

# Hyper S-Stage KIT A Type Instruction Manual

Item No. : 0 1 - 0 5 - 0 0 8 2  
Monkey, Gorilla : Z50J-1300017 ~ 1510400

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

**Please note that, in some cases, the illustrations and photos may vary from the actual hardware.**

## ⚠ Notice about fuel ⚠

This S-Stage Kit 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 you cannot get the high performance of the Kit. Moreover, it is highly likely that the piston 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 is remaining in the fuel tank, do replace it with high-octane gasoline

## ⚠ Notice about spark plug ⚠

Be sure to replace a spark plug with a supplied CR8HSA. And at a later stage, choose and use a right spark plug with the right number, depending on the degree of burning of the spark plug electrode section.

## ⚠ Notice about sprocket ⚠

The installation of this Kit will increase the power of your engine. So with the stock sprocket, every hardware will get worn out soon because of too low gear, not only adversely affecting the engine life, but also possibly breaking the engine in the worst case. Therefore, judge the right type of a driven sprocket, using the supplied drive sprocket. And make the gear ratio high.

The driven sprocket is not included in the Kit.

## Read all instructions first before starting the installation.

We do not take any responsibility for any accident or damage whatsoever arising from the use of the kit not in conformity with the instructions in the manual.

We shall be held free from any kind of warranty whatsoever of products other than this product if the glitch takes place on the other products than this one after the installation and use of this product.

If you make modifications to any product of the kit, we shall be held free from any guarantee of the product.

You are requested not to contact us about the combination of our products with other manufacturers'.

Please note that this kit is designed for exclusive use in the above-mentioned fitting models and frame numbers only and that it cannot be mounted on any other models.

For installation, please prepare suitable tools and work with reference to the installation instructions with enough care. Besides, this instruction manual, as well as a HONDA's service manual, is prepared with those persons in mind who have basic skills and knowledge. Therefore, we recommend those who are technically inexperienced or do not have enough tools to ask a technically-reliable specialist shop for the work.

Bolts, nuts and dowel pins will be reused. However, be sure not to use the worn-down or severely-damaged ones, which please do replace with new ones.

If you use a stock carburetor, do not remove the air cleaner box or air cleaner elements. If you change the carburetor, please do the setting to match various conditions and specifications of your motorcycle. Disregarding of these instructions will result in engine troubles and serious accidents.

You may not run the motorcycle in the rain with the supplied filter installed. Otherwise, please note, it could cause the engine malfunction.

**⚠ CAUTION** The following show the envisioned possibility of injuries to human bodies and property damage as a result of disregarding the following.

- Always try to drive your motorcycle at legal speed, abiding by the laws.
- Work only when the engine and muffler are cool. (Otherwise, you will get burned.)
- Do the installation with right tools. (Otherwise, breakage of parts or injuries to you may take place.)
- Always use a torque wrench to screw bolts and nuts tight and securely to the specified torque. (Otherwise, these parts may get damaged or fall off, resulting in accidents.)
- As some products and frames have sharp edges or protruding portions, please work with your hands protected. (Otherwise, you will suffer injuries.)
- Before riding, always check every hardware like screws for slack. If you find slack ones, screw them securely up to the specified torque. (Otherwise, improper tightening may cause parts to come off.)  
Be sure to fully tighten the cylinder head to the specified torque.
- Always use new gaskets and packings. And check those parts, to be reused, for wear and damage. If you find worn or damaged parts, replace them 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 warnings.

- Always try to drive your motorcycle at a legal speed, abiding by the laws.
- Always start the engine in a well-ventilated place, and do not turn on the engine in an airtight place. (Otherwise, you will suffer from carbon monoxide poisoning.)
- When you notice something abnormal with your motorcycle while riding, immediately stop riding and park your motorcycle in a safe place to check what has gone wrong. (Otherwise, the abnormality could lead to accidents.)
- Before doing work, make sure your motorcycle is secure on level ground for safety's sake. (Otherwise, your motorcycle could overturn and injure you while you are working.)
- Check or carry out maintenance of your motorcycle correctly according to the procedures in the instruction manual or service manual. (Improper checking or maintenance could lead to accidents.)
- 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 as they are could lead to accidents.)
- 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. (Otherwise, it may cause a fire.)

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.

## Lesson

Bolts and nuts will get loose when turned counterclockwise, and tighten when turned clockwise.

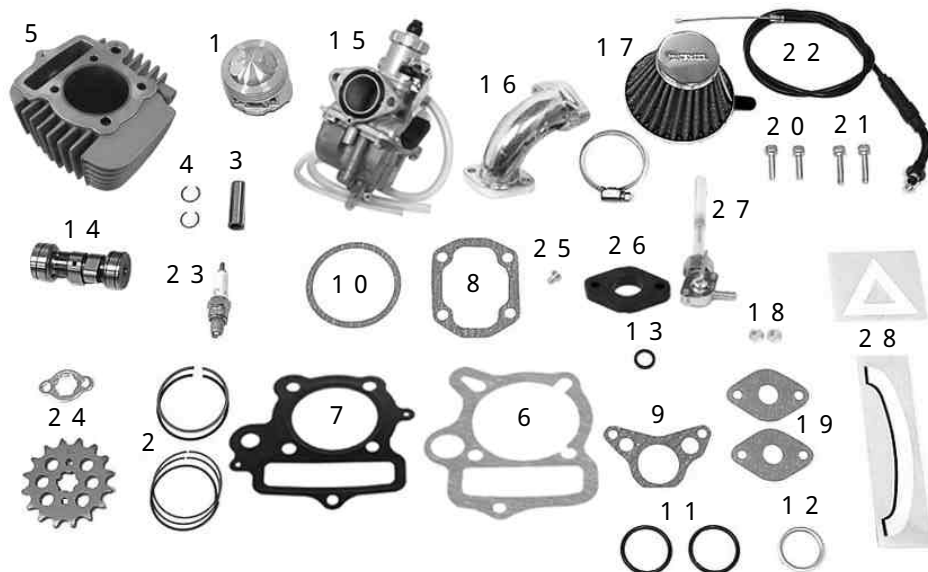
In tightening screws, first finger tighten them as hard as possible without using tools. If they stop turning after giving them one or two turns, the screw may be fixed at a slant.

To loosen a screw means turning a tightened screw around three or four times counterclockwise, and to unscrew it means turning it around counterclockwise until it comes off.

To tighten a screw means to screw it up to keep it from getting loose. The numeric value as a guide at which a screw will not break or get loose when tightened is the so-called "torque." If you do not have a torque wrench, please try to tighten a screw as tight as possible to the point where the screw will not break or get loose, though we can not take any responsibility for the breakage. In case you do not use a torque wrench, you need to judge, only by intuition or using experience, the degree of tightening power at which the bolt will break or get loose.

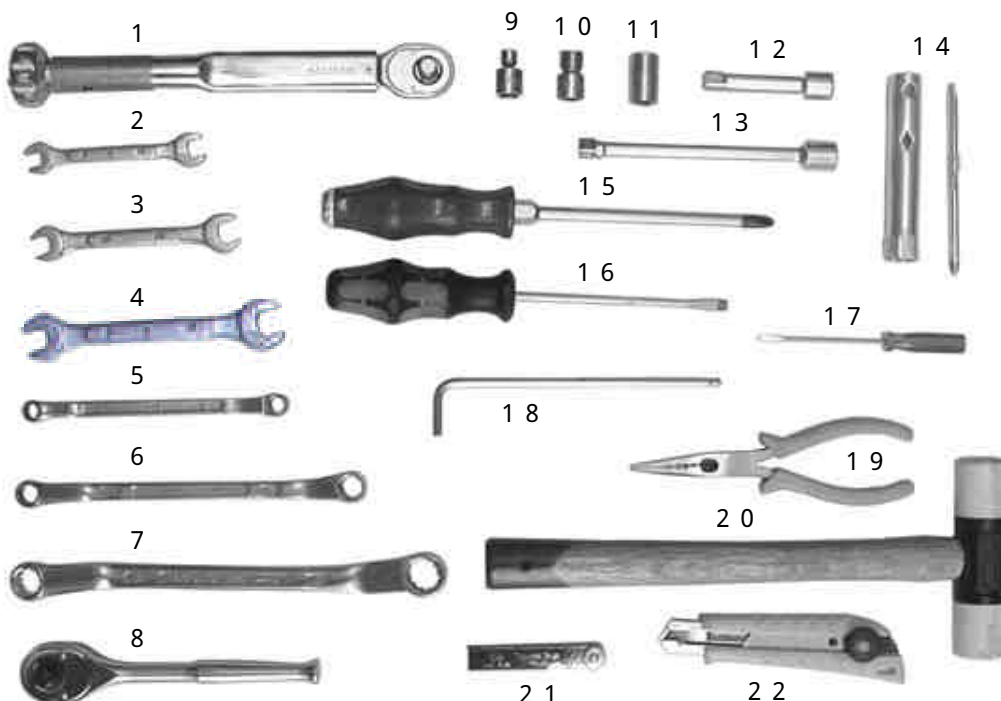
Improper use of tools will result in breakage of the top of a bolt or screw.

Kit includes:



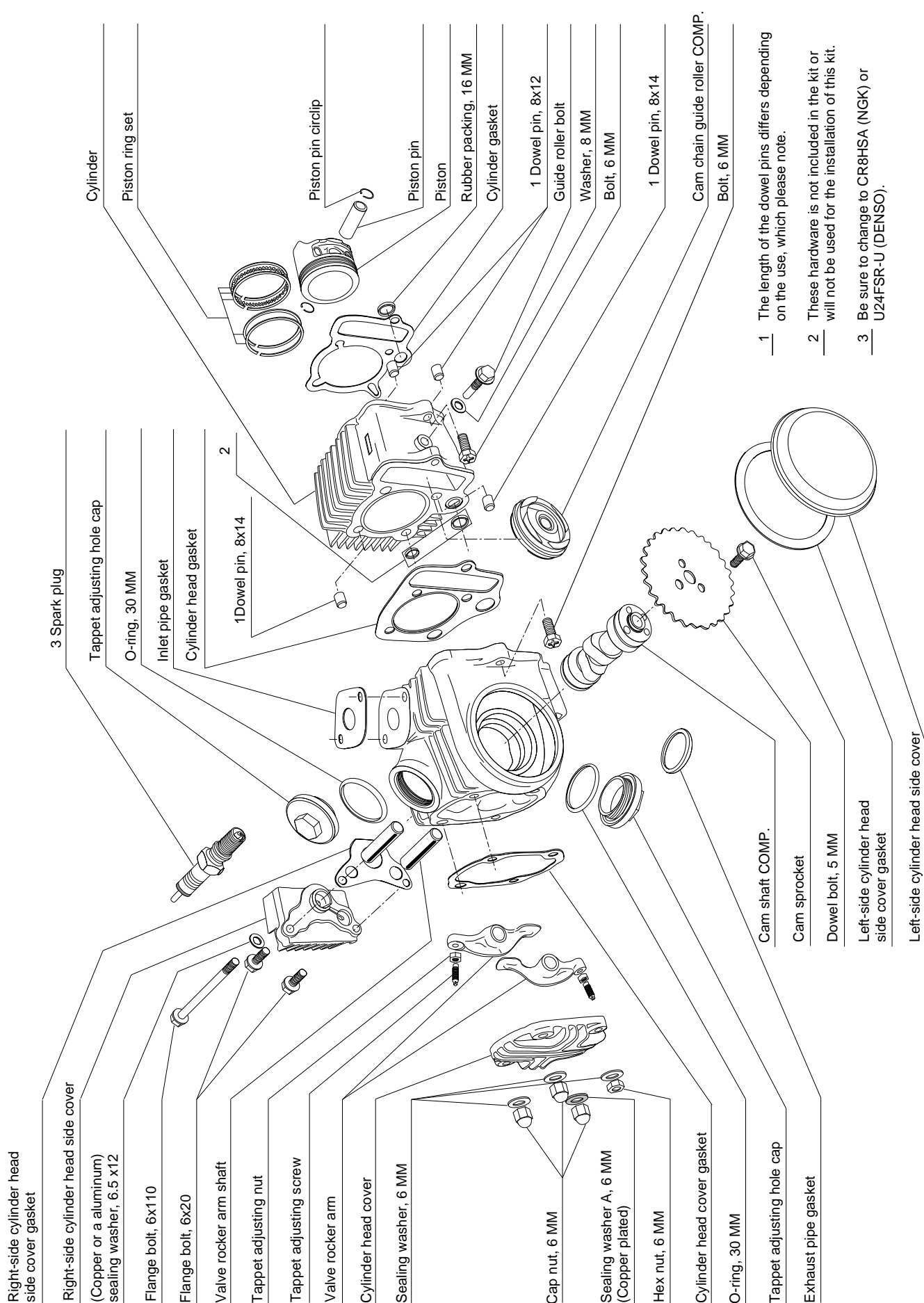
No.	Part Name	Qty
1	Piston	1
2	Piston ring set	1
3	Piston pin	1
4	Piston pin circlip	2
5	Cylinder	1
6	Cylinder gasket	1
7	Cylinder head gasket	1
8	Cylinder head cover gasket	1
9	Right side cover gasket	1
10	Left side cover gasket	1
11	Tappet cap O-ring	2
12	Exhaust pipe gasket	1
13	Rubber packing	1
14	Camshaft	1
15	VM22 carburetor assembly	1
16	Intake manifold	1
17	Air filter (with a band)	1
18	Lock nut, 6mm	2
19	Inlet pipe gasket	2
20	Socket cap screw, 6 x 25	2
21	Socket cap screw, 6 x 30	2
22	Throttle cable, 710 mm	1
23	Spark plug, CR8HSA	1
24	Drive sprocket (with a plate), 15T	1
25	Main jet, #105	1
26	Insulator	1
27	Fuel cock	1
28	Mark set	1

Tools to use for the installation:



1	Torque wrench
2	Open-end wrench 8 - 10 mm
3	Open-end wrench 10 - 12 mm
4	Open-end wrench 12 - 14 mm
5	Offset box wrench 8 - 9 mm
6	Offset box wrench 10 - 12 mm
7	Offset box wrench 14 - 17 mm
8	Ratchet handle
9	Socket 8 mm
10	Socket 10 mm
11	Socket 12 mm
12	Extension (short)
13	Extension bar (medium)
14	Spark plug wrench set, an in-vehicle tool set
15	Cross tip screwdriver (large)
16	Flat tip screwdriver (medium)
17	Fine-shaft flat tip screwdriver
18	Hex wrench, 5 mm
19	Needle-nose plier
20	Plastic hammer
21	Thickness gauge
22	Cutter knife or scraper
	Wire
	Waste cloth or rag
	Engine oil

## Names of components



- 1 The length of the dowel pins differs depending on the use, which please note.
- 2 These hardware is not included in the kit or will not be used for the installation of this kit.
- 3 Be sure to change to CR8HSA (NGK) or U24FSR-U (DENSO).

## Removal of standard hardware

### 1. Removal of seat.



Remove a side cover.



Turn off a fuel cock.



Remove the fuel cock and install the one in the kit.  
Tool to use  
Open-end wrench, 19 mm



Loosen a nut under the seat to remove a bolt.  
Tool to use  
Socket, 12 mm  
Extension (short)  
Offset box wrench, 10 mm



Loosen two nuts on the rear shock absorber.  
Tool to use  
Offset box wrench, 14 mm



Pull the seat backward to demount it.

### 2. Removal of fuel tank.



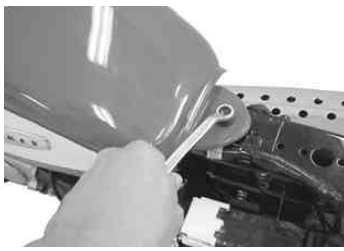
Turn off a fuel cock.



Remove the fuel cock and install the one in the kit.  
Tool to use  
Open-end wrench, 19 mm



Shift the tube clip to disconnect the fuel tube of the carburetor.



Unfasten the bolt holding the fuel tank to the frame.  
Tool to use  
Offset box wrench, 10 mm

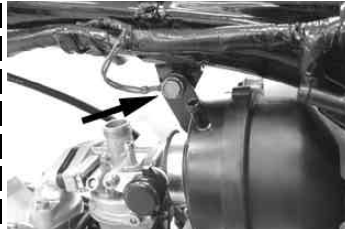


Pull the fuel tank backward to demount it.

### 3. Remove the carburetor.



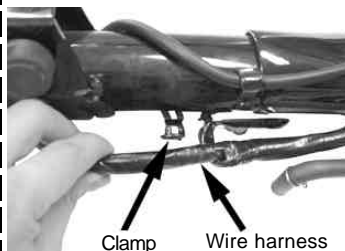
Remove a top cap and pull out a throttle valve, from the carburetor.



Unfasten a bolt on the air-cleaner stay.  
Tool to use  
Socket, 10 mm  
Extension (short)



Unfasten two bolts attaching an inlet pipe to the cylinder head to remove the inlet pipe, carburetor, and air cleaner.  
Tool to use  
Offset box wrench, 8 mm



Move the wire harness so it sits under the frame.

### 4. Remove a muffler.



Remove two nuts on the exhaust pipe by turning them counterclockwise.  
Tool to use  
Open-end wrench, 10 mm



Remove the hex nut securing the muffler by turning it counterclockwise.

Tool to use  
Socket, 12 mm  
Extension (medium)

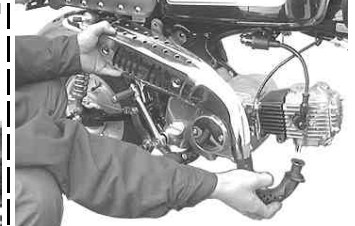
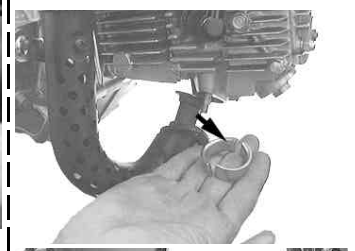


Remove the nut, fastened on the rear side of the muffler, by turning it counterclockwise.

Tool to use  
Socket, 10 mm  
Extension (medium)



Detach two collars of the flange and then detach the muffler from the motorcycle by pulling it outwards.



### 5. Remove a front fender.

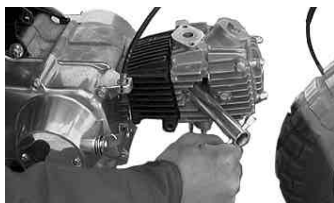


Remove two hex bolts on the reverse side of the front fender by turning them counterclockwise.

Tool to use  
Socket, 10 mm  
Extension (short)

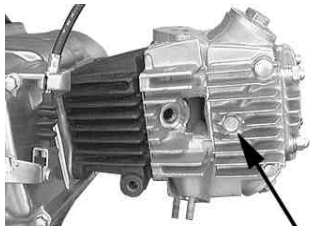


## 6. Remove a spark plug.



Detach a plug cap from the plug by pulling it out. Be sure to hold the cap in pulling it out. With an in-vehicle tool of a spark plug wrench, turn the plug counterclockwise to remove it.

## 7. Remove a cylinder-head left-side cover.



The left-side cover will come off when a hex bolt in the middle of the cylinder-head right-side cover is removed. In case the left-side cover does not come off by so doing, screw a few threads of the hex bolt, and strike the bolt head with a hammer lightly. Then the bolt will come off.

Tool to use  
Socket, 10 mm

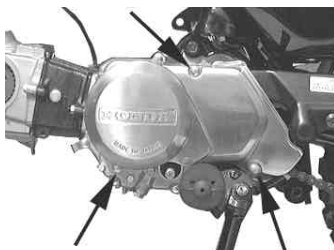


## 8. Remove a crankcase left-side cover.



Unfasten a hex bolt on the shift pedal and remove the shift pedal by turning it counterclockwise.

Tool to use  
Offset box wrench, 10 mm



Remove three screws which are holding a crankcase left side cover by turning them counterclockwise.

Tool to use  
Cross tip screwdriver, (large)

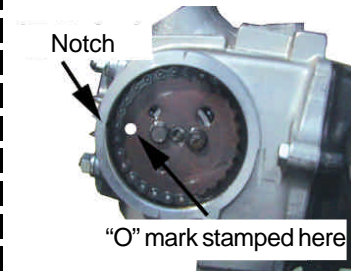
## 9. Remove two tappet caps



Remove two tappet caps by turning them counterclockwise.

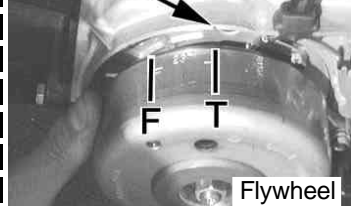
Tool to use  
Offset box wrench, 17 mm

## 10. Remove a cam sprocket.



Notch

"O" mark stamped here



Turn the flywheel counterclockwise so a "T" mark on the flywheel and "O" mark on the cam sprocket align with each notch.



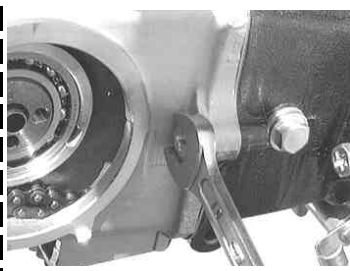
Holding the flywheel, remove three hex bolts on the cam sprocket by turning them counterclockwise.

Tool to use  
Socket, 8 mm  
Offset box wrench, 14 mm (for holding the flywheel)



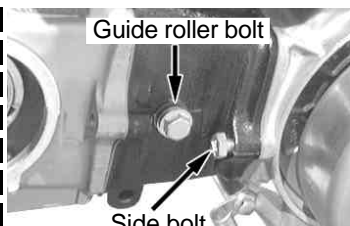
Prize the cam sprocket from the camshaft with a small-sized flat tip screwdriver. Detach the cam chain from the cam sprocket, and take out the cam sprocket. Detach a dowel pin fixed in the center of the camshaft.

## 11. Unfasten cylinder-head side bolt.



Remove the cylinder-head side bolt, which holds the cylinder head and cylinder, by turning it counter clockwise.

Tool to use  
Open-end wrench, 10 mm



Guide roller bolt

Side bolt

Turn counterclockwise the guide roller bolt on the cylinder and the side bolt between the cylinder and the crankcase to loosen these bolts.

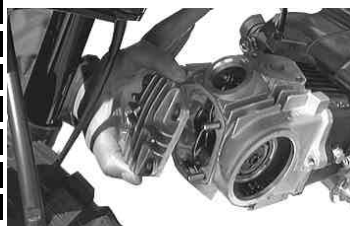
Tool to use  
Open-end wrench, 10 mm  
Offset box wrench, 10 mm

## 12. Unfasten cylinder-head cover.



Remove four nuts, which hold the cylinder head cover, by turning them alternately, diagonally, and counterclockwise. Remove four washers beneath the nuts.

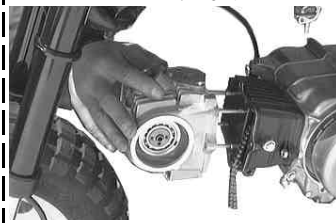
Tool to use  
Socket, 10 mm



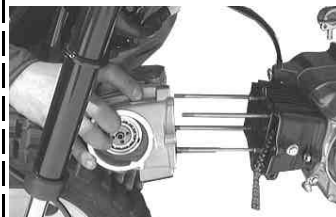
Remove the head cover. (If it does not come off easily, strike it lightly with a plastic hammer, and it will come off.) If some gaskets remain on the cylinder head, wipe them off completely with a scraper or a cutter.

## 13. Remove cylinder head.

Let air out of a front tire. (At the press of the valve with something like a tip of a cross slot screwdriver, the tire will deflate. Continue pressing it till the whoosh of air cannot be heard any longer.)



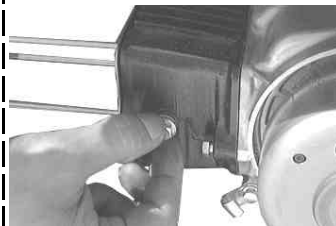
Remove the cylinder head from the cylinder by pulling the head away from the cylinder. (If it does not come off easily, strike the cylinder head lightly with a plastic hammer, and it will come off.)



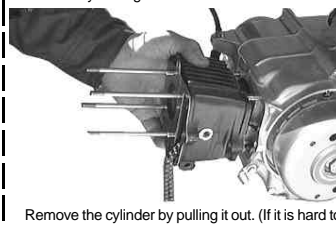
Pressing the front tire, remove the cylinder head. Now you can see the reason why you have let the air out of the tire.

Be sure to save two dowel pins for use later.

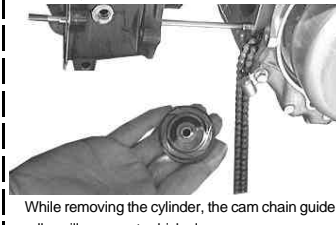
## 14. Remove the cylinder.



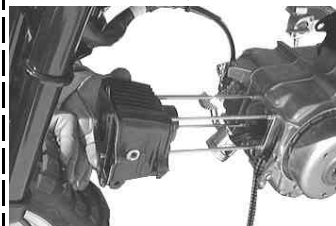
Remove the loosened guide roller bolt and cylinder side bolt by turning them counterclockwise.



Remove the cylinder by pulling it out. (If it is hard to pull it out, hit the cylinder lightly with a plastic hammer.)

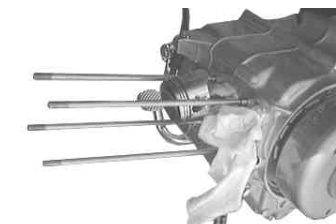


While removing the cylinder, the cam chain guide roller will come out, which please remove.

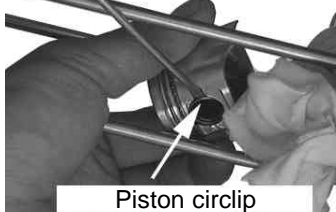


Once the piston has come out, pull out the cylinder forward, holding the tire with a hand.

## 15. Remove the piston.



Plug in a waste cloth so as never to get the dust or component in the cylinder hole in the crankcase or cam chain.



Piston circlip

Remove one of two piston circlips.

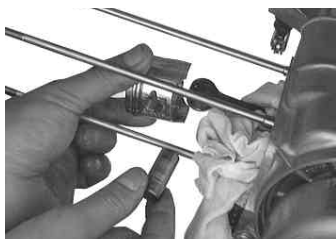
It will come off rather easily if you prize it open with a screwdriver with its tip on the notch.

Tool to use

Flat-tip screwdriver with a fine tip

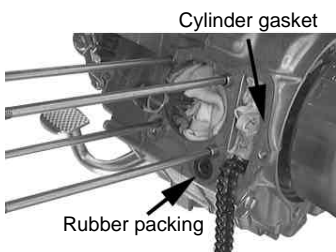


Remove the piston pin in the direction where the piston circlip is not attached. You can easily remove the piston pin by pressing it with a flat tip screwdriver from the direction where a piston pin circlip is attached.



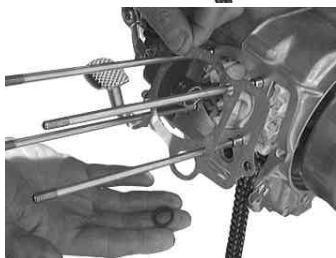
Remove the piston.

## 16. Remove cylinder gasket, rubber packing and dowel pin.



Cylinder gasket

Rubber packing



In case you cannot remove all the gaskets completely, rasp or wipe them off with a scraper or something else, exercising great caution not to scratch the crankcase. In case the crankcase center gaskets squeeze out into the cylinder base or into the cylinder hole, cut them off. Never let any dirt, dust or hardware into the crankcase.



Cut off the gasket squeezing out at the section pointed by a finger as shown in the above picture.

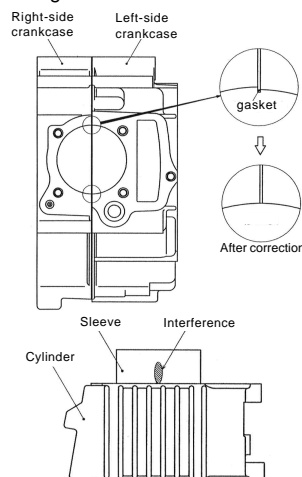
## Precautions for installation of aluminum cylinder:

In installing the cylinder, in some cases, due to right-side and left-side crankcases being out of alignment and for other reasons, the sleeve hole of the crankcase's mating surface, circled portion, the shaded area of the cylinder sleeve and inside of the case may interfere with one another. Since such interference will lead to sleeve deformation and cause engine troubles, do not fail to check the existence of interference and eliminate the interference, if any.

The difficulty level of the work is quite high. So, you may feel like having come close to the professional level if you have successfully completed the work.

## How to correct and eliminate interference

1. Cover the crankcase securely with a waste cloth so the shavings will not get into it.
2. Rasp the higher mating surface of the crankcases till it becomes level with the lower one.
3. After rasping the mating surface, remove the waste cloth with care not to let the shavings get into the crankcase.
4. After removing the waste cloth, stuff up the crankcase opening with a clean waste cloth.
5. After the installation of the kit, idle away the engine for a few minutes, and replace the engine oil with new one without delay. And there is nothing more to do.



## Installation of S-Stage Kit

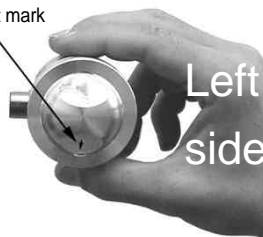
### 1. Piston Installation.



Fix a supplied piston pin circlip securely to the grooves on circlip on the left-side of the piston.

Be sure to set a circlip so its end gap is not on the notch.

Exhaust mark



Left side

You can rather easily install it by pressing it into the piston with a screwdriver, but taking care not to damage the piston with the screwdriver.

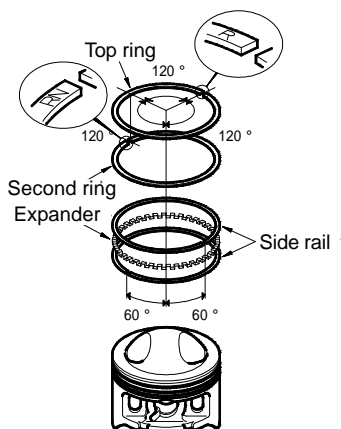
Fix the piston pin circlip first on the left side.

Tool to use

Flat- and fine-tip screwdriver

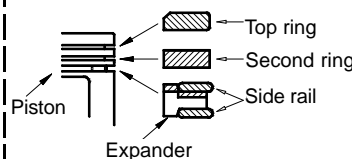
Apply engine oil to the piston-ring grooves, and fix piston rings in the order of an oil ring expander, lower oil ring side rail, upper oil ring side rail, second ring, and top ring.

Arrange the positions of piston ring-end gaps to mesh with each other.



Attach the top ring and the second ring with the letter side up.

Be careful that the top ring is brown and the second ring is black.



Pay attention to the cross section as well.



Fix oil ring expanders.



Fix a lower oil-ring side rail.



Fix an upper oil-ring side rail.



Fix a second ring.

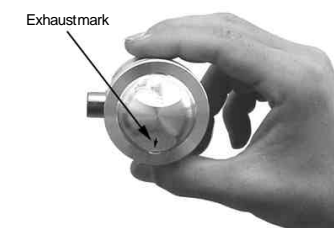


Fix a top ring.

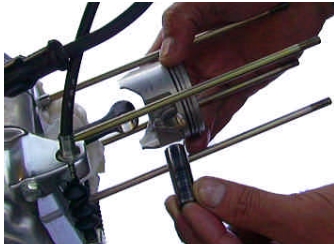




Apply engine oil to the piston pin and con'rod, and install the piston pin.



Fix the piston so the arrow on the piston head faces downward, or to the exhaust side.



It will also be an easy way of installing the piston to insert the piston pin a third into the piston.  
Fix a supplied piston pin circlip securely to the grooves on circlip.

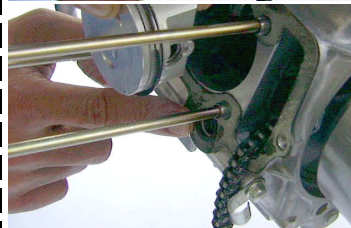
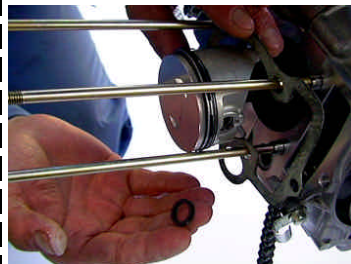


You can rather easily install it by pressing it into the piston with a screwdriver, but taking care not to damage the piston with the screwdriver.  
Do the work carefully as, in some cases, the circlip comes off flying while you are pressing it inside. So, wear protective eyeglasses for your eyes lest it should get into your eyes.

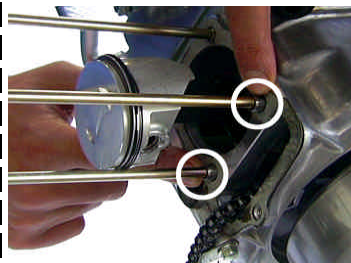
Remove the stuffed waste cloth.

## 2. Installation of cylinder.

Degrease the gasket-mounting surfaces of the cylinder and crankcase.



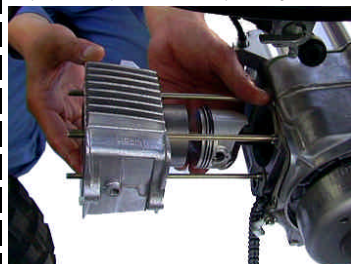
Install the cylinder gaskets and rubber packing.



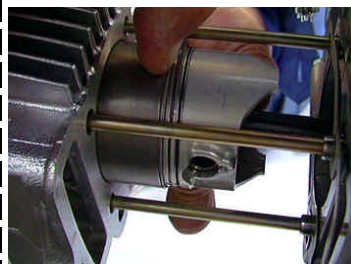
Check that two dowel pins are present.



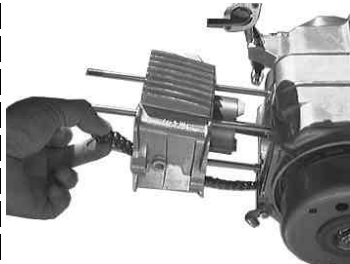
Apply engine oil onto the inside of the supplied cylinder and spread the oil evenly with fingers.



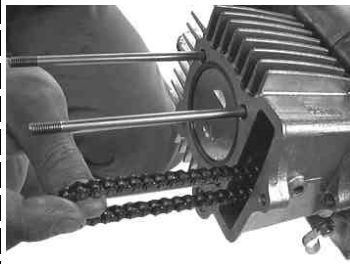
Pressing the tire, install the cylinder.



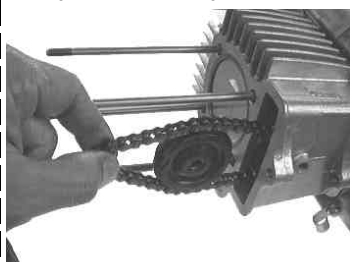
Install the cylinder, by pressing it inch by inch with fingers, being careful not to move the piston ring-end gaps out of alignment.  
The difficulty level of the work is quite high. Please try your best.



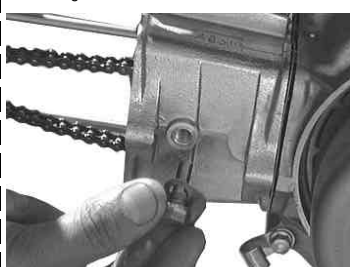
Once the rings have been fixed into the cylinder, pass the cam chain through the cylinder, and fix the cylinder into the crankcase.



Pulling the cam chain, fix the guide roller.



Press in the guide roller so the center of the guide roller and guide-roller bolt hole on the cylinder just mesh together.

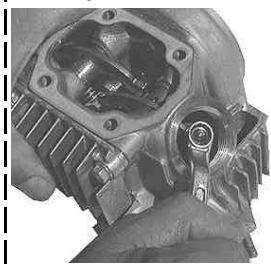


Install the guide roller bolt.  
(Tighten it only finger tight at this point.)



Install a cylinder side bolt.  
(Tighten it only finger tight at this point.)

## 3. Change of camshaft.



Detach tappet nuts and bolts on the rocker arm assembled into the cylinder head.  
At the time the tappet nuts are loosened, detach the tappet bolts and nuts together.

Tool to use  
Offset box wrench, 9 mm



Install a cam-sprocket bolt into the camshaft.  
Turning the camshaft, detach it. Do not pull it out by force.



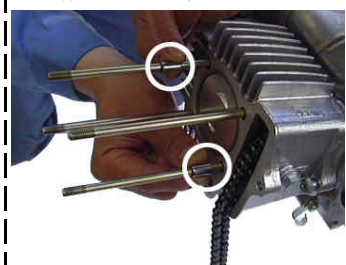
Install the supplied camshaft in the reverse order of removal.  
Apply clean engine oil to the cam top and journal of the camshaft.  
Even if you cannot easily fix the camshaft, fix it manually without striking it with a hammer.



Tighten the tappet screw on the rocker arm by turning it clockwise.

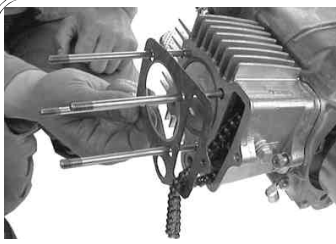
## 4. Installation of cylinder head.

With thinner, degrease the cylinder head surface and upper surface of the cylinder.

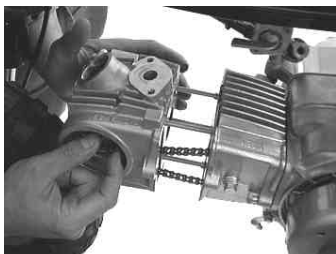


Fix two dowel pins into the cylinder.

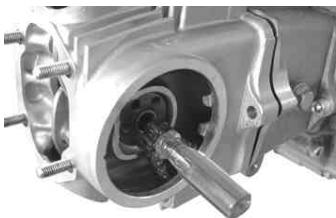




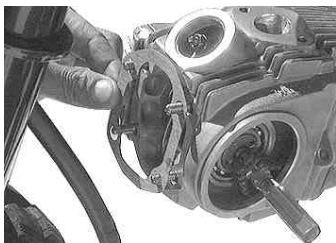
Attach a head gasket.



Pressing the tire with a hand, fit the cylinder head into the stud bolts.  
Passing the cam chain through the cylinder head, install the cam chain.



Hold the cam chain by sticking the screwdriver through the cam chain into a middle hole on the camshaft so the cam chain will not fall into the cylinder.

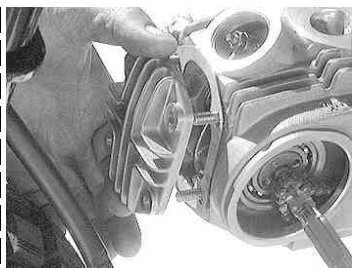


Attach the cylinder-head-cover gasket and head cover.



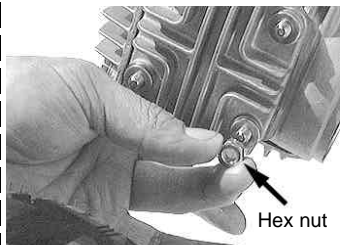
**Beware of this positioning mark**

The arrow should face downward.

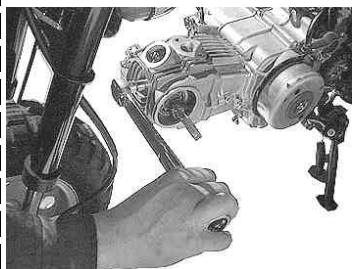


Copper washer

Install the head-cover washers and the nuts. (Attach a copper washer and three iron washers at the lower left, and a hex nut and three cap nuts at the lower right, when the engine viewed from the front.)

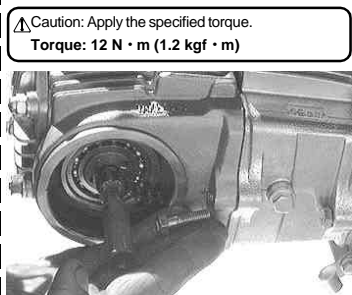


Hex nut



Tighten up the head nuts evenly. (In case a torque wrench is not available, tighten them diagonally, securely and little by little.)

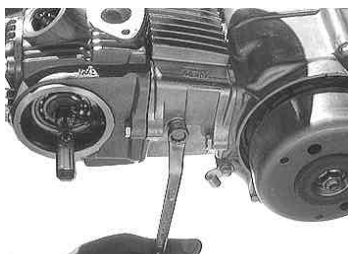
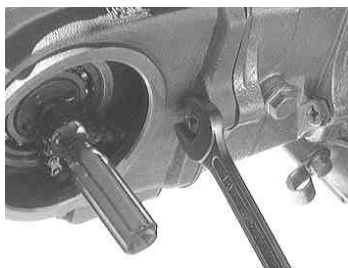
Tool to use  
Socket, 10 mm



⚠ Caution: Apply the specified torque.  
**Torque: 12 N · m (1.2 kgf · m)**

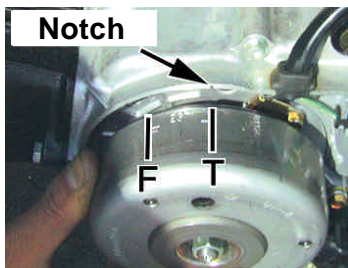
Attach a head-side bolt. Tighten fully the guide roller bolts and the cylinder side bolts which were tightened temporarily.

Tool to use  
Open-end wrench, 10 mm  
Offset box wrench, 10 mm

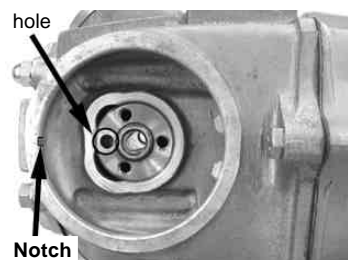


⚠ Caution: Apply the specified torque.  
**10 N · m (1.0 kgf · m)**  
for a guide roller bolt  
**10 N · m (1.0 kgf · m)**  
for lower and upper side bolts

## 5. Installation of cam sprocket.

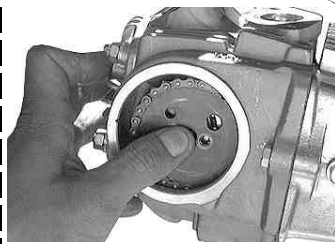


Align the "T" mark on the flywheel with the notch on the crankcase.



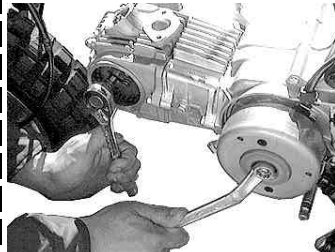
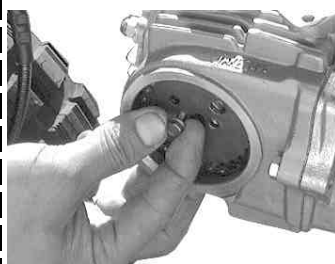
Turn the cam shaft hole to the notch on the cylinder head. This arrangement places the cam shaft at TDC (Top Dead Center) on the compression stroke.

In installing the optional cam, please refer to its instruction manual.



The difficulty level of the work is quite high. Please try your best.

After fixing the cam sprocket, attach the bolt. While attaching the cam sprocket to the cam chain, install the cam chain so the "O" mark on the cam sprocket and the notch on the cylinder head mesh together.



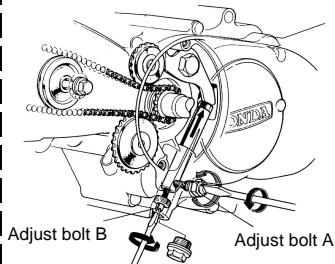
Install the camshaft washer.  
Holding the flywheel, tighten up three cam sprocket bolts.

Tool to use  
Socket, 8 mm  
Offset box wrench, 14 mm

⚠ Caution: Apply the specified torque.  
**Torque: 9 N · m (0.9 kgf · m)**

## 6. Adjust the cam chain.

If you have adjusted the cam chain, do the work in Step 23 on the next page :  
Inspect and adjust the ignition timing



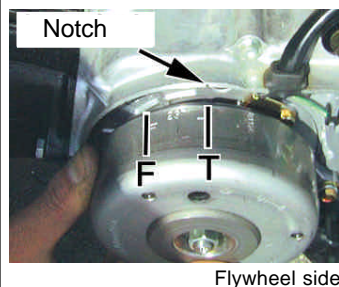
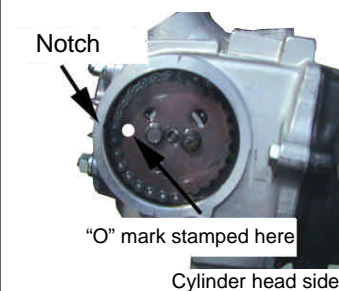
Adjust bolt B Adjust bolt A

Loosen the 8mm nut and the adjust bolt A, then the cam chain will be adjusted automatically by the spring. But in case the cam chain is not stretched tight, keep the loosened adjust bolt A as it is, and gradually tighten the adjust bolt B so that the cam sprocket and cam chain fit together even when the flywheel is turned. Tighten the adjust bolt A, and then 8mm nut.

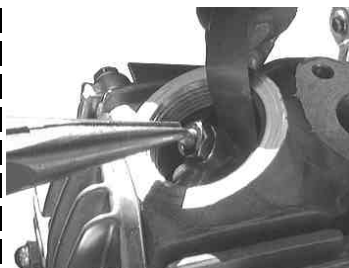
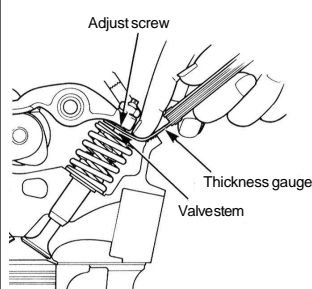
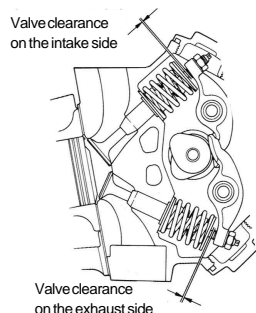


## 7. Adjust valve timing and tappet.

The difficulty level of the work is quite high. Please try your best.

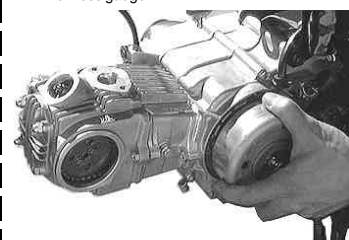


Turn the flywheel until the "O" mark on the camshaft and the "T" mark on the flywheel mesh with each notch. Though the flywheel will not stop right at the required position because the magnet repels each other, it is all right if "O" and "T" marks mesh with each notch at the same time after fixing the cam sprocket.

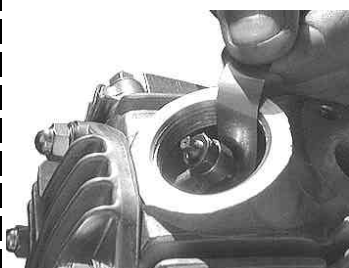


While tightening a rocker arm's tappet screw, tighten the tappet nut to the extent that a 0.05 mm thickness gauge, placed between the tappet screw and the valve stem end, can be pulled out with only a little resistance. If you have no idea of the proper resistance in pulling out the 0.05 mm thickness gauge, then prepare a 0.07 mm and 0.03 mm thickness gauges. When the 0.07 mm gauge won't go in between the space but the 0.03 mm gauge goes in quite loosely, this means that roughly 0.05 mm clearance is secured. Set the space at 0.05 mm both for intake and exhaust.

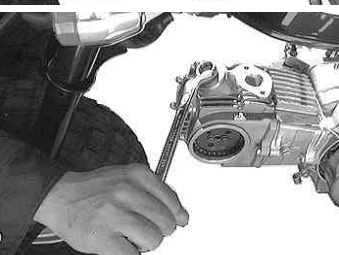
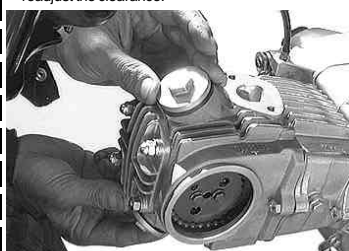
Tool to use  
Needle nose plier  
Offset box wrench, 9 mm  
Thickness gauge



After adjusting the tappet, turn the flywheel counterclockwise twice by hand, and then, align "T" and "O" marks each other.



Check if there is any change in the tappet clearance. If the clearance has not changed, there is no need to readjust it. However, in case there is a change, readjust the clearance.



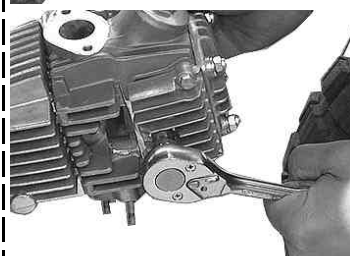
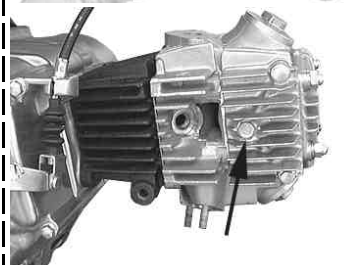
Install two tappet caps.  
Tool to use  
Offset box wrench, 17 mm

⚠ Caution: Apply the specified torque.  
Torque: 12 N · m (1.2 kgf · m)

## 8. Installation of cylinder-head left-side cover.



Attach a cylinder-head left-side cover gasket and left-side cover.  
(Set the anti-rotation stopper of the left-side cover to prevent the cover from turning to the right when the bolt is being tightened.)



Tighten a hex bolt on the right side of the cylinder head as shown by an arrow.

Tool to use  
Socket, 10 mm

⚠ Caution: Apply the specified torque.  
Torque: 12 N · m (1.2 kgf · m)

## 9. Installation of spark plug.



Install a provided plug with in-vehicle tools or spark plug wrench.  
Tool to use  
Spark plug wrench  
Attach a plug cap to the plug.

⚠ Caution: Apply the specified torque.  
Torque: 11 N · m (1.1 kgf · m)

## 10. Installation of stock muffler.



In installing the muffler, route the tail pipe inside the rear shock absorber first, and then set the flange to be roughly under the exhaust port.



Install two flange collars squeezing the exhaust pipe.



Tighten two nuts on the exhaust pipe, loosely for the moment.

Tool to use  
Open-end wrench, 10 mm

⚠ Caution: Apply the specified torque.  
Torque: 10 N · m (1.0 kgf · m)



Attach a nut on the reverse side of the muffler loosely for now.

Tool to use  
Socket, 10 mm  
Extension (medium)

⚠ Caution: Apply the specified torque.  
Torque: 10 N · m (1.0 kgf · m)



Install loosely for now a hex bolt to hold the muffler.

Tool to use  
Socket, 12 mm  
Extension (medium)

⚠ Caution: Apply the specified torque.  
Torque: 26 N · m (2.7 kgf · m)

Tighten up three portions which have just been loosely tightened for the moment.

## 11. Installation of front fender.



Fasten two hex bolts on the reverse side of the front fender.

Tool to use  
Socket, 10 mm  
Extension (short)

⚠ Caution: Apply the specified torque.  
**Torque: 10 N · m (1.0 kgf · m)**

Pump a tire.

## 12. Installation of throttle cables.

Disconnect wiring on the stock throttle cable.



Loosen the hex nut.  
Tool to use  
Open-end wrench, 14 mm



Unfasten two screws to remove an upper throttle housing.



Detach an inner cable in the throttle cable from the throttle pipe.



Remove a stock throttle cable from the lower throttle housing.



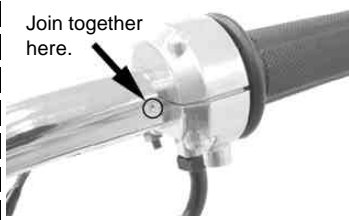
Attach a provided throttle cable to the lower throttle housing.



Connect an inner cable to the throttle pipe.

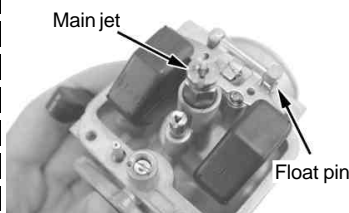


Fix the upper throttle housing with two screws. Tighten up the screw in the front first, and then the one in the back.



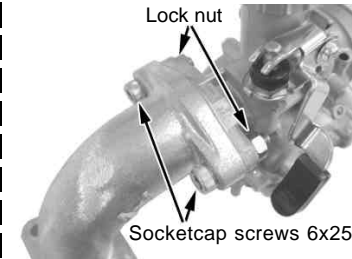
Join together here.  
In the case of a stock steering handle, align the joint on the throttle housing with an "O" mark on the steering handle.  
Connect the throttle cable wiring.  
Tighten up a hex nut.  
Tool to use  
Open-end wrench, 14 mm

## 13. Change of main jet.



Unfasten four screws to remove the float chamber.  
Tool to use  
Cross tip screwdriver, (medium)  
Bear in mind that the float pin is apt to come off.  
Remove the main jet from the jet holder.  
Install a provided main jet.  
Tool to use  
Flat tip screwdriver, (medium)  
Install the float chamber, and attach it to the carburetor with four screws.  
To avoid interference with the crankcase, please cut the drain section by nippers.

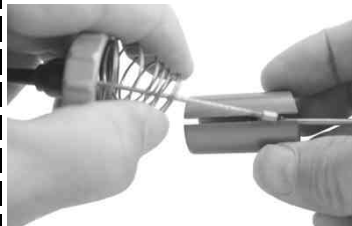
## 14. Installation of carburetor.



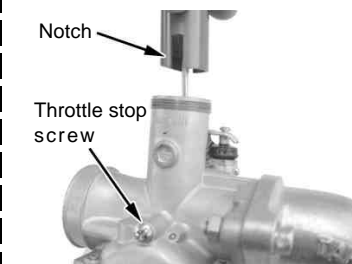
Fix the carburetor and inlet pipe with socketcap screws 6x25 and lock nuts.

Tool to use  
Hex wrench, 5 mm  
Open-end wrench, 10 mm

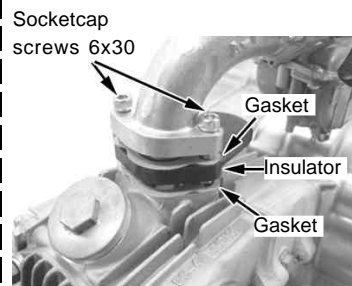
⚠ Caution: Apply the specified torque.  
**Torque: 10 N · m (1.0 kgf · m)**



Remove a top cap of carburetor, spring and throttle valve.  
Attach a top cap, spring and throttle valve to the throttle cable.



Unite the notch part of a throttle valve with a throttle stop screw, and attach in a carburetor.



Attach a gasket, an insulator, a gasket and an inlet pipe with socketcap screws 6x30 in this order.

Tool to use  
Hex wrench, 5 mm

⚠ Caution: Apply the specified torque.  
**Torque: 10 N · m (1.0 kgf · m)**

## 15. Adjustment of throttle free play.

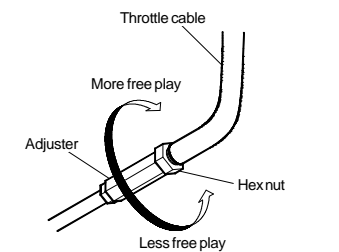


Roll up a throttle cable's boot to expose an adjuster.

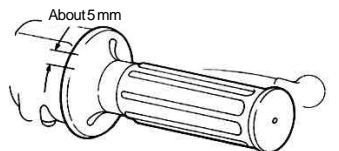


Holding a hex nut, loosen the adjuster.

Tool to use  
Open-end wrench, 8 mm  
Open-end wrench, 10 mm



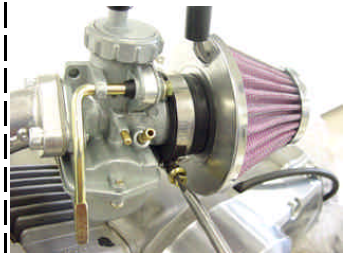
Turning of the adjuster will adjust the free play.



Adjust the free play at the throttle grip to be about 5 mm.  
Hold the adjuster and tighten the hex nut.

Tool to use  
Open-end wrench, 8 mm  
Open-end wrench, 10 mm  
By snapping the throttle, check that the throttle valve moves smoothly and without a hitch.  
Check that there is a little free play in the throttle even when you turn the steering handle all the way to the right and left.  
Cover the adjuster with the boot.

## 16. Installation of air filter.



Attach the band to the air filter, and fit it into the carburetor. And fasten the band.



## 17. Installation of fuel tank.



Install the fuel tank onto the frame.



Install the fuel tank onto the frame with a bolt.

Tool to use

Offset box wrench, 10 mm

⚠ Caution: Apply the specified torque.

**Torque: 12 N · m (1.2 kgf · m)**



Connect a fuel tube to the carburetor.

## 18. Installation of seat.



Insert a seat-stay hook between two washers on the rear shock absorber.



Attach a bolt and nut under the seat.

Tool to use

Socket, 12mm

Extension (short)

Offset box wrench, 12 mm

⚠ Caution: Apply the specified torque.

**Torque: 22 N · m (2.2 kgf · m)**



Tighten two nuts on the rear shock absorber.

Tool to use

Offset box wrench, 14 mm

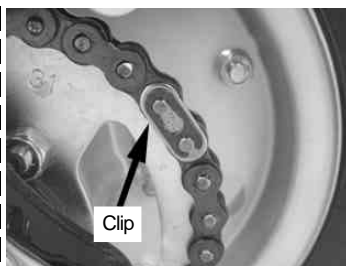
⚠ Caution: Apply the specified torque.

**Torque: 34 N · m (3.5 kgf · m)**



Attach a side cover.

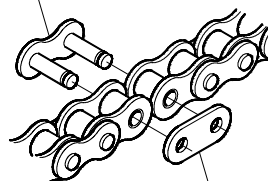
## 19. Installation of drive sprocket. (on the engine side)



Clip

Detach a clip from the drive chain.

Masterlink



Link plate

Detach a link plate and master link to remove the drive chain.

Be sure to stop the engine while you are working.



Applying the rear brake, unfasten two bolts.

Tool to use

Socket, 10 mm

Extension (short)



Remove a plate.



Pull out a stock sprocket from the shaft, and remove the chain.



Fit a provided sprocket into the shaft.



Install a provided plate, and tighten two bolts loosely for now.

## 20 . About a Driven (rear tire side) sprocket.

With change of a drive sprocket, a driven sprocket is also changed and high gear-ization of a sprocket is performed.

A driven sprocket changes with clutch form or tire size. Please make a lower table reference.

The driven sprocket is not contained in the kit. Please purchase separately.

When changing a driven sprocket, the circumference of a rear tire is removed. Vehicles are supported certainly in a racing stand etc. and please float a rear wheel.

A hyper-S stage kit A type recommendation sprocket(In the case of 65kg weight)

Tire size	Clutch	Drive sprocket	Driven sprocket	Ratio
8 inc	Centrifugal 3speed	1 6	3 0	1 . 8 7
	Stock manual	1 5	2 5	1 . 6 7
	Strengthening, special	1 6	2 5	1 . 5 6
1 0 inc	Stock	1 6	2 5	1 . 5 6
	Strengthening, special	1 6	2 8	1 . 7 5

## 21 . About a drive chain.

If it changes into a recommendation sprocket from the sprocket of stock, the slack of a drive chain cannot be abolished only by adjustment. It is necessary to use a chain cutter etc. and to shorten a chain. Moreover, the length of a chain also changes with the length of a swing arm. Please make a lower table reference.

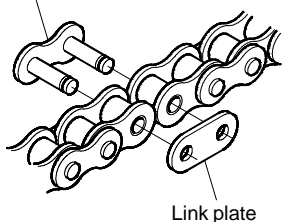
It is surely suspending engine in the case of work.

The number of links of a sprocket and a chain

Drive Sprocket	Driven Sprocket	The length of a swing arm, and the number of links of a chain				
		Stock swing arm	4 c m Stretch	8 c m Stretch	1 2 c m Stretch	1 6 c m Stretch
1 2 (Stock)	3 1 (Stock)	7 2 (Stock)	-	-	-	-
1 2 (Stock)	3 1 (Stock)	7 6 (Stock)	-	-	-	-
1 6	3 0	7 4	7 8	8 4	9 2	1 0 0
1 5	2 5	7 2	7 6	8 4	9 0	9 8
1 6	2 5	7 2	7 6	8 4	9 0	9 8
1 6	2 8	-	-	-	9 2	1 0 0

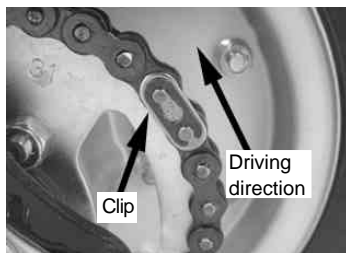
Slack is checked for the bolts attached from the engine to the tire.

Masterlink



Link plate

Fit the master link from inside to connect the drive chain, and attach a link plate.



Clip

Driving direction

Attach a clip.

Be sure to attach the clip with its end-gap in the opposite direction of driving.



Fully tighten the loosely-installed drive sprocket bolt.

Tool to use  
Socket, 10 mm  
Extension (short)

⚠ Caution: Apply the specified torque.

**Torque: 12 N · m (1.2 kgf · m)**

## 22. Installation of crankcase left-side cover.



Install three bolts to hold a crankcase left-side cover.

Tool to use  
Cross tip screwdriver (large)

⚠ Caution: Apply the specified torque.

**Torque: 10 N · m (1.0 kgf · m)**



Install a change pedal.

Tool to use

Open-end wrench, 10 mm

⚠ Caution: Apply the specified torque.

**Torque: 10 N · m (1.0 kgf · m)**

Check for slack in the bolts and the like fixed all the way from the engine to the suspension.

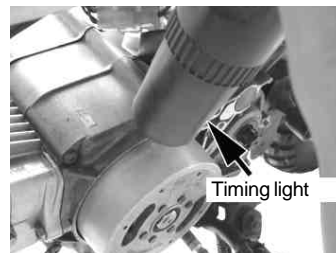


Turn on the fuel cock.

## 23. Inspect and adjust the ignition timing.

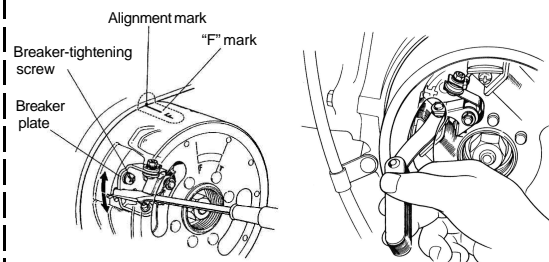
If the ignition timing is off, the engine likely will malfunction seriously let alone fail to exhibit its original performance. Therefore, it is advisable to check and adjust the ignition timing without fail.

If you cannot do the work yourself, we recommend that the work be done by your local motorcycle dealer.



Timing light

Using a timing light (Item No. 00-01-009), check at the time of idling that the "F" mark on the flywheel aligns with the alignment mark on the crankcase.



Alignment mark

Breaker-tightening screw

Breaker plate

"F" mark

Adjust the ignition timing by loosening the breaker-tightening screw and moving the breaker plate a little bit at a time.

After the adjustment, rotate the crankshaft so that the point gap becomes the widest. And measure the gap with a thickness gauge.

Point gap: 0.3 - 0.4 mm

In case the gap is outside the limits, replace the point.

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# 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:
<ul style="list-style-type: none"> <li>• The explosion sound with a dull thud continues intermittently.</li> <li>• The engine malfunctions further if you use the choke.</li> <li>• The engine malfunctions when you warm it up.</li> <li>• The engine works well if the cleaner is detached.</li> <li>• The motorcycle belches dense (or, black) exhaust gas.</li> <li>• The plug smolders, getting blackened.</li> </ul>	<ul style="list-style-type: none"> <li>• The engine overheats somewhat.</li> <li>• The engine starts working well If you use the choke,.</li> <li>• The engine does not accelerate well. (No smooth acceleration)</li> <li>• Revolutions change, generating weak power.</li> <li>• The plug burns white.</li> </ul>

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 tighten 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.

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