SUPPLEMENTARY SERVICE MANUAL

"Our company has passed the certification of ISO9001."

ATV110-M

SERVICE MANUAL

BRIEF INTRODUCTION TO FOUR-WHEELED CROSS-COUNTRY VEHICLE MODEL ATV110-M

Four-wheeled cross -country vehicle, model ATV110-M is a full road condition vehicle which can be driven on every kinds of road conditions such as sand beach, grassland, forest, village,construction site country road , This maintenance manual of four-wheeled vehicle model ATV110-M (Hereafter called cross -country vehicle for short) compiled by Chongqing Industries Co., Ltd is specially provided for saler and technical staff of our Group. This manual mainly introduce the maintenance, removing and repairing method of cross-country vehicle and provide some relative technology and performance data. Because this manual can't collect the whole content of cross-country vehicle, it can only help maintainer of our group and it's saler have a basic understanding on working principle, maintenance procedure and repairing technology of cross-country vehicle. If you don't have this knowledge, when repairing cross-country vehicle, the condition of improper assembling and danger occurs after assembling are easily happened. Proper operation and maintenance are the advance of your safely driving cross-country vehicle, it also can reduce the troubles of cross-country vehicle and keep the best performance of it. The specification, performance and explanation stated in the manual are determined according to newly design of the vehicle, which are subject to changes without notce.

In this manual, for specially important requirement, the words of "Warning " "Caution " are labelled to prompt relative maintainer to abide it.

In the manual

Warning Show that if the content of "Warning "isn't obeyed, the driver, maintainer, checker will be heavily injuried, even dead.

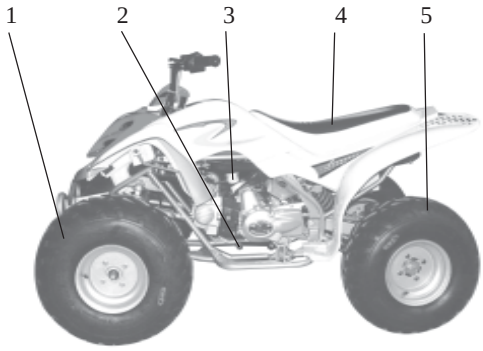
Caution Show that you must be careful to prevent the vehicle from being damaged.

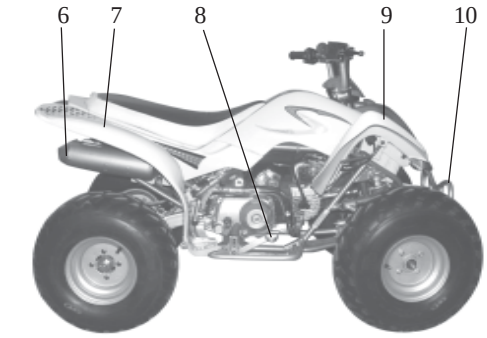
Maintenance manual of four-wheeled cross-country vehicle model ATV110-M
First edition Aujust 2005

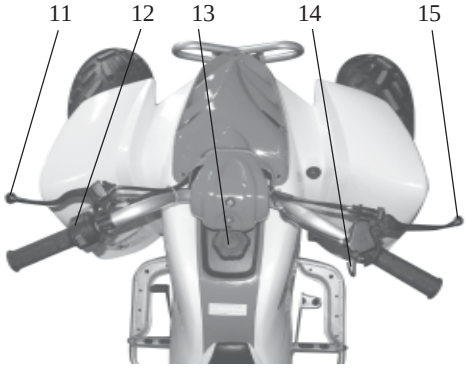
Content

Chapter I General description

Section 1Description







1. Front wheel
2. Shift pedal
3. Fuel cock
4. Cushion
5. Rear wheel
6. Exhaust silencer
7. Rear fender
8. Rear brake pedal
9. Front fender
10. Bumper
11. Left lever of rear brake
12. Left switch unit
13. Fuel tank cover
14. Throttle grip
15. Right lever of front brake

Caution:

The ATV you purchased maybe slightly differ from the pictures in the manual due to improvement or other changement.

Section 2 Special tools, instruments and meters

(I) Special tools

Special tools is the necessary tools used for accurately adjustment and assembly, it is helpful to prevent the maintenance defects and components damage caused by using improper tools.

1.Wrench for valve adjustment mainly used for adjusting valve clearance. Specification: 3mm 90890-01311

2.Puller for piston pin, mainly used of removing pistion pin.

3.Remover for rotator, mainly used for pulling magneto rotator form crank.

4. Clamp for rotator, mainly used for clamping magneto rotator when removing it to prevent it's rotation due to torque force.

5.Stop rotating meter for rotator, mainly used for removing and assembling rotator of kick starter.

6.Puller for crank, mainly used for disassembling crank from crankcase.

7.Puller for rocker shaft, mainly used for removing rocker shaft.

8.Compressing tools for spring of valve, mainly used for fixing and compressing spring when assembling valve lock clamp.

9. Assembling and disassembling tool for valve guide, mainly used for assembling and disassembling valve guide.

10.Assembling buffer, mainly used for assembling crank and balancing gear.

11.Hollow sleeve, mainly used for assembling crank and balancing gear.

12.Assembling toal for crank, mainly used for assembling crank and balancing gear.

13.Assembling and disassembling joint for universal coupling, mainly used for assembling and dismsembling universal coupling.

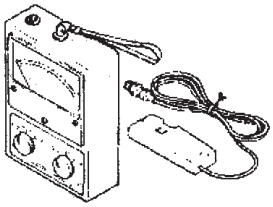
14.Assembling and disassembling disc, mainly used for assembling and disassembling reverse gear.

15.Fixed puller for gear, mainly used for assembling and disassembling gear.

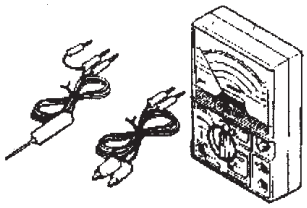
For the above tools, you can select with reference to special tools of the same type of vehicle.

(II) Instruments and meters

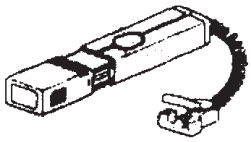
The following instruments and meters can be selected with reference to the same type of vehicle.



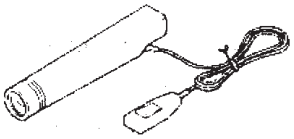
speedometer of engine
(90890-03113)



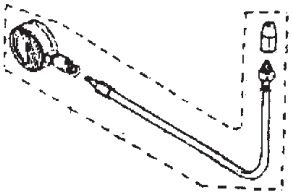
multimeter



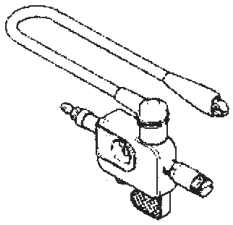
Ignition timing meter
(90890-03141)



spark tester of spark plug

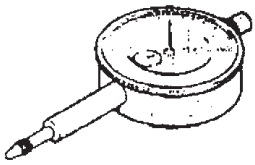


barometer



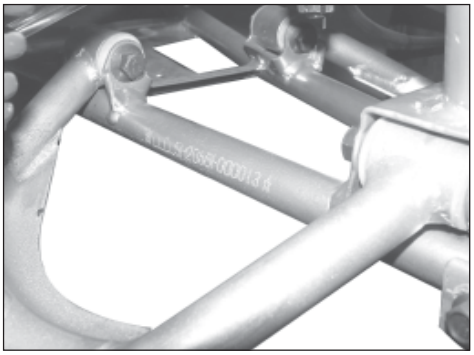
ignition checker

measuring tool of gasoling
(90890-01312)



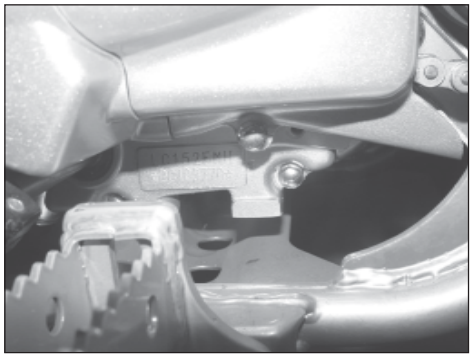
dial indicator

Section 3 Identification code, label of model and engine N0.



Identification code

It is engraved in the left or right side of front supporting main take of engine of frame.



Engine N0.

The engine No. engrave onthe narrow point position.

Section 4 Points for attention in maintenance

1.Preparation when disassembling

1.1 First clean the dirt, mud and attachment on the vehicle befor removing or disassembling.

1.2 Use proper special too cleaning device and means.

1.3 Keep all the components away from fire source. Pay attention to the safety, Don't be burned by the high temperation portion of engine, exhuaster and silencer etc. Be sure to take care of each other when operation with other people.

1.4 When disassembling the ATV, put the mated components, such as gear pairs, cylinder, piston and other "mated" components by normal running in together, When assembling or replacing these components, they should be in pairs.

1.5 When disassembling the engine, clean all the components and put in the tray in the order of disassembly, this in assembling, can not only increase the assembling speed, but also ensure the rightness of assembling.

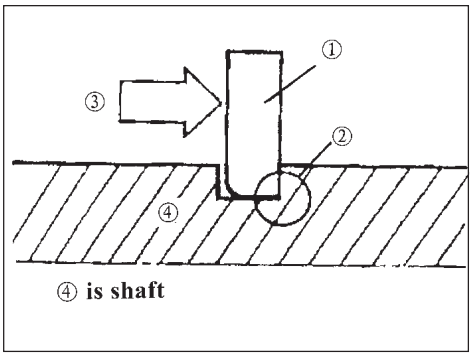
2.Replace the components

When replacing the components, be sure to use qualified products provided by use lubricants and grease which brank is assigned by lubricate.

3.Oil seal, shim, o-ring clip split pin, elastic washer.

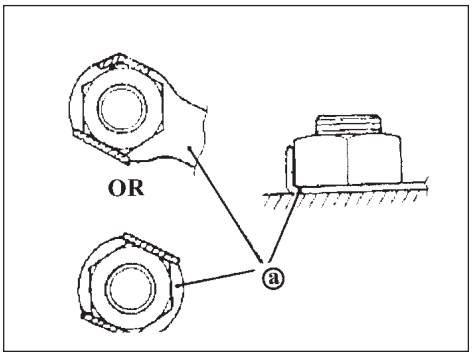
3.1 When disassembling to maintain the engine, in order to ensure that the reassembled engine have good sealing and connecting part is fixed and reliable, all the oil seal, shim, o-ring, clip, split pin and elastic washer should be replaced, be sure to keep lip of oil seal surface of shim and o-ring in cleaning condition.

3.2 When reassembling, apply lubricants to lubricate all the mated components and bearing, apply grease for oil seal.



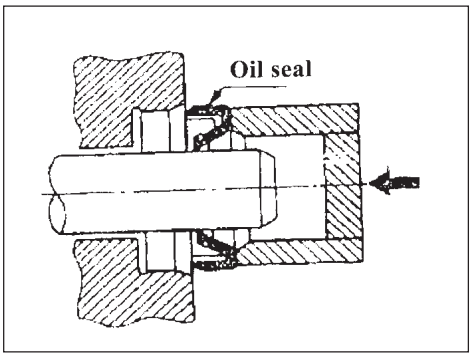
4. Clip

4.1Before assembling, be sure to check all the clips carefully.Use a new one after removing the clip of piston pin. When mounting clip ring ¢Ùmake the sharp face ¢Úon the opposite position of impacted face ¢Ûof clip.(see left fig)



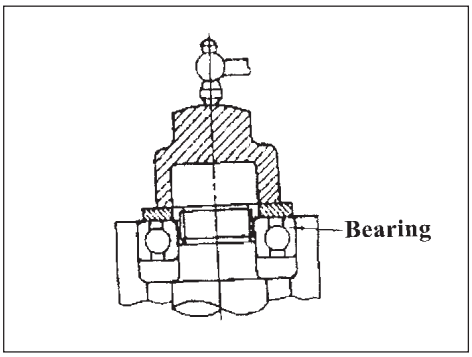
5.Locking washer /shim and location pin

5.1When reassembling after disassembling. be sure to replace all the locking washer /shim and location pin @ After bolt or nut is fixed on the locking position. be sure to bend and fix both ends of locking shim along head of bolt or direction of nut.



6.Bearing and oil seal

6.1 When assembling bearing and oil seal put the mark or specification of manufacturer outside, When assembling oil seal apply a thin film of lithium-base grease on the lip of oil seal.



Caution:

Don’t blow to dry the inside of bearing with compressed air, this would damage the surface of bearing.

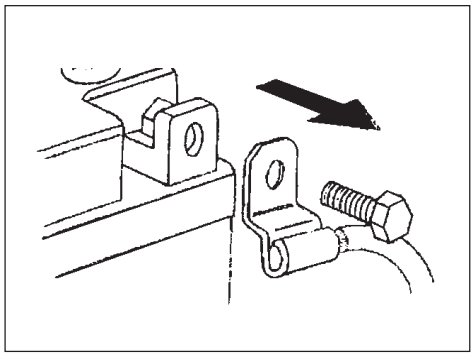


Fig.7.1Removal of negative pole wire of battery

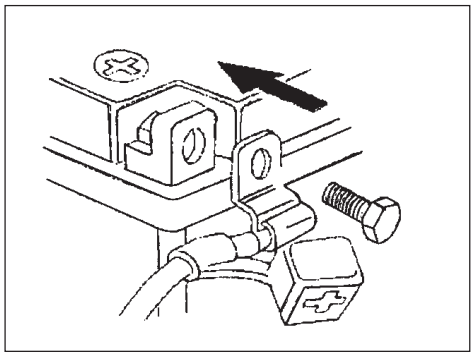


Fig.7.2 Connection of positive pole wire of battery

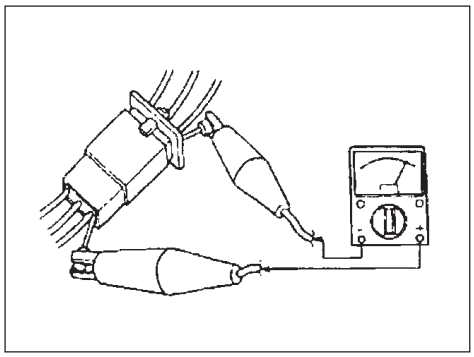


Fig.7.3

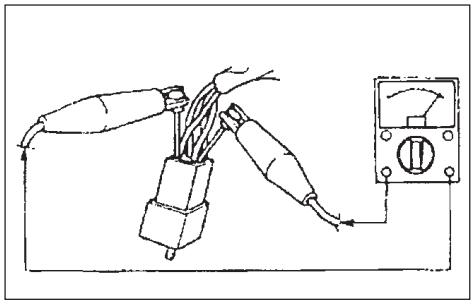


Fig.7.4

7.Check of electirc parts

7.1 Check the rust, dirt and moisture etc. of connector, if there is moisture, please blow it dry and clear the rust and dirt.

7.2 The eclectolyte inside the battery is a kind of corrosive, when operation exercise shall be taken not to let the electrolyte splash on the body.

7.3 When repairing wire on electric parts, first remove the wire on the termianl of negative pole of battery(see fig.7.1).When tightening or loosening bolt of terminal of big capacity battery, don't let the wrench contact with engine or other metal parts of vehicle body to avoid the electric shock.

7.4 When connecting the wire of battery, first connect the opositive pole wire of battery, then connect the negative pole wire After connecting the wire, apply clean grease on the terminal to avoid the increasing of resistance due to rust.

7.5 Check the terminal of connector

a Grip two terminals of connector together, check with the multimeter.(see fig.7.3,fig.7.4)

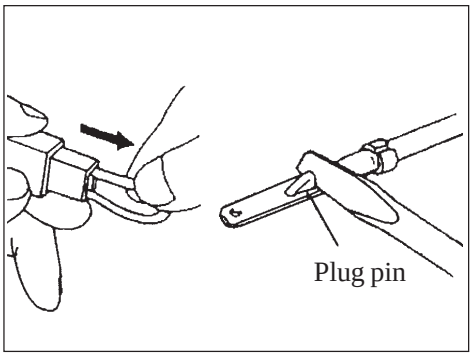


Fig.7.5

b. If joint is slack, bend the plug pin upward, then connect with connector plug(see fig7.5)

7.6 Before mounting new fuse, check if the load of fuse of components is right, especially for the portion being burned broken regularly, then mount the fuse having proper current value.

7.7Wire connector have two kinds, one is single-head connector, another is multi -head one.

Before connecting single-head connector , check if there is broken on the housing of joints, the joint is fixed and if there is a broken phenomenon on it. When inserting the joint, it should be fixed, then put in plastic coating after inserting.

In general, multi-head connector is plastic one, and locking catch is designed. When disassembling the connector, first open locking catch when connecting again, first check if all the joint is in good condition, if there is bent or twisted on them. After connecting, align the locking catch and lock them.

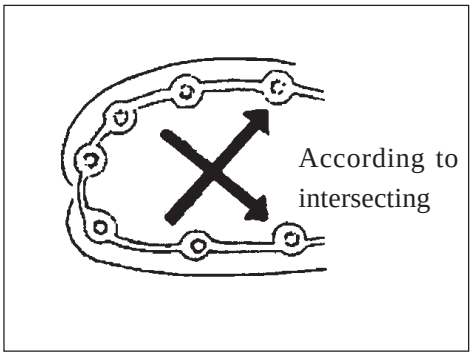


Fig.8.1Tightening method of screw and nut.

8. Use torque spanner to tighten screw and nut, and as per specified torque to tighten them. It should be tightened in steps from big ones to small ones, from inside to outside and along the direction of diagonal line to intersect. A s shown in fig.8.1.

Section 5 Specification

(I) How to use conversion table of unit

(1)How to use conversion table

All the specified documents in this manual are taken SI and Metric as unit. With the following conversion table, metric unit could be conversed into imperial unit.

METRIC	MULTIPLY	IMPERIAL
mm	0.03937	in
2mm ¡À	0.03937 =	0.08in

Conversion table

Conversio between metric and imperial			
	Known unit	Multiply	produst
Torque	m.kg	7.233	ft.lb
	m.kg	86.794	in.lb
	cm.kg	0.0723	ft.lb
	cm.kg	0.8679	in.lb
Weight	kg	2.205	lb
	g	0.03527	oz
Length	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.3937	in
Volume/capacity	cc(cm^3)	0.03527	oz(IMP liq)
	cc(cm^3)	0.06102	cu.in
	lit(liter)	0.8799	qt(IMP liq)
	lit(liter)	0.2199	gal(IMP liq)
Others	kg/mm	55.997	1b/in
	kg/cm^2	14.2234	psi(1b/in2)
	Centigrade	9/5(¡æ)+32	Fahrenheit(^{0}F)

(2)Definition of unit

Unit	Read	Definition	Measurement
mm	Millimetre	10^{-3}Meter	Length
cm	Centimetre	10^{-3}Meter	Length
kg	Kilogram	10^3Gram	Weight
N	Newton	1 lilo ¡Ámeter /second	Force
Nm	Newton meter	Newton ¡Ámeter	Torque
m.kg	Meter kilogram	Meter ¡Ákilo	Torque
Pa	Pascal	Newton/$meter^2$	Pressure
N/mm	Newton per millimeter	Newton/centimeter	Rigid of spring
L	Liter	———	Volume or capacity
cm^3	Cubic centimeter		
r/min	Revolutions per minute	———	Rotational speed

II.Basic specification

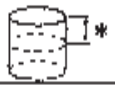
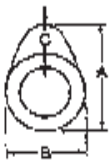
Item	Specification
Dimensions	
Overall length	1400mm
Overall width	865mm
Overal height	955mm
Height of cushion	660mm
Axle base	1016mm
Min.ground clearance	180mm
Min.turning radius	1600mm
Basic weight	
Engine oil(with full tank)	124kg
Engine	Single cylinder, air-cooled four-stroke
Displacement	107cm³
Cylinder bore × stroke	52.4×49.5mm
Compression ratio	9.1:1
Starting system	Electric starter
Lubrication system	Pressure splash
Engine oil	10W/40 SE
(selected according to Model SE,SF,SG or above model)	
Overall capacity	0.8L
Carburetor	
Type	Filter plug
Type of spark plug	L57
Clearance of spark plug	0.6~0.7mm
Type of clutch	
Output	
Output type	Cyclo, three gear forward
Operation	Left-foot operation

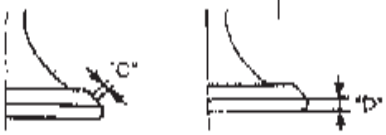
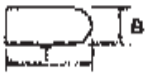
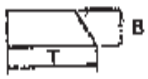
Item	Specification
Shifting type	
1st speed	35/11(3.182)
2nd speed	30/17(1.765)
3rd speed	24/23(1.043)
Reverse gear	31/12(2.583)
Frame	
Bracket	Steel tube
Caster angle	13°
Turn-in of tire	0~5mm
Tire	
Type	Vacuum
Specification of front wheel	AT19×7.8
Specification of rear wheel	AT18×9.5
Pressure of front wheel	20Kpa
Pressure of rear wheel	20Kpa
Brake	
Type of front brake	Drum (sealed)-wheel type
Operation type	Right-hand operation to brake
Type of rear brake	Disc brake
Operation type	Left-hand and right-foot to brake
Front suspension	Independent suspension device
Rear suspension	Box carrying shock absorbing type
Specification of shock absorber	
Front shock absorber	Spring/oil pressure shock absorbing
Rear shock absorber	Spring/oil pressure shock absorbing
Electric system	
Ignition system	C·D·I
Magneto system	A.C magneto
Battery/capacity	Free of maintenance, 12V/6Ah

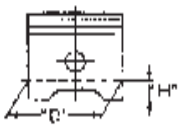
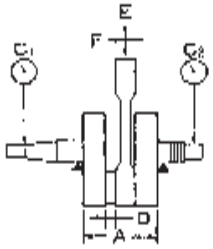
III.ATV body

Item		Standard	Limit
Front wheel	Type	Spock rim, tubeless tire	
	Material of rim	Steel plate	
	Size of tire	AT 19 ¡Á7-8	
	Radial runout of rim		2.0mm
	Lateral swing of rim		2.0mm
Front brake	Type	Drum type	
Rear wheel	Type	Spoke rim, tubeless tire	
	Material of rim	Steel plate	
	Size of tire	AT 18 ¡Á8-8	
	Radial runout of rim		2.0mm
	Lateral swing of rim		2.0mm
Rear brake	Type	Disce	
Brake lever and brake pedal	Free play of brake lever (left)	5-7mm	
	Free play of brake lever (right)	5-7mm	
	Free play of rear brake pedal	20-30mm	
Free play of throttle grip		3-5mm	

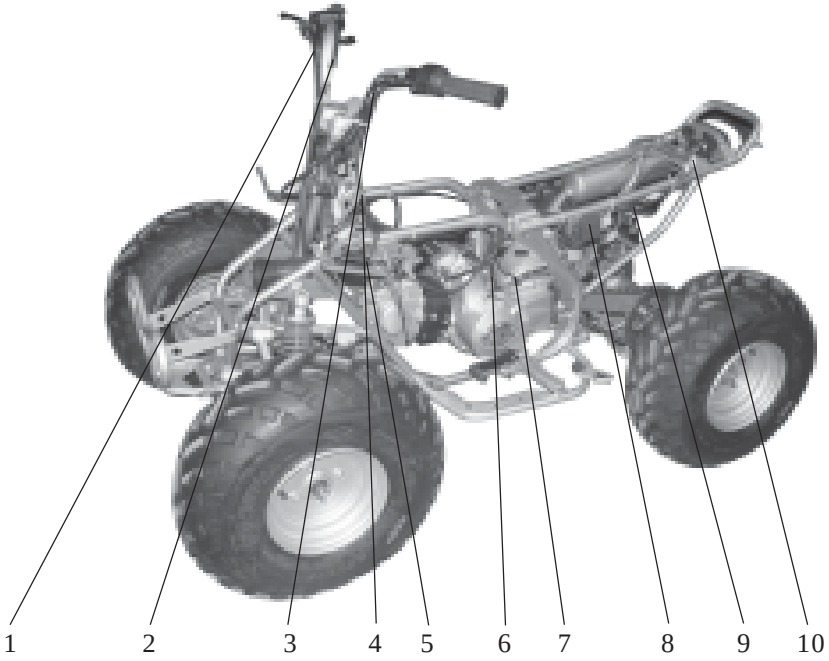
IV.Maintenance specificationof engine

Item	Standard	Limit
Axle drive		
Meshing clearance of last end gear	0.1–0.2mm	
Meshing clearance of middle gear (forward)	0.1–0.2mm	
Meshing clearance of middle gear (backword)	0.10–0.25mm	
Lubrication system:		
Type of filtering oil	Wire filtering net	
Type of oil pump	Rotor type,pressure splash type lubrication	
Clearance of side	0.04–0.09mm	
Endface clearance"A"or"B"	0.15mm	0.09mm
Releasing pressure of safety valve	80–120Kpa	0.20mm
Cylinder  Bore size	70.97 -71.02mm (Distance between measuring point and upper endface of cylinder is 40mm)	71.10mm
Cylinder head		
Flatness of lower endface	Measure the surface warp of every portion on the lower endface of cylinde head with rule.	0.10mm
Timing chain		
Type of timing chain	Roller chain	
Tension type of timing chain	Free adjustment	
Pneumatic camshaft:		
Driving method	Chain driving (left)	
Roundness tolerance of camshaft		0.03mm
Outside diameter of camshaft	24.96–24.98mm	
Cam size		
 Exhaust: "A"	36.582–36.682mm	36.482
"B"	30.252–30.352mm	30.152
"C"	6.572–6.692mm	
Intake: "A"	36.537–36.637mm	36.437mm
"B"	30.131–30.231mm	30.031mm
"C"	6.527–6.647mm	
Rocker arm/Rocker arm shaft		
Outside diameter of shaft	11.981–11.991	
Inside diameter of rocker arm	12.000–12.018	
Clearance between arm and shaft	0.009–0.037	
Valve spring		
Inside spring		
Free length: intake/exhaust	35.5mm	
Setting length when valve is closed:intake/exhaust	30.5mm	
Compressing pressure when assembling:intake/exhaust	82.4–100.0N	
Limit value of squareness:intake/exhaust		2.5°/1.6mm
Twisting direction of spring (top view) :intake/exhaust	Counterclockwise	

Item	Standard	Limit value
Valve spring:		
Outside spring:		
Free length:intake/exhaust	37.2mm 32.0mm	
Setting length when valve is closed):	162.8–200.1N	
Compressing pressure when assembling:intake/exhaust		2.5°/1.6mm
Limit value of squareness:intake/exhaust		
Twisting direction of spring (top view) :intake/exhaust	Clockwise	
Valve,valve seat,valve guide		
Valve clearance (it s cold) :intake	0.05–0.09mm	
exhaust	0.11–0.15mm	
Size of valve:	 	
"A"diameter of valve head: exhaust	28.4–28.6mm	
intake	33.9–34.1mm	
"B"width of valve face: intake/exhaust	1.7–2.8mm	
"C"width of valve seat: intake/exhaust	0.9–1.1mm	1.6mm
"D"limit thickness: intake/exhaust	0.8–1.2mm	
Outside diameter of valve stem: exhaust	5.960–5.975mm	
intake	5.975–5.990mm	
Inside diameter of valve guide: intake/exhaust	6.000–6.012mm	0.10mm
Clearance between valve stem and guide:exhaust	0.025–0.052mm	0.08mm
intake	0.10–0.037mm	
Roundness of valve seem		0.03mm
Piston ring		
First ring		
		
Type	Bucket-shaped back round	
Size(B×T)	1.2×2.8mm	
Clearance of endface (on assembling)	0.15–0.30mm	0.4mm
Clearance of side (in assembling)	0.03–0.07mm	0.12mm
Second ring		
		
Type	Flat type	
Size(B×T)	1.2×2.8mm	
Clearance of endface (in assembling)	0.15–0.30mm	0.4mm
Clearance of side (in assembling)	0.02–0.06mm	0.12mm
Oil ring		
		
Size(B×T)	2.5×2.8mm	
Clearance of endface (in assembling)	0.2–0.7mm	

Item	Standard	Limit value
Piston  		
Piston size "D"	70.93~70.97mm	
Measuring point "H" (from bottom line of piston's lower portion)	4.0mm	
Piston offset	0.5mm	
Direction of piston offset	Inward	
Clearance between piston and Cylinder	0.01~0.06	0.15mm
Outside diameter of piston pin	15.991~16.000mm	
Inside diameter of pin hole	16.002~16.013mm	
Driving method of balancing block	Gear driving	
Connecting rod of crank  		
Limit value of runout: C1		0.03mm
C2		0.06mm
Width of crank "A"	55.95~56.00mm	
Small end free play of connecting rod "F"	0.8~1.0mm	2.0mm
Big end free play of connecting rod "D"	0.35~0.65mm	
Big end radial clearance of connecting rod "E"	0.010~0.025mm	
Automatic centrifugal clutch		
Clutch shoe: quantity	3 pieces	
thickness	2.0mm	1.5mm
Clutch meshing revolution	1800~2100r/min	
Clutch stalled revolution	3200~3600r/min	
Free length of back spring of brake shoe	32.47mm	
Clutch:		
Action method of clutch	Outside pushing type	
Clutch piece: quantity	4 pieces	
thickness	1.45~1.75mm	
Friction piece: quantity	5 pieces	
thickness	2.94~3.06mm	2.8mm
Spring of clutch: quantity	4	
free length	35.1mm	32.9mm
Shifting mechanism		
Shifting method	Shift gear cam drum	
Bending limit of fork guide	and fork	0.8mm
Transmission device		
Offset limit of spindle		0.08mm
Offset limit of transmission output shaft		0.08mm

Section 6 Wiring diagram of ATV



1. Front brake cable
2. Throttle cable
3. Rear brake cable
4. Wire of handle bar switch
5. Hight voltage coils and wire
6. Wire of starting motor
7. Wire of gear indicator
8. Rectifier
9. Cable
10. Taillight unit

Section 7 Requirements for torque of fastener

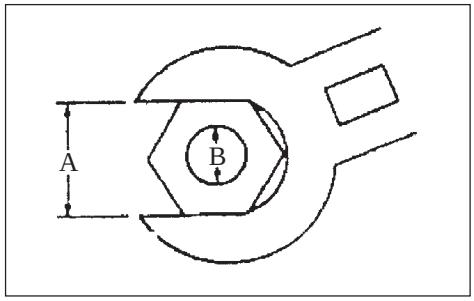
(I) General torque specification

General torque specification (standard screw)

This table is screw locking specification drawn up by International Standard Association.

In order to avoid the twist or unbalancing phenomenon when locking screw. please cross lock or londuit as per appointed orders.

*When measuring torque force, standard torque force testing spanner must be used.



A.Size of nut

B. Size of thread

A (Nut)	B (Screw)	Specification of general lorque m.kg
10mm	6mm	0.6
12mm	8mm	1.5
14mm	10mm	3.0
17mm	12mm	5.5
19mm	14mm	8.5
22mm	16mm	13.0

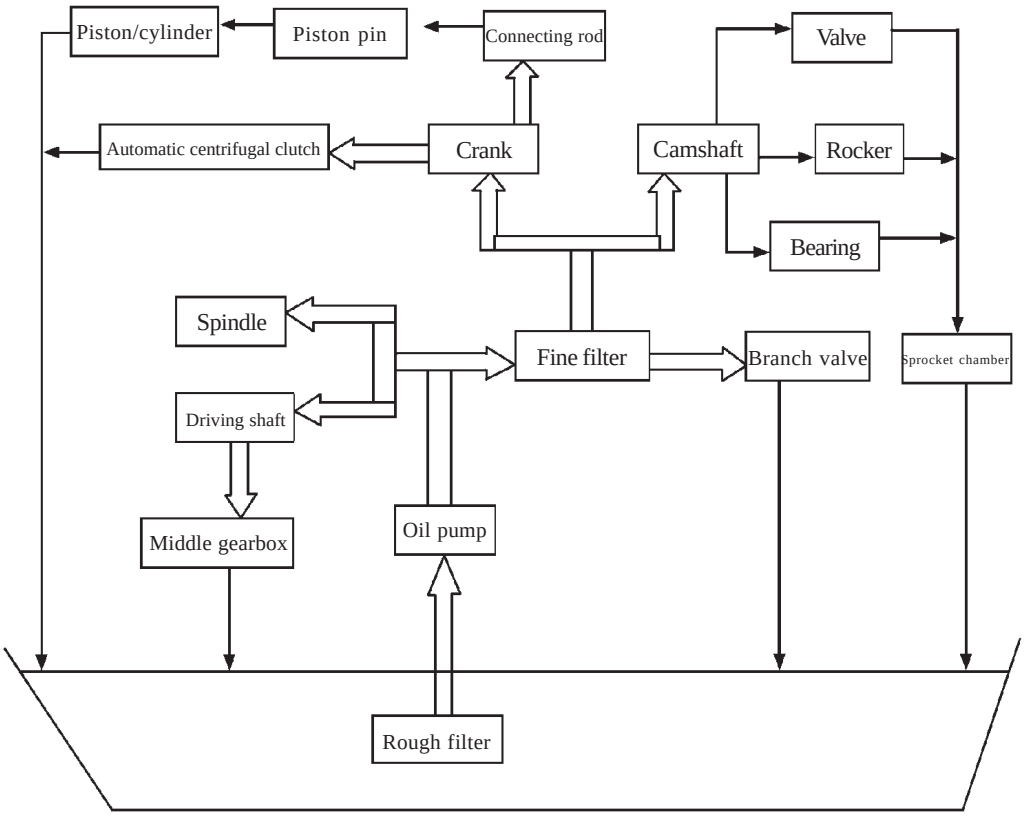
Section 8 Lubrication

Standard	Item

(I) Lubrication oil way

:Pressure

:Splashing oil



Section 9 Lubrication point and type of lubricants

(I)Lubrication point and type of lubricants(ATV body)

Lubrication point		Type of lubricants
Lip of oil seal (full)		Light lithium-base grease
O-ring (full)		Light lithium-base grease
Steering shaft(upper end,lower end)		Light lithium-base grease
Ball connection of steering pushing rod		Light lithium-base grease
Front wheel fork (ball-shaped joint)		Light lithium-base grease
Front wheel bearing		Grease used for bearing
Front & rear brake	Braking camshaft Rotating pin seat Lip of oil seal	Light lithium-base grease
Dust-proof ring of brake		Light lithium-base grease
Joint of front brake cable		Light lithium-base grease
Front brake lever axle and rear brake lever axle		Light lithium-base grease
Adjusting nut and pin of front brake cable		Light lithium-base grease
Adjusting nut and pin of rear brake cable		Light lithium-base grease
Rear brake pedal pivot and brake pedal axle hole		Light lithium-base grease
Throttle rotating frame shaft and end section of throttle cable		Light lithium-base grease
Connection bolt of rear wheel fork and frame,rear wheel fork bearing		Light lithium-base grease
Rubber sleeve and rear wheel fork		Seal gum
Rear shock absorber bushing		Light lithium-base grease

(II)Lubrication point and type of lubricants(Engine)

Lubrication point(name of component)		Type of lubricant
Lip of oil seal	(Crank,shift gear shaft,spindle,shift gear operation shaft)	Light lithium-base grease
All bearing	(Crank spindle, driving shaft, shift gear camshaft, pneumatic canshaft)	Lubricating-oil
O-ring	(Contact position of o-ring)	Light lithium-base grease
Stem end of intake and exhaust valve	(Intake and exhaust valve, vale adjsuting screw)	Lubricating-oil
Fastener of cylinder head	(Bolt flange face,thread portion,washer endface)	Lubricating-oil
Outside surface of piston pin	(Piston piston pin,small connecting rod)	Lubricating-oil
Outside surface of piston.piston ring	(Cylinder block ,piston, piston ring)	Lubricating-oil
Clutch	(Crank main drivinggear)	Lubricating-oil
Upper cam plate guide rod	(Upper cam plate unit guide rod)	Lubricating-oil
Inner hole of upper cam plate unit	(Shift gear shaft, upper cam plate unit)	Lubricating-oil
Steel ball bracket unit	(Steel ball brakcket unit, upper&lowr cam plate)	Lubricating-oil
Spindle and inside hole jointing face of right crankcase	(Spindle ,right crankcase)	Lubricating-oil
Outside surface of short fork shaft	(Fork shaft ,fork crankcase)	Lubricating-oil
Outside surface of long fork shaft	(Fork shaft ,fork ,crankcase)	Lubricating-oil
Shift gear camshaft portion,slot portion,contactor	(Fork, shift gear cam ,crankcase)	Lubricating-oil
Outside surface of shift gear shaft	(Shift gear shaft and it’s contacting portion)	Lubricating-oil
Outside surface of over-wheel shaft	(Over-wheel shaft ,crankcase)	Lubricating-oil
Bushing inner hole of big gear of electric stater	(Bushing,left crankcase)	Lubricating-oil
Electric starting clutch	(Rolling post and it’s contacting portion)	Lubricating-oil

Chapter II MAINTENANCE AND ADJUSTMENT OF VEHICLE

Note:

The correct maintenance and adjustment are necessary to ensure vehicles, normal driving.The repair personnel should be familiar with the contents of this article.

Section 1 Periodic Maintenance/Lubrication

Item	Requirement	Every time			Every	
		1 month	3 month	6 month	6 month	1 year
Valve	Check the valve clearance.Adjust it if necessary.	¡ð		¡ð	¡ð	
Spark plug	Check the clearance and clean the plug. Replace it if necessary.	¡ð	¡ð	¡ð	¡ð	
Air filter	Clean it. Replace it if necessary.					
Carburetor	Check the idle or starting state.Adjust it if necessary.		¡ð	¡ð	¡ð	
Cylinder head	Check it there is crack or damage in gas tube.Replace it if necessary.			¡ð	¡ð	
Exhaust system	Check the leakage.Tighten it again if necessary.Replace the gasket if necessary.			¡ð	¡ð	
Spark surpressor	Clean			¡ð	¡ð	
Oil circuit	Check the cracks or damage of oil tube.Replace it if necessary.			¡ð	¡ð	
Engine oil	Replace.(Preheat the engine before draining the oil)	¡ð		¡ð	¡ð	
Oil filter	Clean	¡ð		¡ð		¡ð
Oil filter screen	Clean	¡ð		¡ð		¡ð
Gear case oil	Check the oil level and leakage.Replace.	¡ð				¡ð
Brake	Check the operation.Adjudt it if necessary.	¡ð	¡ð	¡ð	¡ð	
Clutch	Check the operation.Adjudt it if necessary.	¡ð		¡ð	¡ð	
Wheel	Check the balance,damage,run-out etc.Replace it if necessary.	¡ð		¡ð	¡ð	
Wheel bearing	Check the looseness and damage.Replace it if necessary.	¡ð		¡ð	¡ð	
Front&Rear suspension system	Check the operation and correct it if necessary.			¡ð		¡ð
Steering system	Check the operation and corrcet it if necessary.Check the toe-in and adjust it if necessary.	¡ð	a¡ð	¡ð	¡ð	
Bearing of steering verticle column	Lubricate every 6 months (lithium soap grease)			¡ð	¡ð	
Connecting piece and fastener	Check all the connecting piece and fasteners of chassis correct them if necessary.	¡ð	¡ð	¡ð	¡ð	

.We advise that the maintenance of these items should be conducted by our saler.

Section 2 Diassembly and assembly of Cushion, Fender and Fuel fank

(1) Cushion

1.Disassembly

(1) Place the vehicle on the horizontal ground.

(2) Disassemble the cushion;

Pull the cushion lock lever upward, then raise the tail part of cushion. By that, you can disassemble the cushion.

2.Installation

Firstly insert the support lug on the front end of cushion into the spigot of frame, then press down the rear part. Pay attention to confirm if the cushion is installed firmly.

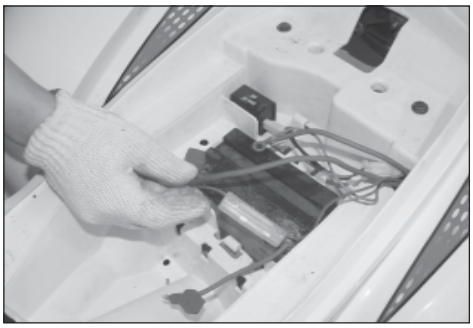
(II) Rear fender

1.Disassembly

(1)Place the vehicle on the horizsontal ground.

(2)Disassemble the cushion

(3)Disconnect the negative wire and positive wire of battery.

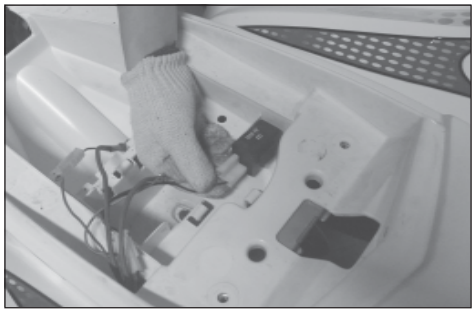


Caution

Should disconnect the negative wire fistly.

(4)Take out the battery.

(5)Disassemble the rear fender.

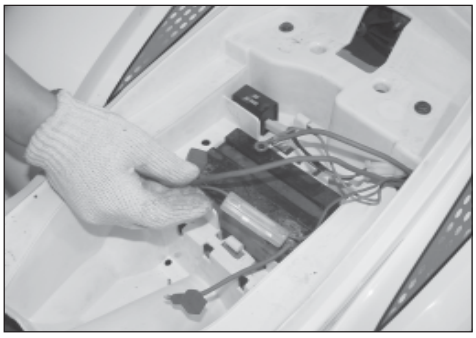


2.Installation

Operate according to reverse procedure of "Disassembly".Pay attention to following points:

(1)Install:

Rear fender



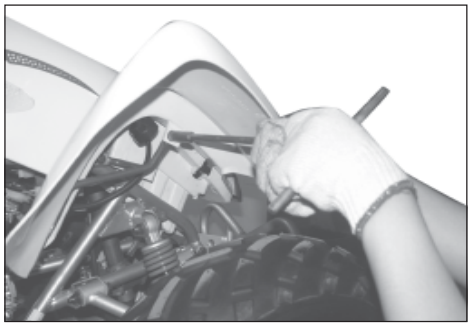
(2)Install:

Battery

(3)Install the cushion

Caution

Insert the support lug ¢Ûof cushion into the plug seat ¢Ûon the frame, then press down the cushion.

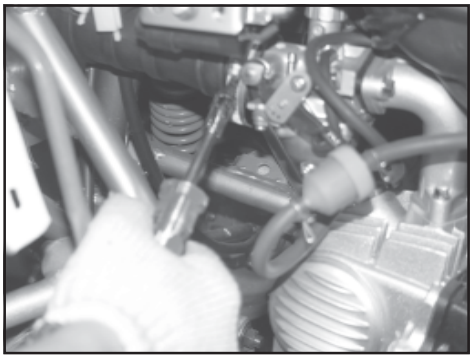


(III)Front fender

1. Disassembly:

(1) Place the vehicle on the horizontal ground.

(2) Take off bolt

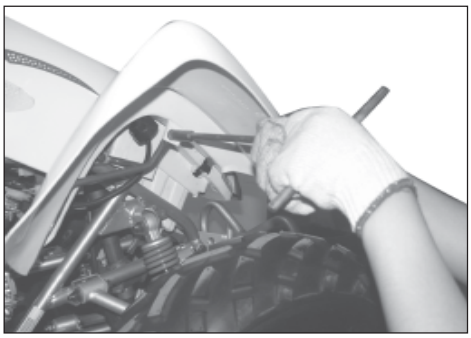


(3) Dismantle the connecting pipe.

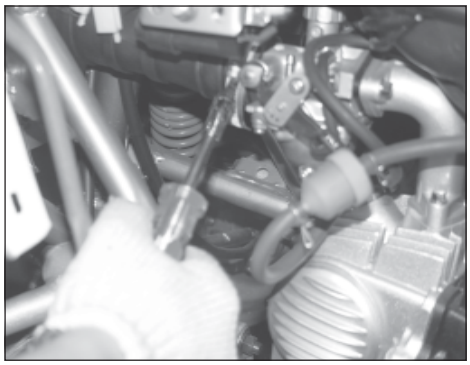
(4)Disassemble the front fender.

2.Installation:

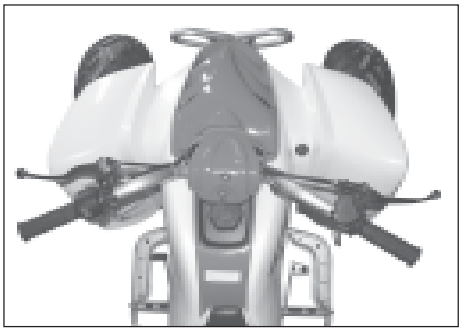
Operate according to reverse procedures of “Disassembly”.



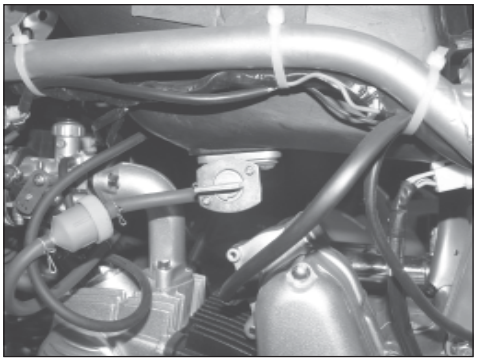
(1)Install:
Front fender



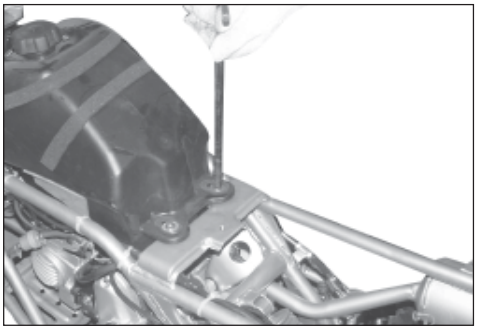
(2)Install:
Assembly of the connecting pipe.



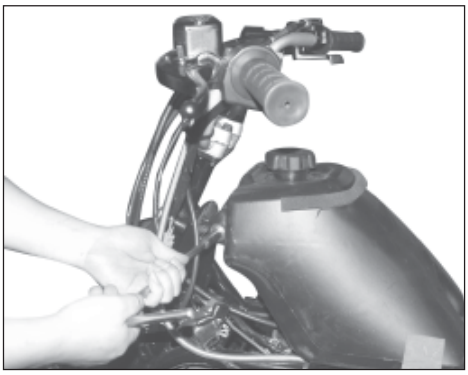
(3)Install:
Bolt



(IV)Fuel tank
1.Disassembly
(1)Place the vehicle on the horizontal ground.
(2)Disassemble the cushion

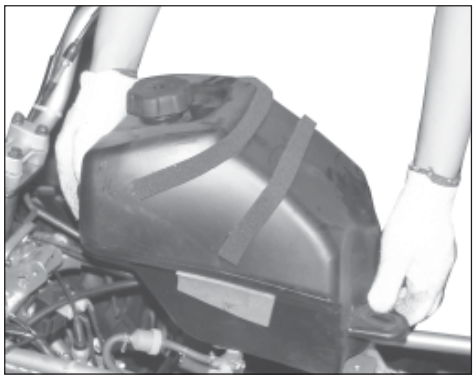


(3) Demove the front fender.
(4) Demove the fuel tank bolt.
(5)Pull the fuel cock lever to “OFF”position.
(6)Remove the fuel inlet pipe



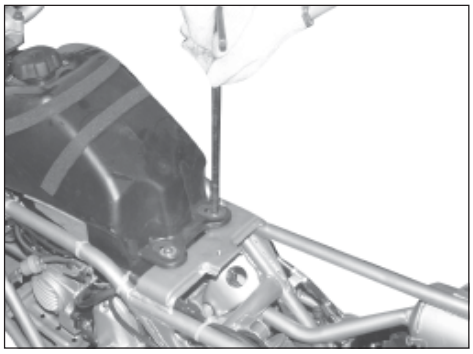
Caution

Place a cloth on the engine to absorb the splashed gasoline.

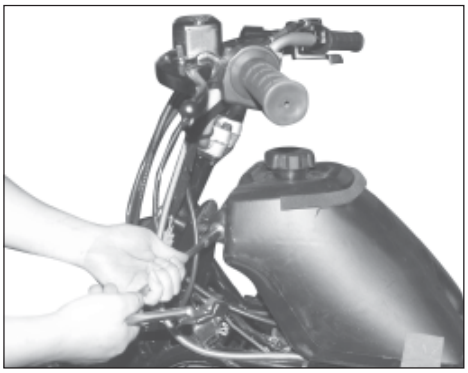


Warning

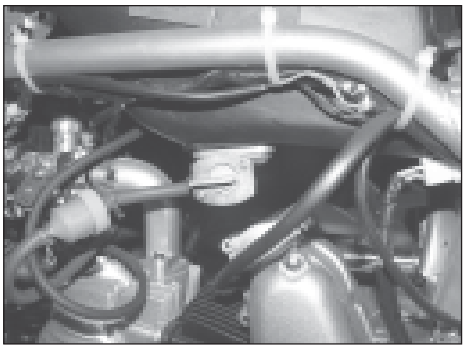
The gasoline is inflammable. Avoid to splash it on the hot engine.
(7)Remove the fuel tank.



2.Installation
Operate according to reverse procedure of “Disassembly”,and pay attention to followig points:
(1)Install the fuel tank
(2)Connect
a.Air inlet pipe and hose

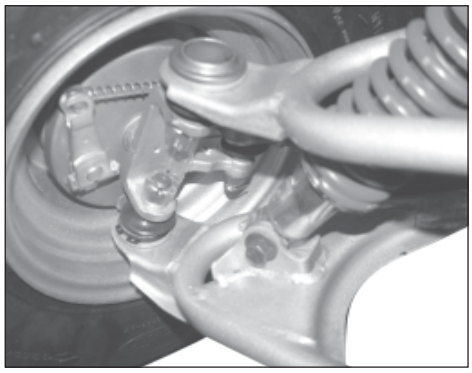


(3)Install the bolt, bushing of rubber hood and washer.
(4) Install: front fender
(5) Install:
Cushion



(6) To turn the fuel cock lever to “on” position.

Section 3 Maintenance and Adjustment of Vechicle Body



(I) Wear inspection of front&rear brake

1. Check the front brake

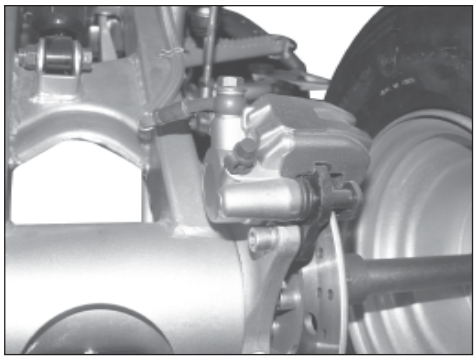
(1) Brake the vehicle with front brake

(2) Check:

.Wear indication

.If the wear indication reach the wear limit mark ,replace the brake shoe assy.

Refer to section“Front wheel and front brake”



2. Check the rear brake

(1) Thread down the rear brake pedal to brake the vehicle.

(2) Check the dick friction pad to see if it reaches the life-spin

Replace it whenever ne cessary.

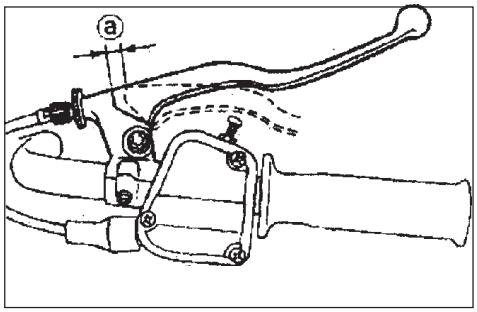
(II) Adjustment of front brake

Caution

Before adjusting, check the wear degree of front brake according to above procedures.

Caution

In order to avoid too large or too small brake force when braking, must ensure the proper free clearance of left/right brake lever and rear brake pedal:

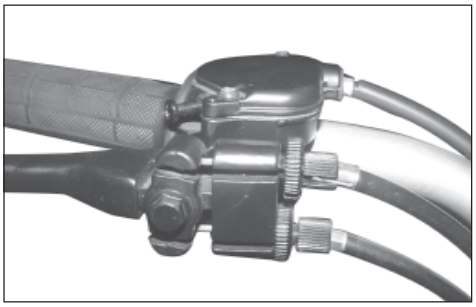


1. Check

If the free clearance of right lever does not conform to ⓐspecification as shown in figure, adjust it according to followig standard.

Standard free clearance ⓐof right lever:5-7mm

Calculate from the fulcrum.(ⓐ in figure)



2.Adjustment

Adjusting procedure of free clearance of right lever:

.Loosen the locking nut¢Ù and rotate the cable adjsuting screw ¢Úclockwise to reduce the tension of front brake cable.

.Pick up the front wheel form ground, and rotate the two front wheels, and ensure the two front brake light brake force.

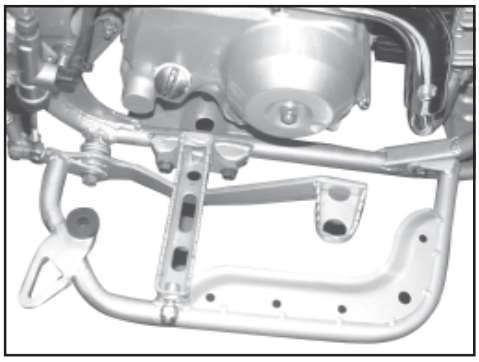
.Rotate the adjusting screw ¢Úclockwise or counterclockwise to gain proper free clearance.

Clockwise: increase free clearance

Counterclockwise:reduce free clearance

.Tighten the lock nut

(III)Adjustment of free clearance of left lever and rear brake pedal.



Caution

Before adjusting, must check the wear condition of rear brake.

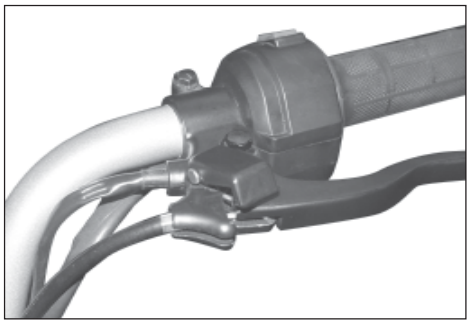
Caution

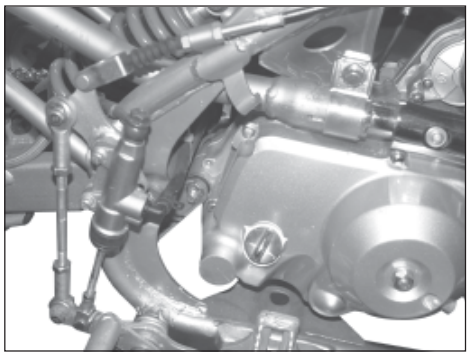
In order to avoid too large or too small brake force of rear brake, must ensure qualified free clearance of left lever and rear brake pedal.

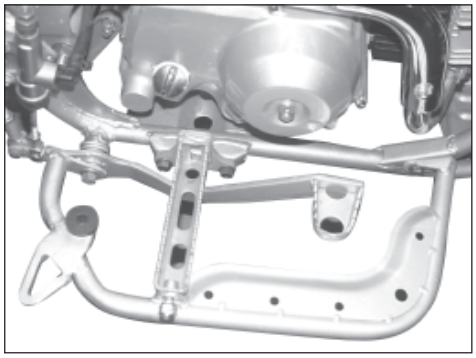
Warning

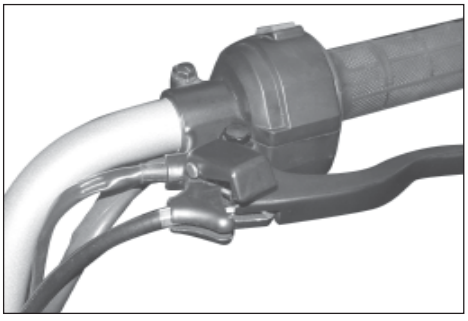
When braking after adjusting, must adjust the left lever and rear brake pedal simultaneously.

1.Place the vehicle on the horizsontal ground









2.Adjust
.Free clearance of left lever
.Free clearance of rear brake pedal
Adjusting procedure:

Caution

Before adjusting, tread the rear brake pedal 2-3times.
.Loosen the locking nut completely, and screw in the cable adjusting screw completely.

.Loosen the adjusting nut of rear brake cable and adjusting nut of rear brake pedal.
.Tighten up the adjusting nut of rear brake pedal until gaining correct clearance :
Free clearance (rear brake pedal): 20-30mm.

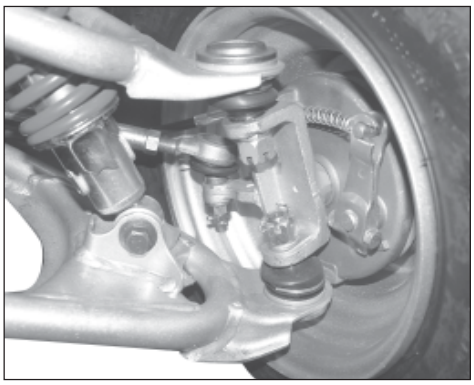
.Rotate the adjusting nut of rear brake cable until gaining correct clearance : 0-1mm
Rear brake arm assy
Pin

.Screw out the adjusting screw of rear brake cable until gaining correct free clearance:
Freee clearance (left lever):5-7mm

.Screw up the locking nut
.Check the free clearance of left lever and rear brake pedal.
If not conforming to standard value, repeat above procedures to adjust.

Warning

After adjusting, raise the rear wheels from the ground and rotate them to confirm no brake force to block the rotation. Otherwise repeat above adjustment.



(IV)Inspection of steering system

1.Place the vehicle on the flat ground

2.Check:

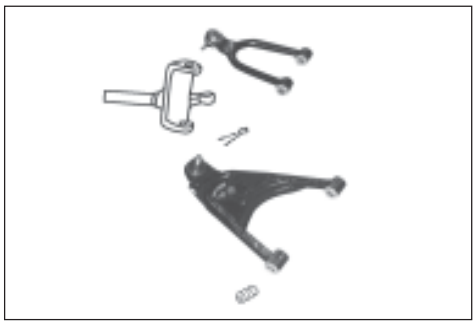
.Clamp seat of steering vertical column and sliding bearing on the lower end of steering vertical column, upper &lower and front &rear moving steering bar If the clearance is too large, replace the sliding bearing

3.Check:

.Ball pin unit of steering tension rod.

Rotate the steering bar leftward and/or rightward, then roate from left to right lightly. If the ball pin unit of steering tension rod have any vertical clearance, replace it.

4.Raise up the front end of the vehicle to make the front wheel not bear any load.



5.Check :

.left/right front seat assy on front brake position, and/or bearing. When moving the wheel back and forth horizontally, if the clearance is too large, replace the following components:

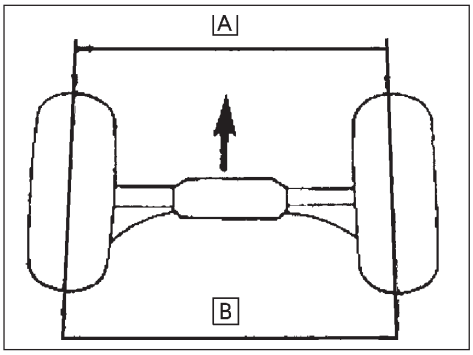
1)bearing

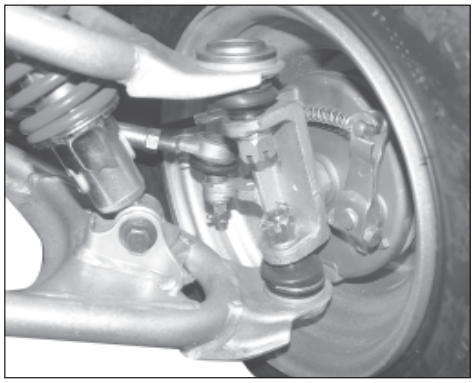
2)left/right front seat assy

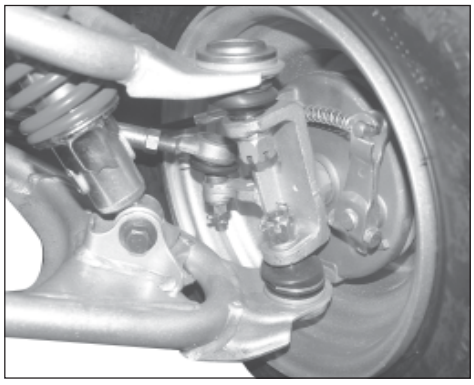
3)split pin

4)front fork ball connection

5)bushing assy







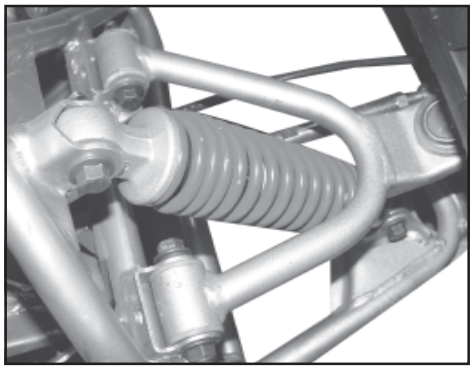
(V)Adjustment of toe-in of front wheel,
1.Rest the motorcycle on the flat ground
2.Measurement:
.Toe-in
.Adjust if out of specification
.Adjustment steps of toe-in.
.Mark the centers of tire thread of two front wheel.
.Lift the front end of motorcycle to keep the front wheel from force.
.Faster the steering forward. Measure the width between two marks.
.Rotate the front tire by 180^0 up to the marks are in reverse.
.Measure the width B between two marks.
.Calculate the toe-in with the following formular
toe-in=B-A

Standard value of toe-in: 0-5mm
.If the toe-in is not correct, please adjust.

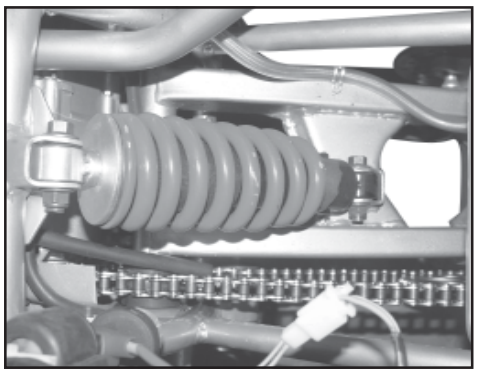
3.Adjusting
Adjusting steps of toe-in:
.Mark determination marks at the end of left/right tension rod.
.Loosen the locking nuts at the end of left/right tension rod.
.Left/right tension rods should turn the same turns left or right up to obtain in the specified toe-in and make the left/right tension rods are the same in strength.
Tighten up the the locking nuts at the end of left/right tension rod.
Torque of locking nut :30N.m

Caution

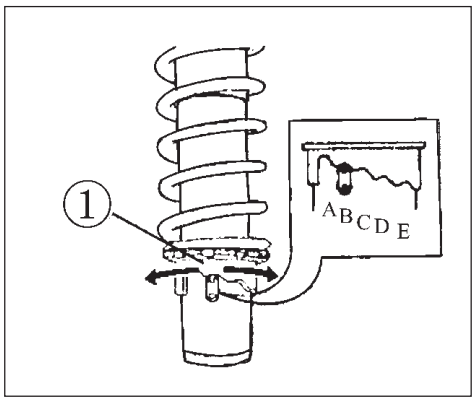
.Make sure that left/right tension rods have turned the same turns. Otherwise the motorcycle will still go forward left and right even though. Operate the motorchycle to go forward straightly with steering bar, easily causing to getting out of control and accident.
.After adjusting the toe-in correcty drive the motorcycle to move forward a span of distance by fastening the steering bar so as to make sure if the steering bar is normal, if not, adjust the tension rod left or right within the specification.



Inspecion of front/rear shock absorber
1. Rest the motorcycle on the flat ground
2. Inspection
(1) Front/rear shock absorber
If scraped/damaged replace the front/rear shock absorbe
(2) Oil leakage
If the heary oil leakage of front/rear shock absorbers is found, replace it.



3.Inspection
.Operation:
.Shock the fornt /rear shock absorbers up and down two times.
.If it is not active in operation, replace the component.



(VI)Adjustment of rear shock absorber
Adjustment of spring preload:
Turn the adjusting ¢Ùto increase or decrease the spring preload.

Caution

The spring preload of rear shock absorber can be adjusted to be applied to needs, hobby, Weight of the operator and driving conditions.
Standand Position:B
A-Softest
E-Hardest

(VII) Inspection of tire

Warning

This motorcycle adopted the low pressure tire, So correct filling pressure and keeping the proper pressure is very important.

.Tire characterics

1)Quality characterics of tire will affect the driving reliability of ATV. The following types of tires reliability by our company be used safely by this motorcycle. If adpot other tires it will cause the disadvantageous effect.So they are out of recommendation.

Dimension	
AT19 ¡Ã7-8	Front
AT18 ¡Ã8-8	Rear

.Tire pressure

1) Recommended tire pressure.

Front 20Kpa(0.20kg f/cm^2)

Rear 25Kpa(0.25kg f/cm^2)

2)The overlow tire pressure will cause the tire came out of the rim in bad driving condition.

The Min. tire pressure

Front 17Kpa(0.17kg f/cm^2)

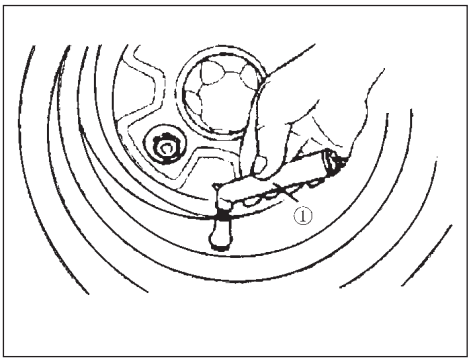
Rear 22Kpa(0.22kg f/cm^2)

3)When installing the tire to the rim, the tire pressure should be no more than.

Front 250Kpa(2.50kg f/cm^2)

Rear 250Kpa(02.50kg f/cm^2)

After installing the tire to the rim, the overhigh pressure will cause explosion. Filling pressure should be conducted slowly and carefully, the overfast fillig pressure will cause the tire to explosion.



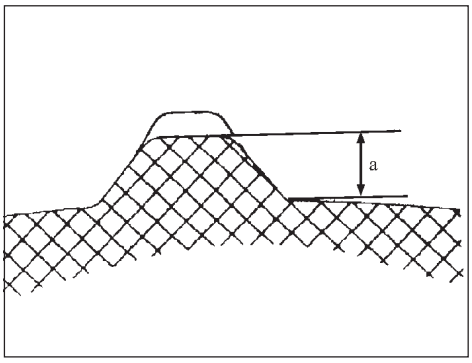
1.Measurement
.Tire pressure(nomal atmospheric temperature):
If out of specification, adjust.

Caution

.The manometer of tire belongs to spare parts of the motorcycle(Never use the high pressure).
.If the foreign matters such as dust, etc are absorbed in the tire pressure manoeter, the readig of the meter will be not correct, at the moment, the second measurement should be conducted and the second measurment reading should be adpoted.

Warning

.Uneven and Improper tire pressure is disadvantageous to driving of the vehicle, which may cause getting out of control.
.Keep the proper tire pressuer
.The tire pressures of two front tires and two rear tires should be kept identically.

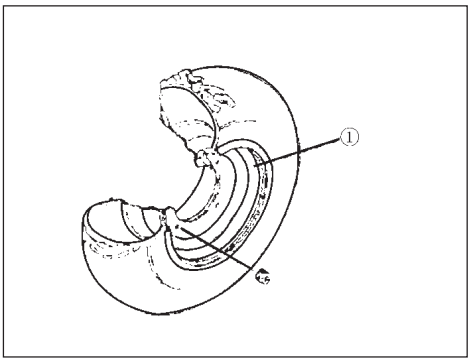


Normal temperature tire pressure	Front	Rear
Standard	20kpa(0.20kgf/cm²)	25kpa(0.25kgf/cm²)
Min	17kpa(0.17kgf/cm²)	22kpa(0.22kgf/cm²)
Max	23kpa(0.23kgf/cm²)	28kpa(0.28kgf/cm²)

2.Inspection
.If wear/damage is found on the surface of tire, replace.

Warning

Using the overworn tire is very dangerous.
If the tire is worn to the specified position,replace immediately.
Wear limit of tire:
Front and rear tires: 2.0mm@



(XIII)Inspection of rim
Inspection of rim ¢ũ
If cracked/bent/damaged,replace it.

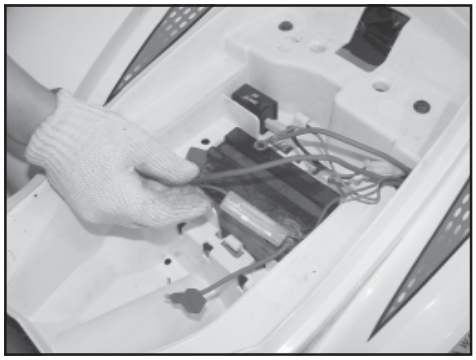
Caution

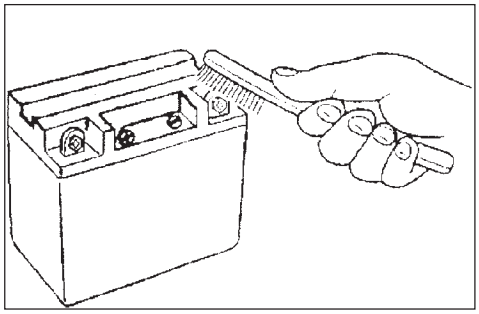
Keep the rim in balance when replacing the rim or tire.

Warning

Never attempt to repair the rim.

Section 4 Maintenance and Adjustment of Electrical Appliance





(I)Inspection of battery
Warning:
The electrolyte is dangerous article, whitch includes sulphuric acid, so it is poisonous and corrosive.
.Please operate by the following steps:
a.Avoid the body touching the electrolyte so as to protect the eye from burn or damage.
b.Wear the protective glasses when operating near the battery.
.Avoiding measures(External):
a.Wash the skin with water.
b.Wash the eyes for 15 minutes with water, then conduct treatment at hospital.
.Avoiding measures (Internal):
Drink a plenty of water , magnesia oxide, egg and rapeseed oil, and conduct treatment as early as possible.
.The battery can produce explosive gas, so follow the following protection measures:
a.Be sure to keep the ventilation when changing the battery.
b.Keep it away from spark, flame,(such as welding equipment, burning cigarette, etc).
c.Smoking is strictly prohibited when charging or operating the battery to keep the battery and electrolyte away from children.
1.Removal (Refer to the content of Section Two of this chapter.)
.Cut off
Refter to “Removal of cushion”of this chapter.
Battery electrode (negative electorde¢Ù¸positive electrode)

Warning

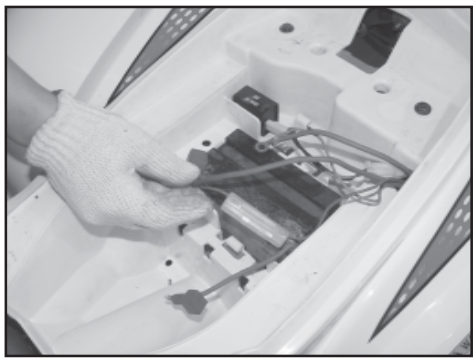
First remove the negative electrode
2.Removal:
a.Battery clamp plate ¢Ü
b.Battery clamp plate ¢Û

Caution

Before using a new battery, be sure to charge to ensure the best condition of the vehicle.
3.Inspection of battery electrode
If the dirt is found, clean off with brush.
If it is not connect well , correct it.

Caution

After cleaning the electrode, apply a film of lubrication grease.

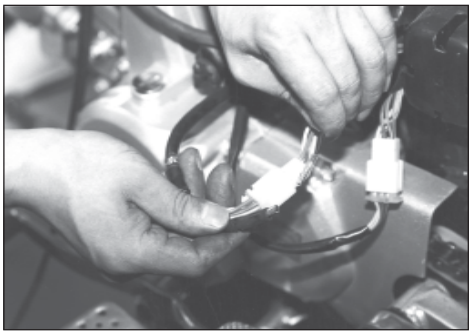


4.Inspection of battery
If damaged, replace it

5.Installment of battery ¢Û
6.Connect
.Battery electrode(positiove electrode ¢Ù negative electrode ¢Ú)

First connect the positive electrode ¢Ù

7.Installment:
a.Battery clamp plate ¢Ü
b.Cushion

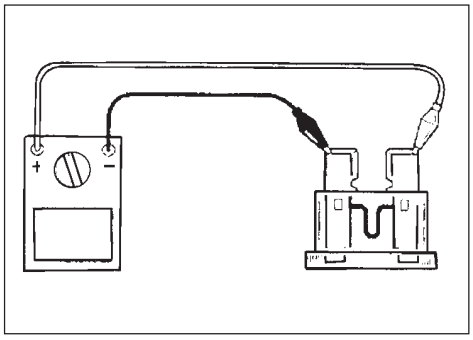


(II)Inspection of fuse

Caution

Closet the main switch when checking or replacing the fuse, otherwise, it will cause the short circuit.

1.Inspection steps
.Remove the fuse
.Connect the small-size test instrumentation to measure if the fuse is connected well.



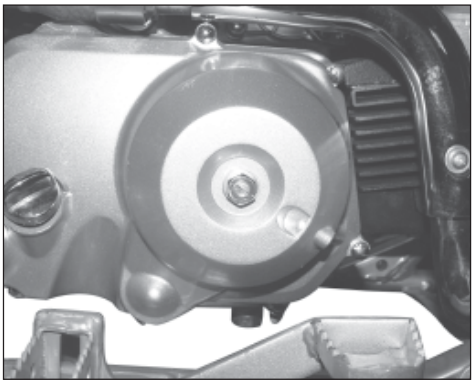
Caution

Set the test instrumentation at the postion of "52 ¡Á1"

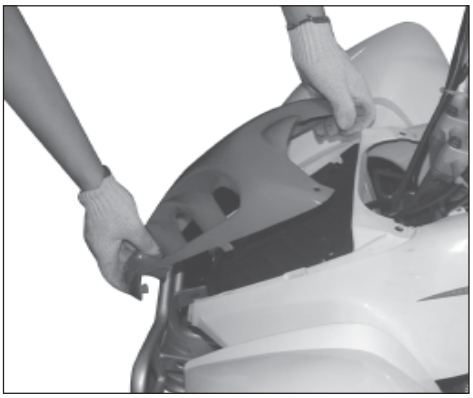
Small size test instrumentation:
9/N.YU-03112
90890-03112

.If the indicating meadle indicates toward ¡Þ the fuse has broken needing to be replaced.

Section 5 Maintainace and Adjustment of Engine



(I)Adjustment of clutch
Adjustment steps:
a.Loosen the locking nut ¢Ù
b.Turn the adjusting screw rod ¢Ú counter-clockwise slowly up to be unable to turn,then turn1/8 clockwise, and fasten the adjusting screw rod¢Úto this position and tighten up the locking nut ¢Ùwith the torque of N.m.



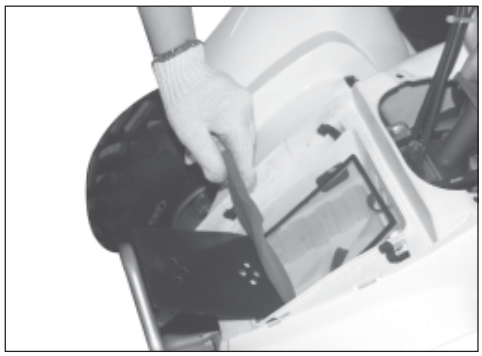
Turn the adjusting screw rod ¢Ú counterclock-wise to decreses the clearance of clutch,Turn the adjusting screw rod ¢Úclockwise to in-crease the clearance of clutch.

(II)Clean of air filter
1. Dismantle the front cover
2. Remove the air filter box cover, air filter components.

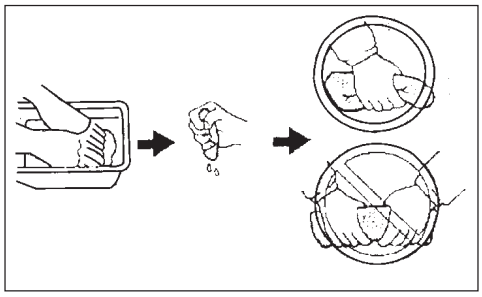
3.Removal
Air filter core

Caution

Never start the engine without filter, otherwise the piston and cylinder will be overworn.
4.Inspection
a.Air filter core ¢Ù
If damaged, replace it.



5.Clean of the foam filter core:
a.Clean with water completely and slightly.
b.Squeeze the surplus water of the foam and dry it.
Note:
When squeezing the water on the foam, be sure to be slight.



6.Installment:
a.Install the foam filter core to the foam supporting cylinder to combine a air filter assy.
b. Install the air filter assy.
c.Install the air filter cover.

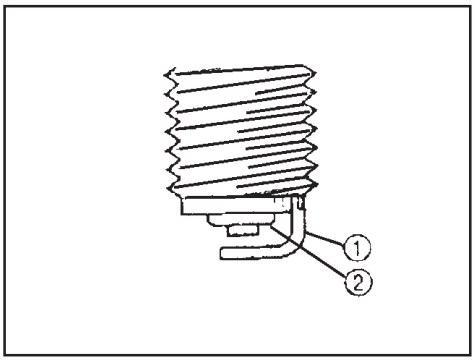
Caution

Make sure that the close fit surface of air fiter is engaged with the close fit surface of air filter box, and the air leakage is not allowed.

(III)Inspection of spark plug

1.Rest the vehicle on the flat ground and lean the spark plug with compressed air to avoid the dust entering the engine.

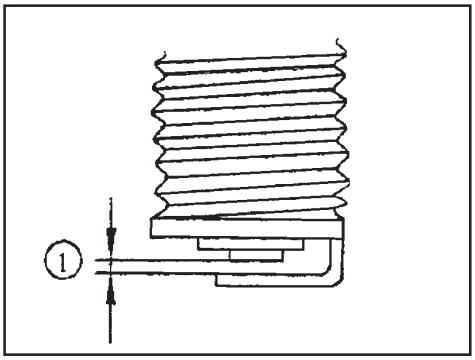
2.Remove the spark plug ¢Ù



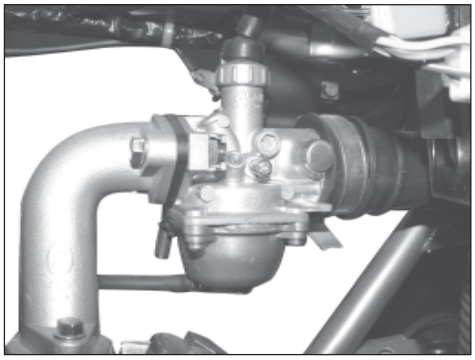
3.Inspection of spark plug
a.Electrode ¢Ù
Wear/damaged ¡úreplace
b. Insultor¢Úcolor
Brown or light brown in normal condition If the color is clearly different ¡úcheck the engine.

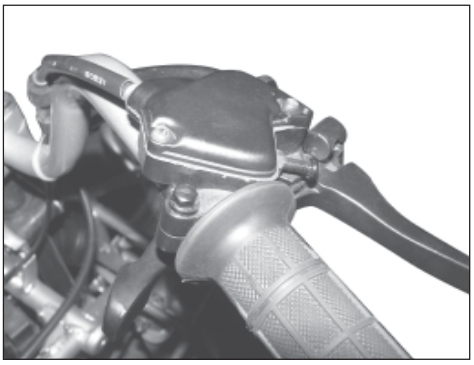
4.Clean of spark plug
Clean the sprak plug with spark pluger cleaner of brush.

5.Measure the spark plug clearance ¢Û Measure with feeler gause. If out of specification, adjust.
Spark plug standard clearance:0.6-0.7mm



6.Installment of spark plug
a.Clean the washer surface and spark plug surface before installing the spark plug.
b.Tighten up the spark plug with hand before install it according to the specification.
Tightening torque of spark plug:17.5N.m





(IV)Adjustment of idle speed

1.Rest the vehicle on the flat ground

2.Start the engine and prewarm it at the speed of 1000-2000r/min, after several minutes, increase the engine speed to 4000-5000r/min.

3.Set the specified idle speed through adjusting the throttle adjusting screw ¢Ù Screw in to incresase the engine speed and screw out to decrease the speed.

Specified idle speed:1450-1550r/min

4.Measure the engine speed with measuring meter.

5.Make sure that the free clearance of throttle grip is within 3-5mm. otherwise readjust the idle speed.

(V)Adjusting ment of free clearance of throttle grip

Caution

First adjust the engine idle speed when adjusting throttle grip.

1.Rest the vehicle on the flat groud.

2.Inspection

.Free clearance of throttle grip@, If out of specification ¡úadjust free clearance of throttle grip:3-5mm

3.Adjustment

Adjustment steps of free clearance of throttle grip.

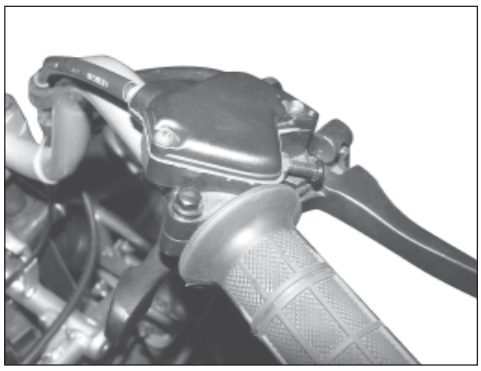
a.Loosen the locking nut ¢Ú.

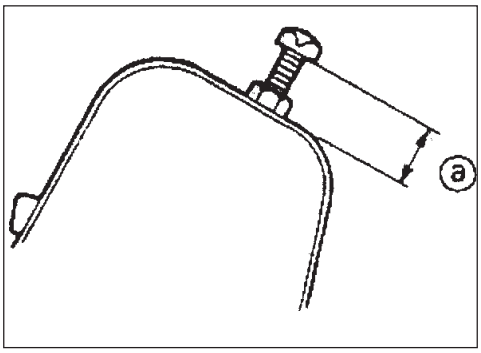
b.Turn the adjusting bolt up to the free clearance of throttle grip @is 3-5mm.

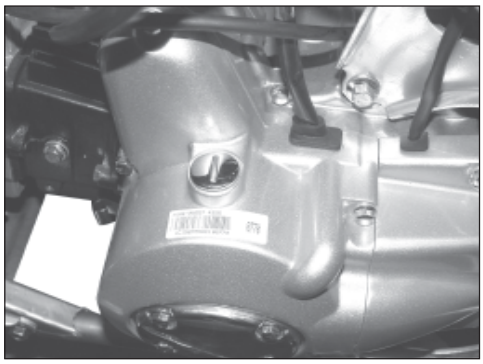
c.Tighten up the locking nut¢Ú

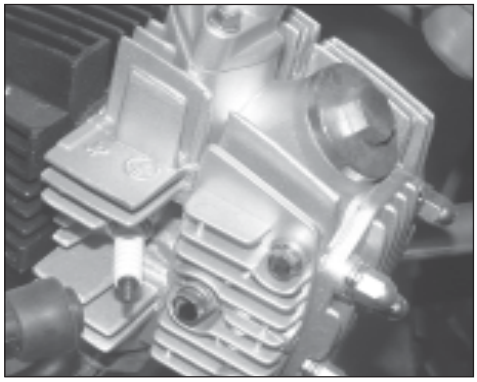
Caution

After adjusting the free clearance,move the lever forward and rearward to make sure that the engine will not lift.









(VI)Adjustment of speed limitator:

The speed limitator can limit the throttle in full opening condition when the throttle grip is pulled to the Max position, screwing the adjuster inward can stop increasig the speed.

1.Adjust speed limiting length@

Adjustment steps:

a.Loosen the locking nut ¢Ù

b.Adjust the adjusting screw ¢Úclockwise or counterclokwise to make @ obtain the specified length of 12mm.

c.Lock the locking nut ¢Ù

Warning

A.For the beginner of driving, pay extral attention to screw in the speed limitator inward and screw out with improvement of driving skill, never remove the adjusting screw of speed limitator.

b.For the correct throttle grip operation, never screw out the adjuster to exceed 12mm, and adjust the free clearance of throttle grip to 3-5mm.

(VII)Adjustment of valve, clearance.

Caution

The valve clearance should be adjusting only after the engine is cold, the valve clearance should be adjusted when the piston is at the end point position of compress stroke.

1.Removal:

1)Rest the vehicle on the flat ground

2)Remvoe

Front fender

3)Remove:

a.Timing observation hole screw¢Ù

4)Remove:

a.valve cap ¢Ù(the side of exhaust valve)

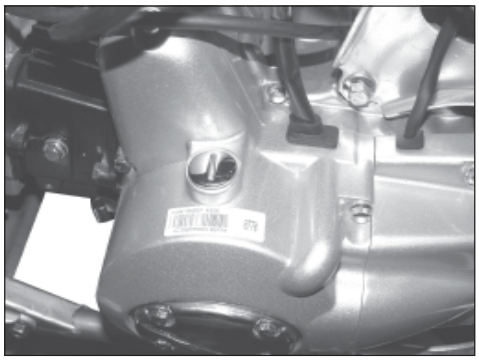
b.valve cap ¢Ú(the side of intake valve)

2.Adjustment

1)Measure the valve clearance

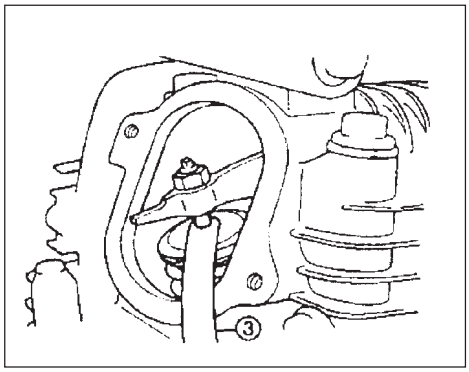
The detailed measure steps are as follows:

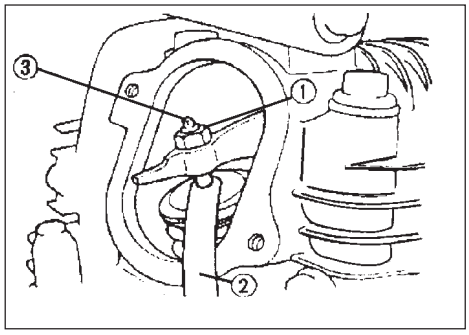
a.Turn the crankshaft counterclockwise with wrench.



b.Make the mark“T”on the rotor is align with the mark on the crankcase. When it is done that is the pistion ties in top dead center(TDC)
c.Inspection of top dead center in pressure stoke:
(i)When the mark on the rotor is align with the mark on the crankcase,the two arms must have clearance.
(ii)If there is not clearnance, turn the crankcase a circle by counterclockwise to meet the above requirement.

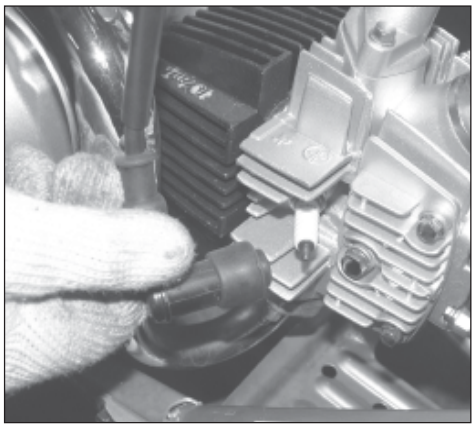
d.Measuer the valve clearance with plug gauge. Adjust the clearance if it is out of specification.
Intake valve clearance:0.05-0.09mm (normal temperature)
Exhaust valve clearance:0.11-0.15mm(normal temperature)

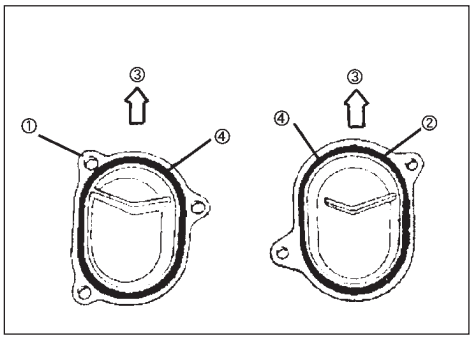


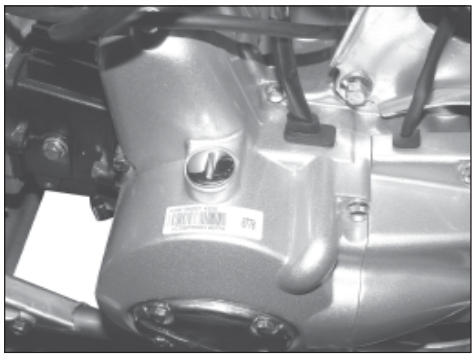


(2)Adjustment of valve clearance:
a.Loosen locking nut ¢Ù
b.Insert the Plug gauge spanner ¢Úbetween the adjusting screw ¢Ûand valve rod.
c.Turn the adjusting screw ¢Ûby clockwise with valve adjusting spanner until the right clearance is gotten to .
Size of valve adjusting spanner :3mm,code 90890-1311
d.Fix the adjusting screw ¢Ûto avoid turning, and fasten the locking nut ¢ÙTorque of locking nut is :14N.m

(3)Adjust the valve clearance again:If the clearance is not right, adjust it by repeating above adjusting steps.







3.Installation:

Carry out it according to opposite steps of “Removal”.

(1)Mount:

a.Valve cap ¢Ù(Side of outlet door)

b.Valve cap ¢Ú(Side of inlet door)

Caution

(i)Project of valve cap ¢Ù¢Úsould be up ¢Û when mounting.

(ii)Check if O-ring ¢Üis damaged. if any, replace it immediately.

Torque of valve cap: 10N.m

(2)Mount:

a. Fuel tank

b. Front fender

(VIII)Inspection of ignition timing

Notice:

Before checking the correct timed ignition adjust the engine idle speed and free clearance of throttle grip to correct position.

1.Put the vehicle on the flat groud.

2.Start the engine for pre-heating ,and then stop the engine.

3.Mount induction engine tachometer (90890-03113)

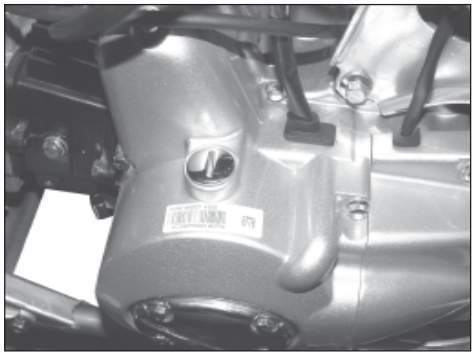
4.Mount correct timed ignition meter on connection line of spark plug cap(9890-00314)

5.Inspection of ignition timing.

Inspection steps:

a.Take off plug

b.Start the engine, and make the engine run at 1450r/min-1550r/min idle speed.



Warning

When the engine is running, the machine, oil maybe splash out, so be careful to start the engine.

c.Check if the mark on the crankcase is in the range of ignition under the magneto rotor indication.If it is out of range, check if the rotor and pulse coil is loosen or damaged.

Caution

Ignition timing can't be adjusted.

6.Mount plug

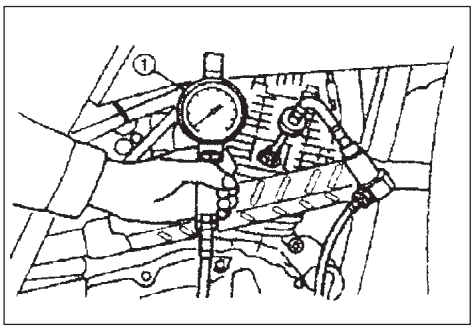
7.Take off ignition timing meter induction engine tachometer.

(IX)Measuring of compressive force

Caution

Inadequate compressive force will reduce the engine performance.

Before measuring compressive force. Valve clearance should be adjusted first (refer to "Adjustment of valve clearance section).



1.Put the vehicle on the flat ground.

2.Take off spark plug.

3.The following is steps of measuring compressive force:

a.Install pressure gauge and change connector.

b.Turn the throttle lever to Max point.

Start the engine with power (battery has charged enoughly)until no increase of read pressure gauge.

Warning

When starting the engine, the spark plug must be connected to ground for avoilding spark.

c.When checking the following ,the read of pressure gauge:

Compressive force on sea level:

Standard value:9000Kpa(9.0kg/cm^2)

Min.Value:800Kpa(8.0kg/cm^2)

Max.Value:1000Kpa(10.0kg/cm^2)

d.If the pressure is lower than the min,value:
(i)Drop some oil to action cylinder.
(ii)Measure the pressure again

Compression force(The machine oil has been filled in the cylinder)	
Compressure read	Reason
Read is highter than one before filling	Piston or piston ring is worn or damaged
Read is equal to one when no oil	Piston ring, throttle cylinderhead, washer maybe be damaged.
Read is over max. value	Check if the cylinder head throttle surface or piston top end are carbon laydown.

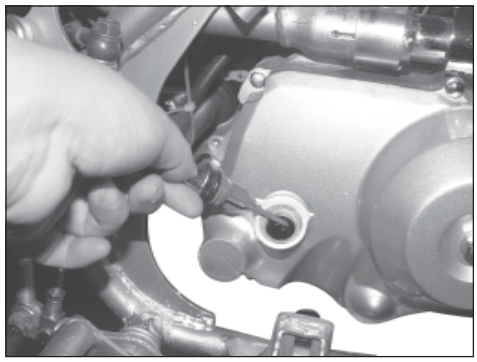
4.Take off pressure gauge

5.Mount spark plug, Torque of mount is 175N.m

(X).Inspection of oil quantity of engine

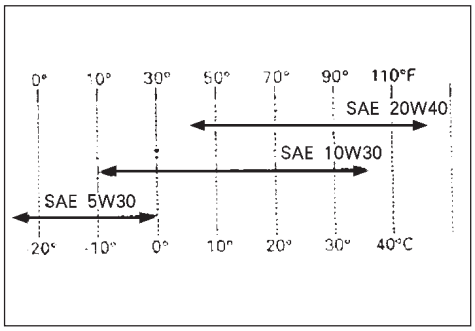
Foreign

No foreign matter in crankcase
1.Put the vehicle on the flat ground
2.Check the quantityof engine oil.If it is inadequate, fill it.
Inspection steps:
a.Pre-heat engine for several minutes, and then turn off it.After waiting for more than ten minutes, return the machine oil into crankcase.



b.Turn out the dipstick ¢Ùentirely, and clean it, then insert it¢Ùback into oil hole.
c.Take out the dipstick ¢Ùto check if the oil level is between the Max. value and the Min. value ¢Û

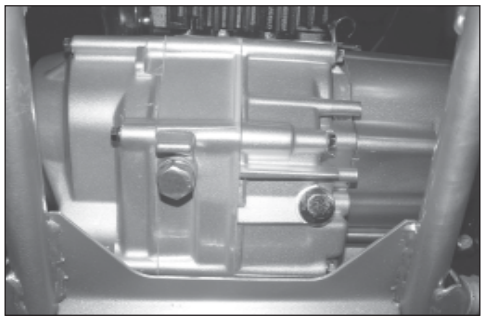
d.If the oil quantity is too small, fill some engine oil to make the oil quantity get to proper quantity. About recommended oil, see left diagram.



Caution

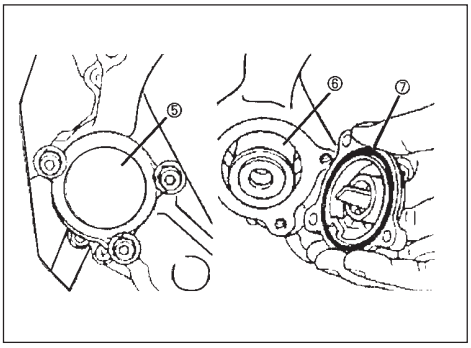
Recommended oil type:
U.S.A Petro Association offers: “SE”. “SF”type equal oil, such as :“SF-SE-CC”“SF-SE-SD”etc.

(XI)Replacement of engine oil and inspection of oil flow.



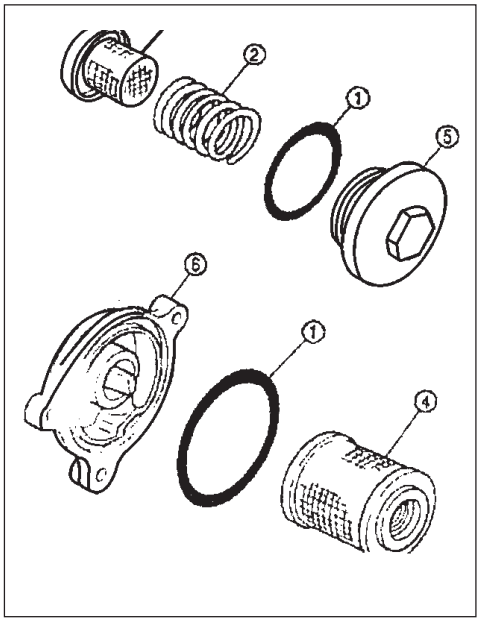
Caution

Engine oil can be used to lubricate clutch, but don’t use any chemical additive in machine oi l, because the additive can lead to clutch out of work.
Don’t permit any foreign matter into crankcase.
1.Put the vehicle on the flat ground.
2.Pre-heat the engine for several minutes, then stop it.
3.Put a container under the engine.
4.Take off oil dipstick, draining plug¢Ùto drain the engine oil.



Warning

When taking off draining plug, compressure spring ¢Ûrough filter ¢Üand O-ring ¢Ýis easy to lose. So pay attention to these parts.
5.Take off fire-filter cap ¢Ýfine filter ¢Þand O-ring ¢ß



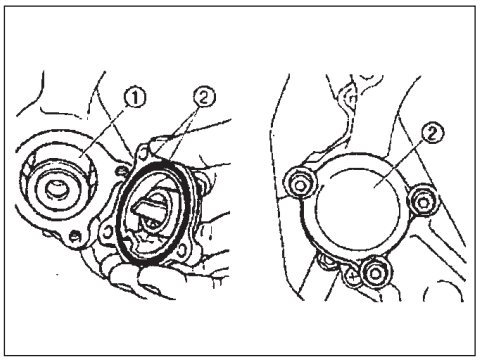
6.Inspection

One of parts of O-ring¢Ù, compressure spring ,rough filter ¢Ûfine filter ¢Üis damaged, repalce it.

7.Cleaning

Clean the compressure spring¢Ý filter¢Ûfilter ¢Ü filter plug of crankcase¢Ýand filter net cap with cleaner.

8.Coat the engine oil on the O-ring slightly.



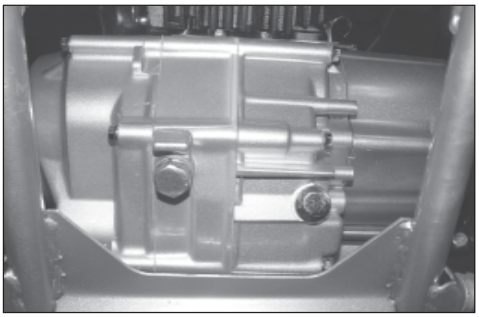
9.Install the fire filter¢Ù fire filter cap with O-ring ¢Ûrough filter ¢Ûand draining plug ¢Ü

Warning

Before installing the draining plug, mount O-ring ¢Ý,compress spring ¢Þand fine filter and be ensure that their mounting order must be correct.

Mounting torque :fine filter cap:10N.m

draining plug:40N.m



10.Fill machine oil into crankcase

Refer to : “Inspection of Engine oil Quantity”

Appendix:Total:2.2L

Periodic changing oil :1.8L

Oil quantity when cleaning or replacing filter net: 1.7L

11. Mount dipstick

12. Pre-heat engine for 5 minutes or more, and then stop

13. Check the oil flow

Chapter III Repair and Maintenance of Vehicle body

Section 1 Front wheel and Front Brake

Technical Parameter

Ser No.	Item		Parameter
1	Tire specification		AT22 ¡Á7-10
2	Rim dimension		5.5 ¡Á10
3	Tire air pressure(normal temperature)	Standard value	20KPa(Standard value)
		Min value	17KPa(Min vlaue)
		Max value	23KPa(Max value)
4	Run-out	Radia run-out	2mm
		End face run-act	2mm
5	Tire wear limit value		2mm
6	Wear limit value of friction wafer		2mm
7	Wear limit value of front brake hub		16mm

¢Ù

(I)Disassembly

1)Pay attention to following points when disassembling front wheels

a:Place the vehicle on a horizontal ground, and press down the rear brake attaching clamp¢Ù

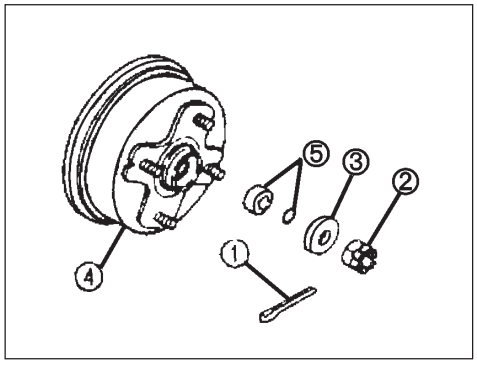
b.Loosen the connecting nut¢Ùof front &rear wheel on the front wheel.

c:Place a bracket under the frame to pick up the front wheels.

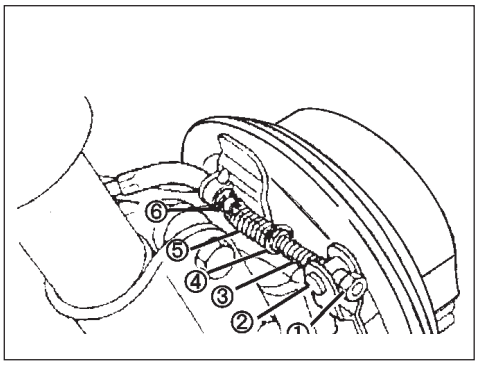
Warning

Support the vehicle firmly and avoid dropping down.

2)Disassemble the connecting nut ¢Ùof front &rear wheel.

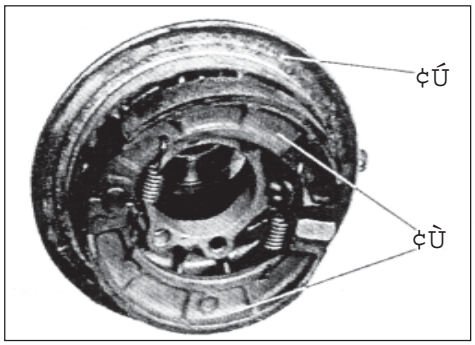


3)Disassmeble split pin¢Ù slotted nut¢Ú plain washer ¢Û front brake ¢Ü and gasket ¢Ý.

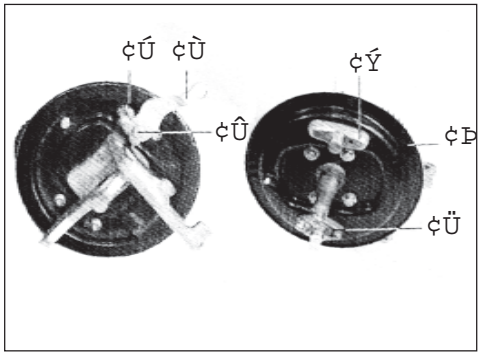


4)Disassmeble adjusting nut¢Ù pin¢Ú spring ¢Û circlip ¢Ü spring ¢Ý and circlip ¢Þ

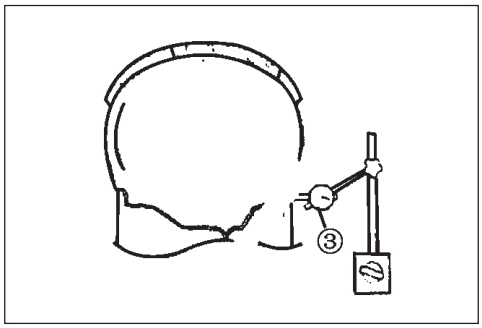
5)Remove the front brake cable and front brake air pipe.



6)Disassemble brake shoe assy ¢Ù and front cover assy ¢Ú



7)Disasssemble
¢ÙFront brake arm ¢Ù
¢ÚWear indicating sheet ¢Ú
¢ÛFront brake cam shaft ¢Û
¢ÜFront brake cam shaft seat ¢Ü
¢ÝRotating pin seat assy ¢Ý
¢ÞBrake cover ¢Þ



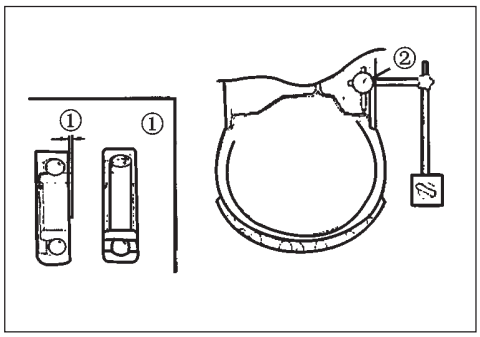
II.Inspecting procedures

1.Check

Front wheel:refer to “Tire inspection”and “Hub inspection”of chapter2.

2.Measure

Radial run-out of front wheel:If exceeding the specified limit, replace the front wheel or check the bearing clearance(¢Ùin figure)



Attached:Rim run-out limit:

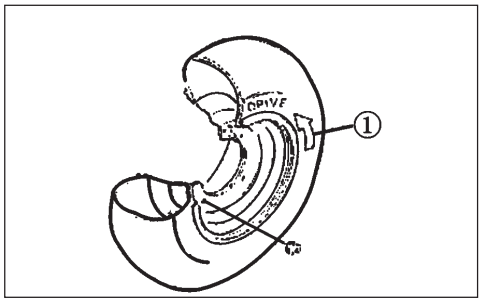
Radial run-out 2.0mm(¢Úin figure)

End face run-out 2.0mm(¢Ûin figure)

3.Check:

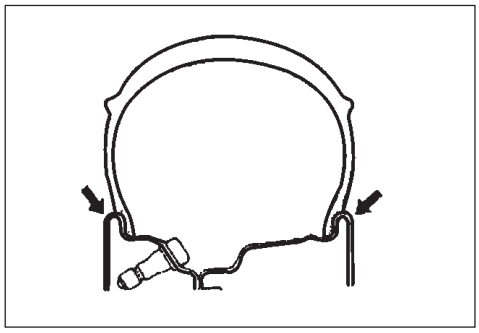
Tire surface:If worn or damaged, replace it.

Refer to “Tire inspection”of chapter2.



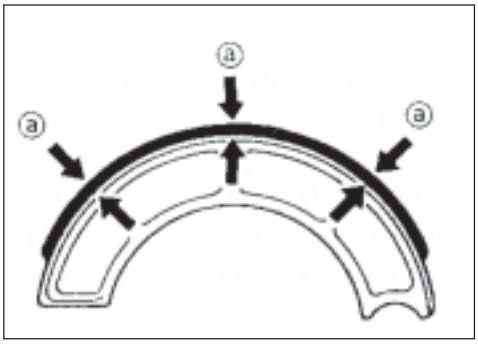
Caution

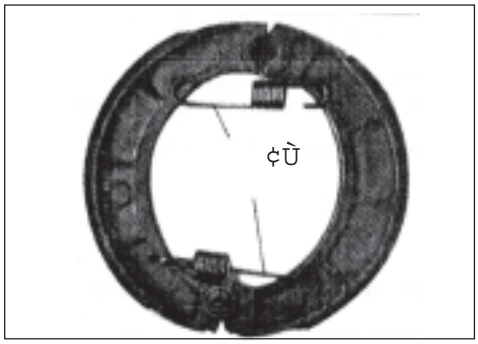
Install the tire according to direction ¢Ùof “ROTATION”mark on the tire.

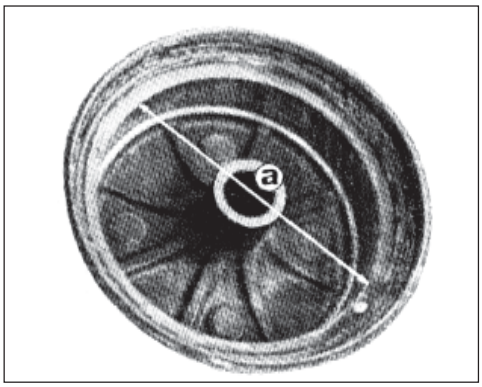


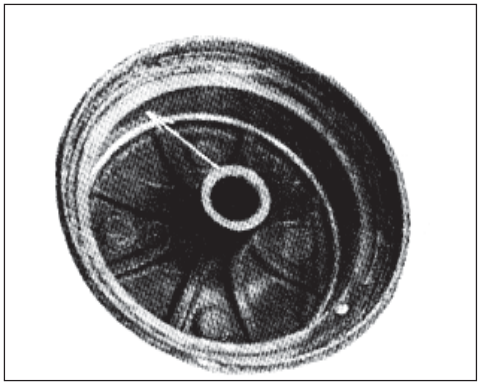
Warning

The tire assembly should be conducted on special equipment. After replacing the tire, conduct curvilinear motion carefully. Must ensure the tire on the correct position in rim. Otherwise may cause damgage of motorcycle or driver.









4.Check
Friction wafer:polish the surface needing polishment with rough sand paper.

5.Measure
Thickness of friction wafer of brake: if it does not conform to specified thickness, replace it .
Attached:
Thicknes of friction wafer of brake:4.0mm
Wear limit :2.0mm

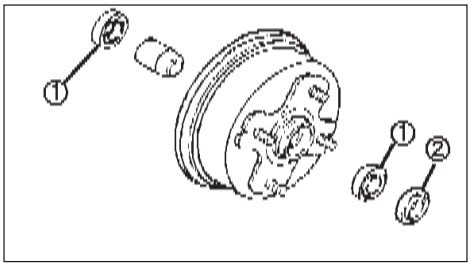
Caution

If the worn thickness of any part of friction wafer exceeds the wear limit specification, it is needed to replace the brake shoe in set. (including brake shoe spring¢Ù)

6.Check
Brake shoe tension spring ¢ÙIf worn or damaged, replace it.

7.Measure:
Inner diameter of front brake hub (@as shown in figure):
If it does not conform to specification,replace it .
Attached:
Inner diameter of front brake hub:160mm
Wear limit:161mm

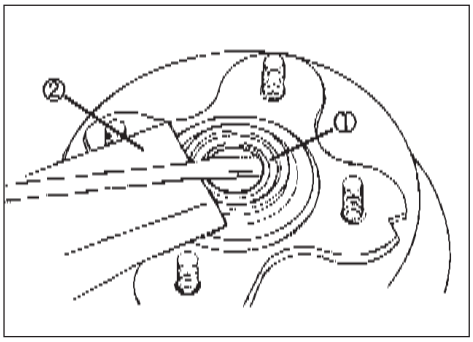
8.Check
If there is engine oil or scrape on the inner surface of brake hub, eliminate them.
¢ÙElimination of engine oil :wipe off with cloth immersed in volatile diluent or volatile solvent.
¢ÚElimination of scrape:wipe it off with carborundum cloth forcedly and evenly until it disappears.



9.Check

¢ÙIf the bearing ¢Ùof front brake hub runs out in brake hub or front wheel runs out when rotating, replace the bearing.

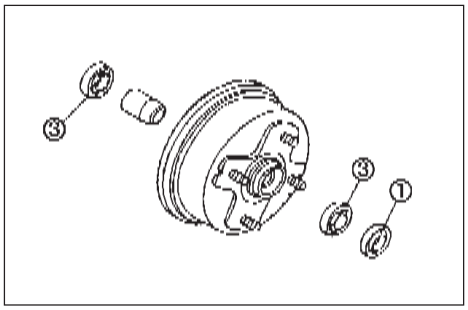
¢ÚIf the oil seal ¢Úis worn or damaged, replace it.



¢ÙReplacing procedures of front wheel bearig and oil seal

Wash the outer side of brake hub

¢ÚRemove the oil seal ¢Ùwith plain screw driver.

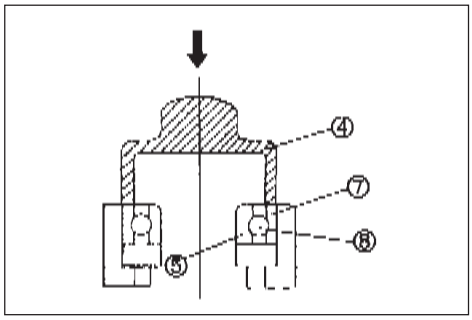


Caution

When removing the oil seal with plain screwdriver, place a cloth on the outer edge of oil seal to avoid damage¢Ú

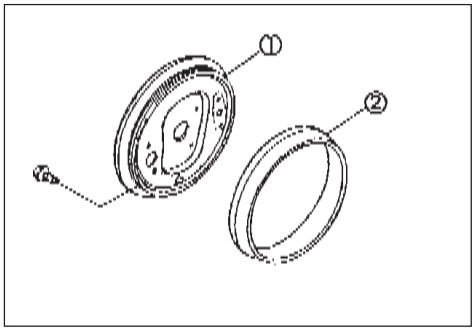
Disassemble the bearing ¢Ûwith corresponding tool.

Assemble new bearing and oil seal according to reverse procedures of above replacement.



Caution

Use a holddown ¢Ücorresponding with outside diameter of oil seal.



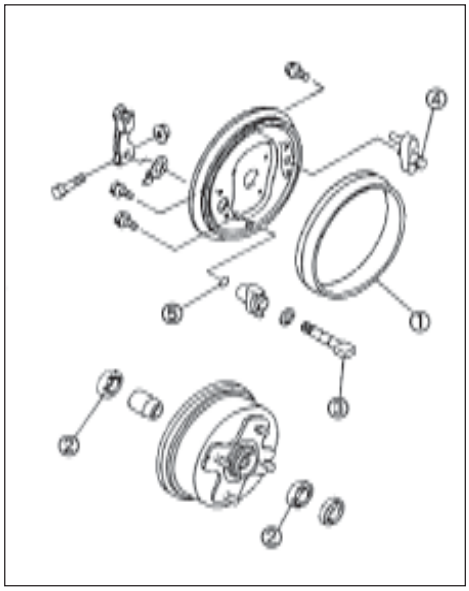
Caution

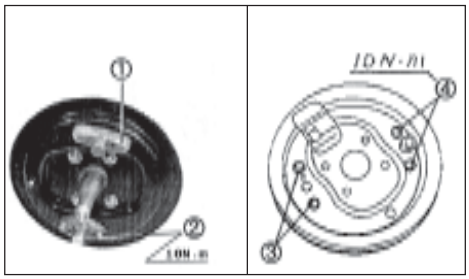
Do not beat the inner circle of bearing or roller , only contact the holddown and outer circle.

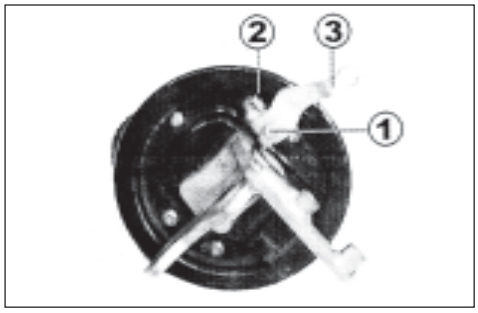
10.Check

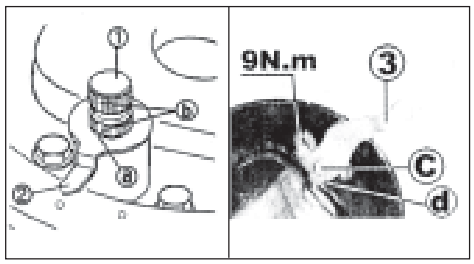
¢ÙIf there is crack or damage on brake cover assy ¢Ý replace it.

¢ÚIf the dust-proof seal of brake cover ¢Úis worn or damaged, replace it.









(III)Installation procedure:

The installation procedure is the riversal of “Disassembly ”.But pay attention to following points:

1.Lubrication:as shown in figure:

¢ÙDust-proof seal

¢ÚBearing

¢ÛCam shaft

¢ÜRotating pin seat

¢Ý“O”sealing ring

Attached:use lithum base grease

Warning

When installing the cam shaft and rotating pin seat, should apply a little grease firstly. After installation, wipe off the surplus grease.

2.Install

¢ÙRotating pin seat

¢ÚCam shaft seat

3.Install:

¢ÙBrake cam shaft

¢ÚIndicating sheet

¢ÛBrake cam arm

Caution

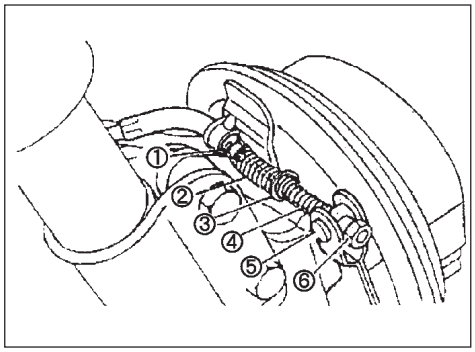
When installing the friction indicating sheet ¢Ú onto the brake cam shaft ¢Ù, should make the convext part (@)of friction indicating sheet corresponding with concave part (ⓑ)of brake cam shaft.

Make the punching mark ⓒ on brake cam shaft ¢Ùcorresponding with punching mark ⓓof brake cam arm.

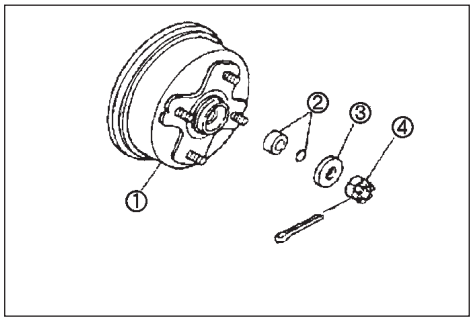
4.Install
Brake shoe assy

Do not apply lubricating grease on brake friction wafer.

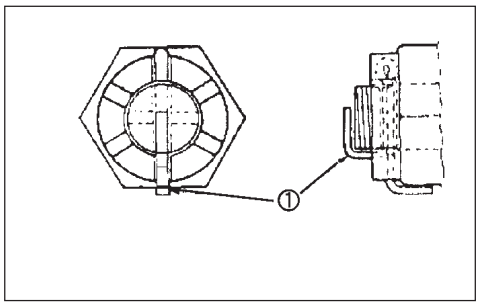
5.Connect
a.front brake air pipe.
b. connect the front brake cable with brake cover.



6.Install (as shown in figure)
¢ÙCirclip
¢ÚSpring
¢ÛCirclip
¢ÜSpring
¢ÝPin
¢ÞAdjusting nut



7.Install(as shown in figure)
¢ÙFront brake hub
¢ÚGakset, O-ring 17 ¡Á1.8G
¢ÛWasher
¢ÜSlotted nut (torque:70N.m)



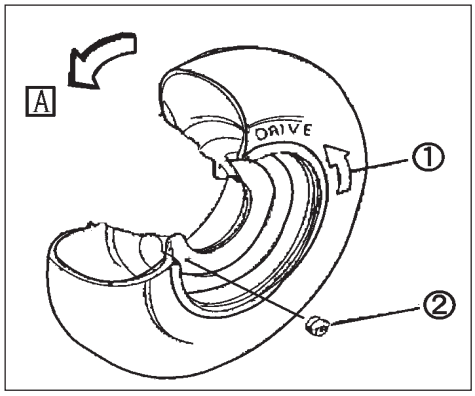
8.Install
¢ÙSplit pin

Caution

After the torque is fixed, do not loosen the slotted nut. If the concave slot of the slotted nut does not aim at pin hole of the screw column, aim them by tightening up the soltted nut.

Warning

Should use new and complete split pin.



9.Installment:

When installing the front wheel¢ÚÌ the fastening torque of connecting nut¢ÚÓof front and rear wheels is 55N.m.

The rotation direction of front wheel (A) is the arrow direction marked on the tire.

10.Adjustment

Free clearance of front brake cable

Refer to the "Adjustment of front brake"section fo chapter Two.

Free clearance of front brake:

The free clearance on the center of right lever is 5.0-8.0mm.

11.Loosen the brake clip.

Section 2 Rear wheel/rear brake/rear wheel axle

(I) Removal steps

1. Rest the motorcycle on a flat ground

2. Stop up the front wheel with wood, then put a proper supporting article under the frame so as to lift the rear wheel and make the rear wheel leave the earth.

In order avoid the parts falling, which will acuse danger, during romoval process, rest the vehcile firmly.

3. Removal

(1) Connecting nut of rear wheels

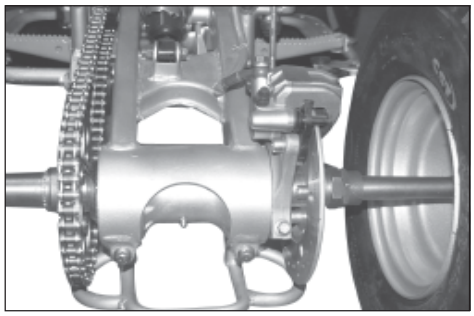
(2) Rear wheels

(3) Split pin

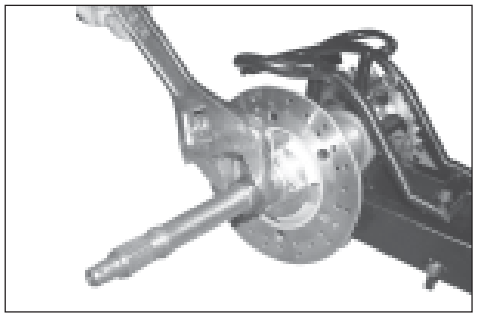
(4) Rear wheel axle nut

(5) Washer

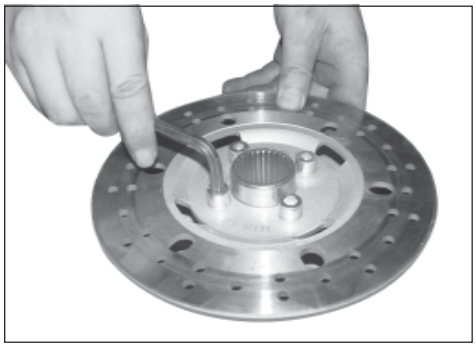
(6) Rear wheel connecting plate



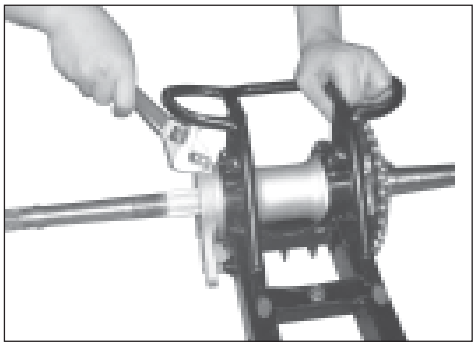
4. Dismantle the rear brake Caliper



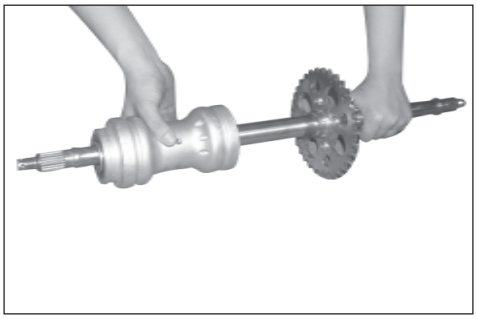
5. Dismantle the lock-nut of the rear axle.

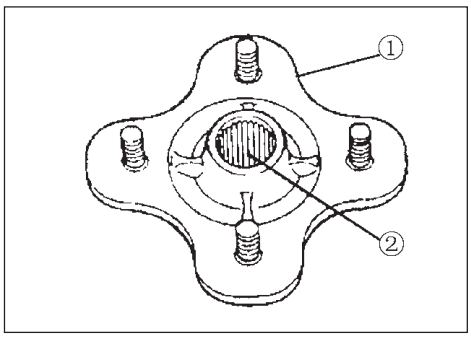


6. Dismantle the rear disk
Brake plate.

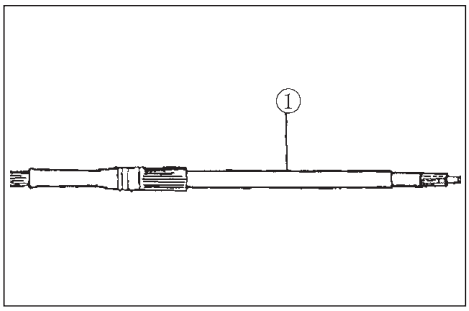


7. Disambly of rear
Disk brake bracket
(1) Connecting
8. Caution
Take out the rear wheel axle from the end of rear wheel axle bushing and gear box with soft hammer
Warning
During taking out the rear wheel axle, in order to protect the thread and gear groure from damage, do nut beat the rear wheel axle directly with hammer
(II) Inspection steps
1. Inspection rear wheel
2. Measurement
a. Radial runout of rim
b. Tire surface
3.Inspection
¢ÙRear wheel connection plate ¢ÚIf cracks or damage is found, replace it.
¢ÛInvolute spline on rear wheel connecting plate
¢ÜIf worn or damaged, replace it.





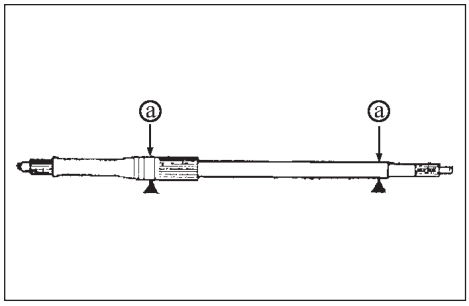
4. Measure ment
¢ÙMeasuring the thickness of rear dick brake pad.
¢ÚReplace the pad when its thickness reaches the timit.



5.Inspection of rear wheel axle ¢Ù

a:If the rear wheel axle is heavily scraped or broken, replace it.

b.If the thread or gear groove on the rear wheel axle is worn or damaged, replace it.



6.Measurement

The radial runout of the pisition @on the rear wheel axle, if out of specification, repalce it.

Attached:The radial runout limit of rear wheel axle:1.5mm

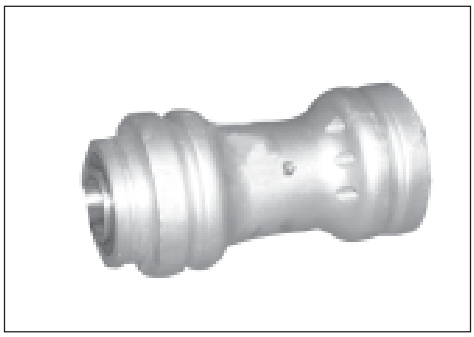
Warning

If the axle is bent, do not straighten it forcefully.

7. Check

¢ÙRear brake suppont

¢ÚIf there is any erack or friction is the suppont, replace it.



8. Inspection

(1) Bearing

Rotate the rear wheel axle, if the axle shakes left and right in the bearing or runout axilaay, It indicated that the bearing is heavily worn needing to be replaced.

(2) Oil seal

If the oil seal is worn or damaged, replace it.

Caution

During the install ment, the prsessing tool of bearing should be matched with the outer diameter of bearing outer race and that of oil seal.

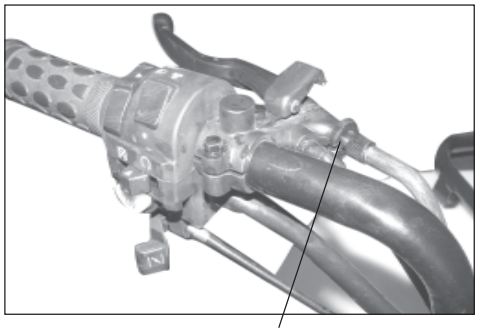
Warning

Never beat the inner race and bearing ball, the pressing tool needs to touch with bearing outer reac.

Section 3 Steering Operation System

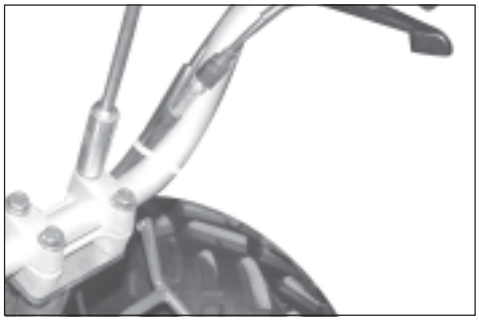
(I)Removal steps of steering bar
1.Removal
Handlebar decration cover

2.Removal
Front brake cable
Remvoal
Throttle grip assy

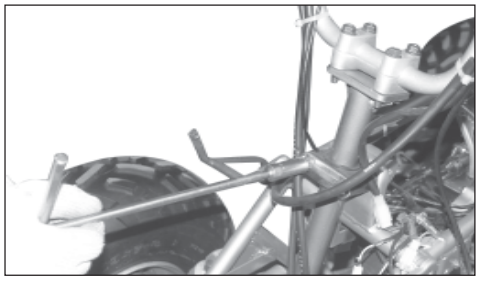


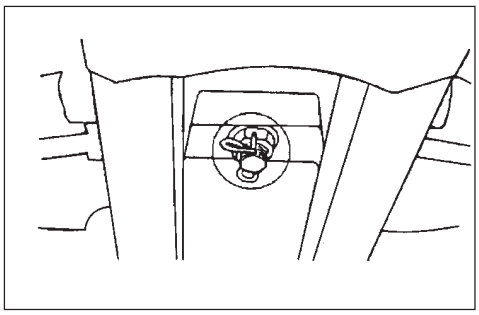
¢Ù

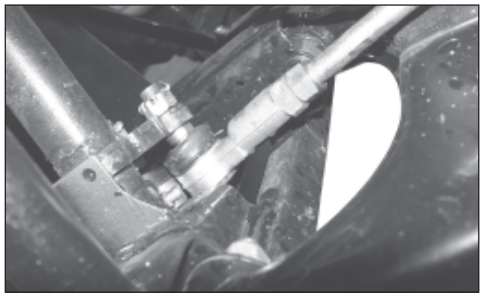
3.Removal
After stopping the vehicle, remove the rear brake cable ¢Ù

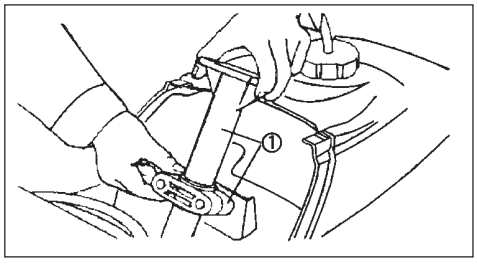


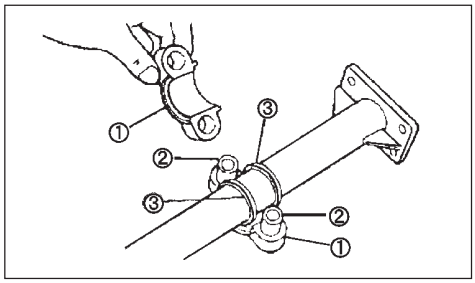
4.Removal
¢ÙSteering bar pipe
¢ÚLower holder of steering bar











(II)Removal steps of steering vertical column welding

1.Plain move

¢ÙThe locking part of locking pad as shown

2.Removal

¢ÚBolt

¢ÛLocking washer

¢ÜClip assy

3.Remocal

Install the steering vertical column with split pin

Nut

Washer

4.Removal

Split pin

Nut

Tension rod¢Ù

Caution

When removing the tension rod end and steering ball pin from the steering vertical column welding assy and front seat assy of front brake with common bearing tension tool and other tools, pay attention to not damage the relavent parts.

5.Removal

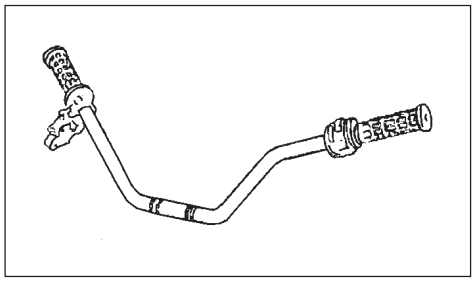
Remove the steering vertical column welding assy together with steering vertical column holder.

6.Removal

¢ÙSteering vertical column holder

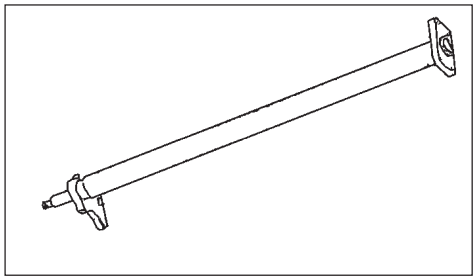
¢ÚBushing

¢ÛOil seal



(III)Inspection content

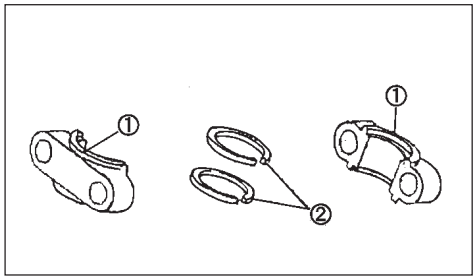
1.Check if the steering bar is cracks bent, is bent or damaged. If it is, replace it.



2.Inspect if the steering vertical column welding assy is bent or damaged. if it is, replace it

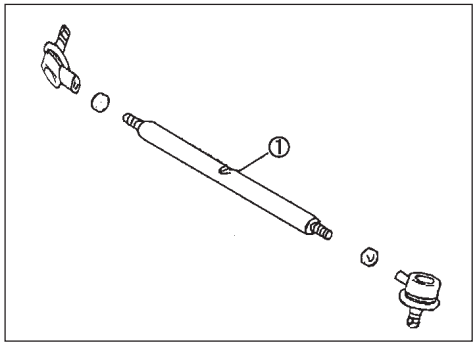
Warning

In order to avoid decreasing the performance of steering vertical column, if it is bent do not straighten it frocefully.



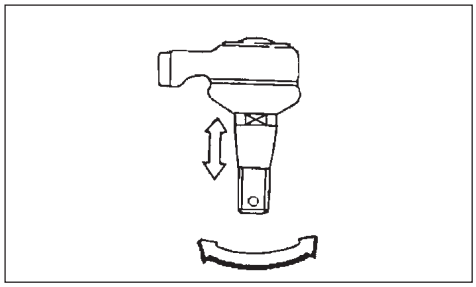
3.Inspection

Steering vertical column holder¢Ùand seal ring ¢Ø .If they are worn or damaged, replace it.



4.Inspection:

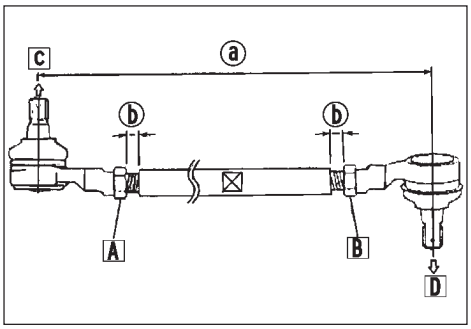
If the tension rod ¢Ùis bent or damaged. If they are, replace them.



5.Correcting:

The displacement of end head of steering tension rod ball pin assy(Refer to as pin ballas shown on the drawing).If the free clearance is found on the ball pin end head ,replace the ball pin. If the part around the ball pin end head is uneven, also replace it.

If there is convex point, wear, damage on the core surface of ballpin end head, replace it.



6.Adjustment

Assembly length of tension rod

Adjustment steps of tension rod assembly length

Loosen the connecting nut (A).(B)

Adjusting the assembly length of tension rod by rotating the tension rod.

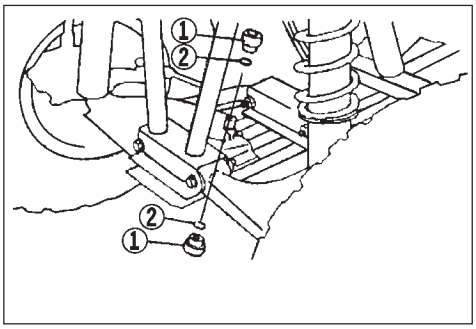
Attached:Tension rod assembly length @: 297mm

(A)Right-hand thread

(B)Left-hand thread

Connect (C)position to the steering vertical column welding assy.

Connect (D)position to the front seat assy, the front brake.



Caution

The connection nut (A)(B)can be tightened up only when the revealed thread length ⓑ of two ends of tension rod are the same.

Attached:Connecting nut torque of tension rod: 30Nm

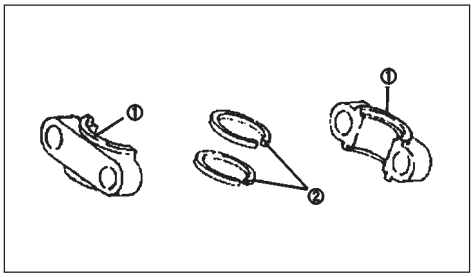
7.Inspection

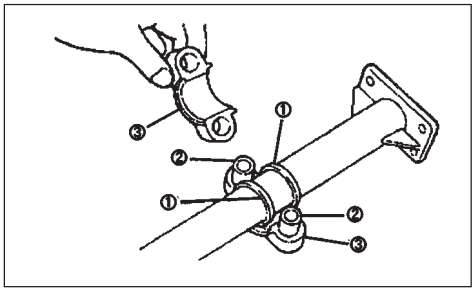
If the bearing ¢Ù and O-seal ¢Ú under the steering vertical welding are worn or damaged, replace them.

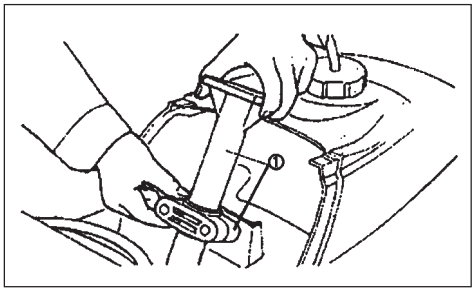
(IV)Installment steps

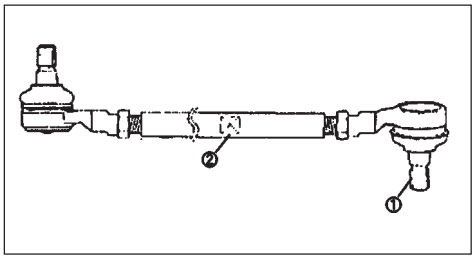
The reversal steps of "Removal"steps "Installment"steps, pay attention to the following points during installment.

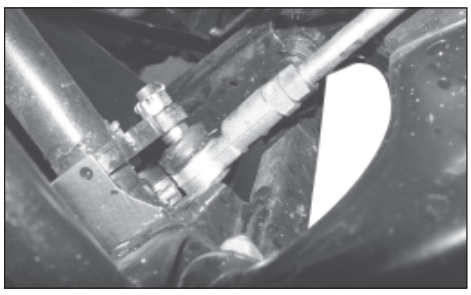
1.When installing steering vertical column welding, lubricate the bearing ¢Ù and seal ring ¢Ú under the steeing vertical column welding.











2.Lubricate the steering vertical column holder ¢Ùand seal ring ¢Úduring installing the steering vertical column welding.

3.Installment

Install the seal ring ¢Ùto the steering vertical column welding, then install bushing¢Ú finally install the steering vertical column holder¢Û

Caution:

Never damage the seal ring when installing.

4.Installment

When installing the steering vertical column holder and steering vertical cotumn welding take them as unit ¢Ù

Warning

In order to ensure the correct circuit of brake cable and wire, never damage and wind the cables and wires.

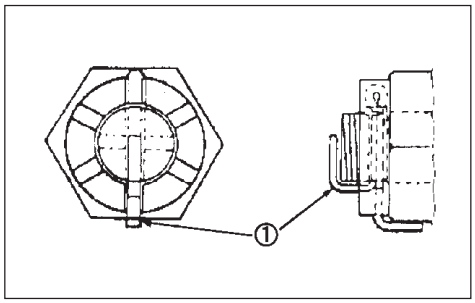
5.Insatllment of left and right tension rod¢Ú

Caution

Make sure that the ball pin ¢Ùat the side of scraped marking connect with the front seat assy of front brake.

6.tighten up the nut¢Ùof ball pin assy.

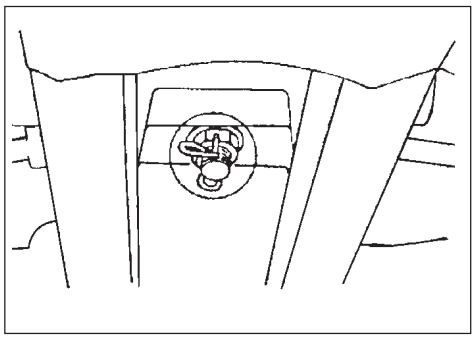
Attached:Nut torque :25Nm



7.Mounting split pin¢Ù

Caution

Don’t loosen the nut after the torque is fixed. If the nut recess is not correspondance with split pin hole on the double -screw bolt, tighten the nut to align them.



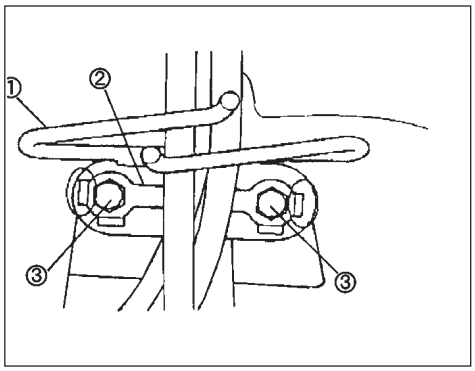
Warning

Always use new split pin

8.Tighting

After mounting the washer,nut, split pin under the steering vertical column.

Nut torque:30Nm



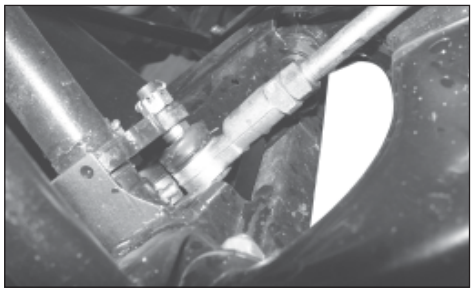
9.Install

Clip ¢Ùlocking washer ¢Úbolt ¢Û

Attached:bolt torque:23Nm

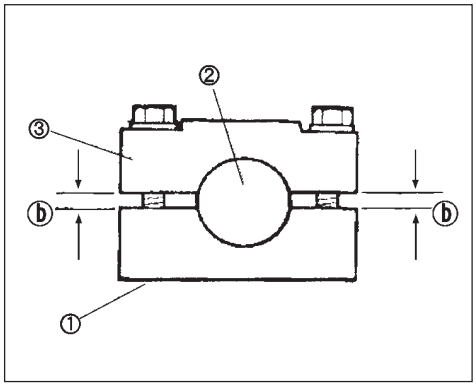
Warning

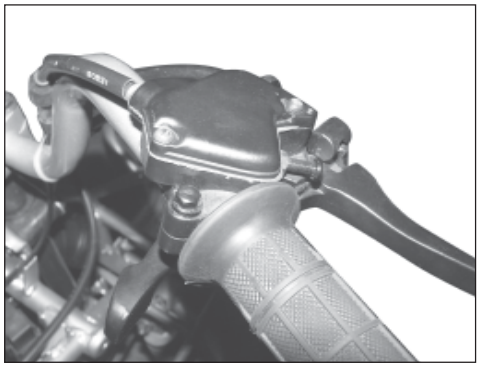
Always use new locking washer.



10.Bent showing supporting lug of locking washer to lock tightly the bolt.

11.Fill the lubrication oil at the oil cup to lubricate the bearing under the steering vertical column.Lubricatin oil is Lithium base grease.





(V)Installation steps of steering bar

1.Install the lower holding seat¢Ù steering tube ¢Úand upper holding seat ¢Û

Warning

When tightening the bolt of holding seat, make ensure the even of clearance ⓑ.

Attached:bolt torque:20Nm

2.Install the throttle grip unit

Caution

The projection ¢Ùof throttle grip must correspond to the sunken part ¢Úon the right lever seat when installation.

Warning

Correct installation of cable and wire is very necessary for ensuring the safty operation of vehicle.

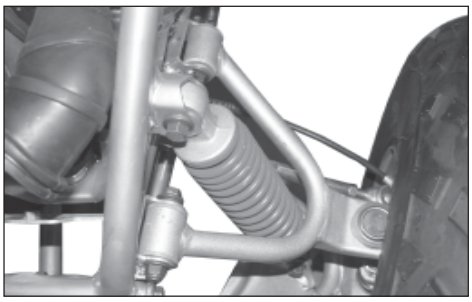
Refer to chapter 1“wiring diagram of vehicle”

3.Ajusting the free clearance of brake cable

4.Adjusting the toe-in of front wheel

5.Mounting front fedner, bumper, front luggage carrier.

Section 4 Front shock absorber and Front wheel fork

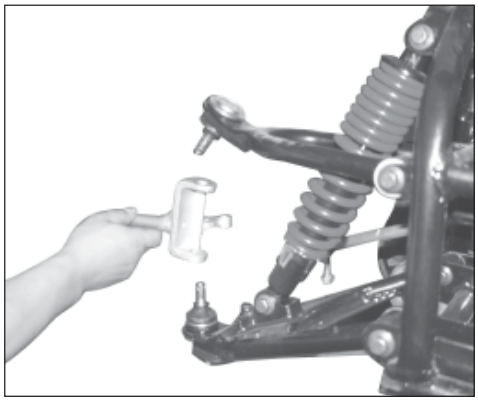


(I)Disassembly:

1.Take off front feder front wheel.

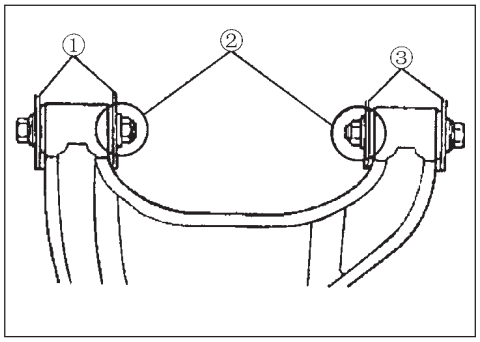
2.Take off split pin, nut and steering rod ball pin assembly.

3.Dismantle the bolt of the front shock-absorber.



4.Take off the bolt under the front shock absorber nut of front shock absrober and front shock absrober.

5.Take off split pin, nut on the left/right front seat assy and left/right front seat assy.



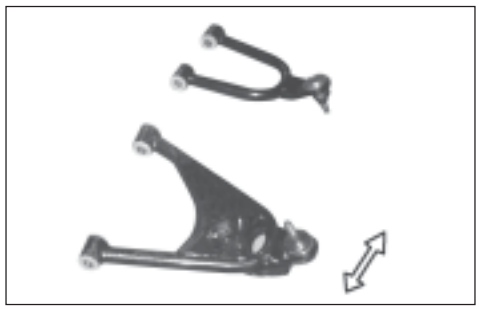
6.Check the free clearance of left/right front wheel fork

Inspection step:

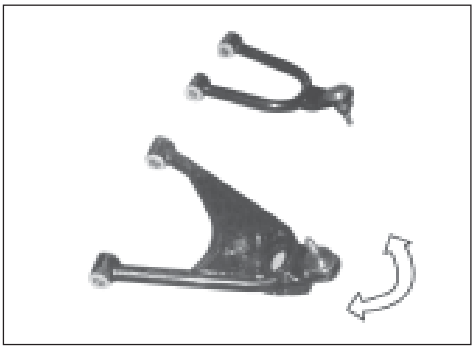
a:Check the parts ¢Ùof let/right front wheel fork on the frame, if it is bend, crack or worn repair or replace the frame.

b:Check the torque value of locking nut on the left/right front wheel fork

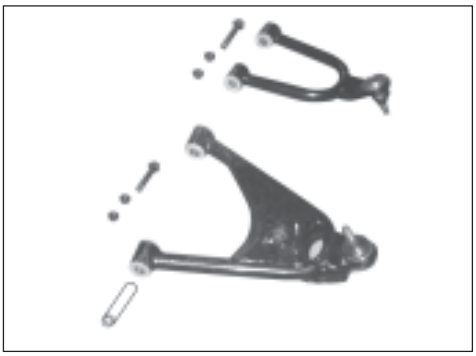
Attached:Nut torque value:45Nm



c:Move the left/right front wheel fork from one side to another to check its side clearance. If the side clearance is very obvious replace bushing sub-assembly or a set of front wheel fork.

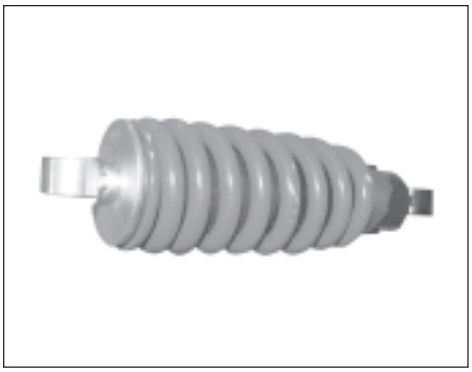


d:Move the left/right front wheel fork up and down to check its vertical clearance. If the vertical moving is tight, limited or uneven, replace the bushing sub-assembly or whole front wheel fork.



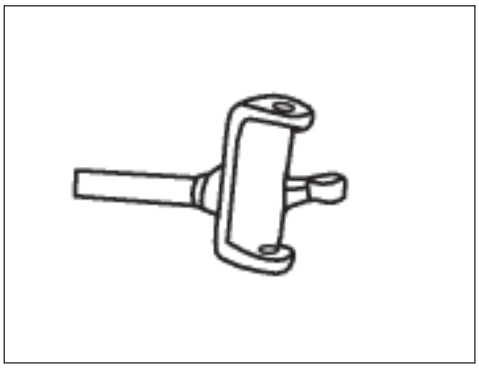
8.Take off nut¢ù bolt¢ú left/right front wheel fork ¢ûand bushing sub-assembly ¢ü

(II)Inspection step



1.Check the front shock absorber. If it is leakage ,replace it .Check the universal joint.If it is crack or damaged,replace the front shock absorber.

Check spring, if it is fatigue or damage, replace the front shock absorbe.(When checking, move the spring up and down)

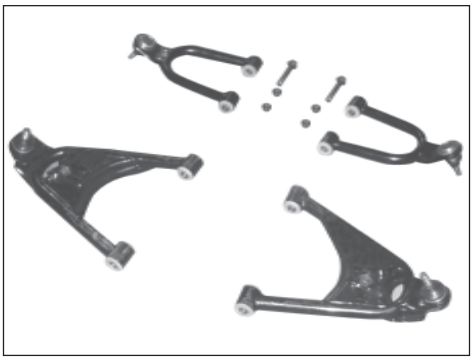


2.Check the front seat assy of front brake, if it is crack sunk or damaged, replace it.

Warning

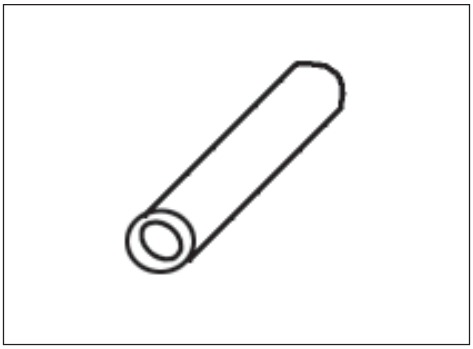
If the front axle is bend don’t strighten it in order to avoid reducing the performance of front axle on the brake.

3.Check the left/right front wheel fork welding, if it is crack, bent or damaged, replace it.

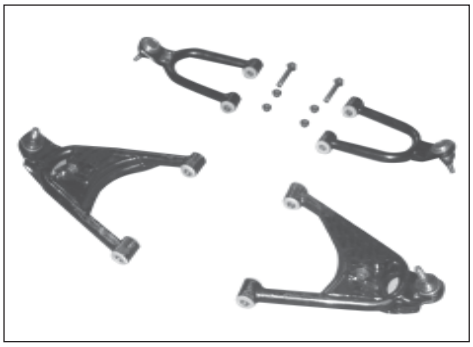


Warning

If the left/right front wheel fork welding is bent, don't strighten it seriously in order to avoid reducing its performance.



4.Check the bushing sub-assembly ¢Ù if it is worn or damaged, replace it.



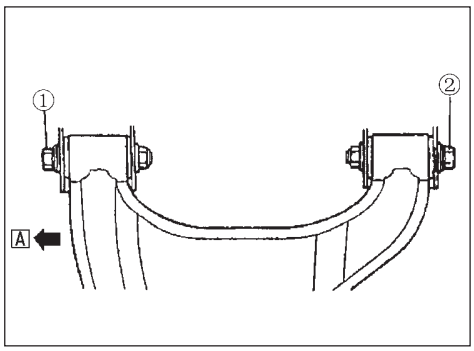
(III)Installment steps

The opposit steps of "Disassembly"is the mounting steps. The following must be paid attention when mounting:

1.Lubricate the inner surface of bushing sub-assembly.(Lubrication oil is lithium base grease).

2.Fix nut

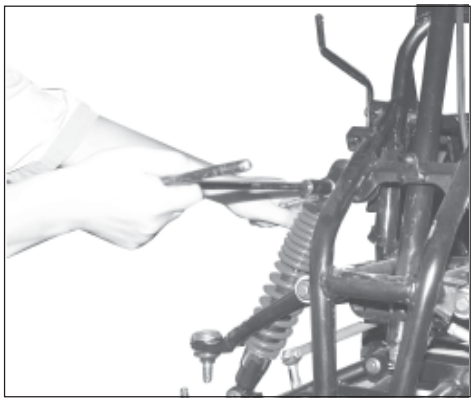
Nut torque:45Nm



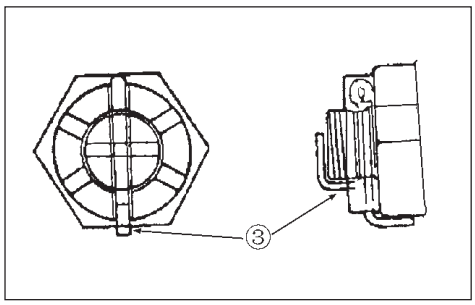
Caution

Must ensure the correctionof bolt mounting direction of left /right front wheel fork, bolt head position is the position showing on the drawing ¢Ùfront, behind ¢Úthat make the bolt head is outward.

means the vehicle is forward.



3.Mount left/right front seat assy ¢Ù
4.Fix the nut ¢Úof left/right front seat assy.
Attached: Nut torque :25Nm



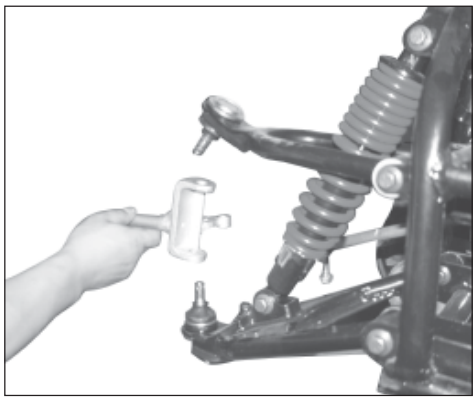
5.Mount the split pin ¢Û

Caution

Don't loosen the nut after marking the standard torque.If the recess on the nut is not correspondence with split pin hole on the bolt, correct it by tightening the nut.

Warning

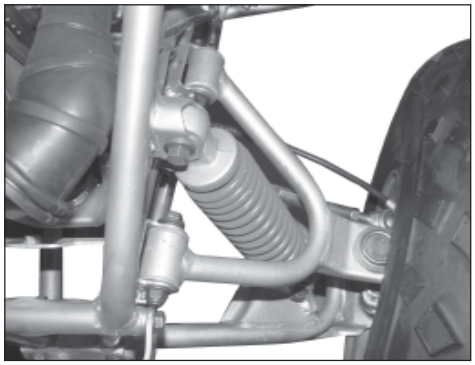
Must use new split pin.



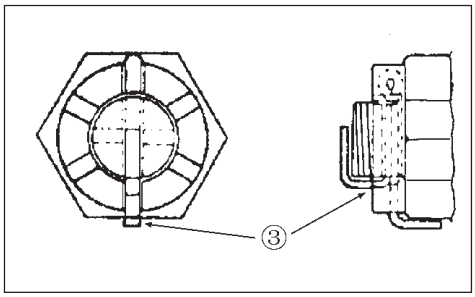
6.Mount:
Front shock absrober ,front shock absorber nut ¢Ý,bolt ¢Þunder the front shock absorber.

Caution

Before fixing the front shock absorber nut¢Ý, Must ensuring the side plane ¢àof universal joint¢ßis limited by frame limited block.
In order to the head of bolt is forward, the correction of bolt mounting direction ¢Þunder the front shock absorbe should be guaranted.



7.Tightten the nut ¢Ý,bolt of front shock absorber ¢Þ
Attached:Nut torque of front shock absorber: 55Nm
Botl torque :78Nm
8. Mount steering lever ball pin assembly ¢Ü, nut ¢Úand split pin ¢Û
Attached: Nut torque:25Nm



Caution

Don’t loosen the nut after markingthe standard torque.If the recess on the nut is not correspondence with the split pin on the bolt, correct it by fixing the nut.

Warning

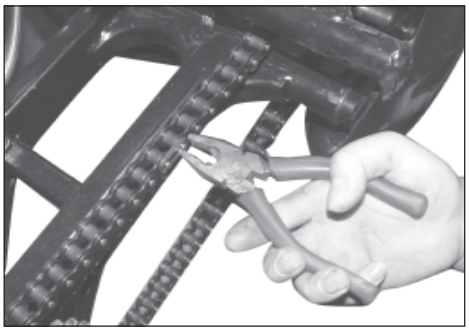
Must use new split pin ¢Û

9. Mount front brake cap assy brake shoe assy front brake hub and front wheel.
Refer to “installation of front wheel and front brake”of this chapter.

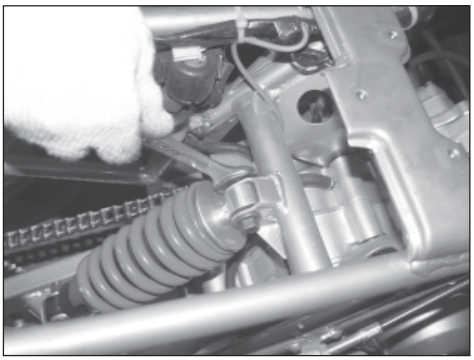
10. Adjust front wheel toe-in
Refer to “Adjustment of Front wheel toe-in”in champer.

11. Mount front fender,safty lever, front carrier,
Refer to the second section of chapter2.

Section 5 Rear shock absorber and Rear wheel fork



1. Take of cushion/rear fender/drive sprocket

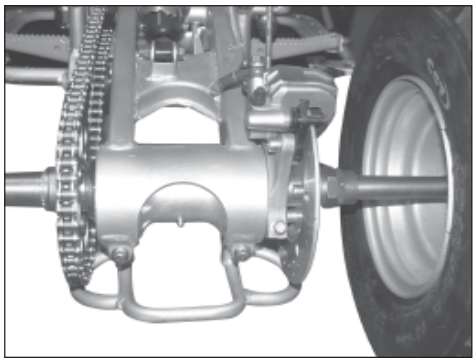


2. Take off rear shock absorber check:

a. If rear shock absorker is leakage, if any, replace it

b. If rear shock absorber is bent or damaged, if any, replace it.

c. Pull the spring up and down to check if the spring fatiguer or damaged, if any, replace rear shock absorber.



3. Take off rear wheel fork

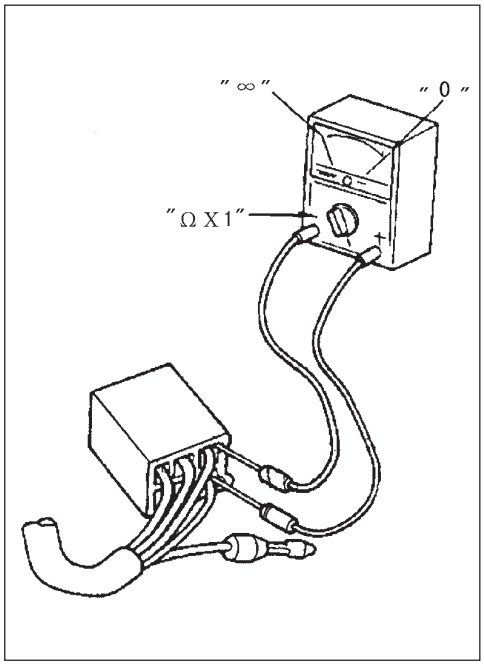
check:

a.If rear wheel fork axle is distored, if any, replace it.

b. Check if the rear wheel fork assy is crack bend and damaged, if any, replace it.

Chapter IV Electric Appliance

Section 1 Inspect switch



(I)Inspect switch

Inspect if the circuit between wire end is on with pocket multimeter. If there is any failure ,replace the switch.

	Pocket multimter

Remark

.Adjust the multimeter to “O”before inspecting

.Adjust the multimeter to “ ¦ÁÃ 1”when inspecting the circuit.

.Should turn on and off the switch many times when inspecting.

Section 2 Troubleshooting the ignition system failure

If the ignition system does not work(no spark or spark stops)

Step

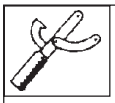
Check

1.Spark plug
2.Ignition park clearance
3.Resistance value of spark plug cap
4.Resistance value of ignition coil
5.Engine stop switch
6.Main switch
7.Resistance value of triggering coil
8.Resistance value of charge coil
9.Circuit connection (whole ignition system)

Remark

.Remove following components before troubleshooting:
1)Cushion
2)Front frame
3)Front fender

Check and repaire with following special tools.



Power spark tester:
Ignition tester:
Pocket multimeter:

1.Spark plug
.Check the spark plug condition
.Check the spark plug type
.Check the spark plug clearance
Refer to chapter 3 “Check spark plug”

Standard spark plug
D8RTC

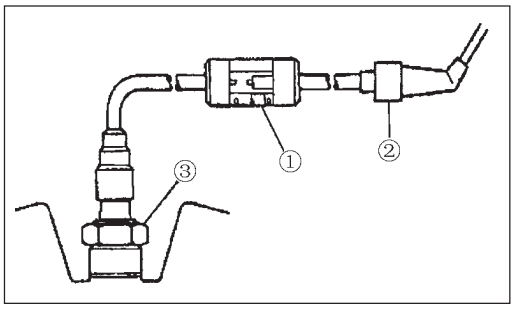
Spark plug clearance
0.6~0.7mm(0.024~0.028in)

Incorrect

correct

Repair or replace the spark plug

2.Ignition spark clearance
.Remove the spark plug cap from spark plug .Connect as shown in figure ¢ÙSpark testing instrument ¢ÚSpark plug cap ¢ÛSpark plug .Rotate the main switch to “ON” .Check the ignition spark clearance. .Press down the starting switch to start the engine. And increase the spark clearance until the engine can not be started.



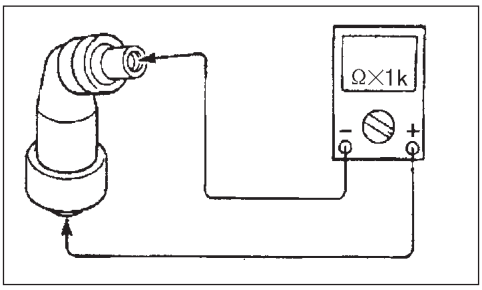
Min spark clearance
6.0mm(0.24in)

Conformig to specification

Ignition system has no problem

Not conforming to specification
or no spark

3.Resistance of spark plug cap
.Remove the spark plug cap .Connect the pocket multitester to spark plug cap



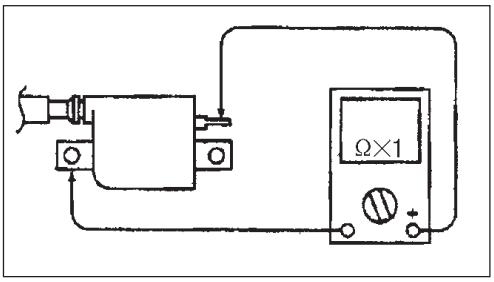
.Inspect if the resistance of spark plug conform to specification
Resistance of spark plug cap:20¡æ(68¡ãF)4-7K¦¸

Not conforming to specification

Replace spark plug cap

conforming to specification

4.Resistance of ignition coil
.Remvoe the ignitioin coil connector from cable .Connect the pocket multimeter (¦¸Á 1)to ignition coil.

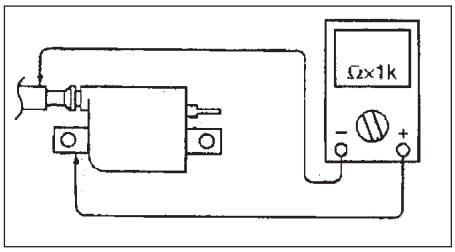


.Inspect if the resistance of primary coil conforms to specification

Primary coil resistance

At20¡æ(68¡æF)0.43~0.5¦¸

.Connect the multitester£"¦¸¡Á1K£©to ignition coil



.Inspect if the secondary coil resitance conforms to specification

Secondary coil resistance

At 20¡æ(68¡æF)4.6-7.6K¦¸

Not conforming to specification

Replace ignition coil

All conform to specification

5.Engine stop switch

Refer to “Check switch”

Abnormal

Replce handlebar switch (left)

Normal

6.Main switch

Refer to “Check switch”

Abnormal

Replace main switch

Normal

7.Resistance value of triggering coil

.Remove CDI magneto connector from clabe

.Connect the multitester(¦¸¡Á100) to wire end of triggering coil

Multitester pen(+)¡úblue wire end¢Ù

Multitester pen(-)¡úblue wire end¢Ú

.Inspect if the resistance of triggering coil conforms to specification

Resistance value of triggering value:

At 20¡æ(68¡æF)180~220¦¸

Not conforming to specification

Replace triggering coil

Conforming to specification

*

*

8.Resistance value of charge coil

.Remove the corresponding connector of charge coil from cable.

.Connect the mulitester(¦ ,¡Á100) to wire end of charge coil

Multitester pen (+)¡ú yellow/green wire end¢Ù

Multitester pen (-)¡ú yellow/green wire end¢Ú

Inspect if the resistance value conform to specification

Coil resistance value

At 20¡æ(68¡ãF)450~550¦

Not conforming to specification

Replace charge coil

Conforming to specification

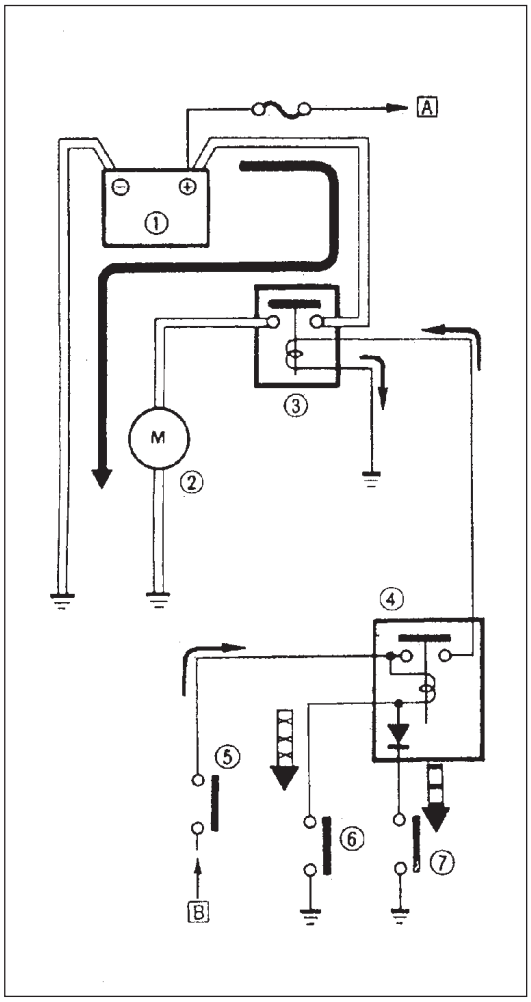
Poor connect

Connect the ignition systen correctly

Correct

replace CDI assy

Section 3 Running of starting circuit



The starting circuit of this vehicle include starting motor, cut-off relay, rear brake switch and neutral switch. If the main switch is in position, the startig motor could be operated only at the following conditions:

.Driving device is at neutral position(neutral switch is closed)

.Tension brake switch (rear brake is closed)

When the vehicle is in driving or reverse start, and the rear brake is in idle start, then the cut-off relay will prevent starting device from running.On this condition, cut-off relay is closed, which leading the current can't reach to starting motor.

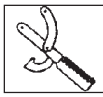
When driving device is at neutral position.

When rear brake is tensioned

¢ÙBattery
¢ÚStart motor
¢ÛStart relay
¢ÜCut-off relay
¢ÝStart switch
¢ÞRear brake switch
¢ßNeutral switch
(A)To main switch
(B)From main switch

Section 4 Troubleshooting electric starting system

If starting motor doesn't work



Pocket-multimeter

Remark

.Remove the following parts before troubleshooting
1)Cushion
2)Fuel tank
3)Front fender
.Use the following special tool to troubleshoot

1.Safety

No electrification

Pass

2.Battery

.Check the battery condition

Voltage of open circuit
At 20¡æ(68¡æF)12.8V or much more

Incorrect

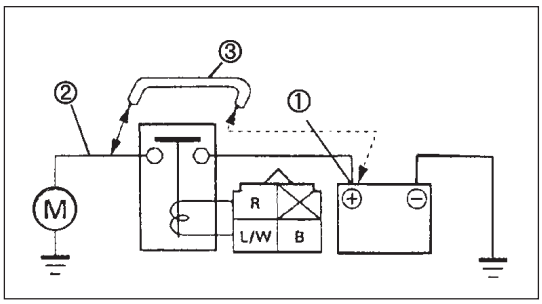
.Clean the battey terminal
.Recharge or replace battery

Pass

3.Starting motor
.Connect positive terminal ¢ÙÒof battery with cable ¢Ú fo starting motor by wire ¢Û
.Inspect the running condition of starting motor.

Warning

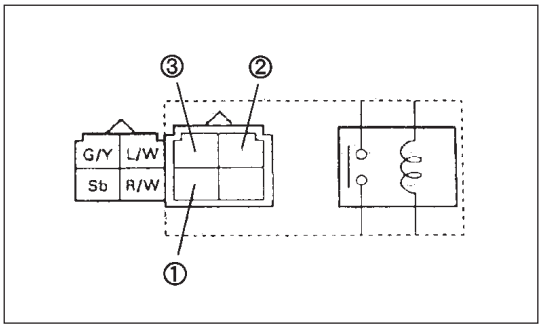
.Jumper wire must have the same or bigger loading capability than battery wire, otherwise it would be burned.
.This kind of testing is similar to marking electric spark, therefore, no inflammable air or liquid nearby must be ensured.



No rotation

Repair or replace starting motor

4.Power off relay
.Remove the relay from cable .Connect portable multitester (¦ ,¡Á1)and battery (12V) to wire end of power off relay
Battery end(+)¡úred/white wire end ¢Ù Battery end(-)¡úgreen/yellow wire end ¢Ú
Multitester pen(+)¡úred/white wire end ¢Ù Multitester pen(-)¡úblue/white wire end ¢Û

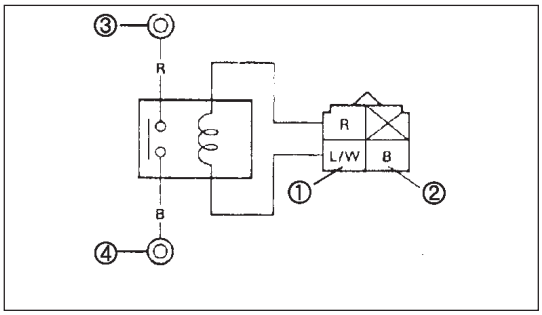


.Inspect if the power off relay is on

Replace power off relay

The circuit is on

5.Starting relay
.Remove the connector of starting relay from cable .Connect the multimeter (¦ ,¡Á1)and battery (12V)to terminal of power off relay.
Battery wire end(+)¡úblue/white wire end ¢Ù Battery wire end(-)¡úblack wire direction ¢Ú
Multitester pen(+)¡úred white end ¢Û Multitester pen(-)¡úblack wire end ¢Ü

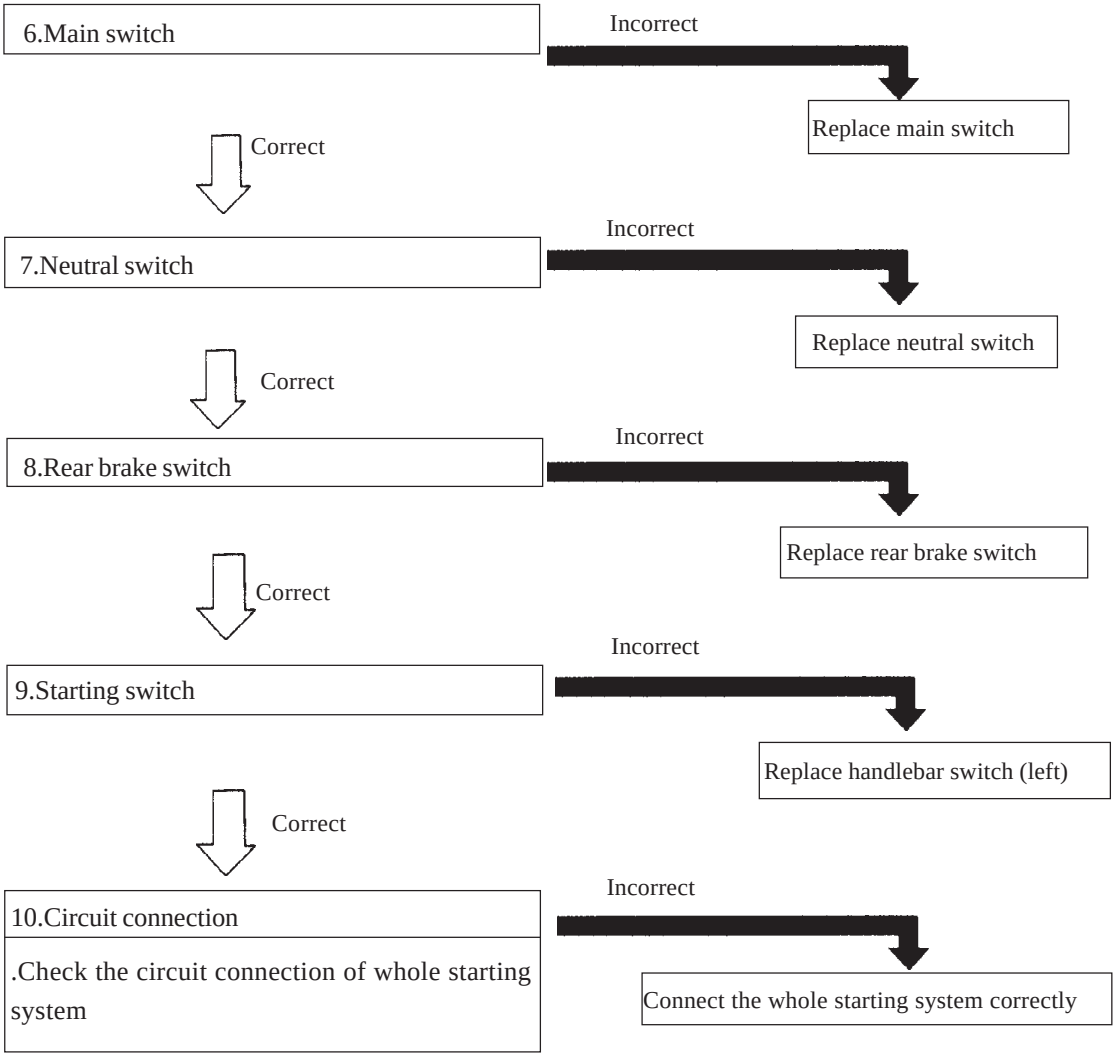


The circuit is not on

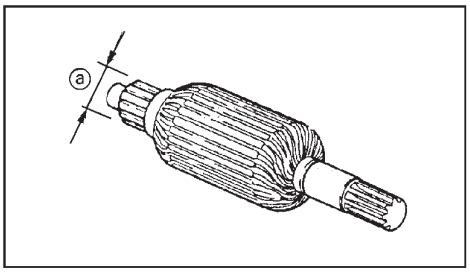
Replace starting off relay

The circuit is on

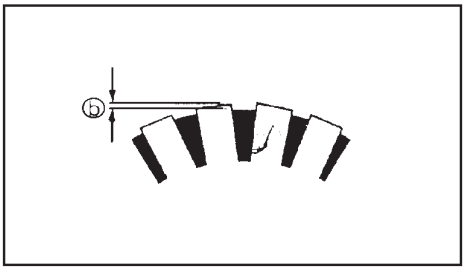
*


6.Main switch
Incorrect
Replace main switch
Correct
7.Neutral switch
Incorrect
Replace neutral switch
Correct
8.Rear brake switch
Incorrect
Replace rear brake switch
Correct
9.Starting switch
Incorrect
Replace handlebar switch (left)
Correct
10.Circuit connection
.Check the circuit connection of whole starting system
Incorrect
Connect the whole starting system correctly

Section 5 Check starting Motor



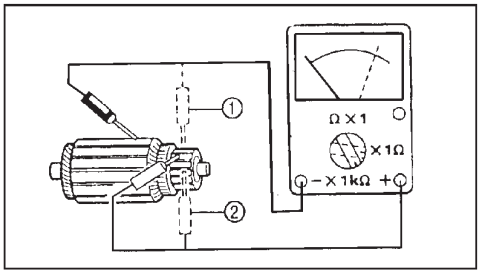
1.Check
.Reverser
Not clean ¡úClean with #600 sand paper
2.Ensure
.Reverser diameter @
Not conforming to specification ¡úchange the startig motor



3.Measure
.Mica cut sheet ⓑ
Not conform to specification ¡úScrape the mica with square scraper

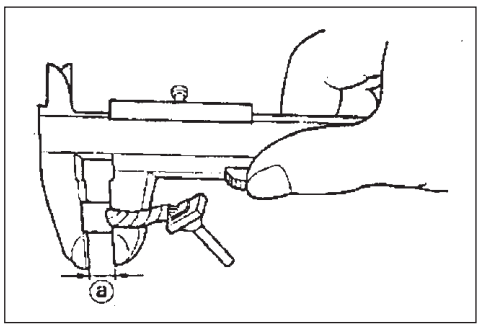
	Mica cut sheet:0.7mm(0.028 in)

Remark
Scrap the mica with square scraper to get proper dimension fit the reverser.
4.Check
.Armature winding (insolation /power on)
Failure ¡úReplce starting motor
****
Check procedure of armature winding
.Connnect the multitester to check power on ¢Ùand insolation¢Ücondition
.Measure the armatur resistance



	Inner resistance of armature winding Power on condition check :At 20¡æ (68¡ãF)0.004~0.005¦¸ Insolation check :At 20¡æ(68¡ãF)exceed 1M¦¸

.If the resistance is incorrect, replace the motor.
****



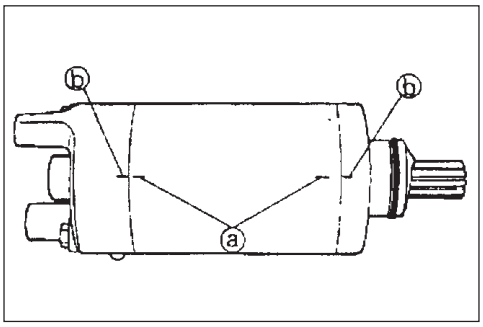
5.Measure
.Length @of brush (every one)
Out of specification ¡ú replace it

	Length of brush:10mm(0.39 inches) Range of wear:<6mm(0.14 inches)>

6.Measure
.Brushing spring force
Fatigue/out of specification ¡ú replace whole device

	Brushing spring force:326~970g(3.2~3.8N)

7.Check
.Oil sealing
.Bushing
.O-ring
Wear/damage ¡ú repalce it
Installation of starting motor:
1.Mount
.Magnetic steel
.Bracket



Remark

Mark the matching mark @On the magnetic steel is align to that on the bracket.

Section 6 No charging in the Battery

Steps
Check:
1.Safety
2.Battery
3.Charging voltage
4.Startor coil
5.Coupling of circuit
(Whole charging system)

Coil techometer
Engine techometer

Pocket multimeter

.Repair with following special toolings

1.Safety
Refer to “Inspection of switch”

NO.electrification

Pass

Replace the safety

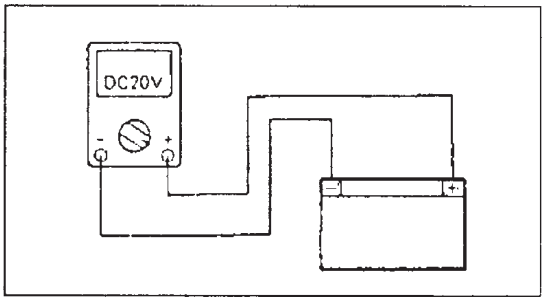
2.Battery
.Check battery condition

Incorrect

Correct

.Clean battery terminal
.Recharge or replace battery

3.Charging voltage
.Connect engine techometer to the wire of spark plug .Connect pocket tester(DC20V)to the battery
Pocket multimeter(+) ¡ ûWhite terminal Pocket multimeter(-) ¡ ûWhite terminal



.Start the engine and accelerate to 2000r/m or so.

Charging voltage:14-15V at 2000r/m

Remark:

Use battery with full capacity

Meet specification

No failure on charging circuit

Oil of specification

4.Resistance value for startor coil

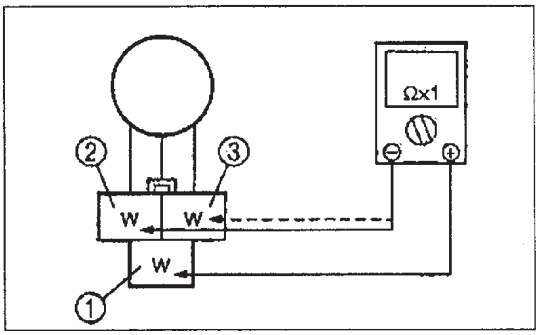
.Take out the lighting coil of AC magneto from inserter

.Connect pocket multiconeter to stator coil(¡¸Á 1)

Pocket multimeter(+)¡ú White terminal
Pocket multimeter(-)¡ú White terminal

Pocket multimeter(+)¡ú White terminal
Pocket multimeter(-)¡ú White terminal
Measure the resistance value of startor coil

At 20¡æ(68¡æF)11.10-1.50¦¸



Out of specification

Repalce parts of startor coil

Meet specification

5.Coupling of ciucuit

.Check the whole coupling of charging wire.

Poor connection

Connect the charging system correctly

Correct

Replace recticed adjuster

Section 7 Troubleshooting

If the or taillight is not work
Steps
Check:
1.Safety
2.Battery
3.Main switch
4.Lamp switch
5.Coupling of wires(for entire lighting system)

	Pocket multimeter:P/N YU-03112 90890-03112

1.Safety
Refer to “Inspection of switch”

Pass

2.Battery
.Check the battery condition
Voltage of open circuit

Correct

3.Main switch
Refer to “Inspection of switch”

Correct

*

No electrification → Replace fuse

Incorrect → .Clean terminal of battery
.Recharge or replace battery

Incorrect → Replace main switch

*

4.Switch for lamps

Refer to “Inspection of switch”

Incorrect

If the lamp switch is failure replace the switch of handle(left)

Correct

5.Coupling of wires

.Check the wire compling or whole lighting system

Poor coupling

Connect whole lighting system correctly.

Correct

Check the returning condition of each lighting system. Refer to “Inspection of Lighting System”.

Section 8 Inspection of Lighting system

(II)If the taillight is out of work

1.Bulb and bulb socket
.Check if the bulb and bulb socket is correct

No electricfication

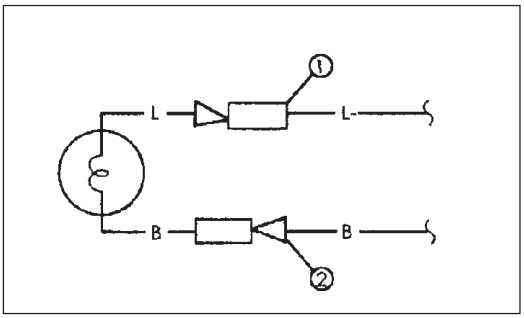
Replace bulb and bulb socket

Meet specification

2.Voltage

.Connect the pocket tester (DC 20V)to the terminal of taillamp.

Multimeter (+) ¡ú blue terminal ¢Ù
Multimeter (-) ¡ú black terminal ¢Ú



.Adjust main switch to ON postion
.Adjust lamp switch to “LO”or “HI”postion
.Check the voltage of blue wire in coupler of bulb socket(12V)

Out of specification

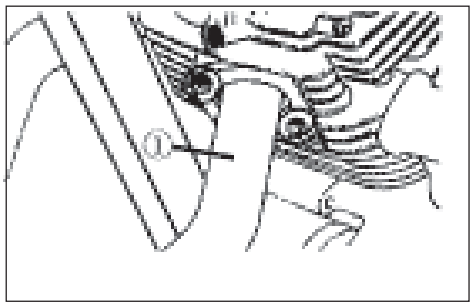
There is failure on the circuit from main switch to bulb socket coupler. Repair it.

Meet specification

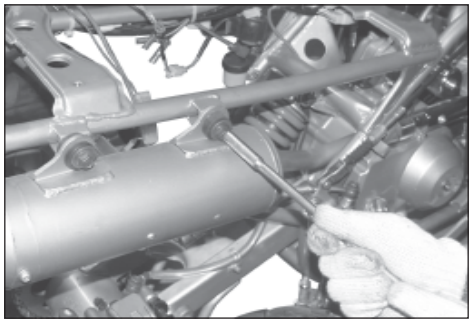
No failure on this circuit

Chapter V Engine

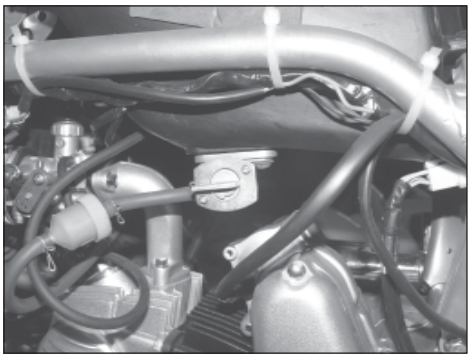
Section 1 Disassembly of engine



(I)Remove the engine from finished ATV
1.Remvoe
.Cushion
.Front fender
.Rear fender



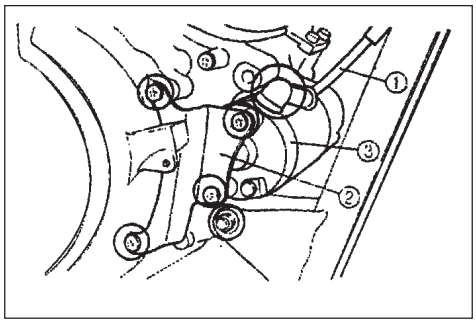
2.Oil draining
Screw out oil draining screw plug. Drain off the lubricating oil of the engine from the oil draining hole.
3.Exhaust pipe and sillencer
1)Remvoe
.Exhaust pipe
2)Remvoe
Silencer



4.Carburetor and air intake pipe
Place the throttle cock grip on “OFF”postion, and remove:
.Throttle cable
.Oil pipe
.Hoop
.Carburetor, carburetor seat and hook hitch assy .

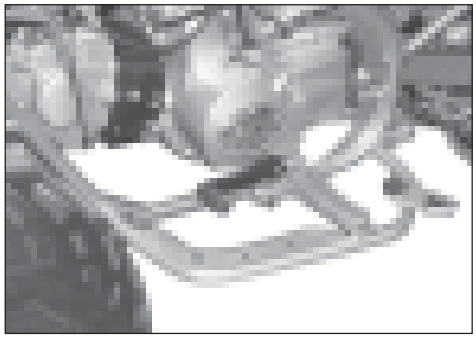
Caution

Before disassembling., drain off the gasoline of the carburetor float cabinet firstly. Wrap the overflow pipe with cloth to absorb the splashed gasoline. The gasoline is inflammable, Pay attention not to splash the gasoline on hot engine.

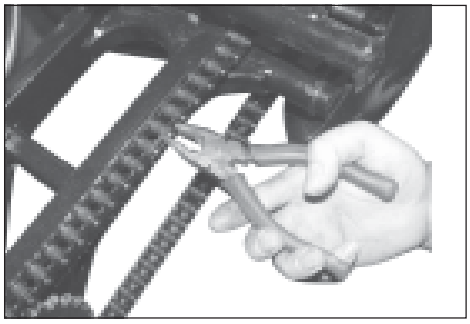


5.Starting motor
1)Remove
.Starting motor line ¢Ù

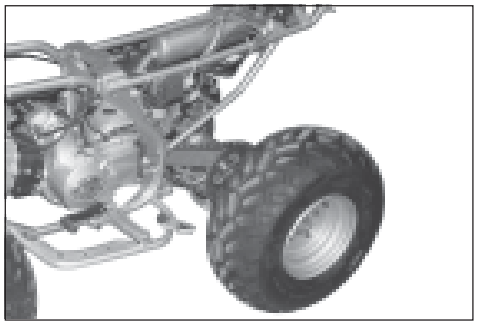
2)Remove
.Connecting plate of sharting motor¢Ú
.Starting motor ¢Û



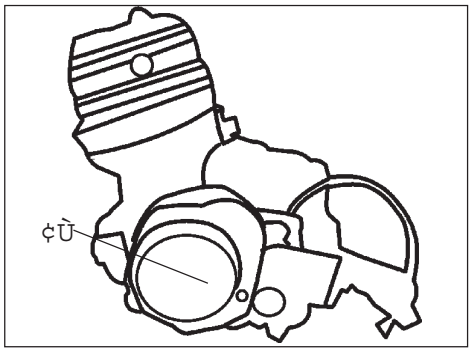
6. Remove
.Left footrest
.Right footrest



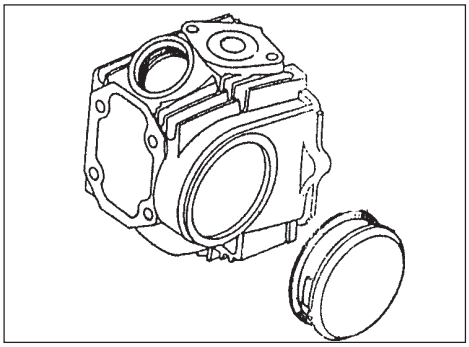
7. Take off drive sprocket



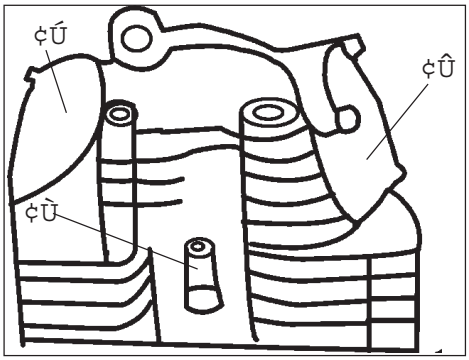
8. Disassembly of engine
2)Remove the engine unit from right side



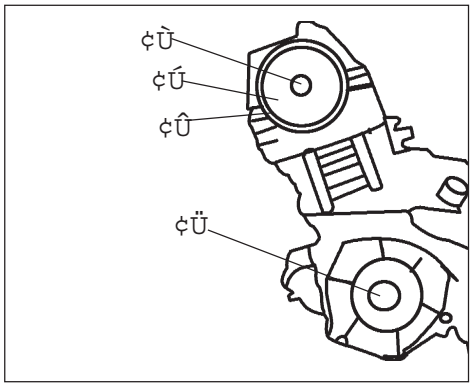
(II) Disassembly of engine



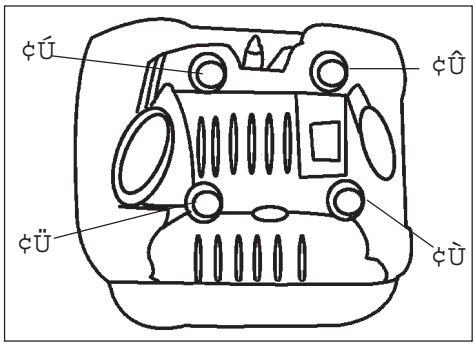
1.Remove
.Sproket cabinet cover



2. Remove
.Spark plug ¢Ù
.Upper valve cap(intake)¢Ú
.Lower valve cap(exhaust)¢Û



3.Remove
.Bolt
Timing sproket



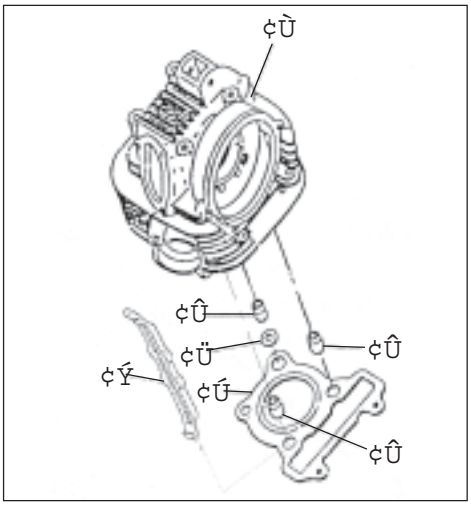
4.Remove

.All the bolts and nut on the cylinder cover.

Caution:

Loosen every bolt and nut by1/4 circle, then disassembly

.Loosen them, from big one to small one according to the numbers marked on the cylinder cover.



5.Remove

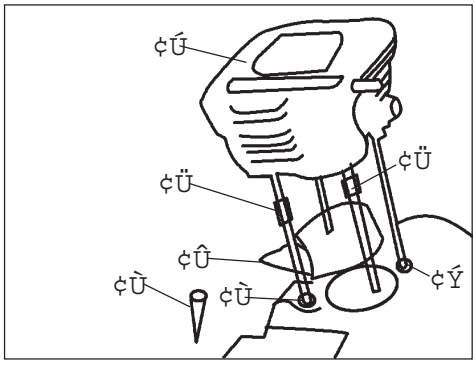
.Cylinder cover unit ¢Ù

.Cylinder cover pad ¢Ú

.Location pin ¢Û

.Oil seal ¢Ü

.Lower guide plate ¢Ý(exhaust side)



6.Remove

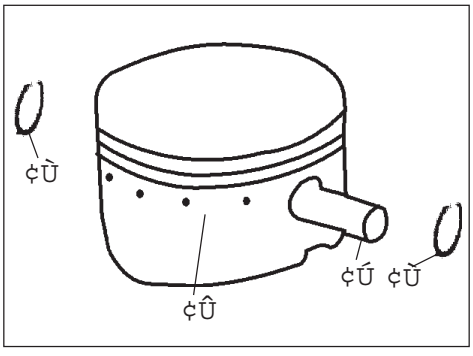
.Screw ¢Ù(cylinder body)

.Cylinder body assy ¢Ú

.Cylinder body pad ¢Û

.Location pin ¢Ü

.O-ring ¢Ý

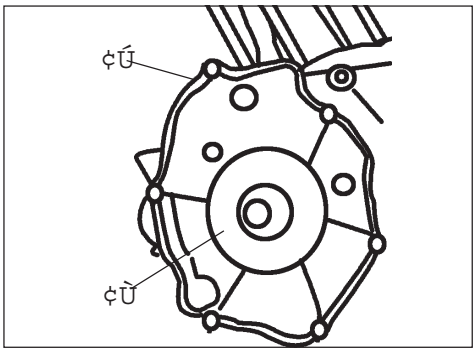


7.Remove

.Circlip ¢Ù

.Piston pin ¢Ú

.Piston unit ¢Û



Caution

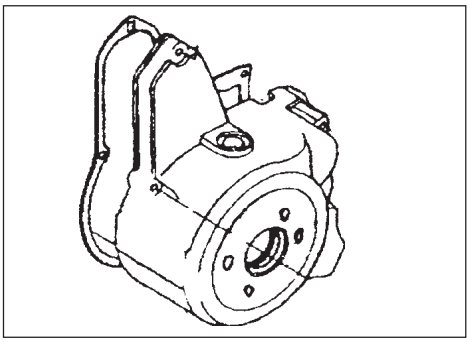
.Before disassembling the piston pin circlip, cover the crankcase with a clean cloth to avoid the circlip to drop into case suddenly.

.Before disassembling the piston pin, remove the burr of circlip groove and pistion pin. If it is still difficult to remove the piston pin, remvoe it with drawing aid

.Do not remove the piston pin with wood hammer

8. Remove

.Left crankcase cover



9. Remove

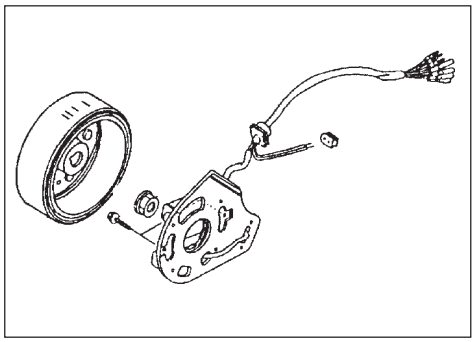
.Gasket of left crankcase cover

.Location pin

.Intermediate gear shaft

.Washer

.Duplex intermediate gear(starting motor)

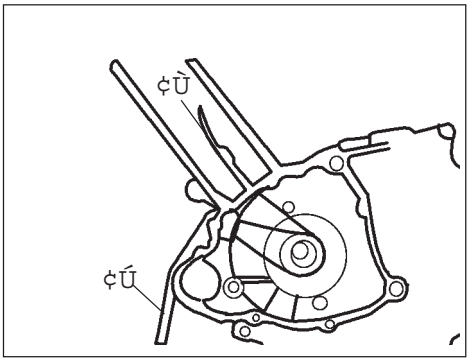


10.Remove

.Magneto

Caution:

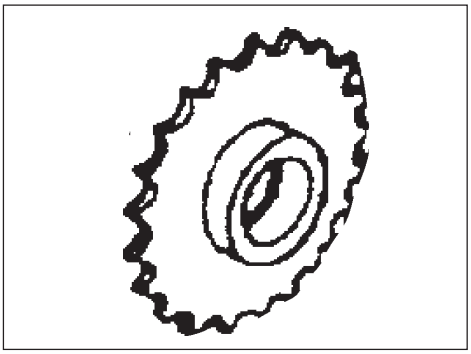
Disassemble the magneto rotator with special tool



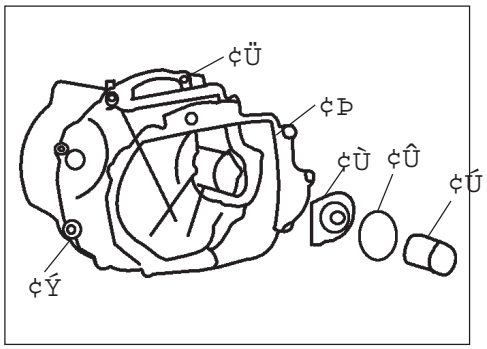
11.Remove

.Upper guide plate

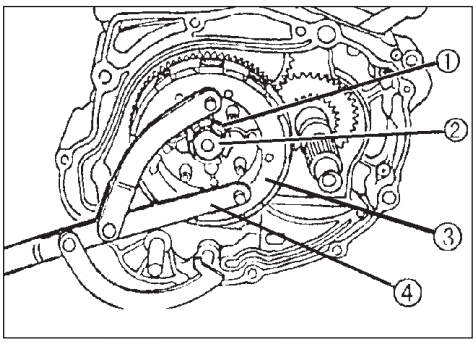
.Timing chain



12.Remove
.Driving sprocket



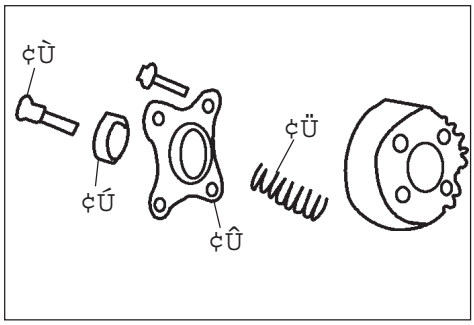
13. Remove
.Fine filter cover of engine oil¢Ù
.Fine filter of engine oil¢Ú
.O-ring ¢Û
.Right crankcase cover ¢Ü
.Location pin ¢Ý
.Gasket of right crankcase cover ¢Þ



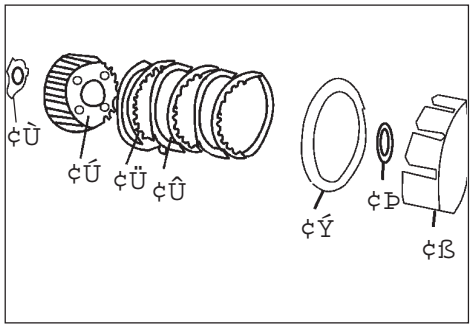
14.Remove
.Main clutchnut ¢Ú

Caution

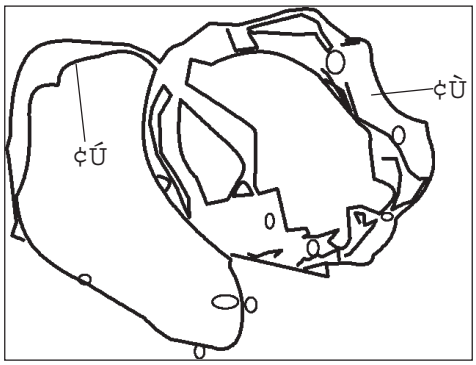
Loosen the locking pad¢Ùbefore removing the nut, and fix the main clutch shoe¢Ûwith special tool¢Ü, then remove then nut.



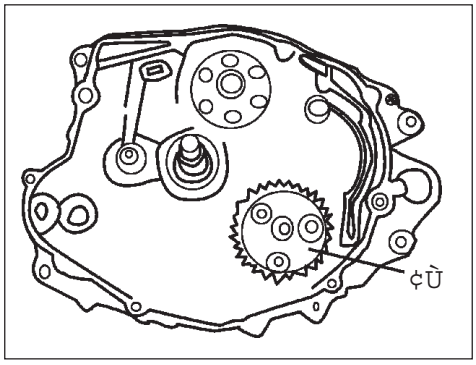
15.Remove
.Clutch post rod ¢Ù
.Bearing ¢Ú
.Compressing cover ¢Û
.Clutch spring ¢Ü



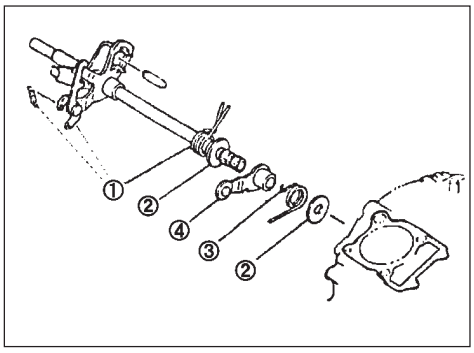
16.Remove
.Locking washer ¢Ù
.Clutch hub assy ¢Ú
.Friction wafer ¢Û
.Clutch piece ¢Ü
.Compressing plate ¢Ý
.Spline washer ¢Þ
.Clutch gear assy ¢ß



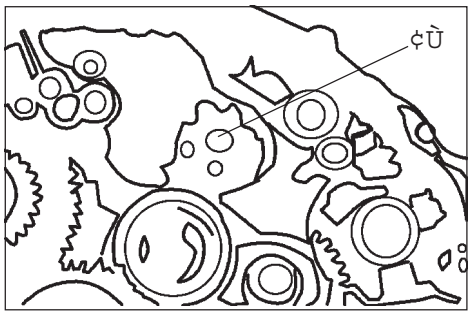
17.Remove
.Right connecting case ¢Ù
.Location pin ¢Ú
.Gasket of right connecting case ¢Û



18.Remove
.Oil pump unit¢Ù
.Pad



19.Remove
.Shift lever unit ¢Ù
.Washer ¢Ú
.Limit torsion spring¢Û
.Limit lever unit¢Ü



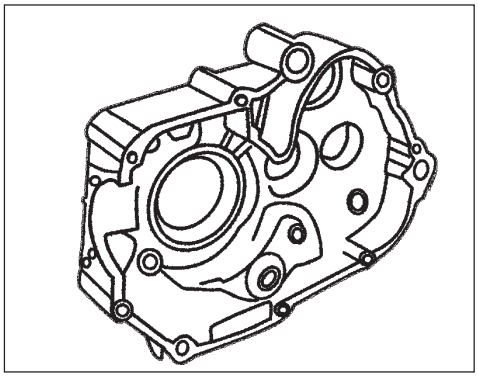
20.Remove
.Star-shaped gear ¢Ù(on shift cam)

.The location pin is easy to drop down. pay attention not to lose it.

21.Remove
.All the closing case screw.

Caution

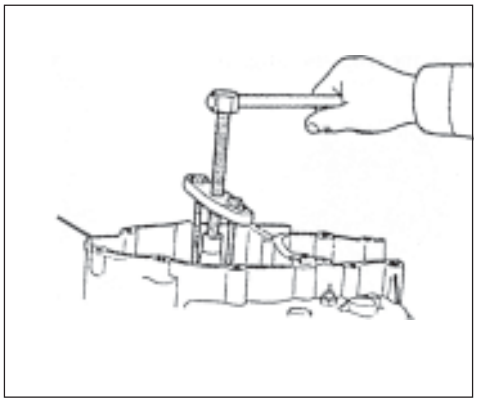
Loosen every screw1/4 circle with cross-slot screwdriver, then remove all of them



22.Remove
.Left crankcase
.Location pin

Caution

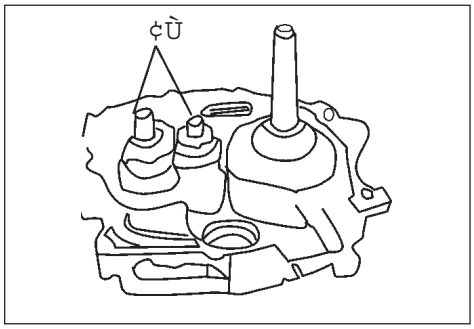
.Disassemble the left crank case with crank-case separator.
.Tighten up the screw of separator, and must keep th separator body parallel with crankcase face. If necessary, screw the screw in reverse direction to adjust the separator body level.
.When appling force to case body separator, knock the front supportor of engine, shift shaft and balance shaft alternatly.



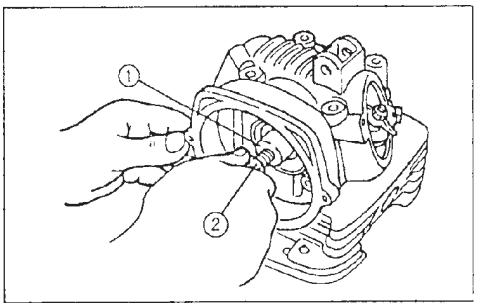
23.Remove
.Long fork shaft
.Short fork shaft
.Shift cam shaft
.Fork 3
.Fork 2
.Fork 1

Caution

Pay attention to position of every part, especially the position and direction of every fork.



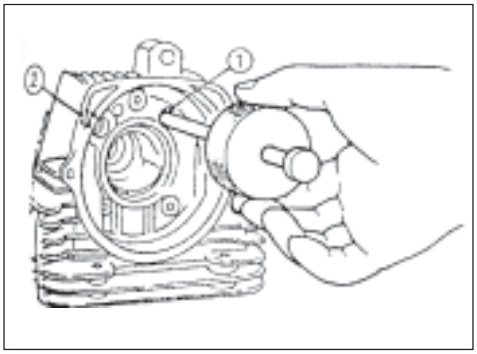
24.Remove
.Main shaft assy and driving shaft unit¢Ù



25.Remove
.Distribution cam shaft¢Ù

Caution

.Screw in the bolt¢Ú10mm to cam shaft screw hole to draw out the distribution cam shaft.

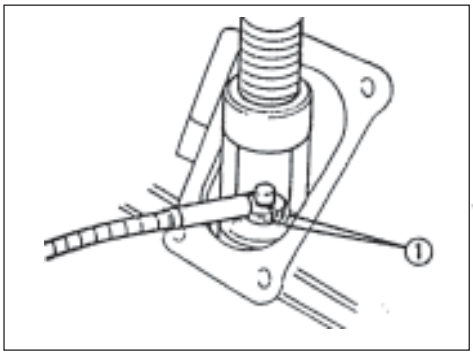


26. Remove
.Rocker shaft ¢Ù
.Air intake and exhaust rocker ¢Ú

Caution

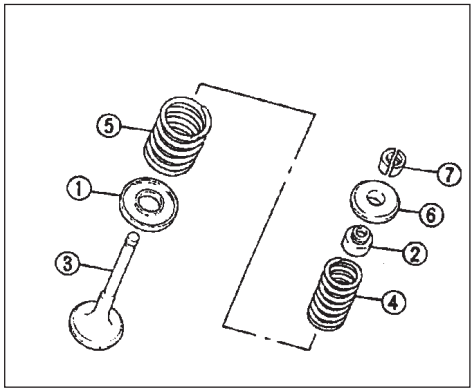
.Screw the slip hammer assy into rocker shaft, then pull out the rocker.

27.Remove
.Valve lock clip¢Ù



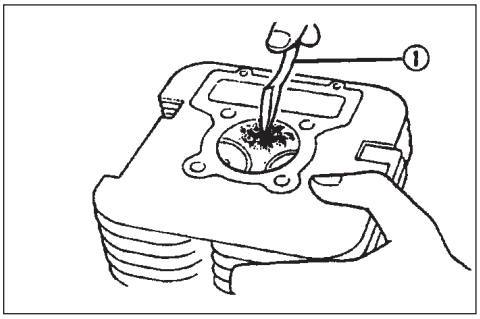
Caution

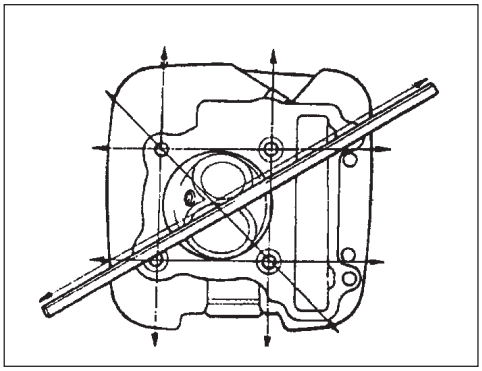
.Disassemble the valve lock clip with valve spring compressing device.
28.Remove
.Valve spring cover
.Valve outer spring
.Valve inner spring
.Valve
.Oil seal of valve rod
.Spring seat of valve

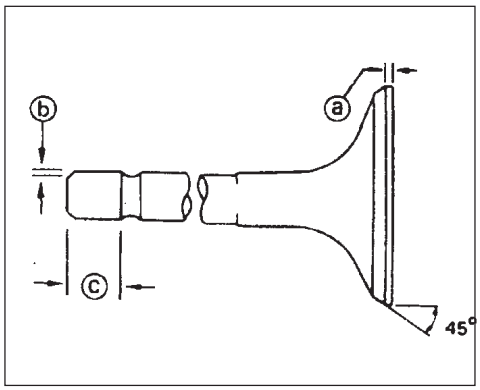


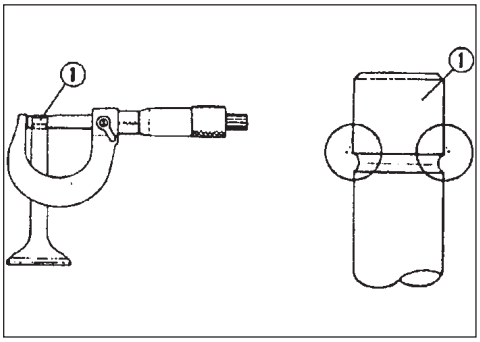
Caution

.Pay attention to position of each component for installation to original position.









1.Cylinder cover
1)Clean
.Carbon eposit
Use circular scraper ¢Ù

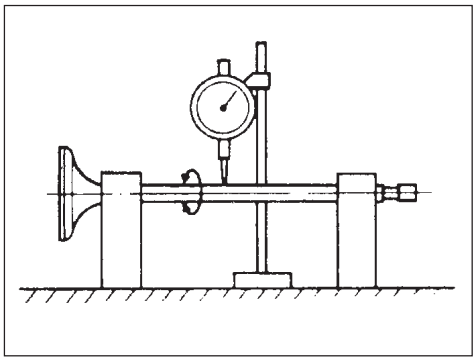
Caution

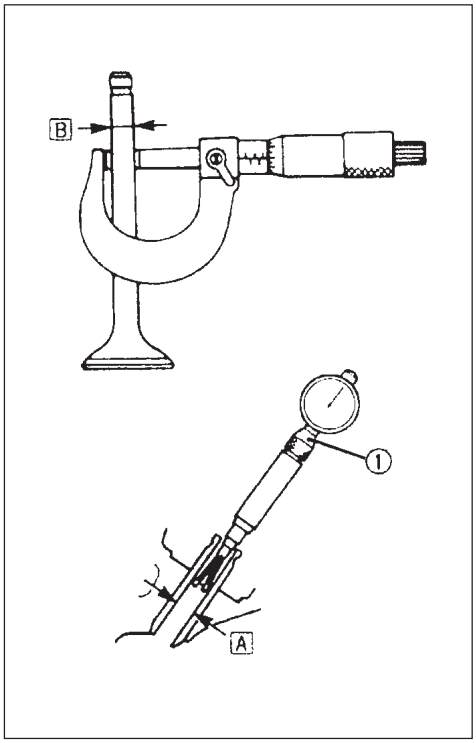
Please do not use sharp tool to avoid scraping
.Nut of spark plug
.Valve seat ring
.Bottom face of cylinder
2)Measure
.Flatness of cylinder cover bottom face
Recorrect the bottom face or replace if unqualified
Flatness of cylinder bottom face is less than 0.10mm(0.004in)

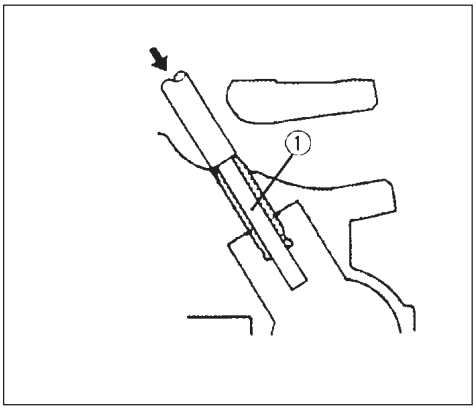
2.Intake and exhaust valve
1).Check
.Valve surface
.Valve rod end
Repalce it if it is worn, exfoliation corroded or unqualifled
Min thickness (working limit)
ⓐ 0.8mm(0.031in)
Slope
ⓑ 0.05mm(0.020in)
Min length (working limit)
ⓒ 4.0mm(0.157in)
2)Check
.Valve rod end ¢Ù
Repalce the valve, valve guide pipe and valve rod oil seal if it is mushroom-shaped or its diameter is bigger than other rod diameter.

Caution

Remove the deformation of valve rod end ¢Ùby polishing the valve end with oilstone.







3)Measure

.Rod part run-out of valve rod

Replace it if unqualified

The rod part run-out of valve rod is less than (0.03mm0.0012in)

4)Measure

.Clearance between valve rod and valve guide pipe

Clearance=A-B

Inner diameter of valve guide pipe A

Valve rod diameter B

Repalce the valve or valve guide pipe if unqualified.

Measure with micrometer and inner diameter gauge ¢Ù

	Clearance between valve rod and valve guide pipe	Limit
Intake valve	0.010~0.037mm (0.004~0.0015 in)	0.08mm (0.0031 in)
Exhaust valve	0.025~0.052mm (0.0010~0.0020 in)	0.10mm (0.0039 in)

Caution

.When replacing the valve, should replace the valve guide pipe and valve rod oil seal together.

3.Valve guide pipe

1)Check

.Valve guide pipe

Replace it if it is worn or the oil leaks into the cylinder

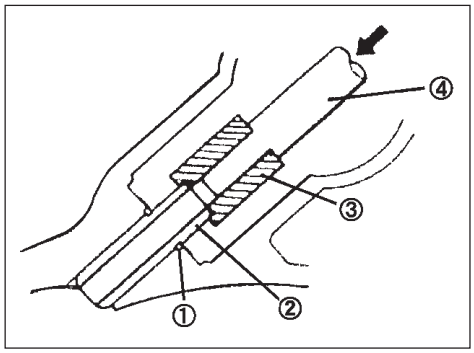
2)Disassemble

.Valve guide pipe

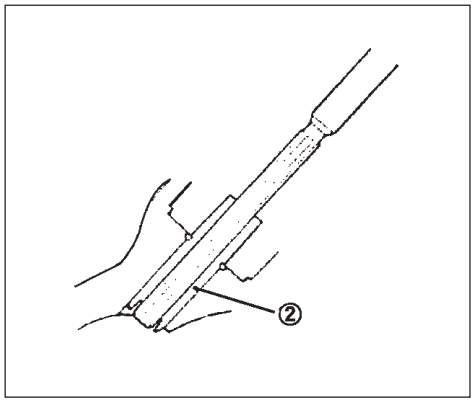
Use valve guide pipe diassembling device¢Ù

Caution

Place the cylinder cover in the furnace to heat to 100¡æ(212F)for the econvience of disassembly and installation of valve quide pipe. And it can ensure correct installating clearance.



3)Install
.Circlip ¢Ù(new)
.Valve guide pipe ¢Ù(new)
Use the installing and disassembling device of valve guide pipe

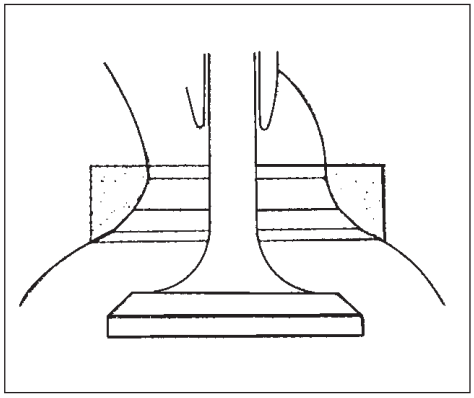


4)Ream the inner diameter of valve guide pipe to get proper valve rod clearance.

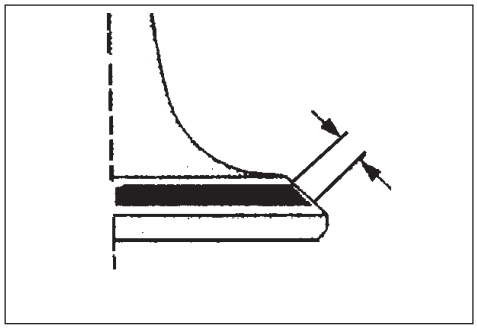
Caution

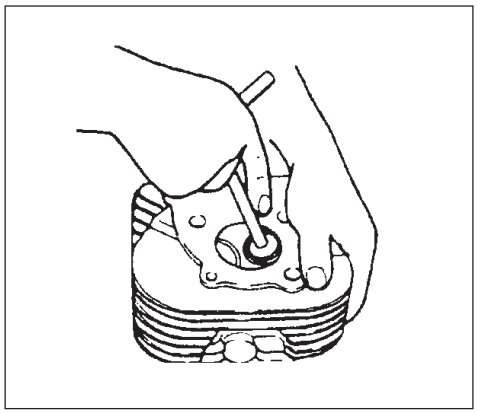
Regrind the valve race after installing valve guide pipe

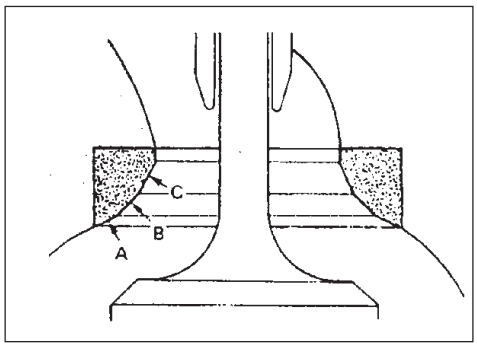
4.Valve race
1).Clean
.Carbon deposit(valve raue and value face)
2)Check
.Valve seat ring
Regrind the valve if it is exfoliation corroded.

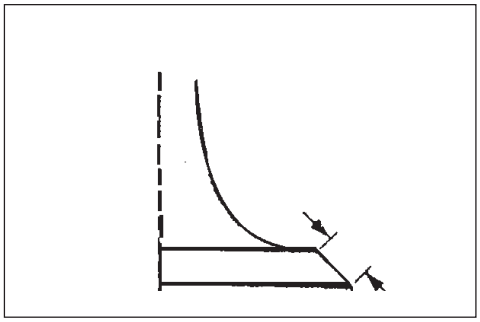


3)Measure
.Contacting width of valve and valve race.
Regrind the valve race if unqualified.
.Paint red lead powder on the valve fit pyramidal foce of valve race
.Place the valve into the cylinder cover.









.Press the valve on through valve guide pipe to leave clear trace on the valves.
.Remove the valve from cylinder cover
.When the valve contancts with valve race, the redle is marked on the valve form vavle race, Then can measure the contacting width of valve and valve race.

	Contactingwidth of valve and valve race	Limit
Intake	0.9~1.1mm (0.035~0.043mmin)	1.6mm (0.063in)
Exhaust		

.If the contacting width is too wide, too narrow or not in the middle, it is necessary to recorrect valve race

4)Correct
.Valve race
Use reamers of30¡ã.45¡ãand60¡ã

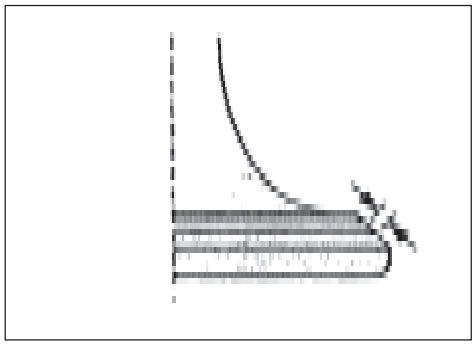
Caution

Rotate the reamer with even force to avoid cutting mark. And remove surplus part to get ideal valve race.

Reamer used on each part	
Part	Reamer
A	30¡ã
B	45¡ã
C	60¡ã

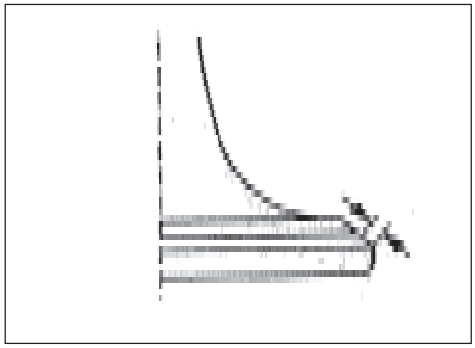
Valve race correcting procedure
The contacting part A is in the middle of valve face. But the contacting width is too wide.

Reamer assy of valve race		Result
Operate lightly	Reamer 30¡ã	Reduce the contacting
	Reamer 60¡ã	width to 1.0mm(0.04 in)



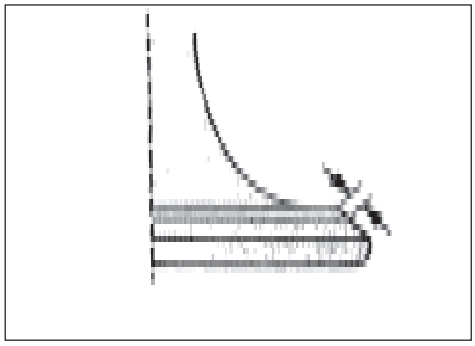
The contacting part B is the middle of valve face. But the width is too narrow

Reamer assy of valve rale		Result
Use	Reamer 45¡ã	Get unified contacting width 1.0mm(0.04 in)



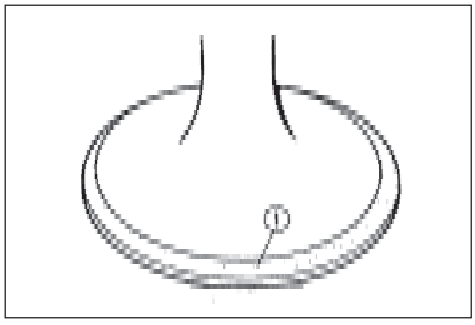
The contacting part C is too narrow, and on the upper edge of valve face

Reamer assy of valve rale		Result
Use	Reamer 35¡ã	Make the contacting part in the middle and get the contacting width 1.0mm(0.04in)
	Reamer 45¡ã	



D The contacting part is too narrow and on the bottom of valve.

Reamer assy of valve rale		Result
Use	Use reamer of 30¡ã firstly	Make the contacting part in the middle and increase the width
	Reamer of 45¡ã	



5)Grind
.Valve face
.Valve race

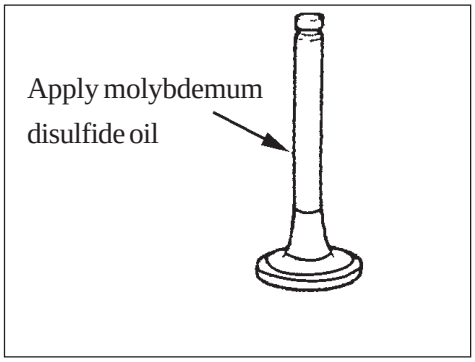
Caution

Should grind the valve face and valve race after correcting the ralve race or replacing valve and valve guide pipe.

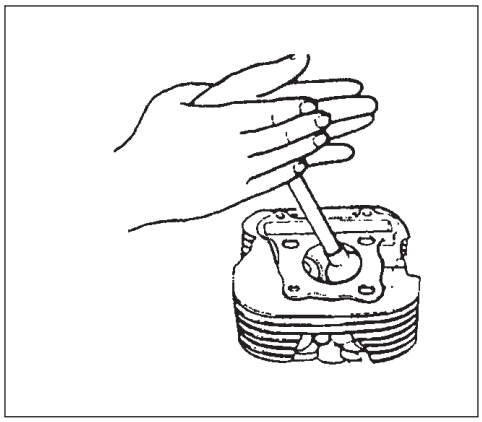
Grinding procedure of valve face
.Paint a layer of grinding powder¢Ù

Caution

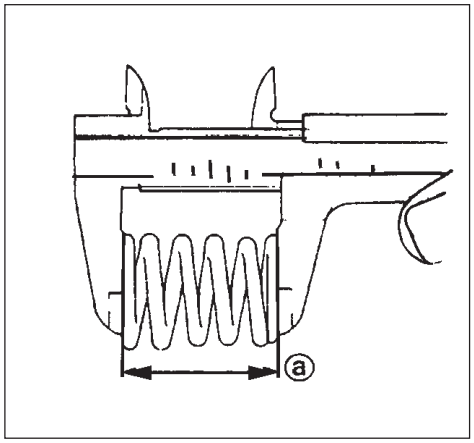
Ensure no grinding power entering the clearance between the valve and valve guide pipe.



.Pain molybdenum disulfide oil on the valve rod part.
.Place the valve into the cylinder cover
.Rotate the valve to grind in with seat fully on the valve face, then clean the dirty
.repeat procedure until the contacting width of valve face and valve seat

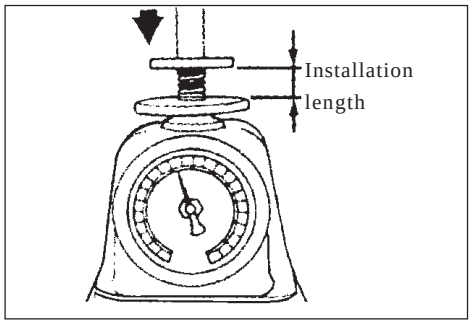


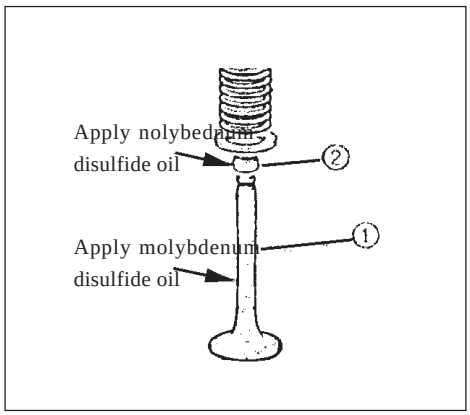
In order to get the best grinding quality, you may slap the valve lightly when rotating the valve forward and backward.Be sure to clean all the dirty on the valve face and valve race after every grinding.
6)Measure the contacting width again after correcting and grinding
.Meassure the contacting width and position of valve and valve race again according to method explained in3
.If the contacting width and position do not conform to specification yet, recorrect and grind the valve race.

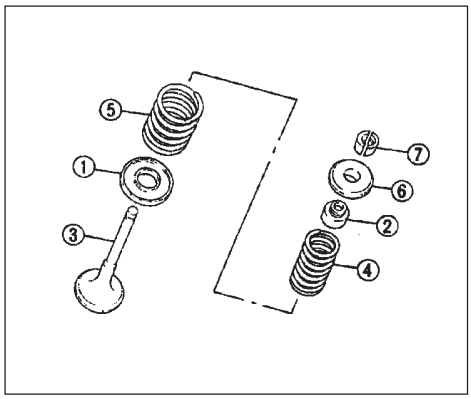


5.Valve spring
1)Measure
.If the free length @(inner and outer spring) of valve spring unqualified, replace it.

Free length of valve spring	
Inner spring(intake/exhaust)	Outer spring(intake/exhaust)
35.5mm(1.4 in)	37.2mm(1.46 in)







2)Measure

.Installing pressure of valve spring

If unqualified, replace the inner and outer spring totally.

Installing pressure of valve spring	
Inner spring(intake/ exhaust)	When it is 30.5mm(1.2 in),the pressure8.4~10.2kg(18.5~22.5pods)
Outerspring(intake/ exhaust)	When it is 32.0mm(1.26 in),the pressure16.6~20.4kg(36.6~45.0pods)

6.Seal check of valve

1)Installation of valve

Lubricate

.Valve rod part ¢Ù

.Valve rod oil seal ¢Ú

Install

.Valve spring seat ¢Ù(Lower part)

.Oil seal of valve rod ¢Ú

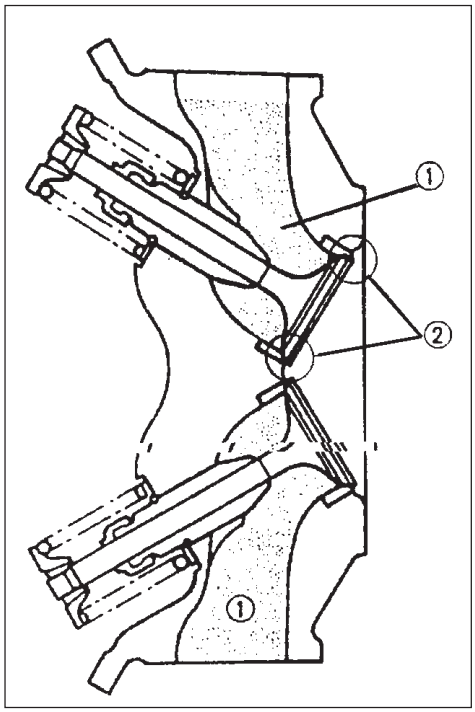
.Valve ¢Û

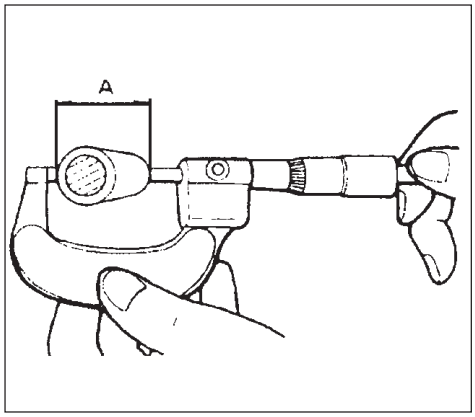
.Inner spring ¢Üof valve

.Outer spring ¢Ýof valve

.Spring cover ¢Þof valve

.Locking clip ¢ßof valve





Caution

Must install the long pitch end of all valve spring upward.

2)Check the valve seal

If there is leakage on the valve face, repair again and regrind or replace the valve and regrind.

Inspecting procedure of valve seal

.Inject the clean solvent ¢ùnto intake way and exhaust way respectively.

.Check the valve seal. There should be no leakage on valve race ¢ú

3)Regrinding procedure

.Remove components of the cylinder cover again

.Grind repeatedly with fine grinding powder.

.Clean totally

.Reassemble and check the leakage with solvent

.Repeat above procedures until getting ideal seal

7.Distribution cam

1)Check

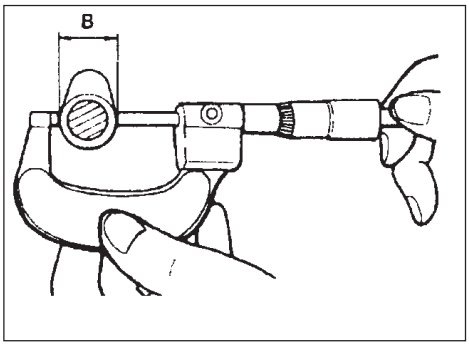
.Distribution cam

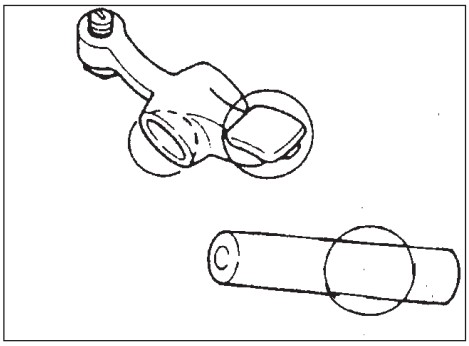
Replace if there is cave, scratch or discoloration

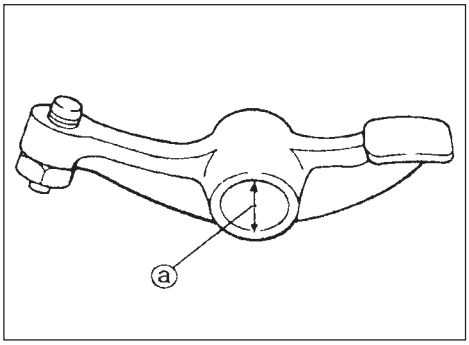
2)Measure

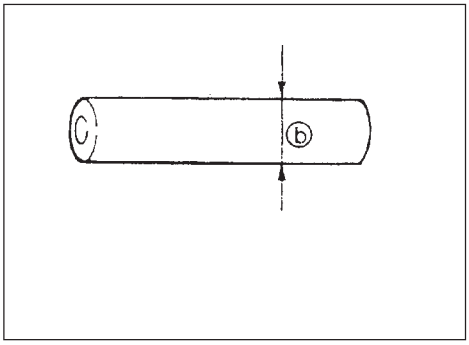
.Distribution cam(use micrometer)

Unqualified ¡úReplace









	Limit value “A” of distribution cam	Limit value “B” of distribution cam
Intake cam	36.437mm (1.435 in)	30.031mm (1.182 in)
Exhaust cam	36.482mm (1.436in)	30.152mm (1.187 in)

8.Valve rocker and rocker shaft

1)Check

.Rocker hole

.Contacting surface with distribution cam

If over worn, replace it

2)Check

.Rocker shaft surface

Replace or check lubrication if there is bent, scratch or discoloration

3)Measure

.Measure inner diameter of valve rocker hole

Replace it if unqualified

Inner diameter of rocker hole:12.000~12.018mm (0.4724~0.4731 in)

.Measure the outer diameter ⓑ of rocker shaft

Replace it if unqualified

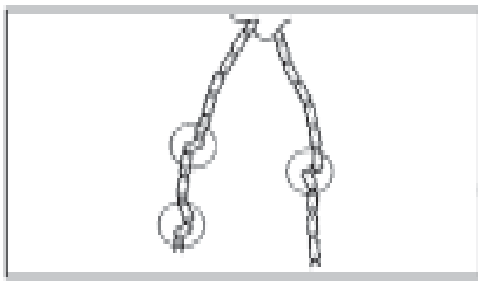
Outer diameter of rocker
11.985~11.991mm(0.4718~0.4721 in)

.Substract the outer diameter of rocker shaft from inner diameter of valve rocker hole to calculate the clearance.

Clearance between rocker hole and shaft=@-ⓑ
Inner diameter of valve rocker hole@
Outer diameter of rocker shaft ⓑ

Replace a set if unqualified

Clearance between rocker shaft and hole: 0.009-0.037mm(0.0004-0.0031 in) Limit: 0.037mm(0.0015 in)

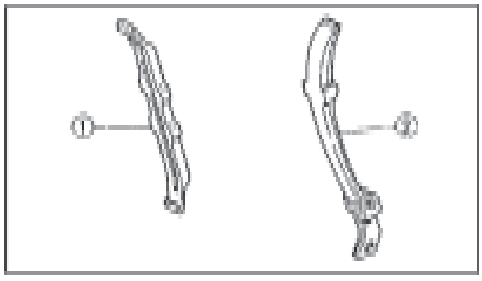


9.Timing chain

Check

.Timing chain

Replace it if the chain is stretched, or not flexible or broken.



10.Timing sprocket and crankshaft sproket

Check

.Crankshaft sproket (on crankshaft)

If there is wear and damaged, replace the sproket and chain totally

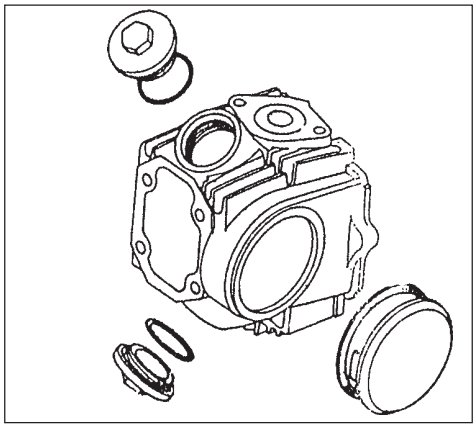
11.Guide plate

1)Check

.Lower guide plate ¢Ù(exhaust side)

.Upper guide plate ¢Ú(intake side)

Replace it if it is worn or damaged



12.Valve cover and sproket cabinet cover

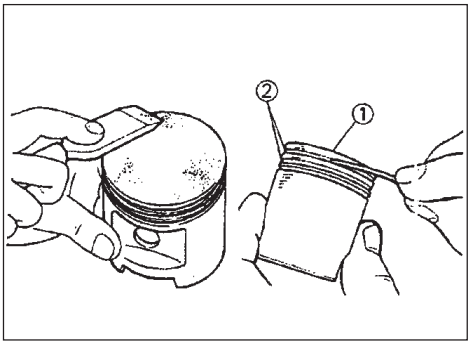
1)Check

.Valve cover (upper valve cover and lower valve cover)

.spocket cabinet cover

.O-ring

Replace it if there is crack and damaged



13.Cylinder and piston

1)Check

.Carbon deposit (from piston top to ring slot)

2)Check

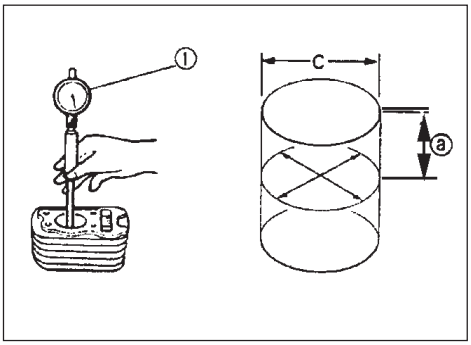
.Surface of cylinder and piston

Rebore cylinder or replace cylinder and piston if there is vertical scratch.

3)Measure

.Clearance between cylinder and piston

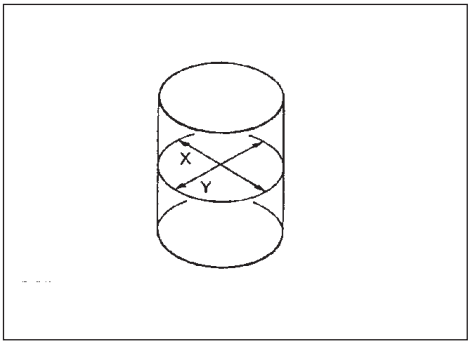
Measuring method is as following

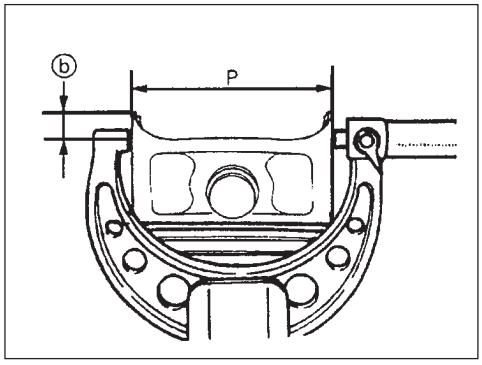


.Measuring the inner diameter “C”of cylinder with inner diameter gauge@is the measuring position

Remark:

Measure twice the inner diameter “C”of cylinder from two directions vertical with each other in the same face. Then find out average value.





If out of specification, rebore or replace the cylinder and piston (Replace in a set)

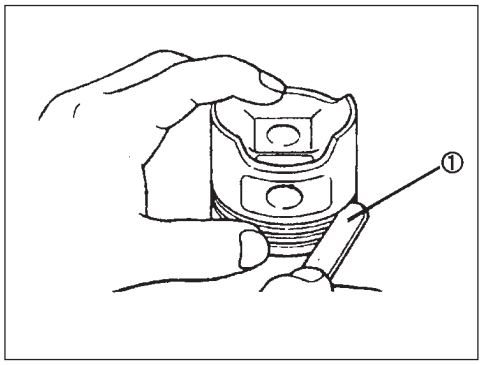
.Measure the diameter “P”of piston lower part with micrometer, ⓑis the measuring position

If out of specification. replace the piston and piston ring as a set at the same time.

.Calculate the mating cylinder clearance with the following formula

Mating cylinder clearance= “C”- “P”
Inner diameter of cylinder“C”
Pistion lower part diameter “P”

Mating cylinde clearance: 0.04~0.06mm (0.0016~0.0024 in)
Limit:
0.15mm(0.0059 in)



.If out of specification, rebore or replace the cylinder, and replace the piston and piston ring as a set at the same time

14.Piston ring and piston pin

Piston ring

1)Measure

.Clearance between piston ring and ring groove

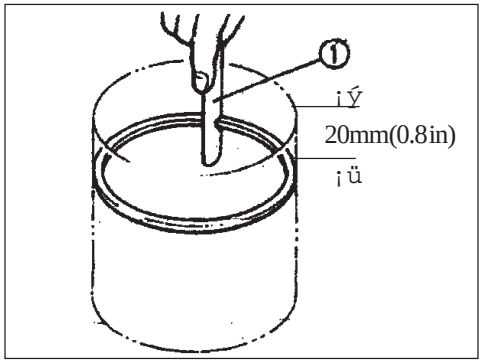
.Use feeler gauge ¢Ù

If out of specification, replace piston and a set of ring

Caution

First clean the carbon deposits inside the pistion ring and ring groove, followed by measuring the clearance between piston ring and ring groove.

Clearance between piston ring and ring groove		
	Standard	Limit
First ring	0.03-0.07mm (0.001-0.003in)	0.12mm (0.005 in)
Second ring	0.02-0.06mm ring (0.008-0.024 in)	0.12mm (0.005 in)



2)Measurement

.Closed clearance of piston ring

.Install the piston ring to the cylinder,pull forward about 20mm(0.8 in),then pull the piston ring with piston top to make it vertical with cylinder wall.

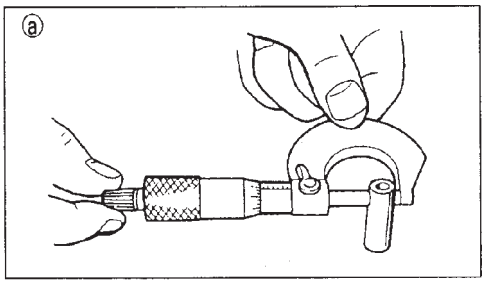
.Use feeler gauge ¢Ù

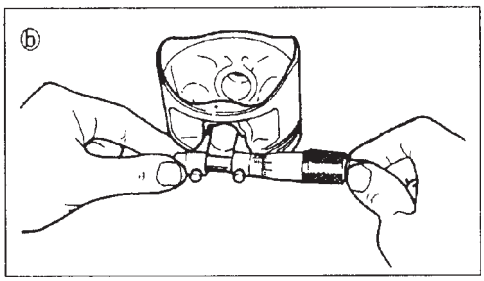
If out of specification replace a set of ring

	close deamance	
	Standard	Limit
Piston ring 1	0.15-0.30mm (0.006-0.012in)	0.4mm (0.016in)
Piston ring 2	0.15-0.30mm (0.006-0.012in)	0.4mm (0.016in)
Oil ring	0.2-0.7mm (0.008-0.028in)	

Caution

You cannot measure the closed clearance of scraping place of oil ring assy,if the clearance of scraping plate is bigger,replace a set of oil ring





Piston pin

1)Inspection

.If the color is changed, or indent is found,replace piston pin, then inspect the Lubrication system.

2)Measurement:

.Outer diameter @ (Piston pin)

Out of specification,replace it

3)Measurement:

.Inner diameter of piston pin

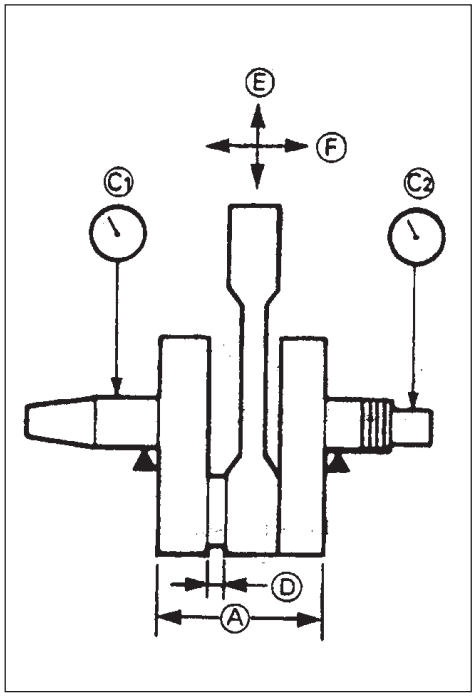
Out of specification,replace it

4)Measurement ⓑ

.Clearance between piston pin and piston pin hloe

Clearance between piston pin and piston pin hloe=ⓑ-@ Inner diameter of piston pin hole ⓑ Outer diameter of piston pin@

Clearance between piston pin and piston pin hole 0.002-0.022mm (0.0001-0.0009 in) Limit 0.07mm (0.003 in)



15.Crankshaft

1)Measurement

.Dimension A of crankshaft assy

If out of specification replace it or repair it

.Runout C

If out of specification replace it or repair it

Runout Limit
C1:0.03mm(0.0012 in)
C2:0.06mm(0.0024 in)

.Side clearance D of big head of connecting rod

If out of specification, replace it or repair it

Max side clearance
0.35mm-0.65mm(0.014-0.026 in)

.Runout E of big head of connecting rod

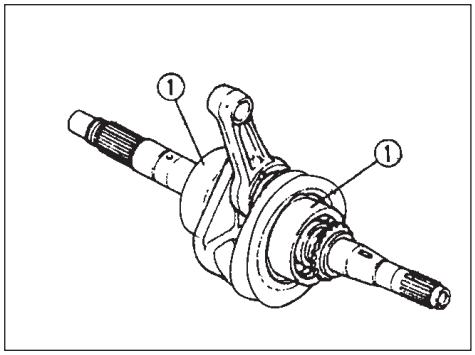
If out of specificaition, replace it or repair it

Runout amount of big head of connecting rod
0.010-0.025mm(0.0004-0.0010 in)

.Clearance F of small end

If out of specification, replace it or repair it

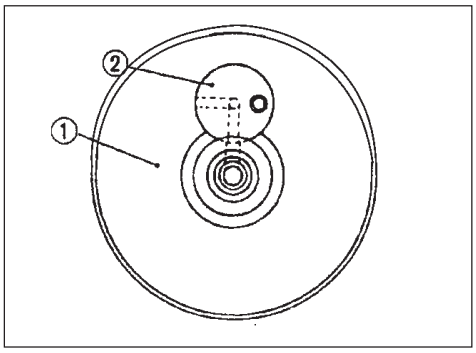
Clearance of small end:
0.8mm-1.0mm(0.032-0.040 in)
Limit: 2.0mm(0.08 in)



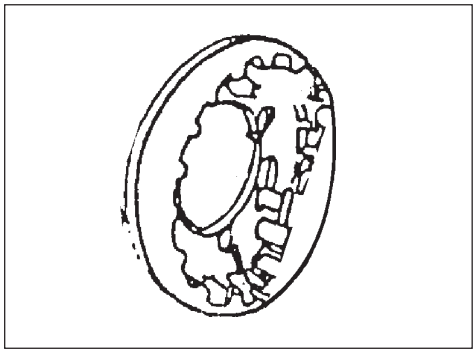
2)Inspection:

.Crankshaft bearing

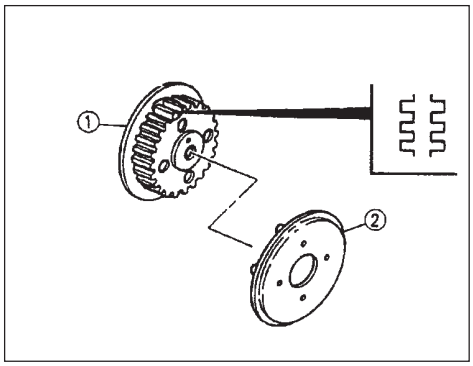
If there is some noise or not active in operation or overbig clearance, replace it.



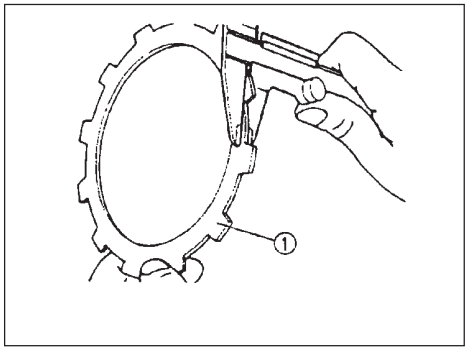
Main points of reassembly of crankshaft:
The oil traces on crankshaft ¢Ùand crank pin ¢Ú should be connected correctly, the malposition of two oil traces should be with in 1mm (0.04 in)



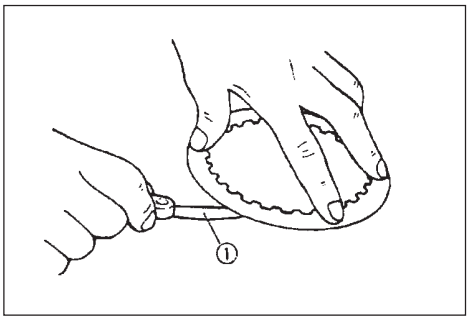
16. Clutch
Clutch case
Inspection
.Split groove of clutch case
If there is pressing mark,worn or damaged on the groove face,remove the burr,or replace it.



Clutch hub assy and pressing plate
Inspection
.Tooth groove on the clutch hub¢Ù
.Tooth groove on the pressing plate¢Ú
If there is scraped,worn or damaged,replace the clutch hub or pressing plate.



Friction plate
1)Inspection
.Friction plate¢Ù
If damaged ,worn replace a set of friction plate
2)Measurement:
.Friction plate thickness
.Measure four positions
If out of specification,replace a set of friction plate



Wear Limit:

2.8mm(0.110 in)

Clutch plate

Measurement:

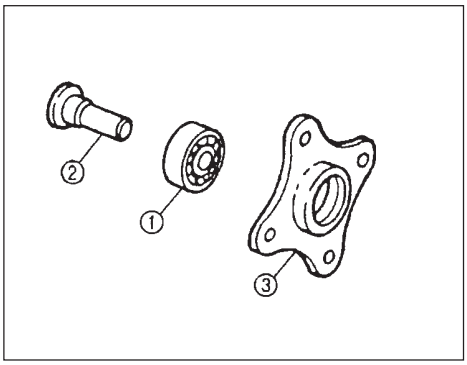
.Planeness of clutch plate

Use flat plate and feeler gauge ¢Ù

If out of specification,replace it.

Planeness Limit:

0.2mm(0.008 in)



Clutch post rod and earing

Inspection:

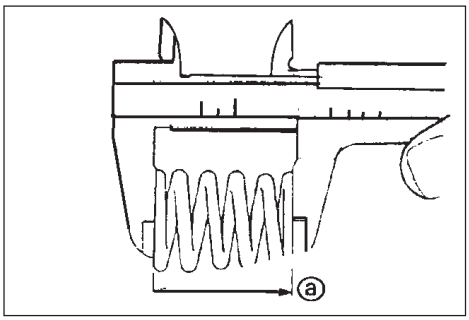
.Bearing ¢Ù(Post rod)

If rough in surface or jammed in rotation,replace it

.Clutch post rod ¢Ú

.Pressing cover ¢Û

If worn,damaged,replace it.



Clutch spring

1)Inspection

.Clutch spling

If worn damaged,replace it

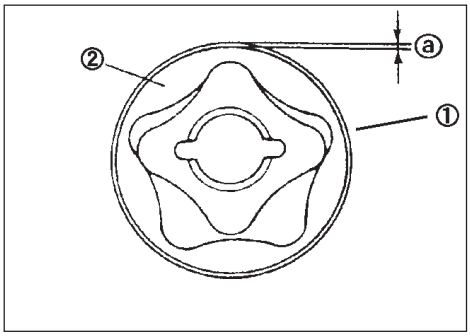
2)Measurement

.Free length of clutch spring@

If not of specification replace a set of spring

Min Limit of clutch spring length

32.9mm(1.30 in)



17.Oil pump

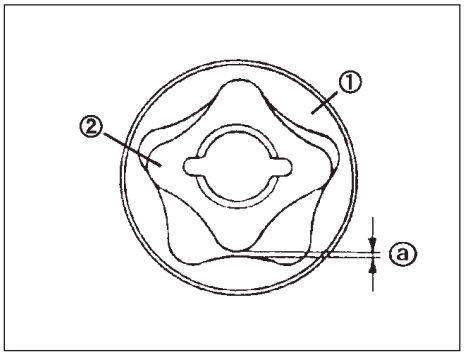
1)Measurement

.Clearance @ between oil pump and out rotor ¢Úwith feeler gauge

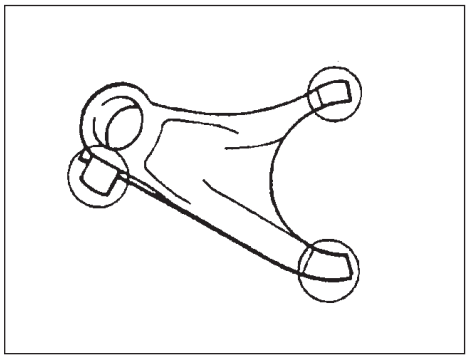
If out of specification,replace oil pump

Clearance Limit

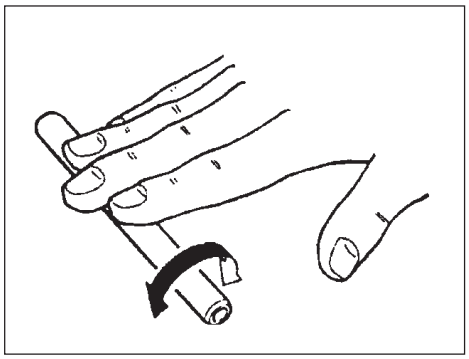
0.09mm(0.004 in)



2)Measurement
.Side clearance between outer rotor¢ÙÙand inner rotor ¢Ú
If out of specification,replace oil pump
Side clearance limit
0.2mm(0.008 in)

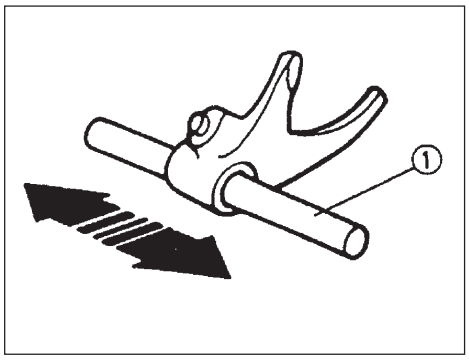


18.Shift fork and fork shaft
1)Inspection
.Fork
Connection surface to gear and shift cam
If worn,scraped,bent or damaged,replace it.

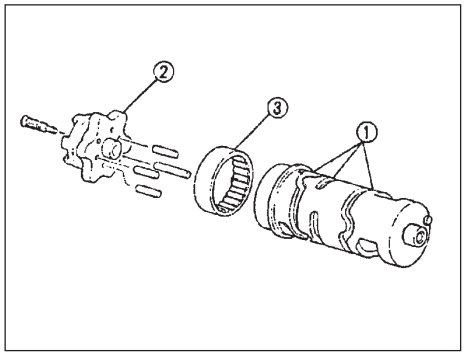


2)Inspection
.Fork shaft
(Roll the fork shaft on a plane)
If bent replace it.
Warning
Never attempt to straight a bent fork shaft

3)Inspection .Movement of fork on the fork shaft ¢Ù
If not smooth in operation,replace fork or fork shaft



19.Shift cam
Inspection
.Groove of shift cam ¢Ù
If worn,damaged,scraped,replace it.
.Start wheel ¢Ú
If damaged or worn,replace it
.Needle bearing ¢Û
If rough in surface or not active in operation, replace it.



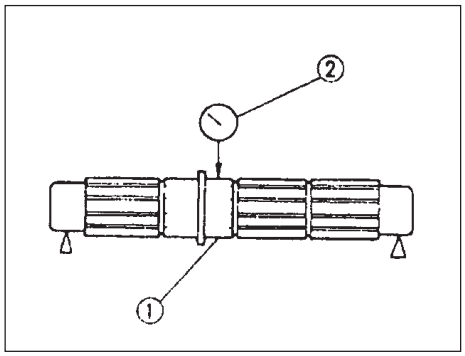
20.Main/vice shaft and gtar

1)Measurement

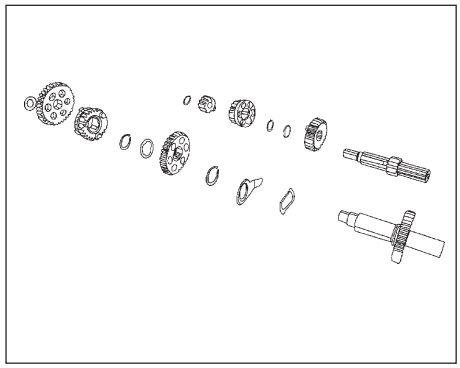
.Runout of shaft ¢Ù(Main/vice shaft)

Measure with bracket and runout meter

If out of specification,replace it.



Runout Limit
0.08mm(0.0031 in)



2)Inspection

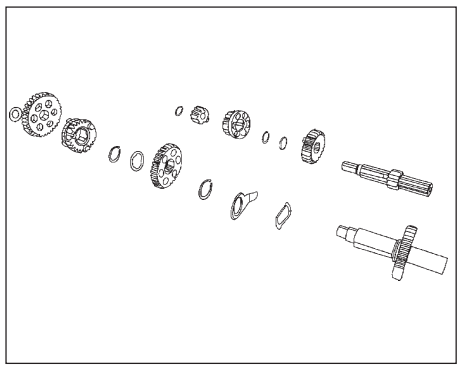
.Gear (refer to shift mechanism and output gear ¢Ù)

.Engaging jaw position

If cracks ,damage,wear,replace it.

Caution

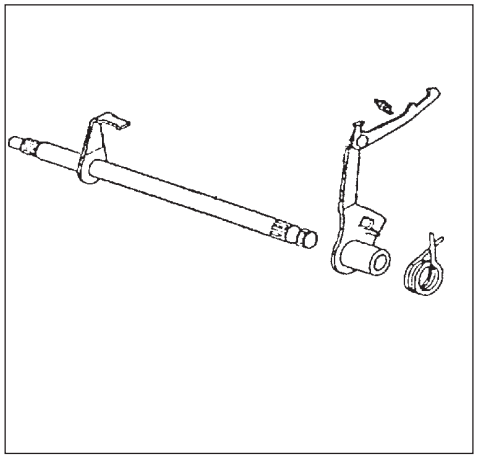
When replacing the output gear,be sure to adjust the adjusting washer of output gear



3)Inspection

.Movement of gear(shift mechanism)

If not smooth in operation,replace it.



21.Shift shaft

1)Inspection

.Shift shaft ¢Ù

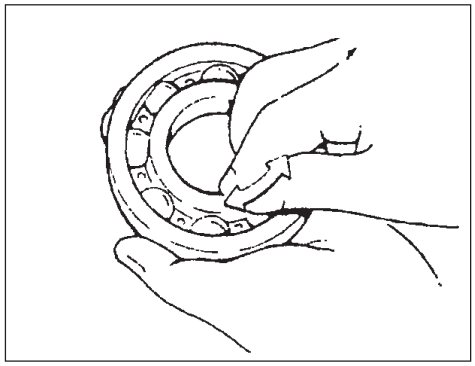
.Hook plate ¢Ú

If bent,worn,damaged,replace it.

2)Inspection

.Shift torsion spring¢Ü(on the shift shaft)

.Tension spring¢Ý(Hook plate)



22.Bearing and oil seal

1)Inspection

.Bearing

If jammed in operation or there are pits and dammagd,replace it.

2)Inspection

.Oil seal

If damaged or worn replace it.

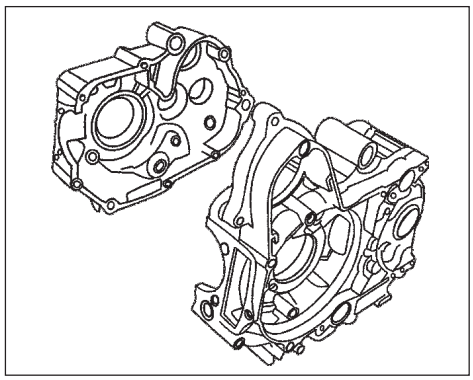
23.Circlip and washer

Inspection:

.Circlip

.Washer

If damaged loose,bent replace it.



24.Crankcase

1)Clean crankcase with soft agent completely

2)Clean all sealing surfaces and closing surfaces completely

3)Inspection:

.Crankcase

Cracks/damage,replace it.

.Oil trace

If jamed,blow with compressed air.

Caution

When replacing the crankcase be sure to re-adjust the output gear washer.

ChapterVI Vehicle Ordinary Trouble and Judgment

.Spark plug is polluted
.wrong spark plug heat value
.Inefficient spark plug cap

(2)Ignition coil
.Primary coil/secondary coil is broken or shortened
.Inefficient high voltage wire
.Ignition coil is broken

(3)CDI magneto system
.CDI is failure
.Coil is failure
.Charging coil is failure
.Woodruff key is bad

(4)Switches and wires
.Main switch is bad
.The engine is off and switch is inefficient
.Wires is broken or shortened
.Neutral switch is bad
.Starting switch is bad
.Rear brake switch is bad

(5)Starting motor
.Staring motor is bad
.Starting relay is bad
.Off power relay is bad
.Super clutch is bad
3`Cylinder
(1)Cylinder body and cylinder head
.Spark plug is loosen
.Cylinder head or cylinder body is loosen
.Cylinder head washer is damaged
.Cylinder body is worn or damaged

Trouble
Caution:
The following trouble, not including all possible troubles, is a help for trouble guide .Please refer to relevent contents for the inspection, adjustment and replacement of parts.
(I)Starting trouble/difficulty
1`Fuel system
(1)Fuel tank
.No oil
.Fuel filter is clogged
.Fuel filter net is clogged
.Breather tube is clogged
.Fuel is deteriorated or polluted

(2)Fuel cock
.Inlet tube is clogged
.Fuel cock is not be opened

(3)Carburetor
.Fuel is deteriorated or polluted
.Starting nozzle is clogged
.Air tube is clogged
.Float is distorted
.Needle valve is worn
.Improper valve sealing
.Improper installation of starting nozzle
.Starting nozzle is clogged
.Improper work of starting plug

(4)Air filter
.Core of air filter is clogged

2`Electric system
(1)Spark plug
.Improper spark plug clearance (standard clearance is 0.6-0.7mm)
.Terminal is worn

(2)Piston and piston ring

.Improper piston ring installation

.Piston ring is worn and out of elasticity

.Piston is damaged or crack

(3)Valve, camshaft and crank shaft

.Valve didnt closed entirdly

.Improper match between valve and valve seat

.Wrong port timing

.Valve spring is damaged

.Valve camshaft is damaged

.Crank shaft is damaged

(II)Poor idle speed performance

(1)Carburetor

.Starting plug is not close entirely

.Idle metering jet is loose

.Idle metering jet is clogged

.Idle air metering jet is clogge

.Improper idle adjustment

.Leakage of carburetor

(2) Electric system

.Spark plug is bad

.CDI is bad

.Coil is bad

.Charging coil is bad

.Ignition coil is bad

(3)Valve system

.Improper adjustment of valve clearance

.Core of air filter is clogged

(III)Poor middle and high speed performance

Refer to “starting trouble/difficulty”and poor idle speed performance section in this chapter.

(1)Carburetor

.Wrong needle valve position

.Main jet is clogged or loosened

.Fuel is deteriorated or polluted

.Wrong float chamber oil level

(2)Air filter

.Core of air filter is clogged

(IV)Shifting trouble

1.Shifting difficulty

Refer to “slippig of clutch”and “ablation of clutch”in this chapter

2.Shifting pedle is clogged

(1)Shifting shaft groups

.Shifting shaft is bend

.Shifting lever groups is damaged

(2)Shifting cam, shifting fork

.There is foriegn matter in shifting camshaft recess

.Shifting fork is clogged

.Shifting fork shaft is bend

(3)Driving system

.Driving gear is clogged

.Foreign matter is clogged

.Incorrect driving system installation

3.Shift is out of gear

(1)Shifting shaft groups

.Improper adjustment of limited lever postion

.Limited lever can’t back

(2)Fork

.Fork is worn

(3)Shifting cam

.Recess of shifting cam is worn

(2) Fuel system
¡¤Main jet of carburetor is wrong
¡¤Improper oil level
¡¤Core of air filter is clogged
(3) Cylinder system
¡¤Serious carbon deposition

(4)Engine oil
¡¤Improper oil level
¡¤Improper oil toughness
¡¤Poor oil quality

(5)Brake
¡¤Brake is stagnant

(VIII) Brake trouble
Troubles: Poor brake efficient
¡¤Brake shoe lining is worn
¡¤Serious wear of brake shoe
¡¤Brake shoe oil is too much
¡¤Improper adjustment of brake clearance
¡¤Improper brake arm position
¡¤Returing spring is fatigue and damaged
¡¤Brake cable is broken

(IX) Shock absorber failure/improper operation
1. Shock absorber failure:
¡¤Damping rod is bent or damaged
¡¤Bad oil sealing lip
¡¤Spring of shock absorber is fatigue

2. Improper operation
(1) Handle bar
¡¤Improper installation or handlebar is bent

(2) Steering system
¡¤Wrong toe-in
¡¤Steering pillar is bend

(4) Driving system
¡¤Claw of gear end is worn

(V) Clutch slips
(1) Clutch
¡¤Improper adjustment of clamp plate release rod clearance of clutch
¡¤Clutch spring is loosen (primary clutch and / secondary clutch)
¡¤Clutch spring is fatigue (primary clutch and/ secondary clutch)
¡¤Friction disc is worn
¡¤Clamp plate is worn or deformed
¡¤Main clutch shoe lining is worn

(2)Engine oil
¡¤Low oil level
¡¤Poor quality(viscosity is low)
¡¤Deteriorated oil

(VI) clutch is locked
¡¤(1)Clutch
¡¤Clutch is out of control or the clearance is too big
¡¤Improper match between release lever and release rod
¡¤Deformed clutch clamp plate
¡¤Friction disc is deformed
¡¤Clutch hub is broken

(2)Engine oil
¡¤High oil level
¡¤Poor oil quality(viscosityis high)
¡¤Deteriorated oil

(VII) Engine is overheat
(1)Ignition system
¡¤Improper spark plug clearance
¡¤Wrong spark plug heating value
¡¤CDI failure

¡¤Improper installation of steering pillar bearings
¡¤Holding seat of steering pillar or sealing ring is damaged
¡¤Rod is bent
¡¤Spherical connection is bent

(3) Wheel tyre
¡¤Uneven pressure on two sides of tyre
¡¤wrong tyre pressure
¡¤uneven tyre wear

(4) Front/Rear tyre
¡¤deformed run
¡¤Loosen bearing
¡¤Front wheel axle is bent or loosen
¡¤Radial run out of front/rear wheel is too big

(5) Frame
¡¤Bend
¡¤Damaged frame

(6)Rear wheel fork
Bearing or bushing is worn
Rear wheel fork is bent or damaged

(X) Lighting system
1. Head light is out of work
¡¤buld is trouble
¡¤Too big load
¡¤Charging difficulty(Lighting coilor rectifier is failure)
¡¤Wrong connection of wire
¡¤Wrong connection of ground
¡¤Poor connection(Main switch or lighting switch)
¡¤use-life of bult is end

2. Bulb is off
¡¤Bulb is out of specification

¡¤Battery fails
¡¤Rectifier fails
¡¤Wrong connection of ground
¡¤Main switch or lighting switch fail
¡¤Use-life of bulb is end

Our group reserve the right to change structure, dimension and parameter of the vehicle’s parts without additional notice.

SUPPLEMENTARY
SERVICE MANUAL