

# SuperHead 4-Valve +R KIT Instruction manual

Product number 01-03-0001

Compatible model of cylinder head (excluding the case of combo kit installation)	Monkey/Gorilla	(Z50J-2000001 ~ ) (AB27-1000001 ~ 1899999)
	Monkey R	(AB22-1000017 ~ )
	Monkey RT	(AB22-1007601 ~ )
	CD90	(HA03-1100005 ~ )
	☆ 138cc kit cannot be installed on Monkey R/RT ☆ This product is applicable to CD90 engines with the above-mentioned frame No.	

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.

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

☆ Please read carefully before use ☆

◎ Please note: Illustrations and photos may vary from the actual hardware.

◎ We do not take any responsibility for any accident or damage whatsoever arising from the use of the products not in conformity with the instructions in the manual.

◎ This kit is designed for exclusive use with the above-mentioned applicable models of motorcycles and frame numbers, and for exclusive use with motorcycles equipped with a bore-up and bore-stroke exclusively for this kit as well. Therefore, please take note that this kit cannot be mounted on other applicable models of motorcycles, or motorcycles not equipped with bore-up, etc. exclusively for this kit.

◎ Installation of this product requires removal and reinstallation of an engine, and disassembly of a clutch. Please prepare genuine service manual for the above-mentioned applicable models, and work with enough care following instructions in the service manual.

Besides, this instruction manual, as well as service manual, is prepared for those who have acquired basic skill and knowledge in tuning.

We recommend those who are technically inexperienced or without right tools to ask a technically-trustworthy specialist shop to do the work.

◎ 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.

◎ You are kindly requested not to contact us about the combination of our products with other manufacturers' .

◎ 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.)

◎ A serial number is engraved on the cylinder head. You may be requested to inform us of the number when ordering parts.

◎ Bolts, and nuts will be reused. However, be sure to replace worn-down or severely-damaged ones with new ones.

◎ Liquid sealing should be used to the specified areas ONLY. (DO NOT apply the unspecified areas.) It might block oil passages, and engines will be broken in the worst case.

◎ Be sure to always use premium unleaded petrol. And make sure to check what kind of gasoline is remaining in the fuel tank. Whenever regular gasoline is left in the fuel tank, always replace it with high-octane gasoline.

◎ Determine the heat value of a spark plug depending on how much it is burnt. In vehicles originally with a resistor plug, use a resistor plug.

◎ Never use this kit on the point-ignition system motorcycle.

◎ Please be informed that what we can safely say is that the ignition system of this kit is compatible with ours and stock ignition systems, because no data is available with us on the compatibility with other ignition systems. Therefore, please never use other ignition systems, which may cause technical troubles.

◎ As the stock clutch cannot be used, a centrifugal filter gets unavailable. Therefore, install an oil filter outside.

◎ Please install an oil cooler when necessary.

◎ Engine oil must be API SF or higher class, such as SAE 10W-40 / 15W-50, which are our recommendations.

◎ Change the sprocket with the one which meets the output and specifications.

◎ This kit cannot be used alone if you have purchased a cylinder head kit. If you have not purchased "our special engine parts", please purchase special parts with reference to the attached "Reference data on bore- & stroke-up kit."

◎ This kit is compatible with only those engine parts recommended by us. So, please replace the engine parts not recommended by us with those of our recommendations.

◎ Since this kit is designed and developed for driving in closed races, do not use the kit for running on public roads.

◎ In case you have purchased this product as a combo kit, the above-mentioned applicable models vary depending on the type of drive sprocket.

◎ 138cc cylinder head and tires may interfere due to the longer cylinder length.

Please refer to the 「Cylinder head installation manuals」 and change the specifications if necessary.

~ feature ~

○ This is Super Head 4-valve for Monkey and Gorilla. This cylinder head has all new designs with 4 valves (two valves each on IN & EX), valve angles, and port designs. Roller bearings are incorporated at shovel portions of valve rocker arms. The increased weight with roller bearings is offset with the decreased weight of rocker arm body made with forged aluminum. With the synergy effect of these features, the higher output power has been achieved in high rpm range. Further, on Monkey or Gorilla engines, the replacements of camshafts are not easy without the disassembly of cylinder head. However, this product allows you to replace the camshaft without removing rocker arms. So, you can replace the camshaft easily. Additionally, the auto decompression of camshaft allows the engine to start easily with a light kick, and to reduce the load of kick shaft and gears.

## Jump-Starting and Sudden Acceleration

Idling, sudden acceleration, and sudden engine braking will put a heavy load on the engine, which please note may result in crank shaft damage and engine breakage in the worst case.

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

■ Since this kit is designed and developed for driving in closed races, do not use the kit for running on public roads.

■ When performing the work, etc., be sure during the cold (when the engine and the muffler is cold). (It may cause burns.)

■ When performing the work, it should be made to prepare the tools for the job. (Breakage of parts, it may cause injury.)

■ The product and the frame, might have edges or protrusions. When working, please wear work gloves to protect your hands. (It may cause injury.)

■ Always use new gasket and packing. (The worn or damaged parts may cause the engine troubles.)

**SPECIAL PARTS**  
**TAKEGAWA**

CONTACT Address : 3-5-16 Nishikiorihigashi Tondabayashi Osaka JAPAN

TEL: +81-721-25-1357 FAX: +81-721-24-5059 e-mail: english@takegawa.co.jp URL: http://www.takegawa.co.jp

Please contact with your name and country name provided. (Only English please)

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

- Those who are technically unskilled or inexperienced are required not to do the work.  
(Improper installation because of insufficient skill and knowledge could lead to parts breakage and subsequently to accidents.)
- Before working, place the motorcycle on the level ground to stabilize its position for safety to avoid the motorcycle overturning.
- Always start the engine in a well-ventilated place, and do not turn the engine on in an airtight place.  
(Otherwise, you will suffer from carbon monoxide poisoning.)
- As gasoline is highly flammable, never place it close to fire. Make sure that nothing flammable is near the gasoline. (It may cause a fire.)
- 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.)
- Never use the parts unspecified by us. (This may lead to parts breakage and consequent accidents.)
- 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 accidents.)
- When you notice something abnormal with your motorcycle, stop riding immediately and park your motorcycle in a safe place to avoid an accident.
- 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.)
- Check or perform maintenance of parts correctly according to the procedures in the instruction manual or a service manual.  
(Improper checking or maintenance could lead to an accident.)
- Always use high-octane gasoline. (Otherwise, troubles such as engine knocking may cause accidents.)

- ◎ 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.

### ● Cautions before riding:

- ① About fuel:  
Whenever regular gasoline is remaining in the fuel tank, always replace it with high-octane gasoline.
- ② Install the dry clutch with an external oil filter or our Special clutch.
- ③ About change of a sprocket:  
◇ The installation of this kit will increase the power of your vehicle.  
So the use of a stock sprocket will result in severe wears of parts because of too low gear, not only adversely affecting the engine life, but also breaking the engine in the worst case.  
Therefore, please change the sprockets with the high-geared one.

**This kit cannot function on its own. Referring to the attached sheet, please purchase a bore-up or borestroke-up kit for exclusive use with this kit. This does not apply if you have purchased a full kit.)**

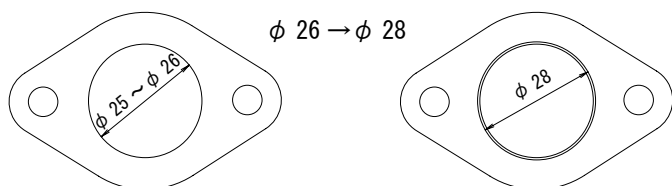
### ● Others:

#### Oil cooler:

- ◇ The installation of this kit increases the heat release value of the engine, set off by the increase in power. For a long-time and high load running, we recommend you to install an oil cooler kit which keeps oil at appropriate temperatures and prevents such troubles as oil film shortage at high temperatures.

#### Carburetor manifold:

- ◇ When using an inlet pipe for Super Head +R, R-Stage (Port diameter:  $\phi 25 \sim \phi 26$ ), there will be a step due to the different diameters of cylinder head and inlet pipe. By enlarging the port diameter of inlet pipe, you get the output power more smoothly.



- ◇ We recommend using our Carburetor Kit for Super Head 4-valve. Refer to the "Parts of our recommendations" on P-A3 regarding to Item No. of carburetor kits.

- Inlet pipe for Super Head 4-valve  
VM26: 03-02-2565  
PE28 : 03-02-2566

### ● For use engine oil

- ◇ Engine oil, please use the recommended engine oil.  
Recommended: Select a viscosity at ambient temperature and use applications based on the Honda genuine Ultra G2 or S9 (for 4-cycle motorcycles) SAE10W-30.  
If you use equivalent, should meet these conditions.
  - API classification SF, SG or, SG class or higher or equivalent
  - JASO standard: MA, MB
  - SAE standard: Please use viscosity oil in accordance with outside air temperature.  
See table of oil suction procedure page.

Note) engine oil, please use the recommended engine oil. Depending on the type of engine oil, there is what is included additives, etc., when used with such engine oil, in the worst case not only adversely affect engine, possibility of engine failure in parts broken.

### ● About camshaft:

- ◇ If you have purchased a cylinder head kit, a special camshaft is needed separately. Camshafts with a few kinds of profiles are available from us to meet different uses and engine displacement. Even if you have purchased a full kit, you can study to use them as an optional extra in addition to camshafts included in the full kit. For more information, please refer to enclosed paper.

- An inspection cap and a breather cap are included in this kit. In case you use a breather cap, please use an oil catch tank at the same time.

### ● Revolution

- ◇ Upper limit of revolutions varies depending on the installed cam shafts, etc. Referring to the camshaft comparison graph on page A4, install a revolution counter to make sure that you drive the engine at revolutions below the upper limit.

- ◇ Take note that idling and sudden acceleration in the 1st and the 2nd gears particularly tend to exceed the upper limit of revolutions. Over revolutions will result in non-smooth revolutions of the engine, not only adversely affecting the engine life, but also breaking the engine in the worst case.

- A serial number is punched on the cylinder head just for the sake of administration. You may be requested to inform us of the number when ordering repair parts.

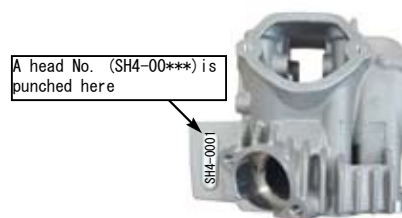
In case you are not able to order parts because you do not have the repair parts numbers or for other reasons, please place an order in the following way.

- ☆ Copy the stamped serial No. on the side of cylinder head.

A head No. (SH4-00\*\*\*) is punched here.

Head No. - SH4-00001

Example of how to order → Super head kit, repair  
head No.-SH4-00001 → Intake valve  
Qty: 1 piece



- For those who purchase our cylinder head only, we have choices that you can combine parts as your specs of displacements etc. Please refer to the attached "Bore & Stroke up Kits reference sheet" and find your kit. Please contact your dealer for more details about the kit or enquiries.

● Engine parts of our recommendations:

※ This kit is only compatible with those engine parts recommended by us. So, please replace the parts not of our recommendations with those of our recommendations.

Parts of our recommendations			
Clutch	Special clutch kit/Special clutch kit TYPE-R		
	Dry-type clutch kit TYPE-R		
Ignition system	Stock C. D. I.	MONKEY/Gorilla, MONKEY R/RT CD90	
	Hyper C. D. I.		
	Super street outer rotor	MONKEY Gorilla	
	C. D. I. Magnet (Inner rotor for racing)	MONKEY/Gorilla, MONKEY R/RT	
Carburetor	MONKEY 88cc 106cc 124cc 138cc	Mikuni VM26 carburetor	03-05-0031
		Keihin PE28 carburetor	03-05-0032
	MONKEY R/RT 88cc 106cc 124cc	Mikuni VM26 carburetor	03-05-0031
	Oil pump	Super oil pump kit	88cc ~ 138cc
Billet oil pump kit			
Cam chain (Only in case of a cylinder head kit)	High-duty cam chain kit (Dai hard $\alpha$ cam chain)	88cc/106cc	82L
		124cc	84L
		138cc	86L
Oil catch tank (Only for the Monkey/Gorilla) (Only in case a head breather cap is used.)	Oil catch return tank kit	Various products made by Takegawa	
	Oil catch tank kit		

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

● About optional camshafts

○ The following camshafts compatible with this Kit are available from us. Referring to the below-mentioned output graphics, please select a camshaft to match your usage and engine displacement for your great riding pleasure.

with auto de-comp		
10/15D camshaft	01-08-0141	Packed together with 88 / 106cc kit
15/20D camshaft	01-08-0142	Packed together with 124cc kit
20/25D camshaft	01-08-0143	Packed together with 138cc kit
25/30D camshaft	01-08-0144	option

○ About Camshafts Number

The bigger the numbers of XX/YY are, the wider the durations are. With these camshafts, the output power will produce more to high rpm range. While, the smaller the numbers are, the narrower the durations are.

With these camshafts, the output power will produce more to low-to-mid rpm range. We supply the suitable camshaft depending on the displacements.

When choosing the optional camshafts, please choose the camshaft referring to the camshaft data chart to suit your riding purpose.

Also, the engine output will vary significantly depending on the using exhaust system, length of inlet pipe, carburetor diameter, compression ratio, ignition system, ignition timing, fuel or natural phenomenons such as ambient temperature or atmospheric pressure.

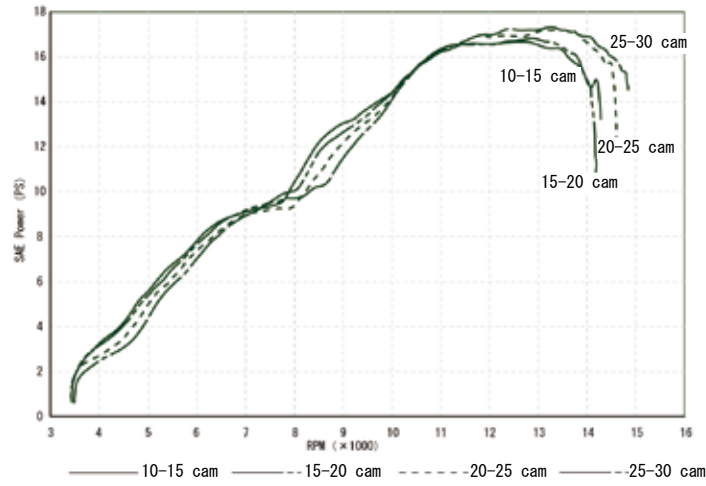
※ Never use 25/30D (01-08-0144/01-08-0148) camshaft for 88cc kit.

☆ Camshaft comparison data list

Note: As these are the data measured on a Dyno Jet, the data differ from the actual driving. Please refer to them just for a reference.  
The engine power varies significantly depending on the temperatures.

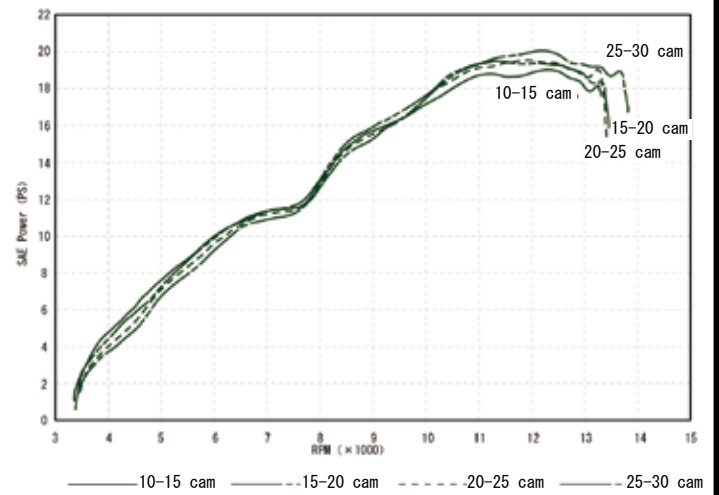
● 106cc

(Super street outer rotor + Racing Muffler + PE28)



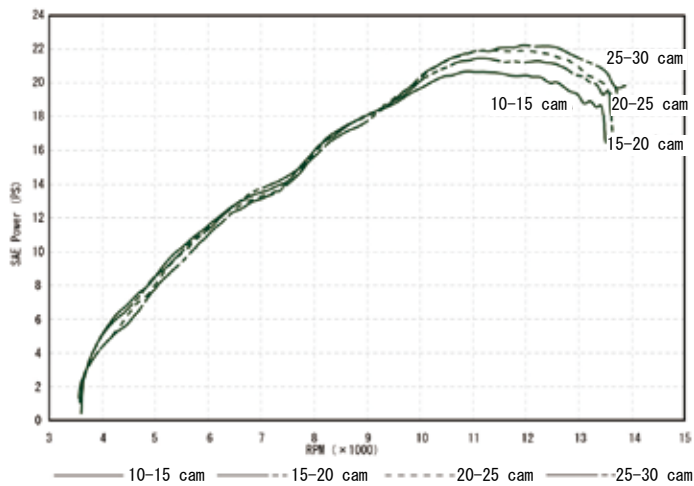
● 124cc

(Super street outer rotor + Racing Muffler + PE28)

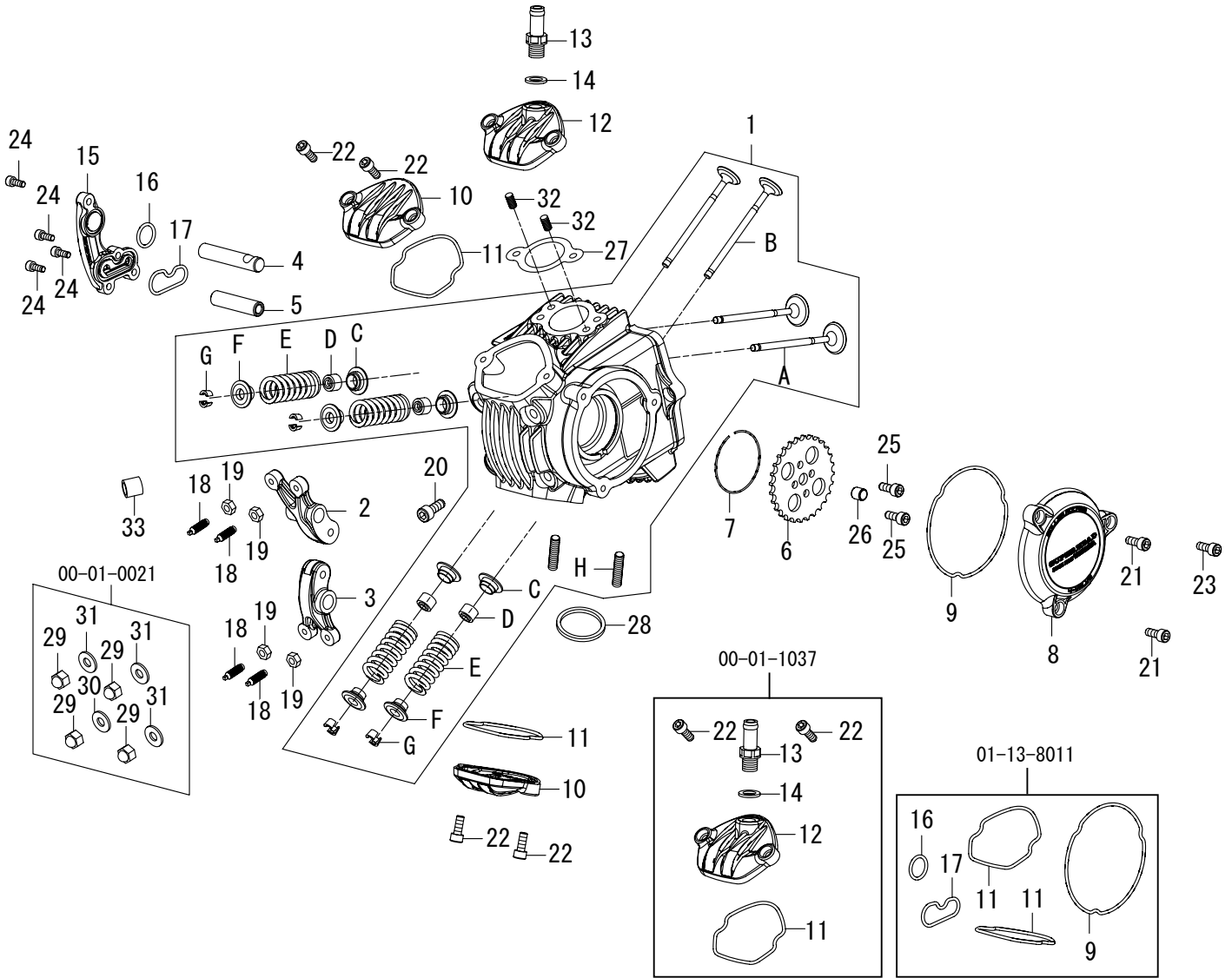


● 138cc

(Super street outer rotor + Racing Muffler + PE28)



Product content



Number	Product content	Quantity	Item Number
1	Cylinder head COMP.	1	00-00-1048
2	Intake valve rocker arm COMP.	1	00-01-0371
3	Exhaust valve rocker arm COMP.	1	00-01-0372
4	Rocker arm shaft	1	00-00-1327
5	Rocker arm shaft	1	00-00-1322
6	Cam sprocket, 28T	1	00-01-0099
7	Cam shaft circlip	1	00-01-0081 (3 pcs)
8	Left side-cylinder head side-cover	1	00-00-1073
9	Left side-cylinder head side-cover O-ring	1	00-01-0144 (5 pcs)
10	Inspection cap	2	00-01-0141 (with ① O-ring)
11	Inspection cap O-ring	2	00-01-0165 (5 pcs)
12	Inspection breather cap	1	_____
13	Straight outlet, M10	1	00-07-0123 (with ④ washer)
14	Aluminum sealing washer, 10mm	1	00-07-0106 (10 pcs)
15	Right side-cylinder head side-cover	1	00-01-0425
16	O-ring, 15 mm	1	00-00-0185 (5 pcs)
17	Right side-cylinder head side-cover O-ring	1	00-01-0143 (5 pcs)
18	Tappet adjusting screw	4	00-01-0132
19	Tappet adjusting nut	4	

Number	Product content	Quantity	Item Number
20	Socket cap screw, 6x18 (SUS)	1	00-00-0156 (4 pcs)
21	Socket cap screw, 5x15 (SUS)	2	00-00-0041 (4 pcs)
22	Socket cap screw, 5x12 (SUS)	4	00-00-0160 (4 pcs)
23	Socket cap screw, 5x10 (SUS)	1	00-00-0288 (3 pcs)
24	Socket cap screw, 4x12 (SUS)	4	00-00-0243 (6 pcs)
25	Socket cap screw, 5x12	2	00-00-0066 (4 pcs)
26	Dowel pin, 8x12	1	00-00-0153 (2 pcs)
27	Inlet pipe gasket	1	00-03-0007 (2 pcs)
28	Exhaust pipe gasket	1	00-01-0064 (2 pcs)
29	Hexagon cap nut, M6	4	_____
30	Copper sealing washer, 6mm	1	00-01-0029 (4 pcs)
31	Sealing washer, 6mm	3	00-00-0344 (10 pcs)
32	Socket set screw, 6x15	2	00-00-0162 (2 pcs)
33	Silicon tubing, 8x13	1	00-01-1044 (3 pcs)
	Anti-seize agent (5g)	1	08-02-0042
Tool	Hex wrench, 3mm	1	_____
Tool	Hex wrench, 4mm	1	_____
Tool	Hex wrench, 5mm	1	_____

Number	Product content	Quantity	Item Number
A	Intake valve	2	00-01-0417
B	Exhaust valve	2	00-01-1078
C	Valve spring seat	4	00-00-1376
D	Valve stem seal	4	00-01-1038 (4 pcs)

Number	Product content	Quantity	Item Number
E	Valve spring	4	00-00-1363
F	Valve spring retainer	4	00-00-1368
G	Valve cotter	8	00-01-1039 (4 pcs)
H	Stud bolt, 6x32	2	00-01-0073 (2 pcs)

※ 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.





- Apply engine oil to rocker arms and adjusting bolts (included in the kit), and attach them.  
(Be careful that the end of the adjusting bolt does NOT protrude from the rocker arm.)



- Install the rocker arms on Super Head. Apply molybdenum oil to rocker arm shafts (included in the kit). Install the shorter shaft on the EX side, and the longer shaft on the IN side. A cutout side of the shaft should be installed facing to the cam chain.



- Fix 8x14 dowel pins of the kit into the dowel pin holes on the cylinder.

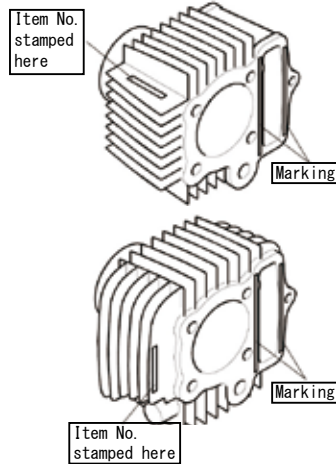


- Thoroughly degrease the upper surface of the cylinder.
- For V, H, S (SCUT) cylinder: use 0.25mm head gasket.

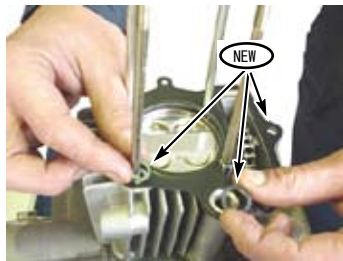


∴ Please use appropriate gasket.

**Caution:** These cylinders have a marking on the cylinder head surface or its Item No. is stamped on the fin side.



- No parts number stamped on your cylinder, (or cylinder uses green O-ring) please use 1.0mm(3 pcs metal) head gasket with green O-ring and black rubber gasket.



∴ Please use appropriate gasket.

- Set the piston at the top dead center position, and install the cylinder head.

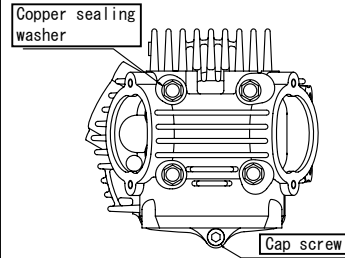


- Fix the cam chain so it will not fall into the crankcase.



∴ Please use appropriate gasket.

- After applying anti-seize agent a little to the threaded part of the cylinder head stud bolts, fix a copper washer of the kit to the lower-left part (oil line) and washers of the kit to other parts. Then fix four cap nuts of the kit and 6x18 cap screws as indicated in the figure below, and loosely tighten them.



- Tighten nuts on the stud bolt diagonally to the specified torque in a few steps.

⚠ Note: Be sure that you protect specified torque.

Nut  
Torque : 12N · m (1.2kgf · m)



- Tighten the side bolt on the cylinder side and the cap screws on the cylinder head side to the specified torque.

⚠ Note: Be sure that you protect specified torque.

Cap screw  
Torque : 10N · m (1.0kgf · m)

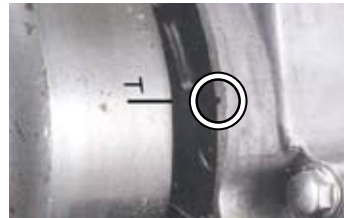


- Tighten a cam chain guide roller pin of the cylinder to the specified torque.

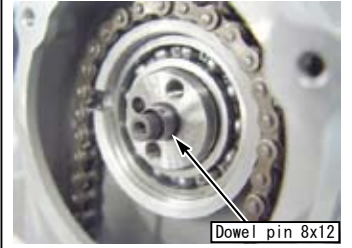
⚠ Note: Be sure that you protect specified torque.

Cam chain guide roller pin  
Torque : 10N · m (1.0kgf · m)

- Align a "T" mark on the flywheel with an alignment mark on the crankcase. Then set the piston at TDC (Top Dead Center).



- Apply engine oil to a bearing on the camshaft COMP., which please fit to a cylinder head. And put a provided 8x12 dowel pin into the center hole in the camshaft.



- Fix a cam shaft circlip of the kit, and fix the cam shaft. At this stage, set the location of ring end gap of the circlip not to meet the notch on the cylinder head cam hole.



- Check that the circlip is right in the circlip groove.

⚠ Warning : Do the checking without fail.



- Remove the side bolt on the cam chain tensioner.

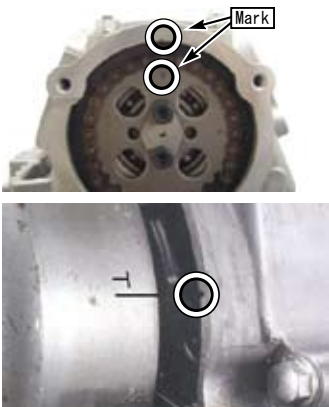


○ Attach the camchain to the cam sprocket. And place the "0" mark align with index notch on the head and install it with two black 5x12 cap screws.

Then, align the "T" mark on the flywheel with the alignment mark on the crankcase, aligning the "0" mark on the cam sprocket with the alignment mark on the cylinder head.

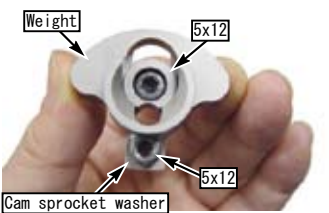
▲ Note: Be sure that you protect specified torque.

Cap screw  
Torque : 10N · m (1.0kgf · m)



○ In case you install an automatic decompression cam shaft:

○ Set a cam sprocket washer through a weight, and set two black 5x12 cap screws into upper and lower holes.



○ Attach the camchain to the cam sprocket. And place the weight to face the "0" mark and install it with two black 5x12 cap screws.

Then, align the "T" mark on the flywheel with the alignment mark on the crankcase, aligning the "0" mark on the cam sprocket with the alignment mark on the cylinder head.



○ Holding the crank, tighten the cap screws, which are attached to fix the cam sprocket, to the specified torque.

▲ Note: Be sure that you protect specified torque.

Cap screw  
Torque : 10N · m (1.0kgf · m)



○ Check that the "T" mark on the flywheel is still aligned with the "0" mark on the cam sprocket.

○ Pass a 6mm snap ring and a plate into a thumb screw supplied in the Camshaft Kit, attach it to the shaft tip of the camshaft comp. and pull the shaft toward you.



○ Attach a snap ring in the shaft groove.

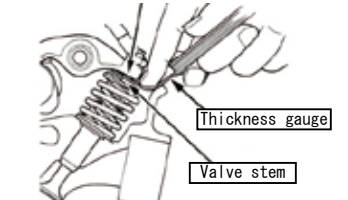
▲ Note :Do not expan't the snap ring more than necessary.

▲ Warning:Always use a new snap ring at any time, and do not reuse it.



○ Adjust the valve clearance with an adjust screw.

IN : 0.05 ~ 0.08 (when cold)  
OUT : 0.05 ~ 0.08 (when cold)



○ In case you install an automatic decompression cam shaft:

○ Adjust the valve clearance on the EX side with the shaft of the camshaft being pulled toward you so that the decompression function can be deactivated.



○ Tighten the adjusting nut to the specified torque.

▲ Note: Be sure that you protect specified torque.

Adjusting nut  
Torque : 10N · m (1.0kgf · m)



○ Unfasten the thumb screw.



○ Check that the "T" mark on the flywheel is aligning with an alignment mark on the crankcase.

※ When replacing camshaft COMP., loose the valve adjusting bolt till the end of the adjusting bolt does not protrude from the rocker arm.



○ Apply engine oil a little to two kinds of O-rings for the right side cover, and fix them to the right side cover. Then tighten them with 4x12 cap screws of the kit to the specified torque.

▲ Note: Be sure that you protect specified torque.

Cap screw  
Torque : 4N · m (0.4kgf · m)



○ Apply engine oil a little to a left-side-cover O-ring of the kit, and fix it to the left side cover. Then fix them to the cylinder head with two 5x15 cap screws and with a 5x10 cap screw of the kit and tighten them to the specified torque. (Be careful of the location of screws.)

▲ Note:Screws must be used at the specified positions only.

▲ Note:Be sure that you protect specified torque.

Cap screw  
Torque : 6N · m (0.6kgf · m)





○ After applying engine oil a little to an O-ring on the inspection cap of the kit, attach the O-ring to the inspection cap, and fix the inspection cap with 5x12 cap screw of the kit, and tighten up the screw to the specified torque.



● In case a breather cap is used:

○ Apply engine oil to an O-ring of the inspection cap (included in the kit), and attach it on breather cap. Then, install the breather cap on the IN side by using the supplied cap screw of 5 x 12. Tighten it to the specified torque.

⚠ Note: Be sure that you protect specified torque.

Cap screw  
Torque : 6N · m (0.6kgf · m)

○ Attach the supplied aluminum sealing washer (10 mm) and the straight outlet (M10) on the breather cap. Tighten them to the specified torque.

⚠ Note: Be sure that you protect specified torque.

Washer/Straight outlet  
Torque : 10N · m (1.0kgf · m)



○ Pour engine oil from the side bolt hole in the cam chain tensioner, and tighten the side bolt.

⚠ Note: Be sure that you protect specified torque.

Side bolt  
Torque : 12N · m (1.2kgf · m)



○ With reference to the service manual, mount the engine on the frame.

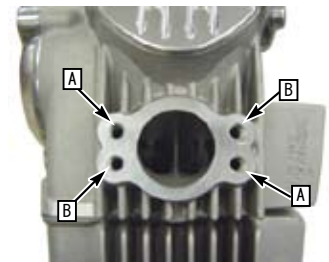
⚠ Note: Be sure to follow the instructions in the manual.

○ Install the supplied socket screws on the two taps that will not be needed when installing a manifold on the intake port of cylinder head. Tighten them to the specified torque.

⚠ Note: Be sure that you protect specified torque.

Socket set screw  
Torque : 5N · m (0.5kgf · m)

○ For mostly Monkey and Gorilla, the "B" portions will not be used. For Monkey R, the "A" portions will not be used.



○ Following the instruction manual for the relative carburetor, install the carburetor.

○ Install the drive sprocket.

⚠ Note: Be sure that you protect specified torque.

Drive sprocket  
Torque : 12N · m (1.2kgf · m)



○ Install the generator cover.

⚠ Note: Be sure that you protect specified torque.

Generator cover  
Torque : 10N · m (1.0kgf · m)



○ Add engine oil in amount specified by the clutch kit you use.

○ With reference to the service manual, attach the drive chain.

☆ In the case of a three-point support crank shaft (3B) kit, fix a generator cover according to crank-kit installation instructions.

○ In case you use a breather cap, fix a breather hose according to oil-catch-tank installation instructions.

∴ In case you use a breather cap, fix a breather hose according to oil-catch-tank installation instructions.

• Item No. for a blade hose set (1m, with clips): 00-07-0070

### ☆ Engine Starting ☆

○ Check that the ignition key and the fuel cock are turned OFF.

○ Continue kicking the starter for a while to circulate the engine oil all around the engine.

○ Install a spark plug. Apply anti-seize agent a little to the threaded part of the plug, and fix it.

⚠ Note: Be sure that you protect specified torque.

Spark plug  
Torque : 8 ~ 10N · m  
(0.8 ~ 1.0kgf · m)



Designated plug  
NGK : ER8EH  
Thermal value  
DENSO : Y24FER  
Thermal value

⚠ Note: Select a spark plug of the correct heat range designed for the load and condition.  
∴ Be sure to use an appropriate spark plug for this Super Head.

○ Remove the plug cap rubber from the top of the plug cap, and insert the supplied silicon tube into the plug cap.



○ Attach the plug cap to the spark plug.

○ Wipe off the dirt and dust on the engine.

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

● In the case of 138cc only Cylinder kit shipped with aluminum sealing washer and tighten specified torque sets the oil plug bolt.

⚠ Note: Be sure that you protect specified torque.

Oil plug bolt  
Torque : 14N · m (1.4kgf · m)



○ Turn ON the fuel cock and ignition key, and start the engine.

⚠ Warning : Work only in a well-ventilated place.

※ When starting the engine, keep the stroke of the kickstarter arm wide enough. Usually, the stroke amount of the kickstarter arm becomes short especially when a dry-type clutch is installed onto the engine, which makes it hard to start the engine. Adjust the angle at which to install the kickstarter arm, and start the engine, taking sufficient stroke amount.



○ Check for any abnormality such as an abnormal sound.  
○ If nothing abnormal is detected, carry out a shakedown for about 30 to 50 km, and check the valve clearance again.

⚠ Note: Work only when the engine and the muffler are cool.

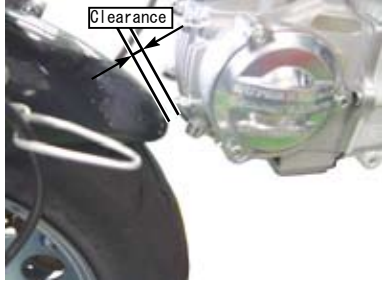
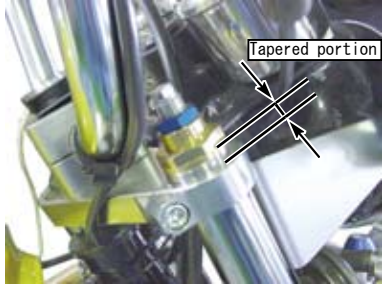
○ Carry out a shakedown again for about 100 to 150 km.  
○ After the shakedown, double-check for any abnormality such as an abnormal sound and blow-by gas. (If any abnormality is detected, disassemble the engine again and check each section.)

⚠ Warning: Never re-use parts which cannot be re-used.

◎ For 138cc relation between front fork and tire

○ Clamp the top bridge at the highest point of the straight portion to avoid the tapered portion of front fork.

※ Before installing, make sure that no interference occurs when the front fork is fully bottomed.



○ Before installing, make sure that no interference occurs when the front fork is fully bottomed.  
○ If the interference occurs, use the low profile tire in order not to interfere.

Relationship front forks and use tire 138cc							
		Size					
Front fork type		3.50-8	3.50-10	3.00-10	80/90-10	90/90-10	100/90-10
STD (standard)							
φ 27 type 1	40mm OFF SET	○	×	○	○	○	○
φ 27 two-piece	40mm OFF SET	○	×	○	○	○	×
φ 27 type 1	60mm OFF SET	○	○	○	○	○	○
φ 27 two-piece	60mm OFF SET	○	○	○	○	○	○
φ 30	42mm OFF SET		○	○	○	○	○
φ 30	60mm OFF SET		○	○	○	○	○

☆ The table above, case an 8-inch tires, is premised on front fork kit used for 8 inches.  
☆ All will be table at our front fork kit. In the case of diverted goods from other manufacturers and other vehicles, it does not apply this table. Please check user side.  
☆ "OFF SET" shows the fork offset of our front fork kit.  
☆ The table above, are displayed only the tire interference. If the offset is front forks kit use of 40mm, mounting position and shape of front fender, it is considered interference due to individual differences. If it interferes, you can either cut the front fender, please use top bridge and steering stem of 60mm off set.

◎ You can see this instruction manual on our website as PDF data .  
If this document hard to read, please download it from our website.



# INSPECTION / SERVICE LIMITS

**⚠ WARNING :** Since this INSPECTION / SERVICE LIMITS is prepared for those who have acquired basic skills and knowledge in tuning, those who are technically unskilled or inexperienced are required not to do the work.

- After the disassembly of the hardware and a cylinder head, clean them before the inspection and measuring. And then, blow them with compressed air, and dry them well.
- Engine oil for lubricating the camshaft will be supplied through the oil passage in the cylinder head. Clean the oil passage before assembling the cylinder head.
- After the disassembly of hardware, put a mark on the hardware so they can be reinstalled correctly to their original position.

## Reference Value List for Cylinder Head Maintenance

Items	Service Limit	Remarks
Cylinder head distortion	0.05mm	More replace
Inside diameter of valve rocker arm	10.05mm	More replace
Outside diameter of rocker arm shaft (intake / exhaust)	9.95mm	Below replace
Clearance between a rocker arm and a shaft	0.10mm	More replace
Inside diameter of valve guide (intake / exhaust)	4.04mm	More repair or replace the head
Outside diameter of valve stem (intake)	3.963mm	Below replace
(exhaust)	3.950mm	Below replace
Clearance between a valve stem and a guide (intake)	0.077mm	More replace
(exhaust)	0.09mm	More replace
Valve seat contact width (Intake)	1.5mm	More repair or replace the head
(exhaust)	1.7mm	More repair or replace the head
Free length of valve spring	34.5mm	Below replace

○ Special tool : Valve spring compressor set of Item No.08-02-0038

○ Torque unit

1 kgf · m = 9.80665 N · m (=newton meter)

○ This mark shows molybdenum solution. **(MO-OIL)**

This solution is a mixture of molybdenum grease and engine oil (in the ratio of 1:1).

∴ Apply molybdenum solution or assembly paste to the portions where it is indicated that molybdenum solution needs to be applied.

○ This mark shows those parts to be replaced with every overhaul. **(NEW)**

Do not fail to replace these parts every time they are overhauled.

○ Anti-seize agent (heat-resistant lubricating agent)

• Anti-seize agent = heat-resistant lubricating paste and grease which prevent galling from high temperatures and heavy loading, and adhesion. (Purpose: good for those parts which get hot like a spark plug and exhaust manifold.)

☆ Never apply this to any parts other than the specified parts.

### ● Splitting of Valve

• Compress the valve spring, using a valve spring compressor.

**⚠ Note :** Never compress it more than necessary.

∴ Special tool: Valve spring compressor set of item No. 08-02-0038



• Removal of Valve Cotter

Use a magnet to remove the cotter if it does not come off easily.

• Remove first the valve spring compressor, and then the following parts:

- Valve spring retainer
- Valve spring
- Valve



Check each valve for bending, baking, and damages.

• Measure the exterior diameter of the valve stem at the sliding surface of the guide with a micrometer.

Service Limit IN:3.963mm EX:3.950mm

Replace the bent, baked or damaged valves with new ones.



Inspection of the Valve Guide.

• Measure the inner diameter of the valve guide.

Service Limit IN/EX:4.04mm

• Replace the valve guide or cylinder head if the valve guide is scratched or damaged.



Outer diameter of the valve stem subtracted from the inner diameter of valve guide is a guide clearance.

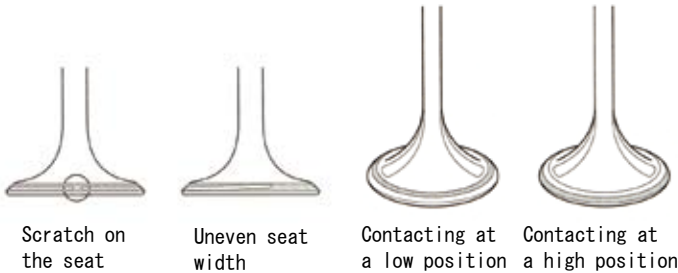
Service Limit IN:0.077mm EX:0.09mm

### Inspection of Valve Seat

- Remove carbon sediment in the cylinder head combustion chamber and valve.
- Dissolve red lead primer with oil or the like, and apply it to the valve face evenly.



- Strike the valve once and lightly with a valve punner, and rotate it.
- Wipe off the red lead primer on the valve faces, and strike the valves once and lightly with the valve punner without rotating them, and check the contact surfaces for damages or scratches.



Service Limit: IN:1.5mm more repair or replace the cylinder head  
EX:1.7mm more repair or replace the cylinder head

- If there is a scratch on the valve seat, modify the seat.
- If the contact width is wide, narrow, in a high or low position, modify the seat.
- Ask a specialist shop in internal combustion or TAKEGAWA for the modification work.

### Inspection of Rocker Arm:

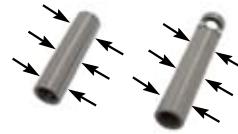
- Check the rocker arms for scratches, damages and jamming. And check if the bearing rotates smoothly.
- Measure the internal diameter of the rocker arms.
- Unfasten an adjust bolt, and check it for scratches. If it is scratched, change it with a new one.



Service limit  
:If the inner diameter is bigger than 10.05 mm, replace the rocker arm.

### Inspection of Rocker Arm Shaft

- Check the rocker arm shaft for bending, scratches, and damages.
- Measure the external diameter of the rocker arm shaft.  
∴ Service limit : If the external diameter is smaller than 9.95 mm, replace it.



Outer diameter of the rocker arm shaft subtracted from the inner diameter of rocker arm is a clearance.

- ∴ Service limit : If the clearance is bigger than 0.1 mm, replace the rocker arm shaft.

### Inspection of Valve Spring Retainer

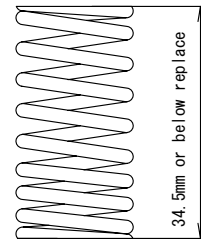
- Check the valve spring retainer, spring and cotter contact surface.
- Replace it When coating peels off or damaged.

Check the spring contact surface and cotter contact surface



### Inspection of Valve Spring

- Check the valve springs for scratches and damages.
- Measure the free length of the valve springs.  
∴ 34.5mm or below replace



### Inspection of Camshaft

- Check the camshaft for scratches, cracks, and damages.
- Measure the height of each cam top.



Kinds of Camshafts	IN	EX	
10/15D Camshafts	Below 27.8	Below 27.8	Replace
15/20D Camshafts	Below 27.8	Below 27.8	Replace
20/25D Camshafts	Below 27.8	Below 27.8	Replace
25/30D Camshafts	Below 27.8	Below 27.8	Replace

- A kind of the camshaft is stamped on the cam top. When you have forgotten the kind of the camshaft, see the stamped figures.



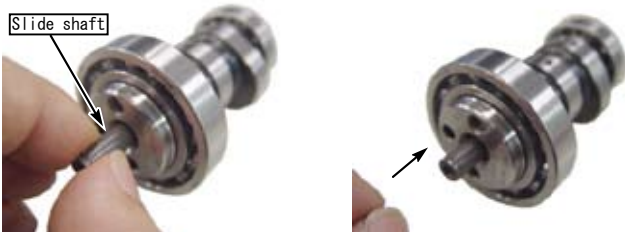


### Inspection of the Camshaft Bearing

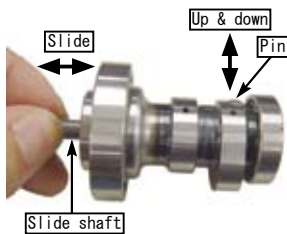
- Rotate the outer race of the bearings with fingers.  
If the outer race does not rotate smoothly or if it is rickety, replace either the ball bearing or cam shaft.



- In the case of automatic decompression camshaft:  
Pull the slide shaft of the camshaft center.  
And compress the spring in the shaft, and release the shaft.  
Then, check if the slide shaft slides smoothly and slides back to its original position.  
If the slide shaft does not slide smoothly or the tension is not on the spring of the slide shaft, change the camshaft.



- Slide the slide shaft, and check if the decompression pin moves up and down on the EX side cam.  
If the pin does not move up and down when you slide the shaft, or the shaft does not slide because it has become stuck, then change the camshaft.



### Inspection of Cylinder Head

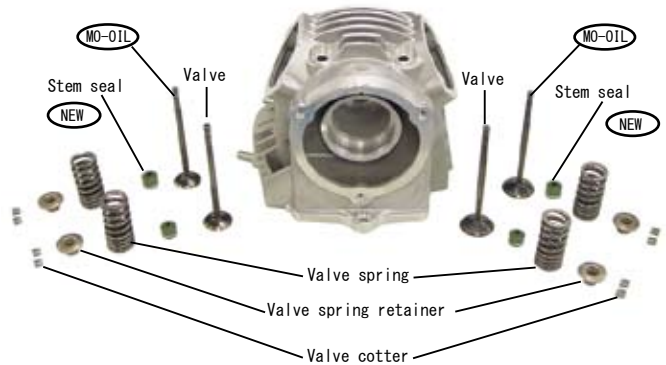
- Check the spark plug hole and valve hole for the cracks in the vicinity.  
Check the cylinder head for distortion with a straight edge and thickness gauge.



Service limit: If the distortion is over 0.05 mm, rectify or replace the cylinder head.

### ● Valve Assembly:

- Install valve spring seats and new valve stem seals.
- Apply molybdenum solution to the sliding surfaces of the valve stems, and fit the valves into the valve guides, rotating valves slowly with care not to damage the stem seals.



- To the head, attach the valve spring, with a narrowly-pitch side pointing to the combustion chamber.

⚠ Note: Be sure to place the narrower-pitch portion of the valve spring to face the combustion chamber side.



- Compress the valve spring with a valve spring compressor.  
And apply a thin coat of grease to valve cotters, and install them.

⚠ Note: Do not compress the valve spring more than necessary.



- Strike lightly the end of valve stems a few times so the valves and cotters fit together well.

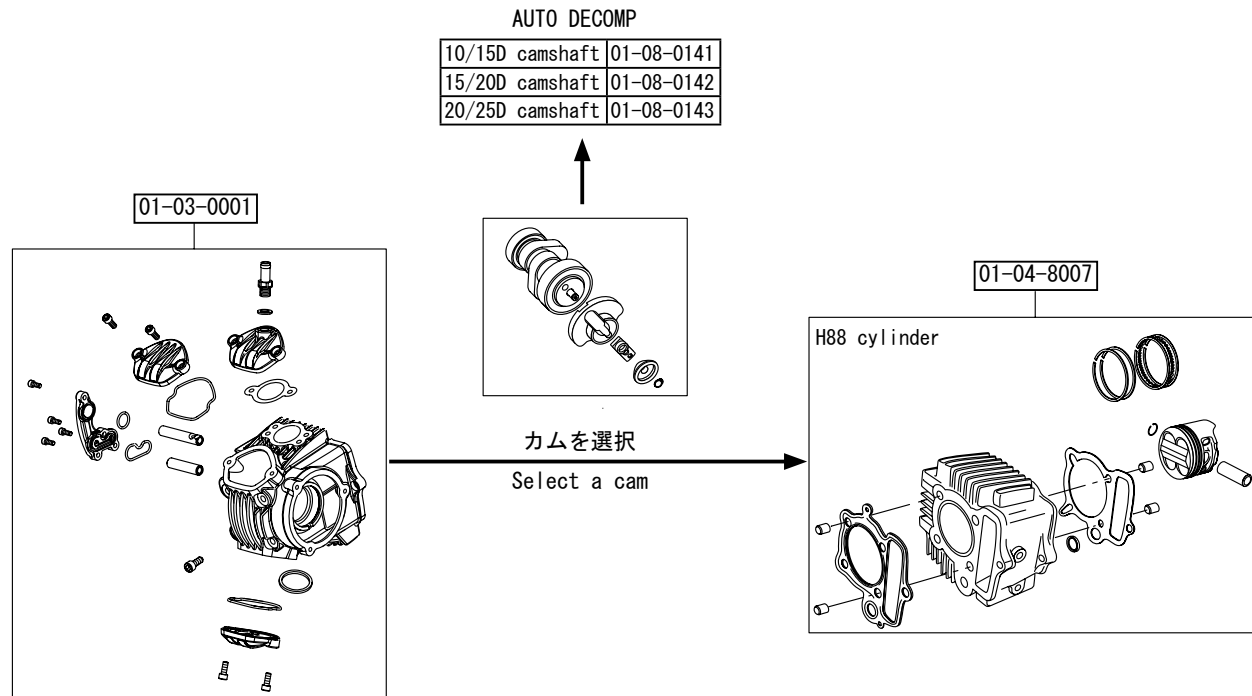
⚠ Note: Never compress it more than necessary.







SuperHead 4-Valve +R ボアアップ参照表 (88cc)  
Reference data on bore- up kit (88cc)



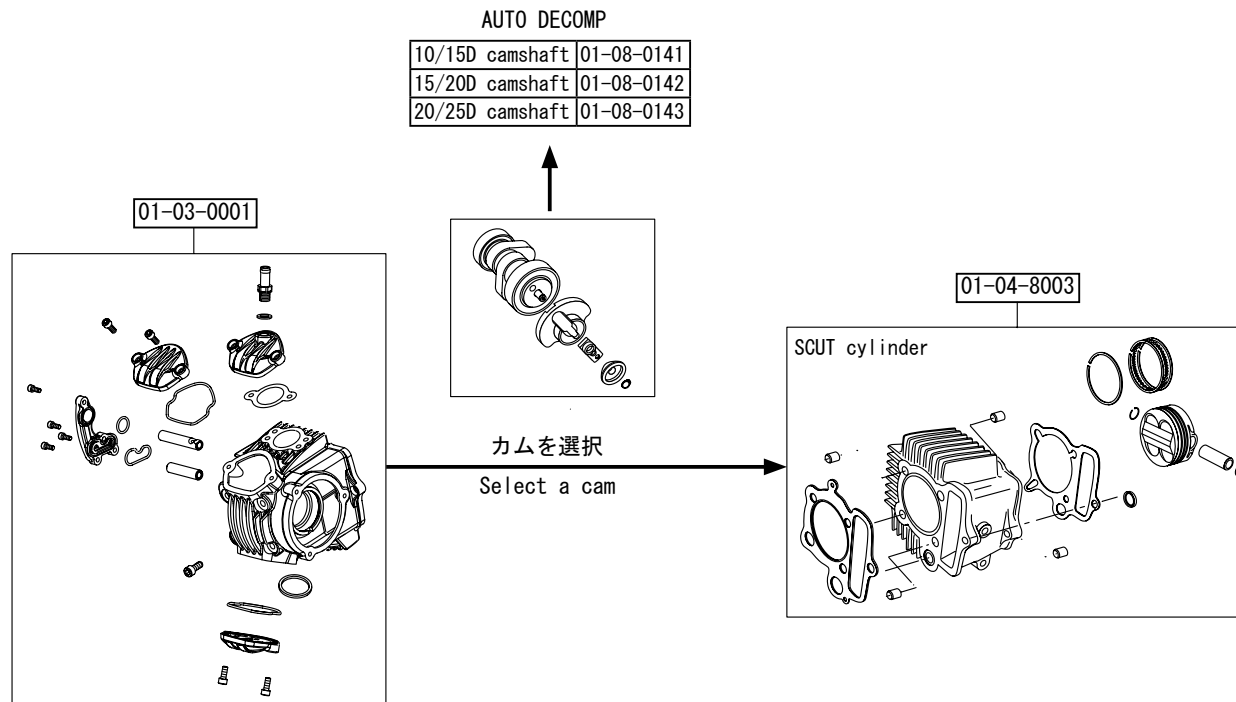
☆ 01-03-0001 シリンダーヘッドキットのみで購入された場合、この参照表にて専用パーツを検討して下さい。(CD90 除く)

※ 88cc キットの場合、25/30 カムシャフト (01-08-0144) はピストンとバルブが干渉する可能性がある為使用出来ませんのでご注意下さい。

☆ If you have purchased a cylinder head kit only (Item No. 01-03-0001), please study to install these special parts referring to this reference data. (except CD90)

※ Never use 25/30D (01-08-0144) camshaft for 88cc kit.

SuperHead 4-Valve +R ボアアップ参照表 (106cc)  
 Reference data on bore- up kit (106cc)

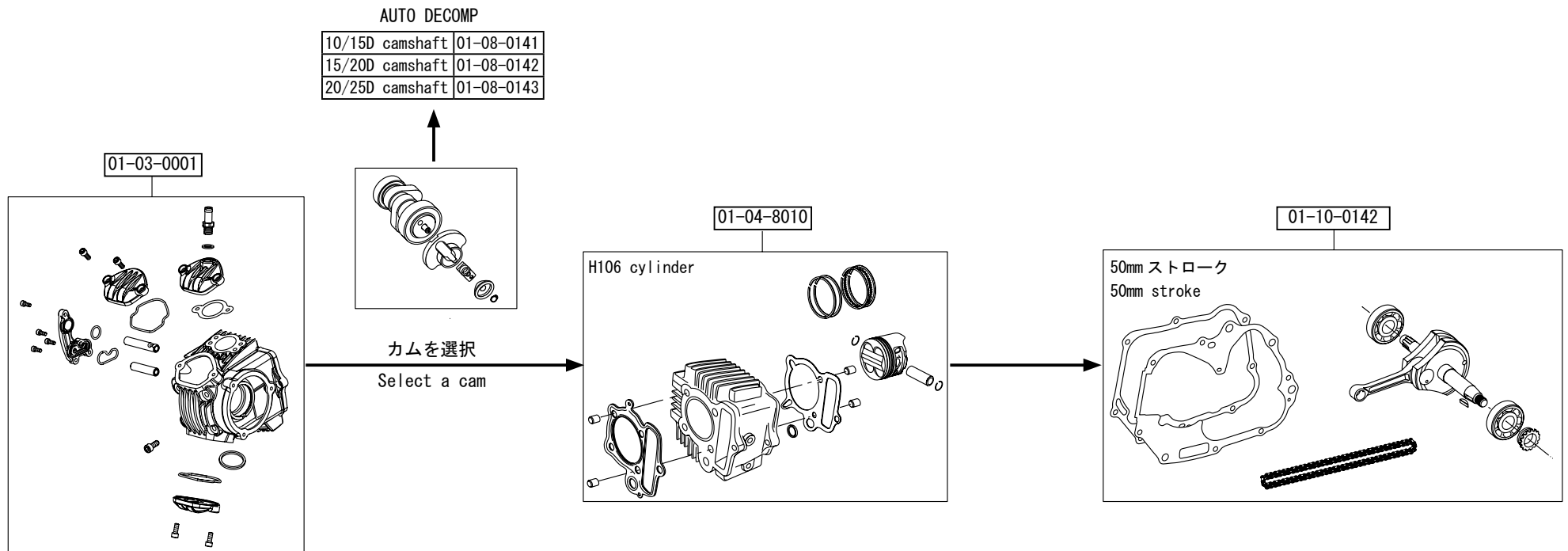


☆ 01-03-0001 シリンダーヘッドキットのみで購入された場合、この参照表にて専用パーツを検討して下さい。(CD90 除く)

☆ If you have purchased a cylinder head kit only (Item No. 01-03-0001), please study to install these special parts referring to this reference data. (except CD90)

# SuperHead 4-Valve +R

## ボア & ストロークアップ参照表 (106cc) Reference data on bore- & stroke-up kit (106cc)

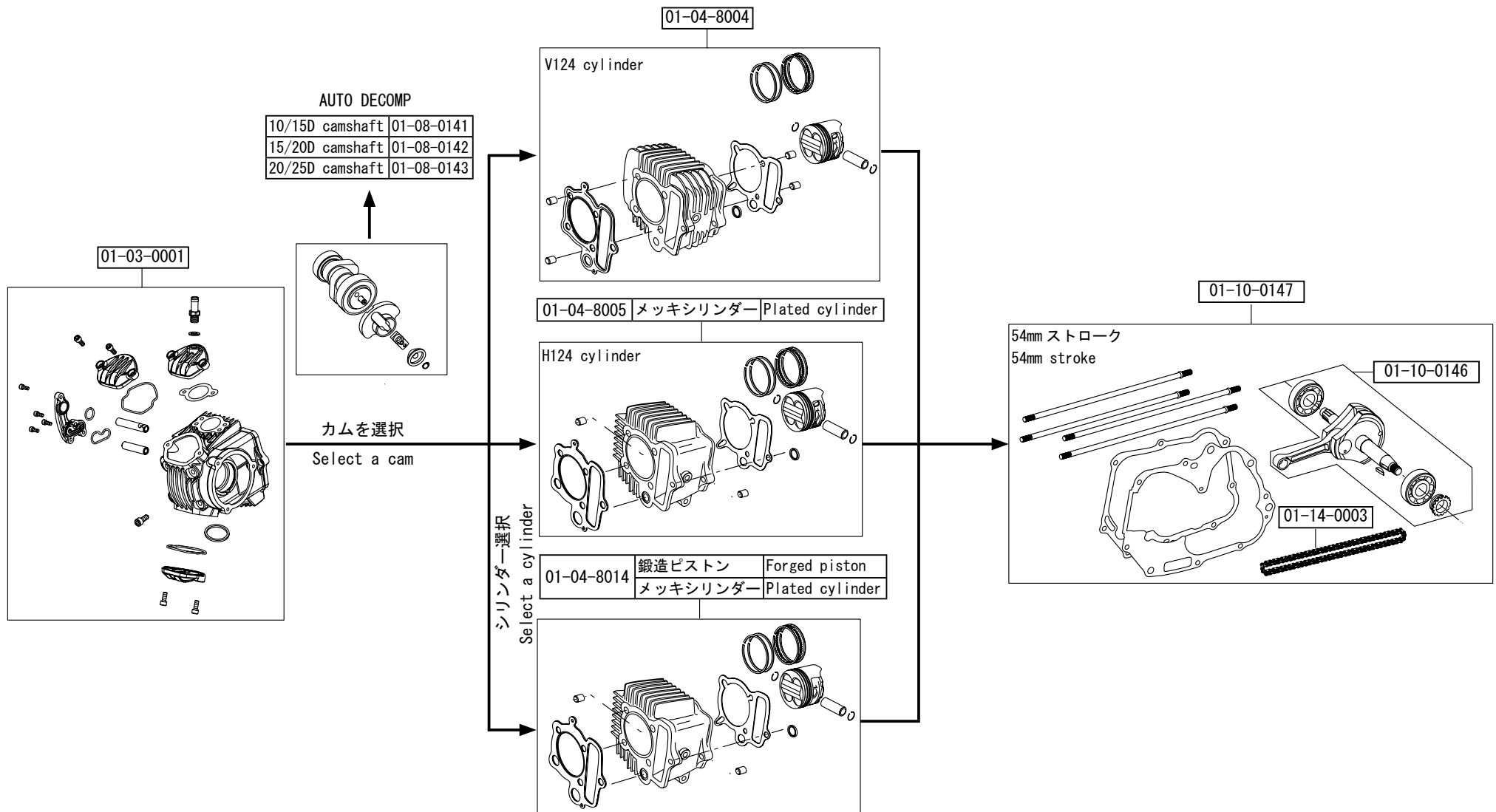


☆ 01-03-0001 シリンダーヘッドキットのみで購入された場合、この参照表にて専用パーツを検討して下さい。(CD90 除く)

☆ If you have purchased a cylinder head kit only (Item No. 01-03-0001), please study to install these special parts referring to this reference data. (except CD90)

# SuperHead 4-Valve +R

## ボア & ストロークアップ参照表 (124cc) Reference data on bore- & stroke-up kit (124cc)

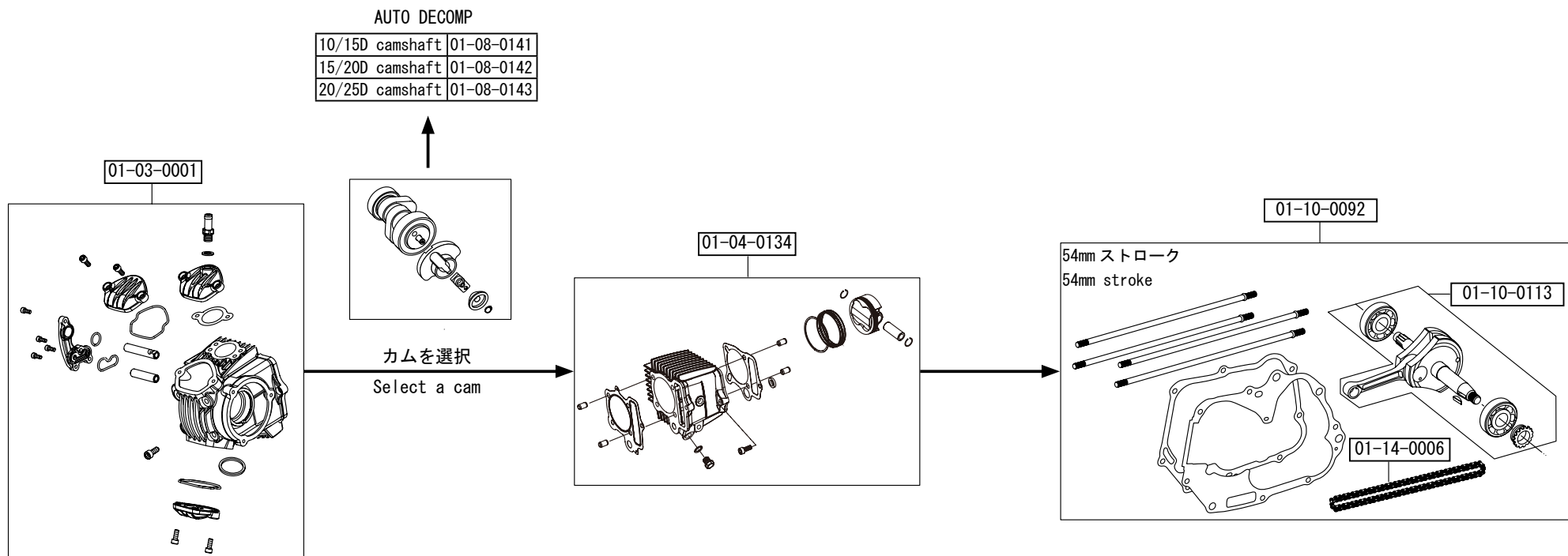


☆ 01-03-0001 シリンダーヘッドキットのみで購入された場合、この参照表にて専用パーツを検討して下さい。(CD90 除く)

☆ If you have purchased a cylinder head kit only (Item No. 01-03-0001), please study to install these special parts referring to this reference data. (except CD90)



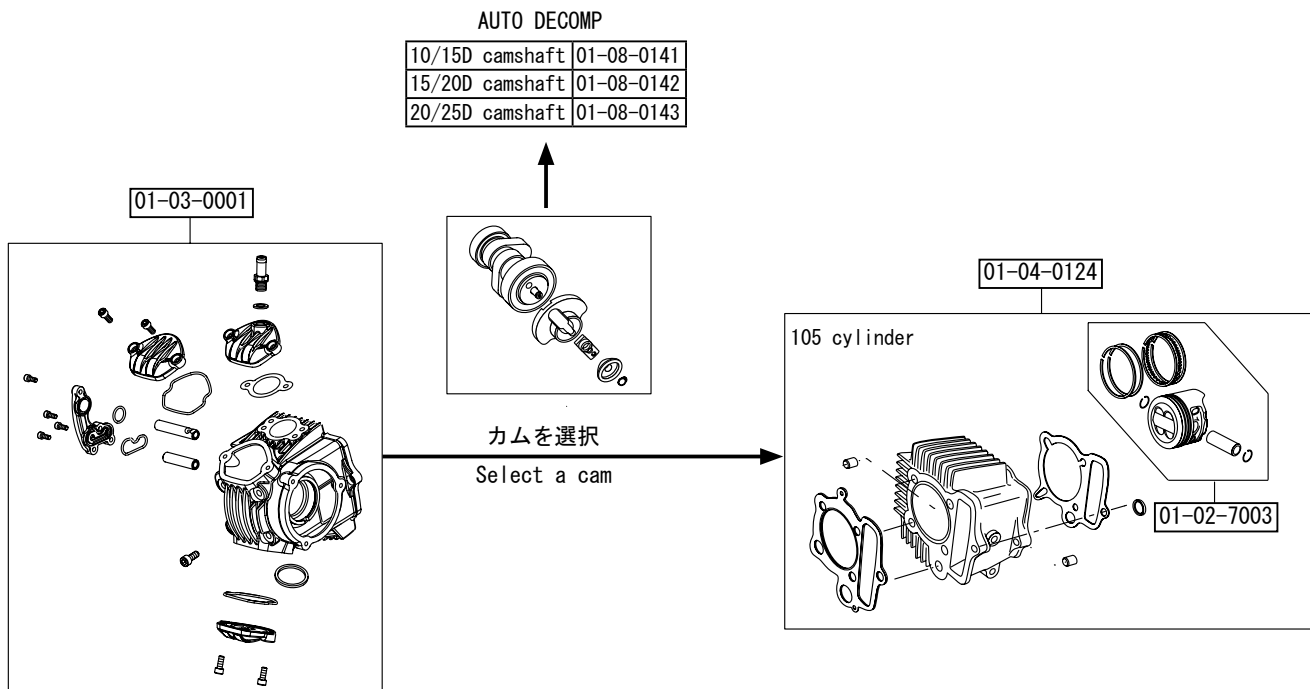
SuperHead 4-Valve +R ボア & ストロークアップ参照表 (138cc)  
 Reference data on bore- & stroke-up kit (138cc)



☆ 01-03-0001 シリンダーヘッドキットのみで購入された場合、この参照表にて専用パーツを検討して下さい。(CD90 除く)

☆ If you have purchased a cylinder head kit only (Item No. 01-03-0001), please study to install these special parts referring to this reference data. (except CD90)

SuperHead 4-Valve +R CD90 エンジン用ボアアップ参照表 (105cc)  
 Reference data on bore-up kit (105cc) For a CD90 engine



☆ 01-03-0001 シリンダーヘッドキットのみで購入された場合、この参照表にて専用パーツを検討して下さい。

☆ If you have purchased a cylinder head kit only (Item No. 01-03-0001), please study to install these special parts referring to this reference data.