

146cc SCUT Cylinder Kit Instruction Manual

Product number	01-04-1017 (Cylinder Kit)
	01-02-0130 (Piston Kit)

Adaptation model	Ape100, XR100 Motard
	CRF100F, XR100R
But limited to	Bikes fitted with Super Head +R

- Thank you very much for purchasing our products. Thank you so you will comply with the following matters at the time of use.
- This product is a kit that was to set our Super Head + R cylinder head special cylinder and piston.
- 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.

~ feature ~

- Cylinder durability, airtightness, and use an all-aluminum cylinder with excellent heat dissipation and minimizes friction loss subjected to a ceramic composite plated cylinder bore.
- Specification you want to set the oil passage outlet can respond to the oil cooler kit.
- Piston production shaving the forged material, were both piston strength and light weight.
- Is the volume up to 146cc with 62mm big bore size, the combustion efficiency is improved by also high as 13.4:1 compression ratio.
- It is possible to suppress the increase in the cylinder temperature by increasing fin than conventional cylinders.
- Big fin cylinder for genuine cylinder and shape is different, the change in shape of engine is mounted, a higher a custom image of vehicle.
- Incorporating the oil jet cylinder system. Result piston, cylinder, lubrication and cooling efficiency of the connecting rod or the like dramatically be improved.
- (Piston cooling method of engine is generally performed in oil injection from the crank case. In contrast, oil jet cylinder decomposition exchange and of the crankcase, oil injection hole drilling, that without you want to add a component, only the replacement of the cylinder in cylinder and piston such as it is possible to inject the oil. Characteristic of oil jet cylinder, direct to the cylinder inner surface is provided with oil injection hole, it will be able to inject oil at a position closer to the piston (shortest distance).)

☆ Please read carefully before use ☆

- © 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 sufficient tools to ask a technically-reliable specialist shop for the work.
- © This kit cannot be installed on the Ape50 or XR50 Motard.
- © This kit alone cannot function on its own. So, you are required to purchase the special cylinder head / crankshaft kit and the recommended parts.
- © In case an oil cooler is installed with a rubber hose through an oil passage, a 30° banjo is needed. If the banjo does not come with an oil cooler kit, please separately purchase the 30° banjo of Item No. 15661-KTK-T00.
- © In case a Slimline Hose is used, a 45° banjo is needed. In this case please separately purchase a 45° banjo of Item No. 00-07-0039.
- © 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.
- © 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.)
- © This kit is for exclusive use with our super head + R. It can not be used for genuine head and other cylinder head.
- © Please be informed that we shall be held harmless against any claim against us whatsoever arising out of use of the products in closed course competition.
- © M5 tap hole in the oil passage plug bolt, the cylinder to set hole for stick sensor, can be mounted on our temperature sensor.
- © You may install and use this Kit together with an oil-jet-processed crankcase. And you do not have to oil-jet-process the crankcase anew.

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

- This Kit is designed for exclusive use in the closed racing. So, take note that it is prohibited to drive your motorcycle on a public road after the installation of this Kit.
- Make sure the engine and muffler are completely cool at below 35 degrees C before starting the installation. (Otherwise, you will burn yourself.)
- Do the installation with right tools. (Otherwise, breakage of parts or injuries to yourself may take place.)
- The product and the frame, might have edges or protrusions. When working, please wear work gloves to protect your hands. (It may cause injury.)

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

- 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.)
- Always use new piston pin circlips, gaskets and packing. The worn or damaged parts may break the parts, leading 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.)
- 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.)
- 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.)
- 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.)
- 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.)
- As gasoline is highly flammable, never place it close to fire. Make sure that nothing flammable is near the gasoline. (Otherwise, it may cause a fire.)
- 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.)
- Never use any other parts than those specified by us. (The use of the unspecified parts may lead to parts breakage and consequent accidents)
- 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.)
- Since vaporized accumulation of gasoline is at the high risk of explosion, work in a well-ventilated place.
- Be sure to always use premium unleaded petrol.

- © Please note. Performance up, the design change, the product and the price in the cost up, etc. are subject to change without notice.
- © Keep this manual stored until this product is discarded.

Bore size	: 62mm
Stroke	: 48.5mm
Engine size	: 146.3cc
Compression ratio	: 13.4:1

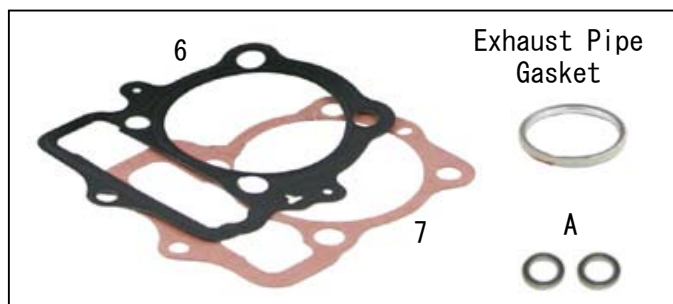
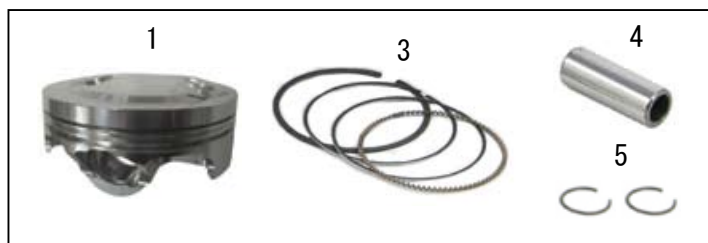
SPECIAL PARTS
TAKEGAWA

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)



01-13-0203:Gasket Kit

01-02-0130:Piston Kit



No.	Product content	Qty	Item Numbe
1	Piston, 62mm	1	
2	Cylinder ASSY.	1	
3	Pinston ring set	1	00-00-1196
4	Piston pin, 14mm	1	00-01-1677 (with clips) Each 1
5	Piston pin circlip	2	00-01-0052 (6 pcs)
6	Cylinder head gasket	1	00-00-1155
7	Cylinder gasket	1	00-00-1126
A	Aluminum sealing washer	2	00-07-0106 (10 pcs)
B	Oil plug bolt	1	00-07-0072 (with sealing washer) Each 1
C	Oil plug bolt with M5 holes	1	00-07-0090 (with sealing washer) Each 1

※ 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.

※ Take note of the following points about the crankshaft to be used

- This kit is made for 146cc crankshaft it only, never use with stock crankshaft for any other crankshaft.
- If the crankshaft is in poor condition, the engine cannot show its true ability. It is advisable, therefore, to check the crankshaft referring to the paragraph about the inspection procedures.

What to Check

⚠ **Caution :** Always be sure to tighten parts to the specified torque using a torque wrench.

⚠ **Warning:** The unskilled or those without proper knowledge are requested not to do the installation work.

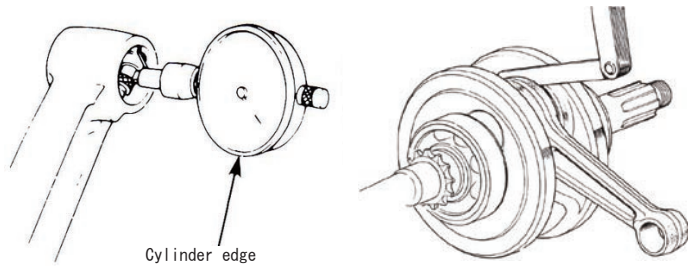
- Some products involve detachment and installation of an engine and separation of a crankcase, etc. Do the installation work infallibly, following Honda's genuine parts service manual.
- Referring to the service manual, detach the engine from the frame and disassemble it.

○ Check every part.

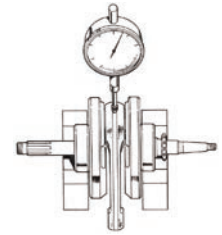
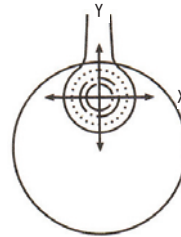
⚠ **Caution:** Infallibly inspect every part and check consumable parts for damage and wear.

What to check:

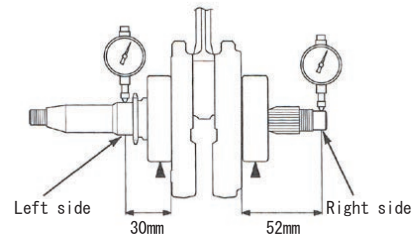
- Measure the internal diameter at the small end of the con' rod.
∴ If larger than 14.05 mm, replace it.
- Measure the clearance at the big end of the con' rod in the axial direction.
∴ If larger than 0.5mm, replace it.



- Measure the misalignment at two points at the big end of the con' rod at right angles to the shaft as shown in the figure on the right.
∴ If larger than 0.01mm, replace it.



- Measure the deflection of the crankshaft.
∴ Right side: Replace the crankshaft if its deflection is more than 0.085 mm.
Left side: Replace the crankshaft if its deflection is more than 0.070 mm.



○ Assemble the crankcase referring to the service manual.

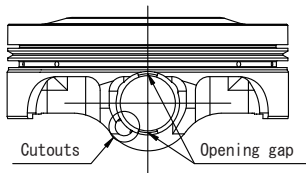
Mounting procedure ※ Mounting methods and specified torque of detail, refer to genuine service manual.

① Piston Installation

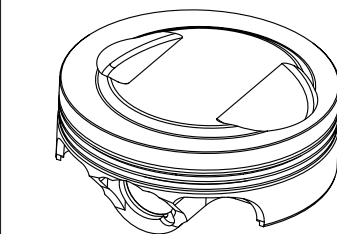
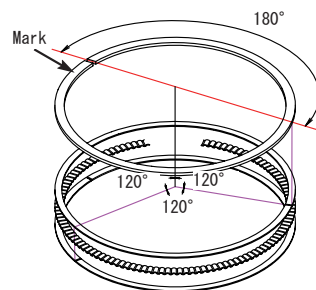
- ◇ Fix one of kit's piston pin circlips to a pin hole.
- ※ Place a circlip so its end gap does not meet with the notch on the pin hole.



- Attach the piston pin circlip so the ring end gap does not meet with the notch on the piston pin hole, and ring end gap should be either on the top or at the bottom of the hole as shown in the picture below.



- ◇ The Install piston ring In reference figure, align the opening gap.



- ※ The top ring is attached by a marking on the upper side.

- ◇ Fix the oil ring expander.



- ◇ Put the top and bottom oil ring side rails.



- ◇ Place the top ring In top mark.



- ◇ Apply engine oil to the piston pin hole.



- ◇ The sleeve hole portion of the crankcase, and packed a clean cloth, to apply the engine oil to the piston pin hole of the connecting rod.



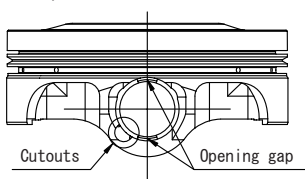
- ◇ The engine oil is applied to the piston pin, "IN" characters of the piston top surface, to attach the piston to face the intake side.



- ◇ Fix the other piston pin circlip, included in the kit, to the pin hole.
- ※ Place the circlip in a position so the end-gaps of a piston pin circlip do not meet with the notch on the hole.

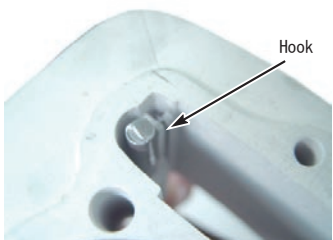


- ◇ Attach the piston pin circlip so the ring end gap does not meet with the notch on the piston pin hole, and ring end gap should be either on the top or at the bottom of the hole as shown in the picture below.



② Cylinder Installation

- ◇ Insert the cam chain tensioner into kit's cylinder, and hang the hook of the spring on the cylinder.



- ◇ Place the cam chain tensioner in a position so the end of the rod will be nearly on the same level as the clamp face. Fix it with an adjust bolt and tighten the lock nut.



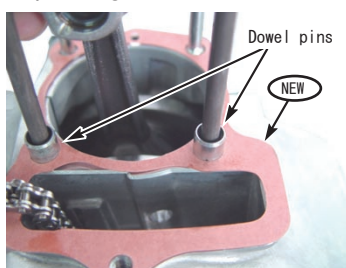
- ◇ Remove the waste cloth.



- ◇ Degrease the mating surfaces of the crankcase and the cylinder with thinner or the like.



- ◇ Attach two dowel pins and a cylinder gasket to the crankcase.



- ◇ Apply engine oil to the inside of the cylinder and spread it with fingers to be equally applied all over.



- ◇ Apply engine oil to whole surface of the piston, and the piston rings.



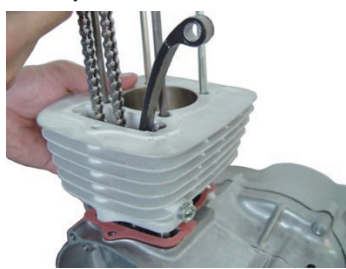
- ◇ Let the cylinder in.



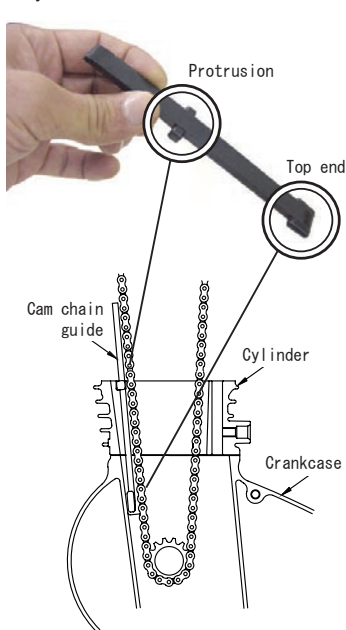
- ◇ Insert the piston into the cylinder gradually by hand with care not to shift the piston ring's end gaps out of the position.



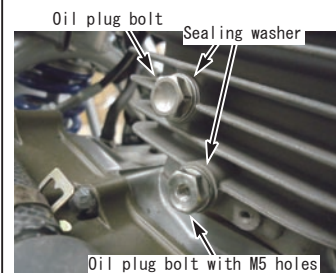
- ◇ When the piston is completely in the cylinder, pass the cam chain through the cylinder and install the cylinder to the crankcase.



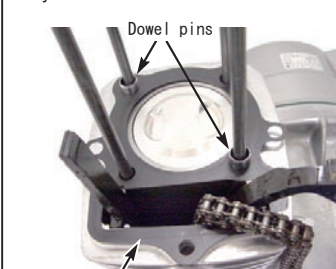
- ◇ Insert the cylinder, fitting the end of a cam chain guide into grooves in the crankcase and the protrusion into grooves in the cylinder.



- ◇ The boss two places the included cylinder, attach the oil plug bolt / sealing washer. Oil plug bolt with M5 hole, turn on the lower side when the engine mounting.
- ※ If you are installing the oil cooler kit, follow the instruction manual of the kit.



- ◇ Clean the mating surfaces of cylinder and cylinder head. Dowel pins, attach the cylinder head gasket in the kit to the cylinder.

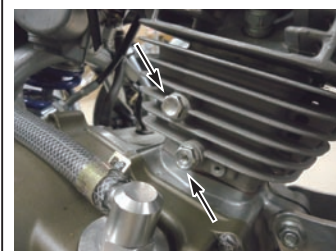


Cylinder head gasket

- ◇ According to mounting procedure of cylinder head kit, attach the cylinder head / cam shaft.
- ◇ Tighten the oil plug bolt specified torque.

▲ Note: Be sure that you protect specified torque.

Oil plug bolt
Torque : 12N · m (1.2kgf · m)

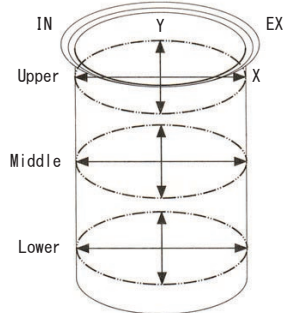


INSPECTION / SERVICE LIMITS

⚠ Warning: The unskilled or those without proper knowledge are requested not to do the installation work.

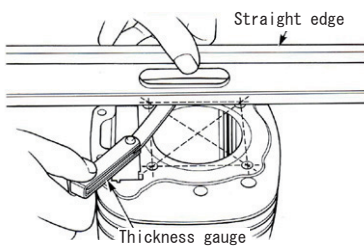
○ Inspection of Cylinder

- 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 ϕ 62.04mm or more replace
- Calculate the clearance between the cylinder and the piston.
- ∴ Clearance 0.01 ~ 0.05 0.10 or more replace



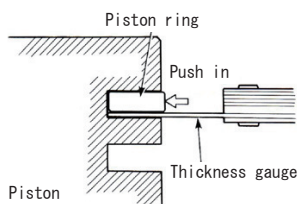
☆ In case the cylinder wall is beyond the service limits, change the cylinder and piston at the same time as a set.

- 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

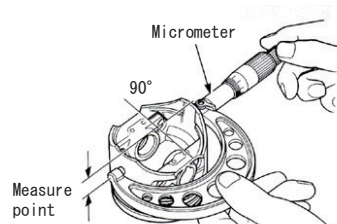
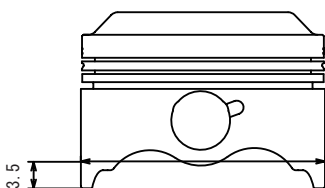


○ Inspection of Piston

- 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.
- ∴ 0.17mm or more replace

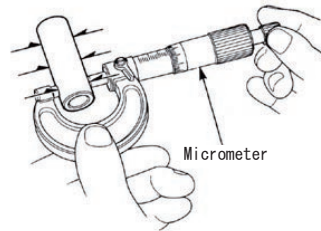


- Check the piston for damages.
- Measure the external diameter of the piston at the specified place at the bottom edge of the piston skirt at the right angle to the piston pin holes.
- ∴ Piston ϕ 61.95mm or below replace



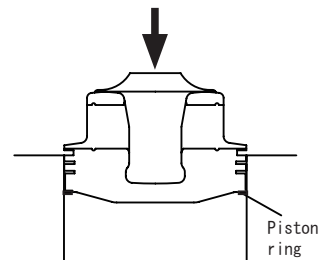
- Calculate the clearance between the cylinder and the piston.
- ∴ Clearance 0.01-0.05 0.10 or more replace

- Calculate the clearance between the cylinder and the piston.
- ∴ 13.98mm or below replace



○ 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-0.50mm or more replace
- ∴ OIL-0.90mm or more replace



Important: After engine started and heated, the piston will shrink a little. Shrinkage will very depending on the situation of running-in. 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 6000rpm / approx. 150km