

R-Stage Head KIT Instruction Manual

Item No. 0 1 0 3 7 0 0 8

Monkey (FI) : AB27-1900001 ~

Super cub 50 (FI) : AA01-1700001 ~

Little cub 50 (FI) : AA01-4000001 ~

- 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.

~ Features ~

- This is the first big valve head for an FI engine, keeping intact a normal head atmosphere.
- The modified valve angle of nip has enhanced the combustion efficiency compared with the normal head.
- The enlarged diameters of intake port from 20 to 24, intake valve pedestal from 20 to 26, and exhaust valve pedestal from 16 to 22.5 have enhanced the intake and exhaust efficiencies.
- We have used an irregular-pitch single valve spring.
- We have used a durable steel retainer.

Notice

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

▲ About fuel to use ▲

This Kit is so designed to achieve a higher compression ratio than stock engines. Therefore, high-octane gasoline should always be used. In case regular gasoline is used, unusual combustion will take place, and you cannot enjoy the high performance of this Kit. Moreover, it is highly likely that the piston will be damaged, leading to a serious failure of a motorcycle. Before installing this Kit, therefore, make sure that no regular gasoline remains in the fuel tank. In case regular gasoline is remaining in the tank, do replace it with high-octane gasoline.

▲ About the spark plug ▲

Be sure to replace a spark plug with a CR8HSA (NGK) or U24FSR-U(DENSO).

▲ About quick starting and sudden acceleration ▲

Please note that idling, sudden acceleration, and sudden engine braking will put a heavy load on the engine, and that it may result in crank shaft and engine damages in the worst case.

▲ Notes on the F.I Controller Plus ▲

If you start the engine with the engine kit only, it is likely that the engine may break down seriously. So, be sure to use this Kit together with the relevant F.I. Controller Plus.

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 this Instruction Manual.

Always try to drive your motorcycle at legal speed, abiding by the laws.

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.

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

A serial No. is stamped on the cylinder head. In some cases, you may be requested to inform us of the serial No. when ordering parts.

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 tools and work with reference to the installation procedures with enough care. Besides, this instruction manual, as well as a HONDA's genuine parts service manual, is prepared for persons who have acquired basic skills and knowledge. We recommend those who are technically inexperienced or without enough tools to ask a technically-reliable specialist shop for the installation work.

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

Fuel must always be supreme unleaded high-octane gasoline.

We disclaim any responsibility whatsoever for any damage or loss arising from riding this-Kit-equipped motorcycle in a racing.

This product is assumed with our air filter, muffler, combination of FI Con PLUS. Please purchase separately.

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

- This product is designed for exclusive use on the closed course. So, take note that it is prohibited to drive your motorcycle on a public road after installation of this kit. Drive your motorcycle at a legal speed, abiding by the laws.
- Work only when the engine and muffler are cold at below 35 degrees Celsius. (Otherwise, you will burn yourself.)
- Prepare right tools for the work. (Otherwise, parts will be damaged or you will suffer injuries.)
- As some products and frames have sharp-pointed or protruding portions, please work with great care. (Otherwise, you will suffer injuries.)
- Always use new gaskets, packings and the like. Worn or damaged ones may cause engine troubles.

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

- Those who are technically unskilled or inexperienced are required not to do the work.
(Improper installation because of insufficient skill and knowledge could lead to parts breakage and subsequently to accidents.)
- Before doing 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.)
- Always drive the engine in a well-ventilated place, and do not start the engine in an airtight place.
(Otherwise, you will suffer from carbon monoxide poisoning.)
- As gasoline is highly flammable, never place it close to fire. Make sure that nothing flammable is near the gasoline. (It may cause a fire.)
- Always use a torque wrench to screw bolts and nuts tight and securely to the specified torque.
(Improper torque could cause these parts to get damaged or fall off, resulting in accidents.)
- Never use any other parts than those specified by us. (The use of the unspecified parts may lead to parts breakage and consequent accidents.)
- If you find damaged parts when checking and performing maintenance of your motorcycle, never reuse them but replace them with new ones.
(The continued use of these damaged parts could break the parts, leading to accidents.)
- When you notice something abnormal with your motorcycle while riding, immediately stop riding and park your motorcycle in a safe place.
(Otherwise, the abnormality could lead to accidents.)
- 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, leading to accidents.)
- Check or perform maintenance of parts correctly according to the inspection procedures in the instruction manual or a service manual.
(Improper checking or maintenance could lead to accidents.)
- Be sure to always use premium unleaded petrol. (Otherwise, troubles such as knocking of an engine may cause accidents.)

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.

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. Please retain this Instruction Manual for future reference.

Cautions before riding

About fuel:

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

With this kit installation, a centrifugal filter will be lost. So, please install a dry-type clutch with an external oil filter, or a special clutch.

Change of a sprocket:

The installation of this kit will increase the power of your vehicle. So the use of a stock sprocket will result in severe wears of parts because of too low gear, not only adversely affecting the engine life, but also damaging the engine in the worst case. Therefore, please change the sprocket with the high-geared one.

This kit cannot function on its own.

Purchase the bore up kit or the bore stroke up kit to go with this kit.

(This does not apply to the case where you have purchased a full kit.)

Others

Oil cooler:

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

About a cam shaft:

If you have purchased a cylinder head kit alone, a special cam shaft is needed separately.

A serial number is stamped on the cylinder head just for the sake of administration.

You may be requested to inform us of the number when ordering repair parts. In case you are not able to order parts because you do not have the repair parts numbers or for other reasons, please place an order in the following way.

Take a note of the number stamped on the cylinder head.:

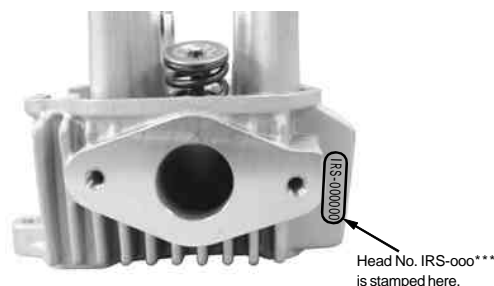
Head No. IRS-000001

Example of ordering

Cylinder head kit, repair part

Head No.: IRS-000001 Intake valve

Qty:1

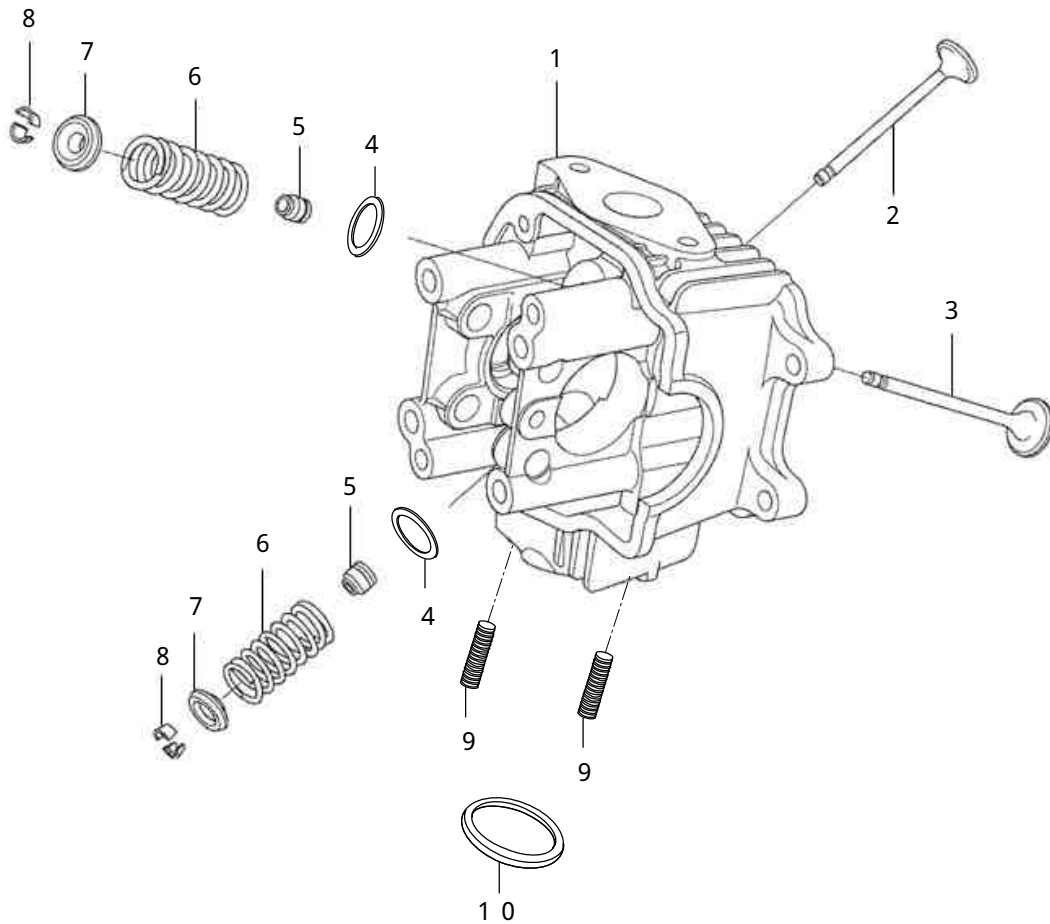


About upper limit of revolution:

The upper limit of revolution is 12,000 rpm. So run the engine at the revolutions of under 12,000 rpm.

Running beyond this revolution limit of 12,000 rpm will not only adversely affect the engine life, but also possibly break the engine in the worst case.

~ Kit Contents ~



No.	Part Name	Qty	Repair Part Item No.	In packs of
1	Cylinder head	1	_____	_____
2	Intake valve	1	14710-GBJ-T00	1
3	Exhaust valve	1	14720-GBJ-T00	1
4	Valve spring outer sheet	2	00-01-0002	2
5	Valve stem seal	2	00-01-0015	2
6	Valve spring	2	00-01-0283	2
7	Valve spring retainer	2	00-01-0102	2
8	Valve cotter	4	00-01-0018	4
9	Stud bolt 6x32	2	00-01-0073	2
10	Exhaust pipe gasket	1	00-01-0064	2

Please note that in ordering repair parts, be sure to quote the Repair Part Item No.

Otherwise, we may not be able to accept your orders.

There are some parts, however, for which we are not in a position to accept your order in just the quantity to be used. In this case, please take them in the quantity packed.

SPECIAL PARTS TAKEGAWA Co.,Ltd.

3-5-16 Nishikiorihigashi Tondabayashi Osaka Japan

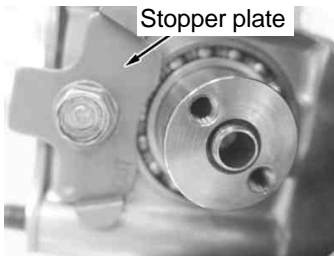
TEL : 81-721-25-1357 FAX : 81-721-24-5059

URL : <http://www.takegawa.co.jp>

~ Installation Procedures ~

1 Installation of cylinder head

Detach a stopper plate, rocker arm, rocker arm shaft from a standard head.



Install an included camshaft onto the R-Stage Head. Apply clean engine oil to the camshaft and camshaft bearings. Even if you cannot easily fit the camshaft, never strike it with a hammer.

Attach the dowel pins, originally attached to the stock camshaft, to the supplied camshaft.

Install the rocker arm, rocker arm shaft and stopper plate which you have just removed from the standard head.

Stopper plate bolt

12N · m (1.2 kgf · m)

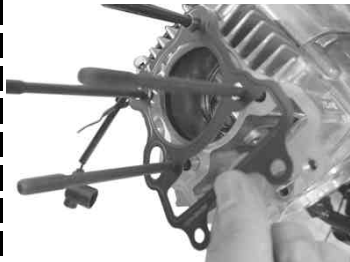
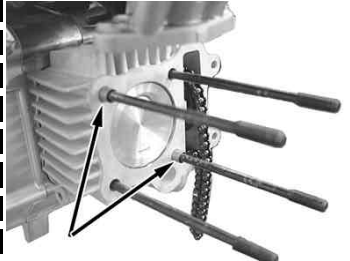
If you fail to install the rocker arm shaft onto the rocker arm, loosen the adjusting screw on the rocker arm.



2 Installation of cylinder head .

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

Fit the dowel pin included in the Cylinder Kit, and place the head gasket.



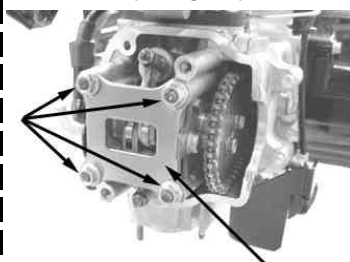
Install the cylinder head, fitting the cam chain and stud bolts in place.



Attach the cylinder head plate and tighten the head nuts evenly.

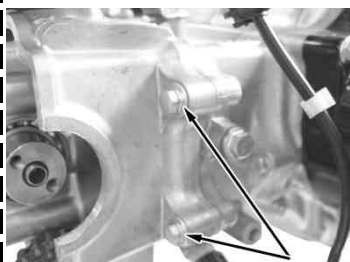
Tightening torque:

14 N · m (1.4 kgf · m)



Cylinder head plate

Attach a head side bolt. Fully tighten the guide roller bolts and the cylinder side bolts which were tightened temporarily.



Tightening torque:

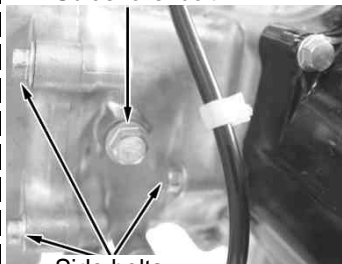
10 N · m (1.0 kgf · m)

for a guide roller bolt

10 N · m (1.0 kgf · m)

for lower and upper side bolts

Guide roller bolt



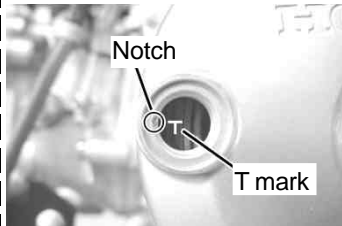
Side bolts

3 Installation of cam sprocket.

Align the "T" mark on the flywheel with the notch on the crankcase, and set the piston at the compression top dead center position.

Set the shaft so the cam top faces the piston when the cam sprocket bolt hole is turned toward the notch on the cylinder head.

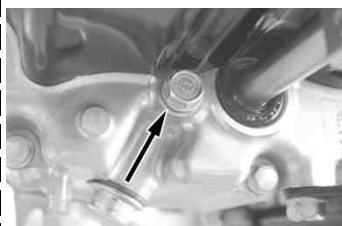
This arrangement places the cam shaft at TDC (Top Dead Center) on the compression stroke.



Notch

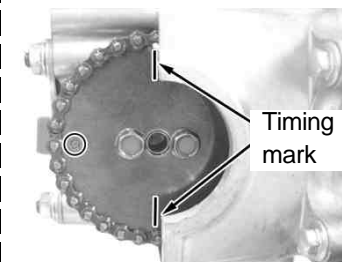
T mark

Unscrew a hex bolt next to the change-pedal shaft. (Consequently, the cam chain tensioner slackens, and you will find it easier to install the cam chain.)



Oil will flow out a little after the bolt is tightened. Wipe off the oil.

Set the cam sprocket so its "O" mark faces the front. And mesh the timing marks with mating surfaces of the cylinder head cover. Aligning the notches together, put the cam chain on the camshaft.



Timing mark

Holding the flywheel, tighten up two cam sprocket bolts.

Tightening torque:

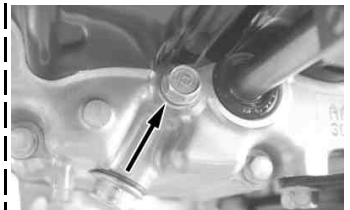
9 N · m (0.9 kgf · m)



Install the just-removed bolt next to the change pedal shaft, and tighten it up.

Tightening torque:

10 N · m (1.0 kgf · m)



4 . Installation of spark plug, oil temperature sensor and O₂ sensor.

Install a plug.

Tightening torque:

16 N · m (1.6 kgf · m)



Attach a plug cap to the plug.

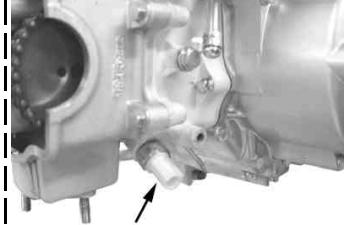
Install the oil temperature sensor and then a sensor guard.

In installing the oil temperature sensor, apply the engine oil to the threaded portion and use a brand-new sealing washer.

Tightening torque

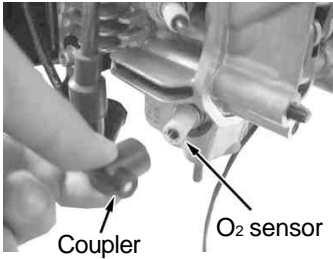
Sensor: 14.5 N · m (1.5 kgf · m)

Guard : 10 N · m (1.0 kgf · m)



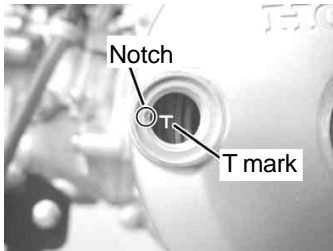
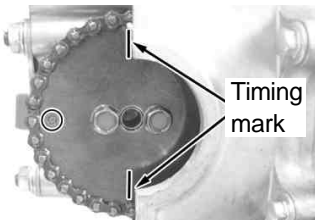
Install the O₂ sensor, and then a coupler.

Tightening torque:
24.5 N·m (2.5 kgf·m)



5 .Valve timing adjustment and tappet clearance adjustment.

Give the crankshaft two clockwise turns. And check that all the alignment marks are meshing with one another, with the "T" mark on the flywheel, the notch on the crankcase and the timing sprocket mark facing the front.



While tightening a rocker arm's tappet adjusting screw, tighten the tappet adjusting nut to the extent that you can pull out a thickness gauge, placed between the tappet adjusting screw and the valve stem end, feeling only a little resistance.

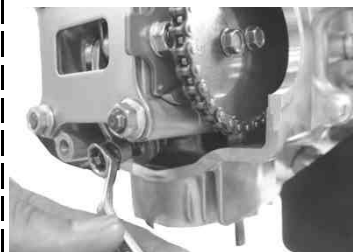
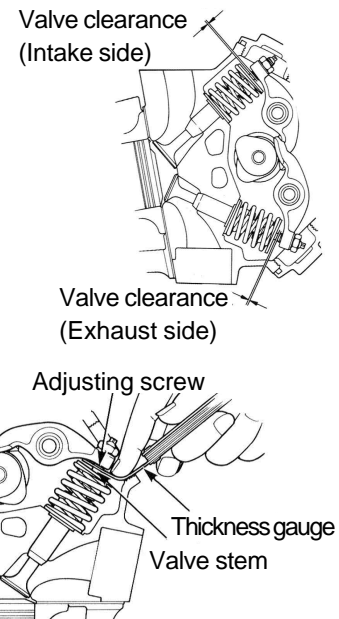
Tightening torque:
9 N·m (0.9 kgf·m)

Valve clearance
 IN: 0.10 mm
 EX: 0.12 mm

Fit together the crankcases with a 14mm box wrench and medium-sized long joint.

After adjusting the tappet, give the flywheel two turns counterclockwise by hand, and then, align the "T" with "O" marks.

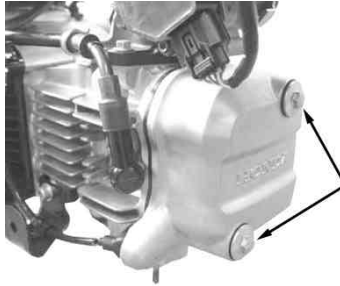
Check if there is any change in the tappet clearance. If the clearance has not changed, there is no need to readjust it. However, in case there is a change, readjust the clearance. Repeat this readjustment until you get a right tappet clearance.



6 . Installation of cylinder head cover.

Attach a cylinder-head cover and gasket.

Tightening torque:
12 N·m (1.2 kgf·m)



7 . Installation of muffler.

Install the muffler referring to the installation procedures in the muffler kit instruction manual.

8 . Installation of inlet pipe.

For FI Monkey

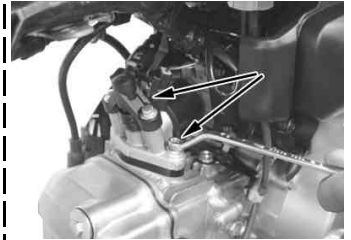
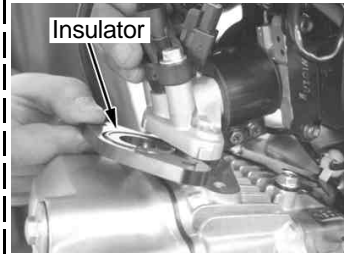
Install two O₂ sensor stays.

Tightening torque:
10 N·m (1.0 kgf·m)



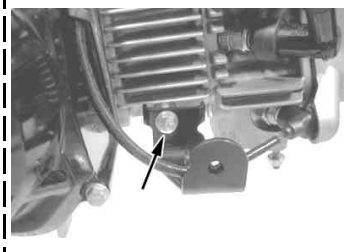
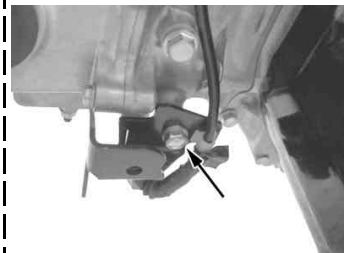
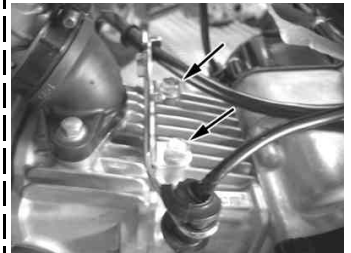
Attach two bolts which hold the cylinder head and inlet pipe.

Tightening torque:
10 N·m (1.0 kgf·m)



For Super cub50 (FI) and Little cub50 (FI)

Install the horn and the front cover brackets on right and left sides.

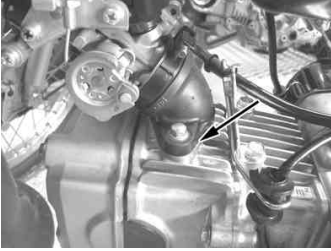


Install the inlet pipe to the cylinder head with two bolts.

Tightening torque:

10 N·m (1.0 kgf·m)

You do not need to use the insulator for Super cub50 (FI) and Little cub50 (FI).



9 . Installation of a hole cap.

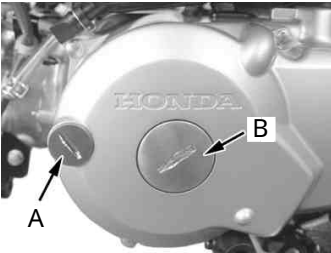
Fix and tighten both A and B.

Tightening torque:

A 1.5 N·m (0.15 kgf·m)

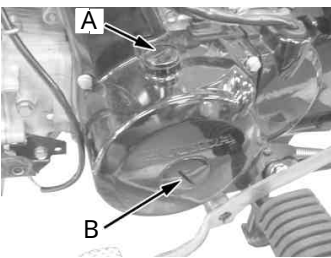
B 3 N·m (0.3 kgf·m)

Monkey (FI)



Super cub 50 (FI)

Little cub 50 (FI)



Attach a change pedal.

Tightening torque:

10 N·m (1.0 kgf·m)

Check bolts for slack which have just been installed up to now on the engine, muffler, inlet pipe and other pieces of hardware.

1 0 . Installation of an F.I. controller.

Install the controller following the installation procedures for the F.I. controller.

INSPECTION / SERVICE LIMITS

(Head No. IRS-00097 ~)

⚠ WARNING

Since this cylinder manual is prepared for those who have acquired basic skills and knowledge in tuning, those who are technically unskilled or inexperienced are required not to do the work.

Reference Value List for Cylinder Head Maintenance

Items	Stock	Service Limit	Remarks
Valve clearance (intake)	0.10 ± 0.02 mm	—————	
(exhaust)	0.12 ± 0.02 mm	—————	
Cylinder head distortion	—————	0.05 mm	Replace
Inside diameter of valve rocker arm (intake)	10.000 ~ 10.015 mm	10.019 mm	Replace
(exhaust)	10.000 ~ 10.015 mm	0.017 mm	Replace
Outside diameter of rocker arm shaft (intake)	9.972 ~ 9.987 mm	9.968 mm	Replace
(exhaust)	9.972 ~ 9.987 mm	9.970 mm	Replace
Clearance between a rocker arm and a shaft (intake / exhaust)	0.013 ~ 0.043 mm	0.05 mm	Replace
Inside diameter of valve guide (intake / exhaust)	—————		Replace the guide or the head
Outside diameter of valve stem (intake)	—————	4.42 mm	Replace
(exhaust)	—————	4.40 mm	Replace
Clearance between a valve stem and a guide (intake)	0.01 ~ 0.037 mm	0.09 mm	
(exhaust)	0.025 ~ 0.060 mm	0.12 mm	
Valve seat contact width (Intake)	—————	1.5 mm	Modify or replace the head
(Exhaust)	—————	1.7 mm	Modify or replace the head
Free length of valve spring	—————	30.5 mm	Replace
Valve spring retainer (intake / exhaust)	—————	Damaged	Replace

Torque unit

1 kgf · m = 9.80665 N · m (=newton meter)

(M O - O I L) This mark shows molybdenum solution.

This solution is a mixture of molybdenum grease and engine oil (in the ratio of 1:1).

Apply molybdenum solution or assembly paste to the portions where it is indicated that molybdenum solution needs to be applied.

(N E W) This mark shows those parts to be replaced with every overhaul.

Do not fail to replace these parts every time they are overhauled.

(A L - S P L) This mark means Aluminum Special (heat-resistant lubricating agent).

• Aluminum Special = heat-resistant lubricating paste and grease which prevent galling from high temperatures and heavy loading, and adhesion.

(Purpose: good for those parts which get hot like a spark plug and exhaust manifold.)

Never apply this to any parts other than the specified parts.

INSPECTION / SERVICE LIMITS

(Head No. IRS-00097 ~)

Valve Overhaul

Compress the valve spring with a valve spring compressor.

⚠ CAUTION: Do not compress the valve spring more than necessary.

Specialized Tools : Valve spring compressor

Item No. 00-01-07

Valve spring compressor set

Item No. 00-01-1005



Remove the valve cotters.

If it is hard to remove them, use a magnet to remove the cotters.

Detach the valve spring compressor, and remove the following parts.

- Valve spring retainer
- Valve springs (inner / outer)
- Valve

Check each valve for bending, baking, and damages.

Measure the surface of the exterior valve stem sliding over a guide with a micrometer.

Service Limit Intake : 4.42 mm Exhaust : 4.40 mm

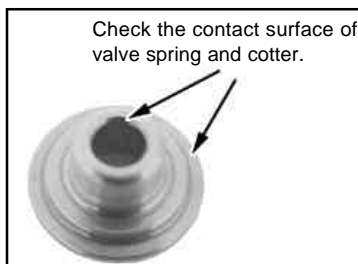
Replace bent, scratched or damaged valves with new ones.



Inspection of Valve Spring Retainer

Inspect a valve spring retainer for damaged.

If it is damaged, replace it.



Inspection of Valve Seat

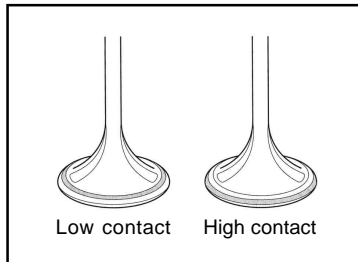
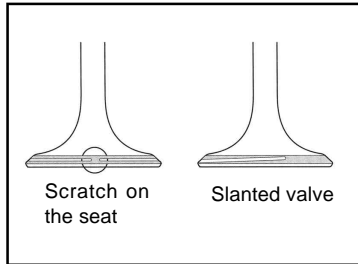
- Remove carbon sediments in the combustion chamber of the cylinder head and in the valves.
- Dissolve red lead primer with oil or the like, and apply the dissolved red lead primer to the valve faces evenly.
- Strike the valves once and lightly with a valve punner to rotate them.
- Wipe off the red lead primer on the valve faces, and strike the valves once and lightly with the valve punner without rotating them, and inspect the contact surfaces.



INSPECTION / SERVICE LIMITS

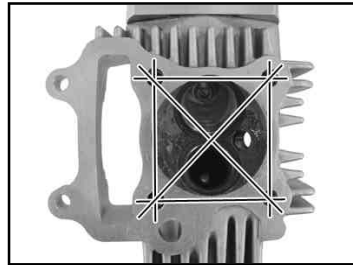
(Head No. IRS-00097 ~)

- If there is a scratch on the valve seat, modify the seat.
- If the contact width is too wide, narrow, high or low, modify the seat.
- Ask a specialist shop in internal combustion for the modification work.



Inspection of Cylinder Head

- Check the spark plug hole and valve hole for the cracks in the vicinity.
- Check the cylinder head for distortion with a straight edge and thickness gauge.



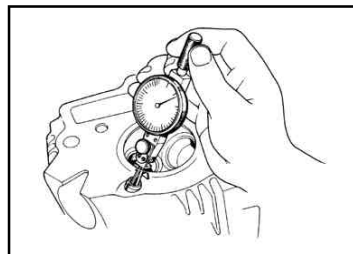
Service limit: If the distortion is over 0.05 mm, replace the cylinder head.

Inspection of the Valve Guide.

- Measure the inner diameter of the valve guide.

Service Limit IN : 4.56 mm
EX: 4.57 mm

Replace the valve guide or cylinder head if the valve guide is scratched or damaged.

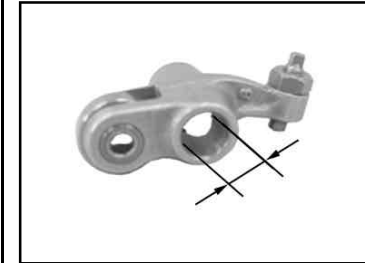


Outer diameter of the valve stem subtracted from the inner diameter of valve guide is a guide clearance.

Service Limit IN : 0.09 mm
EX: 0.12 mm

Inspection of Rocker Arm

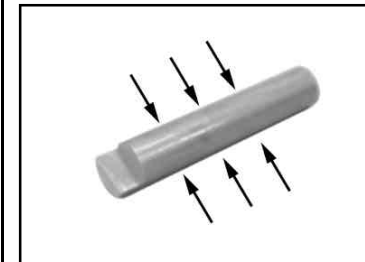
- Check the rocker arms for scratches, damages and jamming.
- Measure the internal diameter of the rocker arms. And if the size is above the following figure, replace it with a new one : IN : 10.019 mm
EX: 10.017 mm



Inspection of Rocker Arm Shaft

- Check the rocker arm shafts for bending, scratches, and damages.
- Measure the external diameters of the rocker arm shafts. And if the size is below the following figure, replace it with a new one : IN : 9.968 mm
EX: 9.970 mm
- Measure the clearance between the rocker arms and the rocker arm shafts.

If the clearance is more than 0.05 mm, replace them.



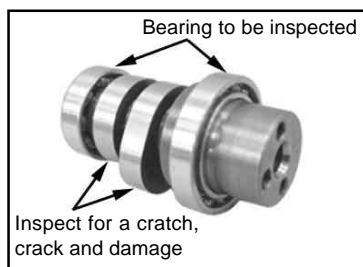
INSPECTION / SERVICE LIMITS

(Head No. IRS-00097 ~)

Inspection of Cam Shaft

- Check the cam shaft for scratches, cracks, and damages.
- Inspect each cam top.
- Check the bearings in the cam shaft.

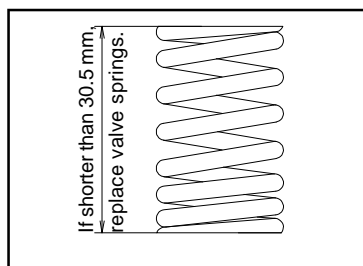
Rotate the outer race of the bearings. If the outer race does not rotate smoothly or if it is rickety, replace the cam shaft.



Inspection of Valve Springs

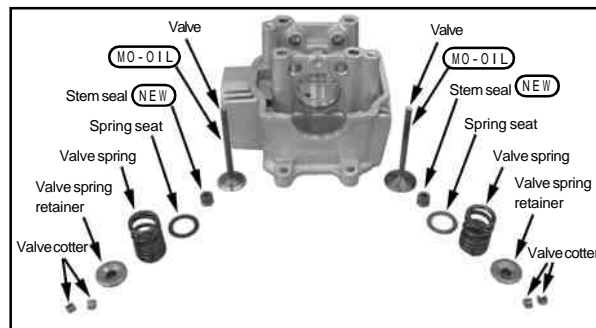
- Check the valve springs for scratches and damages.
- Measure the free length of the valve springs.

Outer : If shorter than 30.5 mm, replace them.



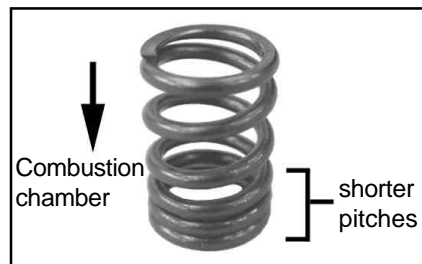
Valve Assembly

- Clean up the cylinder head.
- Fix valve spring seats and new valve stem seals.
- Apply molybdenum solution to the sliding surfaces of the valve stems, and fit the valves into the valve guides, rotating valves slowly with care not to damage the stem seals.



- Attach the valve springs, placing the ones with shorter pitch pointing to the combustion chamber.

⚠ CAUTION: Be sure to place the narrower-pitched portion of the valve spring to face the combustion chamber side.



- Apply grease a little to valve cotters. And compressing the valve springs with a valve spring compressor, attach the valve cotters.

⚠ CAUTION: Do not compress the valve spring more than necessary.



- Strike the tops of valve stems a few times so the valves and cotters fit together well.

⚠ CAUTION: Be careful not to damage the valves.

