## S-Stage Bore Up Kit 88cc Instruction manual

Product number 01-05-5009

	Monkey(FI)	(AB27-1900001 ~ )		
Adaptation model	Super cub 50(FI)	(AA01-1700001 ~ )		
	Little cub(FI)	$(AA01-4000001 \sim)$		

Thank you very much for purchasing our products.

Thank you so you will comply with the following matters at the time of use. Before installation, please check your always kit contents. If there is a point of notice event, Please contact us the dealer of purchase.

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

About fuel to use This S-Stage Kit is so designed to achieve a higher compression ratio than stock engines. Therefore, high-octane gasoline should always be used. In case regular gasoline is used, you cannot get the performance of this Kit. Moreover, it is possible that the piston will be damaged, leading to a serious failure of a motorcycle. Before installing this kit, 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.

About the spark plu
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Be sure to replace a spark plug with a CR8HSA (NGK) or U24FSR-U(DENSO).

#### About quick starting and sudden acceleration

Please note that idling, sudden acceleration, and sudden engine braking will put a heavy load on the engine, and that it may result in crank shaft and engine damages in the worst case.

Instructions for use of FI controller

If you start the engine only with the S-Stage Kit installed, the major malfunction of the engine is likely to take place. So, be sure to install the FI controller.

#### $\bigstar$ Please read carefully before use $\bigstar$

© 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 this Instruction Manual.

◎ Please drive safely and follow the local traffic law.

© We shall be held free from any kind of warranty whatsoever of products other than this product if any defect takes place on the other products than this one after the installation and use of this product.

◎ If you make modifications to any product of the Kit, we shall be held free from any guarantee of the product.

 $\odot$  We do not have any information or service data on the combination of our products and other manufacturer's products.

© Please note that this Kit is designed for exclusive use in the above-mentioned fitting models and frame numbers only and that it cannot be mounted on any other models.

◎ 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.)

◎ For installation, please prepare tools and work with reference to the installation procedures with enough care.

Besides, this instruction manual, as well as a Hgenuine parts service manual, is prepared for persons who have acquired basic skills and knowledge.

We recommend those who are technically inexperienced or without enough tools to ask a technically-reliable specialist shop for the installation work.

© Bolts, nuts, dowel pins and seals will be reused. However, be sure not to use the worn-down or severely-damaged ones, which please do replace with new ones.

◎ Fuel must always be supreme unleaded high-octane gasoline.

#### $\sim$ feature $\sim$

This Kit is to bore up the engine displacement to 88 cc, using a standard cylinder head.

The ceramic-coated cylinder is used.

Oil lines in this cylinder with oil outlets lead the oil to the outlets.

Also, set M5 threaded hole in the oil plug bolt, it can be installed in our M5 temperature sensor.

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

■ Please drive safely and follow the local traffic law.

- Work only when the engine and exhaust system are cool to avoid burns.
- Prepare appropriate tools and work properly to avoid the breakage of parts or injuries.
- Always use a torque wrench to tighten bolts and nuts securely to the specified torque to avoid these parts getting damaged or loose.
   The product and the frame, might have edges or protrusions. When working, please wear work gloves to protect your hands.
- (It may cause injury.) ■ Before riding, always check such parts as screws for loose. If you find loose ones, screw them securely up to the specified torque to
- avoid parts coming off.
  Always use new gaskets and seals. About the reused parts, please check carefully for wear or damage and be sure to replace them with new ones if necessary.



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

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.)
- When you notice something abnormal with your motorcycle, stop riding immediately and park your motorcycle in a safe place to avoid an accident.
- Before working, place the motorcycle on level ground to stabilize its position for safety to avoid the motorcycle overturning.
- 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.)
- If you find damaged parts when inspecting or performing maintenance of your motorcycle, do not use these parts, and replace them with new ones. (The continued use of these damaged parts could lead to accidents.)
- As gasoline is highly flammable, never place it close to fire. Make sure that nothing flammable is near the gasoline. Since vaporized accumulation of gasoline is at high risk of explosion, work in a well-ventilated place. (Otherwise it may cause a fire.)

Please note. Performance up, the design change, the product and the price in the cost up, etc. are subject to change without notice.
 Please be informed that we shall be held harmless against any claim against us whatsoever arising out of use of the products in racing and the like.

◎ Keep this manual stored until this product is discarded.

#### Lesson

- $\diamond$  Bolts and nuts will get loose when turned counterclockwise, and tighten when turned clockwise(some exceptions).
- ♦ At the beginning, hand tighten a screw without using a tool until it stops. If it stops turning after giving it one or two turns, the screw may be fixed improperly.
- ◇ To loosen a screw means turning a tightened screw three or four times to the counterclockwise, and to remove it means turning it until it comes off.
- To tighten a screw means to screw it up to keep it from getting loose. The numeric value as a guide at which a screw will not break or get loose when tightened is the so-called "torque." If you do not have a torque wrench, please try to tighten a screw as tight as possible to the point where the screw will not break or get loose, though we can not take any responsibility for the breakage. 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 bolt will break or get loose.
- ♦ Improper use of tools will result in breakage of a top of a bolt or screw.

Product content

01_02_0122	ĺ	Number	Product content	Quantity	Item Number
		1	Piston	1	
		2 Piston ring		1	01-15-014
			Piston pin	1	00-01-0091 (with ④ clip)
		4	Piston pin circlip	2	00-01-0003 (6 pcs)
34	0.0.13	5	Cylinder, 52mm	1	00-00-1112
	-03	6	Oil plug bolt	1	00-07-0072
					(with ⑧ Sealing washer)
		7	Oil plug bolt with M5 boles	1	00–07–0090
	11 12	,			(with ⑧ Sealing washer)
		8	Sealing washer, 10mm	2	00-07-0106 (10 pcs)
YXY		9	Cylinder head gasket	1	01-13-8009
	13 🖤	10	Cylinder gasket	1	
		11	Exhaust pipe gasket	1	00-01-0064 (2 pcs)
		12	Camshaft	1	01-08-0332
		13	Flange bolt, 6x25	1	00-00-0882 (5 pcs)
		14	Mark set	1	

 $\%\,\ensuremath{\mathsf{Please}}$  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.

#### $\diamond$ Tools to use for the installation



	1	Torque wrench		Spark plug wrench		
	2	Plastic hammer	''	(in-vehicle tool)		
	3	Cutter knife	12	Needle-nose plier		
	4	Open-end wrench, 8-10		Thickness gauge		
	5	Open-end wrench, 12-14		Fine-shaft flat tip screwdriver		
	6	Open-end wrench, 14-17	15	Extension (medium)		
	7	Offset box wrench, 8–10	16	Extension (small)		
	8	Offset box wrench, 12–14	17	Socket, 14mm		
	9	Offset box wrench, 14–17	18	Socket, 12mm		
	10	Spark plug wrench handle	19	Socket, 10mm		
		(in-vehicle tool)	20	Ratchet wrench		



SPECIAL PARTS

с Ж



# Removal of standard hardware

• Remove the inlet pipe

#### (Monkey)

Remove two bolts by turning them counterclockwise which hold a cylinder head and inlet pipe.

After removing as above, remove the insulator as well.



#### (Cub)

 Unfasten a nut A (12mm cap nut), and bolts B and C (10mm bolts), by turning them counterclockwise.
 And unfasten washers and the like at the same time.
 Do the same to the left side as well.



Remove two bolts by turning them counterclockwise which hold a cylinder head and inlet pipe.



 $\diamond$  Remove the horn stay.



Remove the O2 sensor bracket

#### (Monkey)

◇ Remove an O<sub>2</sub> sensor bracket on the cylinder.





- Remove the exhaust system
   (Monkey)
- Remove two nuts on the exhaust pipe by turning them counterclockwise.



Remove two hex bolts, which are holding the exhaust system, by turning them counterclockwise.





Remove the exhaust system from the vehicle by pulling it outwards. Take care NOT to lose ring-shaped exhaust system gaskets.



### (Cub)

Remove two nuts on the exhaust pipe by turning them counterclockwise.



Remove hex bolt, which are holding the exhaust system, by turning them counterclockwise.



Remove the exhaust system from the vehicle by pulling it outwards. Take care NOT to lose ring-shaped exhaust system gaskets.



 Remove a spark plug
 Remove a plug cap from the plug by pulling it out.
 Be sure to hold the cap in pulling it out.
 With an in-vehicle tool of a

plug wrench, turn the plug counterclockwise to remove it.



- Remove a cylinder-head left-side cover
- Unfasten a hex bolt on the cylinder head cover to remove the cover.



- Remove a crankcase leftside cover
- ◇ Turn both A and B counterclockwise to remove them.



#### • Remove a cam sprocket

♦ Set the flywheel and cam sprocket so the "T" and "O" marks on them respectively face forward. And set the timing marks to be in contact with the cylinder head surfaces. And turn the flywheel counterclockwise so it meshes with each notch.



Holding the flywheel, remove two hex bolts on the cam sprocket by turning them counterclockwise.



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SPECIAL PARTS

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

- $\diamond$  Gently pry the cam sprocket loose to remove from the camshaft with a small-sized slotted screwdriver.
- $\diamond$  Remove the cam chain from the cam sprocket, and take out the cam sprocket.
- ☆ Remove a dowel pin fixed in the center of the camshaft.



- Remove cvlinder-head side bolts
- $\diamond$  Remove the cylinder-head side bolts holding the cylinder head and cylinder by turning them counterclockwise.



♦ Remove the coupler of the O<sub>2</sub> sensor.



♦ Loosen the guide roller bolt on the cylinder and the side bolt between cylinder and crankcase by turning them counterclockwise.





• Remove the cylinder ◇ Remove the loosened guide roller bolt and cylinder side bolt by turning them counterclockwise.



♦ Remove the oil temperature sensor by removing its coupler.



◇ Pull out the cylinder. (If it is hard to pull it out, tap the cylinder with a plastic

♦ While removing the cylinder, the cam chain guide roller will come out, which please remove.



Remove the piston

 $\Diamond$  Plug the cylinder hole in the crankcase with a waste cloth so as never to let the dirt, dust or hardware into the cylinder hole and cam chain.



♦ Remove one of the two piston pin circlips. You can remove it by prying it open with a screwdriver tip being placed on the notch.



 $\diamond$  Remove the piston pin in the direction where the piston circlip is not attached. You can easily remove the piston pin by pressing it with a flat tip screwdriver from the direction where a piston pin circlip is attached



♦ Remove the piston.



- Remove a cylinder gasket, rubber seal and dowel pin
- ◇ If the gasket does not remove smoothly, please use the scraper or cutter but NOT scratch the crankcase. Also remove the excess of the gasket if necessary.

#### 🚺 Never let any dirt, dust or hardware into the crankcase.



SPECIAL PARTS

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

## How to rectify As shown in the figure below,

at this point rectify the crankcase to be even without bumps.

- 1. Plug the entire hole in the crankcase securely with a waste cloth so the cutting chips and shavings won't get into the crankcase.
- 2. Rasp the higher mating surface of the crankcases till it becomes level with the lower one.
- 3. After rasping the surface, remove the waste cloth with care not to let the shavings get into the crankcase.
- 4. After removing the waste cloth,stuff up the crankcase opening with a clean waste cloth.
- 5. After the installation of the Kit, idle away the engine for a few minutes, and then, immediately replace the engine oil with new one without delay. And there is nothing more to do.





- Assemble and install a piston
- Attach the piston pin circlip so the ring-end gap does not meet with the notch on the piston pin hole. And attach toward vertically direction to the piston.



Notch in the piston hole

- ◇ Apply engine oil to the piston-ring grooves, and fix piston rings in the order of an oil ring expander, lower oil ring side rail, upper oil ring side rail, second ring, and top ring.
- ♦ Arrange the positions of piston ring-end gaps so they do not align with each other.





♦ Apply engine oil to the ring grooves.







 $\Diamond$  Put the lower side rail.



 $\diamondsuit$  Put the upper side rail.



A

◇ Put the top ring.
 ◇ Apply engine oil to the piston.



Apply engine oil to the piston pin on the con'rod.



At the piston installation, if there is an arrow on piston top surface, turn the tip of arrow mark to the exhaust side, or if there is an IN mark, turn it to intake side.



Pass the piston pin into con'rod and piston.



Fix securely the supplied piston pin circlip to the circlip groove.

◇ Install the piston pin circlip to the piston, with a needlenose plier when necessary, being careful not to damage the piston. Install the circlip so its end-gap is not on the notch. Do the work carefully as, in some cases, the circlip comes off flying while you are pressing it inside.



When you are through with the work, remove the waste cloth which was plugged into the hole.

 Installation of cylinder
 Degrease with thinner the cylinder gasket surfaces on both cylinder and crankcase sides.
 Install the cylinder gasket.



Check if the dowel pin is present.



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Apply engine oil onto the inside of the supplied cylinder and spread the oil evenly with fingers.



 $\Diamond$  Insert the cylinder.



◇ Fit the cylinder by pressing it with a finger bit by bit, taking care so the piston ring-end gaps do not get out of position.



♦ Once the ring has been placed inside the cylinder, route the cam chain through the cylinder, and fix the cylinder into the crankcase.



◇ Pulling the cam chain, fix the guide roller.



Press in the guide roller so the center of the guide roller and the guide-roller bolt hole on the cylinder just mesh together.





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SPECIAL PARTS

◇ Unscrew a hex bolt on the side of the change-pedal shaft. (As the cam chain tensioner slackens, you will find it easier to install the cam chain.)



Oil will flow out a little after the bolt is tightened. Wipe off the oil.

Set the cam sprocket so its "O" mark faces the front. And mesh the timing marks with mating surfaces of the cylinder head cover. Aligning the notches together, place the cam chain on the camshaft.



 ◇ Holding the flywheel, tighten up two cam sprocket bolts.
 ▲ Note: Be sure that you protect specified torque.
 Cam sprocket bolt Torque : 9N • m (0.9kgf • m)



◇ Install the just-removed bolt next to the change pedal shaft, and tighten it up.
▲ Note: Be sure that you protect





 Valve timing adjustment and tappet clearance adjustment

♦ Give the crankshaft two clockwise turns. And check that all the alignment marks are meshing

with one another with the T mark on the flywheel, the notch on the crankcase and the timing sprocket mark facing the front.



While tightening a rocker arm's tappet adjusting screw, tighten the tappet adjusting nut to the extent that you can pull out a thickness gauge, placed between the tappet adjusting screw and the valve stem end, feeling only a little resistance. IN: 0.10 mm

EX: 0.12 mm

♦ After adjusting the tappet, give the flywheel two turns counterclockwise by hand, and then, align the "T" with "O" marks.

Check if there is any change in the tappet clearance.

If the clearance has not changed, there is no need to readjust it. However, in case there is a change, readjust the clearance. Repeat this readjustment until you get a right tappet clearance.



- The boss two places of the supplied cylinder, attach the oil plug bolt / sealing washer. Oil plug bolt with M5 holes, mounted so as to be on the upper side when the engine mounting.
  % If you are installing the oil
- cooler kit, that you follow the instruction manual of the kit.

▲ Note: Be sure that you protect specified torque. Oil plug bolt

Torque: 12N • m (1.2kgf • m)





- Installation of cylinder head cover
- ♦ Attach a cylinder-head cover and gasket.







 $\Diamond$  Attach a plug cap to the plug.

 Installation of stock exhaust system

#### (Monkey)

- ♦ Install an exhaust system.♦ Squeeze the muffler gaskets
- into the space between cylinder head and muffler. And install the muffler unit into the pivot shaft. Tighten the nut to hold the muffler unit. (Finger-tighten the nut for the moment.)



◇ Tighten two nuts on the exhaust pipe loosely for now.



Tighten the nuts to hold the flange and vehicle.





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Mounting procedure ※Please refer to the Genuine Service Manual for detailed mounting methods and specified torques that are not specifically described.								
• Cautions	Before R	unning						
1 About fuel: ◇ High-octane g ◇ Always replac	: asoline sho e the gasol	uld alway ine with	vs be used. high-octane gasolir	ne when	regular gas	oline is remaining in the fuel <sup>.</sup>	tank.	
2 Additional hardware to be installed: For driving your bike with this kit installed, the following hardware need to be installed additionally. We disclaim all responsibility for any consequential and incidental damages or any other losses arising from the use of the provided products or parts, if your bike is not equipped with these additional hardware.								
2-1 Oil pump: The installation Super Oil Pump i Essential Super	: of this ki s essential Oil Pump	t increas in order	es the heat release to circulate large	e value e amoun	of the engi ts of oil an	ne, set off by the increase in p d to help cool hardware and to a	ower. 1 allevia	The installation of te the burden.
Part No.:01-16-0	051							
2-2 Clutch: The stock clutch engine power ful Therefore, it is	cannot res ly to the d necessary	pond to t riving si to instal	che high engine powe de. I a heavy duty clut	er, and .ch.	, therefore,	causes clutch slippage, and co	isequent	tly cannot transmit the
Essential clut Part No. : 02-01- : 02-01-	tch 0202(Primar 0214(The pr	y reducti imary rec	on gear ratio remai luction gear ratio i	ns the s chan	same.) ged to 18 /	67 from 16 / 69.) } Monkey		
3 Change of s	sprocket on of this l use of too l ing the engi nat a sprock the gear rat use the con like. the driven and under t	kit will ow gear, ne in the ket is no tio of th figuration sprocket he engine	increase the power of and will cause seven e worst case. Therefor t included in the k e sprocket changes in the list below , remove hardware a e for safe work.	f your re wear ore, pl it. accordi needs round t	vehicle. So s of hardward ease replace ing to the cl to be change the rear whee	with the stock sprocket, you wil e, not only adversely affecting t the drive and driven sprockets t utch type and wheel size. The I d according to the driver's wei el. Raise the rear wheel off the	l find i <sup>†</sup> he engi o make ist bel ght, pu ground	t uncomfortable to drive ne life, but also the gear ratio high. ow is just for your rpose of use, desire, l by placing a
Recommended sp	procket to	r use w	Specifications	n a dr	river weigh	Ing 65 Kg) (MONKey) Recommended	Sprocke	st
	Rear whee	el size	Clutch	Tra	nsmission	Drive sprocket (Front)	Driv	en sprocket (Rear)
	8ino	h	Manual	4	4-speed	16	i	23
			Heavy-duty special	4	4-speed	16		25
MONKEY (FI)	10in	ch	Manual	4	4-speed	16		25
			Heavy-duty special	2	4-speed	16		28
<ul> <li>When the stock sprocket is changed to the recommended driven sprocket, the drive chain becomes too slack or too short. However, it is impossible to take up the slack of the drive chain just by adjusting the free play.</li> <li>You need to either shorten the chain by cutting it with a chain cutter, or to prepare a new drive chain.</li> <li>Especially, in the case of the Monkey, the length of chain changes according to the length of swing arm.</li> <li>Recommended sprocket for use with S-Stage (with a driver weighing 65 kg) (Cub)</li> </ul>								
Models			Specifications			Recommended	Sprocke	ŧt.
	Rear whee	el size	Clutch	Tra	nsmission	Drive sprocket (Front)	Driv	en sprocket (Rear)
Super cub 50	17in	ch	Centrifugal	3	3-speed	16		35
Little cub	14in	ch	Centrifugal	3	3-speed	16		35
$\diamondsuit$ When the stock	<pre> sprocket</pre>	is change	d to the recommende	d drive	en sprocket,	the drive chain becomes too sla	ck or t	oo short. However, it
is impossible to take up the slack of the drive chain just by adjusting the free play. You need to either shorten the chain by cutting it with a chain cutter, or to prepare a new drive chain.								
• About F. I.	. contro	ller:						
Be sure to insta Using without a	II the F.I. dedicated c	controll ontroller	er, before starting , the air-fuel rati	g the e o wil	ngine. I be very le	an and the engine may cause ser	ious dar	nage.
Models	;		FI controller			Note		
Monkey (FI)		-I contro	ller 2 :05-04	-0029				
Super cub 50 (F)	I) (AA01)	-I contro	ller TYPE-e :05-04	-0128	Please be su	ire to use the our fuel injector		
Little cub (FI)	ttle cub (FI) (AA01) Hyper ECU :05-04-0201 (G-4):00-00-0271 with this kit.					-0271 with this kit.		

O For details, please refer to our parts catalog or website. http://www.takegawa.co.jp

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