Instruction Manual for

Hyper S-Stage Bore Up Kit (115cc)

Item No.: **01-05-5086**
Applicable Models & Frame Nos
Ape100 : HC07 - 1000001～
XR100Motard : HD13 - 1000001～

Thank you for purchasing one of our TAKEGAWA's products. Please strictly follow the following instructions in installing and using the products. Before fitting the products, please be sure to check the contents of the kit. Should you have any questions about the products, please kindly contact your dealer.

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

! Caution about fuel to use !

This product is so designed to achieve a higher compression ratio than stock engines. As for the fuel, high-octane gasoline should always be used. In case regular gasoline is used, abnormal combusiton takes place, and the engine cannot achieve its original performance. Moreover, it is highly likely that the piston will break down, leading to serious failure of the vehicle. Before installing, make sure that no regular gasoline remains in the fuel tank. In case regular gasoline is remaining in the fuel tank, do replace it with high-octane gasoline.

! Caution about spark plug !

Be sure to replace a spark plug with high thermal value of CR8HSA (NGK) or U24FSR-U(DENSO). Subsequently, choose and use a right spark plug with the right level, depending on the degree of burning of the spark plug electrode section.

Please read the following instructions before installation.

◎The following show the envisioned possibility of injuries to human bodies, and physical loss or damage as a result of disregarding the following cautions.
◎ 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.
◎ If you make alterations to the products, we shall be held free from any guarantee of them.
◎ You are kindly requested not to contact us about the combination of our products with other manufacturers'.
◎This kit is designed for exclusive use in the above-mentioned types of motorcycles and frame numbers only. Please take note that this product cannot be mounted on other types of motorcycles.
◎Installation of this kit requires engine removal and mounting. We strongly recommend you to work strictly following HONDA genuine parts service manual for your vehicle.
◎ For installation, please prepare tools (as specified on page 2) and work with reference to the installation procedures with enough care. Besides, this instruction manual, as well as HONDA's genuine parts service manual, is prepared for persons who have acquired basic skills and knowledge in tuning. We recommend those who are technically inexperienced or without enough tools to ask a technically-reliable specialist shop for the installation work.
◎ Since moisture penetrating into an engine will cause engine troubles, please refrain from running in rain as you much as you can. Besides, cover the carburetor with a plastic or vinyl sheet or the like when washing the vehicle to prevent the carburetor from being covered in water.
◎ In case you fix our TAKEGAWA's air filter, please fix our own mud guard (Item No.09-09-1805) as well.
◎ A stock throttle cable cannot be utilized. Replace it with a kit's throttle cable.
◎ Carburetor setting varies depending on the parts used and natural phenomenon.
◎ We would recommend our TAKEGAWA's muffler to make your engine more powerful.
◎ Some of bolts, nuts, dowel pins and packing will be reused. However, be sure to replace worn-down or severely-damaged ones with new ones.
◎ Never use liquid packing. It may plug the oil passage, and in the worst case break the engine.
◎ Installation of this product requires left side crank case cover gaskets (HONDA's item No. 11394-KN4-750), which please purchase.
◎ 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.

⚠ CAUTION The following show the envisioned possibility of injuries to human bodies and property loss as a result of disregarding the following cautions.

- Work only when the engine and the muffler are cool. (Otherwise, you will burn yourself.)
- Prepare right tools for the work, and do the work in the proper and right way. (Otherwise, improper work could cause breakage of parts or injuries to yourself.)
- 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.)
- As some products and frames have sharp-pointed or protruding portions, please work with your hands protected. (Otherwise, you will suffer injuries.)
- 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.)
- Check carefully gaskets and packings, and in case wear or damage is detected, always replace them with new ones.

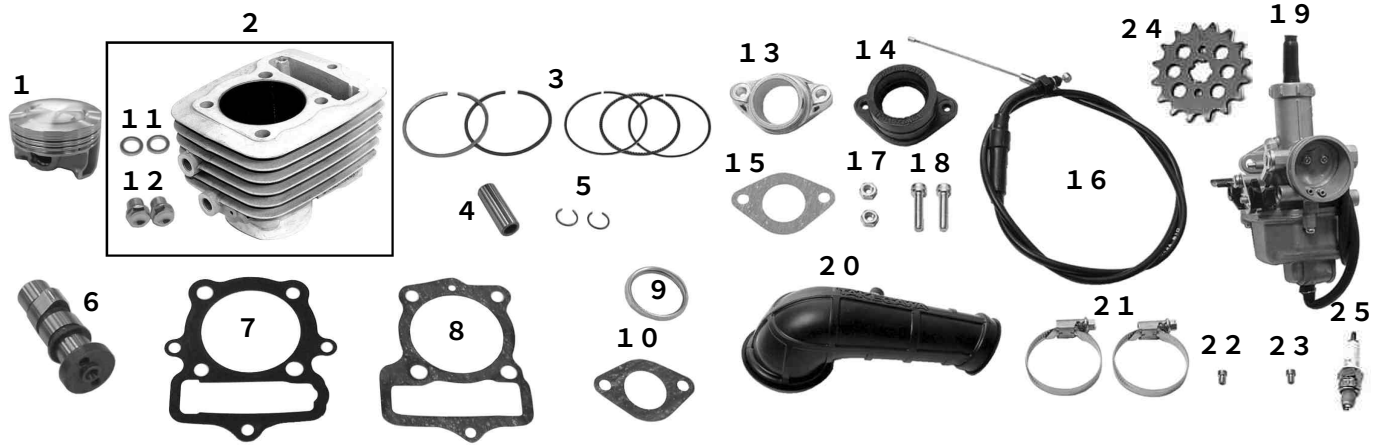
⚠ WARNINGS The following show the envisioned possibility of human death or serious injuries to human bodies as a result of disregarding the following cautions.

- Please always try to ride a motorcycle at legal speed on the public road, abiding by the law.
- Always drive the engine in a well-ventilated place, and do not switch the engine on in an airtight place. (Otherwise, you will suffer from carbon monoxide poisoning.)
- When you notice something abnormal with your motorcycle while riding down a road, stop riding immediately and park your motorcyle in a safe place. (Otherwise, the abnormaility could lead to an accident.)
- Before doing work, place the motorcycle on level ground to stablize the position of your motorcycle for safety's sake. (Otherwise, your motorcycle could fall down and injure you while you are working.)
- Check or perform maintenance of parts correctly according to the procedures in the instruction manual or a service manual. (Improper checking or maintence could lead to an accident.)
- If you find damaged parts when checking and performing maintenance, 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 an accident.)

About Screws

◇ Usually, counterclockwise rotation loosens the bolts and nuts, and clockwise rotation tightens them.
◇ When tightening a screw, at first tighten it by hand at tight as you can.
◇ To loosen a screw means turning a tightened screw around three or four times counterclockwise, and to unscrew it means turning it around counterclockwise until it comes off.
◇ To tighten a screw means to keep a screw from getting loose. The numeric valve as a guide at which a screw will not break or get loose when tightened is the so-called “tightening torque.
◇ If you do not have a torque wrench, please try to tighten a screw as tight as possible to the level where the screw will not break or get loose, though we can not take any responsibility for the screw breakage or getting loose. In case you do not use a torque wrench, you need to judge, only by intuition or using experience, the degree of tightening power at which the screw will break or get loose.
◇ Improper use of tools will result in breakage of the top of a bolt or screw.

～Kit Contents～

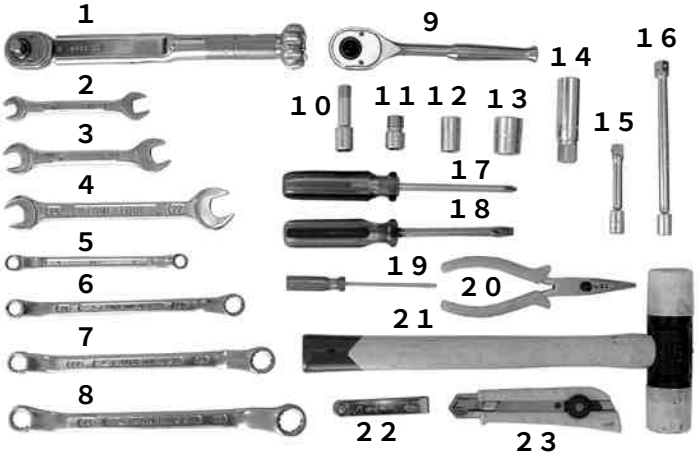


No.	Parts Name	Qty	Repair parts item No.	In packs of
1	Piston 57mm	1	13109-GPH-T20	1
2	Cylinder COMP. 57mm	1	12100-KN4-T01-C	1
3	Piston ring set 57mm	1	01-15-017	1SET
4	Piston pin 14mm	1	13111-KN4-T01	1
5	Piston pin circlip 14mm	2	00-01-0052	6
6	Cam shaft X20E68	1	01-08-042	1
7	Cylinder head gasket	1	01-13-022	1
8	Cylinder gasket	1		1
9	Exhaust pipe gasket	1		1
10	Inlet pipe gasket	1		1
11	Sealing washer	2		2
12	Oil plug bolt	2	90145-GEY-T00	1
13	Inlet pipe	1	17111-KRL-T00	1

No.	Parts Name	Qty	Repair parts item No.	In packs of
14	Insulator	1	00-03-0209	1
15	Carburetor gasket	1	16210-GEF-T01	1
16	Throttle cable	1	09-02-0081	1
17	6mm nut	2	00-00-0128	10
18	6x25 socket cap screw	2	00-00-0089	10
19	Carburetor assembly	1	03-03-028	1
20	Connecting tube	1	03-01-1055	1
21	Band	2	00-00-0050	1
22	Main jet #105	1	00-03-0021	1
23	Main jet #110	1	00-03-0022	1
24	Drive sprocket 16T	1	02-05-051	1
25	Spark plug CR8HSA	1	NGK-CR8HSA	1

※Please order repair parts with the Repair Part Item No. Without the repair part item No., we may not be able to provide the correct parts. Some parts are only available as a set. Please order them with the set number.

～Required Tools for Installation～

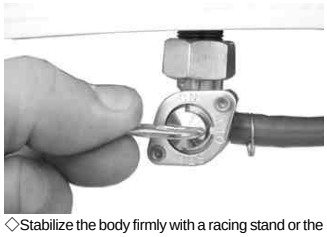


1	Torque wrench
2	Open-end wrench 10-12mm
3	Open-end wrench 12-14mm
4	Open-end wrench 14-17mm
5	Offset box wrench 8- 9mm
6	Offset box wrench 10-12mm
7	Offset box wrench 12-14mm
8	Offset box wrench 14-17mm
9	Ratchet handle
10	Deep socket 8mm
11	Socket 10mm
12	Socket 12mm
13	Socket 17mm
14	Spark plug socket 16mm
15	Extension (small)

16	Extension (medium)
17	Cross tip screwdriver (small)
18	Flat tip screwdriver (small)
19	Fine-shaft flat tip screwdriver
20	Needle-nose plier
21	Plastic hammer
22	Thickness gauge
23	Cutter or scraper
	Wire
	Waste cloth or rag
	Engine oil
	Maintainance stand
	Jack
	Bar file

～Installation Procedures～

◇Shut off the fuel petcock.



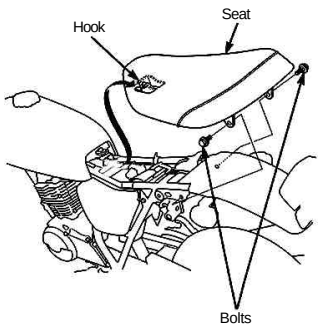
◇Stabilize the body firmly with a racing stand or the like in order to remove the side stand.
※Work only when the engine and the muffler are cool.
※Take off all dirt like the dust and oil on each part as you detach it.
※Don't let the removed bolts and nuts go astray, and keep them orderly so you can recall where to fix them.
◇Shift the tube clip to disconnect the fuel tube.

●Engine Removal

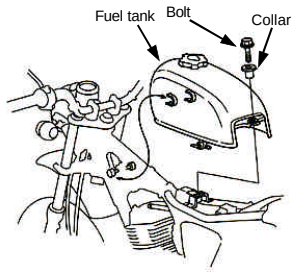
① Seat and Tank Removal

XR100 Motard

※Remove the engine from the frame following the instructions on the service manual.
◇Unscrew two bolts, and remove the seat by pulling it toward the back of the vehicle.
Tool: 10-12mm offset box wrench

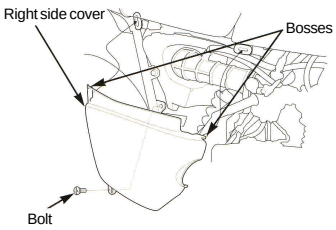


◇Unscrew a bolt and remove the fuel tank by pulling it toward the back of the vehicle.
Tool: 10-12mm offset box wrench

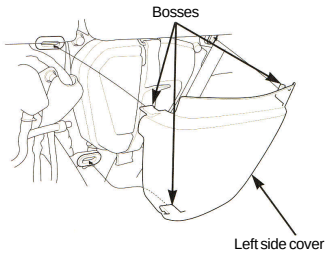


Side Cover Removal

◇Unscrew a bolt on the right side cover.
The cover can be removed by detaching two bosses from the frame.



◇Dismount three bosses on the left side cover from the frame, then the side cover becomes detached.



② Carburetor Removal

◇Remove a carburetor's top cap, and pull out the throttle valve from the carburetor.

◇Loosen a screw on the connecting tube band.
Tool: Cross slot screwdriver (small)

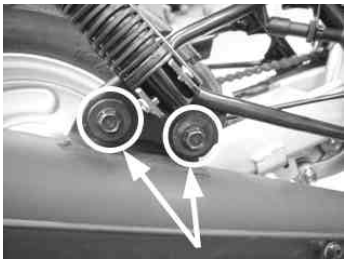
◇Unscrew two bolts, and remove a manifold and the carburetor from the cylinder head.
Tool: 8-9mm offset box wrench

③ Exhaust Muffler Removal

◇Take off two nuts on the cylinder head side.
Tool: 10-12mm open-end box wrench

Ape

◇Unscrew and remove mounting bolts and washers, and detach an exhaust muffler.
Tool: 10-12mm offset box wrench



④ Spark Plug Removal

◇Pull a plug cap to demount it. Be sure to pull the cap, not a wire.

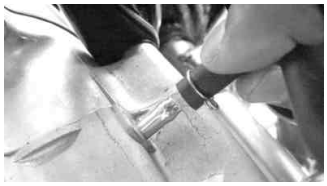
◇Remove a spark plug.
Tools: 16mm spark plug wrench,
Ratchet handle

⑤ Wiring Disconnection

◇Disconnect the wiring.

◇Remove a wire band.

◇Disconnect the wiring of the breather hose. (in the case of Ape)



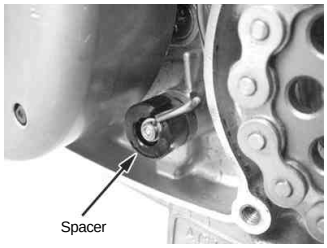
◇Loosen the nut on a clutch cable guide, and disconnect a clutch cable from a lifter lever.
Tools: 10-12mm open-end wrench
12-14mm open-end wrench

◇Disconnect the clutch cable from the cable guide.

⑥ Drive Sprocket Removal

◇Unscrew five bolts on the left side crank case cover, and remove the left side crank case cover.
Tools: Deep socket 8mm
Ratchet handle

◇If the gasket material remains on the mating surfaces, get rid of it with a cutter or a scraper.
◇Remove a spacer in advance.

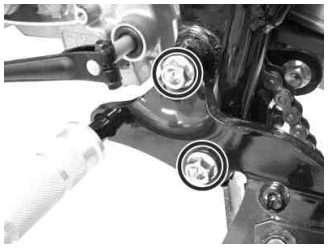


◇Unscrew two bolts on the drive sprocket, and remove a fixing plate and the drive sprocket.
Tools: 10mm socket,
Extension bar (small), and
Ratchet handle.

⑦ Left Step Removal

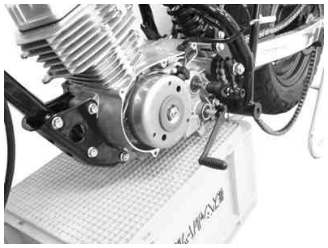
◇Remove the side stand switch cord from the frame.

◇Unscrew two bolts, and remove the left step.
Tool: 14-17mm offset box wrench



⑧ Engine Removal

◇Place a jack or substitute stand under the engine to hold up the engine.



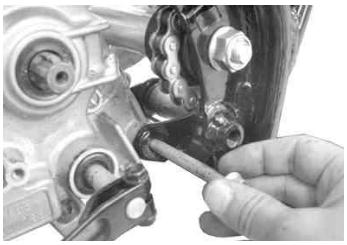
◇Detach four nuts on a front engine hanger, take four bolts out, and remove the front engine hanger.
Tools: 10-12mm closed wrench,
12mm socket, and
Ratchet handle.

◇Remove a nut on the upper rear engine mount.
Tools: 10-12mm offset box wrench,
12mm socket,
Extension bar (mid-size)
Ratchet handle

◇Remove a bottom side nut also.
Tools: 10-12mm offset box wrench,
12mm socket,
Extension bar (small)
Ratchet handle

◇First, pull out the upper side bolt and then remove a collar (Ape) and the clutch cable guide.

◇Take out the bolt on the lowr side, and detach the engine from the left side of the frame. Be careful not to give scratches to the frame.

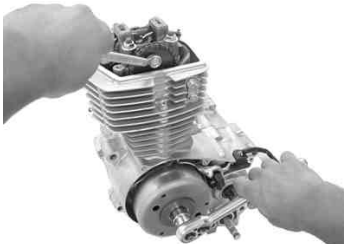


●Removal of Cylinder Head, Cylinder, and Piston

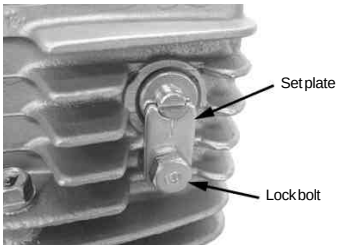
① Cylinder Head Removal

◇Unscrew two bolts on the cylinder head cover, and remove the cylinder head cover and its gasket.
Tool: 10-12mm offset box wrench

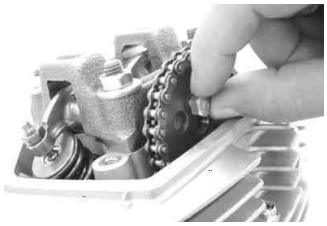
◇Fix a flywheel, and loosen two hex' bolts on a cam sprocket.
Tools: 10-12mm offset box wrench,
17mm socket, and
Ratchet handle.



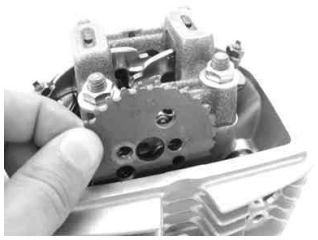
◇Unfasten a lock bolt and a set plate, and remove an adjuster.
Tools: 10-12mm offset box wrench,
Needle-nose plier,



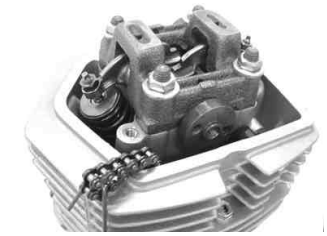
◇Remove two hex' bolts from the cam sprocket.



◇Detach the cam sprocket from the cam shaft and then, from the cam chain.

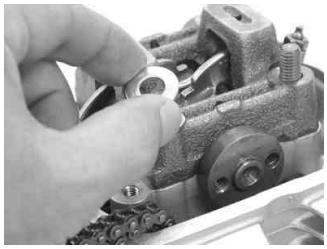


◇Suspend the cam chain with a wire or the like to keep it from falling into the case.



◇Demount a cylinder head mounting bolt.
Tool: 10-12mm offset box wrench

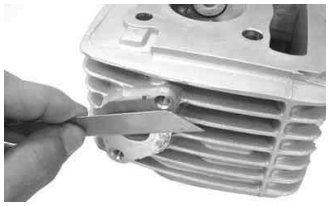
◇Loosen four cam shaft holder nuts in several steps diagonally, and remove four washers, a cam shaft holder, a cam shaft, and dowel pins.
Tool: 10-12mm offset box wrench



◇Remove the cylinder head.

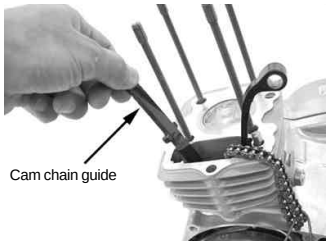
◇Detach two dowel pins in advance and keep them for re-use.

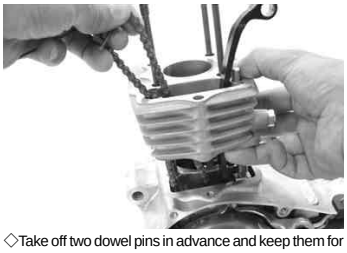
◇With a cutter or a scraper, get rid of the gasket scraps remaining on the cylinder head plane on which to fit a manifold.



② Cylinder Removal

◇Remove the cam chain guide, and pull out the cylinder. (If it is hard to pull it out, hit the cylinder lightly with a plastic hammer.)

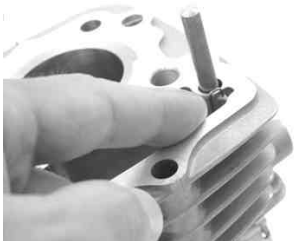




◇Take off two dowel pins in advance and keep them for reuse.

◇Remove a lock nut and an adjust bolt from the cylinder.
Tools: 10-12mm offset wrench,
Flat tip screwdriver (small)

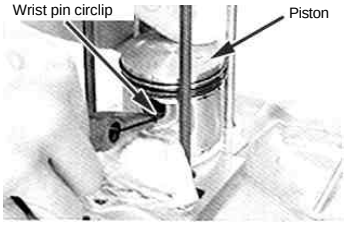
◇Detach a spring, and remove a cam chain tensioner from the cylinder.



◇Plug the cylinder hole on the crank case and a cam chain hole with a waste cloth or clean rag not to let any dirt or part fall into the hose.

③ Piston Removal

◇Remove one of the two wrist pin circlips.
You can remove it by prising it open with a screwdriver with its tip on the notch.
Tool: Fine-shaft flat tip screwdriver, or
needle nose plier

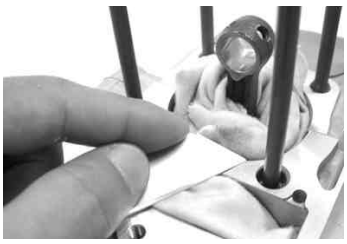


◇Push out the wrist pin with a driver or the like in the direction where one of the two circlips has just been removed.

◇Now you can take out the piston.

④ Mating Surface Cleaning

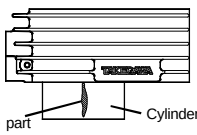
◇Completely get rid of the gasket scraps on the mating surface with a cutter or a scraper. Be careful not to give scratches to the surface.



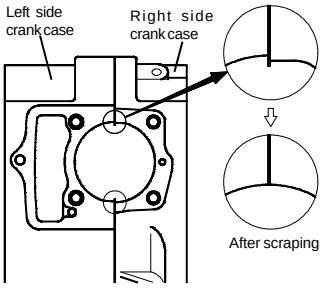
◇Wipe the surface with a waste cloth.

● Crank Case Modification

※In fixing the cylinder onto the crank case, there are some cases where a cylinder sleeve and a crank case sleeve hole may interfere with each other, due to right and left crank cases being out of alignment and for other reasons. Since the use of such a crank case with two parts interfering each other will lead to sleeve deformation and engine troubles, do not fail to check the crank case for the interference.



◇Plug the hole in the crank case with a waste cloth not to let cutting chips get into the case.
◇Scrape the convex parts on both right and left crank cases till the mating surfaces become level.
◇After scraping, remove the cloth with enough care not to let any chip get into the case.



◇Stuff up the sleeve hole with some clean cloths.
◇After installation of the kit, idle away the engine for a few minutes, and replace the engine oil with the new one without delay.

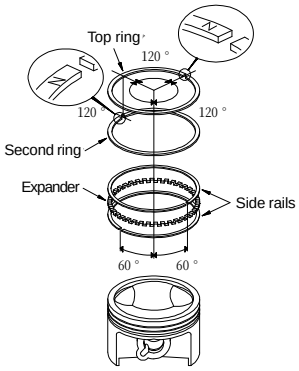
●S-Stage Kit Installation

① Piston Installation

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

※Place a circlip so its end gap does not meet with the notch on the pin hole.
※You can rather easily install it by pressing it into the piston with a screwdriver, but taking care not to damage the piston with a screwdriver.
※Do the job carefully as, in some cases, the circlip comes off flying while you press it inside.
Tools:Fine-shaft flat tip screwdriver, or
needle nose plier

◇Fix piston rings according to the figure below.
Piston ring colors
Top ring : Gold
2nd ring : Black



◇Fix the oil ring expander.

◇Fix the lower oil ring side rail.

◇Fix the upper oil ring side rail.

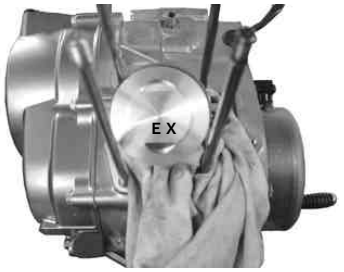
◇Fix the second ring, turning up the side with an engraved letter "N".

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

◇Apply engine oil to the wrist pin hole.

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

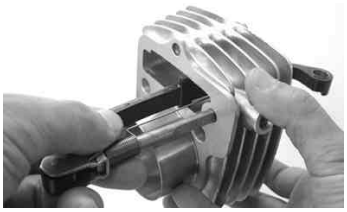
◇Apply engine oil to the wrist pin and place the piston in a position so the "EX" mark on the upper side of the piston faces the front or exhaust side.



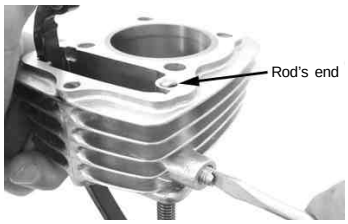
◇Fix the other wrist pin circlip, included in the kit, to the pin hole.
※Place the circlip in a position so the end-gaps of a wrist pin circlip do not meet with the notch on the hole.
※It is relatively easier to press it by a driver with care not to give scratches to the piston.
※Do the job carefully as, in some cases, the wrist pin circlip may come off flying while you press it inside.
Tools:Fine-shaft flat tip screwdriver, or
needle nose plier

② Cylinder 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.
Tools:Flat tip screwdriver (small)
Offset box wrench 10-12mm

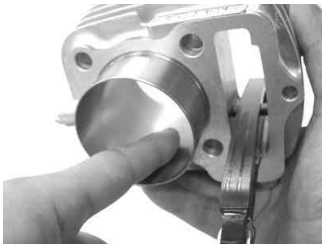


◇Remove the waste cloth.

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

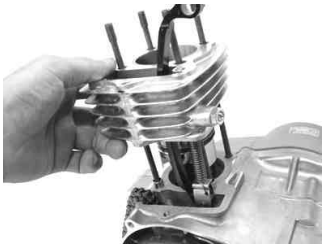
◇Attach two dowel pins and a cylinder gasket to the crank case.

◇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.

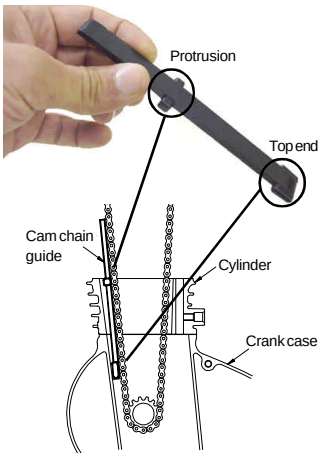
◇Let the cylinder in.



◇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 crank case.

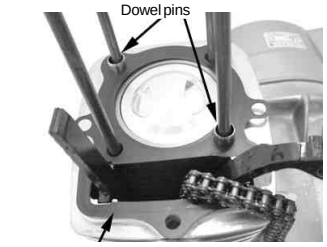
◇Insert the cylinder, fitting the end of a cam chain guide into grooves in the crank case and the protrusion into grooves in the cylinder.



③ Cylinder Head Installation

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

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



◇Pass the cam chain through the cylinder head and install the cylinder head to the cylinder.

◇Install an adjuster, passing it through the cam chain tensioner and the cylinder head.

◇Temporarily attach a set plate with a lock bolt.

◇Temporarily tighten the cylinder head mountiong bolts.

④Installation of Cam Shaft and Cam Sprocket

◇Check the camshaft holder and rocker arm for the interference with the camshaft.
(The supplied camshaft is designed to have higher lift than a stock camshaft. Some of the camshaft holders and rocker arms may interfere with the camshaft because of the size difference of these parts. So, never fail to check them for the interference.)

◇Fit the provided camshaft into the camshaft holder to see whether the camshaft top, cam shaft holder and rocker arm do not interfere with one another.

◇In case of there is no interference, continue the installation work.

※If there is interference, modify the camshaft holder and rocker arm by rasping the interfering portions. Do the following work marked with ◆.

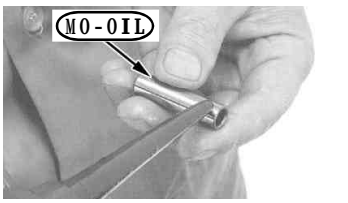
◆Pull out the rocker arm shaft from the camshaft holder in order to remove the rocker arm.

◆Modify the rocker arm by rasping its interfering portions.
Tools to use:
For modifying the camshaft holder:
Bar rasp
Hand grinder or electric hand grinder
For modifying the rocker arm:
Hand grinder or electric hand grinder
Diamond file

⚠ CAUTION : Do not shave off more than needed.
⚠ CAUTION : Work with great care not to give scratches to the cam shaft holder's journal, and clamp faces for the rocker arm and the cylinder head.
⚠ WARNING : In case you use a hand grinder, do the work, protecting your eyes to prevent chips from getting into your eyes.

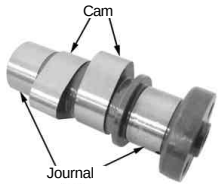
◇After shaving, check for any burr, and clean up the cam shaftholder.

◆Apply molybdenum solution to the rocker arm shaft. Install the rocker arm onto the camshaft holder.

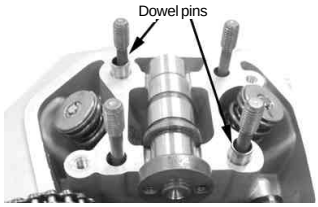


◆Fit the camshaft into the camshaft holder to see if there is no interference with a cam top and rocker arm.

◇Apply engine oil to the journals and cams of a kit's cam shaft. And install the cam shaft to the cylinder head with the cam's top faces downward.

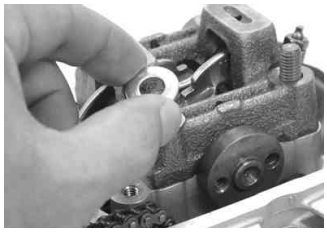


◇Attach two dowel pins.



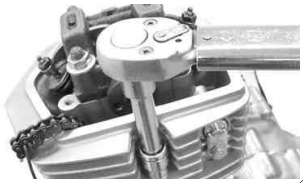
◇Install the cam shaft holder.

◇Fix four washers.

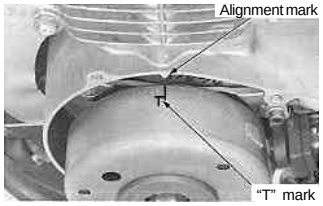


◇Install and diagonally tighten four nuts equally in a few steps.
Tools:12mm socket, and
torque wrench
Torque: **20N • m (2.0 kgf • m)**

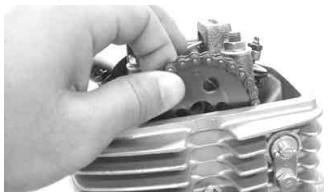
◇Fully tighten the cylinder head mounting bolts.
Tools:10mm socket,
extension bar (small), and
torque wrench
Torque: **12 N • m (1.2 kgf • m)**



◇Check that "T" mark on the flywheel is aligned with the "▽" mark on the crank case.

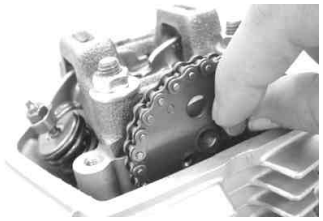


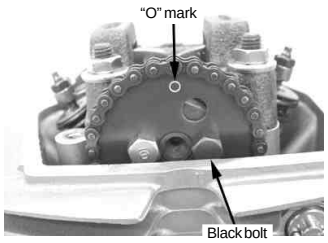
◇Install the cam chain in the position so the "O" mark on the cam sprocket is right at the top. Fit the cam sprocket into the cam shaft.



◇Rotate the flywheel a little, and then rotate the cam sprocket to mark it easy to install hex' bolts.

◇Align cam shaft's bolt-holes with the cam sprocket. Then attach two hex' bolts to the holes by hand temporarily. At this point, attach and tighten a knock bolt (black) to the intake side.





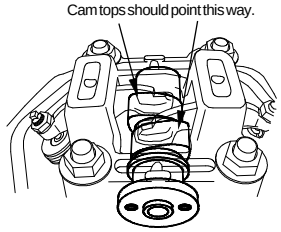
◇Fix the flywheel and fully tighten the hex' bolts on the cam sprocket.
Tools:10mm socket,
torque wrench, and
14-17mm offset box wrench
Torque: **12 N • m (1.2 kgf • m)**

⑤ Cam Chain Adjustment

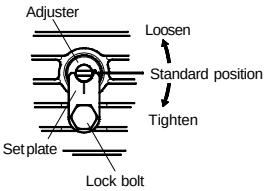
※A camchain, whether tightly or loosely streteched, will impair the engine conditions. Perform this procedure correctly.

◇Rotate the flywheel till both cam tops of the cam shaft point up.

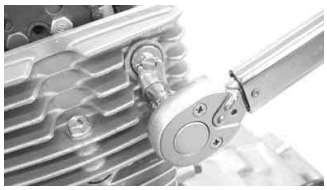
Cam tops should point this way.



◇Rotate the flywheel a little by hand. Depending on how tensely or loosely the camchain is stretched to the camsprocket, turn the flywheel in either direction to get the proper tension of the camchain, watching the "O" mark on the adjuster.
Tool: Flat tip screwdriver (small)

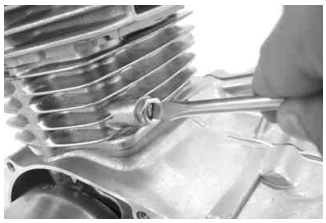


◇Tighten the lock bolt fully when the cam chain is found stretched properly and you can move the flywheel without difficulty, and fix the adjuster.
Tools: 10mm socket, and
Torque wrench.
Torque: **10 N • m (1.0 kgf • m)**



◇In case you can not get the proper tension of the camchain only by adjusting the adjuster, then adjust the tension with the adjust bolt on the cylinder.

◇Fix the adjuster where it has the best tension. Then loosen a lock nut on the cylinder, and loosen the adjust bolt a little bit.



◇Fix the adjust bolt with a flat tip screwdriver, and tighten the lock nut.
Tools: Flat tip screwdriver (small),
12mm socket, and
Torque wrench
Specified torque: **12 N • m (1.2 kgf • m)**

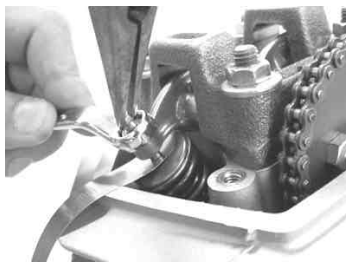
◇Again, move the adjuster and hold it where the camchain has no slackness and you do not feel it hard to rotate the flywheel. Then tighten the lock bolt to fix the adjuster.

⑥ Valve Clearance Adjustment

◇Rotate the flywheel counterclockwise, and stop rotating it where the "O" mark on the cam sprocket is on the top and the "T" mark on the flywheel is aligned with the "▽" mark on the crank case.

◇Insert a 0.05mm thickness gauge between the adjust screw and the end face of the valve (or, valve clearance).
Tool: Thickness gauge

◇Adjust the position of the adjust screw so that there is a little resistance to pulling the gauge out. Then tighten the nut.
Tools: Thickness gauge,
Offset box wrench 8-9mm,
Needle nose plier, and
Flat tip screwdriver (small)
Torque: **10 N • m (1.0 kgf • m)**



◇After tightening the nut, double check the valve clearance with the 0.05mm thickness gauge.

◇Pour fresh engine oil to a oil pool on the cylinder head to the brim.

◇Install the cylinder head cover and its gasket to the cylinder head by tightening two cylinder head cover bolts.
Tool: Offset box wrench 10-12mm
Torque: **12 N • m (1.2 kgf • m)**

●Engine Mounting

① Engine Mounting

XR100 Motard

※Mount the engine on the frame following the instructions of the service manual.

◇Place a jack or a proper stand under the engine to support the engine. Then mount the engine from the left side of the vehicle.

◇Insert a bolt into the lower part of the rear engine mount from the left side.

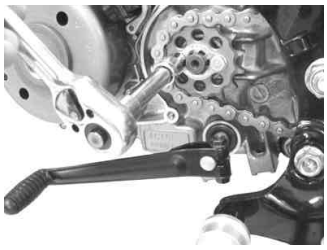
◇Attach a collar and a clutch cable guide, and insert a bolt into the upper part of the rear engine mount.

◇Temporarily tighten the two nuts.

◇Attach a front engine hanger, and insert four bolts from the left side and temporarily tighten four nuts.

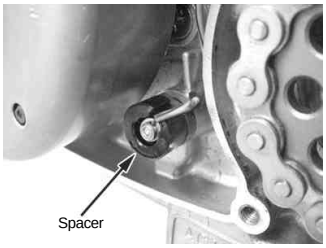
◇Replace the drive sprocket with kit's. Fix the drive sprocket with the drive chain to the counter shaft. If it is hard to fix the drive sprocket, fix it while shaking the engine lightly.

◇Stretching the drive chain moderately loosely, fully tighten the two nuts on the rear engine mount and the four nuts on the front engine hanger plate.
Tools: Offset box wrench 10-12mm,
12mm socket,
Extension bar (small),
Extension bar (mid-size), and
Ratchet handle
Torque:
for rear engine mount nuts
: **44 N • m (4.5 kgf • m)**
for front engine hangar plate nut
: **26 N • m (2.7 kgf • m)**
◇Fit the fixing plate into the counter shaft to align with the threaded holes on the drive sprocket, and fix two bolts.
Tool: Offset box wrench 10-12mm
Torque: **10 N • m (1.0 kgf • m)**



② Installation of Left Side Crankcase

◇Degrease the clamp faces of the left side crankcase cover and the crank case with thinner or the like.
◇Attach a spacer, and install the left crankcase cover and a new gasket to the crank case by tightening five bolts.
Tools: 8mm deep socket,
Ratchet handle
Torque: **12 N • m (1.2 kgf • m)**



③ Installation of Left Side Step (for Ape)

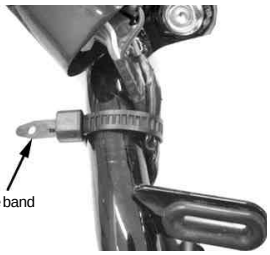
◇Install the left side step to the frame with two bolts.
Tool: Offset box wrench 14-17mm
Torque: **26 N • m (2.7 kgf • m)**

◇Fix the side stand switch cord on the clamp of the frame.

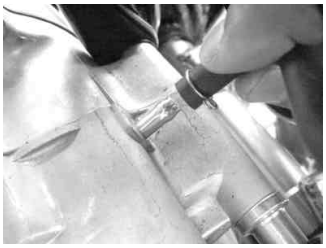
④ Wiring

◇Connect the wiring.

◇Fix the cords with a wire band.



◇Connect the breather hose.
(for Ape)



◇Attach the clutch cable to the lifter lever and install it to the clutch cable guide. Then tighten the nut.
Tools: Offset box wrench 10-12mm
Offset box wrench 12-14mm

⑤ Spark Plug Installation

◇Install a kit's spark plug. At first, screw the spark plug by hand.
◇Then tighten it with a plug wrench.
Tools: Spark plug wrench 16mm, and
Ratchet handle
Torque: **14 N • m (1.4 kgf • m)**

◇Fix a plug cap.

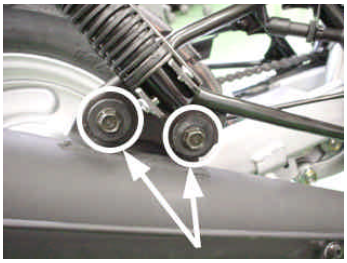
⑥ Exhaust Muffler Installation

XR100 Motard

※Mount the engine on the frame following the instructions on the service manual.
◇Temporarily tighten two nuts on the cylinder head side.
Tool: Open-end box wrench 10-12mm

Ape

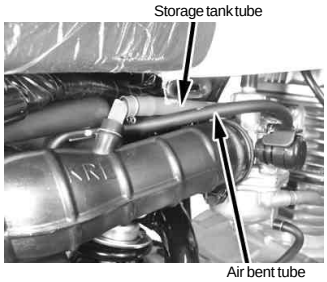
◇Temporarily tighten two mounting bolts and washers.
Tools: Offset box wrench 10-12mm, and
Offset box wrench 14-17mm



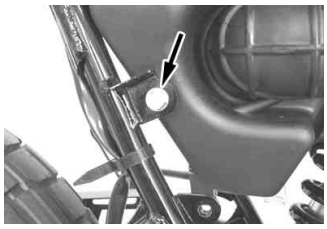
◇Fully tighten them.
Torque:
for two nuts: **12 N • m (1.2 kgf • m)**
for mounting bolts: **20 N • m (2.0 kgf • m)**

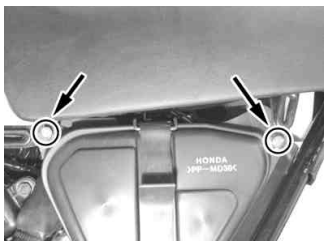
⑦ Carburetor Installation

◇Detach the storage tank hose and the carburetor air bent tube from the side of an air cleaner case.
※Remove the storage tank hose along with the breather tube joint.



◇Loosen the connecting tube band screw.
◇Remove two case mounting bolts from the left side and one from the right side, all of which are fixing the stock air cleaner case.
※If you continue using the stock air clearner case, do not remove it.





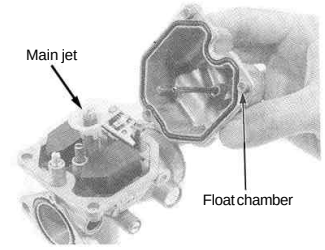
◇Detach a connecting tube from the carburetor, and remove the air cleaner case.
※If you use stock cleaner, do not remove the air cleaner case.

◇Hold a stock air cleaner cover and demount an air filter inside. Unfasten the connecting tube from the stock air cleaner case. Apply an adhesive to a kit's connecting tube, and as with the stock connecting tube, install it to the air cleaner case.

◇Unscrew pan screws on the throttle housing. Detach the throttle cable from the throttle pipe and the throttle housing. Take out the stock throttle cable from the vehicle. Wipe off the dirt and old grease on the throttle pipe, and apply fresh grease to its sliding surface. Fix the throttle pipes to the handle.

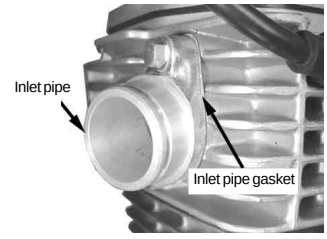
◇Attach a kit's throttle cable to the lower throttle housing and the throttle pipes. Fix the upper throttle housing with pan screws. Tighten the front pan screw first, then the screw at the back. Wire the throttle cable in the same way as the normal cable is wired.
Torque: **4 N・m (0.4 kgf・m)**
※In the case of a stock handle, align the dividing part of the throttle housing with a punch mark on the handle.

◇Remove a float chamber in the PD22 carburetor and replace the main jet with the one in the kit. (As a guideline, #110 for S-stage, and #105 for the stock engine)

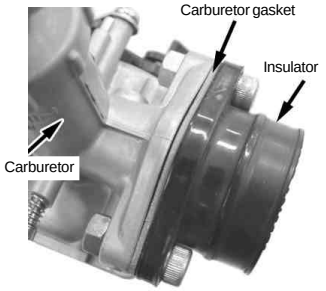


◇Reinstall the float chamber.

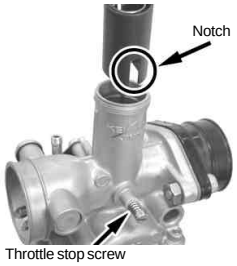
◇Place an inlet pipe gasket (the thinner one) between the cylinder head and the inlet pipe, and fix the inlet pipe by tightening two standard flange bolts.
Torque: **12N・m (1.2 kgf・m)**



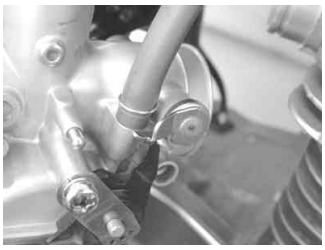
◇Place a carburetor gasket (the thicker one) between the carburetor and the insulator, and fix it by tightening two socket cap screws (6x25) and nuts (6mm).
Torque: **12N・m (1.2 kgf・m)**



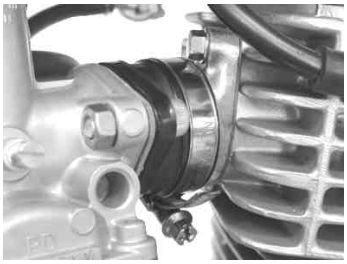
◇Remove the PD22 top cover on the carburetor and take out the spring and the throttle valve. Attach a top cover to the throttle cable, and fit a spring into the throttle valve which then please fix to the inner cable. Align the notch on the throttle valve with the stop screw, and install it to the carburetor.



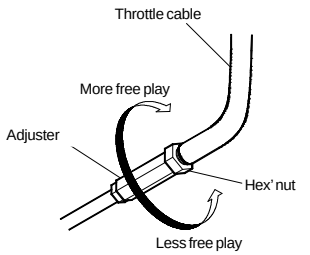
◇Insert the fuel tube into the carburetor, and attach a tube clip.

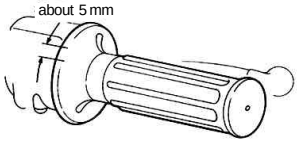


◇Insert the insulator into the inlet pipe and tighten it with a band.



◇Adjust the free play on a throttle cable by the adjuster so there is approx. 5 mm of free play at the throttle grip. Snap the throttle a few times to check whether it moves smoothly without suddenly stopping, and also to check whether the throttle valve is fully open. Also check that the throttle does not get stuck even when you turn the steering handle all the way to the left and right.



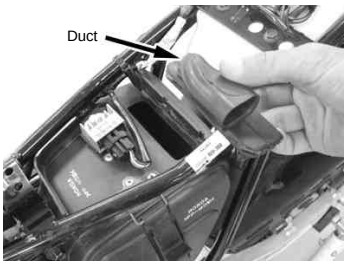


◇Fix the air cleaner connecting tube to the carburetor. Tighten the air cleaner connecting tube band.

◇Reinstall the normal air cleaner, and put the air cleaner cover on it.

◇Fix the storage tank hose to the connecting tube, and attach a tube clip.
※Fix the air bent tube in place so it does not get in the way of running.

◇Reinstall the left and right side covers and the seat.
※When a stock air cleaner is used, be sure to remove the intake duct on the upper side of the air cleaner case in order to secure the amount of intake of air.

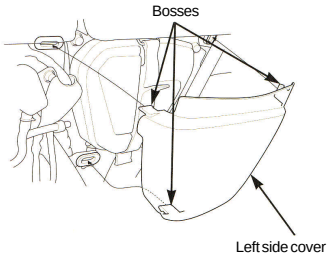


● Side Cover Installation

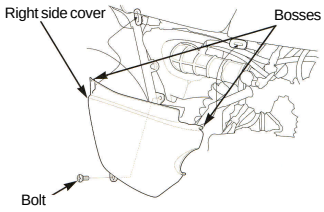
XR100 Motard

※Install the carburetor with reference to the genuine parts service manual.

◇Fix the left side cover by fitting three bosses on this cover into the frame.

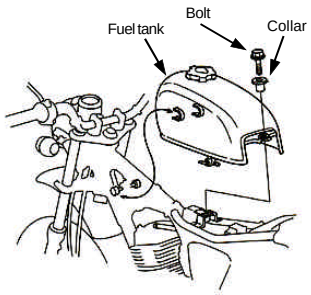


◇Fit two bosses on the right side cover into the frame, and fix the bolt.

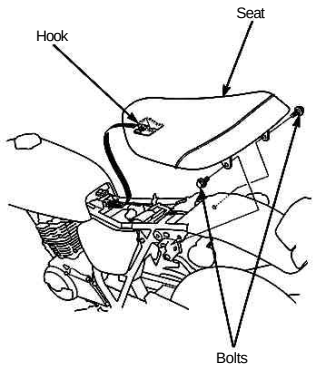


⑧ Installation of Seat and Tank (for Ape)

◇Install the fuel tank to the frame with the bolt.
Tool: Offset box wrench 10-12 mm
Torque: **26N・m (2.7 kgf・m)**

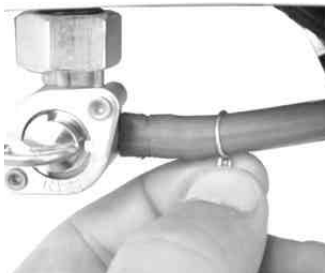


◇Fit the hook in the front on the back side of the seat into the frame and fix it by tightening two bolts.
Tool: Offset box wrench 10-12 mm
Torque: **26N・m (2.7 kgf・m)**



●Fuel Hose Connection

◇Connect the fuel tube with the fuel petcock, and fix it with a tube clip.



☆Engine Starting

- o After checking that the ignition key and the fuel cock are turned OFF, remove the spark plug.
- o Kick the starter for a while to circulate the engine oil all aroud the engine.
- o Reinstall the spark plug, turn ON the fuel cock and ignition key, and pull the choke lever to start the engine.
- o Push back the choke lever little by little, warm up the engine until it rotates smoothly, and finally push back the choke lever to the original position. Adjust the engine revolutions by the throttle stop screw if the engine does not run idle after the warm-up, or it runs idling at high revolutions.
- o Work in a safe place with care, and arrange the setting to match each vehicle.

  ⚠ CAUTION: Be sure to tighten to the specified torque.
  ⚠ WARNING: Work in a well-ventirated area.
- o Check for any abnormarity such as abnormal noises.
- o If no problem is detected, do running-in at leaset 100 to 150 km.
- o After the initial running-in, check for abnormality such as abnormal noises or blow-bye.
  (If there is a problem, disassemble the engine again to check each part.)

  ⚠ WARNING: Do not re-use wrist pin circlips.

⚠ Caution

- o Even bolts and nuts tightened to the specified torque may get loose by repeated heat expantion through warm-up at the time of engine assembly. Retighten bolts and nuts periodically.

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

●Cautions Before Running

① About fuel

Always replace the gasoline with high-octane gasoline when regular gasoline is remaining in the fuel tank.

② Sprocket

Adjust the sprockets depending on how you ride your vehicle. However, setting in too low gears will result in severe wears of parts, not only adversely affecting the engine life, but also breaking the engine in the worst case. Please drive your vehicle at proper setting.

● Other notes

① Oil Cooler

①The installaiton of this product increases the heat release value of the engine, set off by the increase in power. Therefore, we recommend that you equip your machine with an oil cooler kit for long hours of high-load driving.

② Cam Chain

We recommend you to install our TAKEGAWA's solid cam chain, and die-hard α (01-14-005) to cope with the increase in power and in heat release value of the engine.

③ Thermometer

A stick-type temperature sensor is installable on the cylinder side of this kit.
TAKEGAWA's meters listed below are available.

- ・Medium LCD tachometer & thermometer: 09-05-0141 (up to 150 ℃)
- ・Digital thermometer: 07-04-053 (up to 99 ℃)

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