



## Instruction Manual for ST-3 Super Head Cylinder Kit

Item No. : 0 1 - 0 4 - 1 0 0 4

Fitting : Ape, Ape100, XR50 Motard, and XR100 Motard

Specification : Compatible with a motorcycle equipped with a TAKEGAWA's ST-3 Super Head

Thank you for purchasing one of our TAKEGAWA's products.

These products are a cylinder and a piston kits for our Stage-3 super head.

We have designed the cylinder with an aluminum oil passage. So you can install an oil cooler. Moreover, we have also designed the piston to be light in weight, and given molybdenum coating to the skirt for better conformability.

Please strictly follow the following instructions in installing and using the kit.

### Please read the following before starting the installation

This kit alone cannot function on its own. So, you are required to purchase the special cylinder head and the recommended parts.

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.

For the purpose of using this kit in Ape50 and XR50 Motard, our TAKEGAWA-made Stage-3 super head and stroke-up crankshaft kit are necessary.

This kit is for exclusive use with our TAKEGAWA-made Stage-3 super head.

In case this kit is to be used in Ape50 and XR50 Motard, the crankcase needs to be processed in the portion where a sleeve is to be attached. For the details and enquiries, please consult with your local specialist shop handling internal combustion products or a motorcycle dealer.

The processing of the crankcase requires engine removal and mounting, crankcase disassembly, and other work. Please do the work correctly referring to a HONDA genuine service manual for your vehicle. In addition, you need to prepare gaskets and the like for the assembly, which please purchase separately.

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.

This kit is intended for closed course competition purposes only. So, take note that it is prohibited to drive your motorcycle on a public road after the installation of this kit. Drive your motorcycle at a legal speed, abiding by the laws.



#### 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 intended for closed course competition purposes only. So, take note that it is prohibited to drive your motorcycle on a public road after the installation of this kit. Drive your motorcycle at a legal speed, abiding by the laws.

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 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.

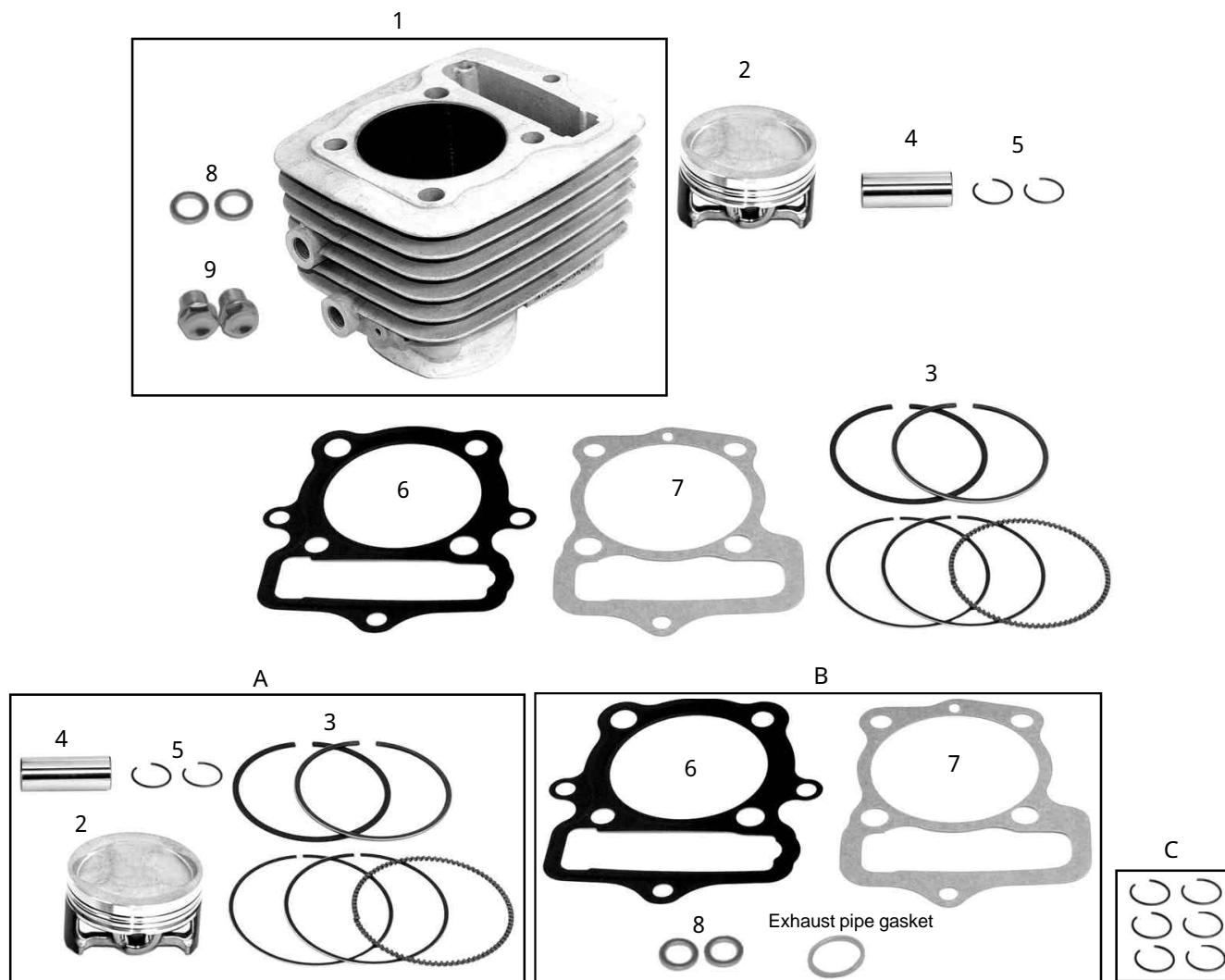
Be sure to always use premium unleaded petrol.

Please be informed that the product specifications, design and prices are subject to change without prior notice.

Please be informed that we do not accept any complaint filed with us against any technical trouble caused by the combined use of our products with other manufacturers' products unspecified by us.

This manual should be retained for future reference.

## ~ Kit Contents ~



No.	Part Name	Qty	Repair Part	In packs of
1	Aluminum Cylinder COMP.	1	12100-KN4-T00-C	1
2	Piston	1	13109-KSJ-T01	1
3	Piston Ring Set	1	01-15-017	1
4	Piston Pin	1	13111-KN4-T01	1
5	Piston Pin Circlip	2	_____	
6	Cylinder Head Gasket	1	12251-GEY-T30	
7	Cylinder Gasket	1	_____	
8	Aluminum Sealing Washer	2	00-07-0010	
9	Oil Plug Bolt	2	90145-GEY-T00	1

No.	Item No.	Description
A	01-02-2702	Piston Kit
B	01-13-022	Gasket Kit B
C	00-01-0052	Piston Pin Circlip Kit

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.

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## ~ Cylinder Installation Instructions ~

### Processing to crankcase:

In case of installation to a 50cc motorcycle, disassemble the engine, referring to the service manual, and consult your specialist shop for the processing.

Install the crankcase, referring to the Honda's service manual and the installation instructions for a stroke-up crankshaft kit.

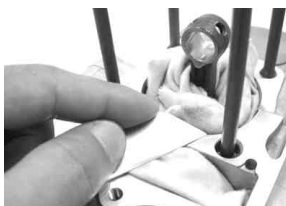
⚠ Note : Be sure to tighten to the specified torque.

⚠ Note : Always use the new gaskets.

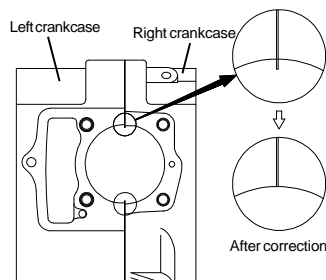
### Cylinder Installation

Remove the gasket scraps thoroughly with a scraper or a cutter knife.

⚠ Note : Be careful not to give scratches to the clamp face.



With a cutter knife, cut off the gasket squeezing out of the crankcase sleeve hole so the sleeve hole surface becomes level.



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

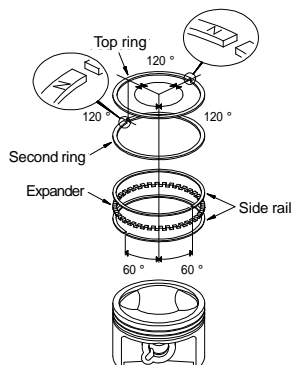


With reference to the figure below, fix piston rings with a letter N facing upward.

Color of the piston rings:

Top: Gold

2nd.: Black



Apply engine oil to the piston ring holes.



Apply engine oil to the piston pin hole of the con'rod.



Apply engine oil or molybdenum solution to the piston pin, and fix the piston so EX mark on the upper surface of the piston faces the exhaust side.



Fix the supplied piston pin circlip. Arrange the position of the ring-end gap of the piston pin circlip not to be on the notch.



Insert the cam chain tensioner into the supplied cylinder, and hang the hook of the spring on the cylinder. (In the case of a 50cc motorcycle, attach the cam chain tensioner supplied in the crank kit.)



Place the cam chain tensioner so the tip of the rod will be nearly at the same level as the clamp face. Fix it with an adjusting bolt and tighten a locking nut.



Remove the waste cloth used to plug the holes.

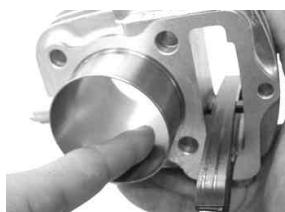
Degrease the mating surfaces of the crankcase and the cylinder with thinner or the like.



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



Apply engine oil to the inside of the cylinder, and then spread the oil evenly.



Apply engine oil to the entire side surface of the piston and piston rings.



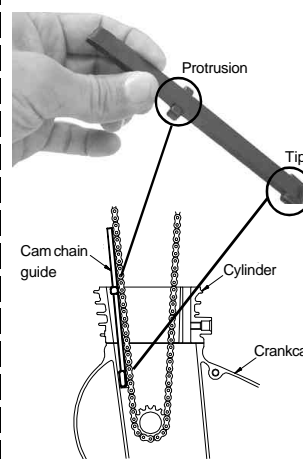
Install the piston to the cylinder with care so the piston ring-end gaps do not get out of alignment.



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



Fix the cam chain guide, aligning its end with the grooves on the crankcase and its protrusion with the grooves on the cylinder. (In the case of a 50cc motorcycle, install the cam chain guide supplied in the crank kit.)



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

## Reference Value List for Cylinder and Piston

Description			Stock	Service Limit	Remarks
Cylinder	Distortion	57	_____	0.05 mm	Replace
	Internal Diameter		57.000 ~ 57.020 mm	57.095 mm	Replace
Piston	External Diameter (9 mm from the lower edge of the skirt)		56.970 ~ 56.995 mm	56.95 mm	Replace
	Internal Diameter of Pin Hole		14.002 ~ 14.008 mm	14.03 mm	Replace
External Diameter of Piston Pin			13.994 ~ 14.000 mm	13.98 mm	Replace
Clearance of Piston Ring-End Gap		Top	0.15 ~ 0.38 mm	0.50 mm	Replace
		2nd	0.20 ~ 0.45 mm	0.50 mm	Replace
		Oil	0.20 ~ 0.70 mm	0.90 mm	Replace
Clearance between Cylinder and Piston			_____	0.10 mm	Replace
Clearance between Piston and Pin			0.002 ~ 0.014 mm	0.05 mm	Replace

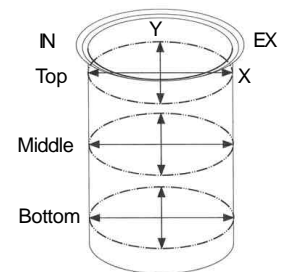
### Inspection of Cylinder:

- 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 diameter is larger than 57.095 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 56.95 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.

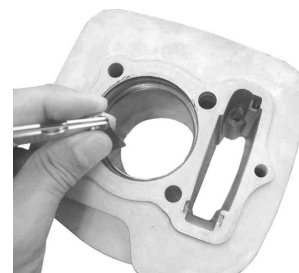
- Figure out the clearance between the piston and piston pin.



### 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 gauge.

Service limit: If the clearance is more than 0.5 mm at top and 2nd, or more than 0.9 mm at oil, change the piston ring.

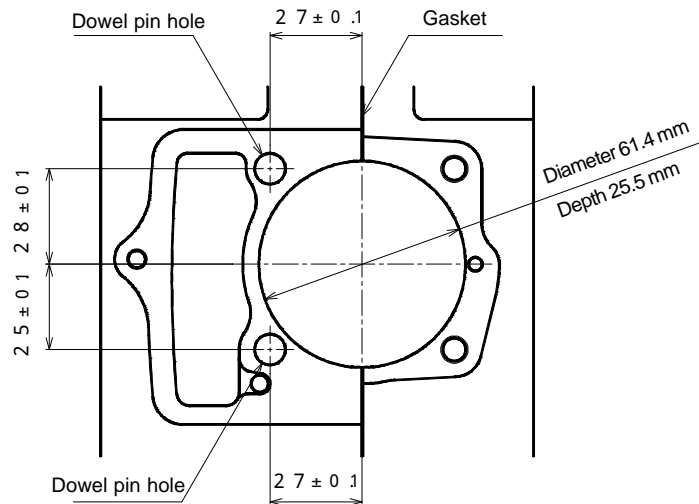


## ~ About boring process of a crankcase ~

Installation of the provided cylinder to Ape50 and XR50 requires crankcase processing.

To those who have the crankcase boring processed by a specialist shop:

- Bore the crankcase till it is 61.4 mm in diameter and 25.5 mm in depth with crankcase gaskets put in between.
- And in processing the crankcase, take care to keep the walls of a dowel pin hole and an oil passage hole as thick as possible. Over-processing will result in hardness decrease and poor oil lubrication.



### Cautions:

- Please note that processing of the crankcase will thin the wall thickness, leading to strength degradation.

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