

# S-Stage Bore Up Kit (178cc/SCUT) Instruction Manual

Product number	01-05-5404 01-05-0120 (without Camshaft)
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Adaptation model	KLX110 (LX110A-000001 ~)
	(LX110A-A08133 ~)
	KSR110 (KL110A-000001 ~)
	(KL110A-A02833 ~)

Thank you very much for purchasing our products.

Thank you so you will comply with the following matters at the time of use. Before installation, please check your always kit contents. If there is a point of notice event, Please contact us the dealer of purchase.

◎ If the description, such as photos or illustration different with this part.

## Caution about 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, unusual combustion will take place, and the engine cannot achieve its original performance. Moreover, it is highly likely that the piston will be damaged, leading to a serious failure of the motorcycle. Before installing this Kit, make sure that no regular gasoline remains in the fuel tank.

## Caution about Spark Plug

Be sure to replace a spark plug with high a CR8HSA (NGK) or U24FSR-U (DENSO). Subsequently, choose and use a right spark plug with the right level, depending on the degree of burning of the spark plug electrode section.

## Caution about Noises

After installing this Kit, a cooling fan in the cylinder may resonate, making a noise. In this case, deal with this matter by fixing provided dampers to a cylinder.

## Caution about Engine Displacement

Installation of this Kit increases the engine displacement to 178 cc, exceeding 125cc. As this Kit is designed and produced only for use as a racing part, it is prohibited to drive your motorcycle on a public road after the installation of this Kit.

## ☆ Please read carefully before use ☆

- ◎ 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 this Instruction 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.
- ◎ Please note that this Kit is designed for exclusive use in the above-mentioned compatible models with the specified frame numbers only and that it cannot be mounted on any other models.
- ◎ Product may have edges or protrusions. Be sure to wear working gloves.  
(Please wear work gloves when working, even if a photo in this article show without work gloves.)
- ◎ 01-05-0120 (no camshaft kit) need to install our sports camshaft 01-08-045.
- ◎ Please do the installation securely referring to a genuine service manual for the above-mentioned relevant motorcycle.
- ◎ 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 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 sufficient tools to ask a technically-reliable specialist shop for the work.
- ◎ As this Instruction Manual is prepared for installation mainly on the KSR110.
- ◎ If you make modifications to any product supplied here, 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'.
- ◎ Some of bolts, nuts, dowel pins, and packings will be reused. However, be sure to replace worn-down or severely-damaged ones with new ones.

**⚠ Caution** When the handling of ignoring this display, property damage and human shows the assumption of what injury.

- 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.)
- The product and the frame, might have edges or protrusions. When working, please wear work gloves to protect your hands. (It may cause injury.)
- 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.)
- 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.

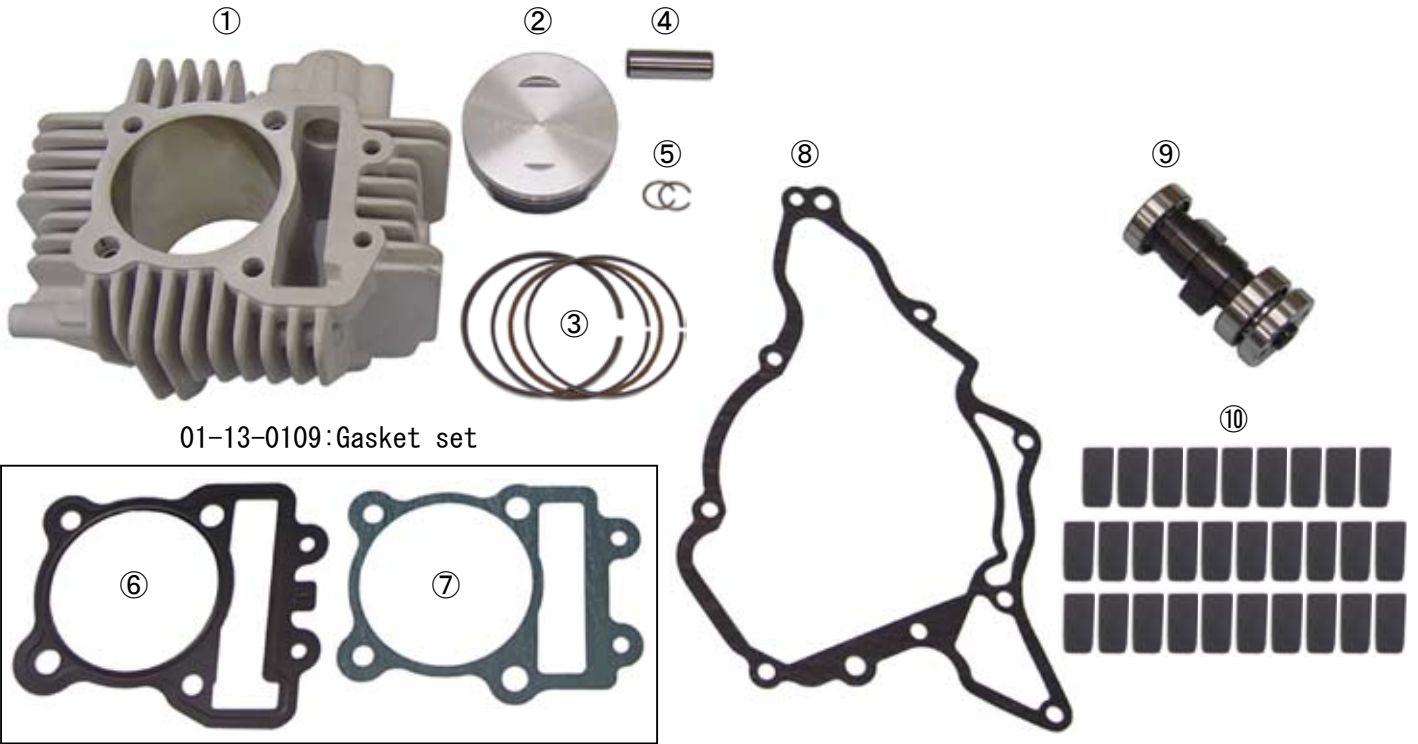
**⚠ Warning** When the handling of ignoring this display people died, shows the contents of the serious injury possibility is assumed.

- 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 unusual with your motorcycle while riding, immediately stop riding and park your motorcycle in a safe place to check what has gone wrong. (Otherwise, the malfunction 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.)
- Carry out inspection and maintenance of your motorcycle correctly according to the instructions and guidelines in the instruction and service manuals. (Improper inspection or maintenance could lead to accidents.)
- If you find damaged parts when inspecting or 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.)

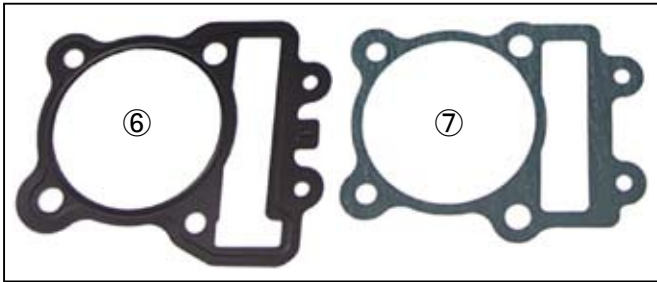
- ◎ Please note. Performance up, the design change, the product and the price in the cost up, etc. are subject to change without notice.
- ◎ Please be informed that we shall be held harmless against any claim against us whatsoever arising out of use of the products in racing and the like.
- ◎ Keep this manual stored until this product is discarded.

**SPECIAL PARTS**  
**TAKEGAWA**

CONTACT Address : 3-5-16 Nishikiorihigashi Tondabayashi Osaka JAPAN  
TEL: +81-721-25-1357 FAX: +81-721-24-5059 e-mail: english@takegawa.co.jp URL: http://www.takegawa.co.jp  
Please contact with your name and country name provided. (Only English please)



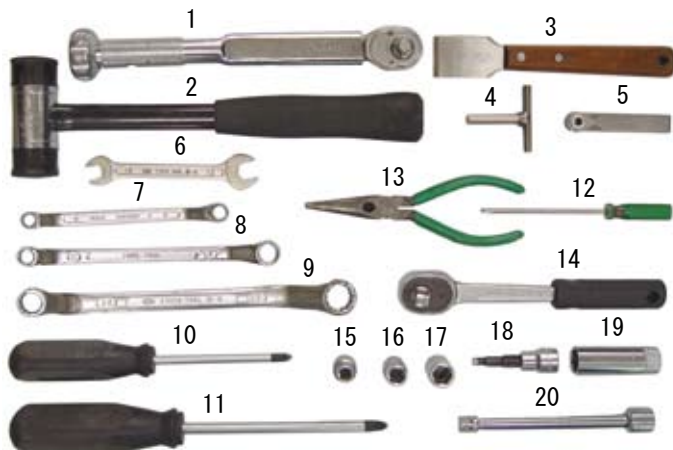
01-13-0109:Gasket set



Number	Product content	Quantity	Item Number
1	Cylinder, 67mm	1	
2	Piston, 67mm	1	
3	Piston ring set (TOP,OIL)	1	01-15-0104
4	Piston pin, 13mm	1	00-00-1258
5	Piston pin circlip	2	00-01-0003 (6 pcs)
6	Cylinder head gasket	1	
7	Cylinder gasket	1	00-01-0392 (2 pcs)
8	Generator gasket	1	00-01-0058
9	Camshaft COMP.	1	01-08-045
10	Cylinder damper B	29	00-01-0342 (10 pcs)

※ No.9 camshaft are not included in the kit of 01-05-0120.  
 ※ Please order in the repair parts are always repair part number.  
 If it is not the part number order, you may not be able to order.  
 Please be forewarned.  
 It should be noted, In the case of parts that can not be separately shipment, please order a set part number.  
 ※ Repair parts may differ slightly from the kit contents in terms of shape, etc.  
 There is no problem to use it. Please be forewarned.

**About tools**



No.	Name	No.	Name
1	Torque wrench	13	Long-nose plier
2	Plastic hammer	14	Ratchet wrench
3	Scraper	15	Socket, 8mm
4	Tappet adjusting wrench	16	Socket, 10mm
5	Thickness gauge	17	Socket, 12mm
6	Spanner wrench, 10-12mm	18	Hex socket, 5mm
7	Offset wrench, 8- 9mm	19	Spark plug socket, 16mm
8	Offset wrench, 10-12mm	20	Extension bar, medium-size
9	Offset wrench, 14-17mm		Oil pan
10	Cross slot screwdriver, size2		Waste cloth
11	Cross slot screwdriver, size1		Engine oil
12	Flat tip screw driver, extra-fine		

**About bolts:**

- Usually, counterclockwise rotation loosens the bolts and nuts, and clockwise rotation tightens them.
- When tightening a screw, at first finger-tighten it as tight as you can, without using a tool.
- To loosen a tightened screw means turning it three or four times counterclockwise, and to remove it means turning it around counterclockwise until it comes off.
- To tighten a screw means to tighten it to keep it from getting loose. However, the bolts may break when overtightened, or may get loose or come off because of the vehicle's vibrations when tightened too loosely. The numeric value as a guide at which a screw will not break or get loose when tightened is the specified torque. And the numeric value varies among the size of the bolts.
- If you do not have a torque wrench, please try to tighten a screw as tight as possible to the extent that the screw will not break or get loose, though we can not take any responsibility for the screw's breakage or getting loose. In case you do not use a torque wrench, you need to judge, only by intuition or using experience, the degree of tightening power with which the screw will break or get loose.

■ Mounting procedure ※ Please refer to the Genuine Service Manual for detailed mounting methods and specified torques that are not specifically described.

### Before installation:

- Before starting the installation, secure your motorcycle firmly on level ground for safety's sake. We recommend that your motorcycle be supported on a racing stand rather than on a usual side stand. This will ensure your safe work with your motorcycle being firmly secured.
- Do the installation work with the engine turned off and, moreover, work only when the engine and muffler are cool.
- Turn off the fuel cock.
- At the time of removal of hardware like bolts and nuts which are to be reused, clean every hardware by taking off all dirt like the dust and oil on each hardware.
- Don't lose such removed hardware as bolts and nuts, and keep them orderly so you can recall where to fix them later.

### Before riding:

- If there remains regular gasoline in the fuel tank, always replace it with high-octane gasoline.
- Install a heavy-duty clutch.

### To get additional performance:

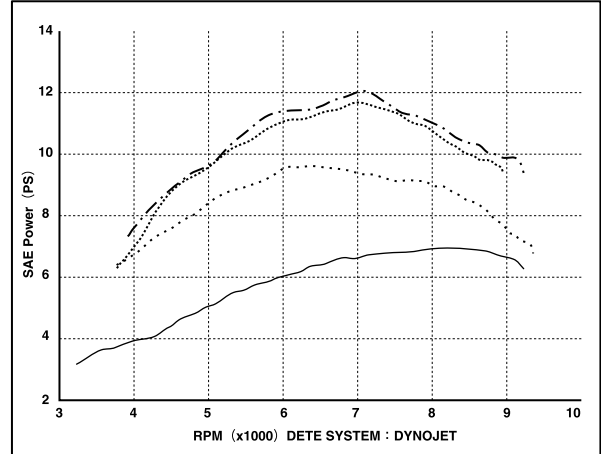
- Carburetor : You can make the engine more powerful through the installation of a special Big Bore Carburetor Kit which works to maximize the power of the S-Stage.
- Muffler : You can make the engine more powerful through the installation of various kinds of our mufflers.

### Others:

- Oil cooler : The installation of this Kit increases the heat release value of the engine, set off by the increase in power. For a long-time, high-load riding, we recommend you to install an Oil Cooler Kit which keeps the oil at appropriate temperatures and prevents such troubles as lack of oil film at high temperatures.

### Upper limit of revolution:

- Install an engine revolution counter, and drive below the upper limit, referring to the graph on the engine output.
- Take note that especially at the time of engine racing and sudden acceleration, particularly in the 1st or 2nd gear, the revolutions tend to exceed the upper limit.
- Over revolutions will result in nonsmooth revolutions of the engine, not only adversely affecting the engine life, but also possibly breaking the engine in the worst case.



- Data on rear-wheel output measured on a Dynojet, just for your reference.
- ※ Engine power also varies widely depending on the temperatures at the time of measurement.

### ■ Tested on: KSR110, but equipped with

- · — · — Hyper S-Stage SCUT 178cc Bore Up Kit (MIKUNI VM26) + basic muffler
- Hyper S-Stage SCUT 178cc Bore Up Kit (MIKUNI VM26) + stock muffler
- S-Stage SCUT 178cc Bore Up Kit + stock carburetor + stock muffler
- Stock 110cc

※ Make sure the motorcycle is secure at a safe place on level ground. Do the following work only when the engine and the muffler are cool.

### ● Removal:

- ◇ Turn off the fuel cock.
- ★ Detach each hardware, removing dirt like dust and oil from the surface.
- ★ Keep the removed bolts and nuts in an orderly manner so you can recall where to fix them later.



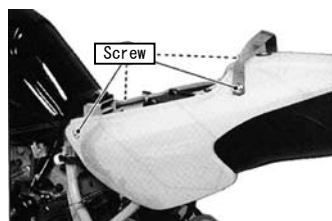
- ◇ Unfasten a bolt, and remove a shroud screen.



- ◇ Demount a seat.



- ◇ Unfasten four screws and remove a seat cowl and seat band.



### ○ Removal of exterior parts:

- ◇ Unfasten three screws, and remove the right side shroud.



### ○ Removal of carburetor:

- ◇ Disconnect two wires. Detach a carburetor top, and pull out a throttle valve.



- ◇ Disconnect the choke cable.



- ◇ Detach a clamp. And detach a tube clamp, and disconnect the fuel hose. Loosen a clamp screw on the air cleaner duct.

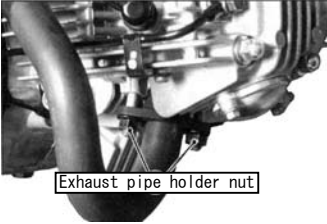


- ◇ Detach two bolts on the manifold, and demount a carburetor from the air cleaner duct.



○ Removal of exhaust muffler:

- ◇ Removal of engine guard.
- ◇ Remove two exhaust pipe holder nuts.



- ◇ Unfasten a muffler-mounting bolt to detach a muffler.



○ Removal of spark plug:

- ◇ Detach a plug cap by pulling it out. Be sure to hold the cap in so doing.
- ◇ Detach a spark plug.



○ Removal of alternator cover:

- ◇ After preparing an oil pan or the like, drain the oil by removing an oil filler cap and an engine oil drain plug bolt.



- ◇ Unfasten three bolts to remove a sprocket cover.



- ◇ Remove a shift pedal.



- ◇ Remove a connector from a generator cover.



- ◇ Unfasten nine bolts and remove a generator cover. Remove and keep dowel pins for re-use later.



- ◇ If some gaskets remain in the crankcase, wipe them off completely with a scraper or a cutter.

★ Do the work with care not to damage the crankcase.

○ Removal of cam sprocket:

- ◇ Unfasten four bolts and remove a cam sprocket cover.



- ◇ Rotate a flywheel counterclockwise to align a "T" mark on the cam sprocket with a protrusion on the cylinder head.



- ◇ Holding the flywheel, remove two bolts on the cam sprocket.



- ◇ Remove a cap bolt on the cam shaft chain tensioner, and turn the stopper clockwise to lock the push rod.



- ◇ Remove the cam sprocket.
- ◇ Unscrew two bolts and remove the cam chain tensioner.

○ Removal of locker arm and camshaft:

- ◇ Unfasten two bolts, and remove valve adjusting covers on both intake and exhaust sides.



- ◇ Unfasten two screws, and remove a rocker arm shaft stopper.



- ◇ Holding the rocker arm by hand, pull out the rocker arm shaft and remove rocker arms on intake and exhaust sides.



- ◇ Pull out the cam shaft.
- ★ Do not pull it out forcibly.

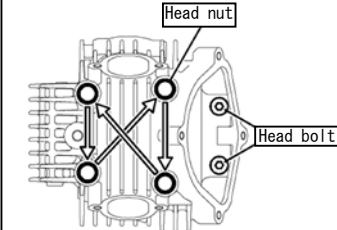


○ Removal of cylinder head:

- ◇ Unfasten an oil-pipe mounting screw and banjo bolts on the crankcase and cylinder head sides, and remove an oil pipe.



- ◇ Remove two head bolts.
- Remove four head nuts by unscrewing them diagonally in several steps.



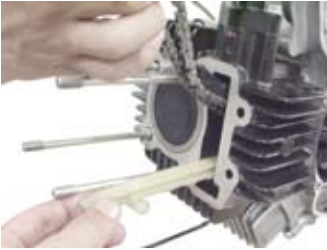
- ◇ Pull out the cylinder head. (If it is hard to pull it out, hit the cylinder head lightly with a plastic hammer.)



◇ Unfasten two dowel pins in advance and keep them for re-use later.

### ○ Removal of cylinder:

◇ Remove a lower cam chain guide.



◇ Pull out the cylinder.  
(If it is hard to pull it out, hit the cylinder lightly with a plastic hammer.)



◇ Unfasten two dowel pins in advance and keep them for reuse later.  
◇ After the cylinder removal, plug the cylinder hole on the crankcase and a cam chain hole with clean waste cloths to prevent any dirt, dust or hardware from falling into the holes.  
◇ If some gaskets remain in the crankcase, wipe them off completely with a scraper or a cutter. Be careful not to scratch the crankcase.  
★ Be careful not to scratch the crankcase.

### ○ Removal of piston:

◇ Remove one of the two piston pin circlips.  
★ It will come off rather easily if you prize it open with a screwdriver's tip on the piston pin notch.



◇ Remove the piston by pushing out the piston pin, with a screwdriver or the like, in the direction where one circlip has just been removed.

## ● Installation of S-Stage Kit:

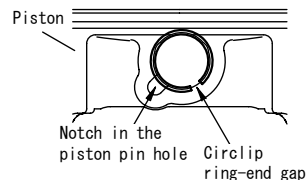
### ○ Installation of piston

◇ Fix a supplied piston pin circlip to one of the pin holes on the piston.

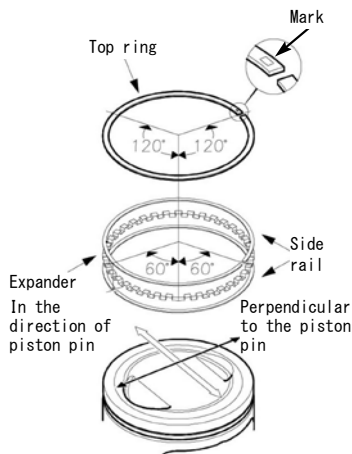
※ Set a piston pin circlip so its ring-end gap is not on the notch in the piston hole.

★ You can rather easily install the piston pin circlip by pressing it with a screwdriver, but taking care not to scratch the piston with the screwdriver.

★ Do the work carefully as, in some cases, the piston pin circlip comes off flying while you are pressing it.



◇ Fix piston rings according to the figure below. Fix an expander, side rails, and a top ring in this order.



Stamped on the top ring.

◇ Apply engine oil to the piston pin, piston-pin hole, and piston-pin hole on the con' rod.  
◇ Install the piston so the arrow mark on its top surface points downward or to the exhaust side.

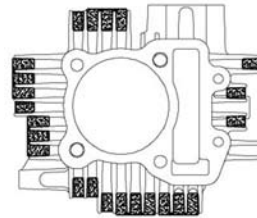


◇ Attach the supplied piston pin circlip.

### ○ Installation of cylinder:

◇ Securely fix the supplied cylinder dampers B in the place as shown in the figure below until they hit a dead end.

(This installation is aimed at reducing a resonant sound from a cylinder cooling fin.)



Install the dampers between the fins

◇ Remove the plugged waste cloth.  
◇ Degrease the mating surfaces each of the crankcase and cylinder to make them clear of the grease.  
◇ Install two dowel pins and cylinder gasket onto the crankcase.

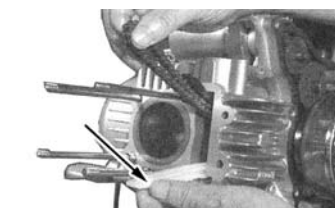


◇ Apply engine oil to the inside of the cylinder and spread the oil evenly and thinly all over. Apply engine oil to the entire side surface of the piston and piston rings.

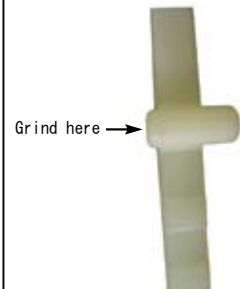


◇ Fit the cylinder into the piston little by little with fingers, being careful not to shift the piston rings' end gaps out of position, and then fit the cylinder into the crankcase.

★ When the cylinder is fitted into the piston, pass the cam chain through the cylinder.  
◇ Fit the lower cam chain guide securely into the grooves in both the cylinder and crankcase.



※ Installing the chain guide on cylinder, the chain guide may not reach at the bottom of the groove. In that case, you need a modification as the photo shown below to install the chain guide properly.



### ○ Installation of cylinder head:

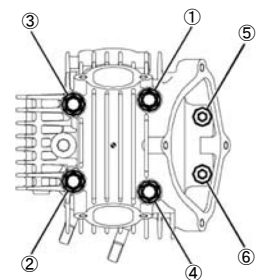
◇ Degrease the mating surfaces of the cylinder and the cylinder head with thinner or the like. Attach two dowel pins and cylinder head gasket to the cylinder.

◇ Pass the cam chain through the cylinder head and install the cylinder head.

◇ Loosely tighten four head nuts and two head bolts first, and then fully tighten them diagonally in numerical order in several steps as indicated in the figure below.

▲ Note: Be sure that you protect specified torque.

Head bolt  
Torque : 12N · m (1.2kgf · m)  
Head nut  
Torque : 22N · m (2.2kgf · m)



◇ Install an oil pipe with a screw and banjo bolt.

⚠ Note: Be sure that you protect specified torque.

Screw  
Torque : 5.2N · m (0.53kgf · m)  
Banjo bolt  
Torque : 15N · m (1.5kgf · m)



### ○ Installation of cam shaft and rocker arm:

◇ Fit a supplied cam shaft into the cylinder head.



◇ Holding the rocker arm by hand, fit the rocker arm shaft into the cylinder head.



◇ Install a rocker arm shaft stopper with two screws.

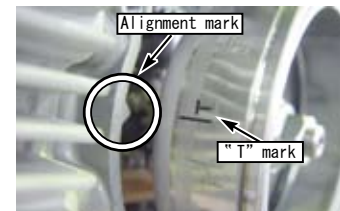
⚠ Note: Be sure that you protect specified torque.

Screw  
Torque : 5.2N · m (0.53kgf · m)



### ○ Installation of cam sprocket:

◇ Make sure that a "T" mark on the flywheel is aligned with the alignment mark on the crankcase.



◇ Attach the cam chain so the "T" mark on the cam sprocket meshes with a protrusion on the cylinder head. Fit the cam sprocket into the cam shaft.



◇ Align a threaded hole of the cam shaft with a hole in the cam shaft sprocket, and install two screws.

⚠ Note: Be sure that you protect specified torque.

Screw  
Torque : 12N · m (1.2kgf · m)



◇ Check that a push rod on the cam shaft chain tensioner is locked.

◇ Attach the cam shaft chain tensioner to the cylinder.

⚠ Note: Be sure that you protect specified torque.

Cam shaft chain tensioner  
Torque : 12N · m (1.2kgf · m)

◇ Turn a little bit a stopper on the cam shaft chain tensioner counterclockwise to unlock the push rod. Then fit a cap bolt.

⚠ Note: Be sure that you protect specified torque.

Cap bolt  
Torque : 5.2N · m (0.53kgf · m)



### ○ Adjustment of valve clearance:

◇ Align a "T" mark on the flywheel with an alignment mark on the crankcase. And check that an "O" mark on the cam sprocket is aligned with the protrusion on the cylinder head.

◇ Insert a thickness gauge between the adjust screw and the valve stem, and adjust the position of the adjust screw to the extent that you feel a little resistance in pulling out the gauge.

Then fix the adjust screw and tighten the nut.  
Valve clearance  
: 0.04 mm to 0.08 mm for both intake and exhaust.

⚠ Note: Be sure that you protect specified torque.

Adjust screw  
Torque : 8.8N · m (0.9kgf · m)



◇ Turn the crankshaft twice counterclockwise, and then, check for clearance change. If the clearance has changed, adjust it again. Repeat this work until the clearance is fixed right.

◇ Install the cam shaft sprocket cover with four bolts. And install valve adjusting covers for both intake and exhaust sides with two bolts each.

⚠ Note: Be sure that you protect specified torque.

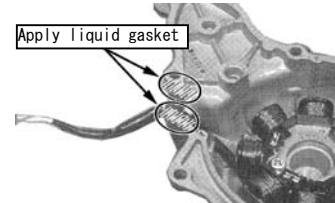
Bolt  
Torque : 5.2N · m (0.53kgf · m)



### ○ Installation of generator cover:

◇ Degrease the mating surfaces of the generator cover and the crankcase with thinner, and fix two dowel pins and a gasket.

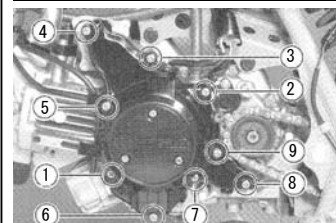
◇ Apply liquid gasket to the grommet on the generator cover wiring.



◇ Attach the generator cover and loosely tighten nine bolts, and then fully tighten them in several steps in numerical order as indicated in the figure below.

⚠ Note: Be sure that you protect specified torque.

Bolt  
Torque : 5.2N · m (0.53kgf · m)



◇ Connect a connector from a generator cover.



◇ Install a shift pedal.

⚠ Note: Be sure that you protect specified torque.

Torque : 7.9N · m (0.8kgf · m)



◇ Install the sprocket cover.

⚠ Note: Be sure that you protect specified torque.

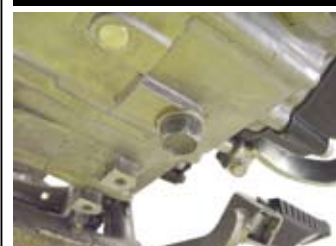
Torque : 5.2N · m (0.53kgf · m)



◇ Install an engine oil drain plug bolt and gasket.

⚠ Note: Be sure that you protect specified torque.

Torque : 29N · m (3.0kgf · m)



- ◇ Inject engine oil in the specified amount, and attach an oil filler cap. Specified engine oil amount: 0.9 liter. (In the case of the oil filter not being removed)



### ○ Installation of spark plug:

- ◇ First, finger-tighten the spark plug.
- ◇ Then tighten it up with a plug wrench.

⚠ Note: Be sure that you protect specified torque.  
Torque : 13N · m (1.3kgf · m)



- ◇ Attach a spark plug cap.

### ○ Installation of carburetor:

- ◇ Attach the carburetor to the air cleaner duct, and install the manifold to the cylinder head with two bolts.

⚠ Note: Be sure that you protect specified torque.

Bolt  
Torque : 7.9N · m (0.8kgf · m)



- ◇ Tighten up the clamp screw on the air cleaner duct. Connect the fuel hose, and attach a tube clamp. And attach a clamp to the fuel hose and spark plug cord.



- ◇ Aligning a notch on the throttle valve with an idle stop screw on the carburetor, install it to the carburetor, and install the carburetor top. Connect two cables.



### ○ Installation of exhaust muffler:

- ◇ Loosely install the exhaust muffler for now with two exhaust pipe holder nuts and a muffler-mounting bolt.



- ◇ Tight two pieces each of nuts and bolts.

⚠ Note: Be sure that you protect specified torque.

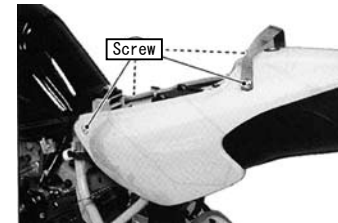
Nut  
Torque : 14N · m (1.4kgf · m)  
Bolt  
Torque : 14N · m (1.4kgf · m)

- ◇ Install an engine guard.

### ○ Installation of exterior parts:

- ◇ Attach a seat cowl and seat band with four screws.

⚠ Note: Be sure that you protect specified torque.  
Screw  
Torque : 5.2N · m (0.53kgf · m)



- ◇ Mount the seat.



- ◇ Attach a shroud screen with a bolt.

⚠ Note: Be sure that you protect specified torque.

Bolt  
Torque : 5.2N · m (0.53kgf · m)



- ◇ Attach the right side shroud with three screws.

⚠ Note: Be sure that you protect specified torque.

Screw  
Torque : 5.2N · m (0.53kgf · m)



### ● Precautions before riding:

#### ① About fuel to use:

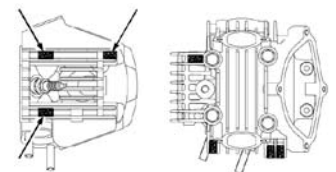
- ◇ Always replace the regular gasoline with high-octane gasoline when the regular gasoline is remaining in the fuel tank.

#### ② Inspection of every hardware:

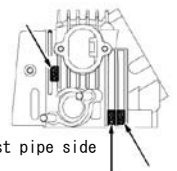
- ◇ Inspect every hardware like screws and nuts for slack.
- ◇ Make sure that engine oil is filled in a specified amount.
- ◇ Drive the engine in a well-ventilated safe place with great care, and warm up the engine.
- ◇ Check for unusual noise from the engine and oil leakage from gaskets.
- ◇ Turn off the engine first, and only after the engine has cooled down, check once again every hardware like screws and nuts for slack.

#### ③ Caution about noises:

- ◇ After the installation of this Kit, cooling fins will generate noises. To deal with this matter, install the supplied dampers to the cylinder head in addition to the cylinder. Securely fix dampers in the place until they hit a dead end as shown in the figure below.



On the spark plug side



On the exhaust pipe side