136cc SCUT Cylinder Kit Instruction Manual

The ceramic-coated cylinder is used.
We coated the piston with molybdenum.

Item No. : **０１－０４－１０１６**
Fitting : Ape100, XR100 Motard, CRF100F, XR100R
But limited to : Bikes fitted with Our Super Head+R / R-Stage

Thank you for purchasing one of our products.
These products are a cylinder and a piston kits for our super head+R / R-Stage.
The cylinder is ceramic composite jet coated and is upgraded in durability and wear-proof when compared with the conventional iron-cast sleeve. And the piston clearance is designed to be smaller, resulting in reduction in friction loss. We have given molybdenum coating to the piston for better conformability. Moreover, the bigger fins than the conventional ones help to hold down the rise in cylinder temperatures.
As the shape of the big-finned cylinder differs from the stock one, the engine installed with this big-fin cylinder looks different with the distinguished looking. We strongly hope that you will use the kit with the full knowledge of the following.

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

Please read the following before starting the installation

○ 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 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.
○ This kit is for exclusive use with our super head+R / R-Stage.
○ 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.
○ **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 The following show the envisioned possibility of injuries to human bodies and property damage as a result of disregarding the following cautions.

○ 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.)
○ As some products and frames have sharp edges or protruding portions, please work with your hands protected. (Otherwise, you will suffer injuries.)

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

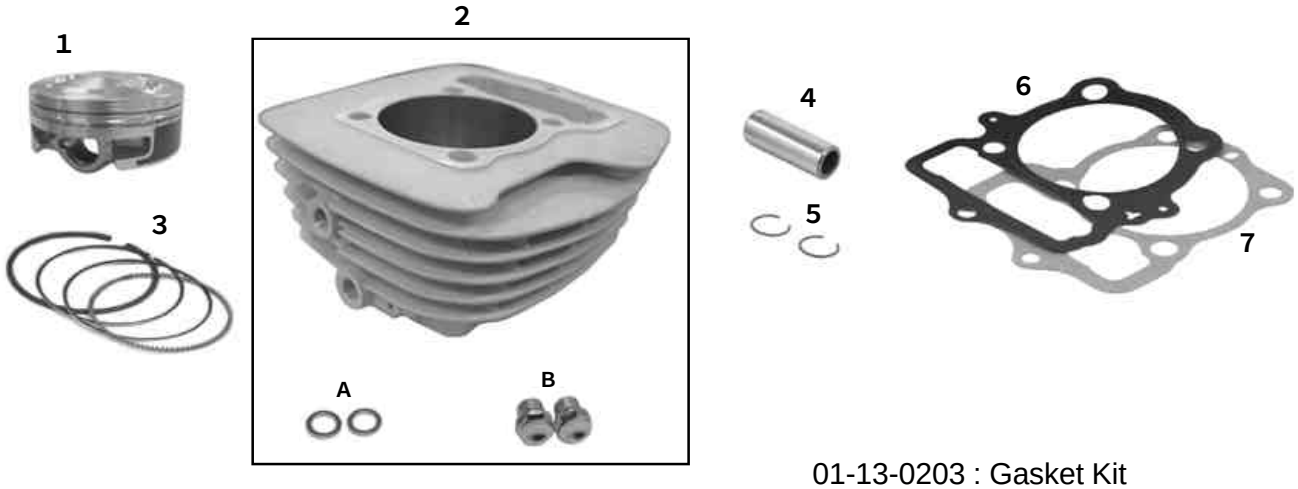
○ Those who are technically unskilled or inexperienced are required not to do the work. (Improper installation because of insufficient skill and knowledge could lead to parts breakage and subsequently to accidents.)
○ Always use new piston pin circlips, gaskets and packing. The worn or damaged parts 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 motorcyle 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 be informed that, mainly because of improvement in performance, design changes, and cost increase, the product specifications and prices are subject to change without prior notice.
◎ This manual should be retained for future reference.

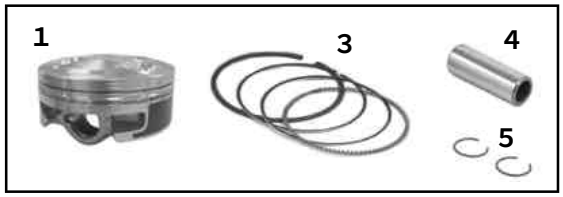
～Characteristics～

The engine piston is commonly cooled by the oil injected from the crankcase.
Meanwhile, our oil jet cylinder does not require replacing or modifying the crankcase, or adding some parts for oil injection. Just the change of the cylinder is sufficient to inject oil to the cylinder and piston.
The oil jet cylinder is characterized by the method of oil injection at the closest range to the piston through the injection hole made inside the cylinder itself **(Patent pending).**
Near the top dead center of the piston, the oil is injected most efficiently to the insides of the cylinder and piston. And near the bottom dead center of the piston position, the oil is injected most efficiently to the cylinder and outside of the piston.
Even at the bottom dead center of the piston, the oil will never flow into the combustion chamber because the oil injection hole is located below an oil ring. All this dramatically improved lubrication and cooling efficiency of the piston, cylinder and connecting rod.

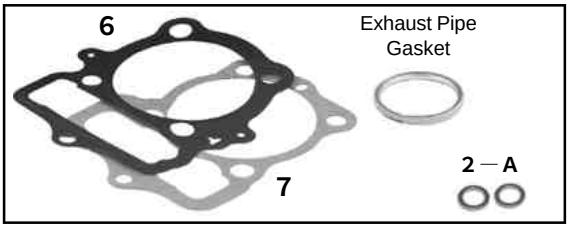
～Kit Contents～



01-02-2705 : Piston Kit



01-13-0203 : Gasket Kit



No.	Part Name	Qty	Repair Part	in packs of
1	Piston (Molybdenum coated)	1	――――	
2	Cylinder Assembly.	1	――――	
2-A	Aluminum Sealing Washer	2	00-07-0106	10
2-B	Oil Plug Bolt	2	00-07-0072 (with sealing washer)	1
3	Pinston Ring Set	1SET	00-00-1196	1SET
4	Piston Pin	1	00-00-1255	1
5	Piston Pin Circlip	2	00-01-00052	6
6	Cylinder Head Gasket	1	00-00-1155	1
7	Cylinder Gasket	1	00-00-1126	1

※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.

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

○This product is designed for use with a standard crankshaft. Therefore, this cannot be used with a stroke up crankshaft or the like. Otherwise, the engine will break.
○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.

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

～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 sepration of a crankcase, etc. Do the installation work infallibly, following Honda's genuine parts service manual.

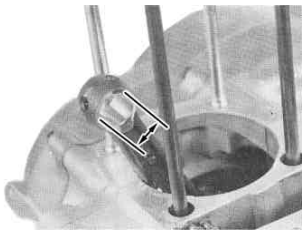
○Referring to the service manual, detach the engine from the frame and disassemble it.

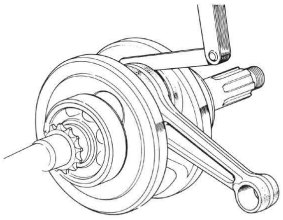
o Check every part.

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

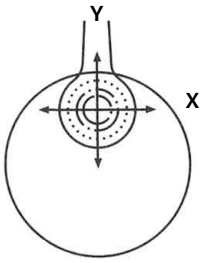
What to check:

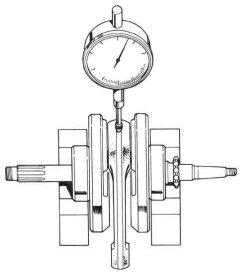
- Measure the internal diameter at the small end of the con'rod.
  ∴ If larger than 14.05 mm, replace it.
- Measure the clearance at the big end of the con'rod in the axial direction.
  ∴ If larger than 0.6mm, replace it.



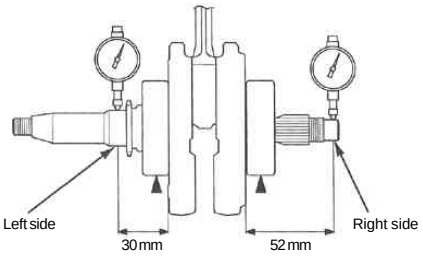


- Measure the misalignment at two points at the big end of the con'rod at right angles to the shaft as shown in the figure on the right.
  ∴ If larger than 0.01mm, replace it.





- 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.



o Assemble the crankcase referring to the service manual.

～Installation Procedures～

① Piston Installation

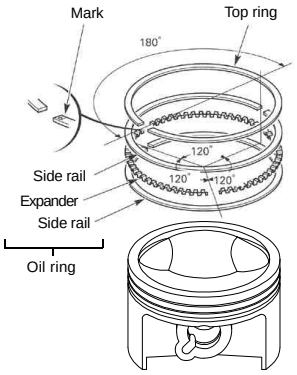
◇ Fix one of kit's piston pin circlips to a pin hole.

※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.

Ring-end gap

◇ Fix piston rings according to the figure below.



◇ Fix the oil ring expander.

◇ Put the top and bottom oil ring side rails.

◇ Fix the top ring, turning up the side with an engraved letter "N".

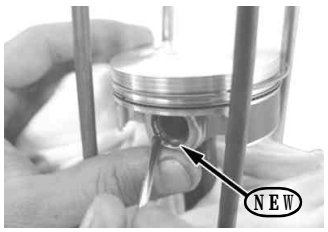
◇ Apply engine oil to the piston pin hole.

◇Apply engine oil to a piston pin hole in the con'rod.

◇ Apply engine oil to the piston pin and place the piston in a position so the "→" mark on the upper side of the piston faces the front or exhaust 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.

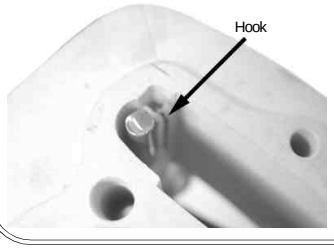


○Attach the piston pin circlip so the ring end gap does not meet with the notch on the piston pin hole, and ring end gap should be either on the top or at the bottom of the hole as shown in the picture below.

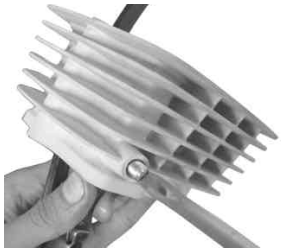
Ring-end gap

②Cylinder Installation

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



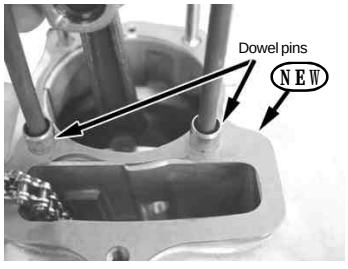
◇ Place the cam chain tensioner in a position so the end of the rod will be nearly on the same level as the clamp face.
Fix it with an adjust bolt and tighten the lock nut.



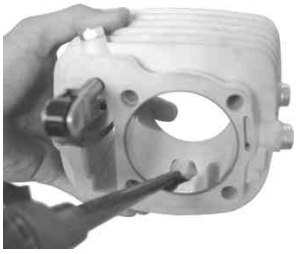
◇ Remove the waste cloth.

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

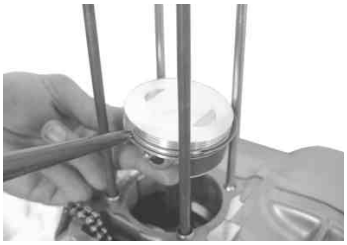
◇ Attach two dowel pins and a cylinder gasket to the crankcase.



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

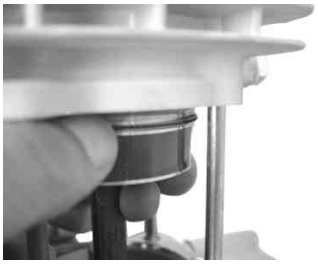


◇ Apply engine oil to whole surface of the piston, and the piston rings.



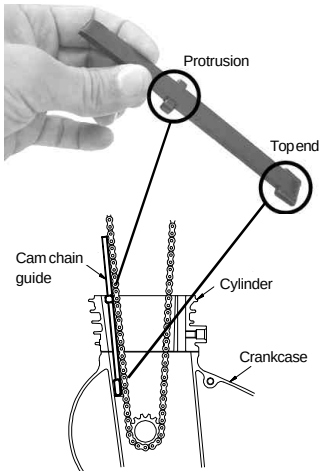
◇ Let the cylinder in.

◇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.



☆ Install the cylinder head, referring to the cylinder head installation instructions.

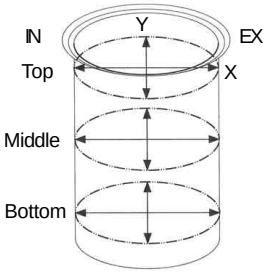
Reference Value List for Cylinder and Piston

Description			Stock	Service Limit
Cylinder	Distortion		————	0.05 mm
	Internal Diameter	ϕ62	————	62.03 mm
Piston	External Diameter (2 mm from the lower edge of the skirt)	ϕ62	61.980～62.000 mm	61.96 mm
	Internal Diameter of Pin Hole		14.002～14.008 mm	14.03 mm
External Diameter of Piston Pin			13.994～14.000 mm	13.98 mm
Clearance of Piston Ring-End Gap		TOP	0.15～0.38 mm	0.50 mm
		OIL	0.20～0.70 mm	0.90 mm
Clearance between Cylinder and Piston			0.008～0.032	0.07 mm
Clearance between Piston and Pin			0.002～0.014 mm	0.05 mm

※The external diameter size of the piston described above is the one before the piston is coated with molybdenum.

○ Inspection of Cylinder:

- Check the inside of the cylinder for wear and damage
- Measure and take note of the internal diameters of the cylinder at 6 positions; at the piston pin angle and at the right angle to it (X-Y) each at upper, middle and lower parts.
  Treat the measured largest value as its internal diameter.
  ∴ If the internal diameter is more than ϕ 62.03 mm, replace the cylinder.
  Figure out the clearance between cylinder and piston.



○ 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, with a piston ring being inserted into the ring groove.
  ∴ If the clearance is larger than 0.17 mm, replace the piston.
- Check the outside of the piston for the damage.
- 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.
  ∴If the diameter is smaller than 61.96 mm, replace the piston.
- Measure the internal diameter of the piston pin hole.
  ∴ If the diameter is larger than 14.03 mm, replace the piston.
- Figure out the clearance between the piston and piston pin.

○ Inspection of Piston Ring:

- Insert each piston ring into the cylinder from the bottom. And measure the clearance of the end gap with a thickness gause.
  ∴ Top ring: Replace the top ring if its clearance is more than 0.5 mm.
  Oil ring : Replace the oil ring if its clearance is more than 0.9 mm.