

Cylinder Kit (145cc) Instruction manual

Product number	01-04-0137
	01-02-0175 (Piston Kit)

Adaptation model	GROM (JC92-1000001 ~ 1099999)
	CT125 (JA65-1000001 ~)
	Monkey125 (JB03-1000001 ~)
Requirement	Must equipped with our SuperHead 4V+R

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.

This kit (cylinder and piston) exclusively for our "Super Head 4V+R" cylinder head.

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

☆ Please read carefully before use ☆

◎ This kit exclusively for our "Super Head 4V+R" cylinder head. Cannot be used as parts alone.

◎ During installation, it prepares the tool or the like, do the work with care in accordance with the mounting procedure.

In addition, this manual and genuine service manual are intended for those who have a basic skills and knowledge.

If no experience of mounting, etc., who preparation of such a tool is insufficient, we recommend that it is your request to the shop with a technical credit.

◎ Export models (other than Japanese model) is not available the compatible FI controllers. Please be forewarned.

◎ This product installation and use, when a problem occurs to after market goods, guarantee other than this product, also can not assume any in any such matters.

◎ If it was the case or mounting that has been processed like a product, it will not be covered under warranty.

◎ It is not possible to inquire of the combination of other manufacturers.

◎ 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.)

◎ Please perform break-in.

◎ This product is generated more heat than stock engine. For long-term high-load riding, we recommend to use SP TAKEGAWA oil cooler kit and "super oil pump kit" (with relief valve mechanism).

◎ 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.

◎ It may be necessary to change the secondary reduction ratio depending on the weight of the rider and riding conditions.

◎ The sealing washer for the guide roller part is not included. Must be purchased yourself. If the sealing washer is damaged, please use a new one.

◎ We also recommend installing our "crankshaft support adapter" at the same time.

◎ Recommended parts and necessary parts are listed in the instruction manual (included in the "Super Head 4V+R" kit).

~ feature ~

○ Uses aluminum with steel sleeve cylinder. Bore 54mm, stroke 63.1mm (same as stock), compression ratio 12.0:1

You can check the cylinder temperature by the compact LED thermometer with M5 sensor (sold separately).

○ The piston rings are designed thin, with TOP: 0.8mm, 2ND: 0.8mm, and Oil: 1.5mm, to minimizing fluttering and friction loss.

○ All piston head are manufactured by CNC machine to minimize individual differences in compression ratio.

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

■ This part is a product that was developed for the closed competition, please do not use public roads.

■ When performing the work, etc., be sure during the cold (when the engine and the muffler is cold). (It may cause burns.)

■ When performing the work, it should be made to prepare the tools for the job. (Breakage of parts, it may cause injury.)

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

■ Be sure to each part inspection before operation, check the loosening of the threaded portion, be sure to securely tighten the specified torque if there is loose. (It may cause detachment of the parts.)

SPECIAL PARTS
TAKEGAWA

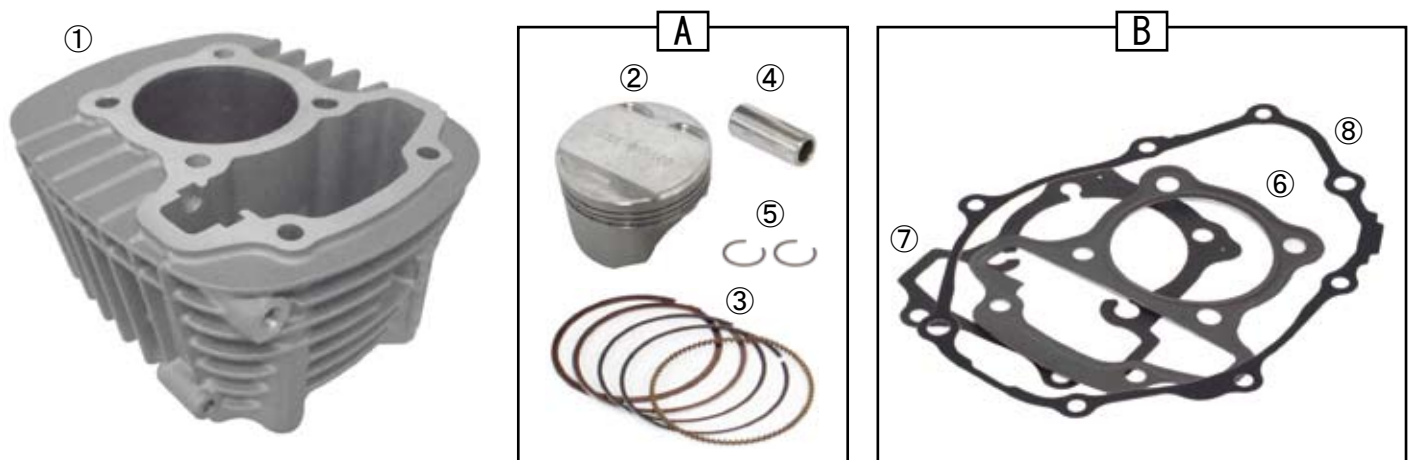
CONTACT Address : 3-5-16 Nishikiorihigashi Tondabayashi Osaka JAPAN
TEL: +81-721-25-1357 FAX: +81-721-24-5059 e-mail: english@takegawa.co.jp URL http://www.takegawa.co.jp
Please contact with your name and country name provided. (Only English please)

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

- The technology and those who no knowledge, please do not to work.
(The cause of parts damage etc., could result in falls and accidents.)
- Always use new pinston pin circlips, gaskets, packings and the like. Worn or damaged ones may cause accidents because of breakage of these parts.
- When performing the work, do the work safely stabilize the vehicle in a horizontal location.
(There is a risk of injury vehicle collapsed while working.)
- When carrying out the inspection and maintenance, etc., if found damaged parts, replace the damaged parts to avoid possible to reuse the parts. (There is a risk that lead to accidents Continued use.)
- If you start the engine, be sure in a well-ventilated place. In the sealed such place, please do not start the engine.
(There is a risk of carbon monoxide poisoning.)
- During operation, when an abnormality occurs, immediately stop the vehicle in a safe place, please stop running.
(It may lead to an accident.)
- 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.)
- Inspection, maintenance, the instruction manual or, inspection methods such as service manuals, to protect the way, should be done correctly. (unsuitable inspection and maintenance, there is a risk that result to an accident.)
- Never use parts other than those specified by us. (Or, the unspecified parts may break, leading to accidents.)
- Do the work must always specified torque using a torque wrench. (Damage of bolts and nuts, and cause of dropout.)
- Always perform repair work should be in a well-ventilated room (caution vaporized gasoline can be dangerous).
(Also may lead to an explosion.)
- Be sure to always use premium unleaded petrol. (Otherwise, troubles such as knocking of an engine may cause 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.

Product content



Number	Product content	Quantity	Item Number
1	Cylinder, 54mm	1	01-01-0123
2	Piston, 54mm	1	00-01-0491
3	Piston ring set, 54mm	1	01-15-015
4	Piston pin, 12mm	1	00-01-0477 (with ⑤ circlip)
5	Piston pin circlip, 12mm	2	00-01-0478 (6 pcs)
6	Cylinder head gasket	1	00-01-0479
7	Cylinder gasket	1	00-01-0480
8	L. crankcase cover gasket	1	00-02-0498

Symbol	Product content	Item Number
A	Piston Kit	01-02-0175
B	Gasket Set	01-13-0128

- ※ 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.

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

□ Depending on the condition of the crankshaft (and other parts), it may be necessary to disassemble the crankcase, and take measurements. To do such work refer to the genuine service manual and perform the work. If this is difficult to work at your home, please contact with performance shop or TAKEGAWA Factory Mechanic Service.

- Park the motorcycle in a horizontal place with a maintenance stand, etc
- When installing the FI controller, carefully read the installation manual.

■ Disassemble

● Removal of exterior parts

- If necessary, remove the exterior parts and drive sprocket cover referring to the service manual.
- L. Disconnect the harness from the crankcase cover.

● Exhaust muffler (stock) removal

- Refer to the service manual and remove the exhaust muffler.
- ※ If the exhaust muffler already changed, remove it following to their instruction manual.

● Removal of air cleaner case, inlet pipe / throttle body

- For GROM, refer to the service manual and remove the air cleaner case, inlet pipe / throttle body.

● Disconnect all sensor

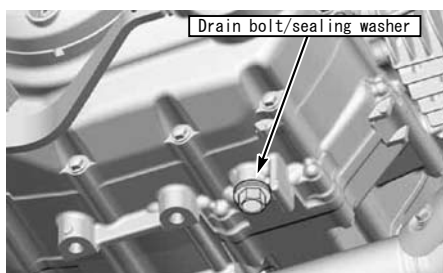
- Refer to the service manual and disconnect the O₂ sensor and EOT sensor.

● Removal of Cylinder head, Cylinder and Piston

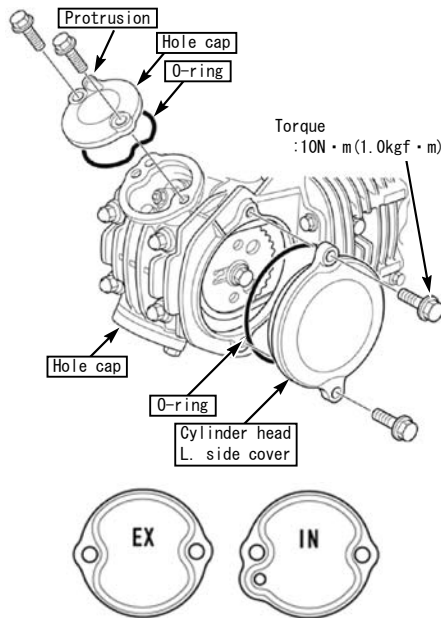
- Remove the spark plug cap and spark plug.



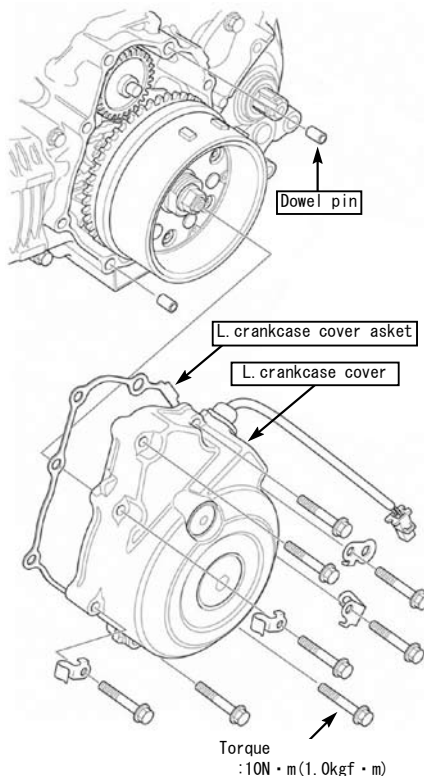
- Prepare the pan, remove the drain bolt/sealing washer, filler cap, and drain the engine oil.



- Remove the two bolts and remove the cylinder head L. side cover/O-ring, intake side, and exhaust side hole cap/O-ring.
- ※ Prepare the pan for oil to drip.



- Loosen and remove the bolts diagonally in several steps. Remove the crankcase cover.
- ※ The L. crankcase cover is pulled in by magnetic force, so be careful not to get your fingers pinched.
- Remove the two dowel pins and clean off the gasket remaining on the crankcase and L. crankcase cover mounting surface.



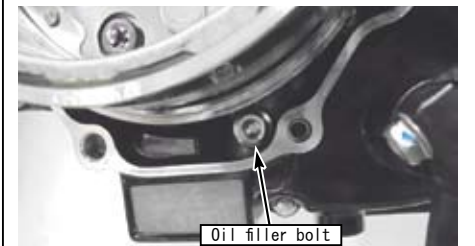
- Turn the crankshaft counterclockwise and align the "O" mark on the cam sprocket with the protrusion on the cylinder head.



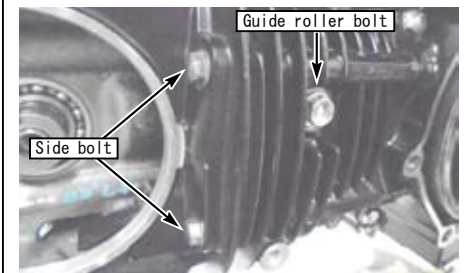
- Fix the cam sprocket with a universal holder, remove the cam sprocket bolt/washer, and remove the cam sprocket.



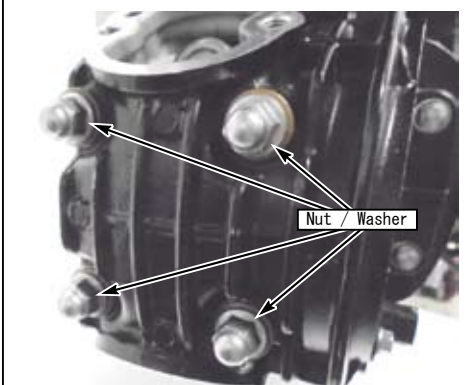
- Remove the tensioner rod oil filler bolt.



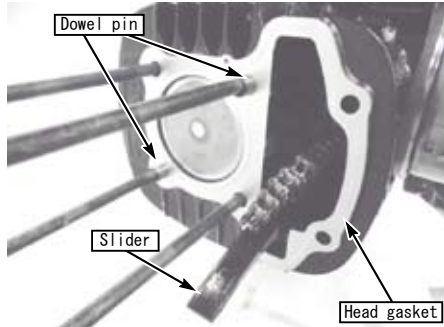
- Loosen the cylinder guide roller bolt. Remove the two side bolts of the cylinder head.



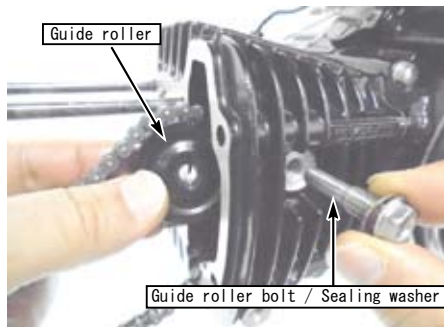
- Loosen the 4 cylinder head nuts diagonally (in several steps) and remove (with the 4 washers). Remove the cylinder head.



- Remove the cylinder head gasket and 2 dowel pins. Remove the slider.



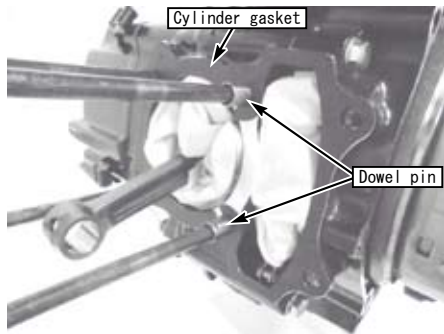
- Remove the guide roller bolt / sealing washer from the cylinder and take out the guide roller.



- Remove the cylinder.
- ※ cover the crankcase opening with a rag, etc. to prevent parts from entering the crankcase.
- Remove one side of the piston pin circlip, remove the piston pin and the piston.



- Remove the cylinder gasket and 2 dowel pins. The cylinder gasket must be removed clearly.

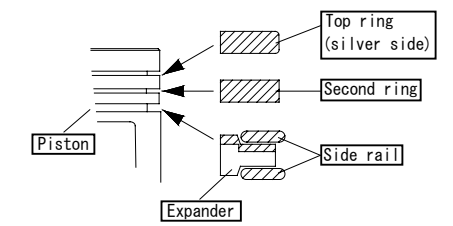
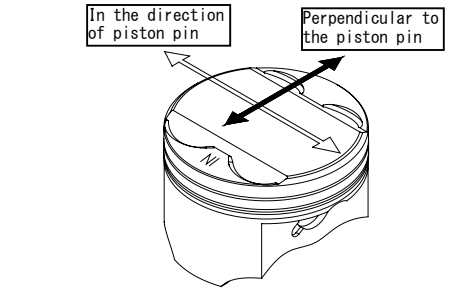
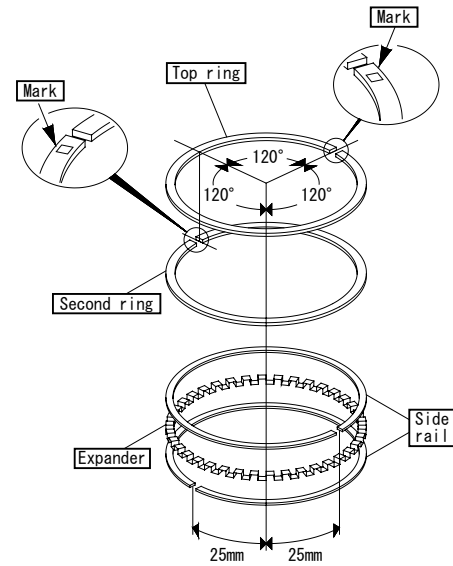


● Check for cylinder interference

- ※ Due to individual differences in crankcases, there may be interference between the cylinder's crankcase insertion part (sleeve skirt and the crankcase). never use the engine with interference (may cause engine trouble).
- Attach the cylinder to the crankcase using two dowel pins and check for interference between the cylinder sleeve skirt and the crankcase.

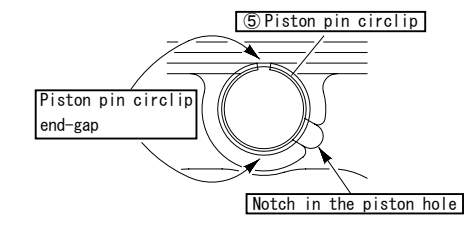
● Installation of Piston and Cylinder

- Install each piston ring ③. (blow the piston ring groove with air to clean)
- ※ Install the TOP ring and 2ND ring with the mark facing up.
- ※ Do not damage the piston/piston rings.
- ※ After installation, check that the ring rotates smoothly.
- ※ Install the ring openings at 120 degree intervals as shown in the diagram.
- ※ Install the expander and then the side rails.

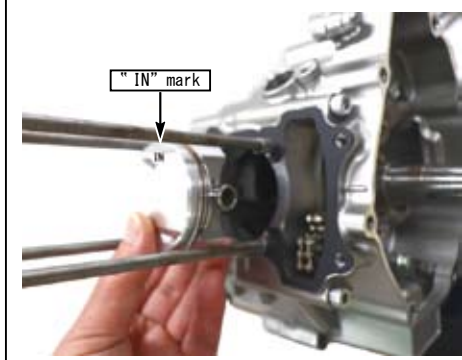


Pay attention to the cross section as well!

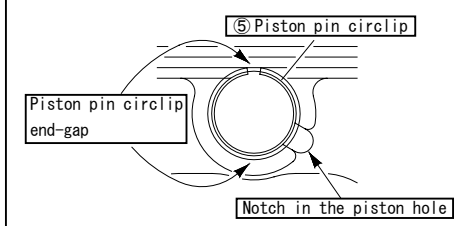
- Install the ⑤ piston pin circlip into the groove of the piston pin hole on one side.
- ※ Install the piston pin circlip so that it faces upward/downward, avoiding the notch.



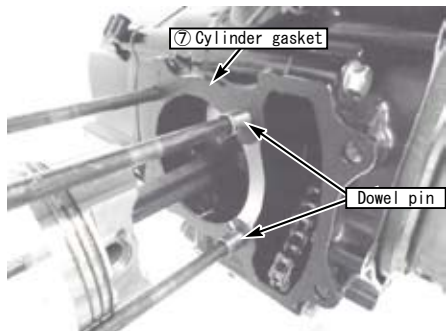
- Apply engine oil to the small end of the connecting rod and the piston pin hole, apply molybdenum solution to the ④ piston pin, and turn the piston pin with the "IN" mark on the piston head facing the intake side.



- Install the ⑤ piston pin circlip into the groove
- ※ Install the piston pin circlip so that it faces upward/downward, avoiding the notch.



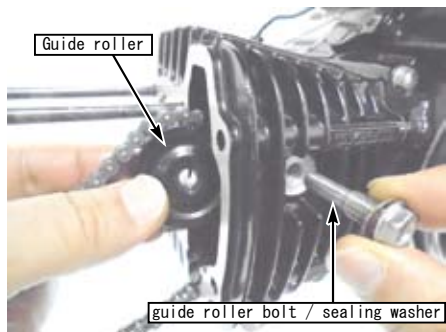
- Clean the cylinder mounting surface of the crankcase and remove the rag that was stuck in the crankcase opening.
- Install the two dowel pins and ⑦ cylinder gasket to the crankcase.



- Apply engine oil to the piston ring and let it blend in. Apply engine oil after cleaning the inner circumference of the cylinder.
- Install the cylinder with the cam chain through the cylinder and compressing the piston ring with fingers.

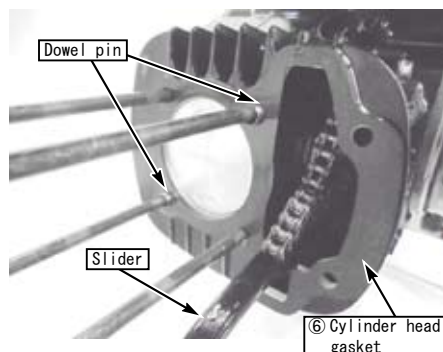


- Align the guide roller with the cylinder mounting hole and temporarily tighten the guide roller bolt/new sealing washer.



● Installation of Cylinder head

- Set the slider on the cylinder and crankcase. Clean the mating surfaces of the cylinder and cylinder head. Attach the dowel pin and ⑥ cylinder head gasket to the cylinder.



- From here on, please assemble the cylinder head following to the "Super Head 4V+R" installation manual.

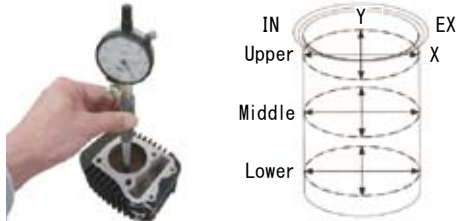
INSPECTION / SERVICE LIMITS

※ This inspection manual is checking and referring to the usage limit of each part (when required for overhaul).
When its new, there is no need to inspect each parts.

⚠ **Caution** : Be sure to use a torque wrench to ensure the torque is maintained.
⚠ **Warning** : Do not perform the work without experience, skills or knowledge.

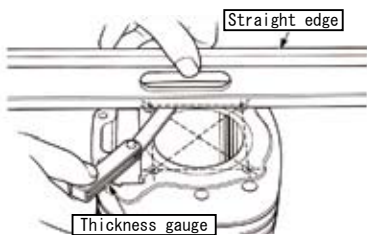
○ Inspection of Cylinder

- Check the inside of cylinder for wear and damage.
- Measure the internal diameters of the cylinder bore at 6 positions: at the piston pin angle and at the right angle to it (X-Y) each at upper, middle and lower parts of the cylinder bore. Treat the largest value as its internal diameter.
 - ∴ Cylinder : If larger than 54.125mm, replace it.
- Calculate the clearance between a cylinder and a piston.
 - ∴ Clearance : 0.12 or more replace



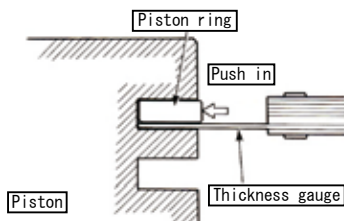
☆ In case the cylinder wall is beyond the service limits, change the cylinder and piston at the same time as a set.

- Check the top surface of the cylinder for scratches and damages.
- Check the cylinder top surface for distortion with a straight edge and thickness gauge.
 - ∴ Usage Limit : 0.05mm or more replace

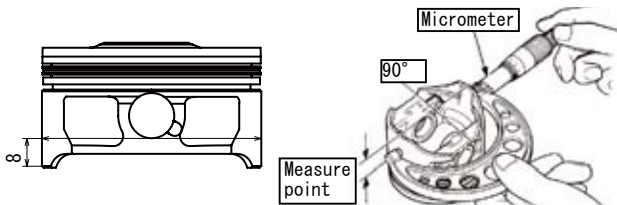


○ Inspection of Piston

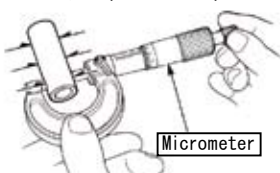
- Clear the piston of the remaining carbon residue.
- Fit a piston ring into the piston, and measure the clearance between the piston ring and ring groove with a thickness gauge.
 - ∴ TOP : If larger than 0.09mm, replace it.
 - 2ND : If larger than 0.09mm, replace it.



- Check the piston for damages.
- Measure the external diameter of the piston at the specified place at the bottom edge of the piston skirt at the right angle to the piston holes.

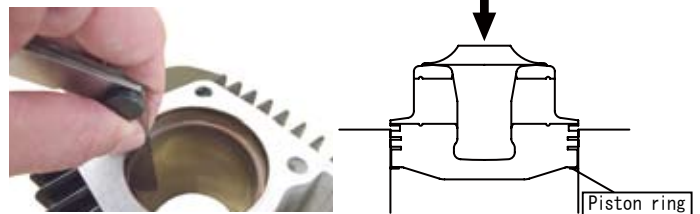


- ∴ Piston : If smaller than ϕ 53.9mm, replace it.
- Figure out the clearance between cylinder and piston.
 - ∴ Clearance : 0.09 or more replace
- Measure the external diameter of the piston pin.
 - ∴ If it is below 11.98mm, replace the piston pin.



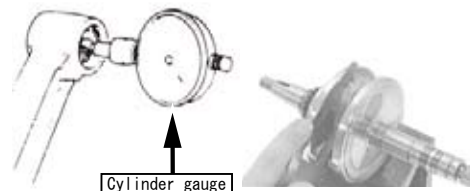
○ Inspection of Piston Ring

- Press down a piston ring into the piston with the piston head, and measure the clearance of the ring-end gap at the horizontal position with a thickness gauge.
 - ∴ TOP : If larger than 0.50mm, replace them.
 - ∴ 2ND : If larger than 0.60mm, replace them.
 - ∴ OIL, Side rail : If larger than 0.90mm, replace it.

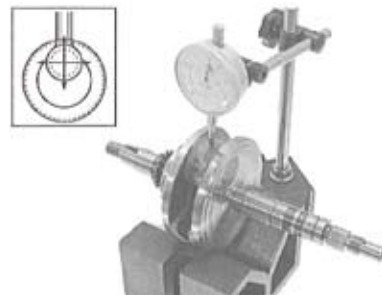


○ Inspect the crankshaft

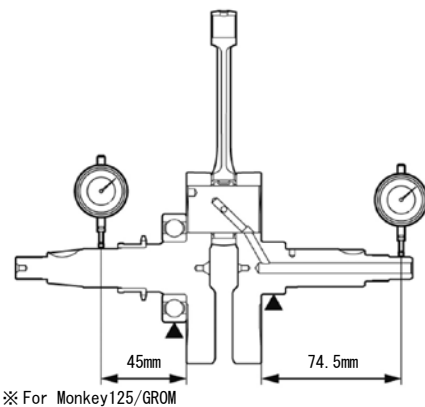
- When crankshaft is damaged (or has been used for a considerable amount of time), we recommend inspect the crankshaft.
- ☆ Complete overhaul are required for inspection.
 - Measure the internal diameter at the small end of the connecting rod.
 - ∴ If larger than 12.038mm, replace them.
 - Measure side clearance.
 - ∴ If larger than 0.6mm, replace them.



- Check the looseness at the big end of the connecting rod.
 - ∴ If larger than 0.05mm, replace them.



- Check the crankshaft runout.
 - ※ For Monkey125/GROM
 - ∴ Right : Replace or repair 0.1mm or more
 - ∴ Left : Replace or repair 0.05mm or more



Important : Please do the running-in enough. If you do not do the enough running-in, it might cause to burning piston, or piston will shrink terribly and the knocking sound of piston will bigger.

[Ref.] Running-in
Up to 5000rpm / approx. 150km