JIANSHE

JIANSHE MOTORCYCLE MODEL JS125-6B

MAINTENANCE MANUAL

JIANSHE INDUSTRIES CO.,LTD.(GROUP)

MAINTENANCE MANUAL

NOTICE

This manual was produced by the chongqing Jianshe motorcycle co., Ltd primarily for use by Jianshe Group dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual, so if is assumed that anyone who uses this book to perform maintenance and repairs on JS125-6B motorcycle has a basic understanding of the mechanical ideas and the procedures of machine repair.Repairs attemped by anyone without this knowledge are likely to render the machine unsafe and until for use.

Chongqing Jianshe Industries(Group)Co., Ltd is continually striving to improve all its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Jianshe Group dealers and will appear in future editions of this manual where applicable.

IMPORTANT INFORMATION

Particularly important information is distinguished in this manual by the following notations.

The Safety Alert Symbol means ATTENTION!BECOME ALERT!YOUR SAEFTY IS INVOLED!

Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander or a person inspecting or repairing the machine.

A CAUTION indicates special precautions that must be taken to avoid damage to the machine.

A NOTE provides key information to make procedures easier or clearer.

Maintenance manual of four-wheeled cross-country vehicle model JS125-6B

First edition July 2007

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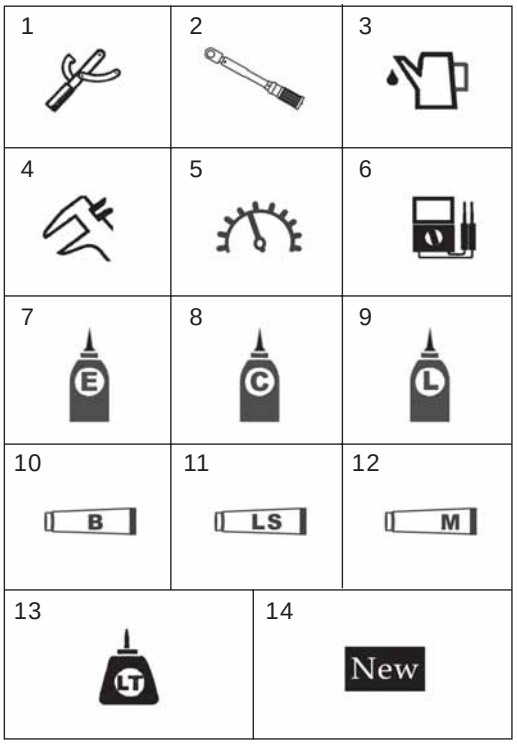
ILLUSTRATED SYMBOLS



1 Special tool
2 Tighten
3 Filling electrolyte
4 Wear limit, clearance
5 Engine speed
6 Tester
7 Apply engine oil
8 Apply gear oil
9 Apply molybdenum disulfide oil
10 Apply wheel bearing grease
11 Apply lightweight lithium-soap base grease
12 Apply molybdenum disulfide grease
13 Apply fluid locking agent
14 Install a new part

COLOR INDICATIONS

Abbreviation	Full name	Abbreviation	Full name
B	Black	B/W	Black/white
Br	Brown	B/R	Black/red
Ch	Dark brown	Br/W	Brown/white
Dg	Dark green	G/W	Green/white
G	Green	G/Y	Green/yellow
L	Blue	W/L	White/blue
Or	Orange	W/R	White/red
Sb	Light blue	B/Y	Black/yellow
P	Pink	L/W	Blue/white
R	Red	L/B	Blue/black
Y	Yellow	R/W	Red/white
W	White		

CONTENT

CHAPTER 4 ENGINE

CHAPTER 5 CHASSIS

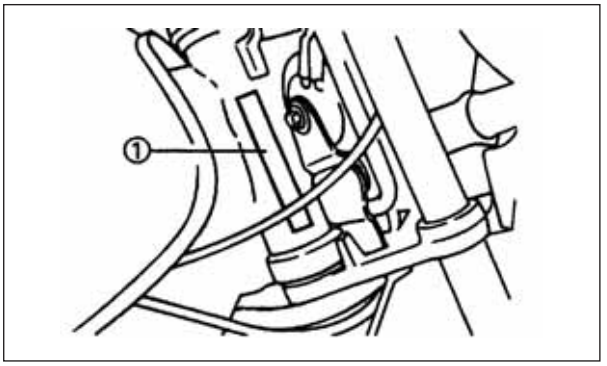
CHAPTER 6 CABLE AND ELECTRIC APPLIANCE SYSTEM

CHAPTER 7 TROUBLESHOOTING

CHAPTER 1

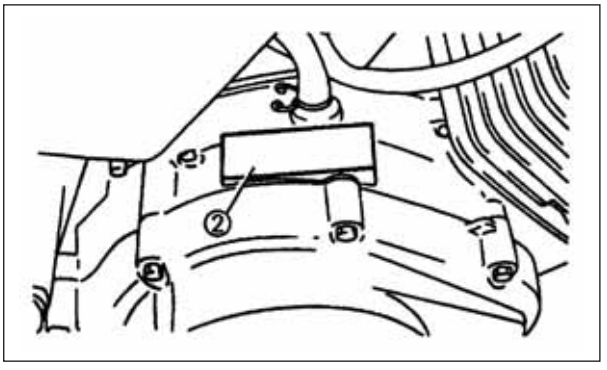
GENERAL INFORMATION

Motorcycle identification



Frame identification

The number is stamped on the front tube of frame. The frame number is make up of 3 parts, the first part（3 ones） is the code of manufacturer(WMI); The second part (6 ones) is the direction code of motorcycle (VDS) the third part (8 ones) is the inspecting position. (VIS).



Engine Ser. No

The No.s of engines stamped on the crankcase.

Engine No.
JS154FMI/JYM154FMI ※ 00000001 ※

Note

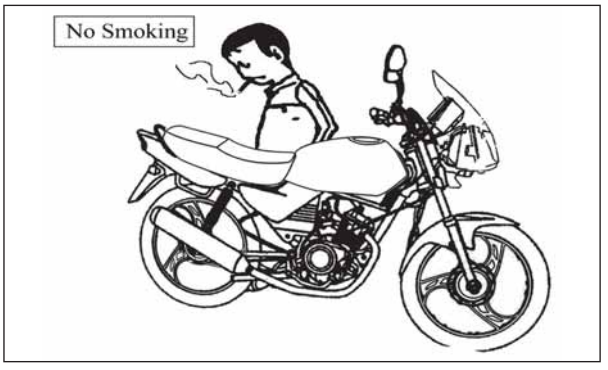
There will be no further notice if the design or rule is changed.

Important Information

Important information to ensure safe and high active work

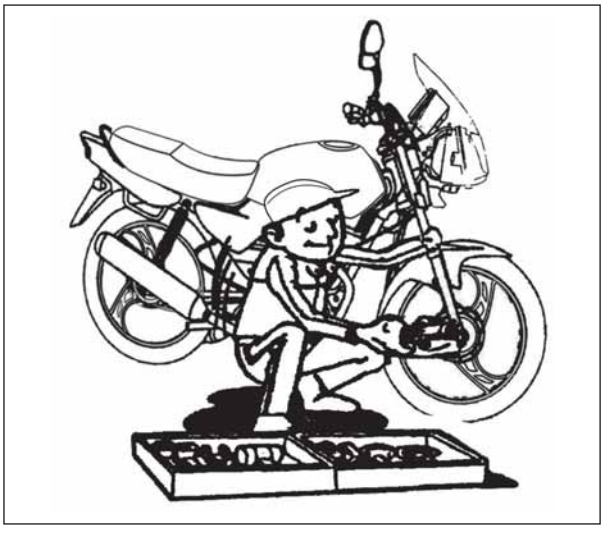
(1)Motorcycle wash

Clear out the frame and engine to prevent the entry of dust



(2)No smoking

Keep out fire from replacement position .



(3)Choose right tools

•Use only the appropriate special tools will help prevent damage caused by the use of inappropriate tools or improvised techniques.

• Use appropriate tools and metro logic instrument for replacement.

• Use double offset ring spanner and socket key instead of non-adjustable wrench.

(4)Use authentic replacement parts

• Use only genuine Jianshe Group parts for all re－placements. Use oil and grease recommended by Jianshe Group for all lubrication jobs. Do not use Other Brands' re-placement parts.

(5)Wearing parts must usually replaced (marked with NEW)

•Replace all gaskets, oil seals , cotter pin ,circlip and O-rings.

(6)Safe operation

• Be careful in operation to avoid accident or get a burn by the engine, exhaust pipe and silencer..

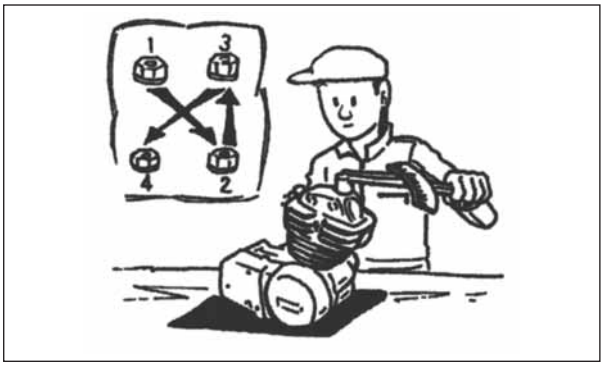
• Always think of the right tools, right ways, right fixture and the right position to ensure body's steady.

(7)The operation should be broken down in order and the taken apart parts should be sort out in time.

• Unscrew: from offside to inside on a cross by 2 or 3 times.

• Check and measure the important parts while breaking down, and keep the records for reference The disassemble parts should be put in order to prevent mix and loss.

• The parts of the engine transmission must be cleaned by oil and dried by compressed air after knocked down.



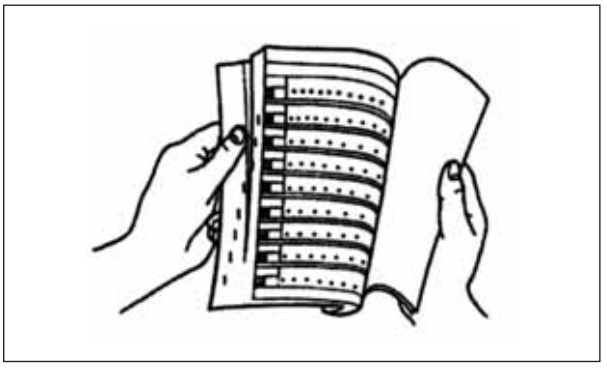
(8)Defer to each part to confirm while assembling. Screw down: from inside to offside on a cross by 2 or 3 times.

• Defer to each part's correct results and the data before broken down during the operation.

• Do not let dust sticks on various components in assembly

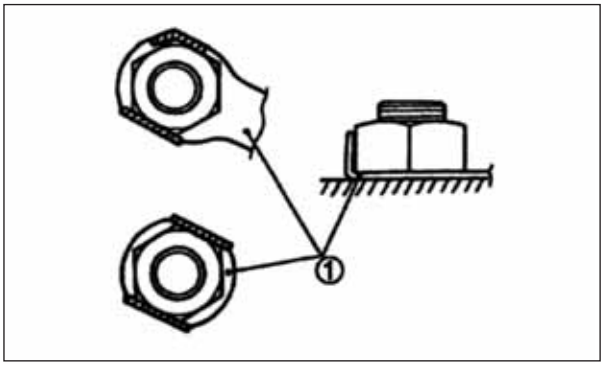
• Smear motor oil on rotary and sliding parts (smear grease on oil seal and O-rings). Make sure to follow the screw moment method.

• Two persons should cooperation perfectly when work in with each other.



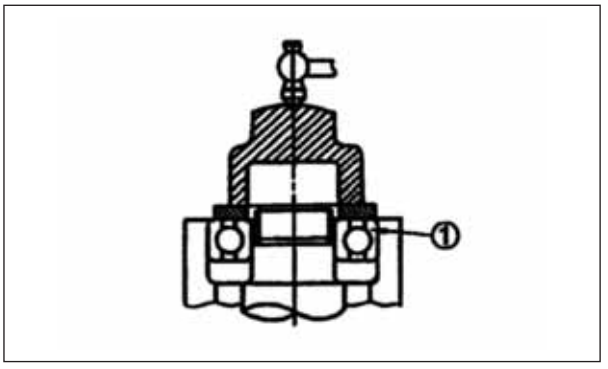
(9)Maintenance manual and parts catalog is necessary

•Maintenance manual and parts catalog is necessary. For efficiently, reliable and safe operation.



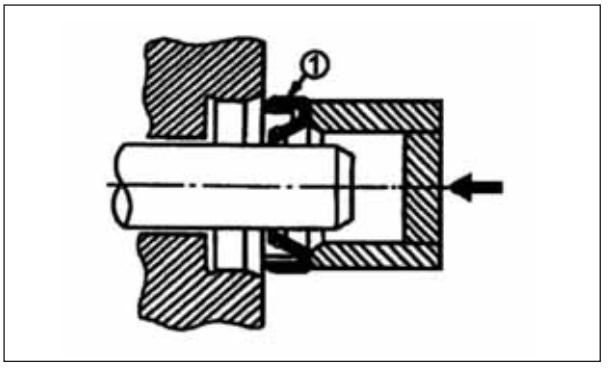
Gaskets Oil seal and O-rings

1. Replace all gaskets, oil seals and O-rings when overhauling the engine. All gasket surfaces, oil seal lips and o-rings surface must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



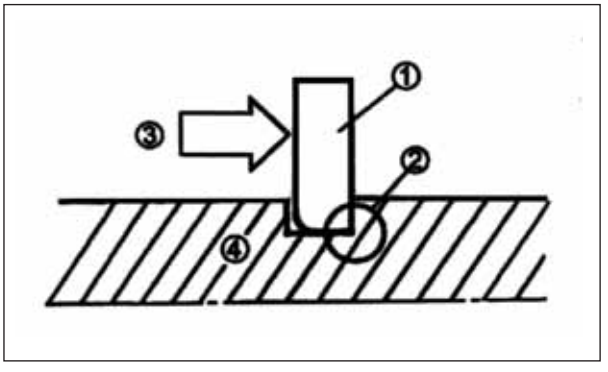
Lock washer/plates and cotter pins

1.Replace all lock washer/plates and cutler pins after removal. Bend lock tabs along the bolt or nut flats after the bolt or nut has been tightened to specification.



Bearings and oil seals

Install bearings and oil seals so that the manufactures marks of numbers are visible. When in-stalling oil seals, apply a light coating of lightweight lithium base grease to the seal lips. Oil bearings liberally when installing, if appropriate.



Circlips

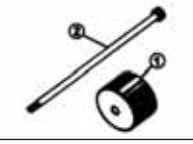
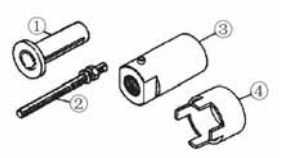
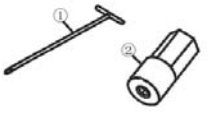
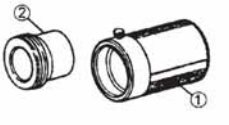
Check all circlips carefully before reassembly. Al-ways replace piston pinclips after one use.
Replace distorted circlips, when installing a circlip make sure that the sharp edged corner is positioned opposite the thrust it receives view. Shafe.

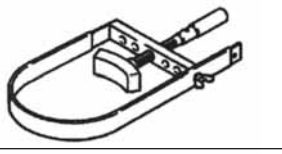
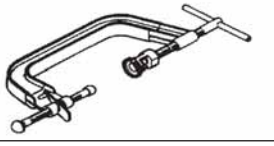
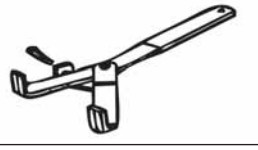
Caution

Do not use compressed air to spin the bearings dry. This will damage the bearing surfaces.

Special tools

The proper special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriates special tools will help prevent damage caused by the use of inappropriate tools or improvised techniques.

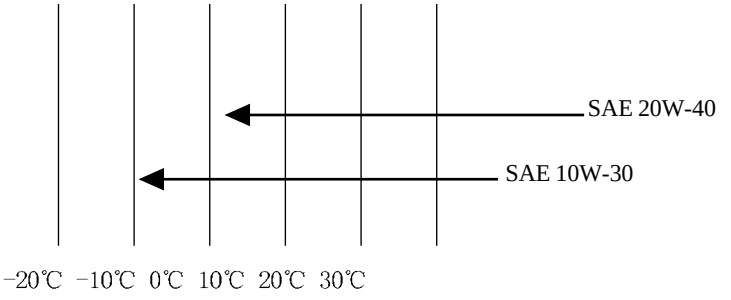
Special tools name	Drawing
Slide hammer bolt① Weight②	
Crankcase separating tool	
Crankshaft installer set ① Crankshaft installer bolt② Joint of different diameter tide③ Spacer ④ Crankshaft installer tool⑤	
Shock absorber lever yoke Handle Antic kid tool	
Valve adjusting tools	
Liquid meter Fuel level gauge	
Rotor strip down tools Strip down rotor tools	
Front fork gasket press tool Front fork gasket press tool ① Front fork gasket press tool attachment ②	

Special tools name	Drawing
Turning and exhaust pipe wrench	
Turning wrench	
Magneto rotor holder	
Clearance ruler	
Cylinder compression gauge	
Pocket tester	
Inductive techometer	
Valve spring compressor	
Universal clutch holder	
Ignition checker	

CHAPTER 2

SPECIFICATIONS

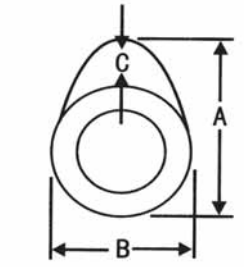
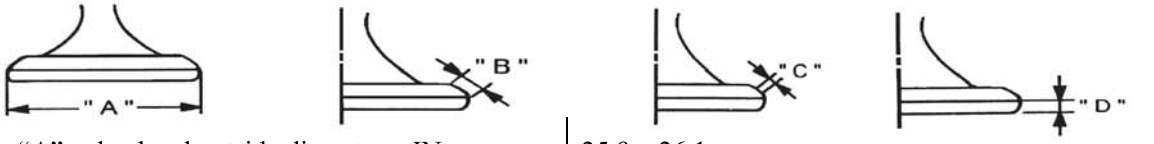
General specifications

Item	Standard
Model code:	JS125-6B
Dimensions:	
Overall length	1980mm
Overall width	745mm
Overall height	1050mm
Seat height	775mm
Wheelbase	1290mm
Minimum ground clearance	160mm
Minimum turning radius	1750mm
Basic weight: With oil and full fuel tank	117kg
Engine:	
Engine type	Air-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined single cylinder
Displacement	123m^3
Bore×stroke	54.0×54.0mm
Compression ratio	10:1
Starter	Electric and Kick starter
Lubrication	Compress and splash
Oil Engine oil capacity  Periodic oil change Total amount	 1L(1000cm^3) 1.2L(1200cm^3)
Lubrication system	Wet sump
Oil filter	
Type	90#gasoline
Fuel tank capacity	13L
Fuel reserve amount	1.4L

Item	Standard
Carburetor	Z20P-1B/VM22SH
Spark plug	
Type	A6RTC/CR6HSA
Spark plug gap	0.6mm～0.7mm
Clutch	
Type	Wet ,multi-piece with handle
Transmission	
Primary reduction system	Spur gear
Primary reduction ratio	68/20(3.400)
Secondary reduction system	Chain drive
Secondary reduction ratio	45/14(3.214)
Type	Constant mesh 5-speed
Gear ratio	
1st	37/14 (2.643)
2nd	32/18 (1.778)
3rd	25/19 (1.316)
4th	23/22 (1.045)
5th	21/24 (0.875)
Chassis	
Frame type	Rhombus
King pin front caster angle	26.4℃
Tire	
Type	With tube
Size	
Front wheel	2.75-18(42P)
Rear wheel	90/90-(18(51P)
Tyre pressure	
Single	
Front tyre pressure	175kPa(1.75kgf/cm²)
Rear tyre pressure	196kPa(2.0kgf/cm²)
Couples	
Front tyre pressure	195kPa(2.0kgf/cm²)
Rear tyre pressure	245kPa(2.5kgf/cm²)
Brake type (front/rear)	Drum brake .disk/drum brake
Brake	
Front brake type	Single-disc hydraulie brake or drum brake
Front brake operation	Right hand operation
Rear brake type	Drum brake
Rear brake operation	Right foot operation

Item	Standard
Suspension	
Front	Telescope tube
Rear	Swingarm rear fork
Shock absorber	
Front	Coil spring / oil damper
Rear	Coil spring / oil damper
Wheel base	1290mm
Electrical	
Ignition system	CDI
Generator system	A.C. magneto
Battery type	
Battery capacity	12V5Ah
Headlight type	Bulb type
Bulb power:	
Headlight	12V35/35w×1
Tail light/brake light	12V21W/5/W×1
Meter light	12V3W×3
Position indicator	12V3W
Neutral indicator	12V1.7W×1
High beam indicator	12V1.7W×2
Turn indicator	12V1.7W×2

Check the Specification

Item	Specification	Limit
Cylinder head: Warp limit	0.03mm	0.03mm
Cylinder: Bore size Wear limit	54.060mm-54.075mm	
Cam shaft: Cam dimensions Intake "A" "B" "C" Exhaust "A" "B" "C" Cam shaft runout limit	 25.881mm～25.981mm 21.194mm～21.294mm 5.081mm～4.781mm 25.841mm～25.941mm 21.097mm～20.097mm 5.041mm～4.741	 <25.851> <21.165> <25.817> <21.027> 0.03mm
Cam Chain: Cam chain type Cam chain adjustment method	 DID25/88 Automatic	
Rocker arm /rocker arm shaft: Rocker arm inside diameter Shaft outside diameter Arm to-shaft clearance	 10.000mm～10.015mm 9.981mm～9.991mm 0.009mm～0.034mm	 <10.03mm> <9.95mm>
Valve, valve seat, valve guide: Valve clearance(cold) IN EX Valve dimensions: Intake  "A" valve head outside diameter IN EX "B" face width IN EX "C" seat width IN EX "D" margin thickmess IN EX Stem outside diameter IN EX	 0.08～0.12mm 0.10～0.14mm 25.9～26.1mm 21.9～22.1mm 1.4～3.0mm 1.3～2.4mm 1.2～1.4mm 0.9～0.1mm 0.4～0.8mm 0.8～1.2mm 4.975～4.990mm 4.960～4.975mm	 <4.950> <4.935>

Item		Specification	Limit
Guide inside diameter			
	IN	5.000～5.012mm	5.042mm
	EX	5.000～5.012mm	5.042mm
Stem-to-guide clearance	IN	0.010～0.037mm	0.08mm
	EX	0.025～0.052mm	0.10mm
Stem runout limit			0.01mm
Valve seat width	IN	0.2～1.4mm	1.6mm
	EX	0.56～1.64mm	1.6mm
Valve spring			
Free length		39.62mm	
Set length (valve closed)		25.6mm	
Force of compression		132～236N	
Direction of winding		Clockwise	
Piston:			
Piston clearance		0.02～0.034mm	
Piston size “D”		53.997～54.028mm	
Measuring point “H”		4.5mm	
Piston pin hole inside diar		15.002～15.013mm	
Piston pin outside diameter		14.991～15.000mm	
Piston to cylinder clearence		0.002～0.022mm	
Piston rings:			
First ring			
Type		Drum piston ring	
Size (BT)		1.0×2.1mm	
Split clearance installed		0.15～0.30mm	0.4mm
Side clearance (installed)		0.035～0.07mm	0.12mm
Second ring			
Type		Flat piston ring	
Size (BT)		1.0×2.1mm	
Split clearance installed		0.30～0.45mm	0.55mm
Side clearance (installed)		0.02～0.06mm	0.12mm
Oil ring			
Size (BT)		2.0×2.25	
Crank shaft:			
Crank width “A”		46.95～47mm	
Runout limit “C”		0.03mm	0.03mm
Big end side clearance “D”		0.15～0.45mm	0.8mm
Big end side radial clearance		0.095～0.073mm	
Balancing device			
Balancer drive way		Gear	
Transmission:			
Main axle deflection			0.08mm
Drive axle deflection			0.08mm

Item	Specification	Limit
Clutch:		
Friction plate:		
Thickness	2.9～3.0mm	2.8mm
Quantity	4	
Clutch plate:		
Thickness	1.55～1.65mm	0.05mm
Quantity	3	
Clutch spring:		
Free length	29.29mm	31mm
Quantity	4	
Clutch out	Cam actuated	
Kick starter		
Type	Kick starter and mesh type	
Carburetor		
Identification code	VM22SH	
Main jet	#97.5	
Main air jet	0.9	
Jet nozzle	5EJ49-2(L=50.0)	
Pilot Air jet	1.4	
Pilot mixture outlet	1.0	
Pilot jet	#15	
Pilot mixture adjustable bolt	21.2±3/4	
Oil level	7.1±0.05mm	
Idle speed	1400±100pm	
Suction subpressure	31.9±2.7kPa	
Oil pump type:	Trochoid type	
Tip clearance	0.15mm	0.23mm
Side clearance	0.06～0.10mm	0.14mm
The clearance from magneto rotor to rotor chamber	0.06～0.10mm	0·14mm
Steering system:		
Steering bearing type	Ball bearing	
Front suspension:		
Front fork travel	120mm	
Fork spring free length	337mm	330mm
Fuel capacity	154.5cm^3	
Fuel level	156mm	
Fuel degree	10W or equivalent oil	
Inner tube angularity limit		0.2mm
Rear suspension:		
Shock absorber travel	90mm	
Spring free length	239.5mm	235mm
Front wheel:		
Type	Spoke wheel /radial wheel	
Rim size	18X1.60(W)	
Rim material	Aluminium	
Rim runout limit		
Radial		0.5mm
Lateral		0.5mm

Item	Specification	Limit
Rear wheel: Type Rim size Rim material Rim runout limit Radial Lateral	 Spoke/radial 1.85×18(W)	 0.5mm 0.5mm
Drive chain No.s of link Looseness of chain	 118 20～30mm	
Front wheel brake Type Brake drum inside diameter Drum thickness Brake shoe spring free length	 Drum brake 130mm 4mm 36.5mm	 131mm 2.0mm
Rear wheel brake Type Brake drum inside diameter Drum thickness Brake shoe spring free length	 Drum brake 130mm 4mm 36.5mm	 131mm 2.0mm
Brake lever and brake pedal: Brake pedal free play Brake pedal free play	 5.5～10.5m/10～15m (Disk/drum) 20～30mm	
Clutch lever Clutch lever free play	 10～15mm	
Ignition time: Ignition timing (B.T.D.C.) Advanced timing(B.T.D.C.) Advancer type	 7° 29° Electrical	
C.D.I: Pulse coil resistance /color Source coil resistance /color	 (290～330Ω)/20℃ (810Ω±20%) (Brown-green)	
Ignition coil Primary winding resistance Secondary winding resistance	 (0.4Ω±20%)/20℃ (7.1kΩ±20%)/20℃	
Spark plug gap Type Resistance	 Resin type 5kΩ±20%/20℃	

Item	Specification	Limit
Rectifier / regulator No load regulated voltage Capacity Withstand voltage	 14.5V±0.5 5A 240V/min	
Battery Specific gravity	 1.280±0.01(20℃)	
Starter motor Type Output Rotor winding resistance Brush overall length Brush spring pressure	 0.4KW 0.171～0.209Ω 10mm 0.9N±20%	
Start relay: Nominal current Coil resistance	 30A 4Ω±10%(20℃)	
Horn: Type Max. current	 1.5A	
Fuel meter: Resistance of sensor—Full —Empty	 10Ω(20℃) 90Ω(20℃)	
Flashing replay: Type Flash period	 60～120 frequency/min	
Circuit breaker Type Main circuit Reserve circuit	 Fuse 15A×1 15A×1	

Lock torque

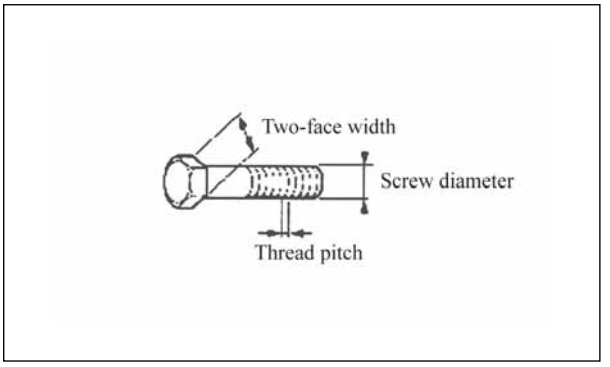
Engine

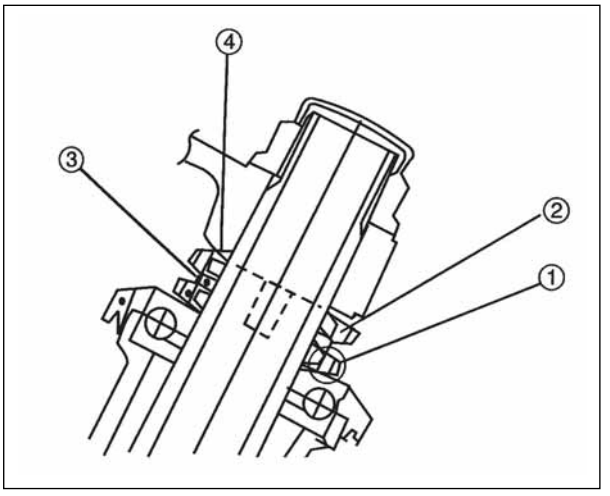
Ser. No	Locking component and location	Name	Size of thread	Q'ty	Tightening torque	
					Kgf.m	N.m
1	Cylinder head	Bolt	M8×1.25	4	2.2±0.2	22±2
2	Cylinder head(timing chain)	Bolt	M6×1.0	2	1.0±0.2	10±2
3	Oil check bolt	Bolt	M6×1.0	1	0.7±0.2	7±2
4	Spark plug		M10×1.0	1	1.25±0.25	12.5±2.5
5	Cylinder head side cover 3	Bolt	M6×1.0	2	1.0±0.2	10±2
6	Cylinder head side cover 1 (Valve)		M45×1.5	2	1.0±0.2	17.5±2.5
7	Magneto rotor	Nut	M12×1.25	1	7.0±1.0	70±10
8	Chain guide stopper 2	Bolt	M6×1.0	1	1.0±0.2	10±2
9	Valve locking nut	Nut	M5×0.5	2	0.75±0.15	7.5±1.5
10	Timing gear	Bolt	M8×1.25	1	2.0±0.2	20±2
11	Cylinder head pressure plate	Bolt	M6×1.0	1	1.0±0.2	10±2
12	Cam chain tensioner	Bolt	M6×1.0	2	1.0±0.2	10±2
13	Oil pump assy	Bolt	M6×1.0	2	0.7±0.2	7±2
14	Straight screw plug	Bolt	M12×1.5	1	2.0±0.5	20±5
15	Muffler assy (cylinder head)	Bolt	M6×1.0	2	1.0±0.2	10±2
16	Muffler assy (body frame)	Bolt	M8×1.25	1	2.2±0.2	22±2
17	Left and right crankcase	Bolt	M6×1.0	2	1.0±0.2	10±2
			M6×1.0	7	1.0±0.2	10±2
			M6×1.0	1	1.0±0.2	10±2
18	Crankcase cover 1	Bolt	M6×1.0	1	1.0±0.2	10±2
			M6×1.0	6	1.0±0.2	10±2
19	Timing chain cover	Bolt	M6×1.0	2	0.7±0.2	7±2
20	Crankcase cover 2	Bolt	M6×1.0	6	1.0±0.2	10±2
			M6×1.0	6	1.0±0.2	10±2
21	Kick starter assy	Nut	M12×1.0	1	5.0±1.0	50±10
22	Driven gear pressure plate	Bolt	M6×1.0	2	0.7±0.2	7±2
23	Starter motor assy	Bolt	M6×1.0	2	1.0±0.2	10±2
24	Starter clutch outer assy	Bolt	M8×1.25	3	3.0±0.3	30±3
25	Main clutch gear	Nut	M12×1.0	1	7.0±1.0	70±10
26	Pressure plate 2	Elastic screw	M5×0.8	4	0.6±0.2	6±2
27	Carrier clutch assy	Nut	M12×1.0	1	6.0±1.0	60±10

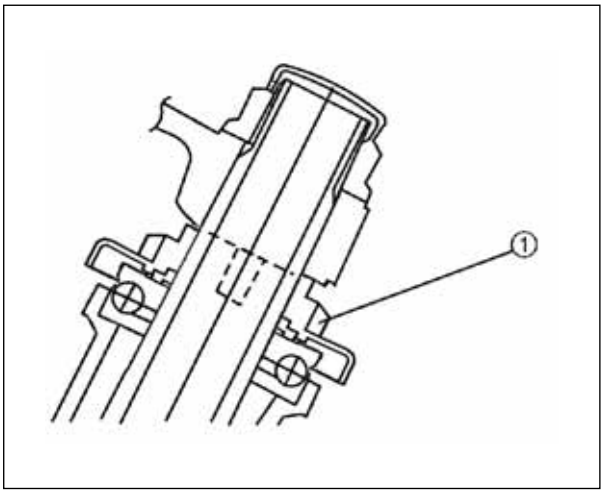
Body frame

Ser. No	Locking component and location	Name	Size of thread	Q'ty	Tightening torque	
					Kgf.m	N.m
1	Handlebar seat and inner tube	Bolt	M8×1.25	2	1.8－2.8	18－28
2	Handlebar and steering column	Nut	M22×1.0	1	10－12	100－120
3	Lower holder and inner tube	Bolt	M10×1.25	2	2.3－3.5	23－35
4	Steering column and adjust nut	Nut	M25×1.0	2	3.0－3.5	30－35
5	Handlebar and handlebar seat	Bolt	M8×1.25	4	1.8－2.8	18－28
6	Caliper and front fork(disk brake)	Bolt	M10×1.25	1	2.3－2.7	23－27
7	Front main cylinder and handlebar (disk brake)	Bolt	M6×1.0	2	0.75－1.2	7.5－12
8	Engine front part and engine bracket 2	Bolt	M8×1.25	2	3.5－4.0	35－40
9	Engine bracket 2 and body frame	Bolt	M10×1.25	2	4.6－6.0	49－60
10	Engine rear part and body frame	Bolt	M8×1.25	1	3.5－4.0	35－40
11	Engine upper part and engine bracket 3\4	Bolt	M8×1.25	1	3.5－4.0	35－40
12	Engine bracket 3\4 and body frame	Bolt	M8×1.25	2	3.5－4.0	45－72
13	Steering column and nut	Bolt	M12×1.25	1	4.5－7.2	24－39
14	Rear shock absorber and rear arm	Nut	M10×1.25	2	2.4－3.9	15－23
15	Rear shock absorber and body frame	Nut	M10×1.25	2	3.1－4.9	5－8
16	Brake rod and rear arm	Bolt	M8×1.25	1	1.5－2.3	3－5
17	Fuel tank and fuel cock	Bolt	M6×1.0	4	0.5－0.8	71－112
18	Fuel sensor	Bolt	M6×1.0	2	0.3－0.5	35－56
19	Front wheel axle and nut (disk brake)	Bolt	M14×1.25	1	7.1－11.2	71－111
20	Front wheel axle and nut (drum brake)	Bolt	M10×1.25	1	3.5－5.6	35－45
21	Rear wheel axle and nut	Bolt	M14×1.5	1	7.1－11.1	15－23
22	Driven sprocket and clutch hub	Bolt	M8×1.25	4	3.5－4.5	7.5－12
23	Brake rod and rear brake cover	Bolt	M8×1.25	1	1.5－2.3	18－28
24	Camshaft lever and camshaft	Bolt	M56×1.0	1	0.75－1.2	18－28
25	Front disk plate and front wheel (disk brake)	Bolt	M8×1.25	6	1.8－2.8	100－120

For general locking torque (except appointed locking torque), locking torque force is determined by thread diameter (two-face width) and thread pitch when fastening a screw and a screw cap.







Screw diameter (two-face width) × Thread pitch	Lock
M5（8mm）× 0.8	3-4N.m(0.3-0.4kg.m)
M6(10mm) × 1.0	5-8N.m(0.5-0.8kg.m)
M8(12mm) × 1.25	12-19N.m(1.2-1.9kg.m)
M10(14mm) × 1.25	24-39N.m(2.4-3.9kg.m)
M12(17mm) × 1.5	45-72N.m(4.5-7.2kg.m)

Tightening order of steering system (dual toroidal nut)

※ 1. First, the nut (serial number ①) is fastened to 30～35N.m.

2. Then, the direction handle is turned from left to right 2～3 times. Clamping stagnation must not be occurred and the ball race is not flexible while the direction handle is turned.

3. After that, the nut (serial number ①) is unscrewed one-quarter turn, and then fastened. Its fastening torque is 20～24 N.m.

4. The nut (serial number ②) is turned to press against the nut (serial number ③).

5. Then a special gasket of the nut (serial number ④) is assembled, a retaining pawl should be jammed in the furrows of the nuts (serial number ③ and ④) in the meantime. If the furrows are not aligned, the nut (serial number ②) should be turned to guarantee alignment.

Tightening order of steering system (securing nut with dustproof)

※ 1. First, the nut (serial number ①) is fastened to 30～35N.m.

2. Then, the direction handle is turned from left to right 2～3 times. Clamping stagnation must not be occurred and the ball race is not flexible while the direction handle is turned.

3. After that, the nut is unscrewed one-quarter turn, and then fastened. Its fastening torque is 20～24 N.

Lubrication point and type of lubricants

Engine

Ser No.	Lubrication point (name of component)	Marks
1	Lip of seal (full)	LS
2	Bearing lock plate	
3	Bolt (cylinder head)	
4	Crank shaft pin	
5	Piston pin	
6	Timing chain/Cam sprocket	
7	Piston / Piston ring	
8	Valve rod /Valve guide pipe	
9	Intake. Exhaust valve rod end surface	
10	Rocker arm shaft	
11	Cam and bearing (camshaft)	
12	Rocker arm shaft inner surface	
13	Crankcase right-left matching surface	Yamaha
14	O-ring (full)	LS
15	Kick starter lever gear (inner surface)	
16	Kick starter lever idle gear (inner surface)	
17	Crankshaft bush of Kick starter lever	LS
18	Starter idle gear axle surface	
19	Starting clutch (external/rotary part)	
20	Starting wheel gear (inner surface)	
21	Push rod	LS
22	Master drive gear (inner surface)	
23	Push rod shaft	
24	Master shaft/drive gear (inner surface)	
25	Shifting fork/guide rod/shifting shaft/shifting cam	

Body

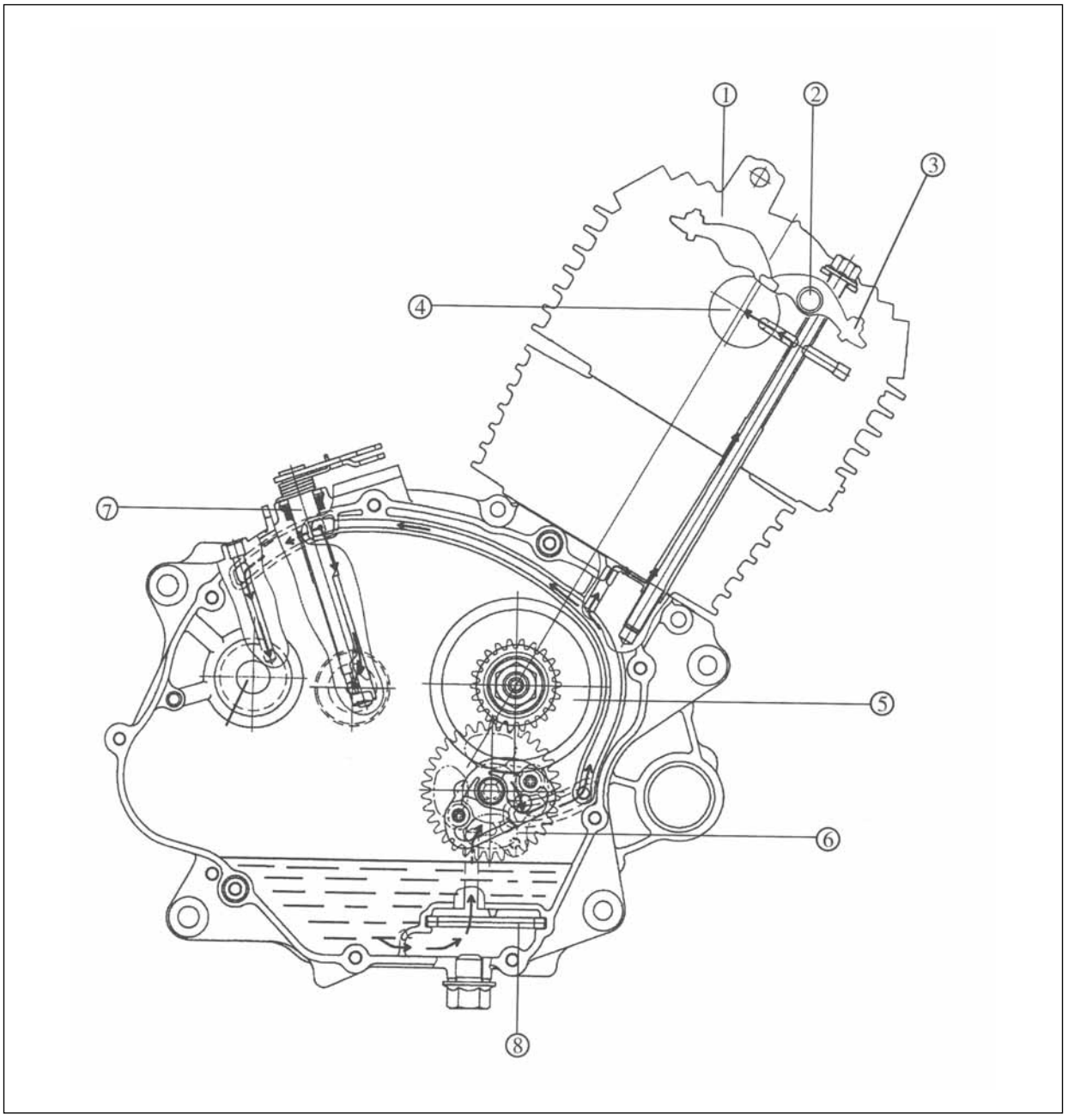
Ser No.	Lubrication point (name of component)	Marks
1	Rear wheel fork shaft	LS
2	Steering column (upper and lower end0	M
3	Guide tube .handlebar (inner surface)	M
4	Clutch cable and clutch lever contacting parts	M
5	Clutch lever and clutch bracket pivot surface	M
6	Brake cable and brake lever contacting parts	M
7	Brake lever and brake bracket pivot surface	M
8	Brake pedal inner surface	M
9	Main stand and the pivot shaft	M
10	Side stand and the bracket pivot surface.	M
11	Rear footrest pivot surface.	M
12	Speedometer gear	M
13	Camshaft	M
14	Brake shoes pin pivot parts	M
15	Hub assy.clutch assy .brake cover oil seal lip	M

※  YAMAHA 4-Stroke engine oil

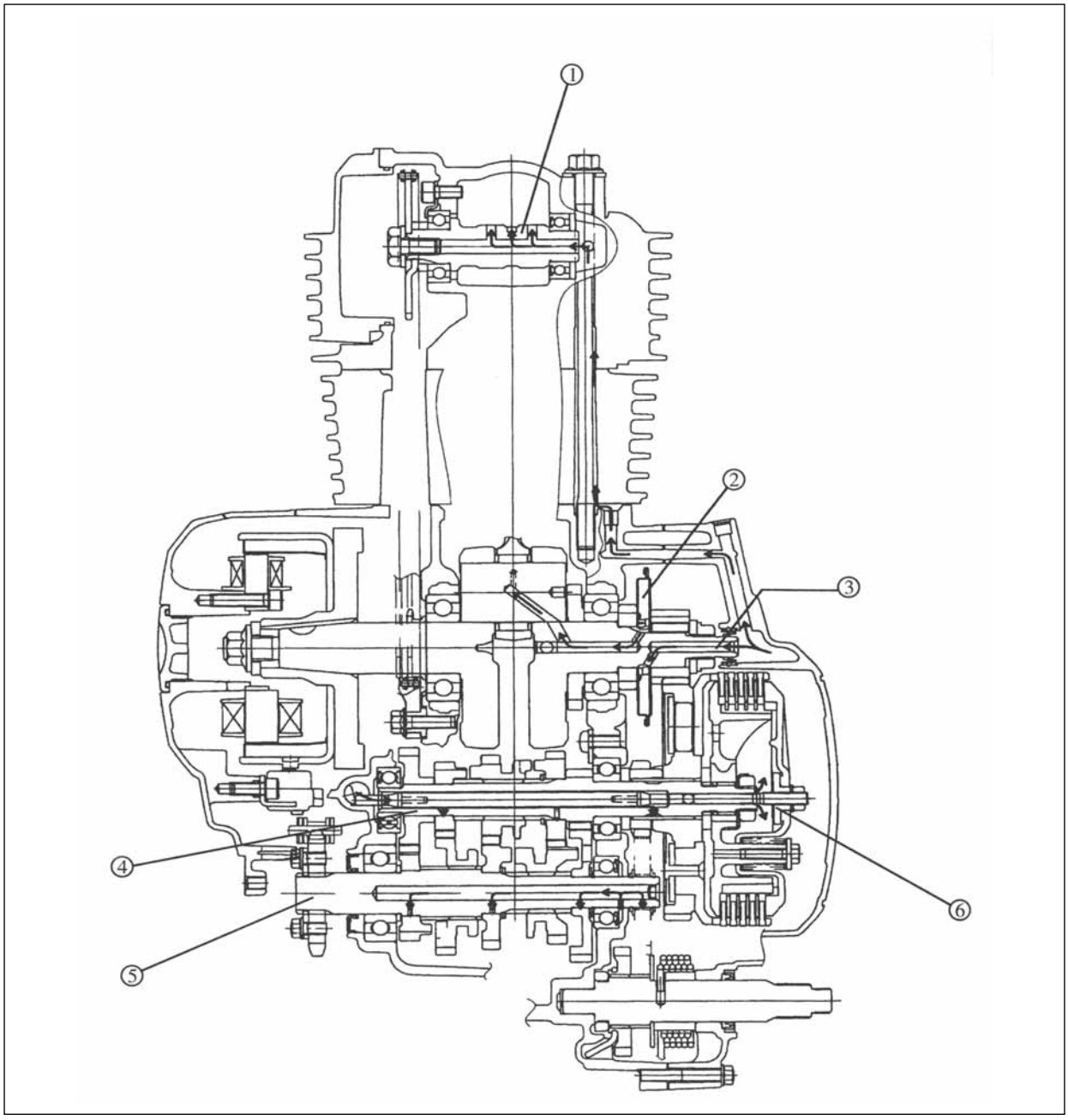
 Light lithium base grease

 Special grease

Engine lubrication flow



①Valve arm (intake)
②Rocker shaft
③Valve arm (exhaust)
④Cam shaft
⑤Fine oil filter
⑥Oil pump
⑦Push rod
⑧Filter net



① Cam shaft
② Filter net assy
③ Crankshaft assy
④Main axle
⑤Drive axle
⑥ Clutch assy

CHAPTER 3

PERIODIC INSPECTION AND ADJUSTMENT

Introduction

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable operation and a longer service life. In addition, the need for costly overhaul work will be greatly reduced. This information applies to machines already in service as well as new machines that are being prepared for sale. All service should be familiar with this entire chapter.

Periodic maintenance/lubrication

Item	Routine	Run-in period 1,000(600) or 1 month	Initial 3,000 (2,000) or 3 month	every 3,000 (2,000) or 3 month
Valves*	Check valve clearance. Adjust if necessary	○	○	○
Spark plug	Check condition. Clean or replace if necessary	○	○	○
Ait filter	Clean. Replace if necessary	○	○	○
carburetor*	Check idle speed/starter operation. Adjust if necessary		○	○
Fuel pipe*	Check fuel hose for cracks or damage. Replace if necessary		○	○
Engine oil	Replace(Warm engine before draining)	○	○	○
Engine oil filter net falls	Clean or replace		○	
Front brake*	Check operation drum brake/disk brake fluid leakage/refer to the remarks. Adjust if necessary.		○	○
Rear brake	Check operation. Adjust if necessary		○	○
Clutch	Check operation. Adjust if necessary		○	○
Rear arm fulcrum*	Check rear arm whether looseness or not. Screw down it if necessary. Disassemble and repair if properly.	○	○	○
Rear suspension arm fulcrum*	Check operation. Disassemble and repair it properly.	○	○	○
Wheel *	Check bearing whether looseness or not. Adjust if necessary. Disassemble and repair wheels every 12,000km(8,000km) or 12 months.		○	○

Item	Routine	Run-in period 1,000(600) or 1 month	Initial 3,000 (2,000) or 3 month	every 3,000 (2,000) or 3 month
Wheel bearing*	Check bearing assembly for looseness/damage. Replace if damaged.		○	○
Steering bearing*	Check balance state/damage/swing tolerance/ screw down spoke, repair if necessary.	○		○
Front fork*	Check operation/oil leakage. Repair if necessary		○	○
Rear shock absorber	Check operation/oil leakage. Repair if necessary		○	○
Drive chain	Check tension/alignment. Adjust if necessary. Clean and lubricate	○	○	○
Fittings/fasters*	Check all fittings and fasters, adjust if necessary	○	○	○
Main stand	Check operation. Repair if necessary	○	○	○
Storage battery	Check the specific gravity of electrolyte fluid. Check breath pipe for proper operation. Correct if necessary		○	○

* : It is recommended that these items be serviced by a Jianshe Service station.

* *: Heavy-duty or medium truck wheel bearing grease.

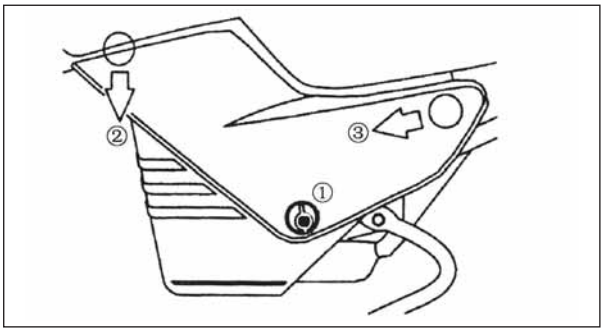
* * *: Lithium soap base grease.

Remark

Replace brake fluid:

1. If disassembling brake master cylinder, the brake fluid must be replaced. Check the fluid level under normal condition and refill if necessary.
2. The oil seal of brake master cylinder must be replaced every two years.
3. The brake pipe must be replaced every 4 years or immediately if any crack or damage is found.

Disassemble and install the seat cushion, oil tank and cover types



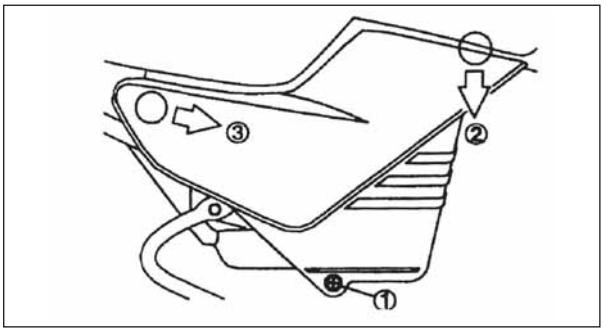
Disassemble

1. Disassemble the side cover (left)

• Open ① with a key

• Pull out the fixed pin of side cover (serial number ②)

• Take out the side cover on the direction of the arrow (serial number ③) points.

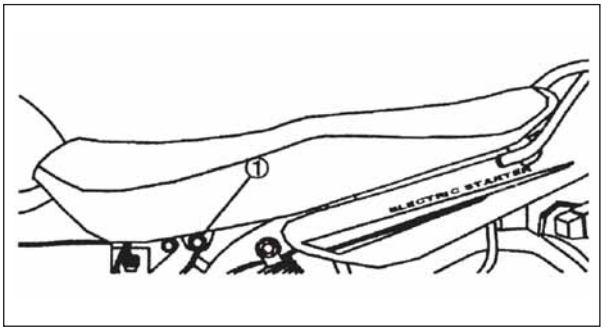


2. Disassemble the side cover (right)

• Take out the bolt (serial number ①) with screw-driver

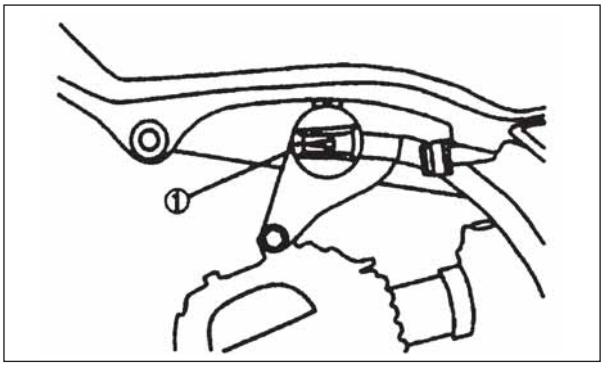
• Pull out the fixed pin of side cover (serial number ②)

• Take out the side cover on the direction of the arrow (serial number ③) points.



3. Disassemble the seat cushion

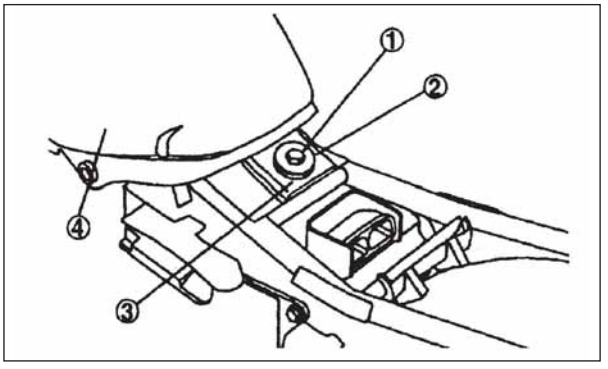
• Take out the bolts (see the left figure), one on the left and right sides.



4. Disassemble the fuel cock
• Close the fuel cock

Note

First close the fuel cock to a position of "●", and then the fuel pipe.



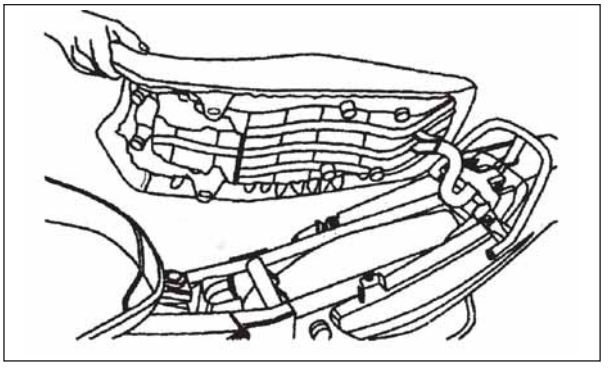
5. Disassemble the fuel tank
• Bolt ①
• Spacer ②
• Rubber pad ③
• Fuel tank ④

Install

This installment steps is the reverse of disassembling steps.

1. Install
• Fuel tank
• Torque

	Bolt torque (see above figure) 2 kgf.m (20 N.m)



2. Install
• Seat cushion

Note

The parts of lobes located in the rear of the seat cushion are inserted into the pin holes of the frame, and the bolts of the seat cushion are load into every hole respectively, and then screw down the nuts.

	Bolt torque (see the left figure) 1 kgf.m (10 N.m)

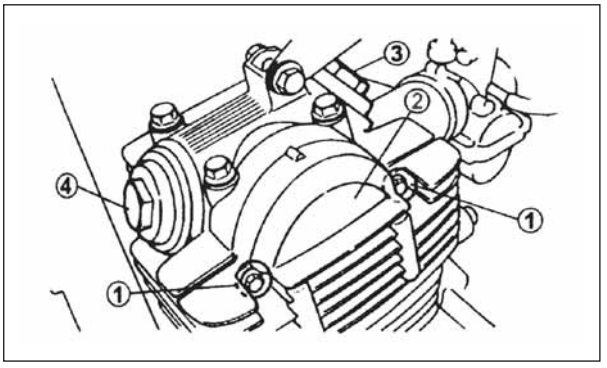
Check and adjust valve clearance

Note

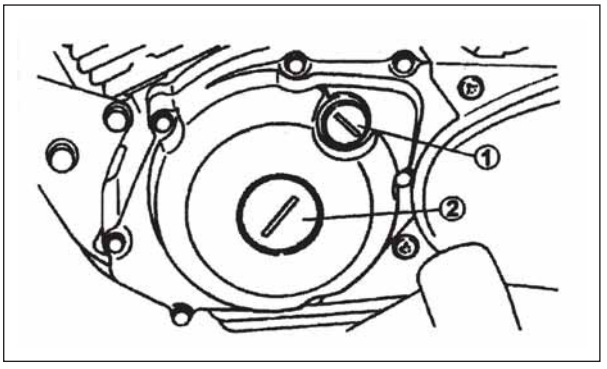
The valve clearance must not be checked and adjusted until the engine is cool. It can be adjusted when the piston locates T.D.C.

1. Disassemble the parts as fellows
- Side cover (left and right)
- Seat cushion
- Fuel tank

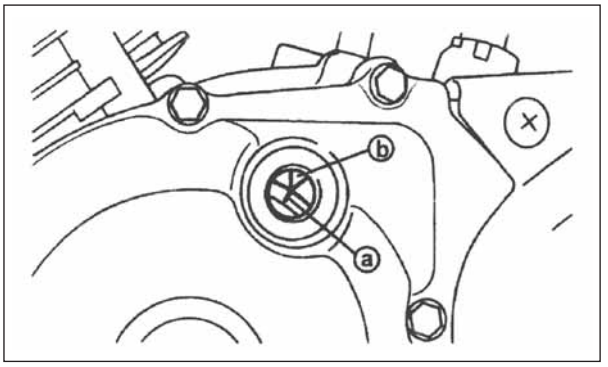
(Refer to disassembling and installment of the seat cushion, fuel tank and cover types)



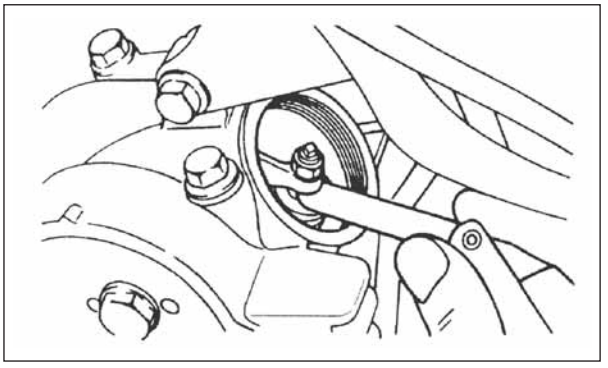
2. Disassemble the parts as fellows
- the side cover of cylinder head ② and bolt ①
- Spark plug
- Rocker arm cover ③ (intake)
- Rocker arm cover ④ (exhaust)



3. Disassemble the parts as fellows
- Screw cap ① (with o-ring)
- Screw cap ② (with o-ring)



4. Turn around the rotor in counter clockwise direction, and turn the mark ⓐ of top dead center of the rotor to a place, which is in alignment with the mark ⓑ of top dead center of the crankcase cover.

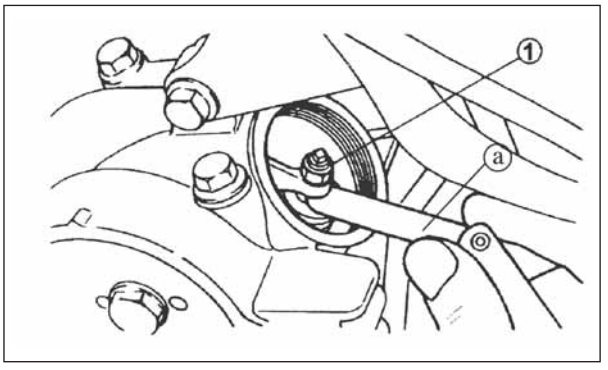


5. Check

• Valve clearance

	Standard valve clearance IN (intake): 0.08～0.12 mm EX (exhaust):0.10～0.14 mm

Below standard value → adjust



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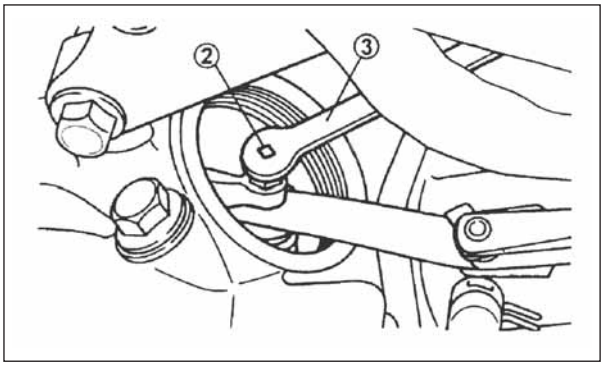
Adjustment steps

• Loosen the fixed nut ①

• Insert a feeler gauge ⓐ

•Install the valve adjusting tool ③ on the adjuster ②

	Valve adjusting tool



• Turn the adjuster to a standard value. In order to avoid it turn round together, the fixed screw cap is fixed with the adjusting tool and then locked.

	Lock torque of the fixed screw cap 0.75kgf.m (7.5 N.m)

•Confirm the valve clearance, if it is not in line with the standard value, adjusts it once more.

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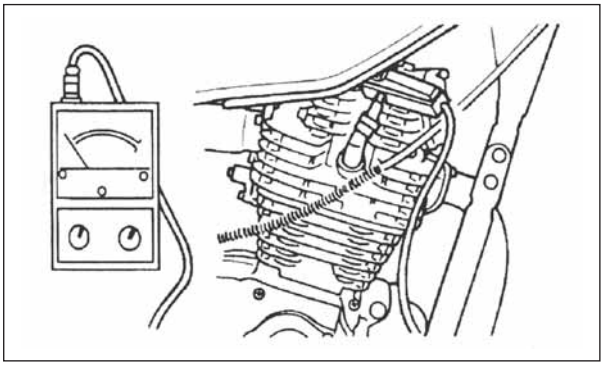


Adjust idle speed

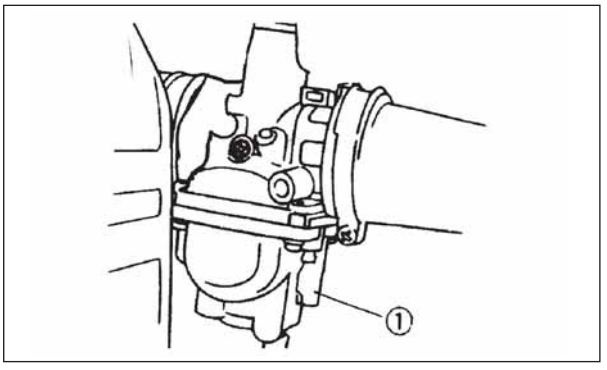
1. Start and warm the engine
2. Install the parts as fellows
• Engine speedometer
• Install the engine tachometer on a high-pressure wire (park plug).

	Engine tachometer

3. Confirm items
• Turnover number of standard idle speed

	Turnover number of standard idle speed 1300～1500rpm

Out of standard value → Adjust



4. Adjustment
• Turnover number of standard idle speed

****

Adjustment order

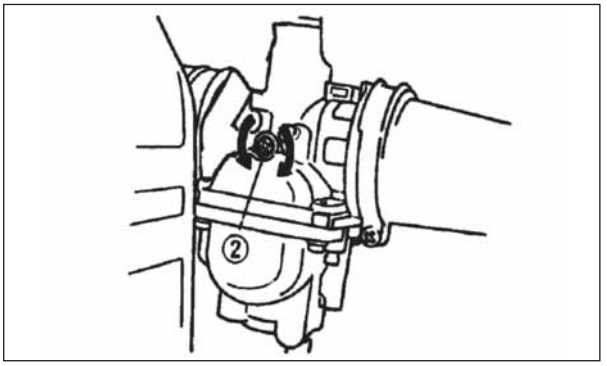
• Screw down P.S adjusting screw ① lightly

Note

Don't lock tightly

• Turn out it to standard number of turns

Standard number of turns of P.S adjusting screw: 2.0 circle

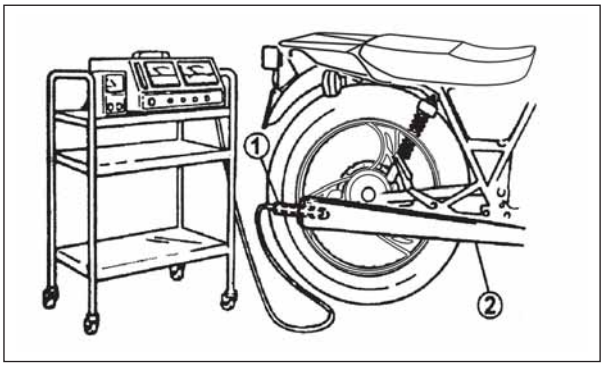


• Start engine
• Turn the adjusting screw from left to right until standard number of turns.

Turn in → Engine speed is increase Turn out → Engine speed is decrease

****

5. Disassemble the parts as fellows
• Engine tachometer



Adjust CO content under idle speed condition

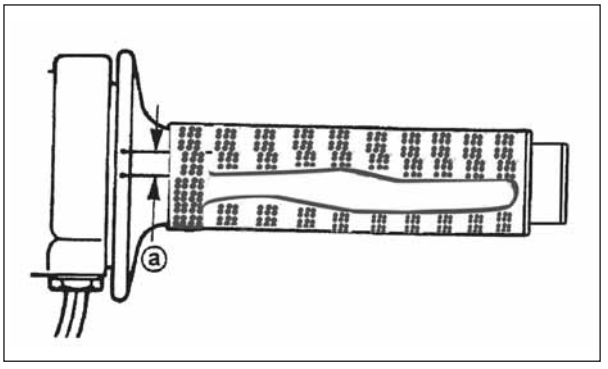
1. Install the measuring instrument as fellows
The measuring instrument with the measure-normal-temperature probe and the engine tachometer.
2. Start engine to warm until oil temperature up to the specification.

	Given measurement 55~65℃

3. Confirm idle speed value:
4. install CO content measuring instrument ①
5. Check CO consistency value

	Standard CO consistency value 1.5%~4.5%

Exceed standard value → Adjust P.S adjusting screw (work in with adjustment of the idle speed screw)

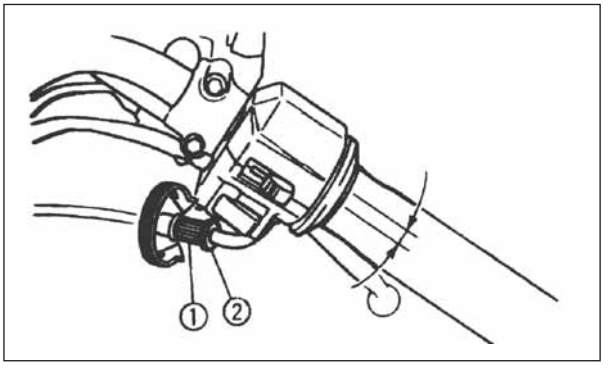


Check/adjust the free play of the throttle cable

1. Check
• Check free play ⓐ of extent part of the throttle handle

	Free play ⓐ of extent part of the throttle handle：3~7mm

Out of specification → Adjust



2. Adjust
• Free play ⓐ of extent part of the throttle handle

****

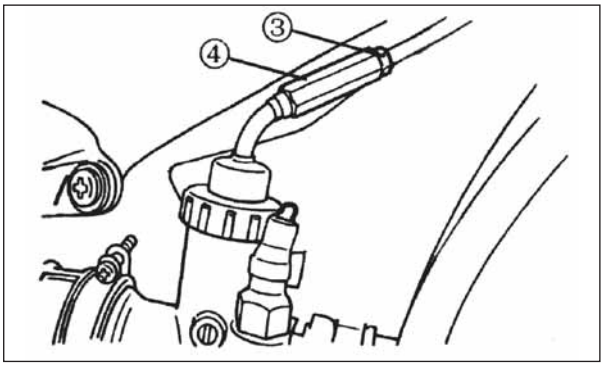
Adjusting orders

The first step (the throttle cable)

• Loosen the lock screw cap ②
• Adjust the adjuster ①

Turn in → The clearance is increased Turn out → The clearance is decreased

• Tighten the lock screw cap ②



Note

When unable to adjust the cable on the throttle handle, adjust the adjuster on the carburetor.

The second step (carburetor)

• Loosen the lock screw cap ③

• Adjust the adjustor ④

Turn in → The clearance is increased Turn out → The clearance is decreased

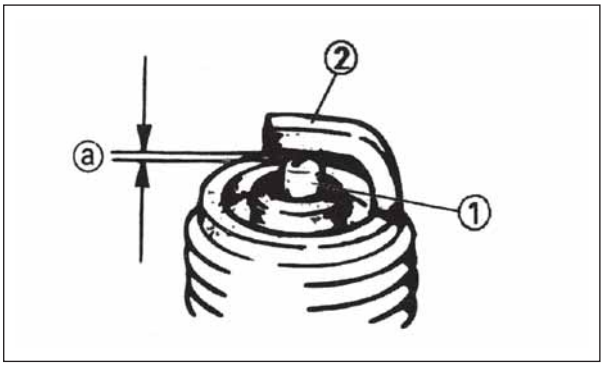
• Tighten the lock screw cap ③

****

Warning

After adjusted, start the engine, turn the steering bar from the left to the right, and confirm the engine idle speed will not rise.

Check the spark plug



1. Check

Check electrode, insulation pollution, burning loss, deposit loss → Replace

Pollution, deposit → Clean it with some spark plug detergent and a wire brush.

2. Measure the clearance of the central electric pole ① and the side electric pole ②.

	The clearance between the electric poles 0.6~0.7mm

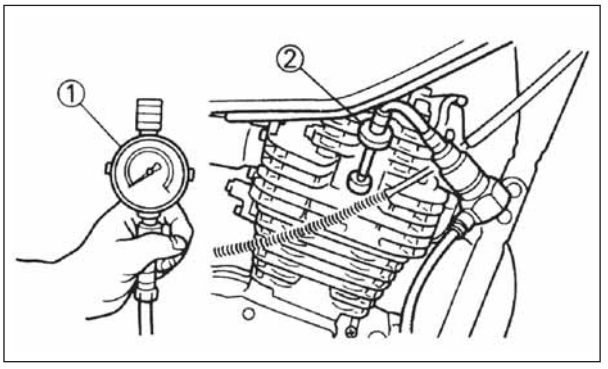
Out of specification → Adjust side the electric pole

Standard spark plug: A6RTC/CR6HSA

Inspect compression pressure

Note

Insufficient compressure will bring about performance degradation.



1. Check
• Valve clearance
Out of specification → Adjust clearance
Refer to "Valve clearance adjustment"
2. Start the engine, and pre-warm it for several minutes.
3. Stop the engine
4. Disassemble: spark plug
5. Install
• Pressure indicator
• Connector

	The Connector of the pressure indicator

6. Check
• Compressure

****

Checking steps

•Start the engine with the kick starting device or the electric starter when the throttle is opened fully until the reading of the pressure indicator reaches a maximum value, and then read it.
• Check the reading by the specification.

	Standard compressure value: 1200kPa (12kg/cm^2)

****

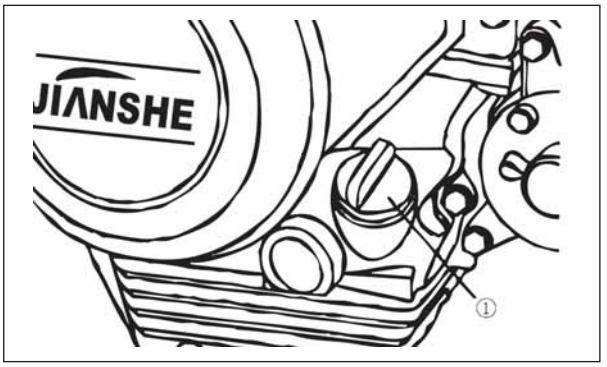
7. Install
• Spark plug, spark plug cap

• Too lower compressure
A.The throttle joints badly, which gives rise to compressive leak.
B.Bad adjustment of the throttle clearance.
C.Wear the piston, cylinder and piston ring
• Too higher compressure
A. Carbon deposit of the cylinder head chamber
B. Carbon deposit of the piston head

Check engine oil

Note

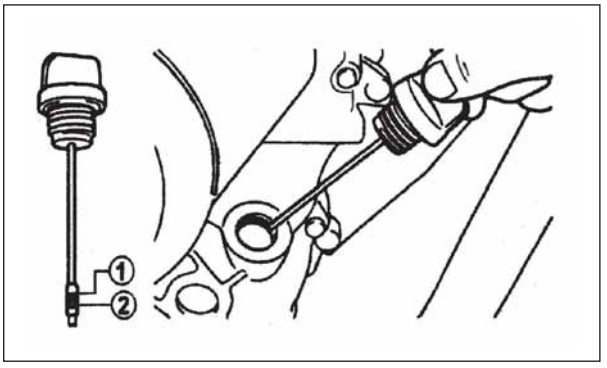
Must be in a level place, and maintain the body in vertical position.



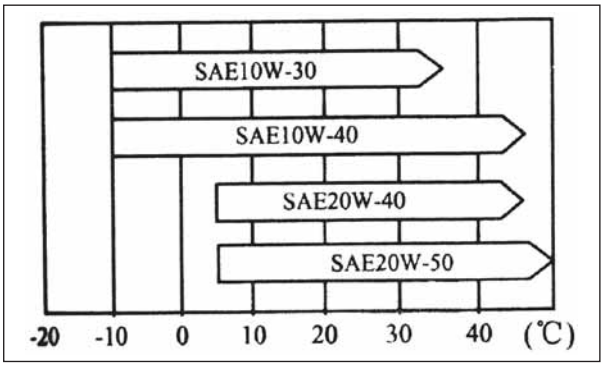
1. Check

• Engine oil capacity

After two-to-three minutes idle running, the engine is stopped from 2 to 3 minutes so as to make the body in vertical position. Take out the fuel gauge ①.



• Check the oil level of the fuel gauge to make sure it is between ① and ②.

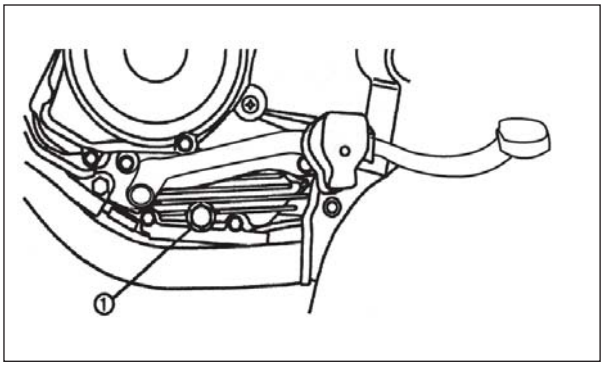


Engine oil capacity * recommendatory lubrication oil

	When replace in general: 1.0L (1000ml) When check the engine: 1.2L (1200ml)

Refer to the left figure, and choose a viscosity number of engine oil suits to the local.

Recommendatory lubrication oil: Yamaha four-stroke lubrication oil

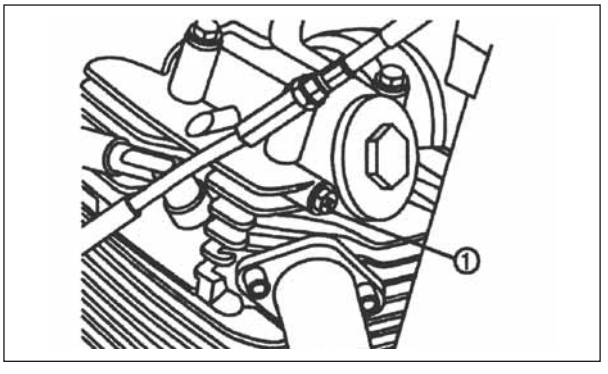


Replace engine oil

Note

Must not super-add any chemical additive. Engine oil is able to lubricate a clutch, but the additive might cause clutch slipping. Take care of not to have foreign matters into the crankcase.

1. Put the motorcycle on a flat place.
2. Pre-warm the engine for several minutes, and then stop it. Put an oil container under the outage cock.
3. Disassemble
 • pour oil into the cock
 • Outage cock ①
 • Gasket (be fixed on the outage cock)
4. Oil drain
5. Charge oil from the place where oil is poured into the cock
6. Install
 • Pour oil into the cock
 • Gasket (be fixed on the outage cock)
 • Outage cock ①



	Outage cock torque 2kgfm(20N.m)

Check oil pressure

1. Disassemble: oil pressure check bolt ①
2. Start engine, rotate several minuets at idle speed
3. Check
 • Oil state around the spoil hole

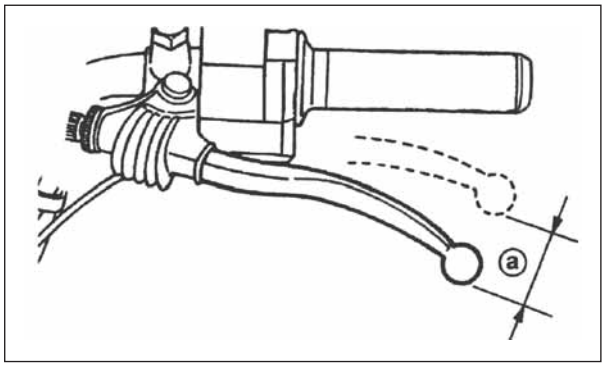
Oil outflow → Oil pressure is normal

Oil don't outflow → Oil pressure is lacking

Note

If no oil outflows after 1 minuet, the engine should be stopped to avoid damaging it.

Adjust clutch



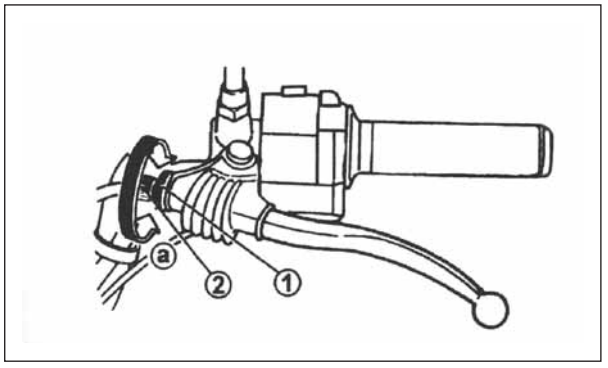
1. Check
• The free play of the clutch cable ⓐ

	Free play:10～15mm Measure at the clutch handle end

Exceed specification range → Adjust
2. Adjust
• The free play of the clutch cable

****

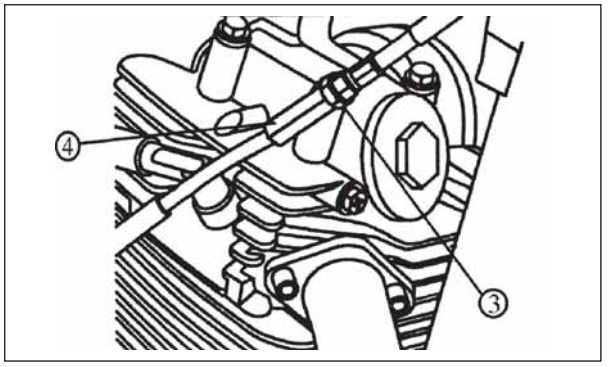
Adjusting steps



1. Confirm the adjustor ② and the locknut ① to be tightened thoroughly.
2. Loosen the locknut ①.
3. Turn in or turn back adjusting nut② until it reaches given free play.

Turn in → Free play is increased Turn out → Free play is decreased

4.Tighten the locknut ①



Note

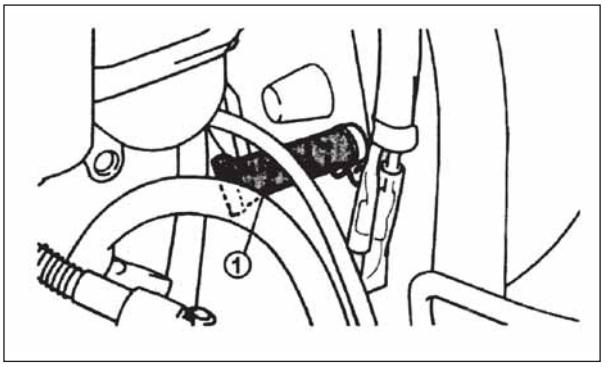
If a free play is incorrect, using the adjustor (one of the part of the clutch handle) to adjust the free play of the clutch cable.

5. Loosen the locknut ③
6. Turn in or turn back adjustor ④ until it reaches a correct free play.

Turn in → Free play is increased Turn out → Free play is decreased

7. Tighten the locknut ③

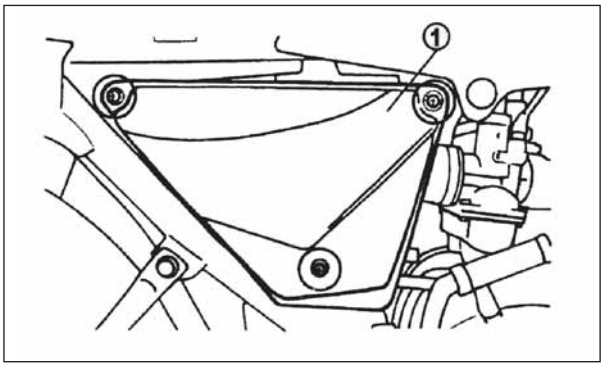
****



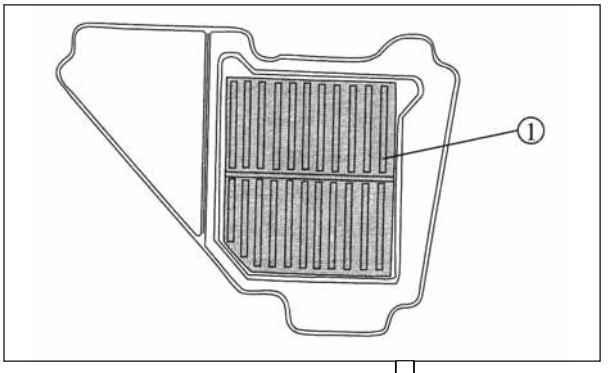
Clean the air cleaner

Note

There is a flexible tube ① on the air cleaner housing bottom. If dust and water gather in the flexible tube, cleaning the filter element and the housing is need.

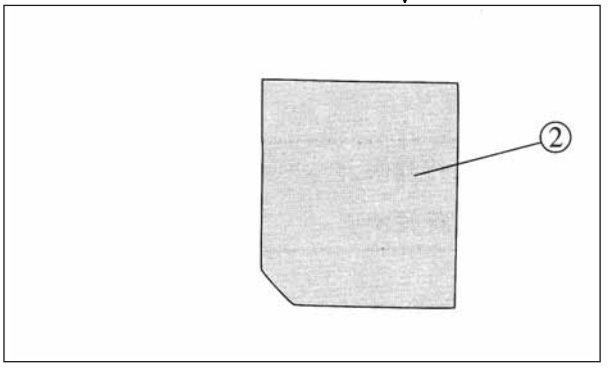


1. Disassemble
- Side cover (right)
- Seat cushion
- Air cleaner housing cover ①



2. Disassemble
- Filter element ①

Air filter element 2 assemble into the air filter element 1



Note

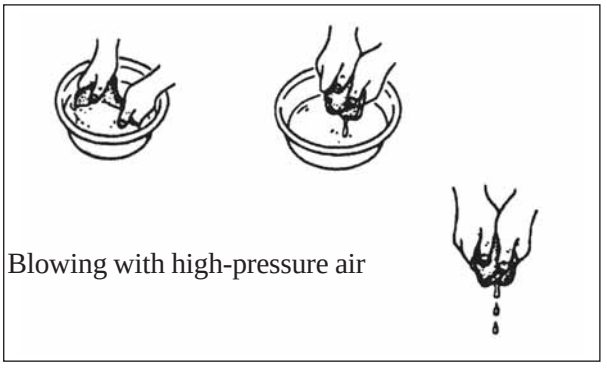
Starting the engine is strictly forbidden when the air cleaner has been disassembled, or unfiltered air may be enters into the engine result in quick wear of the parts and the damage of the engine. Besides, operating at the state of no filter filling can influence the carburetor operation, and may be lead to an overheating engine.

3. Check

• Filter element

Damage → Replace

Dust → Remove the dust on the filter net with compressed air



Blowing with high-pressure air

① Remove the filter element 1 and 2, blowing wash them with high-pressure air.

② If the dust on the filter element 2 is excessive, cleaning it with neutral solution, after finishing, it must be dried by blowing.

Warning

Be mustn't add oil onto the filter element 2.

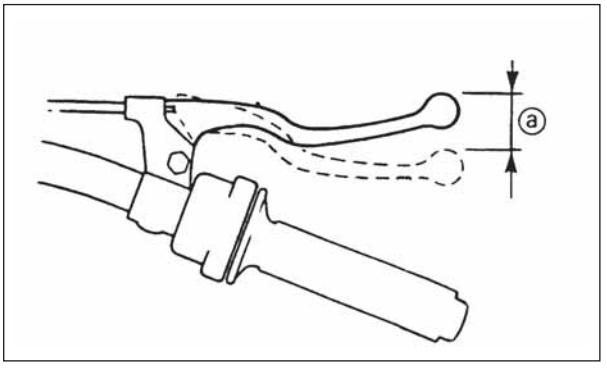
Warning

Be should confirm the filter element has been fixed in the air cleaner housing.

Warning

If the filter element is not installed yet, the engine mustn't be operated to avoid over wearing the piston/cylinder.

Adjust front brake



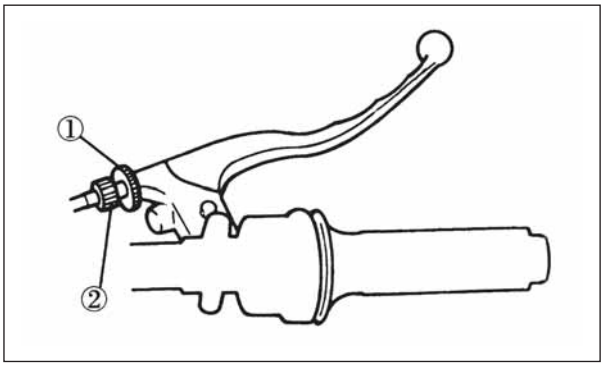
1. Check

• Brake handle free play ⓐ

Out of specification → Adjust

2. Adjust

• Brake handle free play



Adjusting steps (handle side)

• Loosen the locknut ①

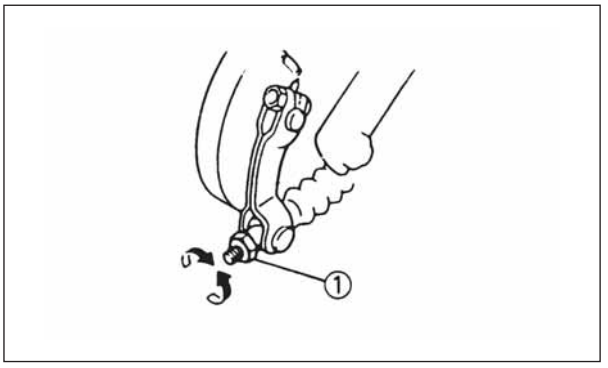
• Turn in or turn out the adjusting nut ② until it reaches the defined free play.

Turn in → Free play is increased
Turn out → Free play is decreased

• Tighten locknut

Note

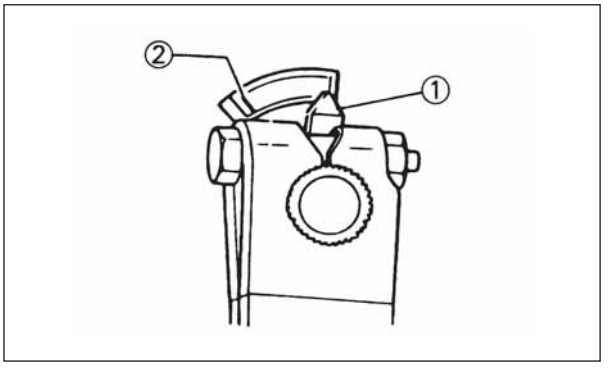
After adjusting, should make sure the brake has no brake drag.



Adjust (brake drum side)

• Turn in or turn out the adjusting nut ① until it reaches the defined free play

Turn in → Free play is decreased
Turn out → Free play is increased



Check front brake shoes

1. Check

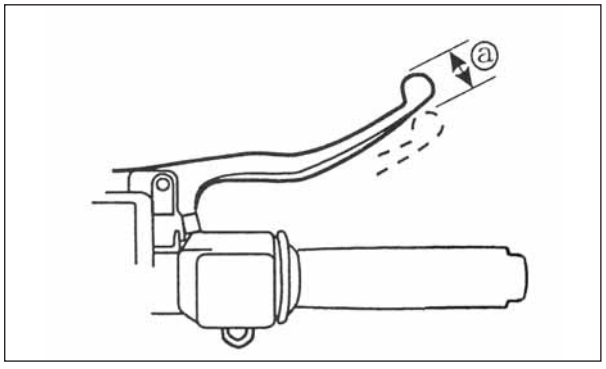
• Clock hand (wear indicating panel)①

Clock hand has reached limited scale mark ② of the wear indicating panel → Replace the brake shoes

Check front brake (disk)

Warning

If hand feeling is soft in brake, maybe because of oil leak or entry of air, the amount of brake fluid should be checked.



1. Check

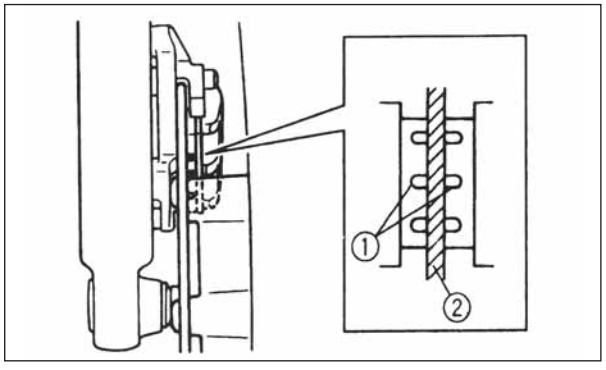
• Right-left steering or vibration under drive, should check whether the brake hose touches the other part or not, if touch → Adjust.

2. Check the free play amount of the brake handle front end.

	The free play amount of the brake handle front end ⓐ 5.5～10.5 mm

Note

Manufacture guarantees the clearance, and needn't to be adjusted.

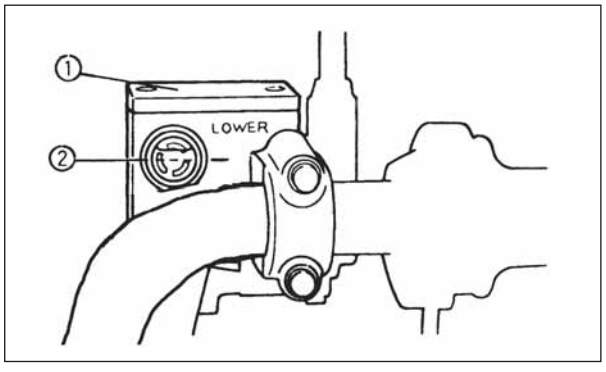


Check brake lining

1. Check

• Amount of wear of the brake lining

When the wear indicator① almost touches the brake disc ②→ Replace the whole group of brake linings



Check the amount of brake fluid

1. Check

• Brake fluid level

• Make the brake fluid in a level place, check the fluid level should on the figure 2.

• Beneath the lower limit position, supplement the fluid to the above of it.

Recommended brake fluid: special brake fluid DOT3 or DOT4

Note

Don't mix different brand brake fluids. The brake fluid can erode painting surface or plastic parts. Therefore the leaked fluid must be wiped off immediately.

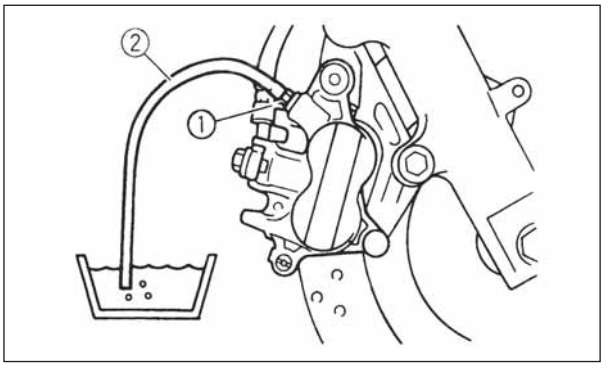
Exhaust

Warning

When the parts related to the brake fluid are disassembled, must make sure that the other parts is locked and sealed, and then conduct the exhaust operation.

****

Exhaust orders



1. Disassemble the brake fluid cylinder cover.
2. Disassemble the brake fluid cylinder diaphragm.
3. Install a rubber hose ② at the front end of the oil drain screw ①, and put an oil tray in front of the front end of the rubber hose.
4. After braking several times, the brake handle is held tightened, loosening the oil drain screw about one-half cycle, and then tightened it rapidly.

Note

Mustn't the brake handle before re-newly tighten the oil drain screw.

5. Repeat above procedures, until the oil drain screw let off bubbles completely.

Note

Supplement brake fluid in the meantime, mustn't make it below the lower limit position.

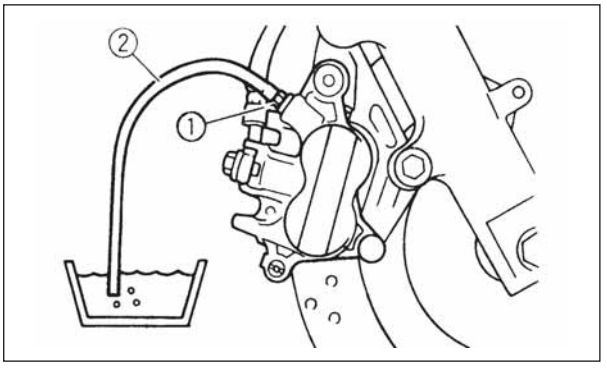
Warning

Hold the brake handle, check whether brake fluid leaks or not, wiping off the brake fluid splashed on the brake disc, the tyres and the wheel rim.

6.Reinstall the brake fluid cylinder diaphragm.

7.Reinstall the brake fluid cylinder cover.

****



Replace brake fluid

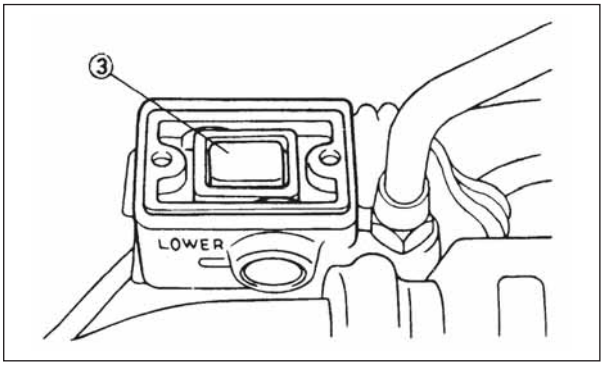
1. Make the master cylinder in a level position, disassemble the brake fluid cover.
2. Fit the front end of the oil drain screw ① with rubber hose②, putting an oil tray in front of the front end of the rubber hose, loosening the oil drain screw, repeat it until the oil drain screw do not drain brake fluid no longer.

Warning

Wipe off the brake fluid splashed on the brake disc, the tyres and the wheel rim.

3. Lock the oil drain screw

	Oil drain screw: 0.6kg.m (6N.m)



4. Disassemble the brake fluid cylinder diaphragm③.
5. Pour brake fluid into the above of the lower limit position.

Recommended brake fluid: special brake fluid DOT3 or DOT4

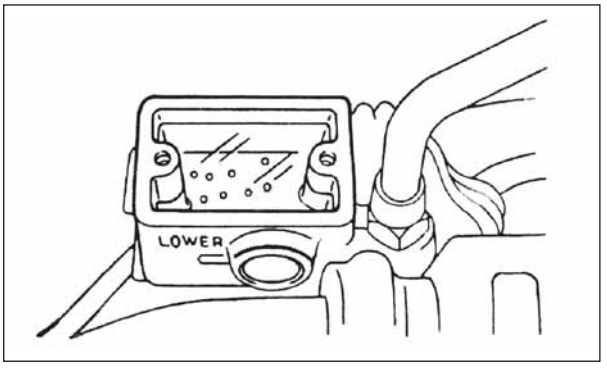
Note

Don't mix different brand brake fluids.

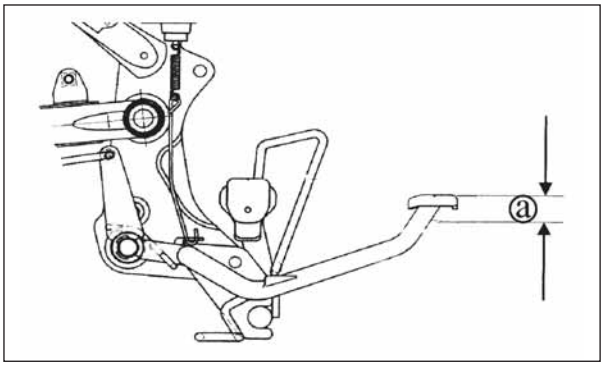
6. Pull the brake handle until the brake fluid hose is full of brake fluid.

Note

Supplement brake fluid in the meantime, mustn't make it below the lower limit position.



7. Slowly operate the brake handle until the brake cylinder lets off bubbles from small hole, and feel the brake handle strong.
8. Exhaust air
9. After adjusting, install it by the reverse orders of disassemble.



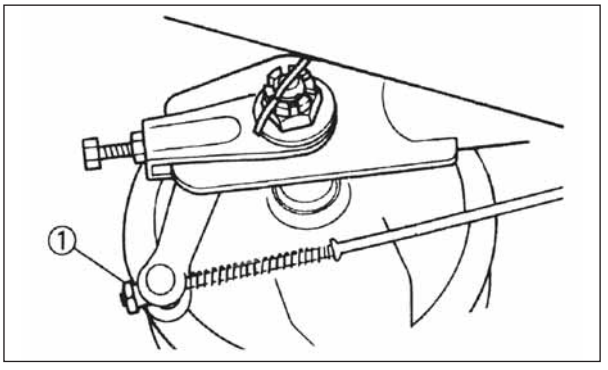
Check and adjust the rear brake

1. Check

• Check the brake and the free play of the front end of the brake pedal.

	The brake and the free play of the front end of the brake pedal:20～30mm

Out of specification → Adjust



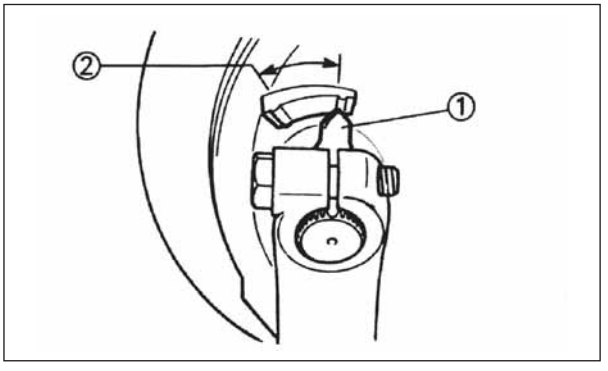
2. Adjust

• The amount of the brake pedal free play

Adjustment orders

• Turn the adjuster until the free play is in specified range.

Turn in → Decrease
Turn out → Increase



Check the rear brake shoes

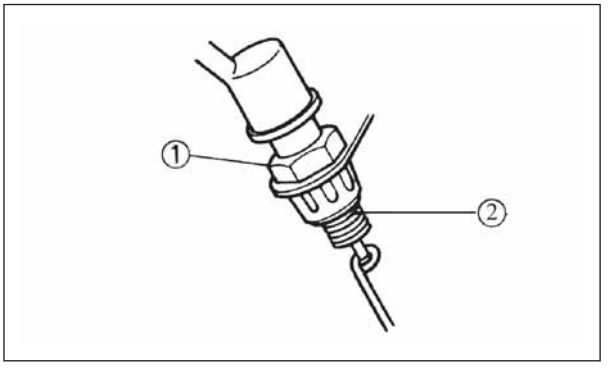
1. Check

• Clock hand (wear indicator board)①

The clock hand has reached a wear limit reticle of indicator board ②→ Replace the brake shoes.

Note

Must replace the tension spring when replace the brake shoes.



Check the rear brake switch

1. Check

• Brake light

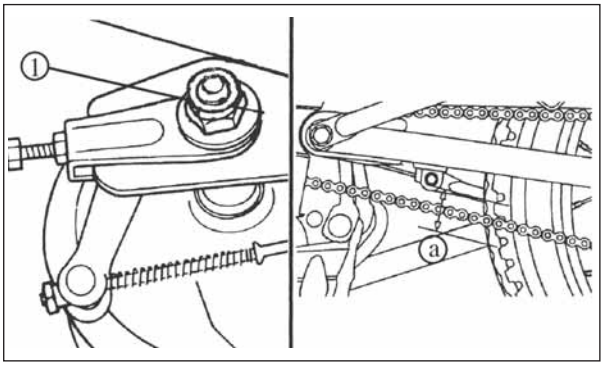
Check whether the brake light is lightened up or not push on the brake pedal to 20～30mm.

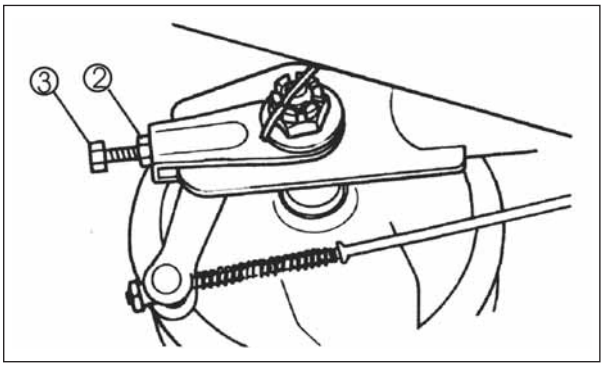
The brake light is gone → Adjust

2. Adjust

• Turn the adjusting nut ①

• Rear brake light switch ②





Check and adjust the drive chain

1. Check

• Put the motorcycle on the main stand.

• Check drive chain slack ⓐ

	Drive chain slack: 20～30 mm

2. Adjust the drive chain

****

Adjust steps

• Loosen the axle locknut ①

• Loosen the locknut of adjustor ②

• Turn in or turn back the adjusting advice ③ until the defined slack is obtained.

Turn in → The slack is decreased.
Turn out → The slack is increased.

Note

There are scale marks on the chain adjustor. Guarantee the mark numbers of the chain adjustors on the both sides of the rear arm are united when adjust. After adjusting correctly, tighten the adjustor locknut ② and the axle locknut.

	Axle locknut: 9.1kgf.m(91N.m)

****

Transmission chain lubrication

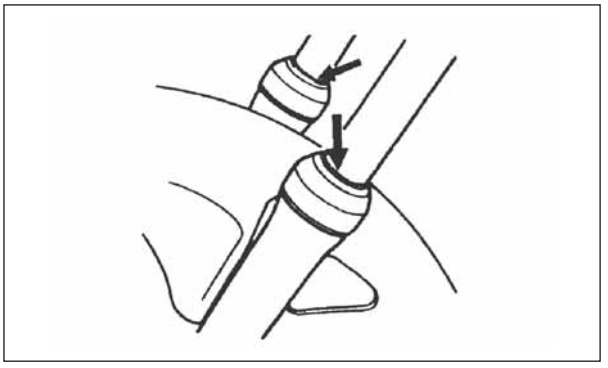
The drive chain includes lot of parts to jointly work. If maintain improperly, the parts will be worn rapidly. So, periodic repair should be conducted. If a motorcycle is running under rich dust condition, this repair is very important.

1. Any brand of spray lubrication oil can be used. Remove all the mud and dirt attached to the drive chain with brush or rag, and then spray the lubrication oil.

2. When the drive chain is needed to be clean, remove it from motorcycle and immerse it into solvent and clean. Then take it out, dry and lubricate it immediately to prevent it from rusting.

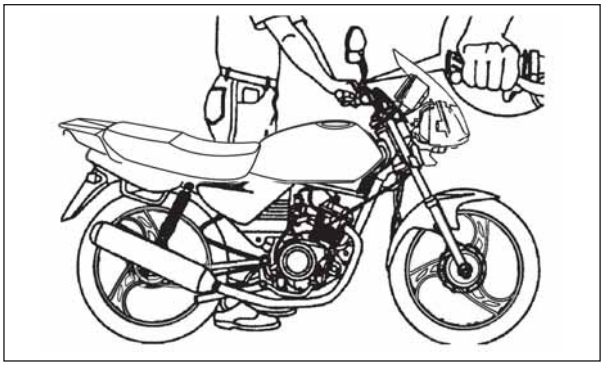
Note

The chain mustn't be lubricated with lubricating grease.



Check front fork

1. Place the machine in a level place
2. Check
• Front fork vertical rod
Scratch or damage → Replace
• Oil seal
Serious leakage → Replace

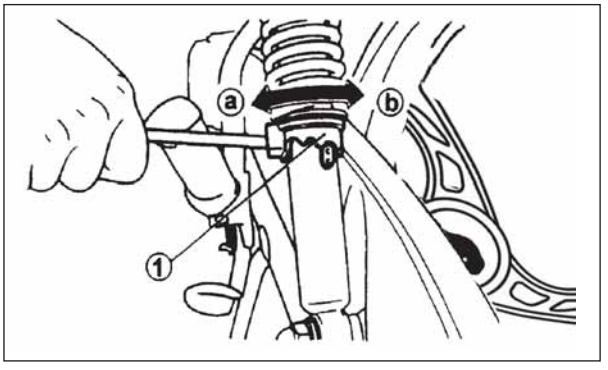


3. Maintain the machine in vertical position, catching the front brake.
4. Check
• Operation
Slide the front fork up and down several times.
Stuck → Repair
Refer to "Front fork" in chapter 6

Adjust rear shock absorber

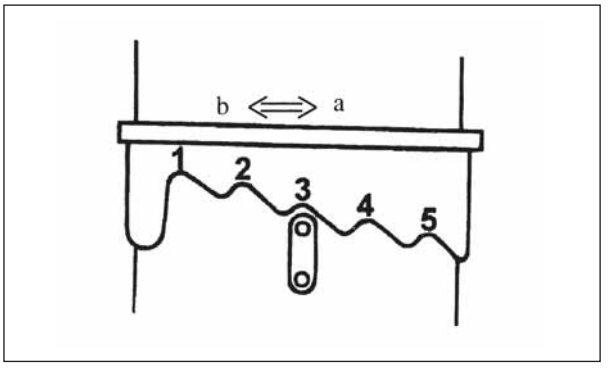
Warning

• Must adjust each absorber's preloaded values to uniform set value to avoid worsening operability and reducing stability.
• Support the machine firmly to prevent it from turn over.



1. Adjust
• Spring preload
Turn adjusting advice ① to the direction ⓐ or ⓑ.

Turn to the direction ⓐ→ The spring preloaded value is increased. Turn to the direction ⓑ→ The spring preloaded value is decreased.

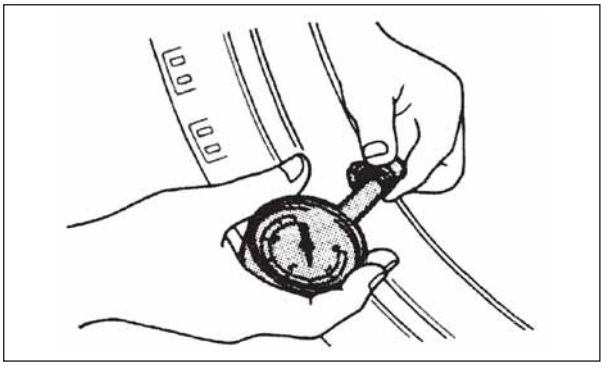


	Adjusting advice: Standard:3 Min :1 Max :5

Caution

The adjusting advice mustn't turn. to a minimum position or a maximum position.

Check Tire



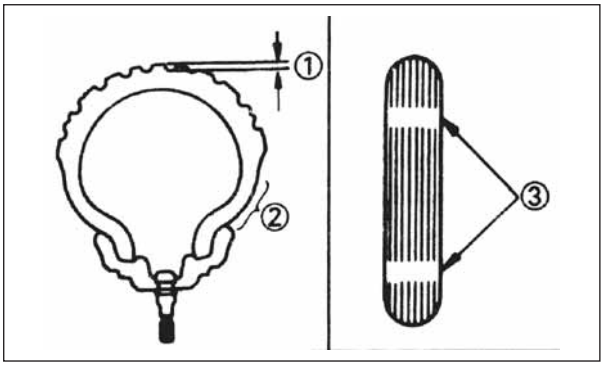
1. Measure the tire pressure

Load	Front wheel	Rear wheel
Load below 0～90kg*	175KPa (1.75kgf/cm²)	196KPa (2.0kgf/cm²)
Maximum load 100kg *	196KPa (2.0kgf/cm²)	245KPa (2.5kgf/cm²)

* Load includes total weight of cargo, driver, passenger and accessories.

Out of specification → adjust

Front tire specification	2.75-18（42P）
Rear tire specification	90/90-18（51P）

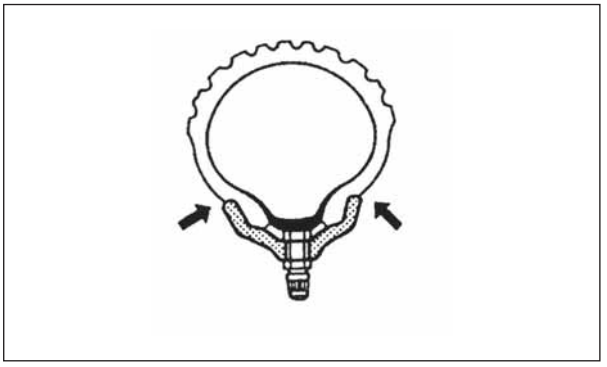


2. Check the tire surface

- Tire tread ①
- Side wall ②
- Wear indicator ③

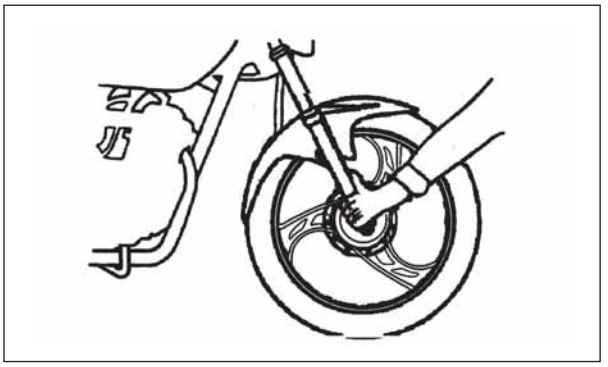
	Tire wear limit (front and rear): 1.0mm

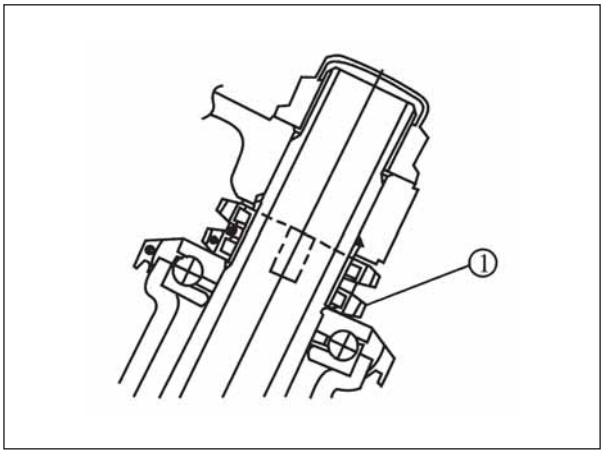
Wear/damage → Replace

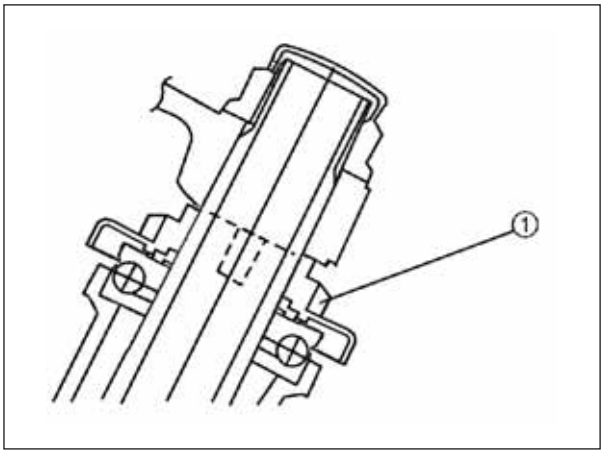


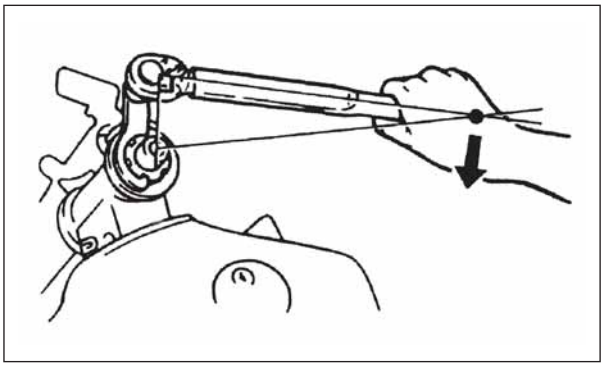
Warning

- It is dangerous to ride with a worn out tire. When a tire is out of specification, replace the tire immediately.
- Pay attention not to pick the tubed tire when repair.









Check steering device

1. Check

Set up the front wheel, shaking the lower part of the front fork with hands to check whether the steering column loosen or not. Check whether the direction handle bar can be turn left and right smoothly.

Shake to loosen, turn roughly → Adjust the steering column screw cap.

2. Steering nut

• Steering screw cap

Adjusting steps (double ring locknut)

• Disassemble the steering handle

(Refer to "Steering handle" in Chapter 6)

• Disassemble the steering handle seat

Lock the nut with the steering nut spanner

(The lock orders and methods refer to page 20)

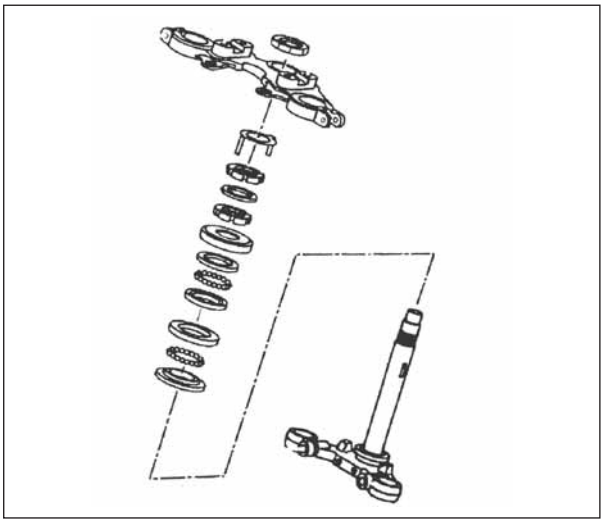
Adjust steps (dust cap locknut)

• Disassemble steering handle

(Refer to "Steering handle" in Chapter 6)

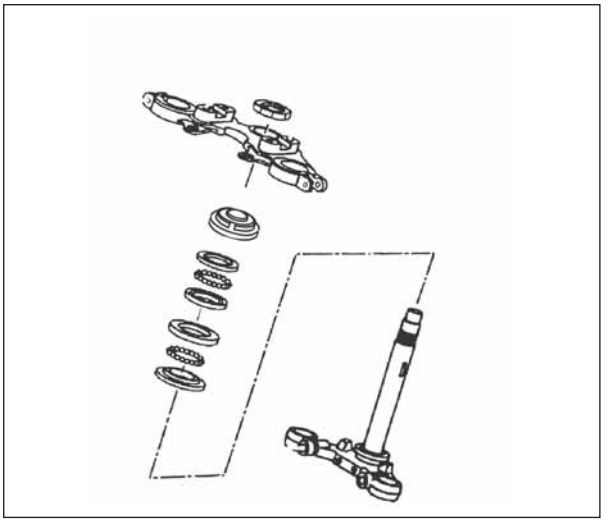
• Disassemble the steering handle seat

(The lock orders and methods refer to page 20)



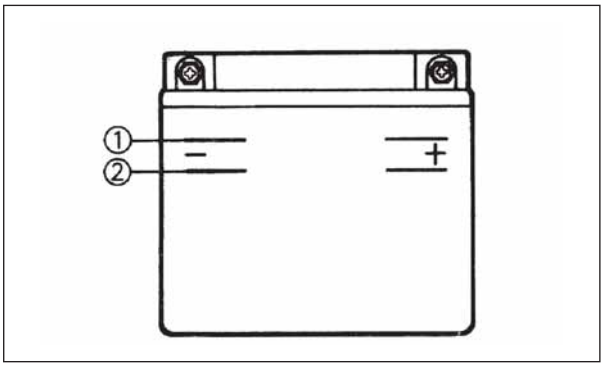
Ring locknut

- Install the steering handle seat
- Install the steering handle



Dust cap locknut

- Install the steering handle seat
- Install the steering handle



Check battery

1. Disassemble
- Side cover

Refer to "Disassemble side cover"

2. Check
- Electrolyte level
- The level must be kept between upper level ① and lower level ② marks.

Lower → Fill

Caution

Refill with distilled water only. Tap water contains minerals harmful to a battery.

3. Check

• Battery terminal

Dirty → Clean with wire brush

Improper connection → Correct

Caution

After cleaning the terminals, apply grease lightly to the terminals.

4. Check

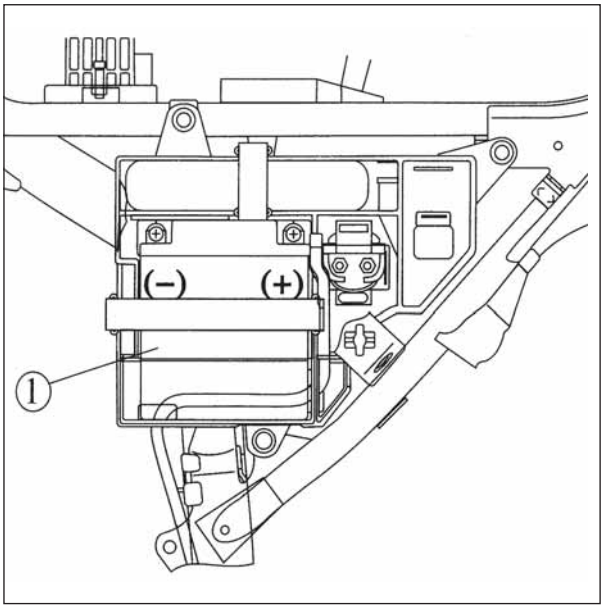
• Breather hose

Obstruction → Remove

Damage → Replace

Caution

When inspecting the battery, be sure the breather hose in routed correctly. If the breather hose touches the frame or exists in such a way as to cause battery electrolyte or gas to exit onto the frame, structural or cosmetic damage to the machine can occur.



5. Connect

• Breather hose

Be sure the breather hose is connected.

6. Check

• Specified gravity

Charging current: 0.5A/10h Specified gravity: 1.280 at 20℃(68℉)

Less than 1.08 → Charge

Replace the battery if:

• Battery voltage will not rise to a specific value.

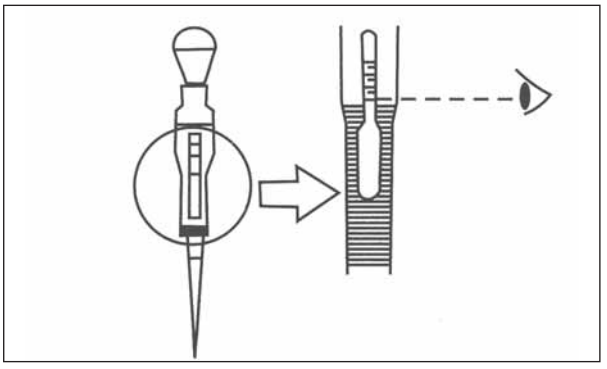
• Sulfurization of one or more cells occurs. (As indicated by the plates turning white, if the cell).

• Specific gravity readings after a long, slow charge indicate one cell to be lover than the rest.

• Warpage or buckling of plates or insulators is evident.

Caution

Always charge a new battery before using it to ensure maximum performance.



Warning

• Battery electrolyte is dangerous: it contains sulfuric acid and therefore is poisonous and highly caustic. Always follow these preventive measures.

• Avoid bodily contact with electrolyte as it can cause sever burns or permanent eye injury.

• Wear protective your eyes gear when handling or work near batteries.

Warning

Antidote (External):

Skin--Flush with water.

Eyes--Flush with water for 15 minutes and get immediate medical care.

Antidote(Internal)

Drink large quantity of water or milk of magnesia, beaten egg, or vegetable oil. Get immediate medical attention.

Battery also generate explosive hydrogen gas. You should always follow these preventive measures.

① Charge batteries in a well-ventilated area.

② Keep batteries away from fire, spark, or open flames (e.g. welding equipment, lighted cigarettes, etc.) Do not smoke when charging or handling batteries.

③ Keep batteries and electrolyte out of reach of children.

CHAPTER 4

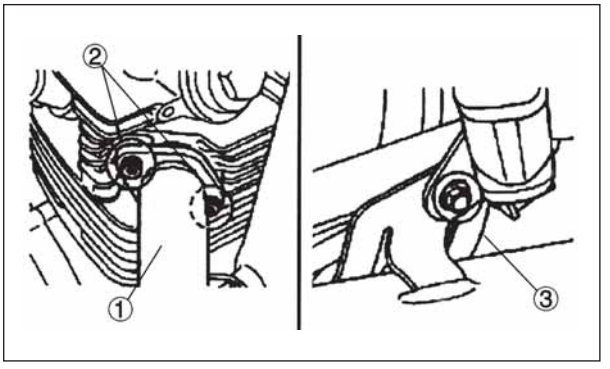
ENGINE

Disassemble the engine

Ready to disassemble the engine

1. Disassemble
- Side cover
- Seat cushion
- Fuel tank

Refer to "Disassemble seat cushion, fuel tank and side cover"

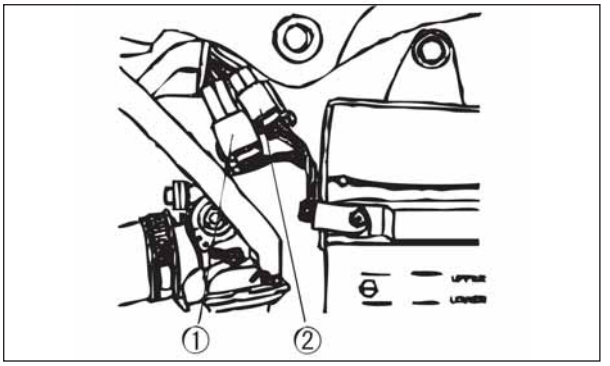


2. Engine oil
- Drain oil

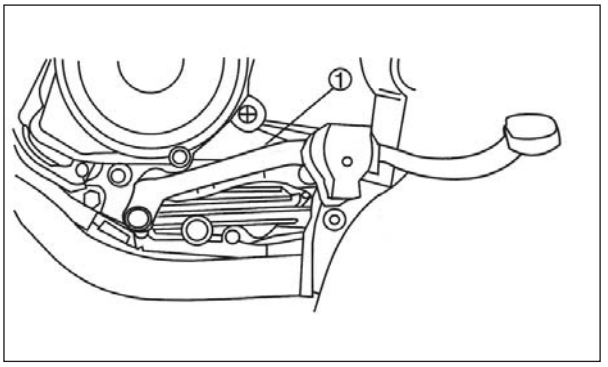
Refer "Replace engine oil"

3. Disassemble the exhaust tube
- Exhaust tube ①
- Fixed bolt ②③

4. Disassemble the carburetor
- Carburetor



5. Disassemble the cable and wire
- Socket connector ①
- Socket connector ②
- Battery positive and negative pole wires
- Starter motor wire
- Clutch cable



6. Disassemble the shifting pedal and drive chain

1) Loosen

• Rear wheel axle nut

Note

Loosen the chain adjustor nut, and increase the chain slack.

2) Disassemble

• Shifting pedal ①

3) Disassemble

• Small chain sprocket cover

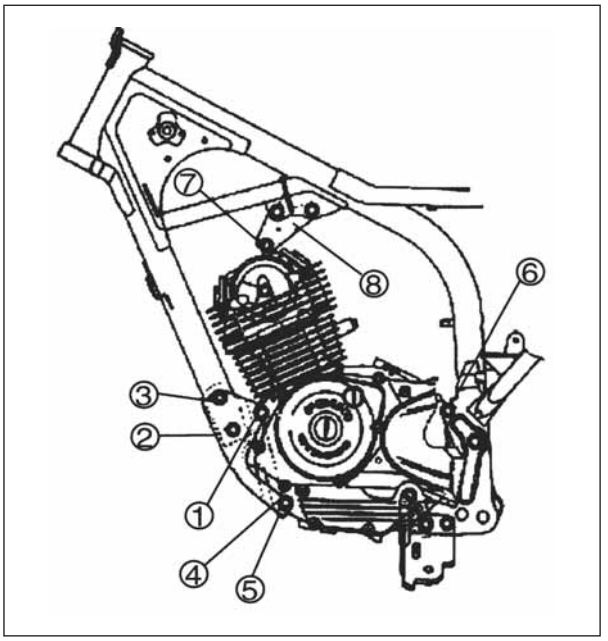
• Drive chain

7. Disassemble the kick starting rod

• Nut

• Kick starting rod

Disassemble the engine



1. Place proper a bracket underneath the engine and the frame (or place the main stand in a level position, make it steady)

2. Disassemble

• Install the bolt ① (front side lower support and the engine)

• Install the bolt ② and ③ (front side lower support and the frame)

3. Disassemble

• Install the bolt ④ and nut ⑤(lower side)

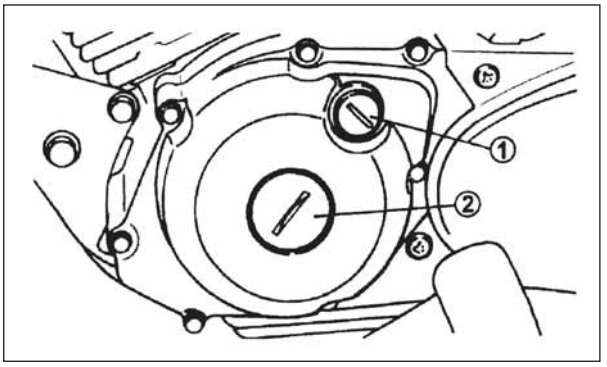
4. Disassemble

• Install the bolt (the rear part of the engine and the frame) ⑥

5. Disassemble

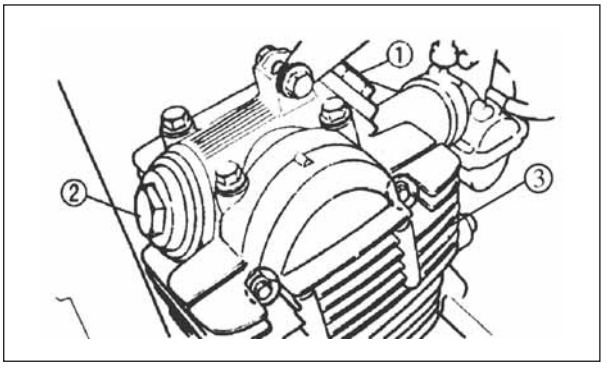
• Install the bolt (the engine top and the bracket) ⑦, Install the bolt (the top support and the frame) ⑧

Disconnect the engine

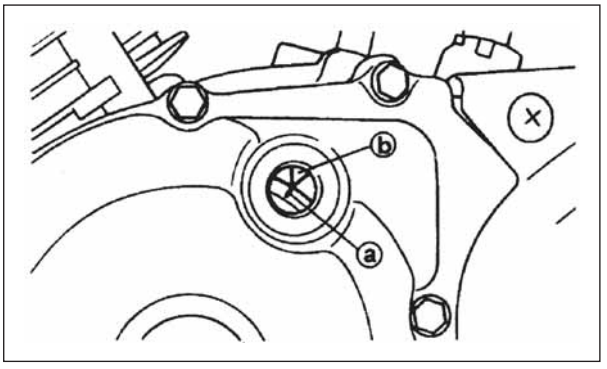


Cylinder head, cylinder and piston

1. Disassemble
• Spark plug
2. Disassemble
• Intake tube (the connecting hose joint the cylinder and the carburetor)
3. Disassemble
• Hole cover ①, ②



4. Disassemble
• Valve cover (intake) ①
• Valve cover (exhaust) ②
5. Disassemble
• The side cover of the cylinder head
6. Timing adjustment
• Aim " | " mark on the rotor at the fixed needle pointer on the crankcase cover.



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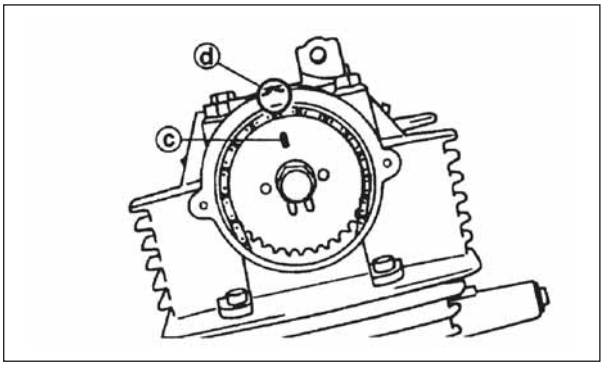
Timing adjustment steps

Turn the crankcase anticlockwise with spanner.

Aim " | " mark ⓐ on the rotor at the fixed needle pointer ⓑ on the crankcase. When " | " mark is in alignment with the fixed needle pointer, the piston locates at the top dead center (T, D, C).



In the meantime, the calibration mark ⓒ on the cam chain sprocket is in alignment with the one ⓓ on the fixed needle pointer, the rock arm on both side must form a valve clearance.

If no valve clearance, turn the crankcase anticlockwise to meet above requirements.

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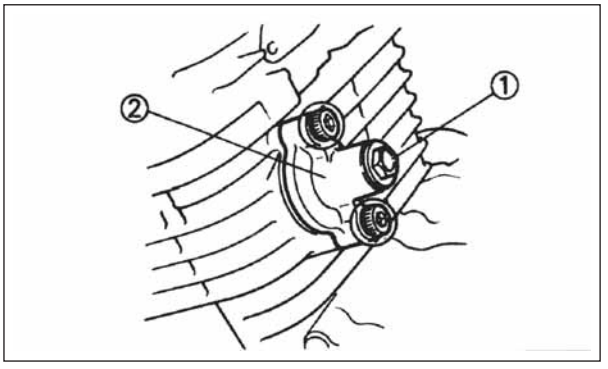
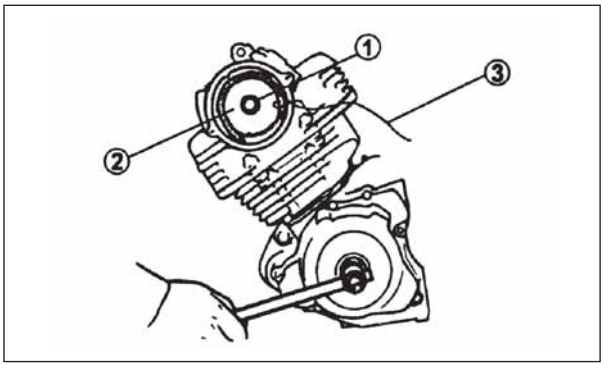


7. Loosen
- Cap bolt ① (cam chain tensioner)

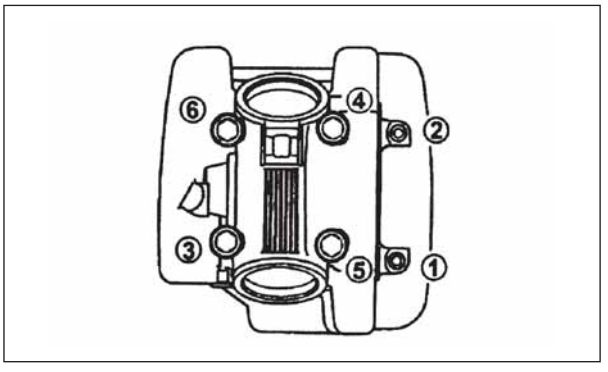
8. Disassemble
- Cam chain tensioner ②



9. Disassemble
- Bolt ①
- Cam chain sprocket ②

Note

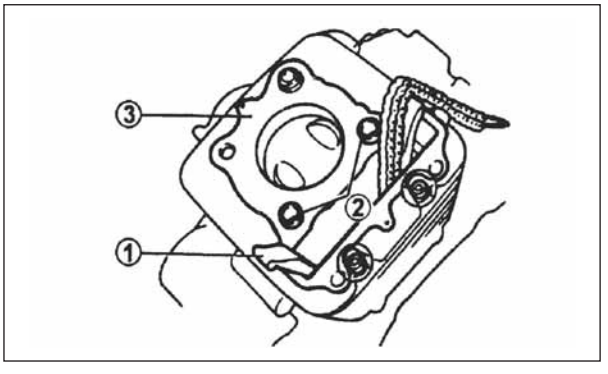
The timing chain is fixed by a protecting cable ③ to avoid dropping into the crankcase.



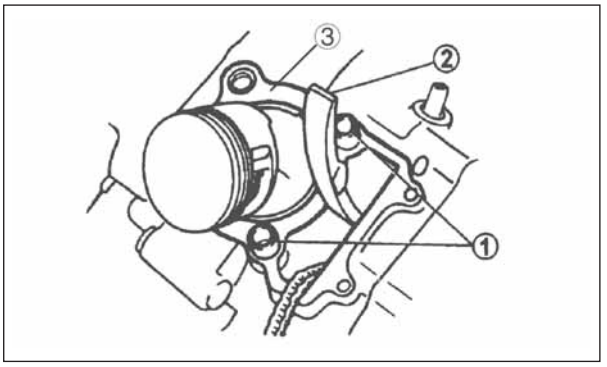
10. Disassemble
- Bolt ①②③④⑤⑥
- Cylinder head

Note

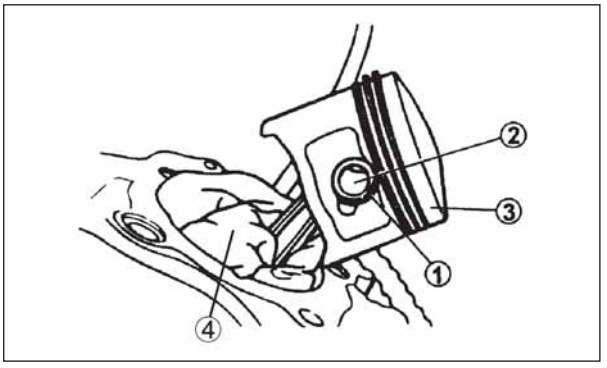
Each blot is loosened quarter turn in advance, and is twisted off when all of them is loose. Loosen them from the minimum number. The opposite numbers countermarked on the cylinder head is the orders to turn the bolt.



11. Disassemble
- Chain guide plate ①
- Dowel pin ②
- Cylinder gasket
- Cylinder



12. Disassemble
- Dowel pin ①
- Gasket ③

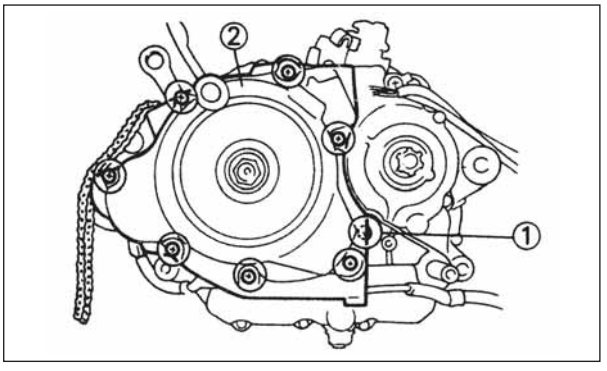


13. Disassemble
- Elastic circlip of piston pin ①
- Piston pin ②
- Piston ③

Note

- Before disassembling the circlip of piston pin, the crankcase should be covered a piece of clean cloth ④ to prevent the circlip from falling into the crankcase.
- Before disassembling piston, the groove of circlip and the pin hole should be cleaned. If they have been cleaned, but the piston pin is still disassembled difficultly, the remover for piston pin should be used.

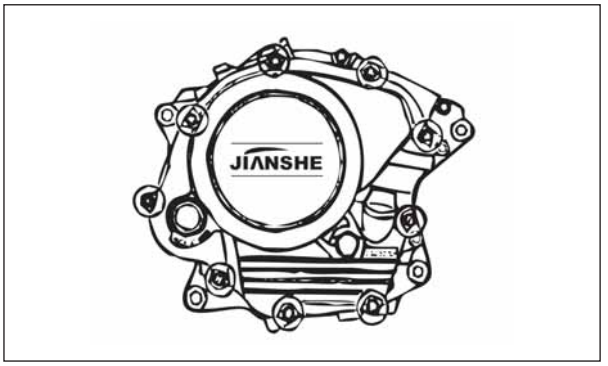
Left crankcase cover and starter motor



1. Remove
- Neutral light switch ①

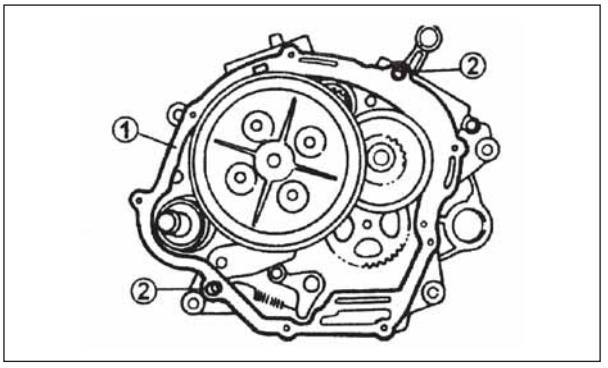
2. Disassemble
- Left crankcase cover ②
- Dowel pin
- Gasket

3. Disassemble
- Starter motor



Clutch and oil pump

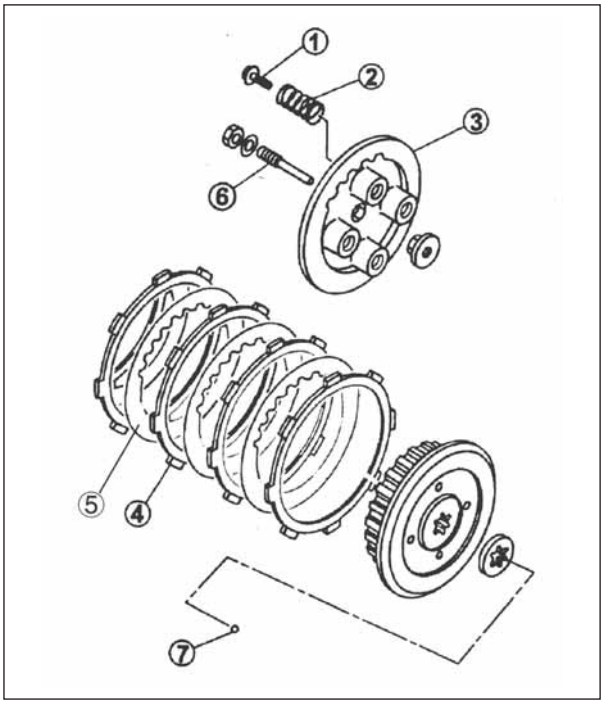
1. Disassemble
- Kick starter rod



2. Disassemble
- Crankcase cover (right)
- Gasket ①
- Dowel pin

Note

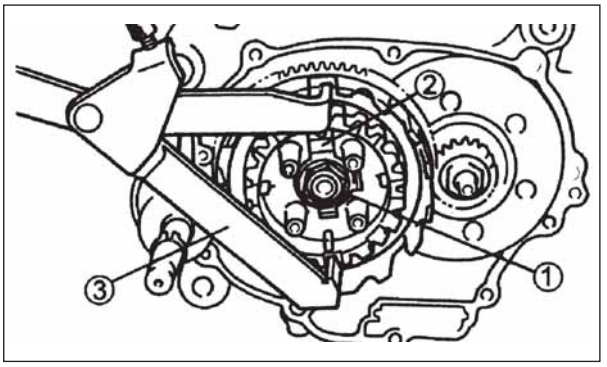
First, loosen each bolt quarter turn by the order of cross wire, and then turn off all the bolts.



3. Disassemble
- Bolt ①
- Clutch spring ②
- Pressure plate ③
- Friction lining ④
- Clutch lining ⑤
- Push rod 1 ⑥
- Steel ball ⑦

Note

First, loosen each bolt quarter turn by the order of across corners, and then turn off all the bolts.



4. Straightening

Level the tongue of lock washer

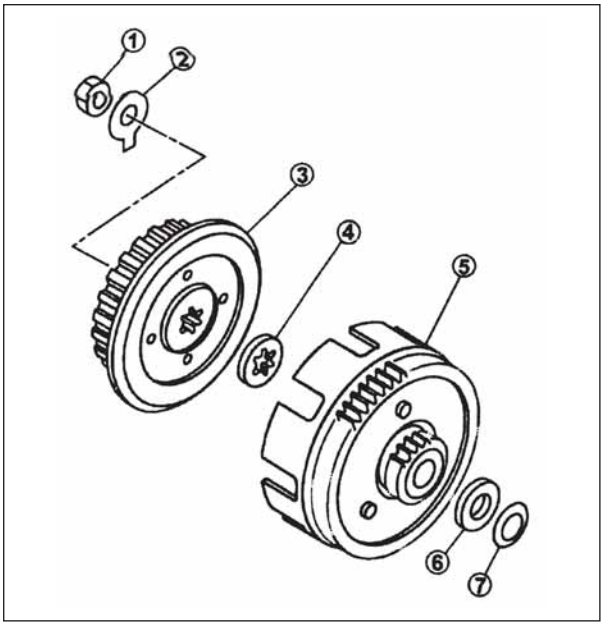
5. Loosen

• Nut ①

Note

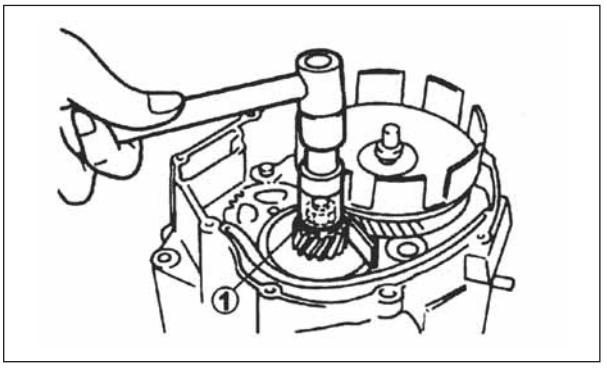
When loosen nut (clutch scab), the clutch hub is fixed with the clutch clamp.

	Universal clutch clamp



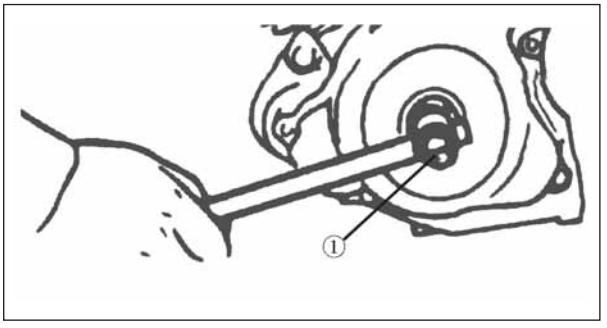
6. Disassemble

• Nut ①
• Lock washer ②
• Clutch hub ③
• Spline washer ④
• Driven gear ⑤
• Washer ⑥
• Elastic washer ⑦



7. Disassemble

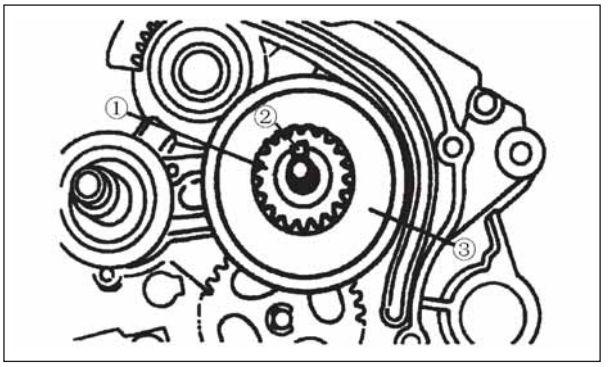
• Primary driven gear nut ①



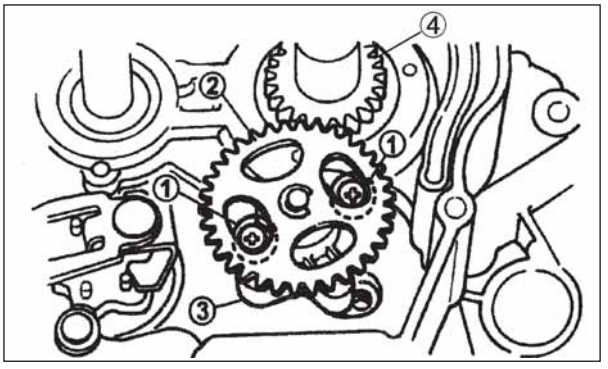
Note

• Strap, aluminium plate and copper strip can not be put into the place between the driven gear and the primary driven gear.

• Should use the sleeve to fix the nut at the place where the rotor fixes the nut, and then disassemble the primary driven gear nut ①.



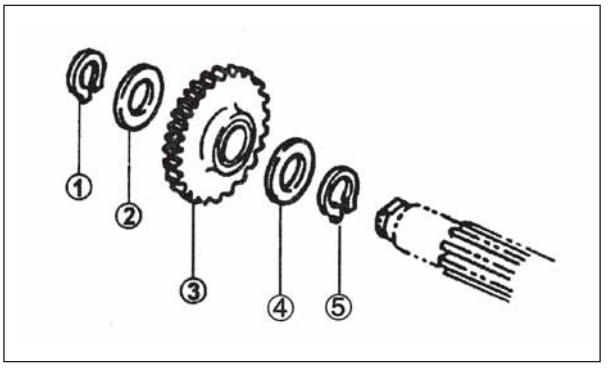
8. Disassemble
- Primary driven gear nut ①
- Key ②
- Oil filter ③



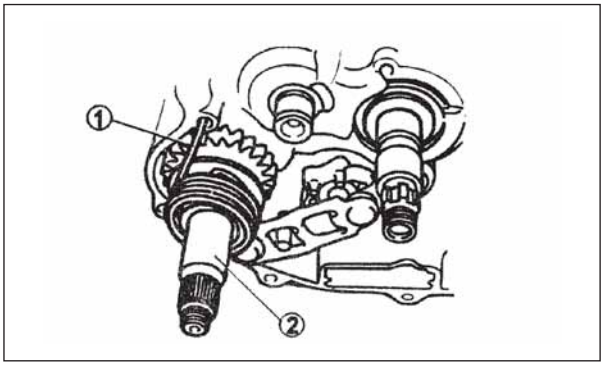
Oil pump

1. Disassemble
- Bolt ①
- Oil pump ②
- Gasket ③
- Oil pump driven gear ④

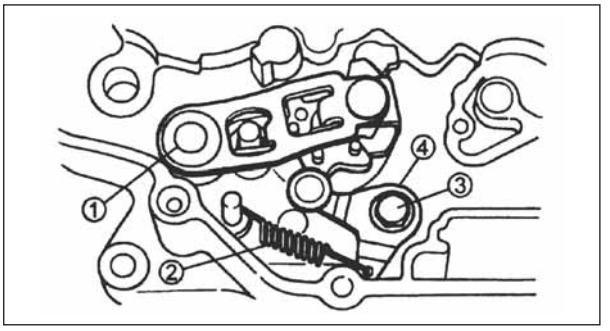
Starting shaft and idle gear

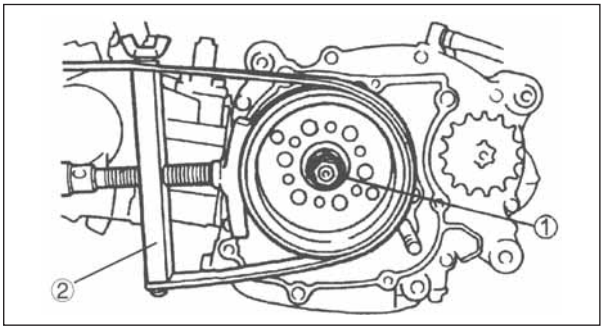


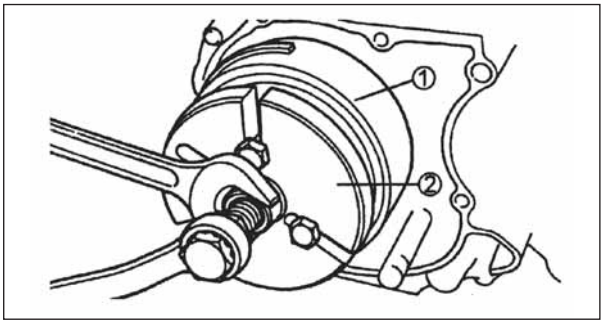
1. Disassemble
- Circlip ①
- Flat washer ②
- Idle gear ③
- Flat washer ④
- Circlip ⑤

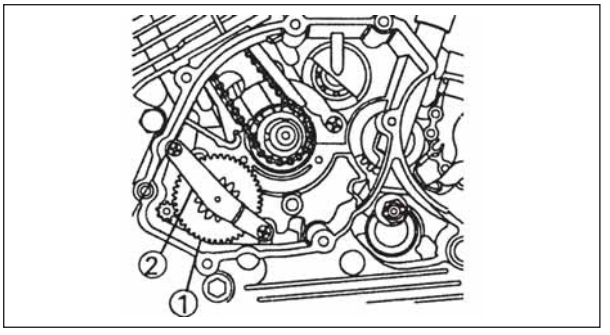


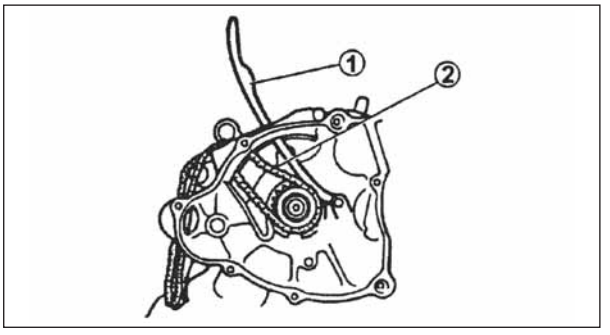
2. Disassemble
- Torsion spring ①
- Starting shaft assy ②











Shift shaft

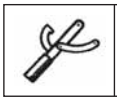
1. Disassemble
- Shifting lever ①
- Torsion spring ②
- Bolt ③
- Stopper ④

Rotor

1. Disassemble
- Nut ①

Note

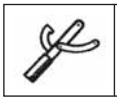
Fix the rotor with a rotor clamp, and then loosen the nut.

	Rotor clamp

2. Disassemble
- Rotor ①
- Woodruff key

Note

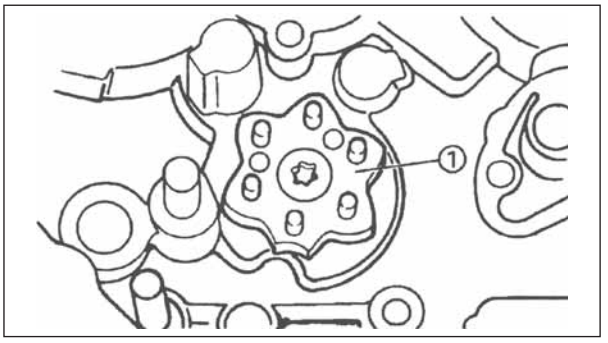
A fly wheel remover ② pushes the fly wheel backwards to disassemble the rotor ①.

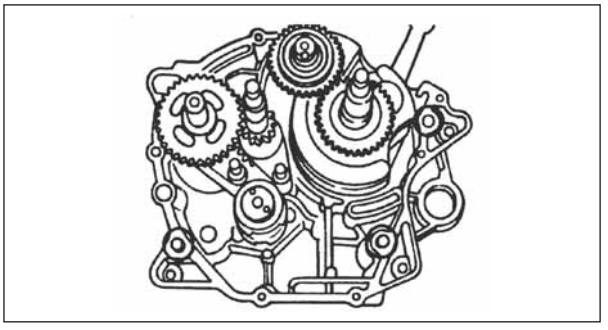
	Fly wheel remover

3. Disassemble
- Starting idle gear 1
- Washer

4. Disassemble
- Gear pressure plate ②
- Starting idle gear 2 ①

5. Disassemble
- Chain guide plate ①
- Timing chain ②





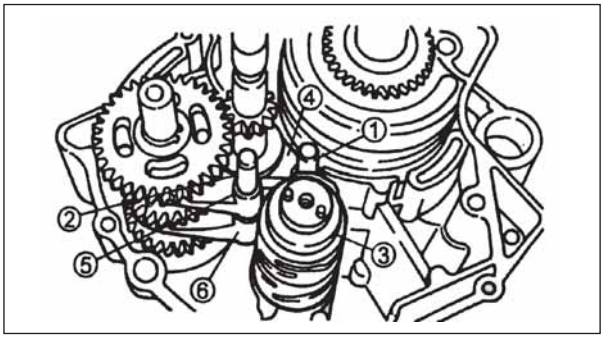
Crankcase (right)

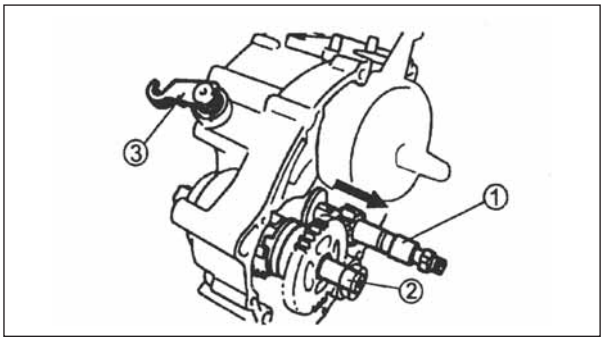
1. Disassemble
- Screw (crankcase)

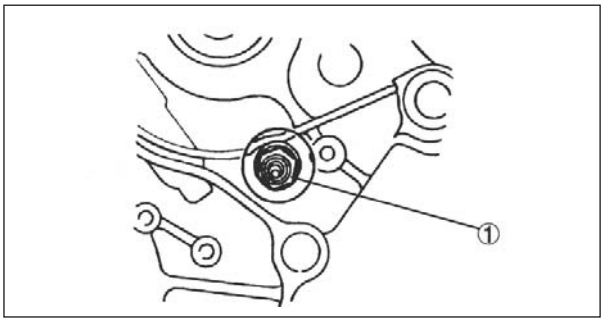
2. Disassemble
- Star gear
- Dowel pin

Note

- The crankcase should be separated from the right side.
- Disassemble the star gear.
- Be careful not to damage the mating surface of the crankcase.







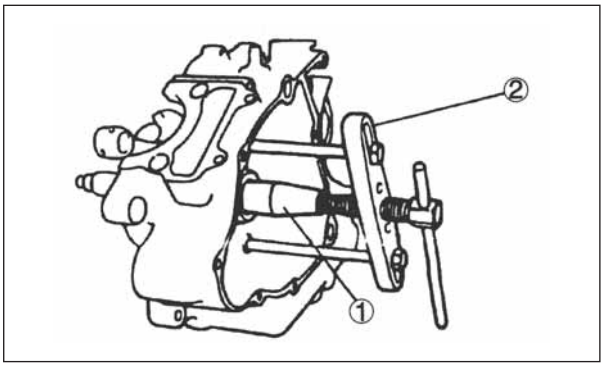
Balancing device, transmission and shifting rod

1. Disassemble
- Shifting fork guide rod ① (short)
- Shifting fork guide rod ② (long)
- Shifting fork C ④
- Shifting fork R ⑤
- Shifting fork L ⑥
- Shifting cam ③

2. Disassemble
- Main shaft ①
- Clutch inner push bar 2
- Drive shaft ②
- Washer
- Clutch push bar ③

3. Disassemble
- Neutral switch ①

Crankshaft and counterbalance



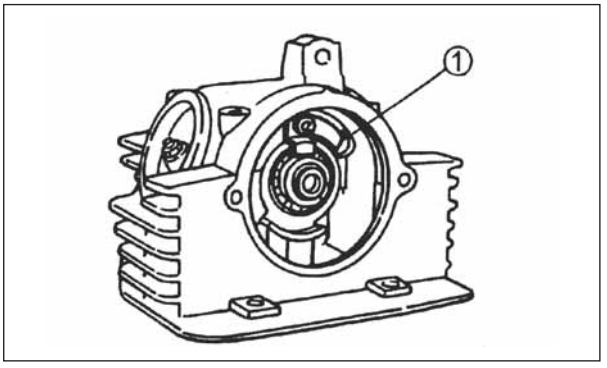
1. Disassemble
- Counterbalance
- Crankshaft ①

Disassemble them with a crankshaft remover ②.

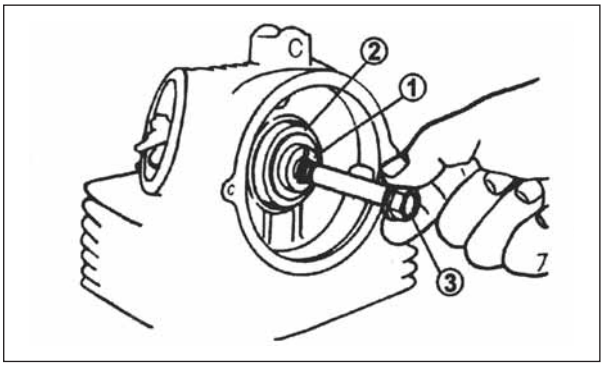
Note

• Tighten the strutting bolt of the separating tool, but make sure that the tool shell is perpendicular to the crankshaft. If necessary, one screw can be turned back a little to calibrate the state of the stool shell.

Rocker arm and camshaft



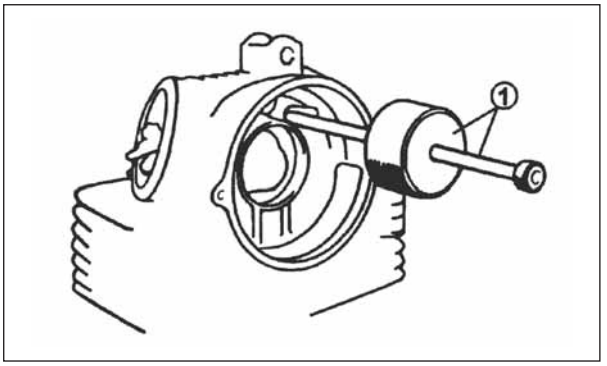
1. Disassemble
- Lock pressure plate ①



2. Disassemble
- Camshaft (with bearing ②) ①

Note

The camshaft is disassembled with bolt of 8mm 3



3.Disassemble

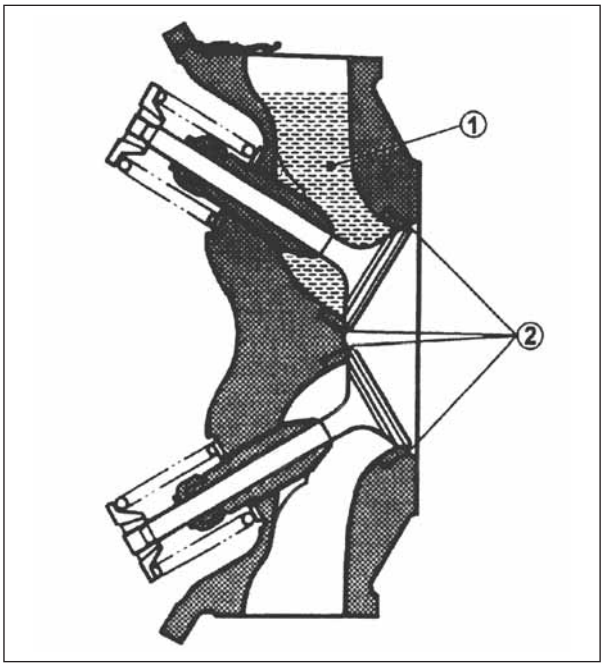
. Rocker arm shaft

.Rocker arm

Note

The rocker arm shaft is disassembled with the slide hammer bolt and the weight ①.

Slide hammer bolt
Weight



Valve

Note

Before disassembling the inner parts of the cylinder head (for example valve, valve spring, valve seat), check the valve seal before hand.

1. Check

• Valve sealer

Leakage at valve seat → Check the working face of the valve

• Valve seat and valve seat width

Refer to "Valve seat check and maintenance"

****

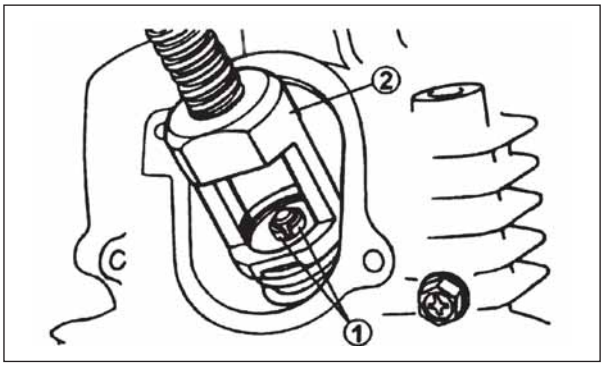
Check steps

• Pour the clean solvent① in the intake valve and the exhaust valve.

• Check the valve seal.

• No leakage around the valve seat ②

****



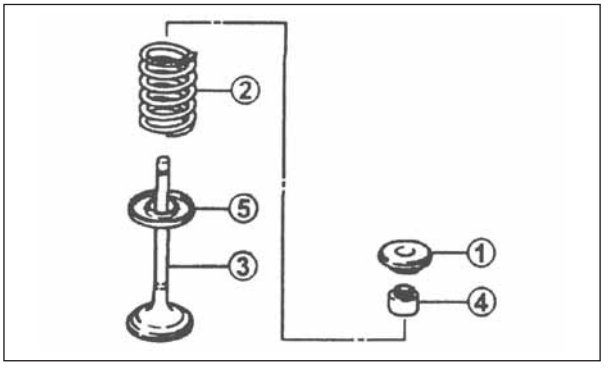
2. Disassemble

• Valve lock ①

Note

When disassemble the valve lock, use the valve spring compression tool to compress the compression valve spring.

	Valve spring compression tool



3. Disassemble

• Valve spring upper seat ①

• Valve spring ②

• Valve ③

• Valve seal ④

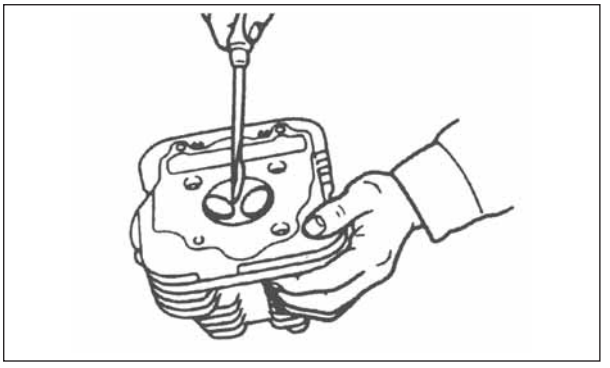
• Valve spring lower seat ⑤

Note

Mark positions of every parts to install it on the original position once more.

Check and repair

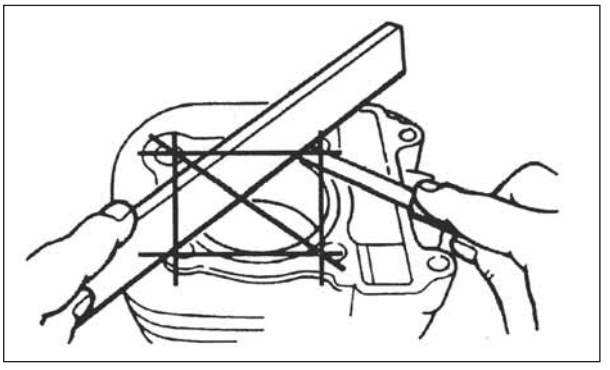
Cylinder head



1. Clean
• Carbon deposit
(Eliminate from combustion chamber)

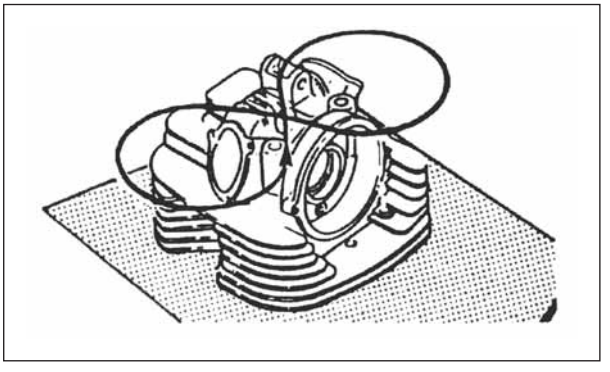
Note

Don't use sharp tool to avoid damaging or scoring spark plug thread and valve seat.



2. Check
• Cylinder head
Scratches or damage → Replace
3. Measurement
• Cylinder skew
Check whether the 6 directions of the junction surface of the cylinder head is skew or not.

	Skewness: less than 0.03mm



4. Reshape surface
• Cylinder head

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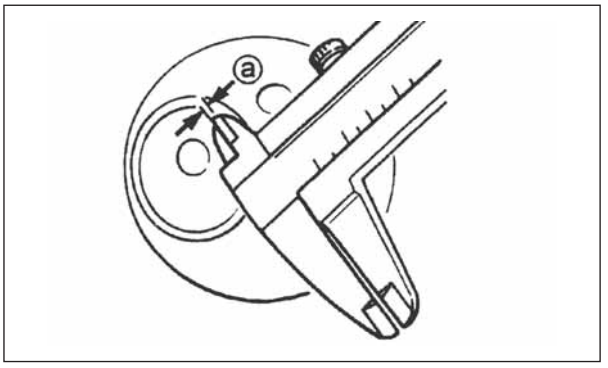
Reshape surface steps:

Place a piece of wet sandpaper of 400～600# onto a platform, and use it to grind the cylinder head by figure eight.

****

Note

Move the cylinder head several times to avoid grinding some side excessively



Valve seat

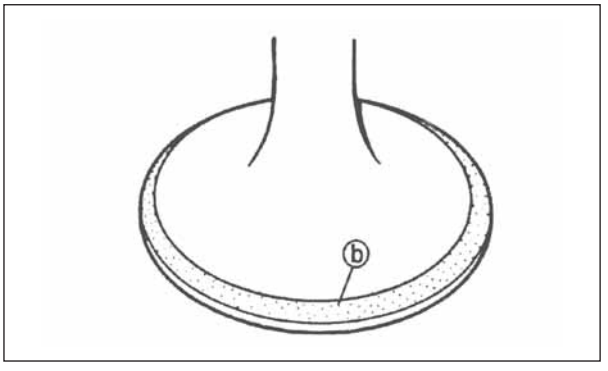
1. Clean
• Carbon deposit
(Eliminate from valve face and the valve seat)
2. Check
• Valve seat
Pit corrosion or wear → Repair valve seat once more
3. Measurement
• Valve seat width ⓐ

	Valve seat width ⓐ Intake: 0.9～1.1mm Exhaust: 0.9～1.1mm

Out of specification → Repair valve seat once more

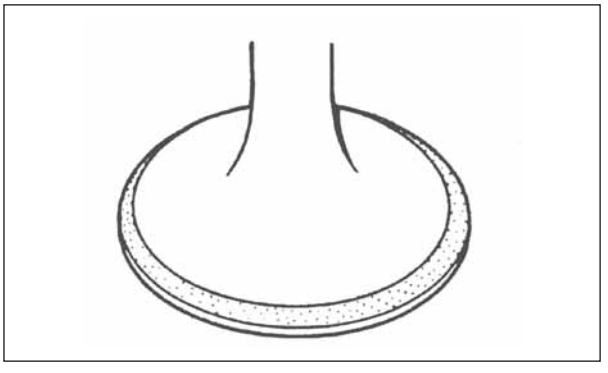
****

Measuring steps



• Smear blue dyes (Dykem) onto the working surface ⓑ of the valve when overhaul.
• Install the valve into the cylinder head.
• The valve is push onto the valve seat through the valve guide, and then got a clear trace.
• Measure the width of the trace, that is, the width of the valve seat. No matter how the valve seat and valve face contact anywhere, the blue don't disappear.
• If the valve seat is too wide, narrow or don't locate in the center, must repair it once more.

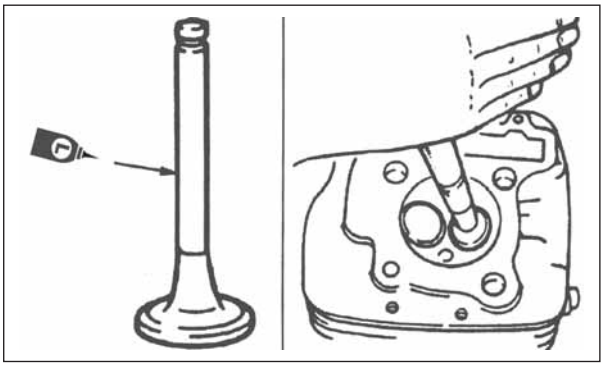
****



4. Grind
• Working surface of valve
• Valve seat

Note

After replacing the valve and the valve guide, must grind the valve seat and valve face.



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Grinding steps

• Smear rough grinding sand on valve face.

Note

Don't make grinding sand into the gap between the valve stem and the valve guide.

• Smear molybdenum-bearing disulfide oil on the valve stem surface.

• Install the valve into the cylinder head

• Turn the valve till valve face and the valve seat are polished evenly, and then eliminate all grinding agents.

Note

For good effective, knock the valve seat lightly while turning the valve back and forth with two hands.

• Smear fine grinding agent on valve face, and then repeat the above steps.

Note

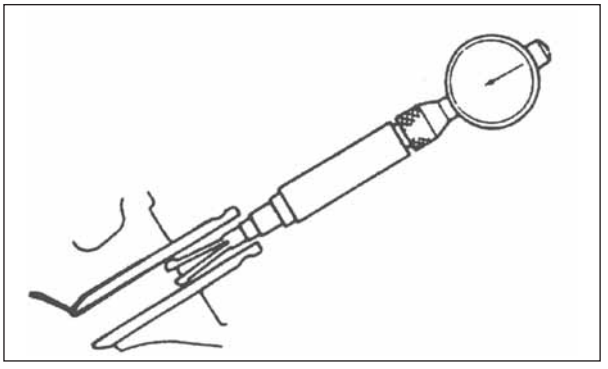
After grinding each time, wipe the grinding agent on valve face and the valve seat clean.

• Measure the width of the valve seat again.

• If the width is out of specification, repair and grind the valve seat once more.

****

Valve and valve guide



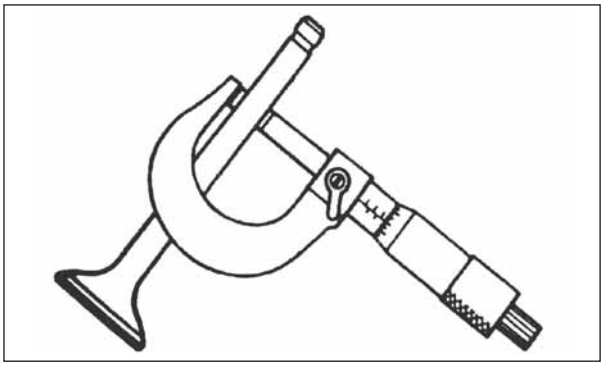
1. Measure

• Gap between valve stem and guide

Gap between valve stem and guide =guide inside diameter-valve stem diameter

Out of specification → Replace valve guide

Gap between valve stem and guide:
Intake: 0.01～0.037 mm limit value:0.08mm
Exhaust: 0.025～0.052 mm limit value:0.10mm



	Valve guide inside diameter standard value	Used limits
Intake valve	5.000～5.012mm	5.042mm
Exhaust valve	5.000～5.012mm	5.042mm

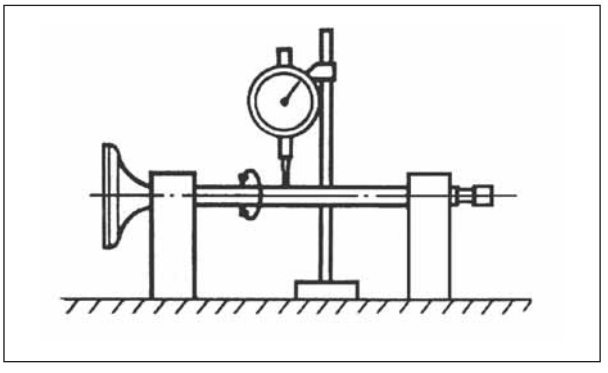
Note

After replacing the valve guide, repair the valve seat face once more.

2. Clean

• Carbon deposit

(Eliminate from valve face)



3. Check

• Valve face

Pit corrosion or wear → Polish surface

• Valve stem end

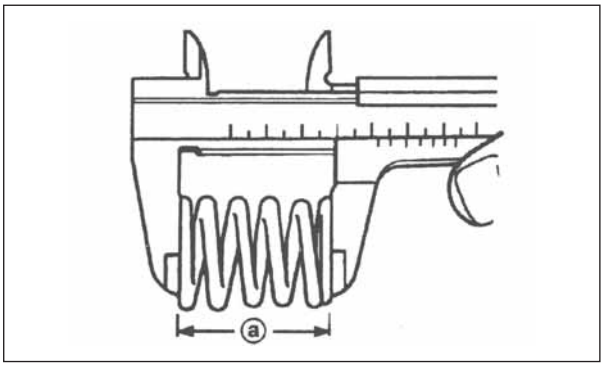
Mushroom shape or the diameter is more than the other parts of the valve stem → Replace

4. Measurement

• Swing tolerance (valve stem)

	Swing tolerance: less than 0.01 mm

Out of specification → Replace



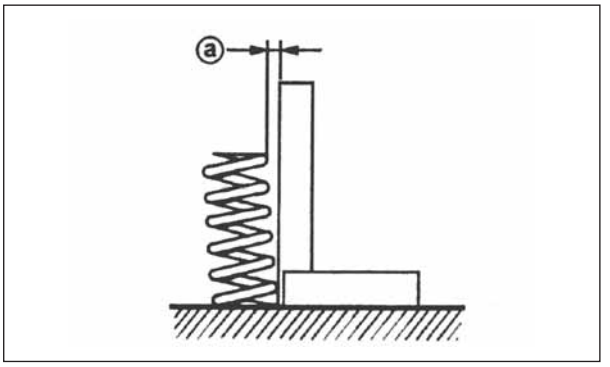
Valve spring

1. Measurement

• Free length ⓐ (valve spring)

	Valve spring free length: Standard:32.28mm Limit:31.90mm

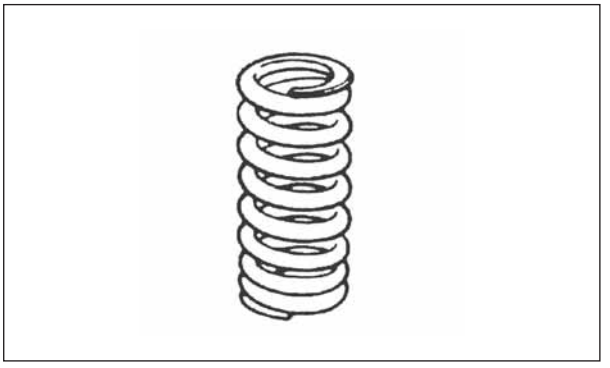
Out of specification → Replace



2. Check

• Valve spring verticality

	Side angle limit ⓐ: 1.2 mm

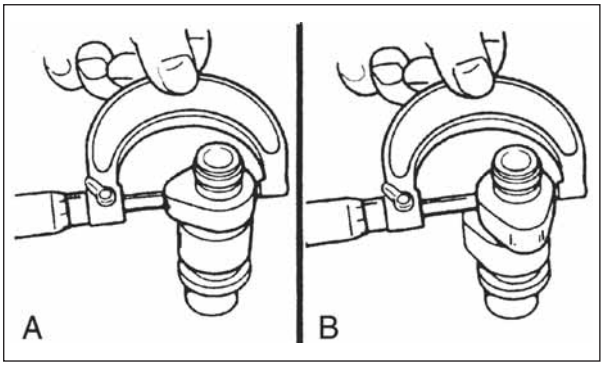


3. Check

• Valve spring contact surface

More than 2/3 of peripheral region is horizontal contact → Replace

Camshaft



1. Cam heave

Pit corrosion, scratching, bluing → Replace

2. Measurement

• Cam heave A and B

	Cam heave length **Intake:** A standard: 25.881-25.981mm Limit:25.851mm B standard: 21.195-21.295 Limit:21.165 **Exhaust:** A standard:25.841-25.941 Limit:25.811 B standard:21.050-21.150 Limit: 21.02 mm

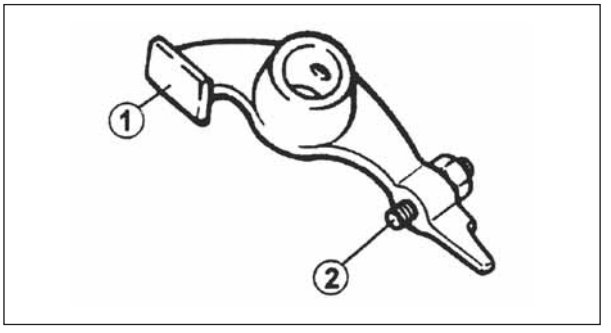
Out of specification → Replace

3. Check

• Bearing

Clamping stagnation, shake → Replace

Rocker arm and rocker arm shaft

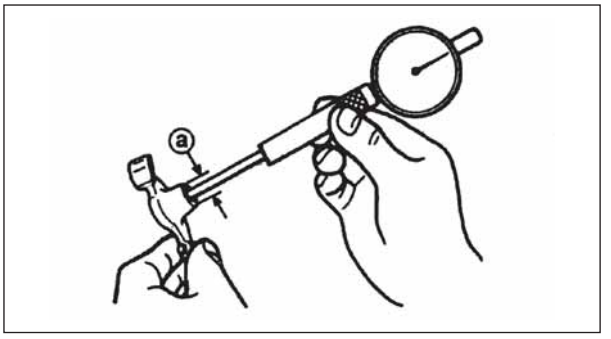


1. Check

• Rocker arm and cam heave contact surface ①

• Valve adjusting screw face ②

Wear, pit corrosion, scratching, bluing → Replace, and then check lubrication system

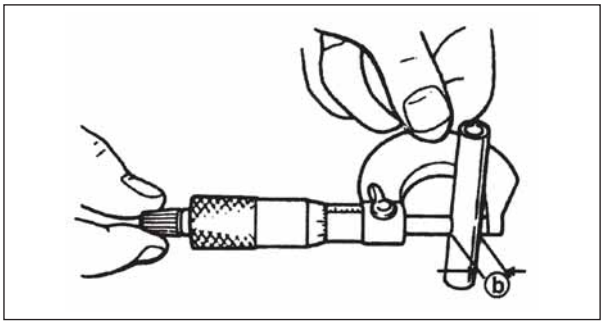


2. Measurement

Rocker arm inside diameter ⓐ

	Rocker arm inside diameter standard: 10.000-10.015mmUsed limit:10.030mm

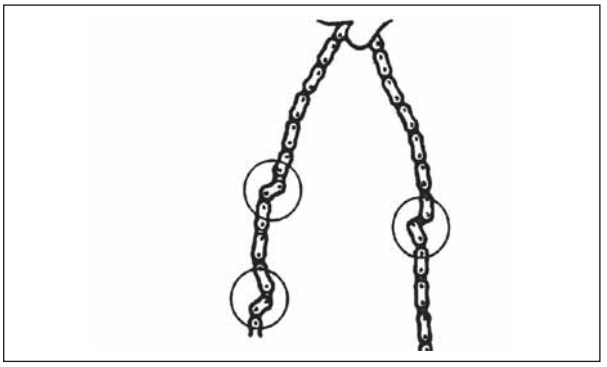
Out of specification → Replace



3. Measurement

• Rocker arm shaft outside diameter ⓑ

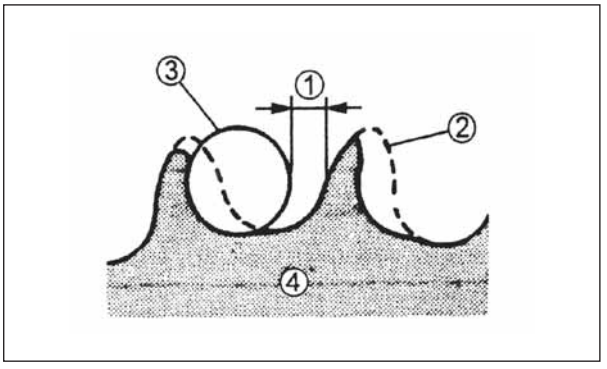
	Rocker shaft outside diameterStandard value:9.981-9.991mmLimit:9.95mm



Timing chain, sprocket, chain guide plate and chain tensioner

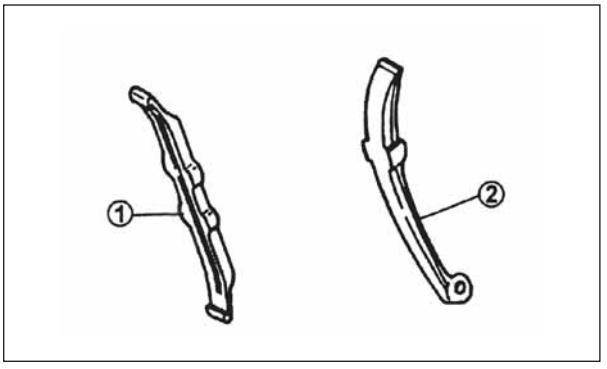
1. Check
• Timing chain

Hardening or crack → Replace timing chain and sprocket completely



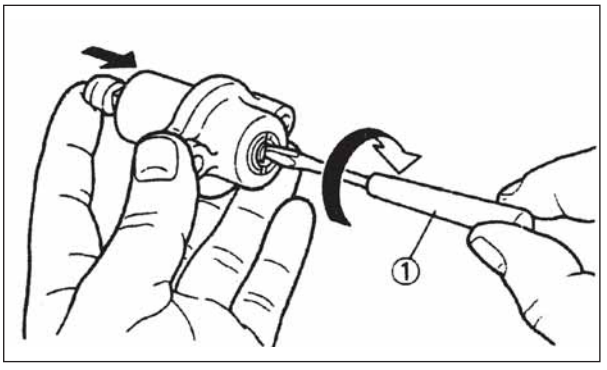
2. Check
• Sprocket

Hardening or crack → Replace timing chain and sprocket completely
• Quarter gear ①
• Correct combination ②
• Rotor ③
• Sprocket ④



3. Check
• Chain guide plate ① (exhaust side)
• Chain guide plate ② (intake side)

Wear or damage → Replace



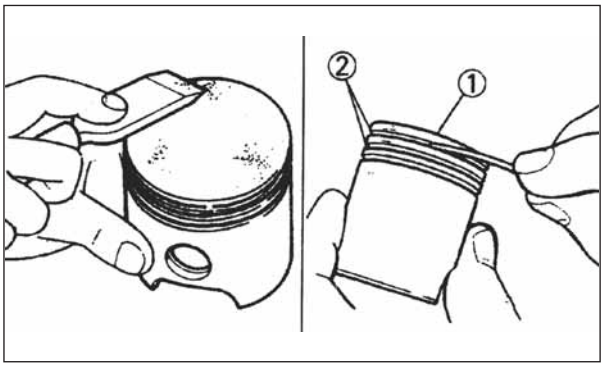
4. Check
• Timing chain tensioner free play

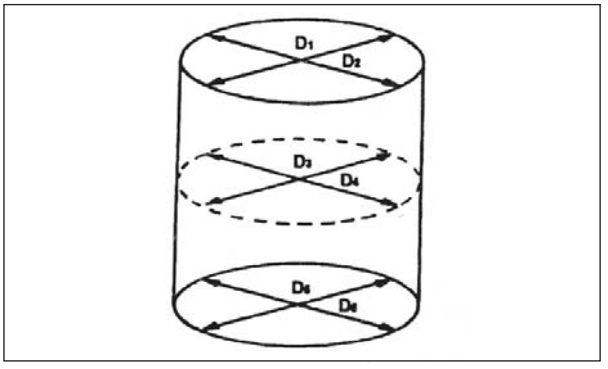
****

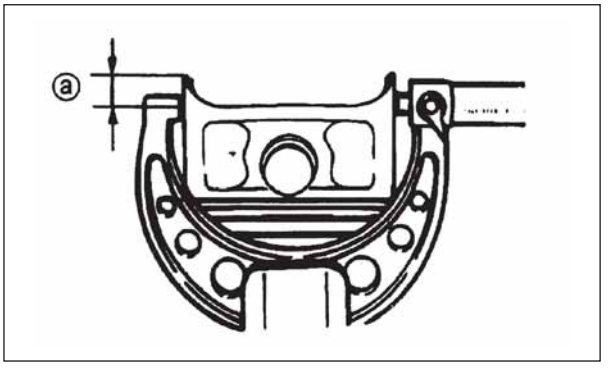
Checking steps

• Press the tensioner rod lightly with a finger, and turn the tensioner rod to the end with a small screw driver.
• When press and loosen the screw driver, should make sure that the tensioner can go out smoothly.
• If not, the tensioner assy must be replaced.

****







Cylinder and piston

1. Clean
• Carbon deposit
(From the top of piston ① and ring groove ②)
2. Check
• Piston side wall
Wear, scratching and damage → Replace
3. Check
• Cylinder wall
Wear or scuffing → Bore cylinder once more or replace

4. Measurement
• Piston-to-cylinder clearance

****

Measuring steps

1. Measure the cylinder bore C with a bore gauge. The position of D3,D4 (40mm distance from the top of cylinder)

Note

Measure the cylinder bore in the two directions, one parallels to the crankcase, one squares to the crankcase, and then demand an average value.

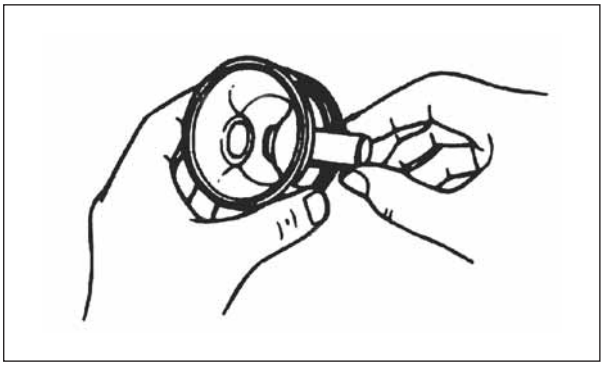
	Cylinder inside diameter standard: 54.024～54.056 mm

Out of specification → Replace

2. Measure the piston
• Measure the piston skirt diameter with micrometer calipers, and measure it at the distance of 5.0 mm away from the bottom margin of the piston.

	Piston outside diameter standard: 53.997～54.029 mm

****



5. Piston-to cylinder clearance

Cylinder inside diameter-piston outside diameter = clearance

	Standard piston-to-cylinder clearance: 0.020～0.034mm

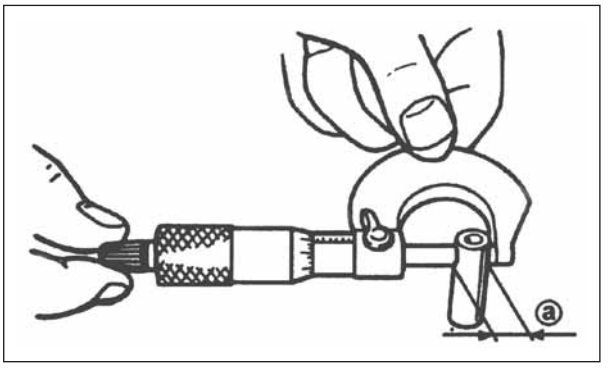
Out of specification → Replace

Piston pin

1. Check

• Piston pin

Bluing or form groove → Replace, and then check lubrication system

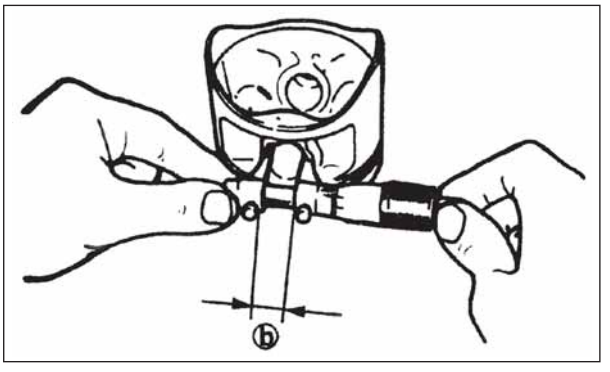


2. Measurement

• Piston pin outside diameter ⓐ

	Piston pin outsidediameter: 14.991～15.000mmLimit:14.969mm

Out of specification → Replace



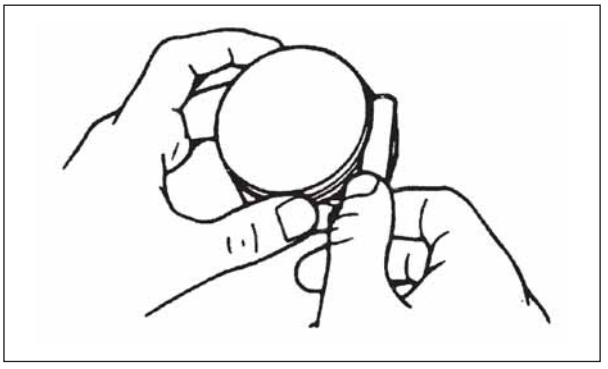
3. Measurement

• Piston pin hole inside diameter ⓑ

	Piston pin hole inside diameter: 15.002-15.013mmUsed limit:15.043mm

Out of limit → Replace

Piston ring



1. Measurement

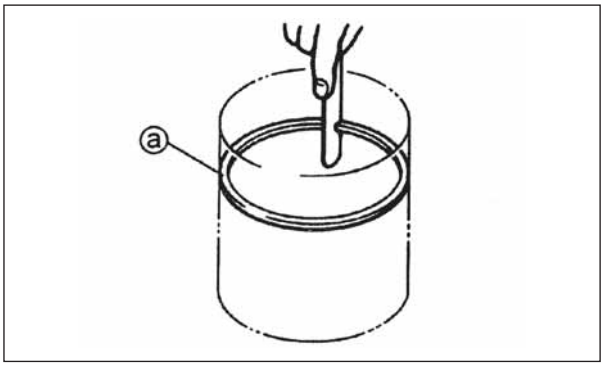
• Side clearance

Out of specification → Replace piston-ring groove and piston ring completely

Note

During measuring side clearance, carbon deposit on the piston-ring groove and the every ring should be eliminated.

Side clearance:
1 ring:0.03～0.07mm
Used limit:0.12mm
2 ring:0.02～0.06mm
Used limit:0.12mm



2. Measurement

• Push the piston ring ⓐ into the cylinder (the position of 5 mm away from the top)

Note

Use the piston top to push the piston ring to make the ring verticality to cylinder bore.

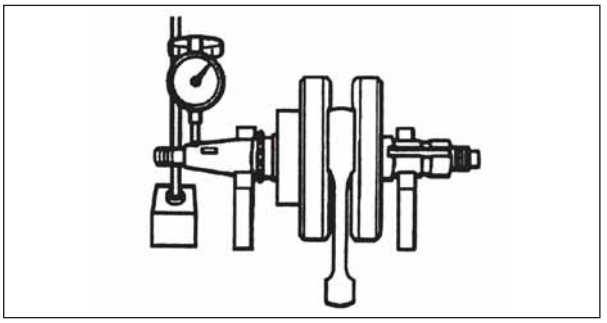
3. Measurement

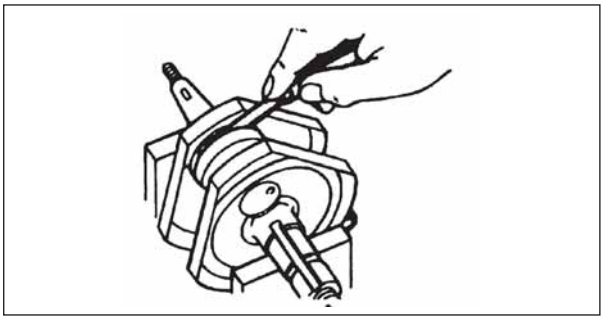
• End gap

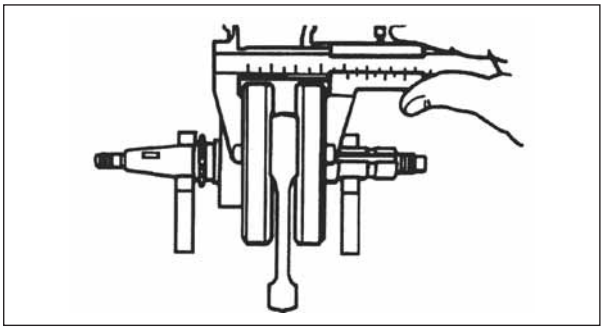
Note

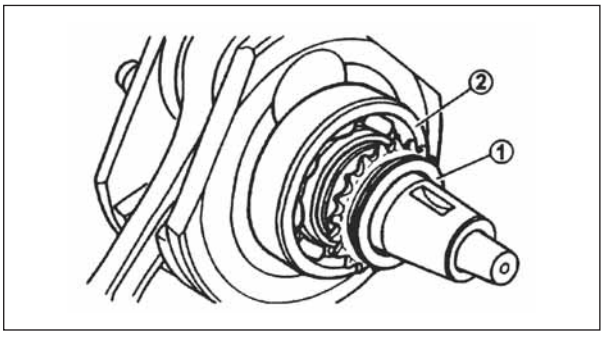
The end gap of the oil ring can not be measured at the expander-ring septum of the oil ring, and only measure the end gap between upper and below barriers. If the gap is too large, then there are 3 rings must all be replaced.

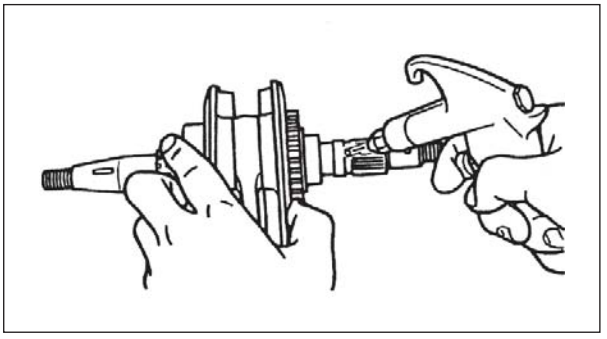
End gap:
1 ring: 0.15～0.30mm
Used limit:0.4mm
2 ring: 0.30～0.45mm
Used limit:0.55mm
Oil ring: 0.2～0.7mm











Crankshaft

1. Check

• Crankshaft swing tolerance

	Crankshaft swing tolerance: 0.03mm

Out of limit → Replace

Note

Turn the crankshaft slowly for the measurement.

2. Check

• Big-end side clearance

	Standard side clearance:0.15-0.45mm Used limit:0.8mm

Out of limit → Replace

3. Measurement

• Crankshaft width (measure it with a vernier caliper)

	Standard width: 46.95～47.00mm

Out of standard → Replace

4. Check

• Crankshaft sprocket ①

Damage, wear → Replace crankshaft

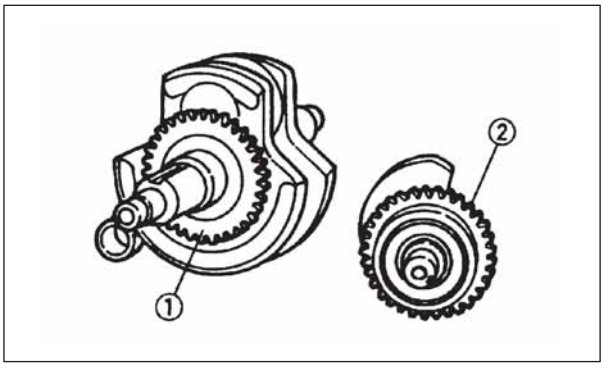
• Bearing ②

Abnormal noise, instable rotation, loose → Replace

5. Check

• Crankshaft oil-way

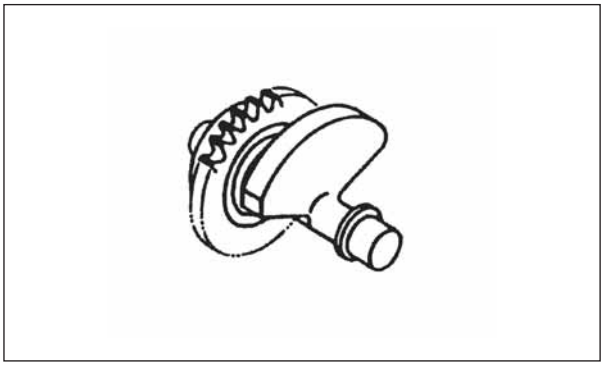
Blockage → Clean it through compressed air



Balancing device

1. Check
- Crankshaft driving gear ①
- Crankshaft driven gear ②

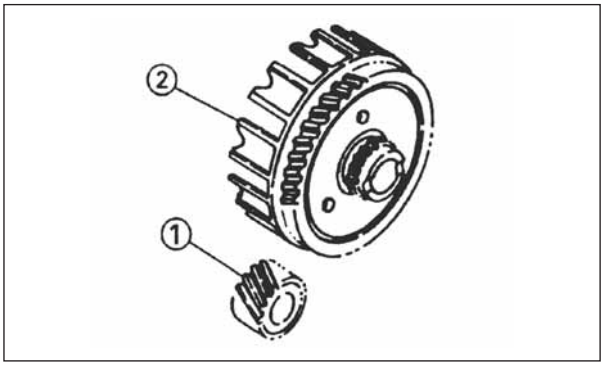
Wear, damage → Replace



2. Check
- Balancer

Wear, damage → Replace

Cultch

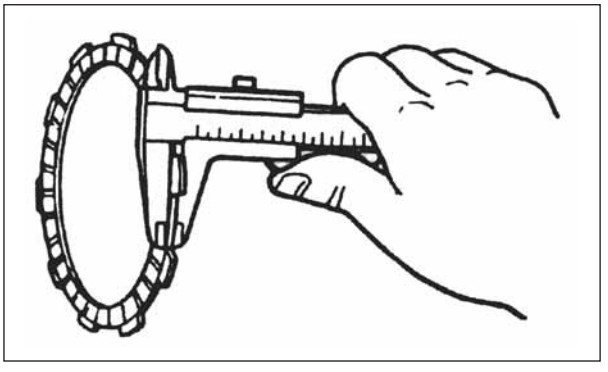


1. Check
- Driving gear ①
- Driven gear ②

Wear, damage → Replace 2 gears

2. Check
- Friction lining

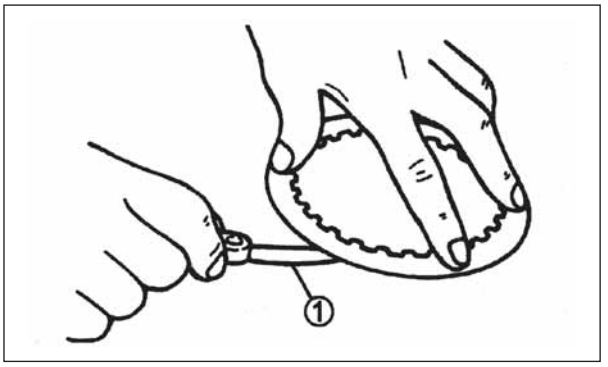
High noise when operating →Replace friction lining completely



3. Measurement
- Friction lining thick

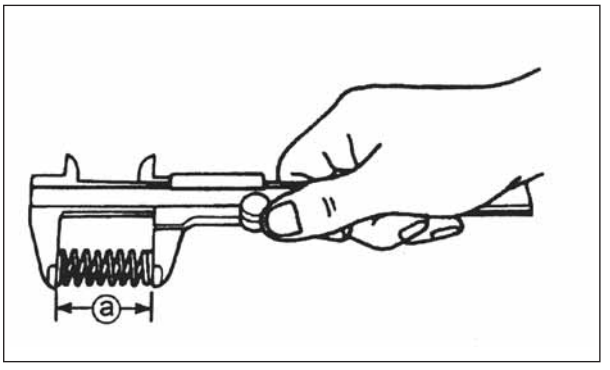
	Friction lining thick: 3.0mm Used limit:2.8mm

Out of specification → Replace friction lining completely, measure it at the 4 point of the upper, the lower, the right and the left.



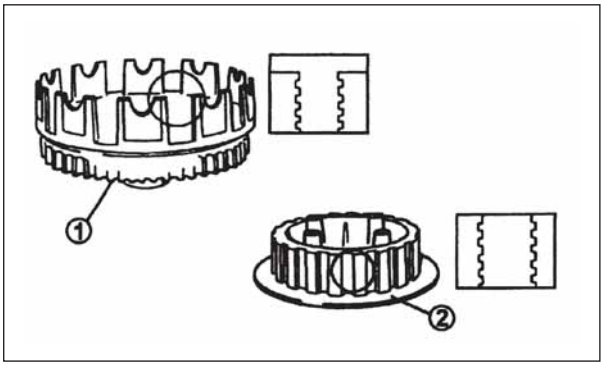
4. Check
• Clutch lining
Damage →Replace clutch lining completely
5. Measurement
• Clutch warp
Out of specification → Replace clutch lining completely
• Use plate and caliper gauge ①

	Friction limit value: less than 0.05mm

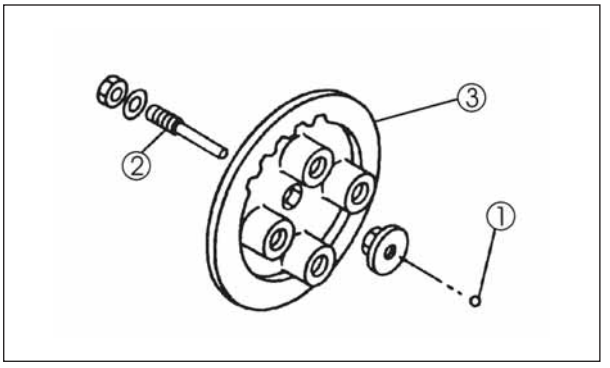


6. Measurement
• Clutch spring length ⓐ
Damage → Replace clutch spring completely

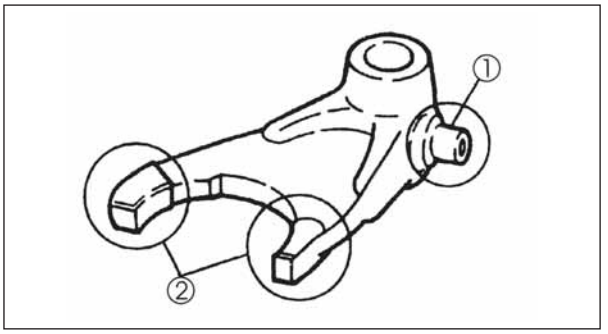
	Clutch spring length: 33.0mm Limit: 31.0mm



7. Check
• Main driven gear ① stopper
Scrape, wear, damage → Barbing or replace
• Clutch hub ②
Scrape, wear, damage → Replace



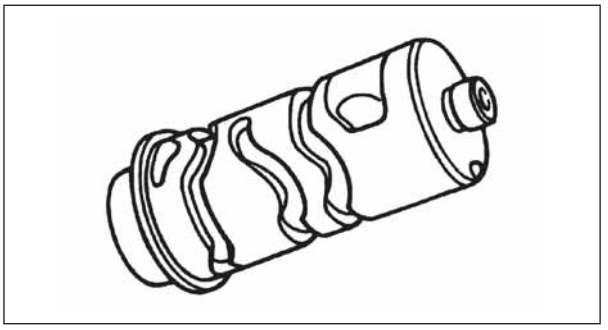
8. Check
• Steel ball ①
• Push rod 1 ②
• Pressure plate ③
Wear, damage → Replace



Transmission and shift lever

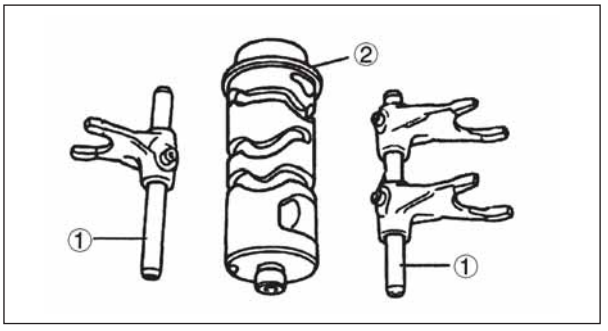
1. Check
- Cam follower of shifter fork ①
- Shift fork claw ②

Scuffing, bend, damage → Replace



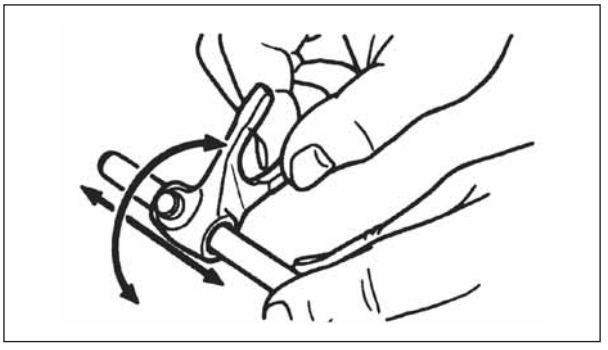
2. Check
- Shifting cam groove

Damage or wear → Replac



3. Check
- Fork guide rod (short left, long right) ①
- Shifting cam ②

Distortion, scuffing, bend, damage → Replace

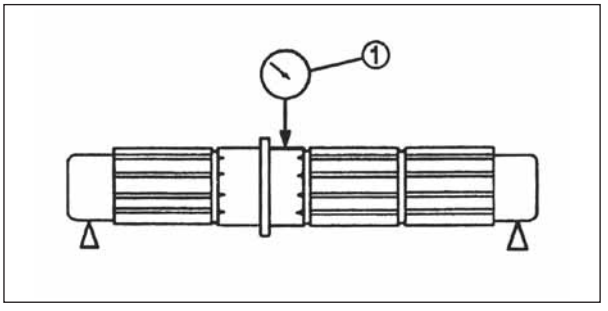


4. Check
- Shifting fork action

Unfavorable action → Replace shifting fork or guide rod

Warning

Be mustn't straighten the curving guide rod.

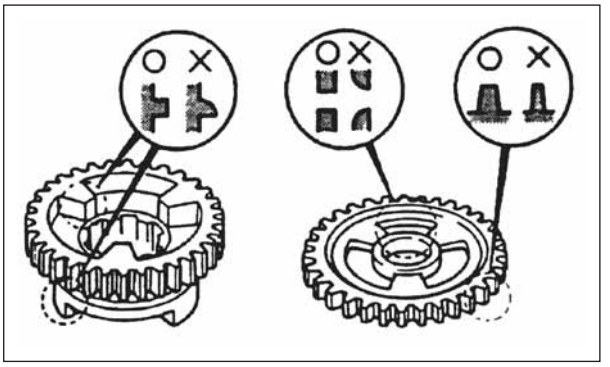


5. Measurement
- swing tolerance (driving shaft and main shaft)

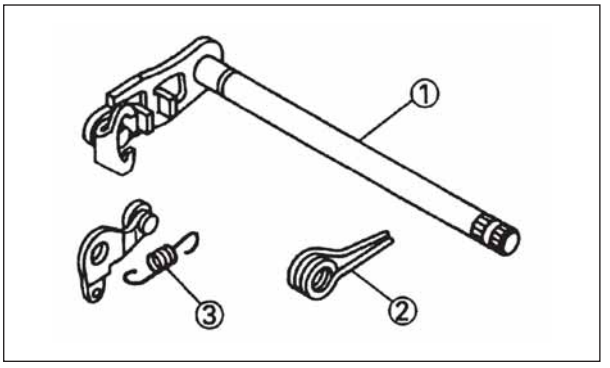
Out of specification → Replace

Warning

Be mustn't straighten the curving shaft.

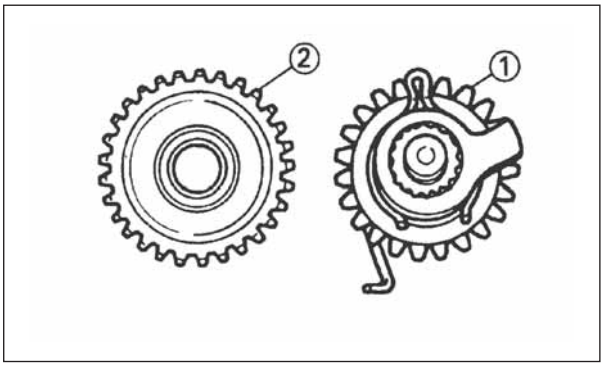


6. Check
• Gear tooth
Bluing, pit corrosion, wear → Replace mating gear
End land become round, crack and disalignment → Replace

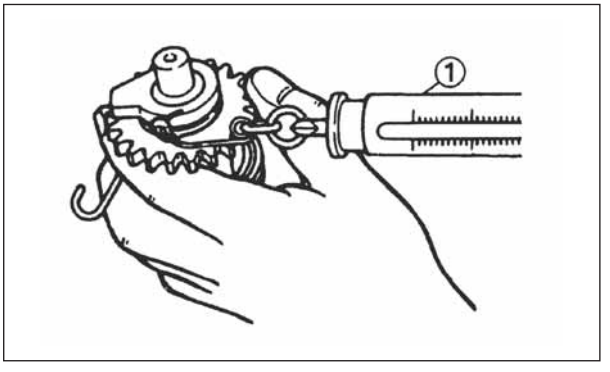


7. Check
• Shifting shaft ①
Damage, bend, wear → Replace
• Torsion spring (stopper lever)②
• Return spring (shifting shaft)③
Damage → Replace

Kick starter



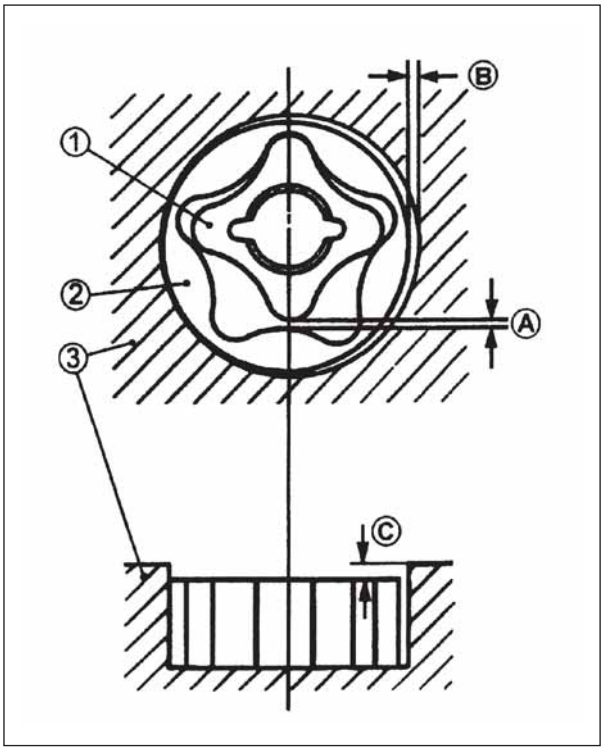
1. Check
• Kick starter gear tooth ①
• Kick starter pinion tooth ②
Damage or wear → Replace 2 gears in couples



2. Measurement
• Kick starter collar tension
Use spring balance ①

	Kick starter collar tension: 0.2-1.2kg

Out of specification → Replace



Oil pump and oil filter

1. Measurement

• Gear tip clearance A

(Between inside rotor ① and outside rotor ②)

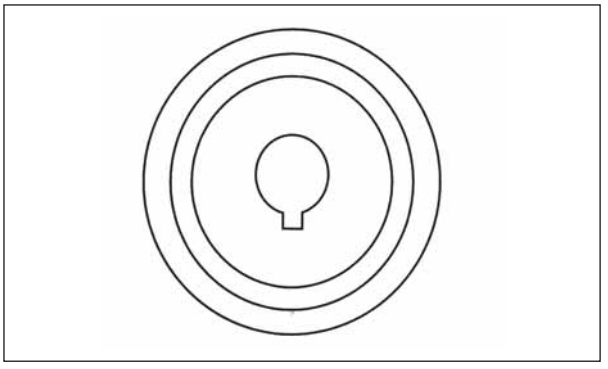
• Side clearance B

(Between outside rotor ② and pump housing ③)

• Clearance C between inside-and-outside rotor and pump housing

(Thickness difference of inside rotor ①, outside rotor ② and pump housing ③)

	Gear tip clearance A: 0.15mm Side clearance B: 0.06-0.10 mm Thickness difference C: 0.06-0.10 mm

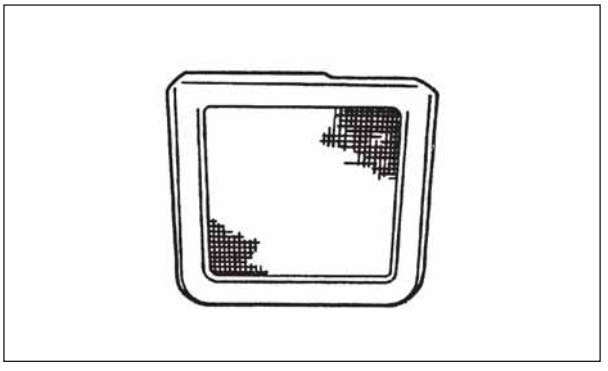


2. Check

• Centrifugal oil filter

Chap, damage → Replace

Have the dirt →Clean



3.Check

• Oil filter net

Chap damage → Replace

Have the dirt → Clean

Crankcase

1. Thoroughly wash the contact face of crankcase with a sort of hot solvent.
2. Thoroughly wash the matching faces of sealing gasket and crankcase with a sort of hot solvent.
3. Check
• Crankcase
Crack or damage → Replace
• Oil hole
Blockage → Blow out with compressed air

Bearing and oil seal

1. Check
• Bearing
Clean and lubricate, whirl the inner race with a finger.
Unevenness → Replace

Note

Must not dry them by blow in compressed air, or can lead to a damage of the bearing face.

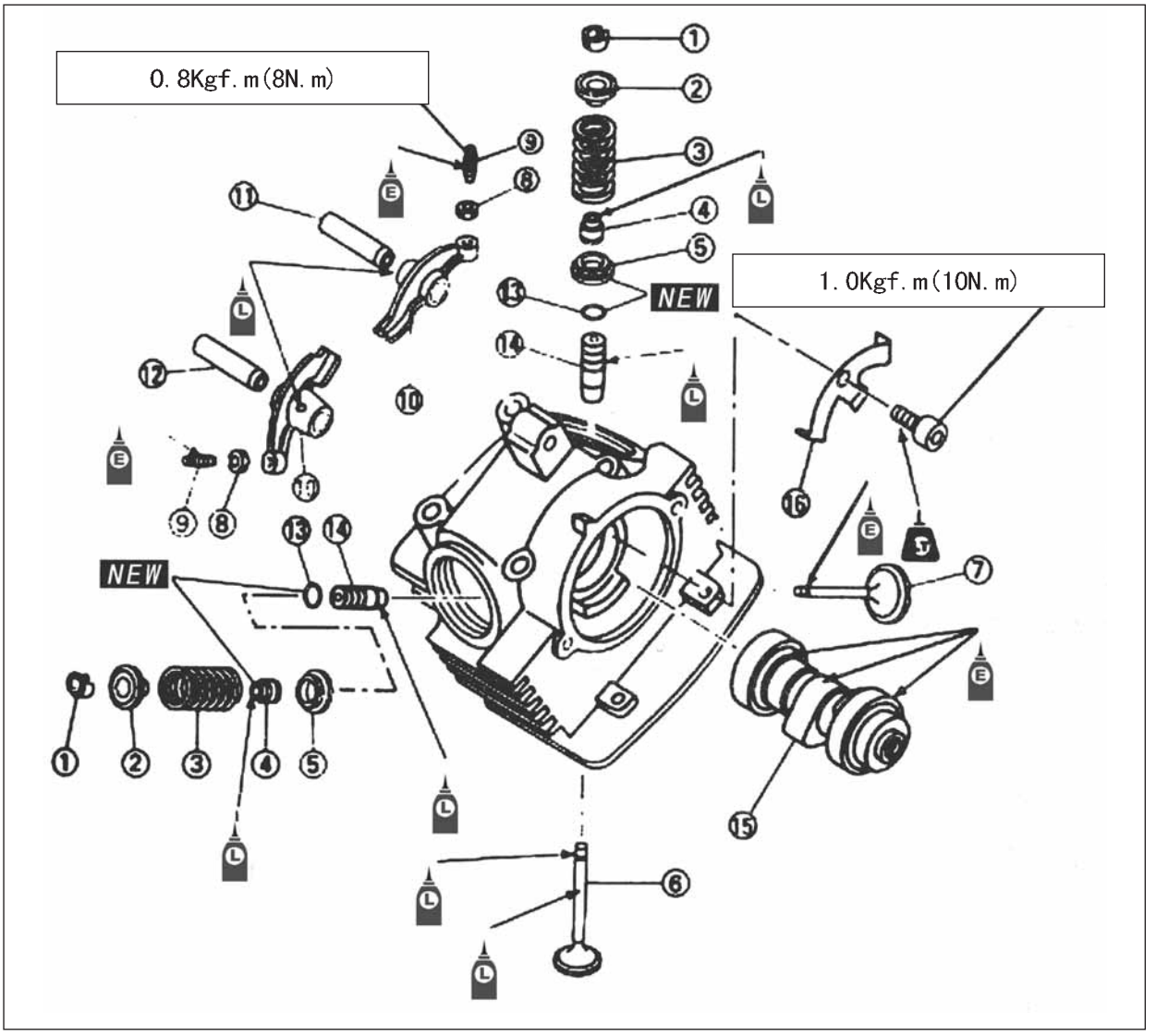
2. Check
• Oil sealing
Damage or wear → Replace

Circlip and washer

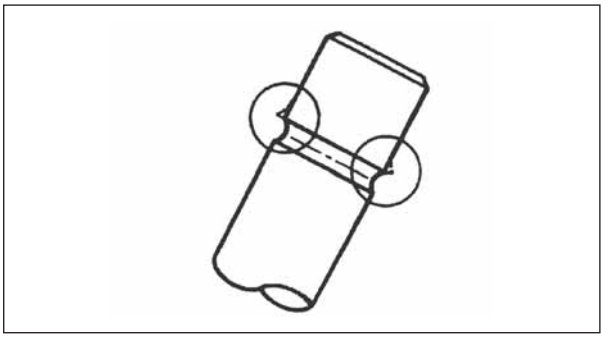
1. Check
• Circlip
• Washer
Damage, loosen, bend → Replace

Engine assembly and adjustment

Valve, rocker arm and cam shaft

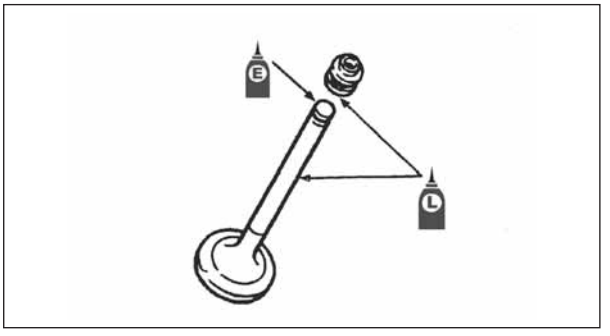


①Valve lock
② Valve spring upper seat
③Valve stem oil seal
④Valve spring
⑤Valve spring seat
⑥ Valve stem (exhaust)
⑦Valve stem (intake)
⑧ Lock nut
⑨Adjusting bolt
⑩ Rocker arm
⑪ Rocker arm pin (intake)
⑫ Rocker arm pin (exhaust)
⑬ O-ring
⑭ Valve guide
⑮ Cam shaft
⑯ Pressure plate



Engine assembly and valve adjustment

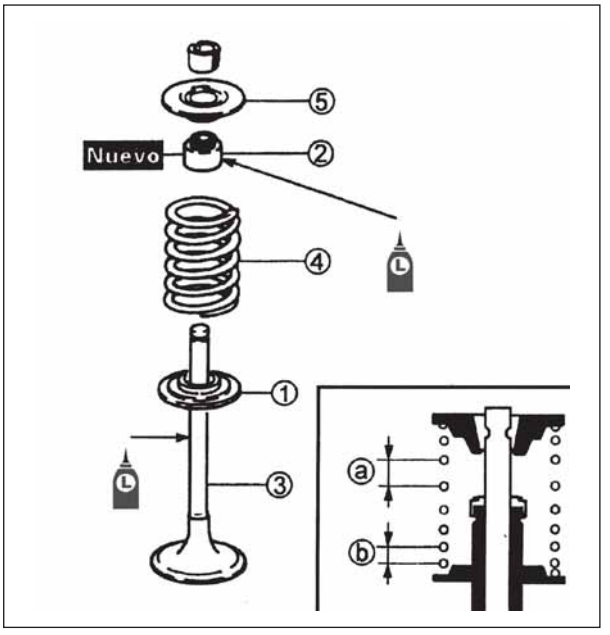
1. Eliminate burr
- Valve stem end
- Polish valve stem end with oilstone



2. Smear
- Molybdenum sulfide base lubricant

(Smear it on the valve stem and valve oil seal)
- Four stroke engine oil

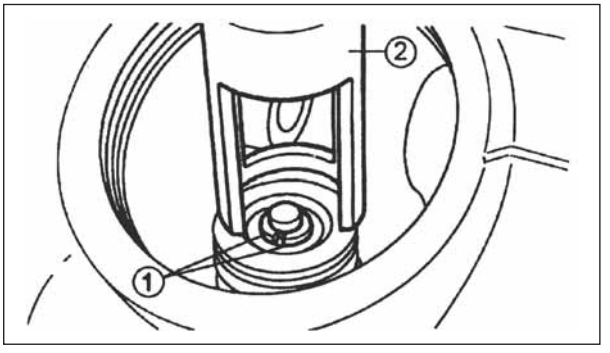
(Smear on the valve stem top)



3. Install
- Valve spring seat ①
- Valve oil seal ②
- Valve ③
- Valve spring ④
- Valve upper seat ⑤

Note

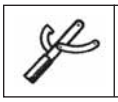
Upturn the side to make the spring pitch ⓐ big, install the valve spring. ⓑ is small pitch.

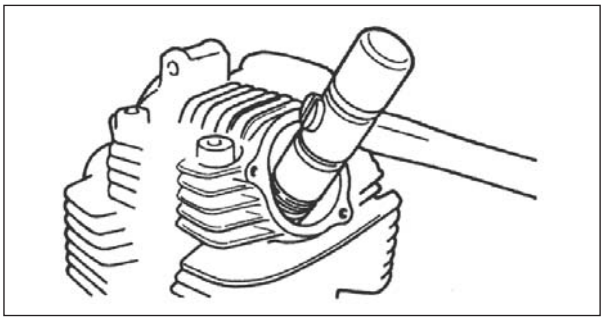


4. Install
- Valve lock ①

Note

When install the valve lock, compress the valve spring with the valve spring compressed tool.

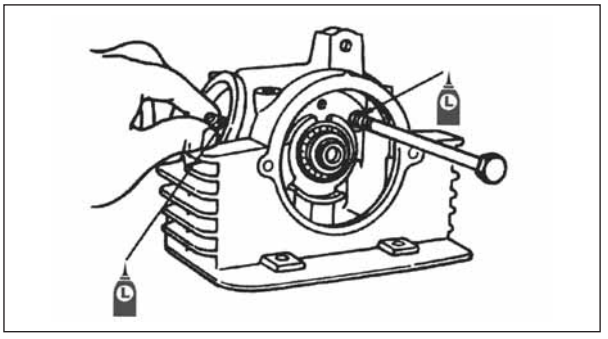
	Valve spring compressed tool



5. Ham the valve lock with a hammer to fix it on the valve stem.

Note

Don't ham it too hard to avoid damaging the valve.



Rocker arm and cam shaft

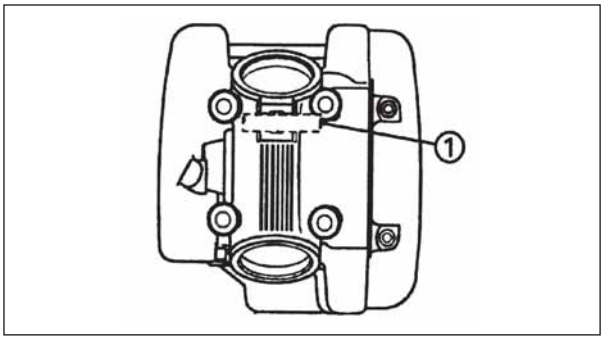
1. Lubrication

• Supramoly sulfide base lubricant

(Smear the contact face of the rocker arm hole and the cam shaft)

• Four stroke engine oil

(Smear rocker arm shaft and O-ring seals)



2. Install

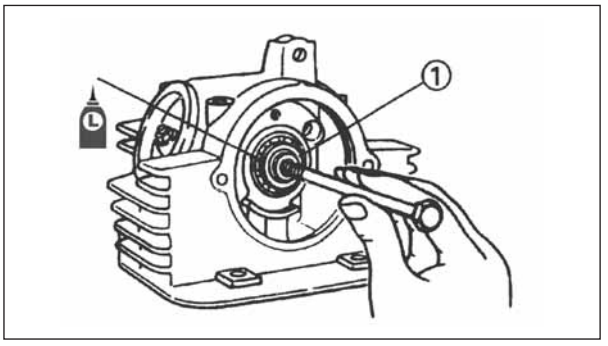
• Rocker arm

• Rocker arm shaft ①

• Align the screw hole of cylinder head to install until the rocker arm is invisible.

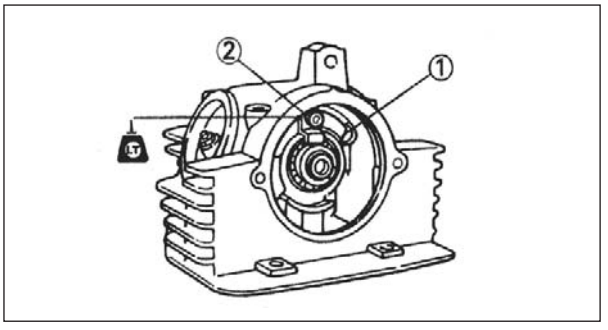
Note

The screw hole is toward outside while installing.



3. Install

• Cam shaft ①

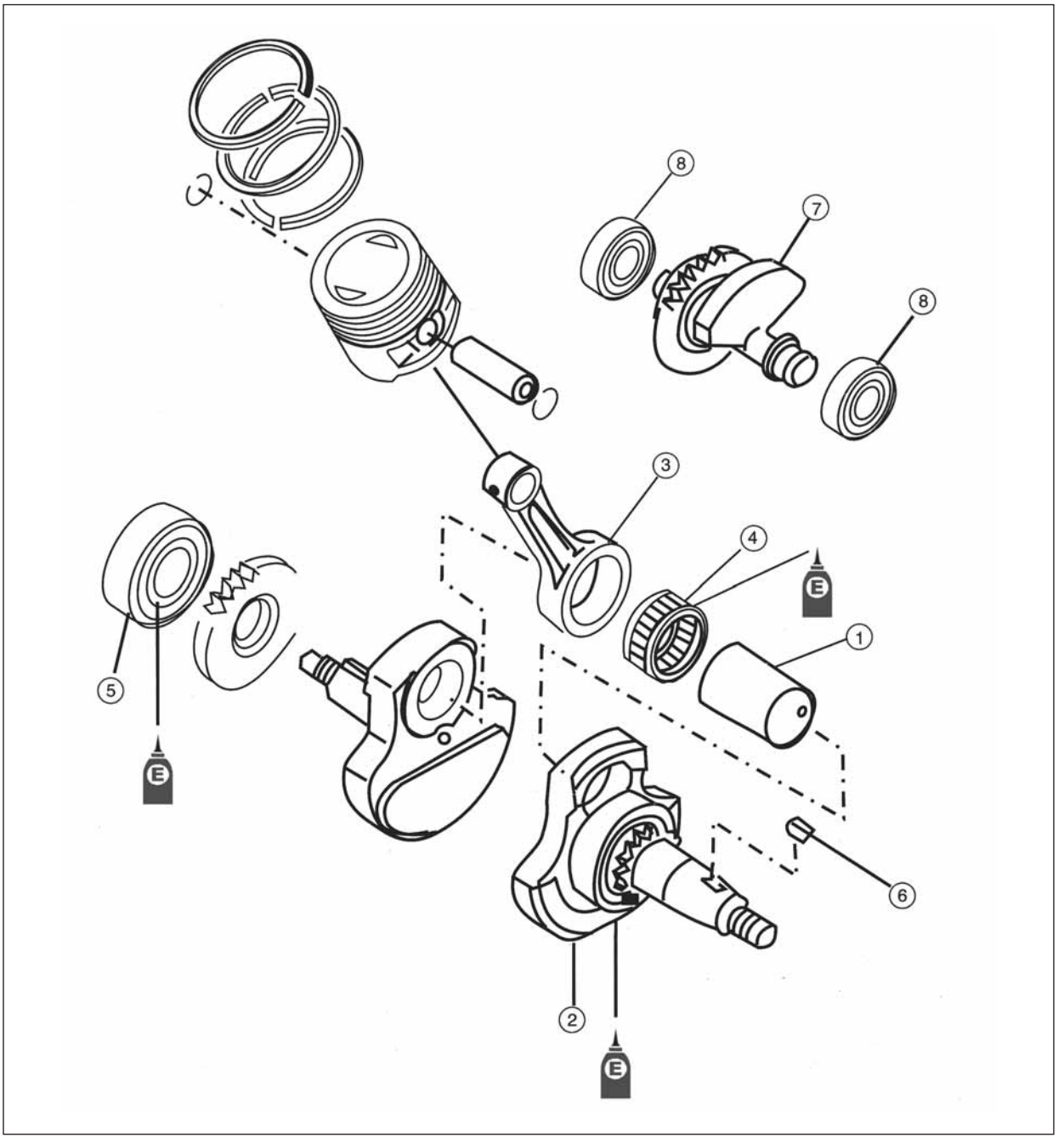


4. Install

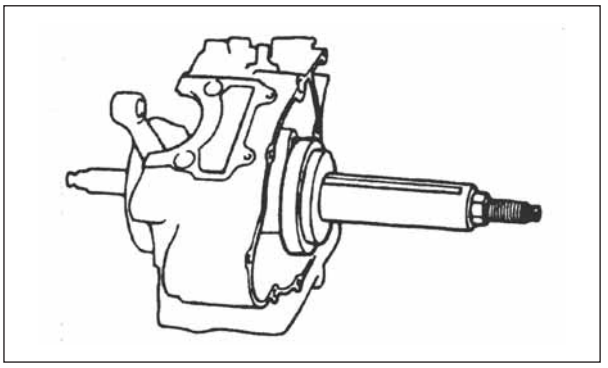
• Pressure plate ①

• Bolt ②

Crankshaft and bala nce device



① Crank pin
② Crank
③ Connecting rod
④Big-end needle bearing
⑤ Crankshaft bearing
⑥ Woodruff key
⑦Balancer
⑧Balancer bearing



Install crankshaft and balancing shaft

1. Install

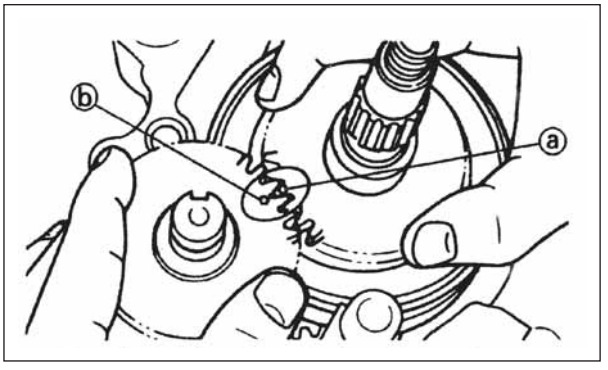
• Crankshaft

	Distance bushing install The crankshaft spanner The crank shaft bolt Reducing coupling

Note

• Maintain the connecting rod in the position of upper dead center, when installing, do not touch the crankcase.

• Do not ham the crankshaft with a hammer.

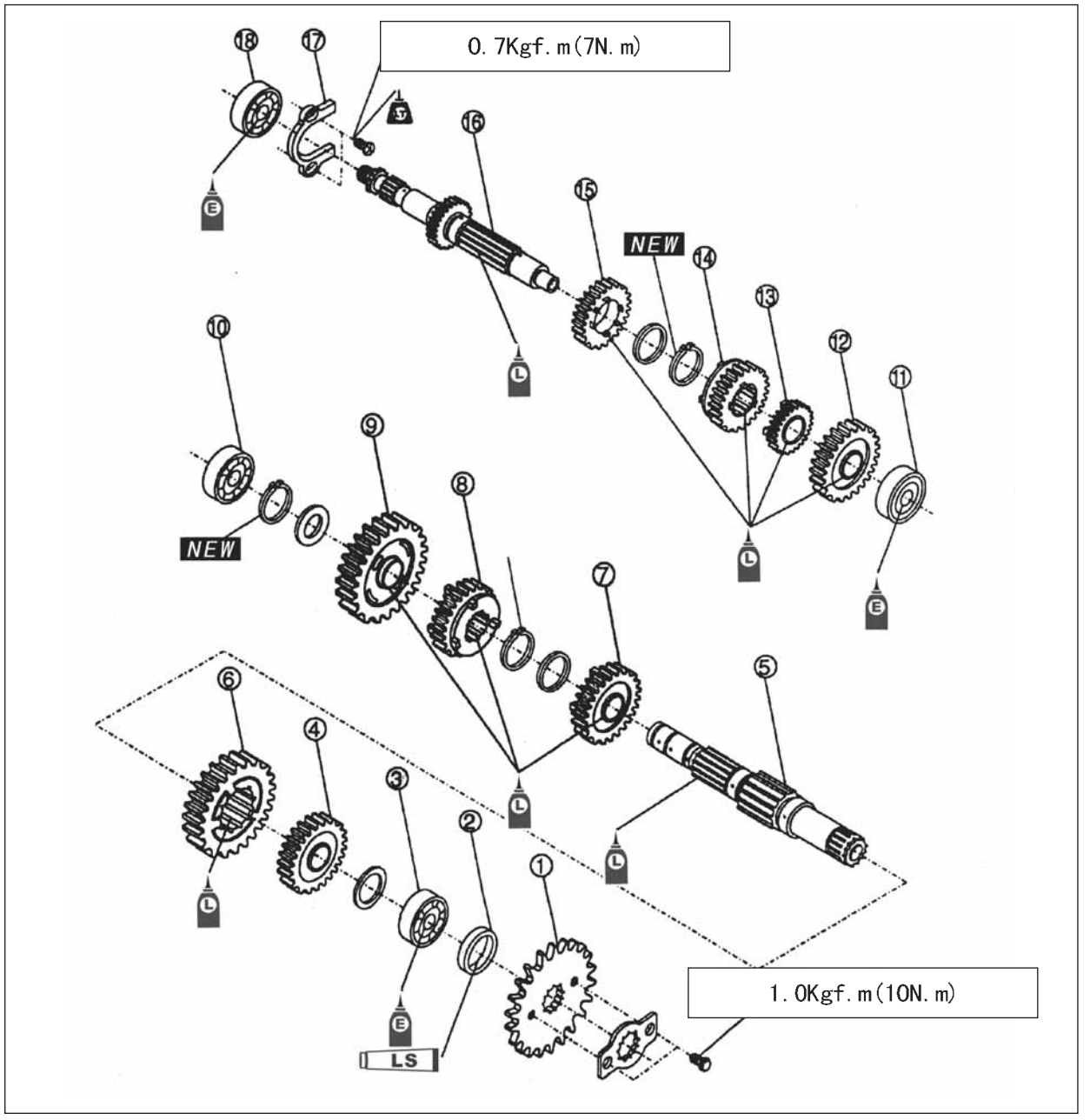


2. Install

• Balance shaft

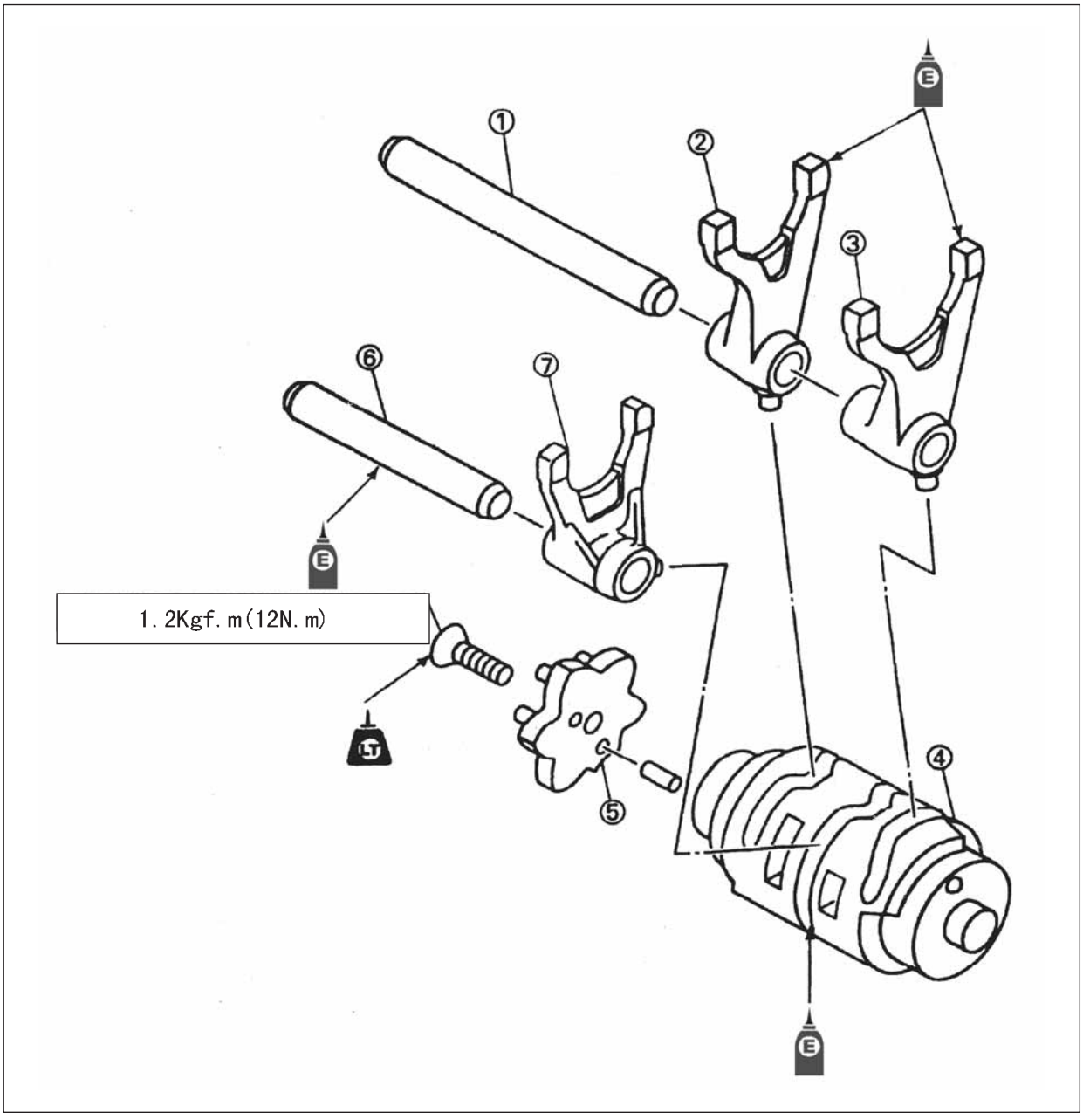
• Align the mark ⓐ on the crank driving gear with the mark ⓑ on the balance shaft gear, and then install them.

Transmission



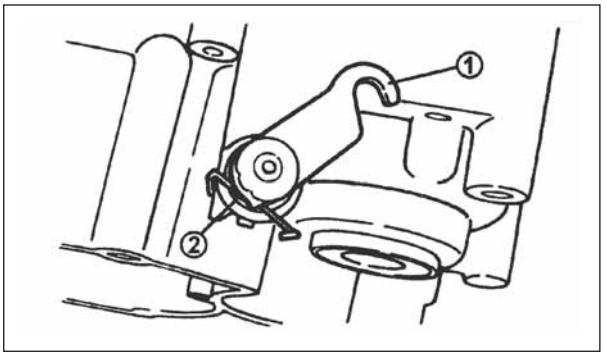
① Driving sprocket
② Oil seal
③ Bearing
④ 5th wheel gear
⑤ Driving shaft
⑥ 2nd wheel gear
⑦ 3rd wheel gear
⑧ 4th wheel gear
⑨ 1st wheel gear
⑩ Bearing
⑪ Bearing
⑫ 5th pinion gear
⑬ 2nd pinion gear
⑭ 3rd pinion gear
⑮ 4th pinion gear
⑯ Main shaft
⑰ Retaining ring
⑱ Bearing

Gear shift cam and fork

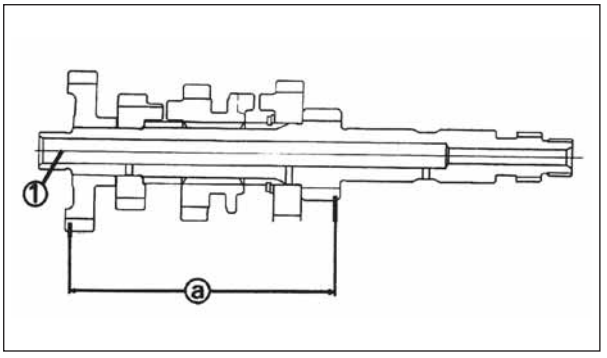


① Fork guide rod 1
② Fork 3
③ Fork 1
④ Cam
⑤ Star gear
⑥ Fork guide rod 2 (short)

Install transmission system, gear-shift cam, gear-shift fork



1. Install
- Clutch push rod 2 ①



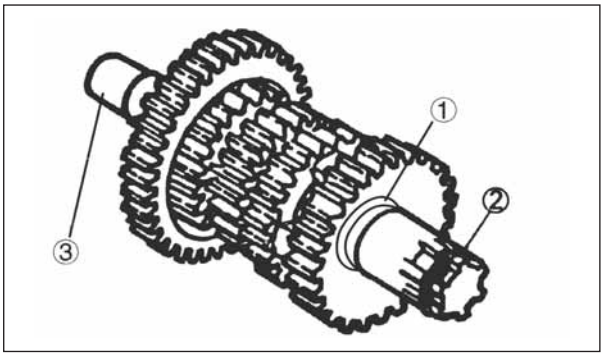
2. Install
- Main shaft

Note

• First, the clutch inside push rod is installed in main shaft inside hole. Then install the main shaft.

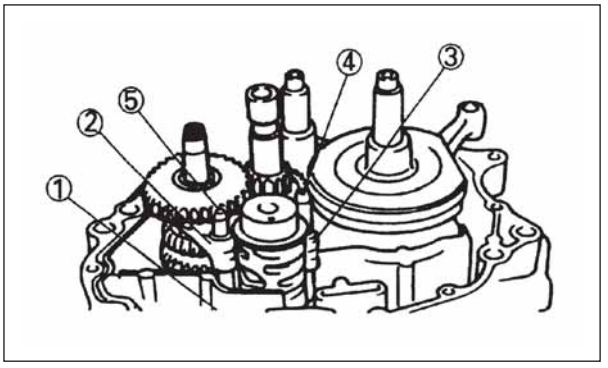
3. Check
- The installing width of the main shaft gear ⓐ

	Standard installing width of the main shaft:82.25-83.45mm



4. Install
- Washer ①
- O-ring ②

Install the O-ring in the mounting groove of the fixed bracket of the driving shaft sprocket. After installing the driving shaft, take off the O-ring.
- Driving shaft ③



5. Install

• Gear shift cam

(Align the salient point on the gear shift cam with the contact point of neutral switch on the crankcase)

• Gear shift fork "L" ①

(One side marked L towards the clutch)

• Gear shift fork "R" ②

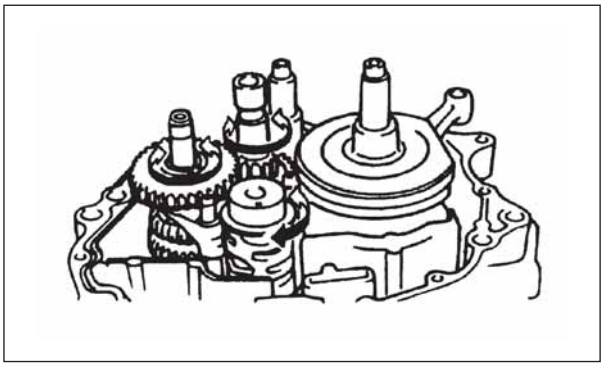
(One side marked R towards the clutch)

• Gear shift fork "C" ③

(One side marked C towards the clutch)

• Gear shift fork guide rod 2 ④

• Gear shift fork guide rod 1 ⑤



6. Check

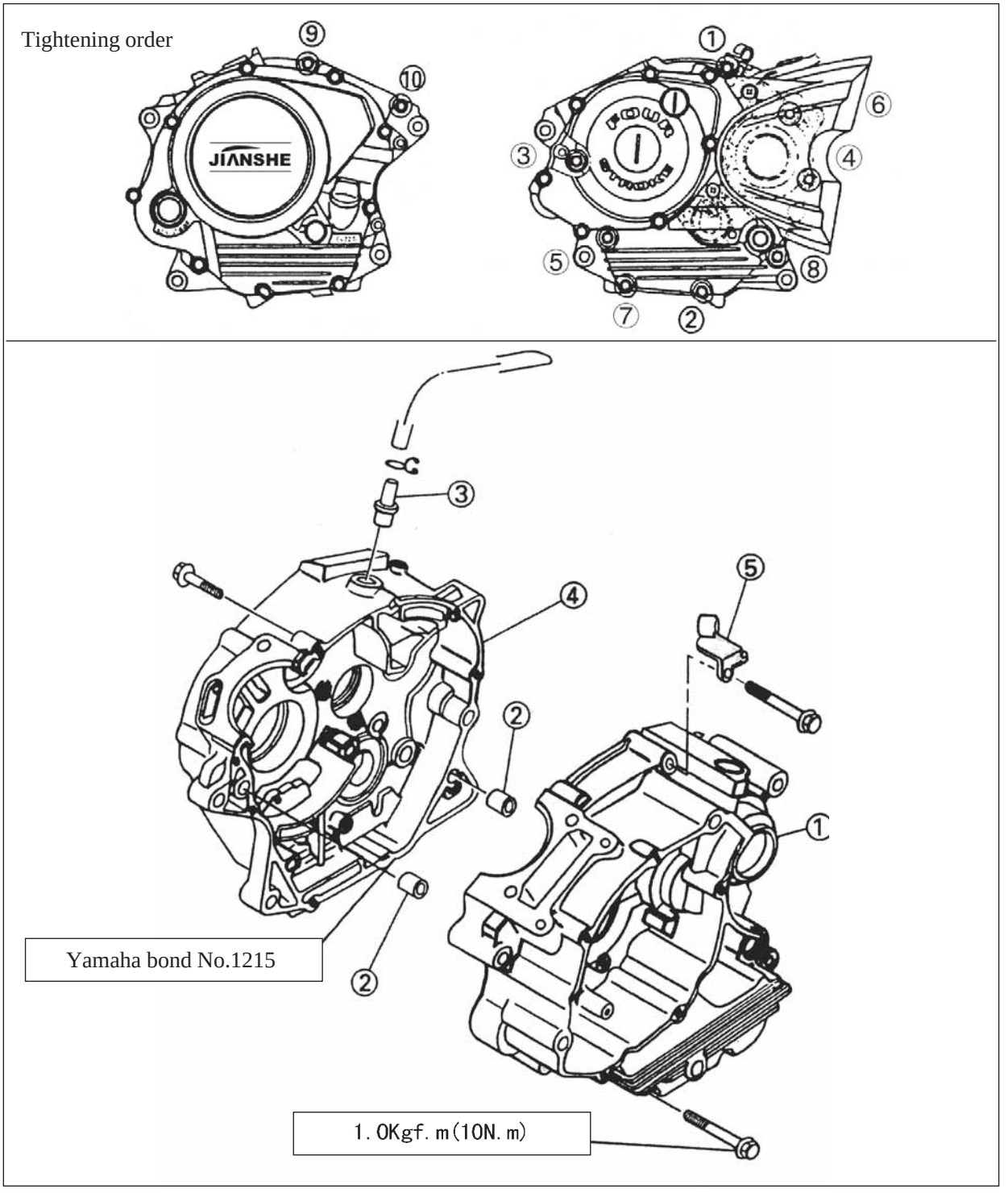
• Gear shift cam operation

Rough operation →Re-installment

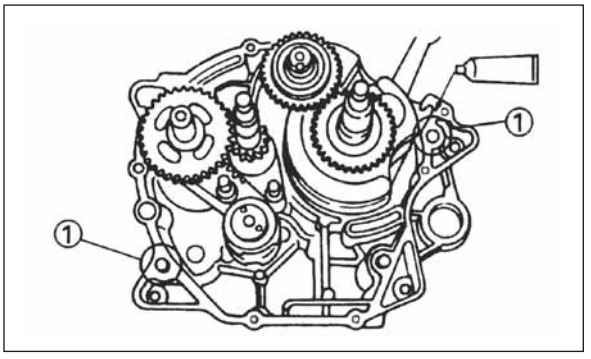
Note

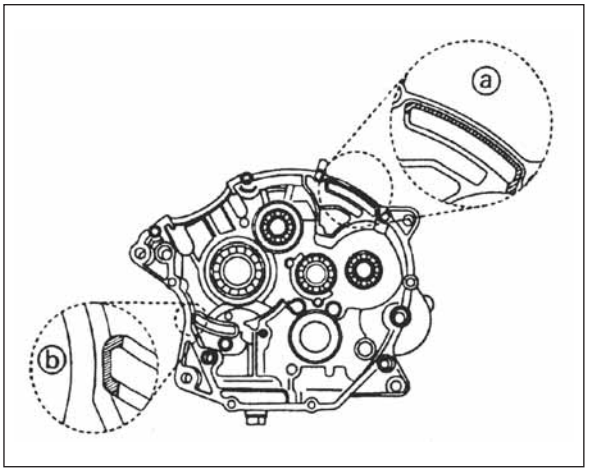
• Turn the gear shift cam to confirm drive and fork operation smoothly with hands.

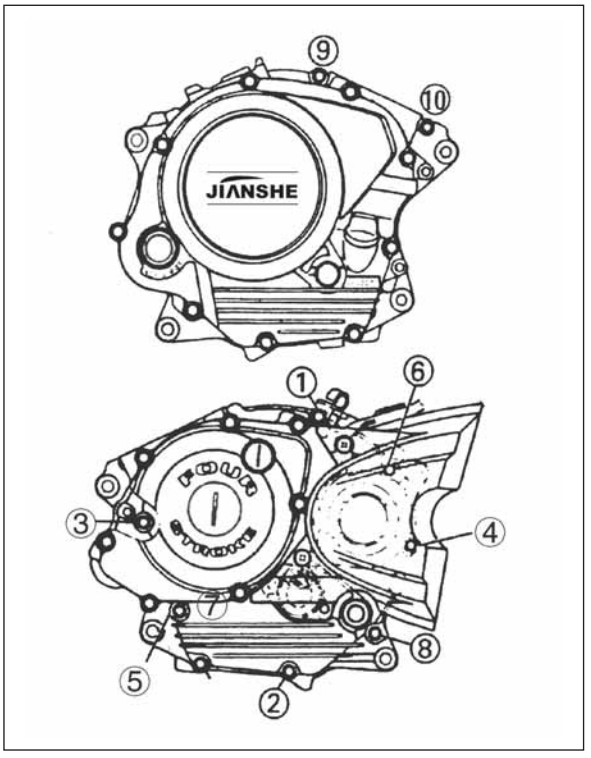
Crankcase



① Left crankcase
② Dowel pin
③ Air pipe
④ Right crankcase
⑤ Clutch fixing clip







Crankcase (right)

1. Smear
• Sealant
(Smear on the contact surface of left or right crankcase)

	Sealant (Yamaha bond.No.1215)

Note

Be must not let any Sealant into lubricating hole. See figure, the place of ⓐ and ⓑ.

2. Install
• Dowel pin ①
3. Install
• Install the right crankcase on the left crankcase.

Note

Before installing and tightening the fixed screw of crankcase, the gear shift cam must be turned with hands to check the transmission in normal operation.

4. Tighten
• Bolt ①②③④⑤⑥⑦⑧⑨⑩(crankcase)

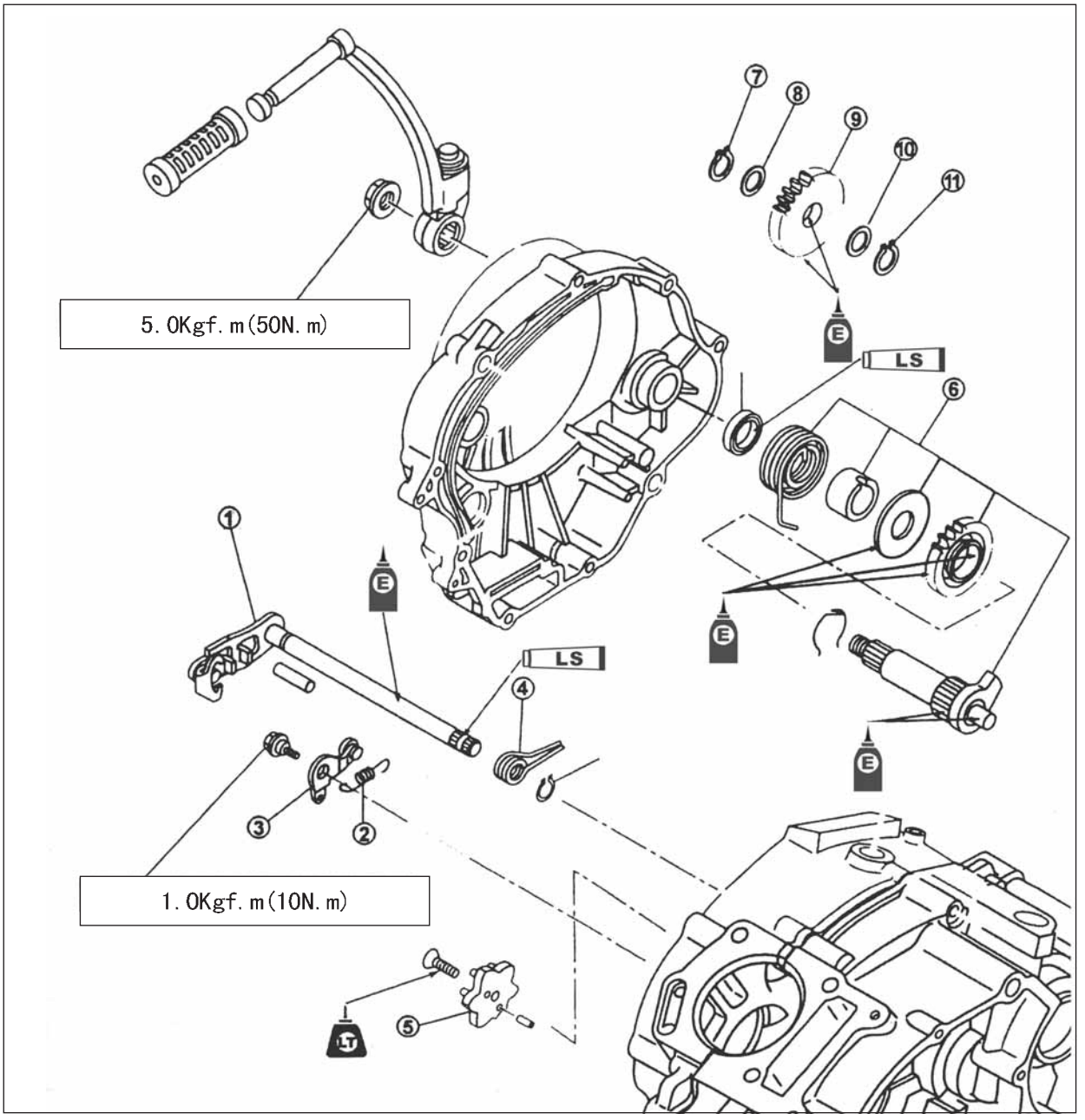
Note

Tighten the bolts one by one, beginning from the minimum number.

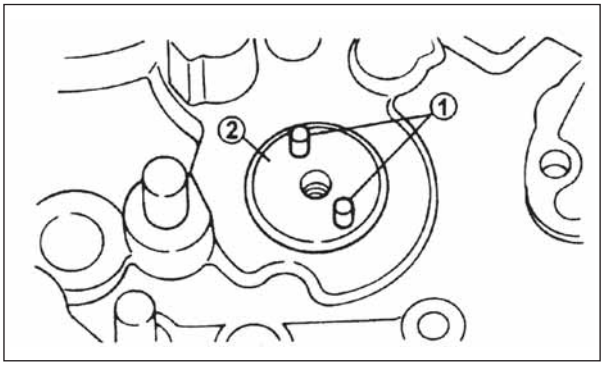
5. Smear
• Four stroke engine oil
(Smear on the crankshaft pin, bearing and crank hole.)

6. Check
• Crankshaft and transmission actions
Tough operation → Repair

Shift shaft, kick starter axle and kick starter idle gear

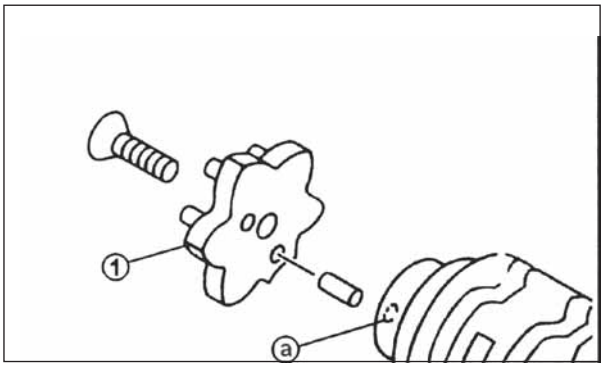


① Shift shaft
② Return spring
③ Stopper
④ Torsion spring
⑤ Star gear
⑥ Starting shaft assy
⑦ Circlip
⑧ Washer
⑨ Idle gear
⑩ Washer
⑪ Circlip



Shifting cam

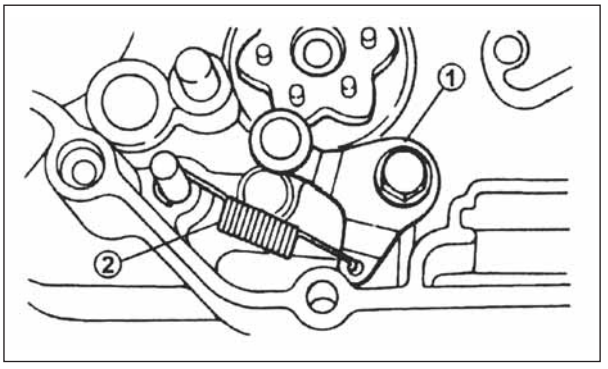
1. Install
- Dowel pin ①



2. Install
- Star gear ①

Note

When install the star gear, the pin hole on the star gear and the pin hole ⓐ on the cam must be installed on the right position.

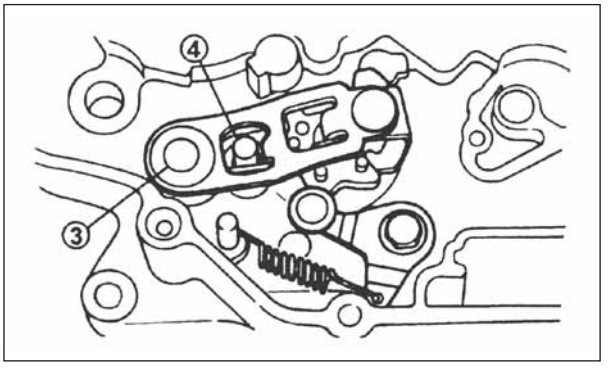


3. Install
- Stopper ①
- Spring ②

	Bolt (stopper):1.0kgf.m(10 N.m)

Note

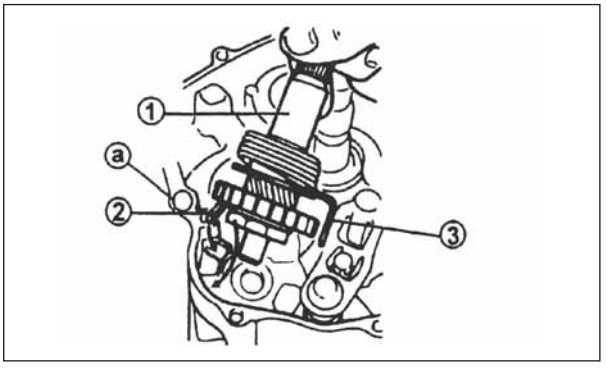
Make the stopper mesh with the shift star gear.



4. Install
- Shift shaft ③

Note

When install the shift shaft, the torsion spring on the shift shaft must be jammed into the dowel pin ④.

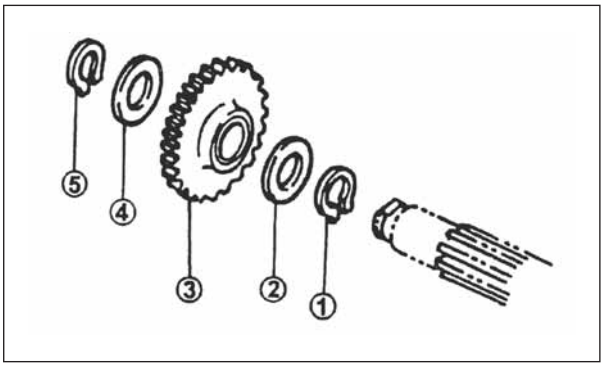


Kick starter axle and kick starter idle gear

1. Install
- Starting shaft ①
- Clamp ②
- Spring ③

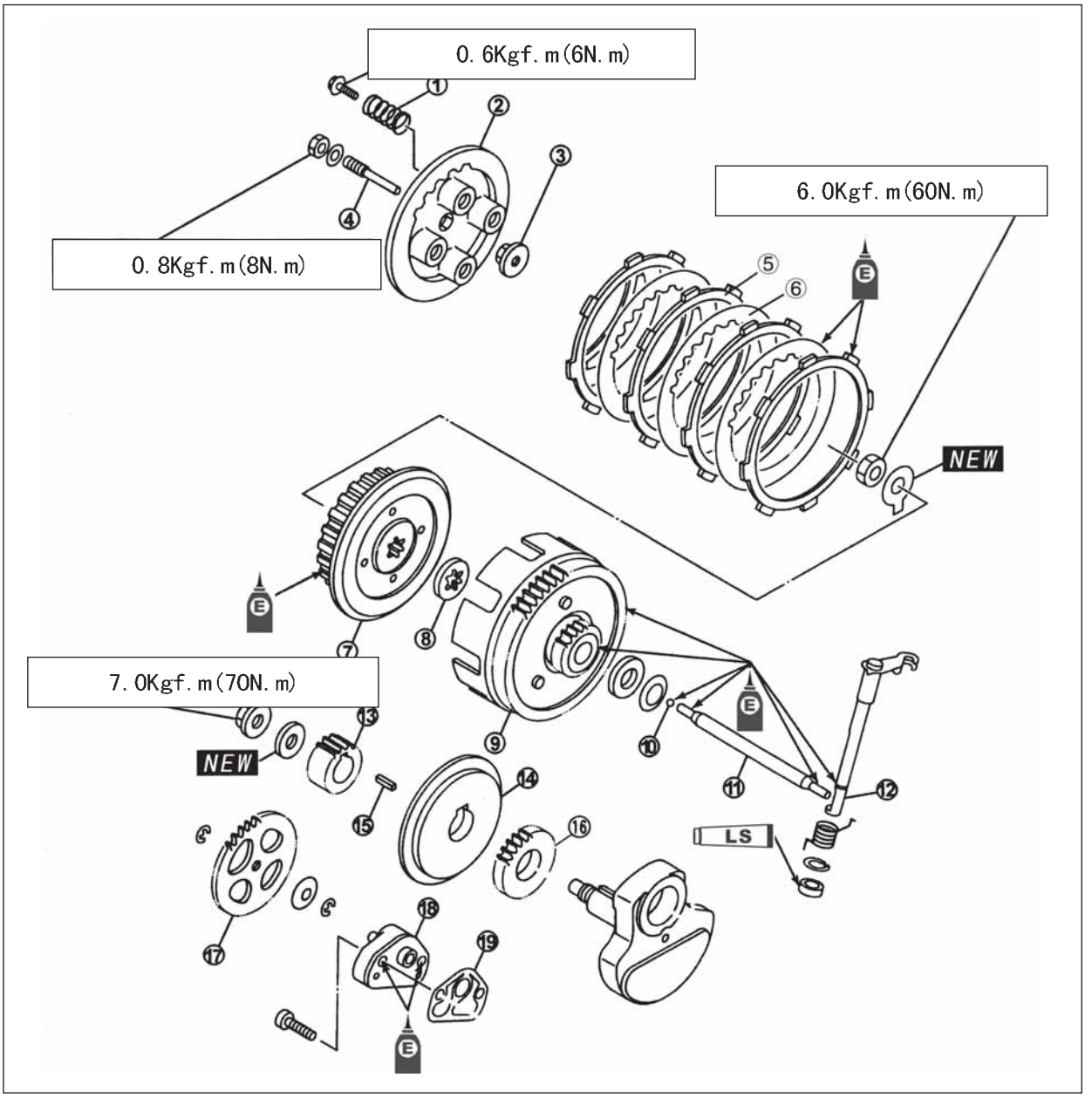
Note

The projection of spring ③ must be installed on the place ⓐ of the case, and the spring can not be fixed till it rotates one lap.

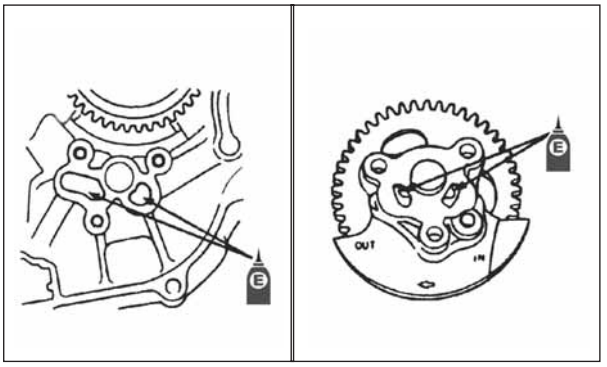


2. Install
- Circlip ①
- Washer ②
- Idle gear ③
- Washer ④
- Circlip ⑤

Clutch, oil pump



① Spring
② Pressure plate
③ Push plate
④ Push rod 1
⑤ Friction lining
⑥ Clutch lining
⑦ Clutch hub
⑧ Stop washer
⑨ Main driven gear
⑩ Steel ball
⑪ Push rod
⑫ Push rod assy
⑬ Driving gear
⑭ Oil filter
⑮ Dowel pin
⑯ Oil pump transmission gear
⑰ Oil pump driving gear
⑱ Oil pump housing
⑲ Oil pump gasket

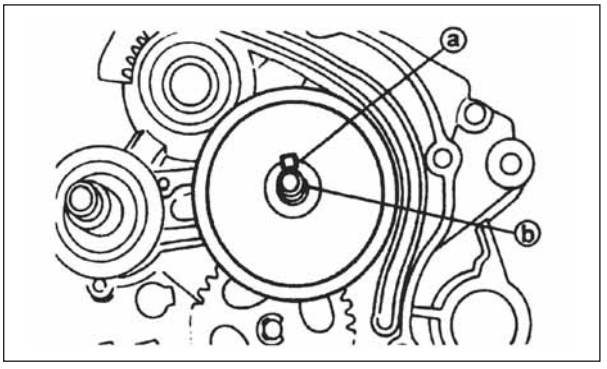


Oil pump

1. Oil charge
   • Four stroke engine oil

(Charge into the oil holes in the crankcase and the oil pump)

2. Install
   • Oil pump

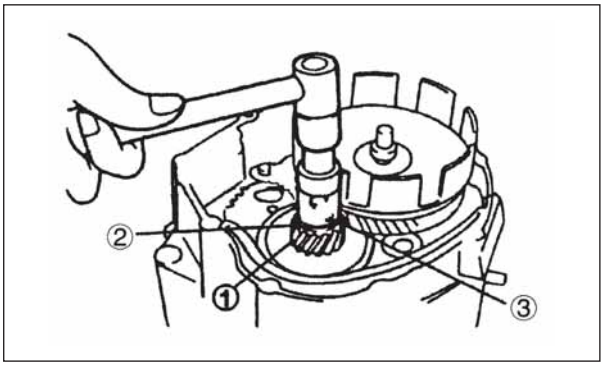


Oil filter

1. Install
   • Oil pump driving gear
   • Centrifugal filter

Note

Install the dowel pin ⓐ of the centrifugal filter in the stop groove of the crankshaft.

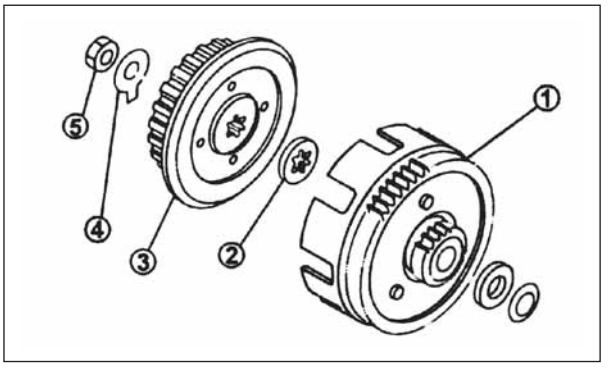


Main driving gear

1. Install
   • Main driving gear ①
   • Dowel pin
   • Washer ②
   • Nut ③

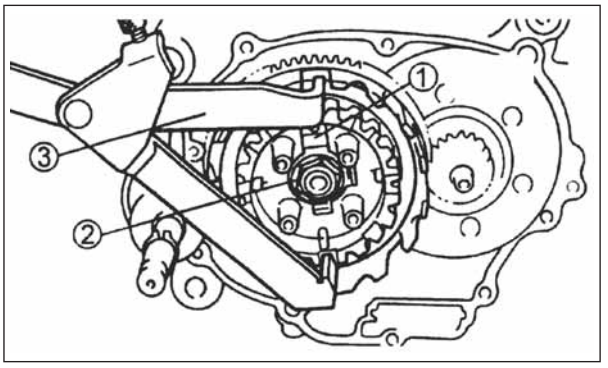
Note

When lock the nut, the rotor must be fixed not to make crankshaft turn. The prohibition against placing aluminium flakes, stripes or copper sheets among the gears to make the crankshaft stop turning.



Clutch

1. Install
- Main driven gear ①
- Thrust washer ②
- Clutch hub ③
- Lock washer ④
- Nut ⑤



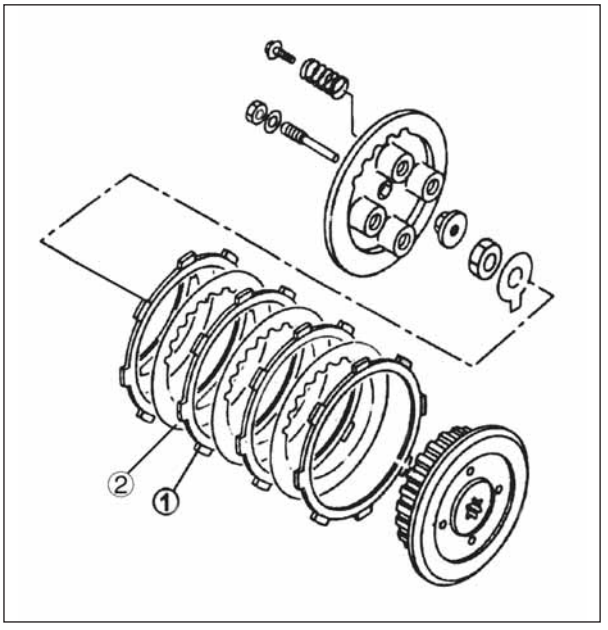
2. Install
- Nut ②

Note

Fix the clutch hub with a clutch clamp③, locking the nut, and bending the lock washer ①.

	Clutch clamp

	nut torque: 6.0 kgf.m(60N.m)

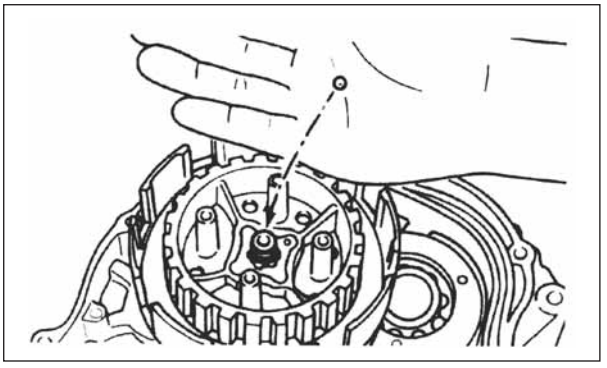


3. Install
- Four friction linings ①
- Three clutch plate ②

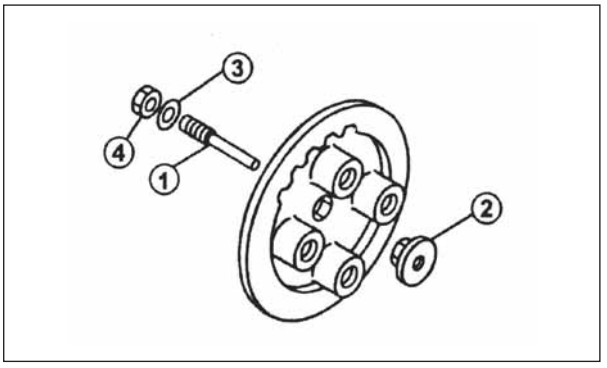
Note

• Smear the clutch plates with four stroke engine oil, and then install it.

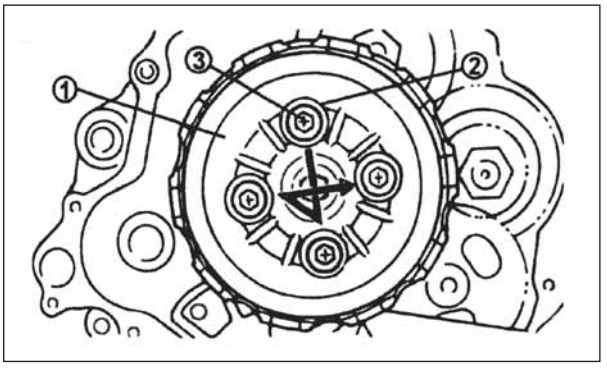
• Install the clutch plate and friction lining on the clutch hub alternately, beginning with the friction lining, ending with the friction lining.



4. Install
• Steel ball



5. Install
• Push rod ①
• Push plate ②
• Washer ③
• Nut ④

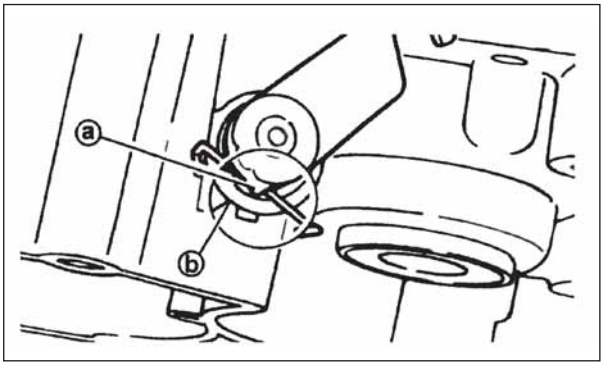


6. Install
• Pressure plate ①
• Spring ②
• Bolt ③

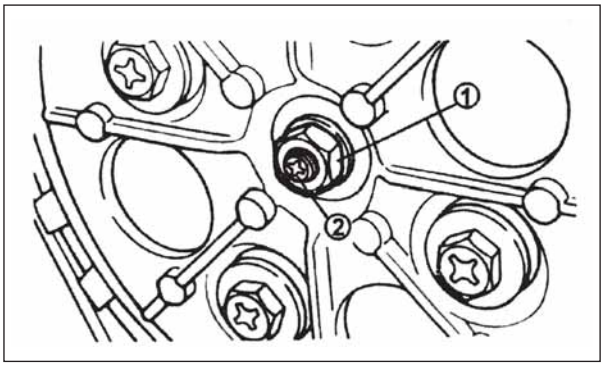
	Mounting torque of the bolt: 0.6kgf.m(6N.m)

Note

Tighten the bolts by diagonal order.



7. Confirm
• Alignment mark of the push rod assy and the crankcase
• Turn the push rod assy anticlockwise thoroughly, confirming whether the objection ⓐ of the push rod aligns with the one ⓑ of the alignment mark of the crankcase or not.
Unaligned →Adjust



8. Adjustment

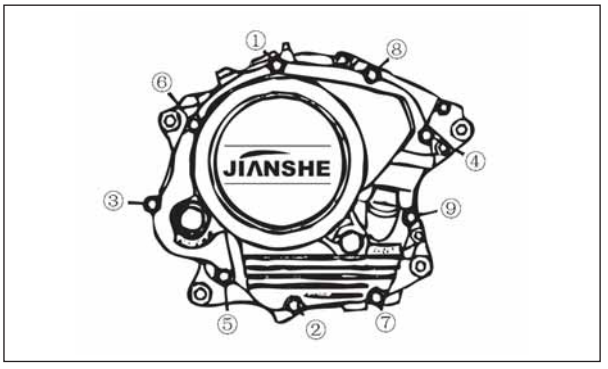
• Alignment mark of the push rod ③ and the crankcase

• Loosen the nut①, turn the push rod anticlockwise thoroughly

• Turn the push rod ② right and left for adjusting until ⓐ aligns with ⓑ.

• Lock the nut after adjusting.

	Lock torque of the nut: 0.8kgf.m(8N.m)

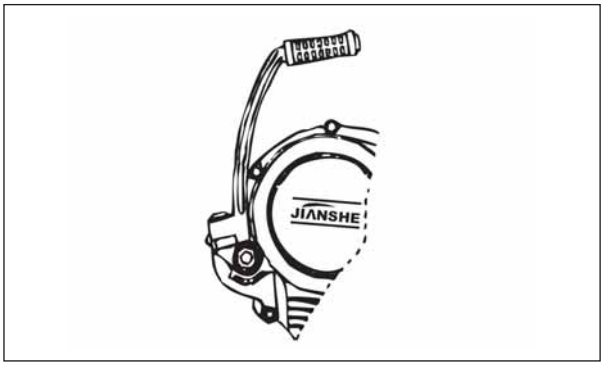


9. Install

• Gasket (new)

• Right case cover

	Mounting torque of the case cover: 1.0kgf.m(10 N.m)

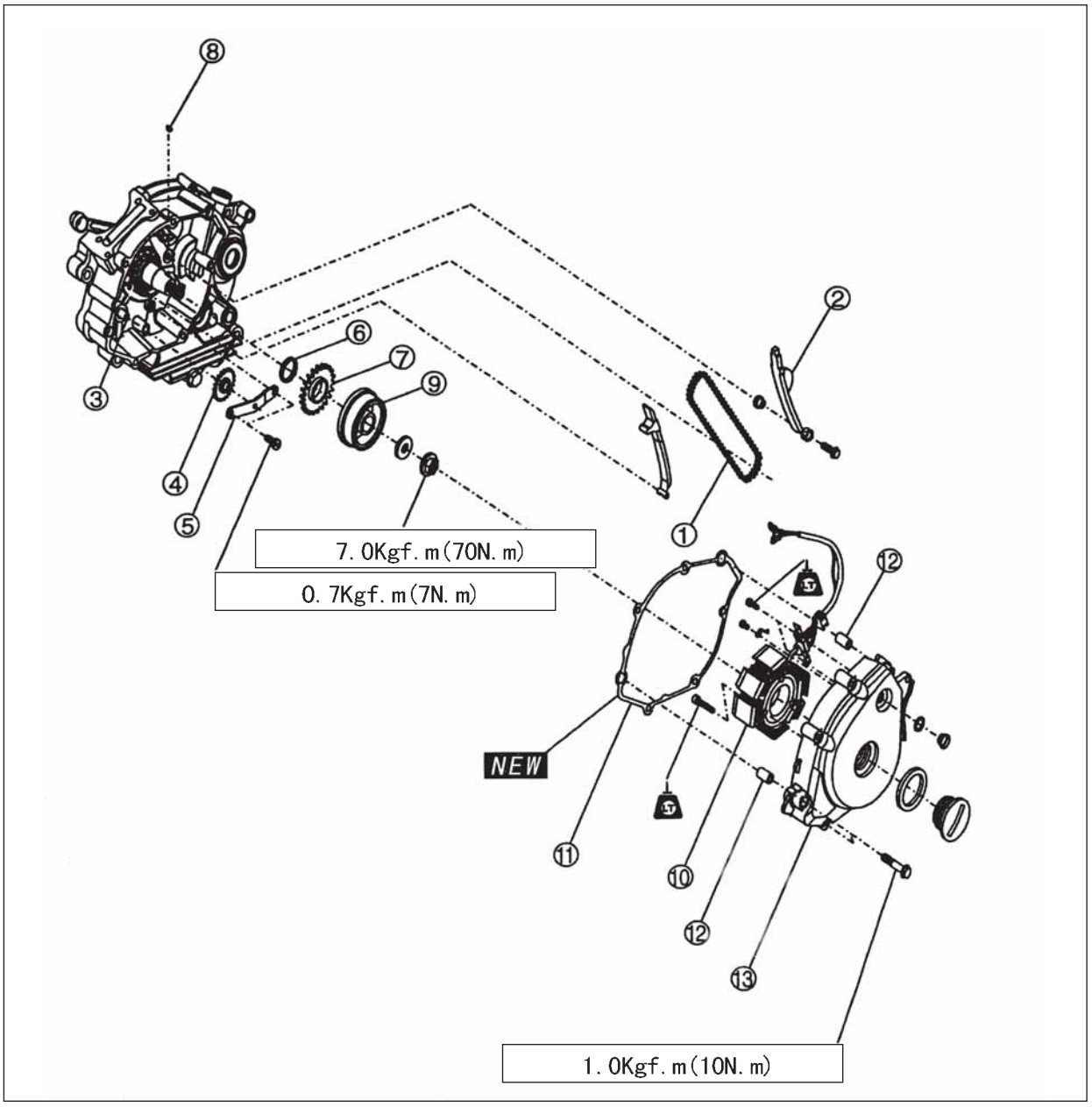


10. Install

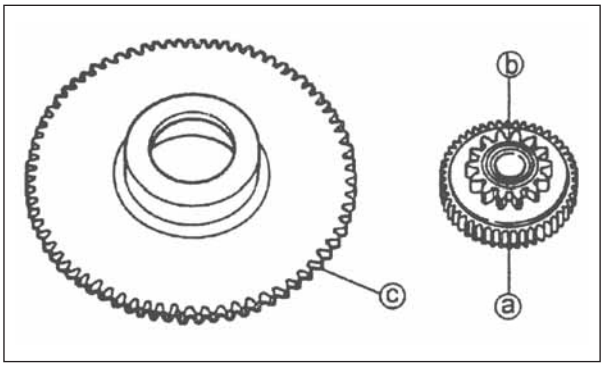
• Kick-starting rod

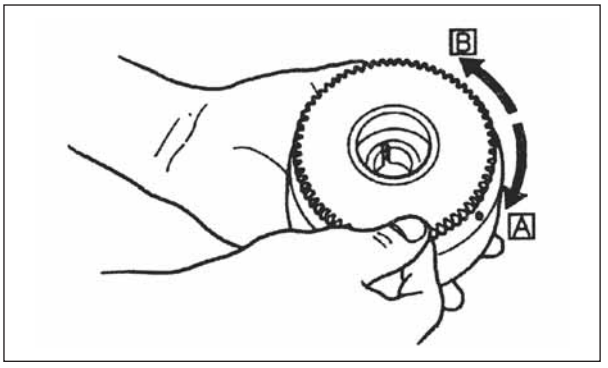
	Mounting torque of the kick-starting rod: 5.0kgf.m(50 N.m)

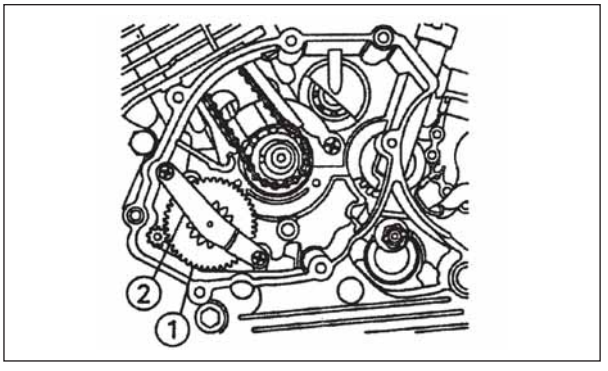
Timing system



① Timing chain
② Chain guide plate
③ Dowel shaft
④ Idle starting gear 1
⑤ Pressure plate
⑥ Washer
⑦ Starting gear 2
⑧ Woodruff key
⑨ Rotor
⑩ Stator
⑪ Gasket
⑫ Dowel pin
⑬ Left case cover







Rotor and starting mechanism

1. Check

• Check the gear condition ⓐ ⓑ ⓒ of starting gear 1 and 2.

Burr, Scraps, out-of-flatness, wear → Replace

2. Check

Starting gear 2 (contact surface)

Pit corrosion, wear, damage → Replace

****

Check steps

• Install the starter gear in the clutch of the starter, and hold the clutch.

• When turn the starter gear clockwise A, the clutch of the starter mesh with its gear, or the clutch of the starter goes wrong and be replaced.

• When turn the starter gear anticlockwise B, the clutch gear of the starter should be turned freely, or the clutch of the starter goes wrong and be replaced.

****

Chain guide plate and idle gear

1. Install

• Timing chain

• Chain guide plate

	Mounting torque 1.0kgf.m(10 N.m)

Note

First, the timing chain must be installed, and then the guide plate is fixed.

2. Install

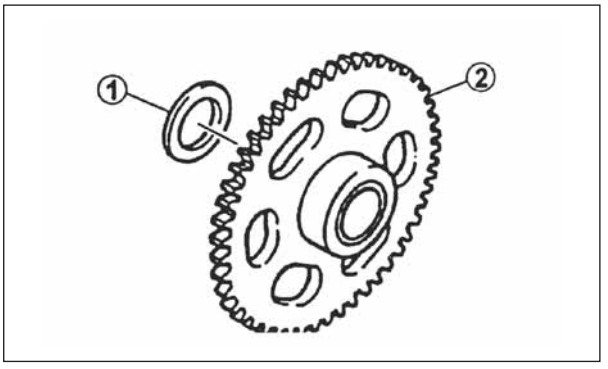
• Starting idle gear ①

• Pressure plate ②

	Mounting torque 0.7kgf.m(7N.m)

3. Smear
- Four-stroke engine oil

(Smear shaft collar and starter drive mechanism)

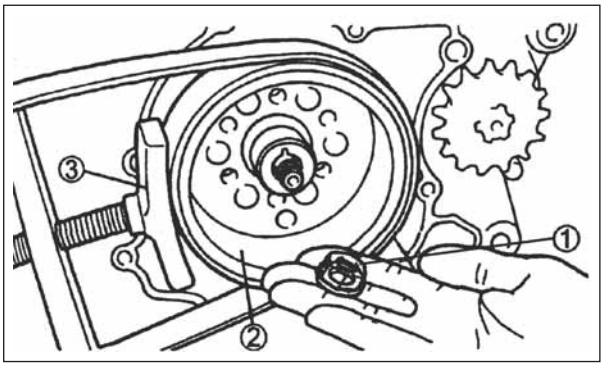


4. Install
- Washer ①
- Starting gear ②

5. Install
- Woodruff key
- Rotor

Note

Eliminate foreign materials and the dirt on the rotor, and then fixed it.



6. Lock
- Nut

	Locking torque 7.0kgf.m(70 N.m)

Note

Fix the rotor with sliding stopping tool ③, lock the rotor ② with the nut with the washer.

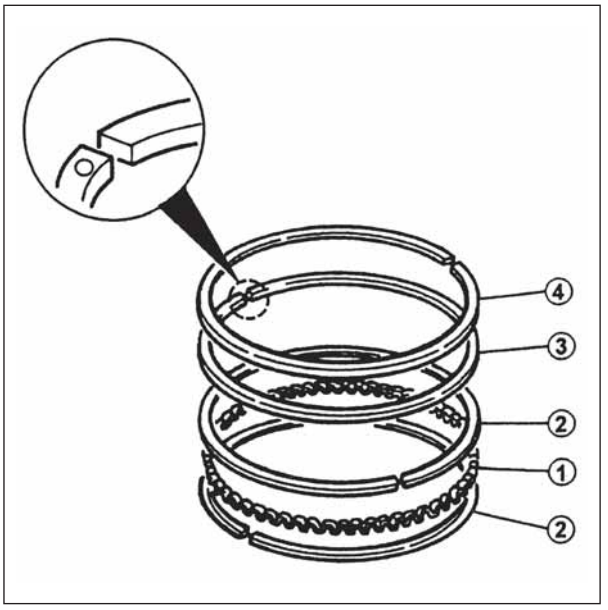
	Sliding stopping tool

7. Install
- Dowel pin
- Gasket NEW
- Left case cover

	Case cover locking torque 1.0kgf.m(10 N.m)

Note

The left case cover must be installed after the main driving gear lock nut of the right case is installed.



Piston and piston ring

1. Piston installment

- Oil-bearing baffle ②
- Scraper baffle ②
- Second ring ③
- First ring ④

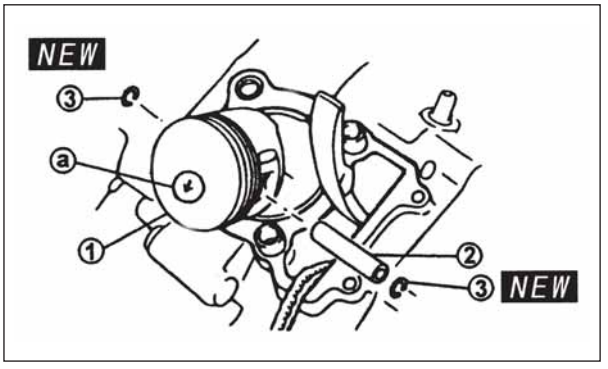
Note

• When install the first ring and second ring, dividing top and bottom. The mark toward the top.

• When install the oil ring, the scraper baffle should be installed first ②, and then install the Oil-bearing baffle, finally install the scraper baffle.

• After assembling, make sure that the piston ring can turn smoothly.

• The connecting place among each ring should have 120° of angle difference.



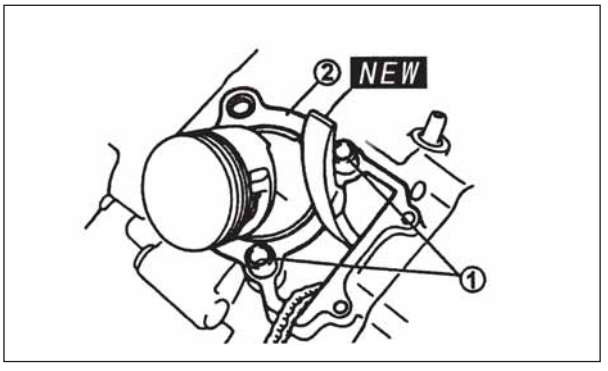
2. Install

- Piston ①
- Piston pin ②
- Piston pin circlip ③ NEW

Note

• The arrow mark ⓐ must toward the front of engine.

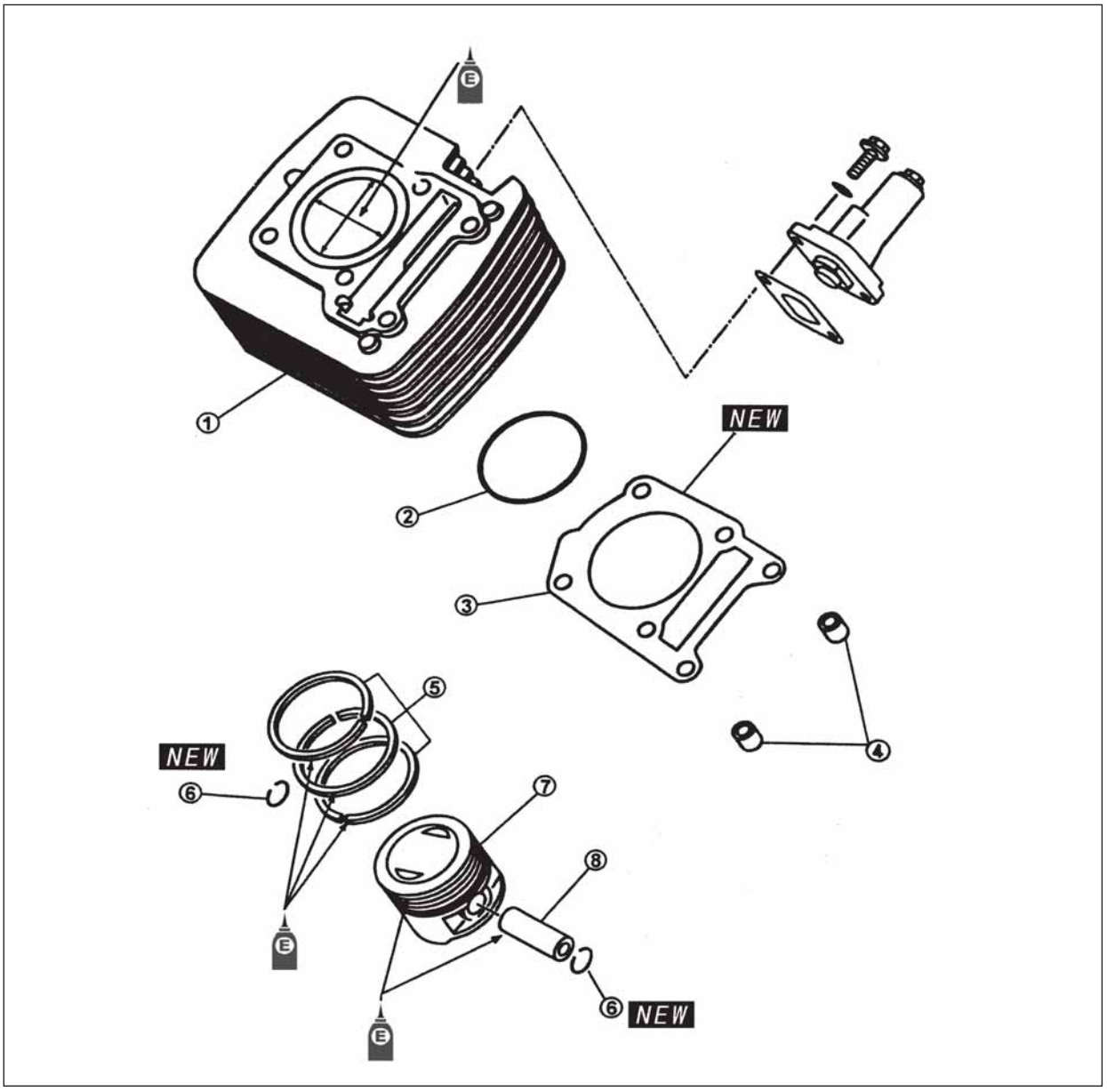
• Before installing the piston pin circlip, the crank-case is covered with clean towel or cloth.



3. Install

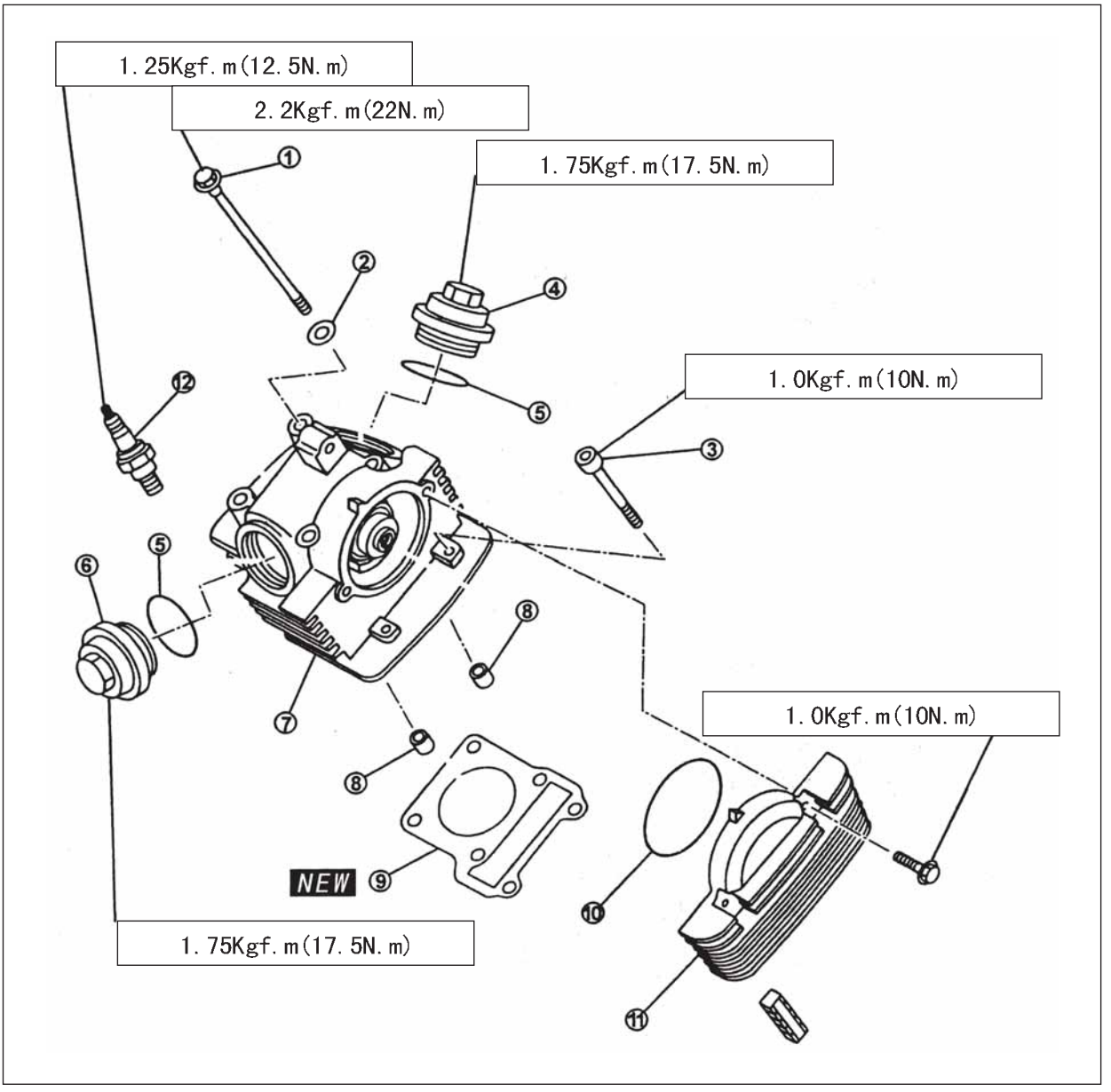
- Dowel pin ①
- Gasket ② NEW

Cylinder and piston



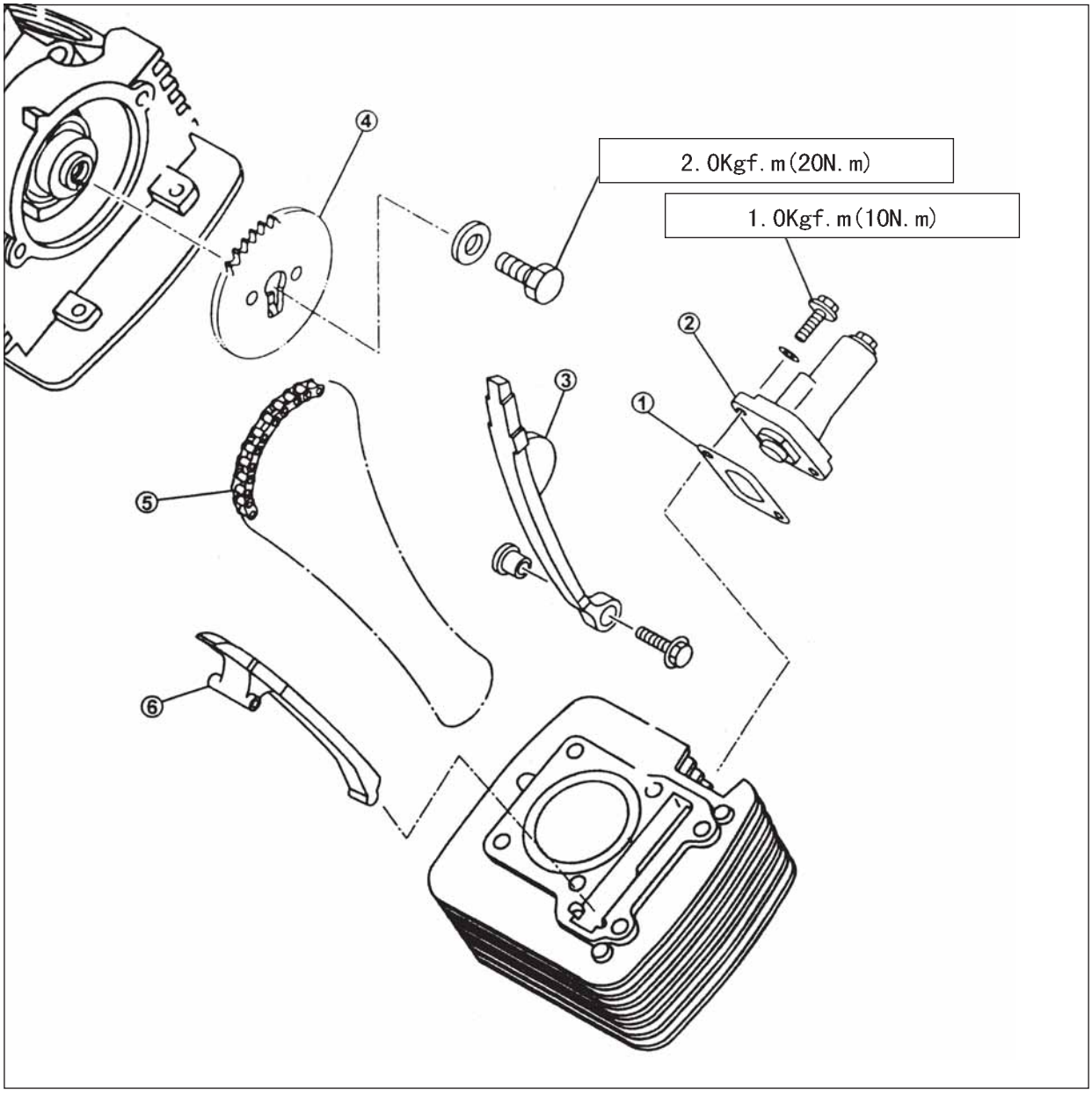
①Cylinder
② O-ring
③ Gasket
④ Dowel pin
⑤ Piston ring
⑥ Piston pin circlip
⑦ Piston
⑧ Piston pin

Cylinder head



①Bolt
② Copper washer
③ Inner hexagon bolt
④ Valve cover (intake)
⑤ O-ring
⑥ Valve cover (exhaust)
⑦Cylinder head
⑧ Dowel pin
⑨ Steel gasket
⑩ O-ring
⑪ Cylinder head side cover
⑫ spark plug

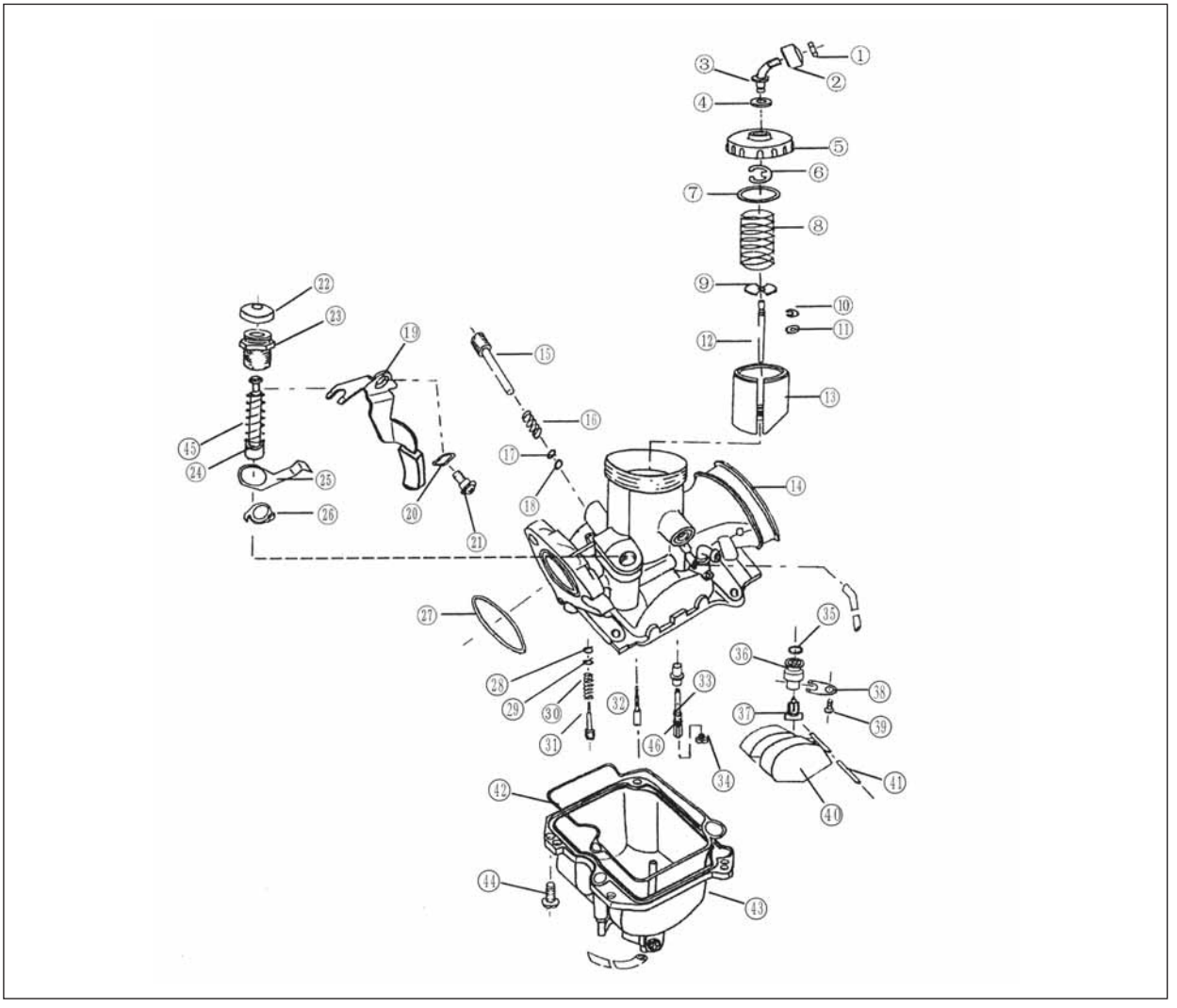
Cam shaft and dowel pin



① Gasket
② Tensioner
③Chain guide plate (intake)
④ Timing sprocket
⑤ Timing chain
⑥ Chain guide plate (exhaust)

Intake and exhaust system

Carburetor



① Adjusting screw of throttle cable
② Rubber cover
③ Guide tube of throttle cable
④ Rubber washer.
⑤ Top cover cap
⑥ circlip
⑦ Rubber washer
⑧ plunger spring
⑨ Needle pressure plate
⑩ Elastic clamp ring
⑪ Needle washer
⑫ Fuel needle
⑬ Throttle valve
⑭ Carburetor body
⑮ Idle screw
⑯ Spring
⑰ Washer
⑱ Rubber washer
⑲ Choke lever
⑳ Wave washer
㉑ Screw
㉒ Rubber cap
㉓ Guide holder
㉔ Choke valve
㉕ Spring piece
㉖ Fixed plate
㉗ O-ring
㉘ Rubber washer
㉙ Washer
㉚ Spring
㉛ Ps adjusting screw
㉜ Idling fuel jet
㉝ Main nozzle
㉞ Main jet
㉟ O-ring
㊱ Needle valve seat
㊲ Needle valve
㊳ Fixing catch
㊴ Bolt
㊵ Float unit
㊶ Float pin
㊷ Seal shim
㊸ Floater cover
㊹ Bolt
㊺ Spring
㊻ O-ring

Disassemble

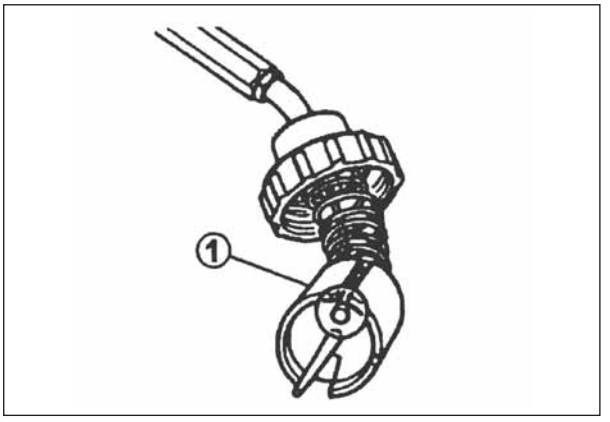
1. Disassemble
- Guide tube of throttle cable
- Carburetor body

Disconnect

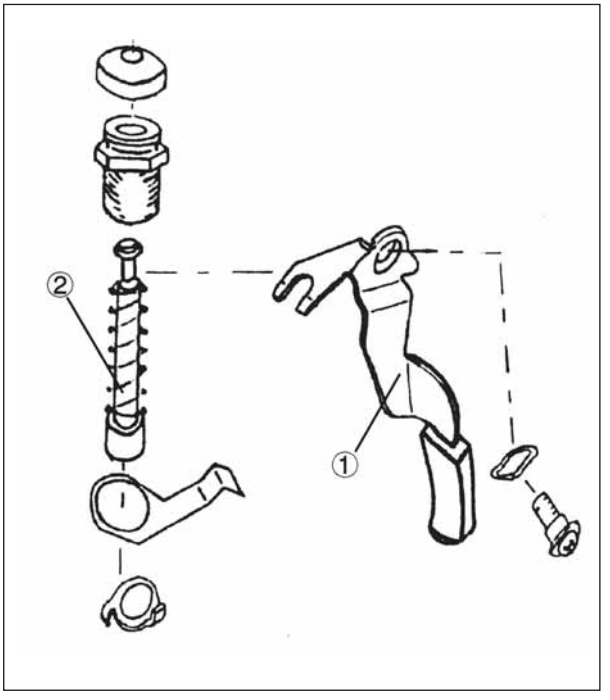
1. Loosen

Drain screw

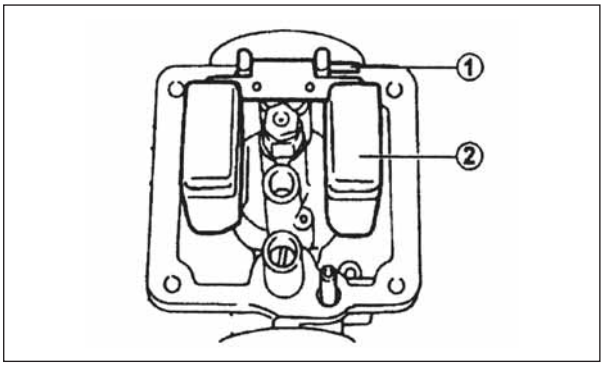
2. Disassemble
- Throttle valve ①



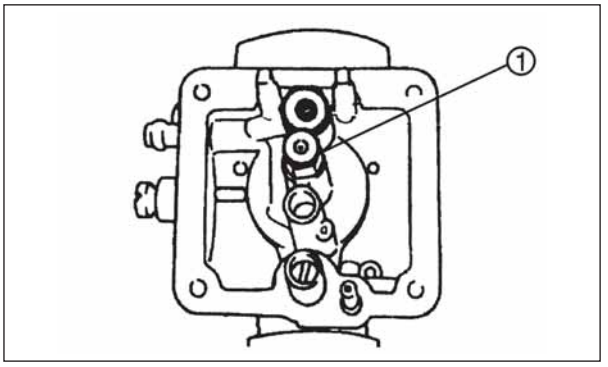
3. Disassemble
- Choke lever ①
- Choke valve ②



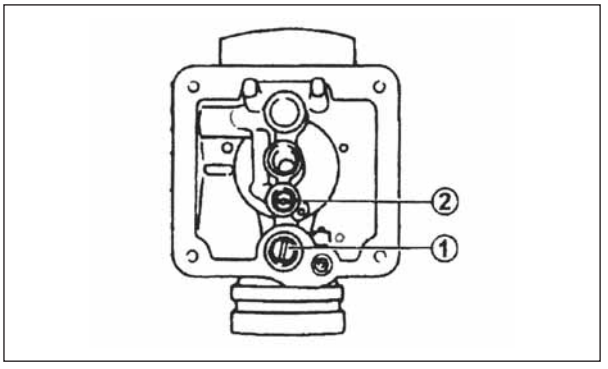
4. Disassemble
- Float chamber



5. Disassemble
- Float pin ①
- Floater ②
- Needle valve
- Needle valve seating



6. Disassemble
- Main jet ①
- Main nozzle
- O-ring



7. Disassemble
- Idle fuel jet ②

8. Disassemble
- P.S adjusting screw ①

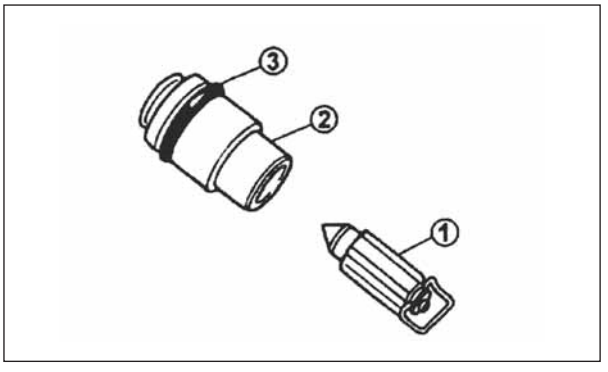
Check

1. Check
- Carburetor mixing chamber

Pollution →Clean

2. Check
- Floater

Damage → Replace

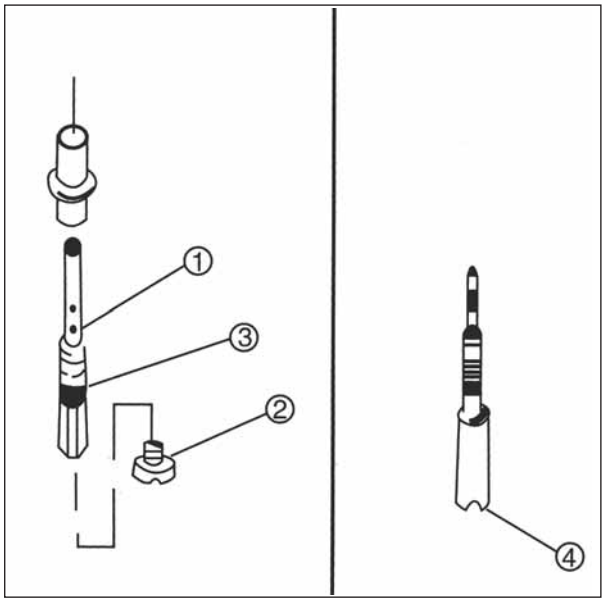


3. Check
- Needle valve ①
- Needle valve seating ② O-ring ③

Wear → Replace

Note

The needle and the needle valve seating must be replaced.



4. Check

- Main nozzle ①
- Main jet ②
- O-ring ③
- Idle fuel jet ④

Pollution →Clean

Note

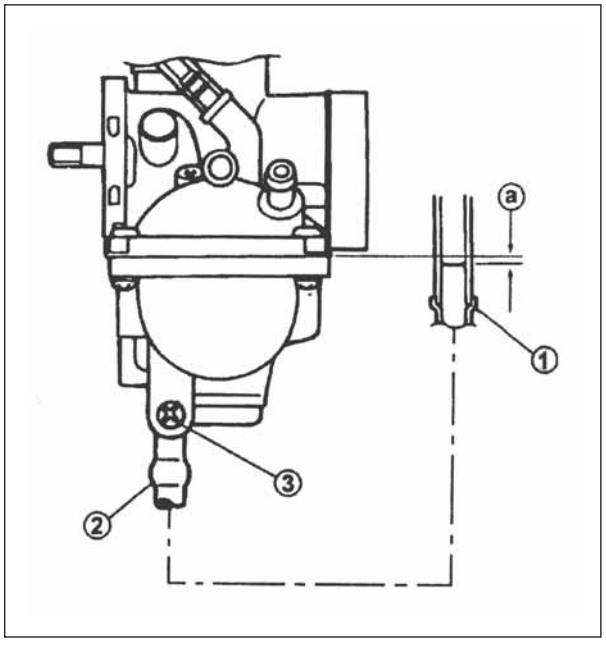
Blow down each jet with compress air.

Assemble

Assemble them contrary to disassemble steps.

Note

Clean all the parts with clean gasoline before assembling once more.



Adjust fuel level

1. Measurement

- Fuel level ⓐ

	Fuel level ⓐ: 6.6-7.6mm

*Be should locate the middle position of the float chamber below the edge of carburetor housing.

Out of specification → Adjustment

****

Measure fuel level and adjusting steps

- Place the motorcycle in the position of level, and made sure that the carburetor maintain in verticality
- Connect the fuel liquidometer ① to the drain oil tube.

	Fuel liquidometer

• Loosen drain-hole screw ③, warming the engine for several minutes.

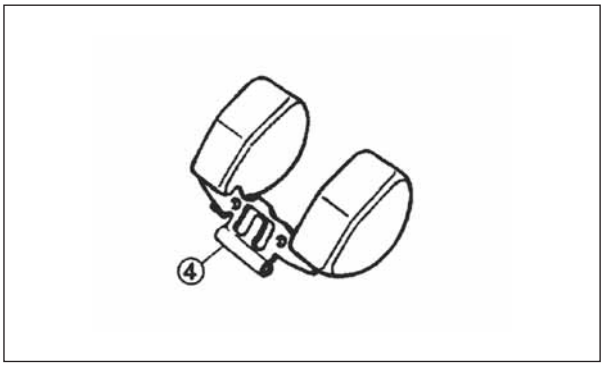
• Maintain the fuel liquidometer in verticality, making it approach the reticle of the float chamber.

• Measure the fuel level with fuel liquidometer

Note

The readings on the pipeline of the two sides of the carburetor are equal.

****



2. If the fuel level is not correct, adjusting:

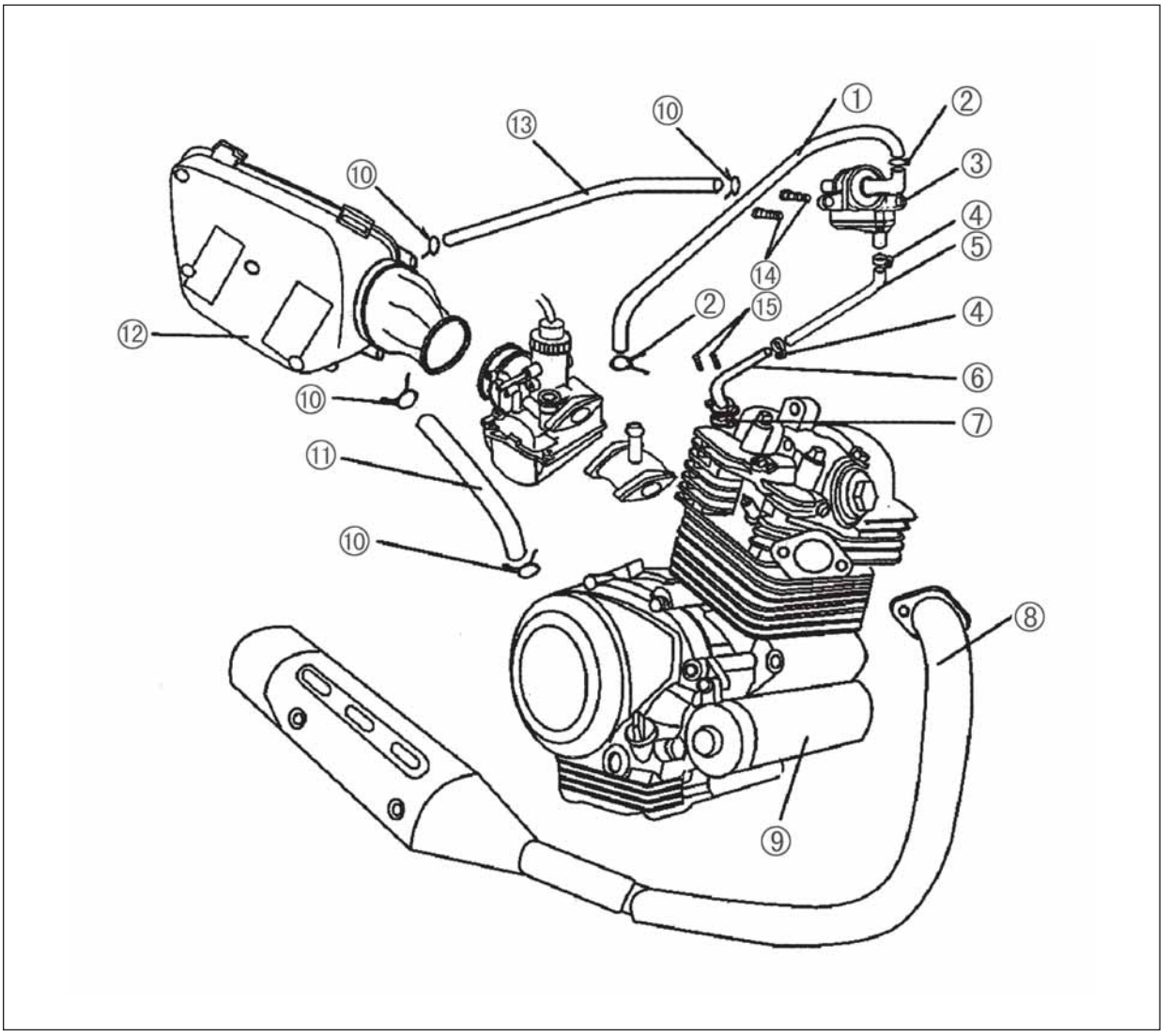
• Disassemble the carburetor

• Check valve seating and needle valve

• If both of them are normal, the floater tail④ should be bended to adjust fuel level.

• Check the fuel level once more.

Intake, exhaust system

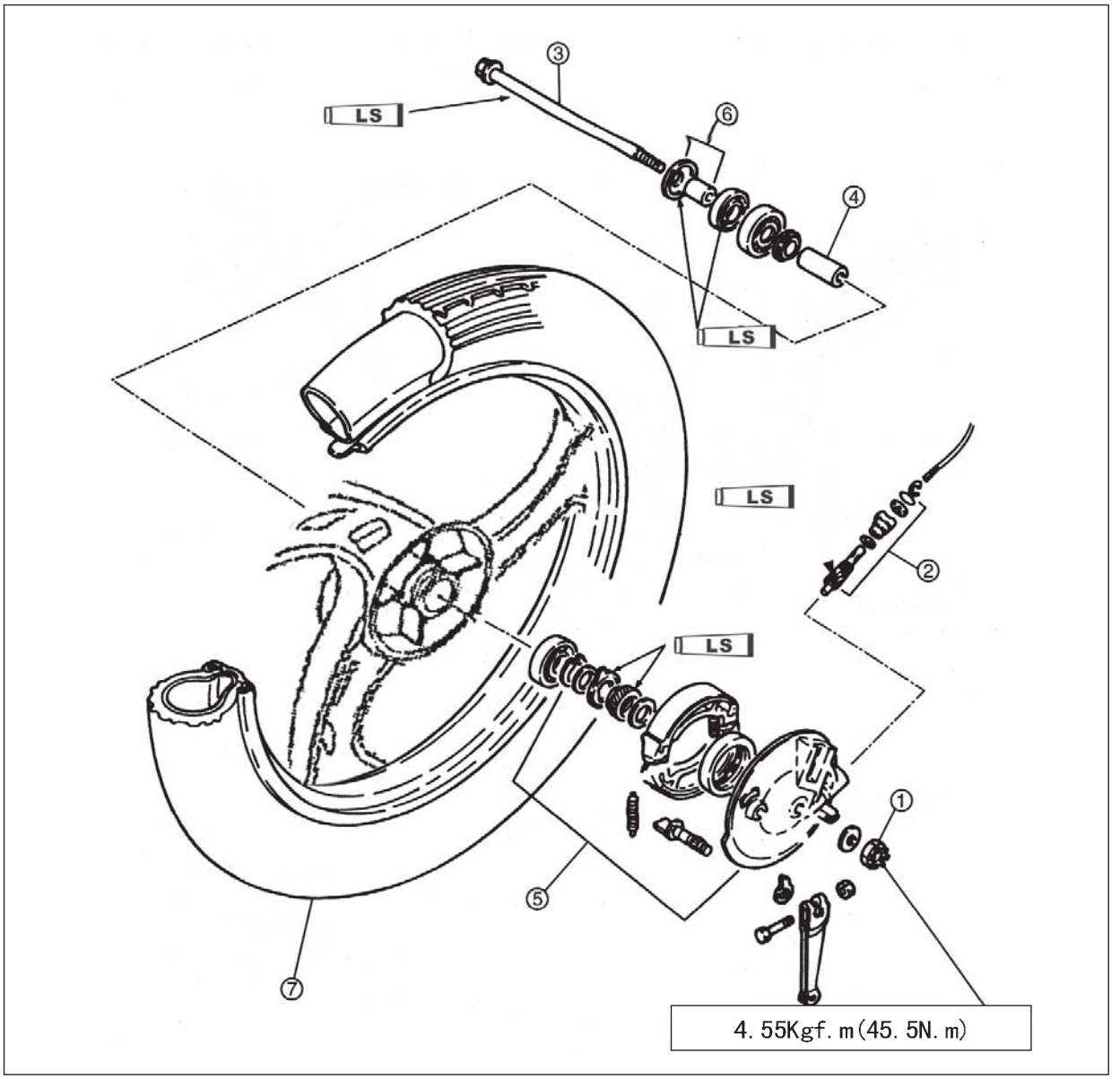


① Negative pressure pipe
② Wire clip
③ Complementary gas valve
④ Circlip
⑤ Complementary gas 1 pipe
⑥ Syphon assy
⑦ Washer plate
⑧ Muffler assy
⑨ Engine assy
⑩ wire clip
⑪ Exhaust gas cycle tube
⑫ Air filter assy
⑬ Complementary gas 2 pipe
⑭ Bolt M6 × 16
⑮ Screw M6 × 16

CHAPTER 5

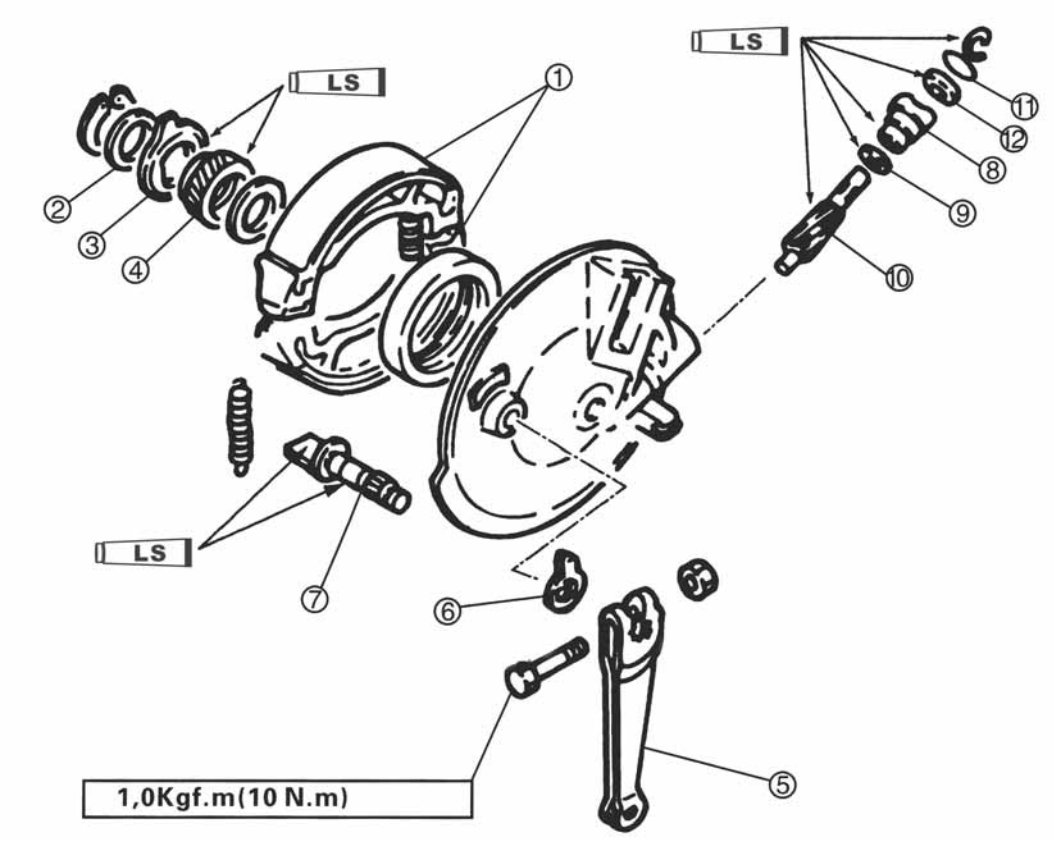
CHASSIS

Front wheel



① Lock nut
② Instrument gears
③ Front wheel axle
④ Spacer
⑤ Front wheel assy
⑥ Spacer assy
⑦ Front wheel assy

Front brake

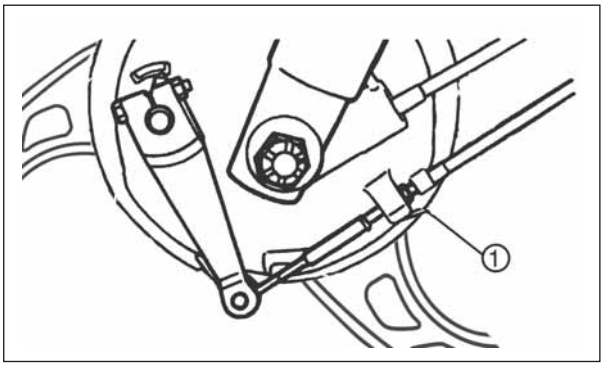


① Brake shoes assy
② Oil seal
③ Speedometer clutch
④ Drive gear
⑤ Cam shaft lever
⑥ Indicator plate
⑦ Cam shaft
⑧ Spacer
⑨ Washer
⑩ Meter gear
⑪ O-ring
⑫ Oil seal

Removal

Warning

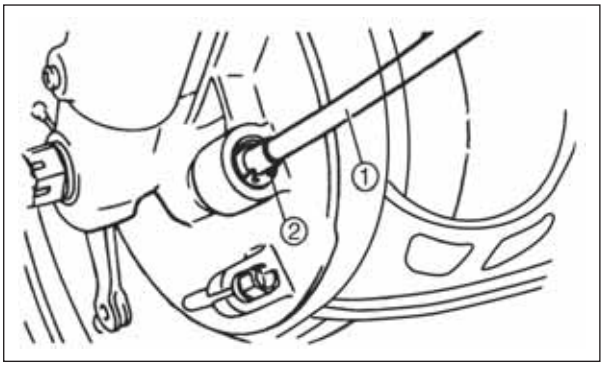
• Place the machine on a level place
• Place the machine on main stand
• Elevate the front wheels by placing suitable stand under the frame or engine.



1. Disconnect:
• Front brake cable ①

Note

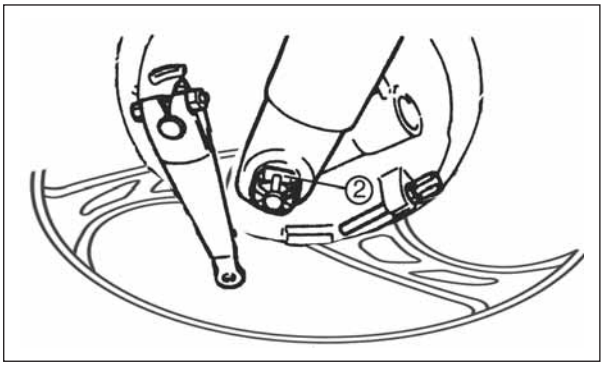
Be sure to relax the brake before disconnet



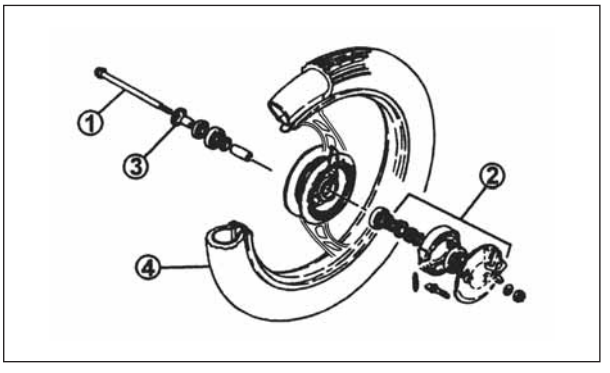
2. Remove
• Speedometer cable ②

Note

Be sure to remove circlip first

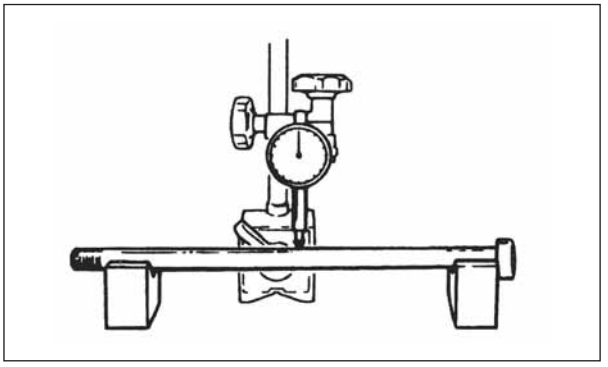


3. Remove
• Lock nut ②



4. Remove
• Front wheel axle ①
• Front brake assy ②
• Spacer ③
• Front wheel assy ④

Inspection



1. Inspection:
• Front wheel shaft (check with dial indicator)
Crooked → Replace

Warning

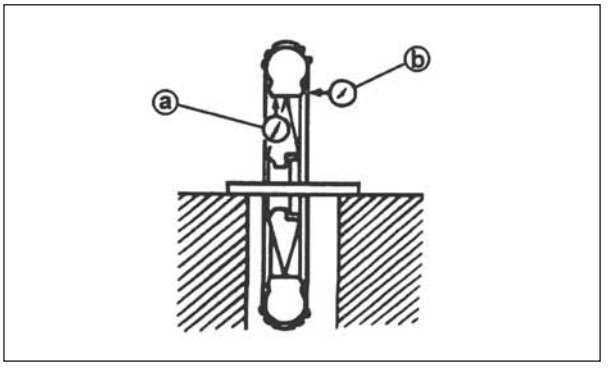
Be sure not to straighten the crooked front wheel shaft

	Crook limit: 0.25mm

2. Inspection:
• Tire
Wear/Damage → Replace

Warning

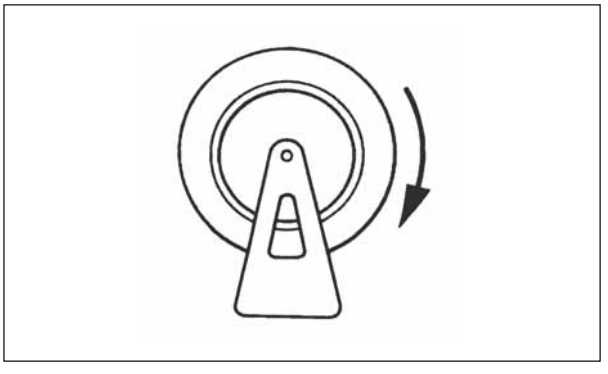
Never try to repair the tire by yourself



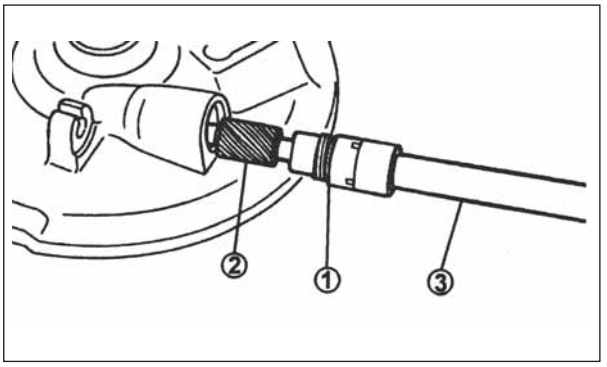
3. Measure:
• Wheel runout

	Rim runout limit: Vertical: 1.0mm Lateral: 0.5mm

Over specified limit →Replace

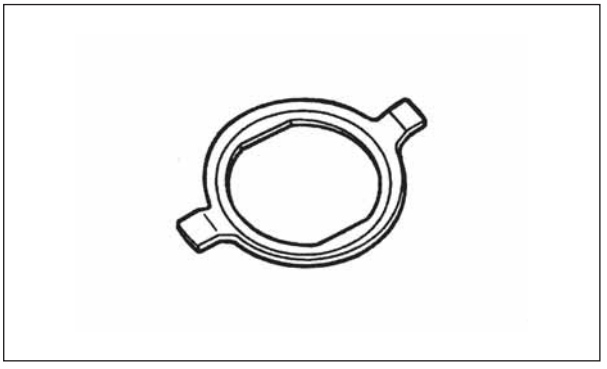


4. Inspection:
• Wheel bearing
The bearing moving in the hub or rotating unstably
→ Replace
• Oil seal
Wear/Damage → Replace



Speedometer gear assy

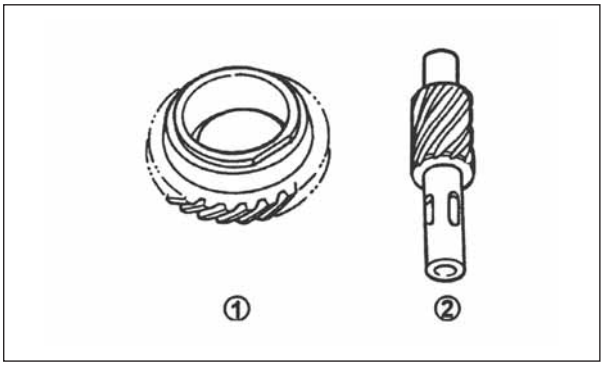
1. Install
- Speedometer cable ①
- Driven gear ②
- Do not crooked the speedometer cable ③



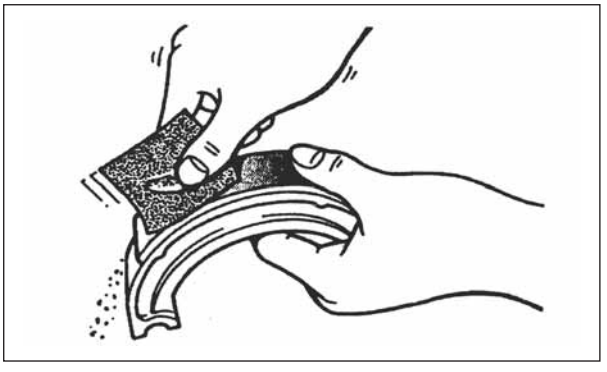
Instrumentation clutch

1. Inspection
- Instrumentation clutch

Wear/Damage → Replace



- Instrumentation driven gear ①
- Instrumentation meter gear ②



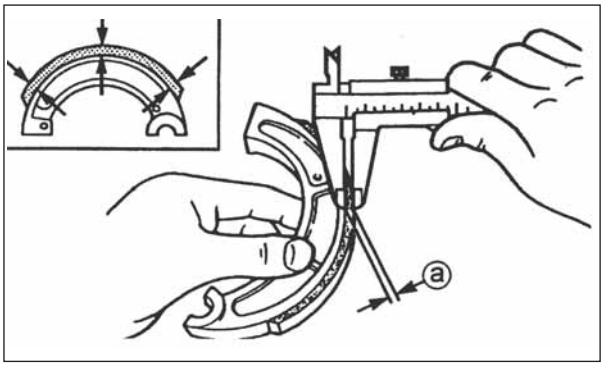
Front brake

1. Inspection
- Brake shoe lining surface

Smooth side → Grinding
- Sand with coarse sand paper

Note

Wipe off the grinding material pellet before sanding



2. Measure:

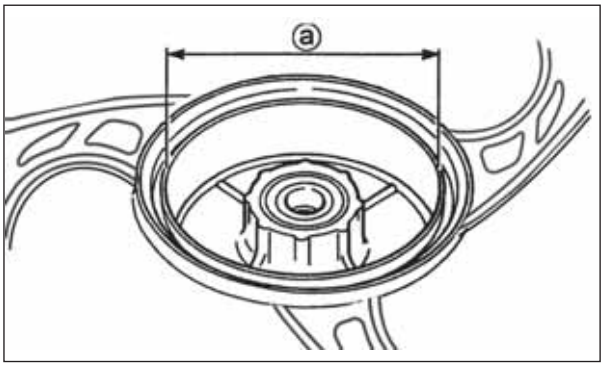
• Brake shoe lining thickness ⓐ

	Brake shoe thickness ⓐ: 4mm Limited ⓐ: 2mm

Out off specification → Replace

Note

Be sure to replace the whole brake shoes if any one of them is out of specification.

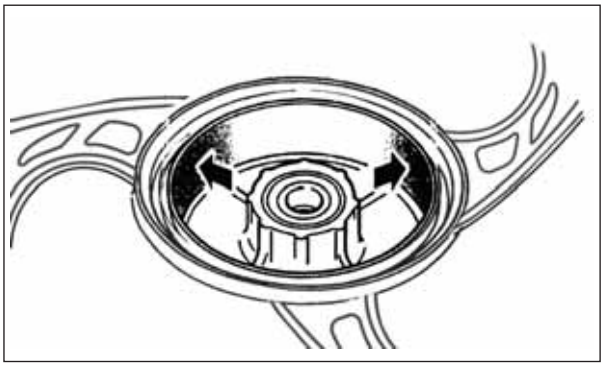


3. Measure

• Brake drum inside diameter ⓐ

	Brake drum inside diameter: standard:130mm limit:131mm

Over specified limit → Replace



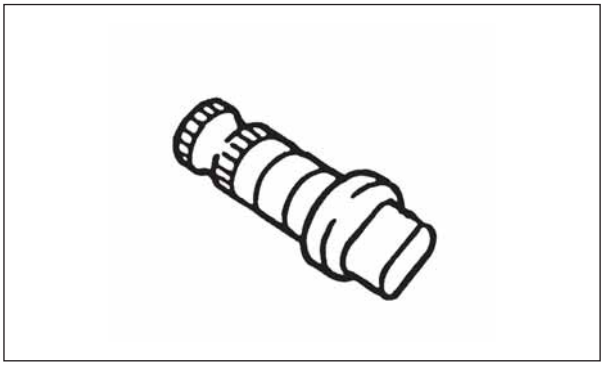
4. Inspect:

• Brake drum inner surface

Oil/scratched → Remove

Oil: use a rag soaked in lacquer thinner or a solvent.

Scratched: use a emery cloth (lightly and evenly polishing)



5. Inspect

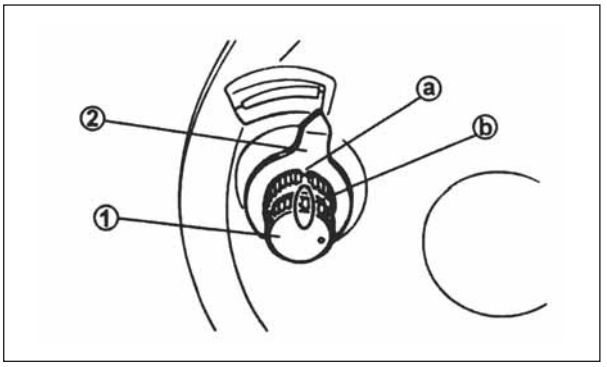
• Camshaft

Damage → Replace

Warning

Install the camshaft and the pivot lightly greased. Wipe off the excess grease.

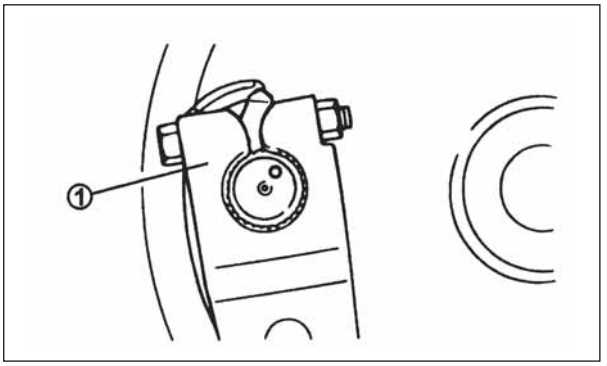
Assembly



1.Install
- Camshaft ①
- Indicator ②

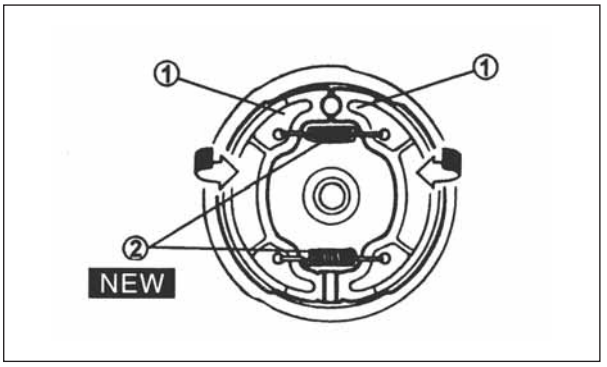
Install steps

•When install the wear indicator ⓑ, place its convex part into slot of camshaft ⓐ
- Aim the needle at the wear indicator.



2.Install
- Camshaft rod ①

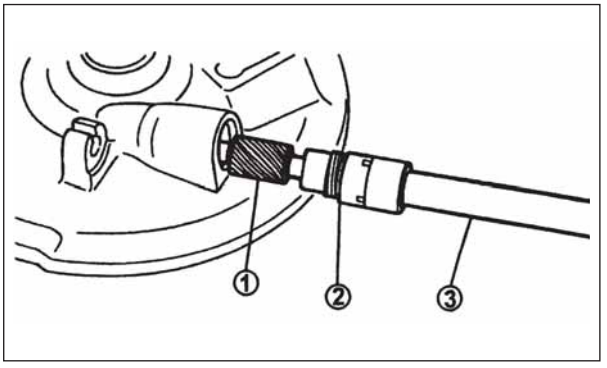
	Install torque: 1.0Kgf.m



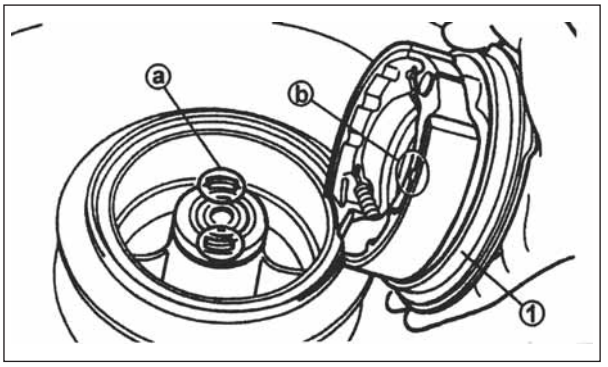
3.Install
- Brake shoe ①
- Brake shoe spring ②

Note

• Don’t use plier when installing which may cause disshape and damage of hooks and rings of spring.
• Don’t grease the brake shoe lining.



4. Install
- Instruments driven gear ①
- Speedometer cable ③
- Speedometer cable end ②



5.Install

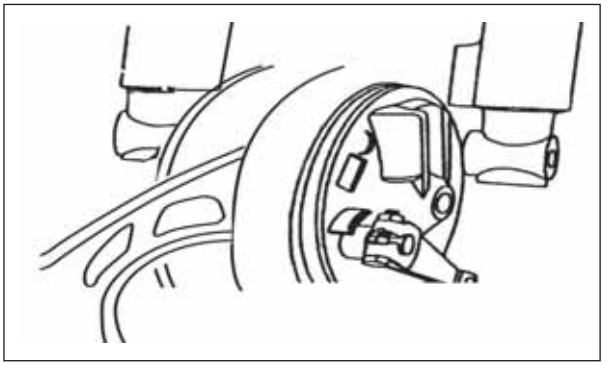
• Brake assy ①

Note

Make the slot face the wear indicator when install brake assy.

Pull and press braked shoe in direction of arrow, making pivot and brake camshaft rod as fulcrum, when installing brake shoe.

Install



1.Install

• Front brake cable

• Speedometer cable

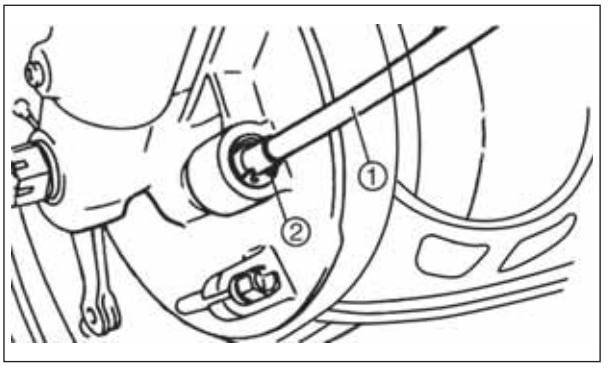
• Front wheel axle nut

2.Install

• Front wheel

Note

The convex seat of the left front shock absorber must bite with the locating slot of gear assy correctly.



3.Cable

• Brake shoe

The brake shoe moving in the hub or rotating unstably

→ Replace

	Nut torque: 3.5-5.6Kgfm

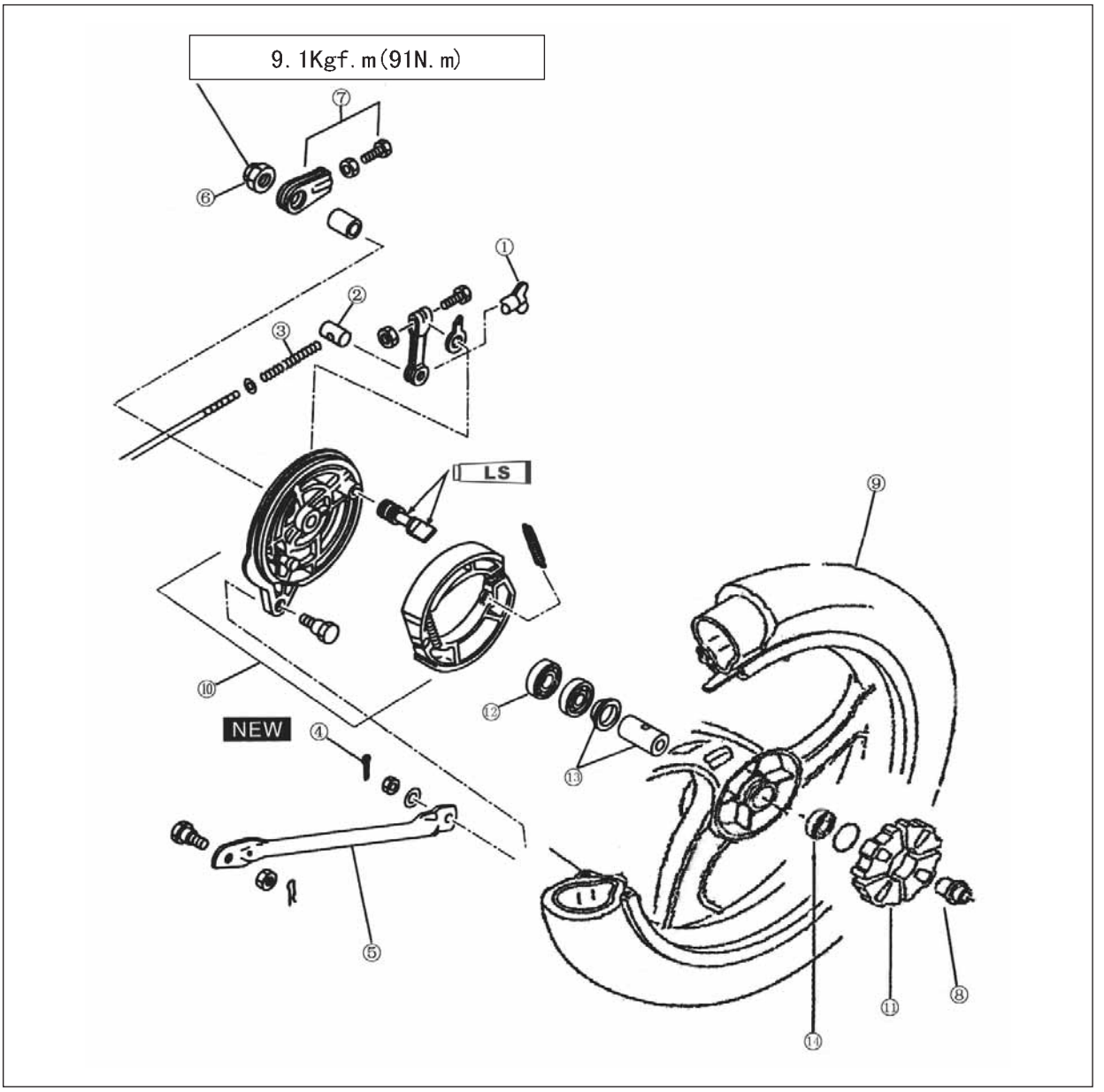
4.Install

• Speedometer cable

• circlip

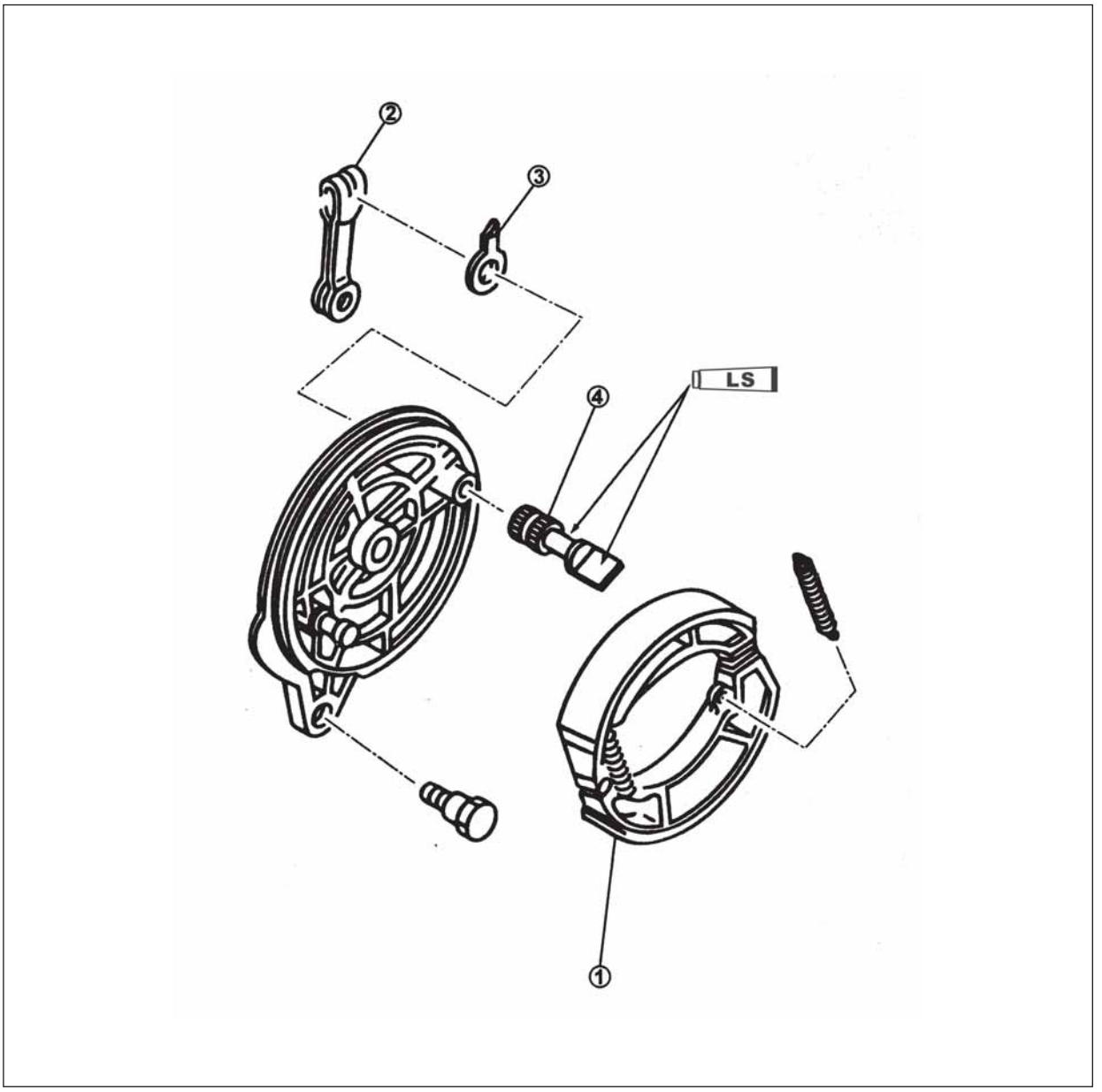
Be sure not to flex the speedometer cable

Rear wheel



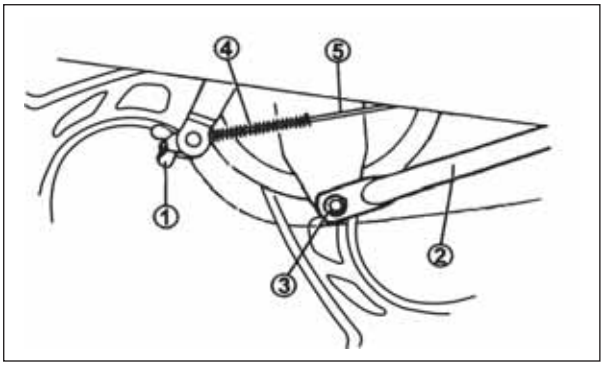
① Adjusting nut
② pin
③ Compression spring
④ split pin
⑤ Tension rod
⑥ Lock nut
⑦ Chain adjuster assy
⑧ Sprocket shaft
⑨ Rear wheel
⑩ Rear brake
⑪ Damper
⑫ Oil seal
⑬ Spacer
⑭ Bearing

Rear brake



① Brake shoes
② Camshaft lever
③ Indicator plate
④ Brake camshaft

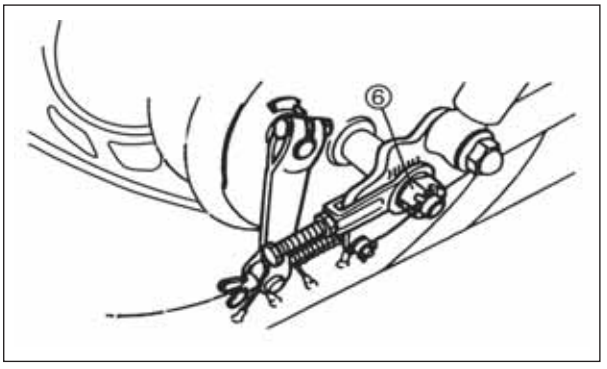
Removal

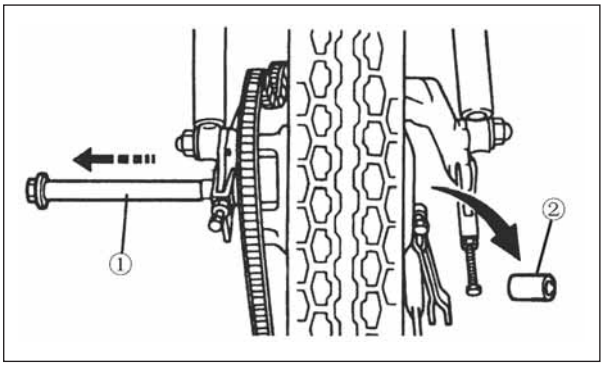


Warning

Support the motorcycle firmly to avoid falling over.

1. Remove;
- Adjuster ①
- Tension rod ②
- Nut ③
- Compressing spring ④
- Brake rod ⑤
- Rear wheel shaft nut ⑥

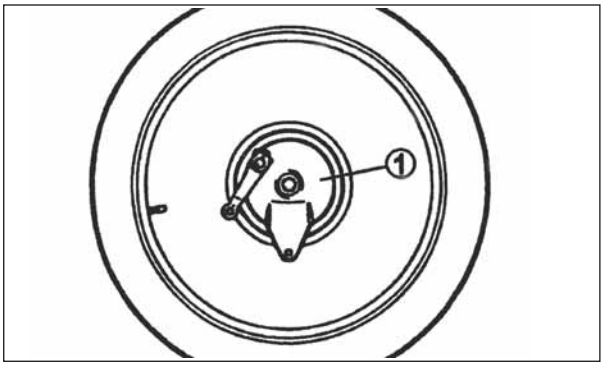




2. Remove
- Rear wheel shaft ①
- Spacer ②

Note

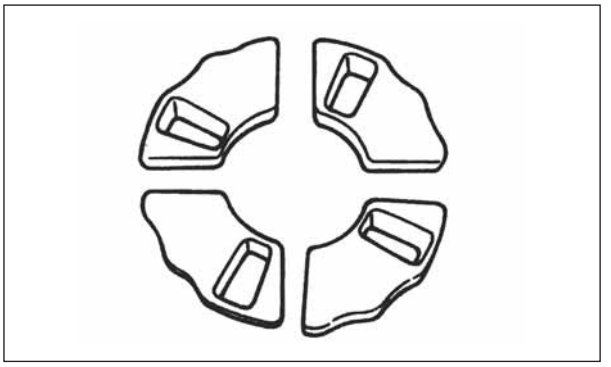
When removing the wheel shaft, Spacer will drop down. Be careful not to lose it.



3. Remove
- Rear wheel
- Rear brake

Note

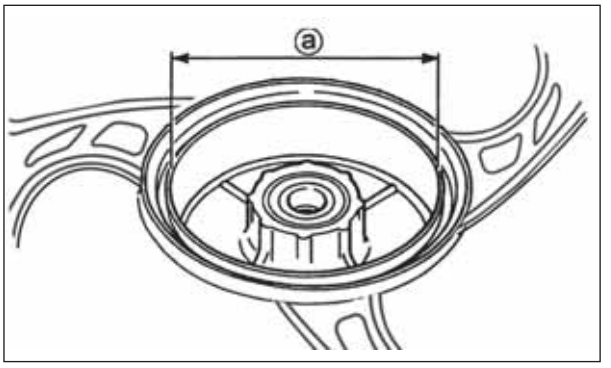
When removing the rear wheel, be care for of the dropping clutch hub.



4.Remove
• Damper
Cracks/Damage → Replace

Rear wheel hub

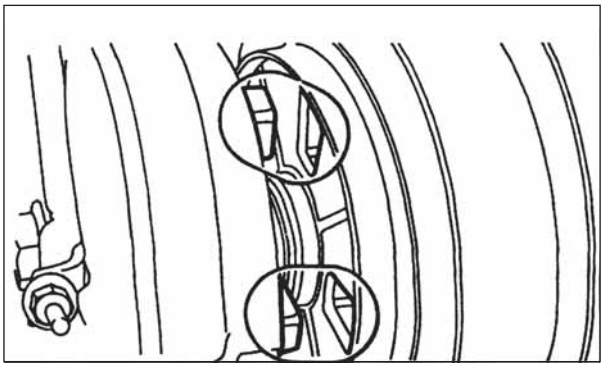
1.Inspect
• Brake drum inner surface
Oil/Scratches → Remove
Oil: use a rag soaked in lacquer thinner or a solvent
Scratches: use a emery cloth (lightly and evenly polishing)



2. Measure
• Brake drum inside surface ⓐ

	Brake drum inside diameter: Standard: 130mm Limit: 131mm

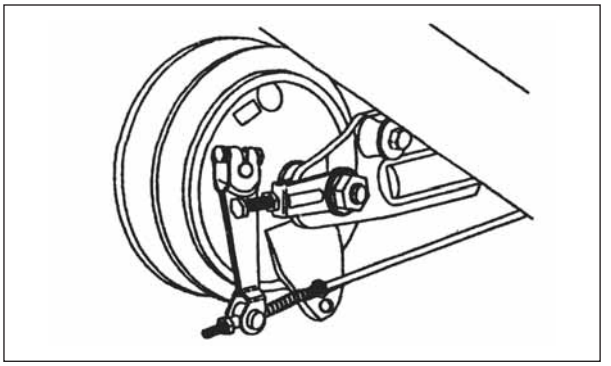
Out of specification → Replace



3. Install
• Rear wheel

Note

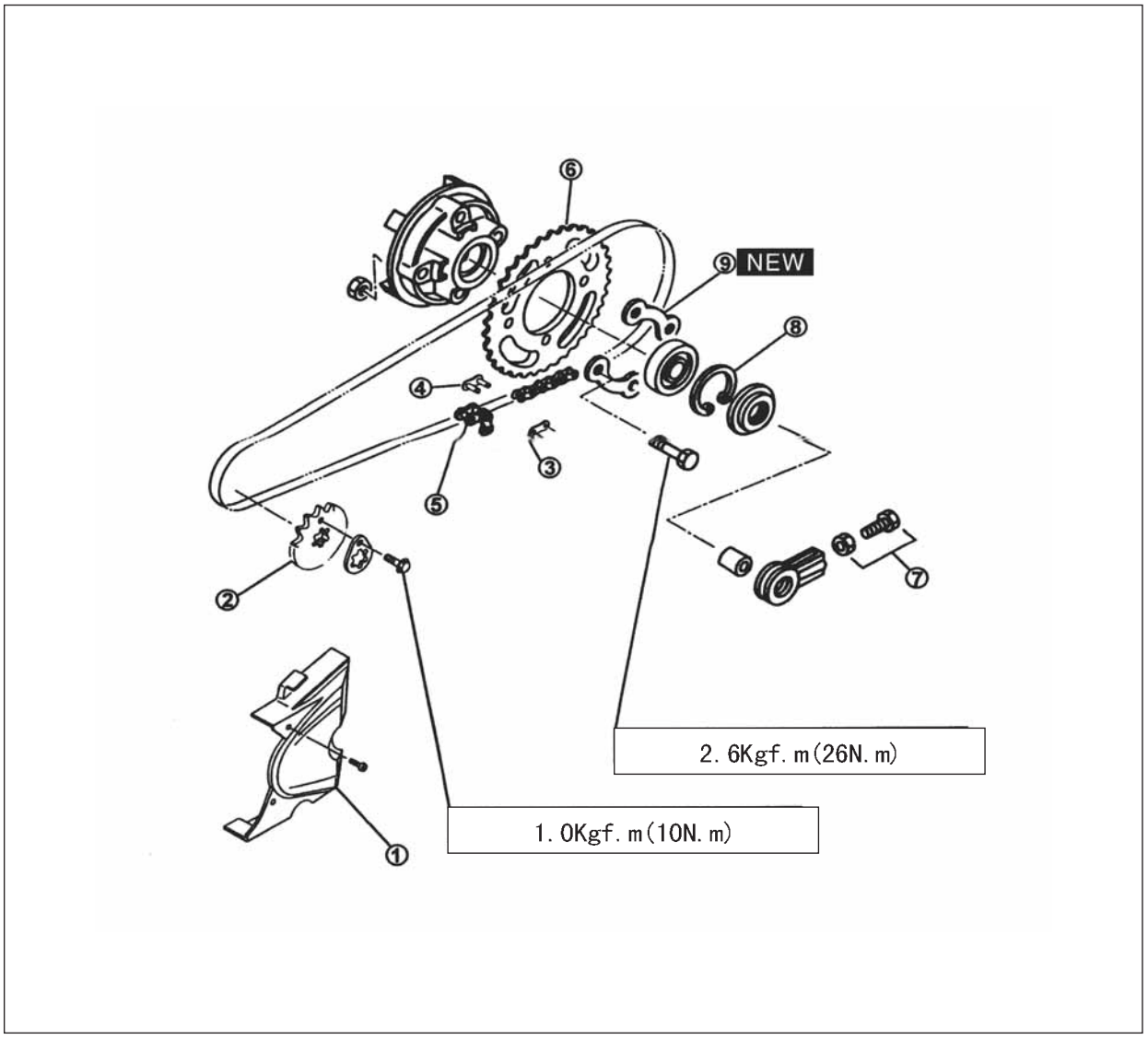
Be sure to engage the convex part of clutch hub with slot of damper



4. Install
• Axle nut

	Axle nut :9.1kgf.m(91N.m)

Diving chain

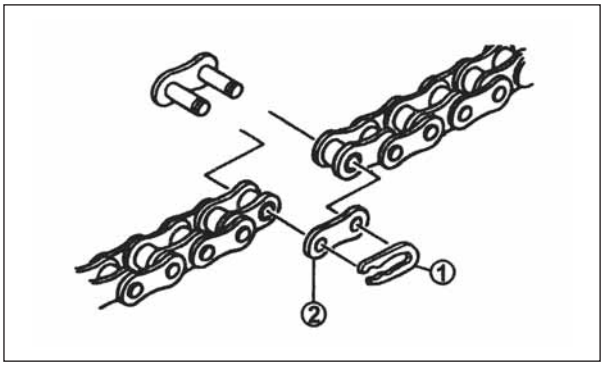


① Sprocket cover
② Slave sprocket
③ Link plate
④ Chain adapter
⑤ Chain connect
⑥ Main drive sprocket
⑦ Adjuster
⑧ Circlip
⑨ Stop washer

Disassembly

Warning

Stand the motorcycle firmly and avoid turning.



1.Put the motorcycle on the main stand

2.Disassembly:

• Sprocket cover

3.Screwing-down

• Small sprocket

4.Disassembly

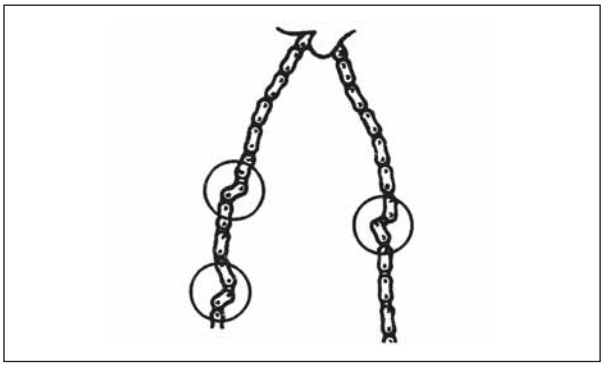
• Chain connect snap ring ①

• Link plate ②

• Chain connect

• Driving sprocket

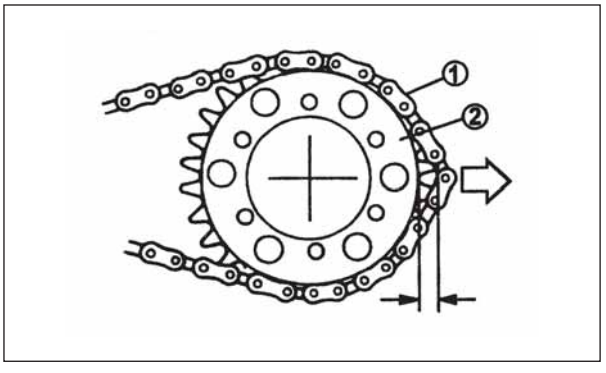
Inspection



1.Inspection

• The driving chain stuck

Get stuck → Clean and lubricate or replace it



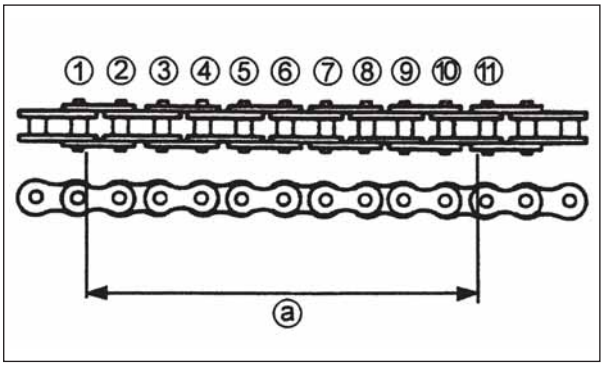
2. Inspection

• Driving chain ①

• driving sprocket ②

The clearance that is pressed to right side must not excess 1/2 of the gear.

Overran → Replace



3. Measure

• The length of 10 chain elements ⓐ(driving chain)

	The max length of 10 chain elements: 119.5mm

Excess the stipulated scope → Replace

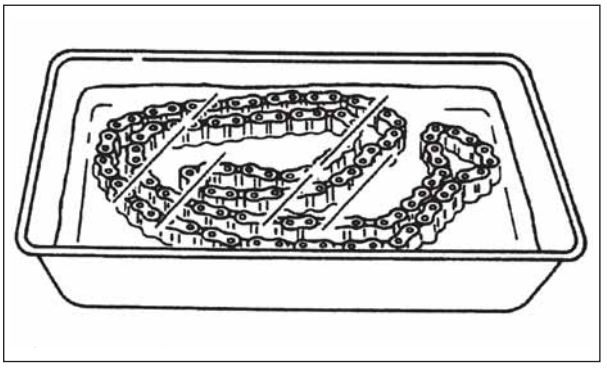
Note

Stretch the chain with fingers first, then measure the length.

• As shown in the figure, measure the length of 10

• chain elements from the internal side of the roller ① to the roller ⑪

• Measure the length of 10 chain elements in different sections two or three times.



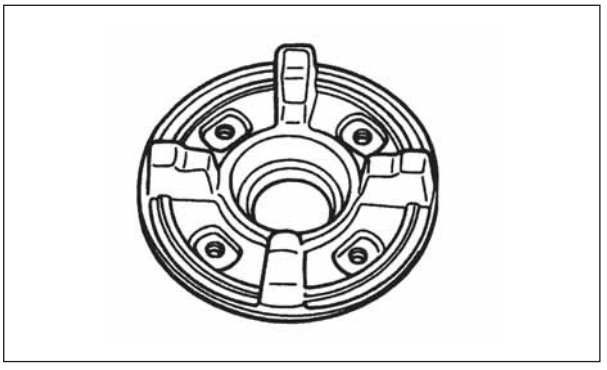
4.Clear:

• Clean with neutral detergent

• Oiled with lubricant or SAE10W-30W YAMAHA motor oil.

Warning

Be sure not to clean with volatile substance, such as gasoline, stream, etc.

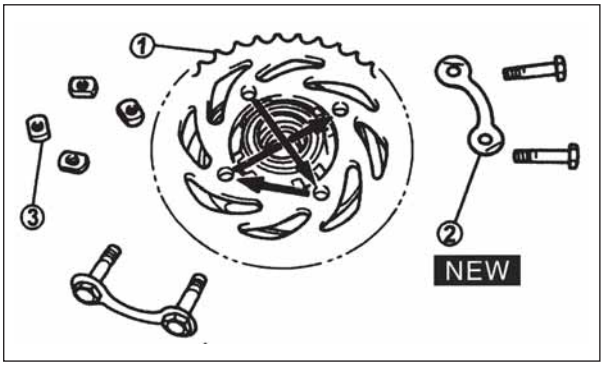


Inspect clutch hub

1. Inspection

• Clutch hub

Wear, chap → Replace



2. Install

• Driving sprocket ①

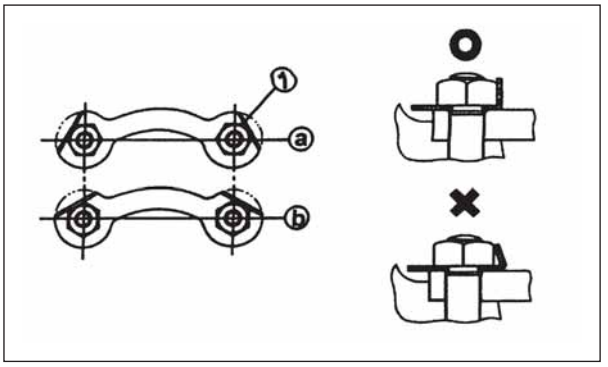
• Antiloosen washer ② NEW

• Nut ③

	Nut: 2.6kgf.m(26N.m)

Note

Screw up the bolts following the cross curve.

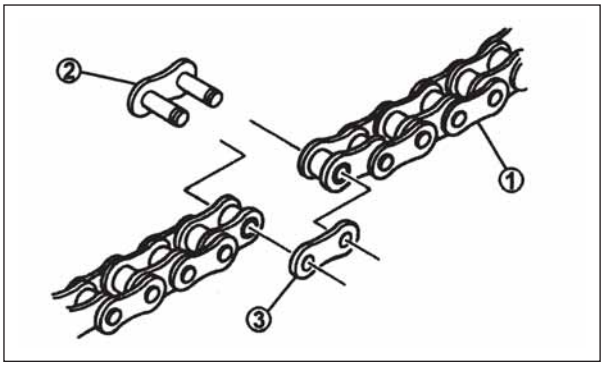


3. Install

• Install as the illustration shows

• Stretch the convex tongue of the antiloosen pad straight, screw down the construction bolt, then disassemble the driving sprocket.

Install

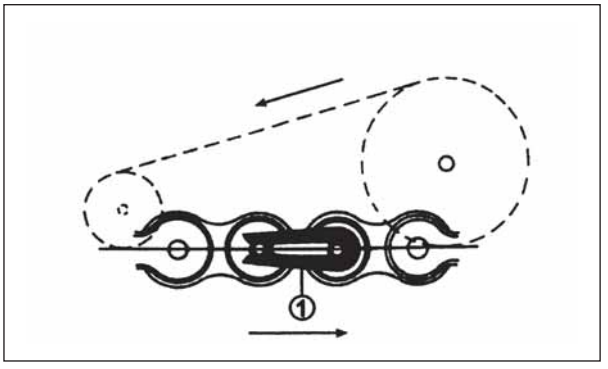


1.Install

• Driving chain ①

• Driving chain cutter ②

• Link plate ③



2.Assembly

• Chain connect work carrier

Note

Pay attention to eh assembling direction of the work carrier of the carrier of the chain connect

3.Adjustment:

• Loose degree of driving chain

Please refer to the section of loose degree adjustment of driving chain in part III.

Note

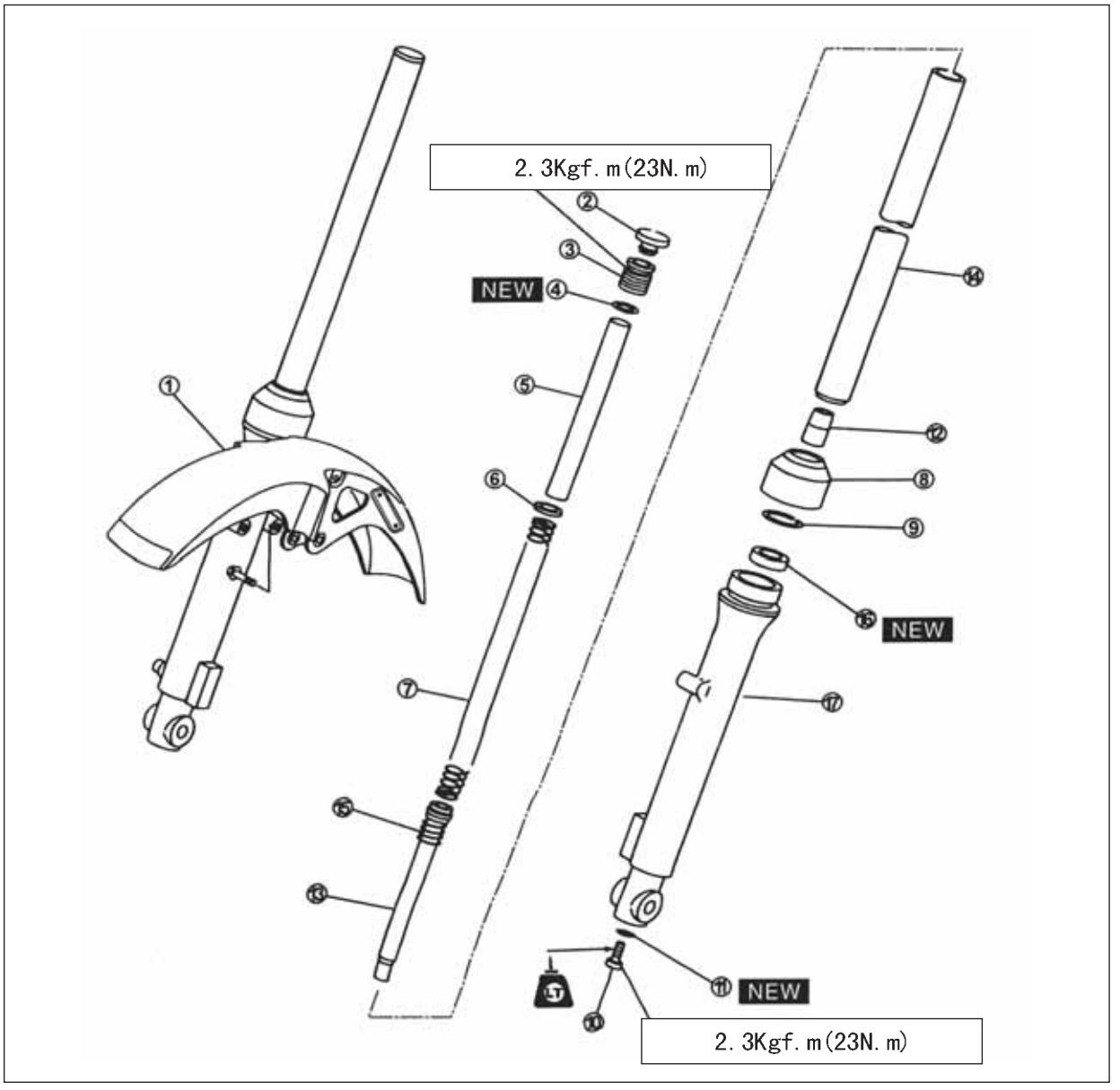
Overloading of engine and other main parts will occurs if the driving chain is too tight. The loose degree of the chain should be kept within the stipulated scope.

4. Screwing-up

• Sprocket shaft nut

• Bolt

Front fork

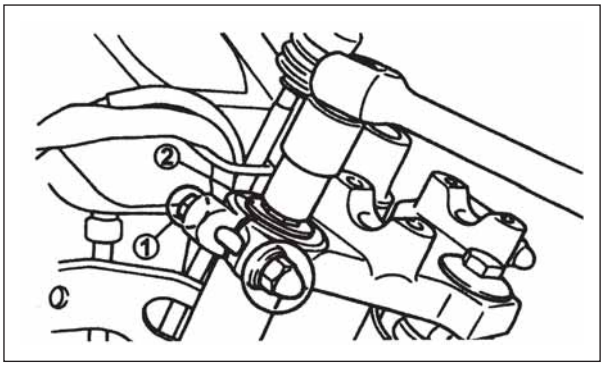


① Front fender
② Plug
③Bolt
④ O-ring
⑤Collar
⑥ Spring seat
⑦ Spring
⑧ Dust-preventative cap
⑨Circlip
⑩ Bolt
⑪ Washer
⑫ Button valve
⑬ Resistance device
⑭ Inner tube
⑮ Spring
⑯ Oil seal
⑰ Outer tube

Remove

Warning

Securely support the machine to avoid falling over.

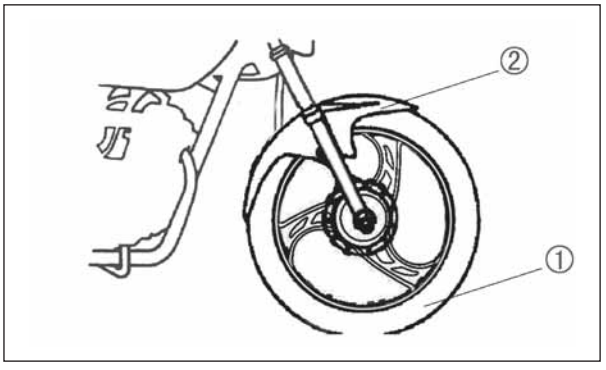


1.Place the machine on a level place.

2.Elevate the front wheels by placing the suitable stand under the frame and engine.

3.Remove

- Front wheel ①
- Front fender ②



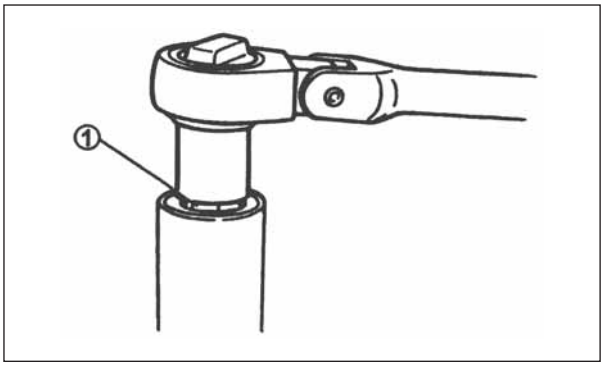
4.Loose

- Bolt ①
- Cap bolt ②

Note

Be sure to loose the two bolts of the front fork before remove.

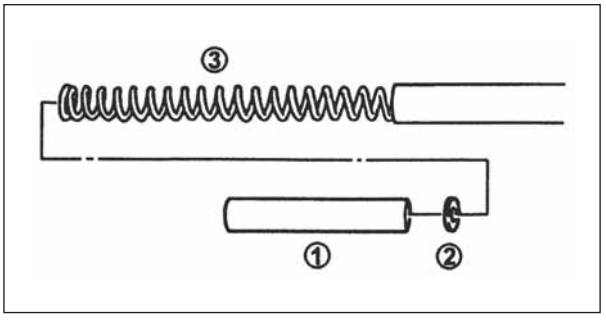
Dissassemble



1.Remove

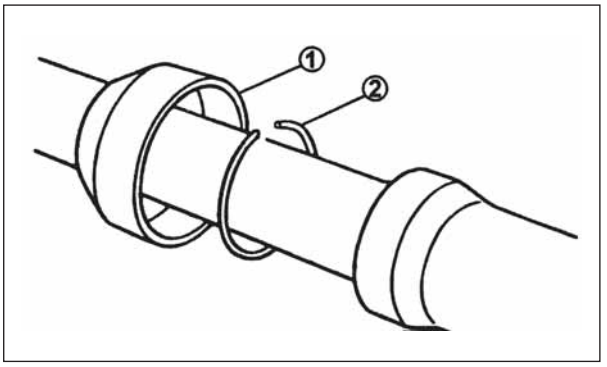
- Cap bolt and O-ring ①

2 Oil-drain



3. Disassemble

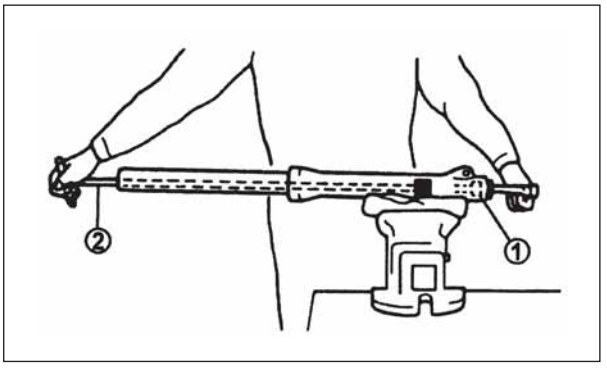
- Collar ①
- Spring seat ②
- Spring ③



4. Disassemble
• Dust-preventative cap ①
• Circlip ②

Note

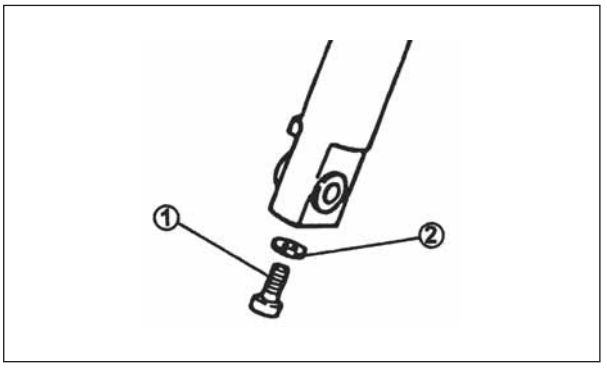
Be careful not to damage the surface of inner tube



5. Remove
• Bolt ①

Hold the shock absorber rod, and loosen the bolt shock absorber rod, with "T" spanner ② and shock absorber rod fixture

	"T" spanner



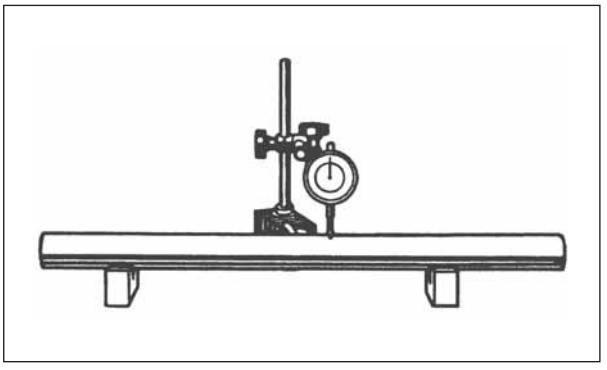
6. Remove
• Bolt ①
• Washer ②

7. Remove
• Oil seal

Note

Be careful no the scratch the outer tube of front fork when removing oil seal.

Inspect

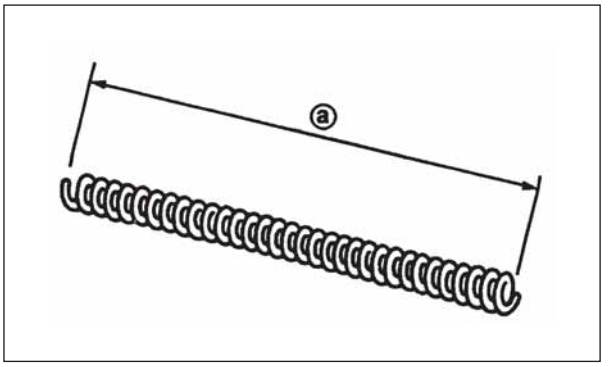


1. Inspect:
• Inner tube of front fork

	The angularity of inner fork Angularity limit: 0.2mm

Warning

Don't try to straighten the crooked inner tube of front fork, otherwise will damage the tube seriously.

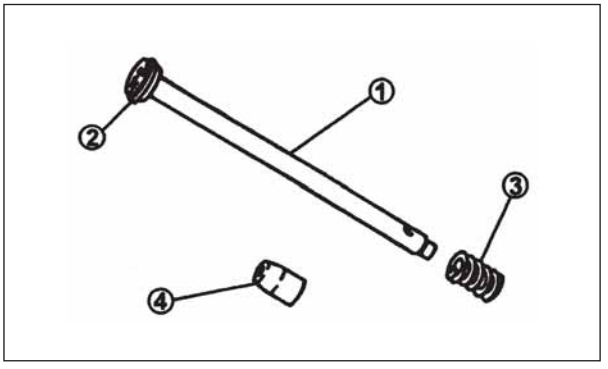


2. Measure

• Free length of front fork spring ⓐ

	Free length of front fork spring: 339.9mm Min free length: 330mm

Out of specification → Replace



3. Inspect:

• Resistance device rod ①

• Absorber piston ②

Wear /Cracked /Damage → Replace

• Spring ③

• Button valve ④

Wear/Cracks/Damage → Replace

Dirt → Blow and clean all oil hole with compressed air

Note

Don't try to straighten crocked resistance device rod, otherwise it will be damaged seriously.

Assemble

Reverse the "REMOVAL" procedures. Note the following points.

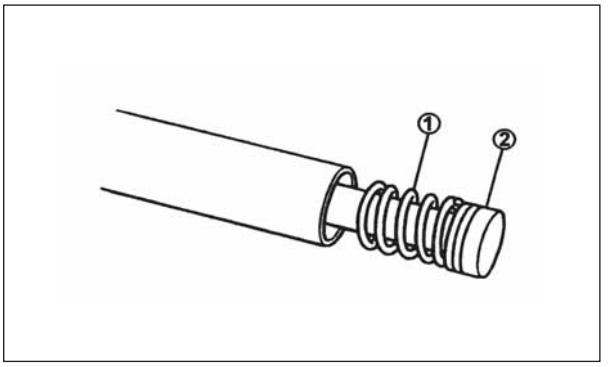
Note

Be sure to use following components before assembly.

• Oil seal

• Dust-preventative seal part

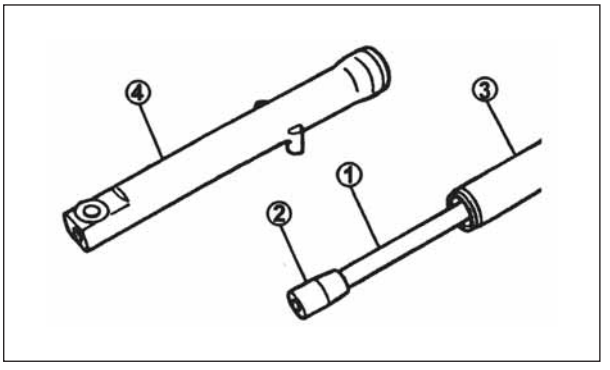
Ensure the clean state of all components before assemble.



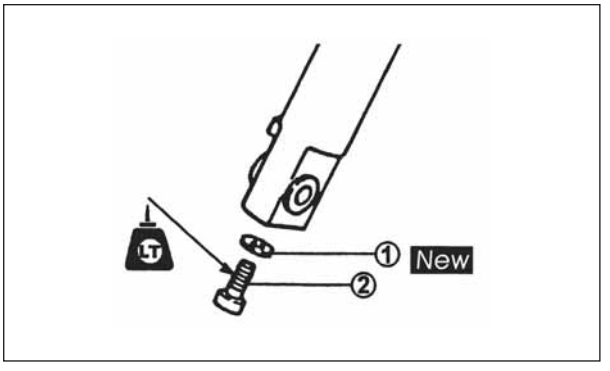
1. Install
• Spring ①
Absorber piston ②

2. Lubricate:
• Inner tube of front fork (outer surface)

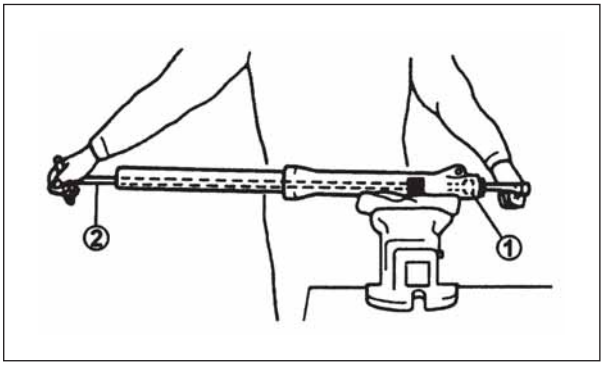
	Front fork oil 10w or equal substitute



3. Install
• Resistance device ①
• Button valve ②
• Inner tube of front fork ③
• Outer tube of front fork ④



4. Install
• Washer ① NEW
• Bolt (shock absorber rod)②



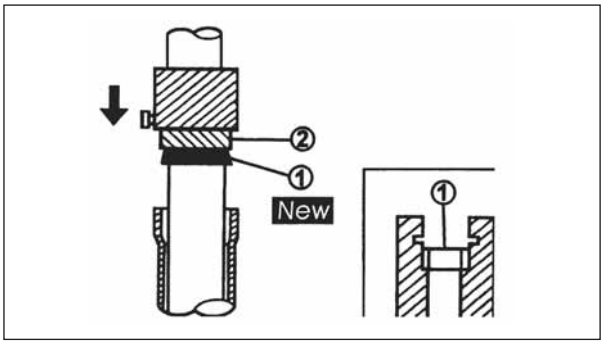
5. Tighten:
Bolt (Resistance device rod)①

	Bolt (Resistance device rod): 2.3kgf.m(23N.m)

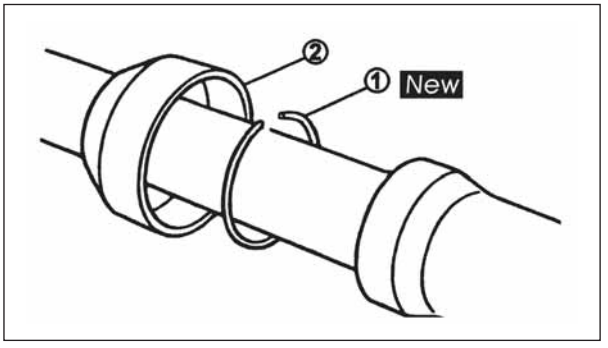
Note

Lock the shock absorber rod with "T" spanner ① and shock absorber rod fixture ②

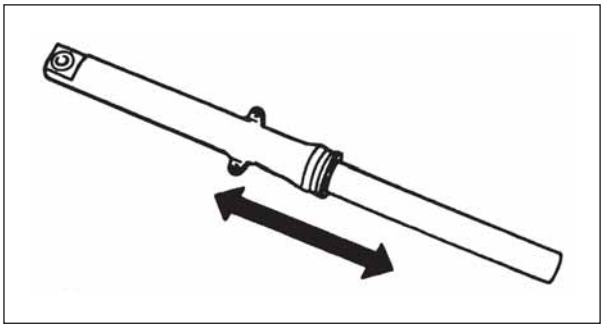
	"T" spanner: Shock absorber rod fixture



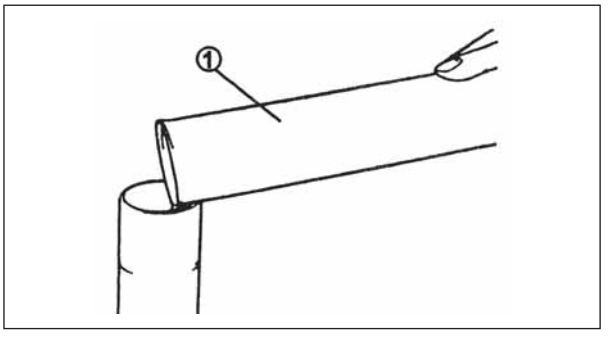
6. Install
Oil seal① NEW



7. Install
Circlip① NEW
Outer tube of front fork ②



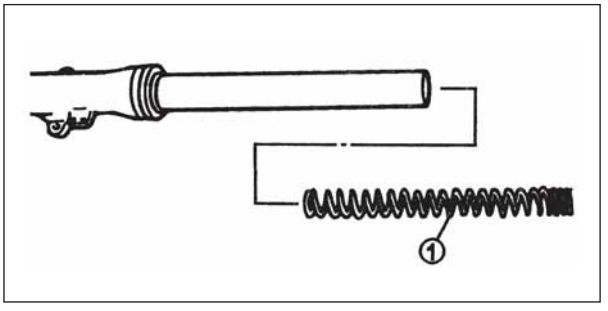
8. Inspect
• Inner tube extension
Re-inspect if can not extension freely.



9. Inject
• Measuring cup ①

	Every front fork tube: 156ml 10W shock absorber oil

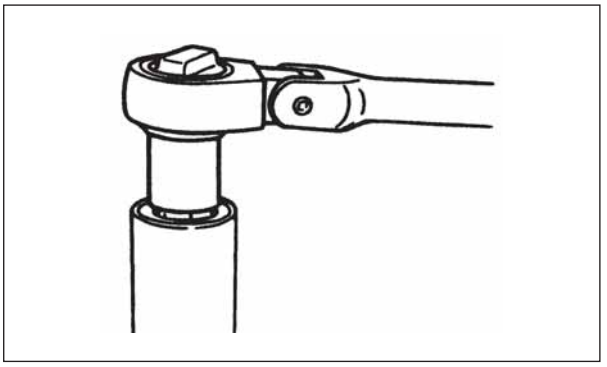
10. Move the front fork up and down slowly after infection to make the oil all over the tube.



11. Install
• Front fork spring ①

Note

Make the end with shorter pitch of spring up ward to install the spring.

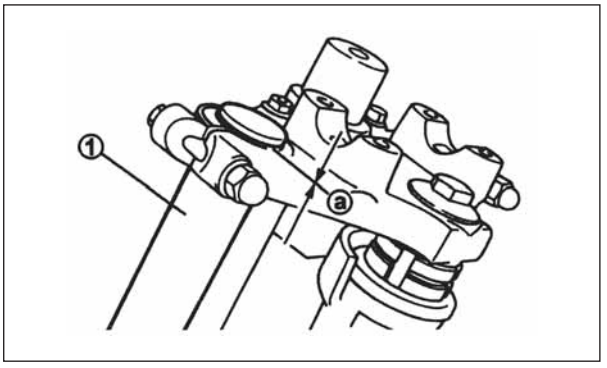


12. Install
- Cap bolt
- O-ring

Note

Be careful not to damage the outer surface of inner tube.

Intall

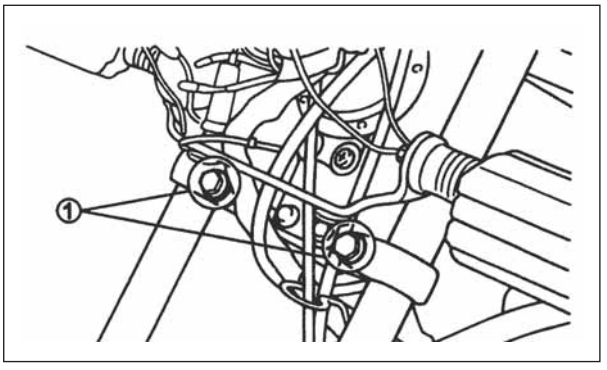


Reverse the “REMOVE” procedure
1. Install
- Front fork ①

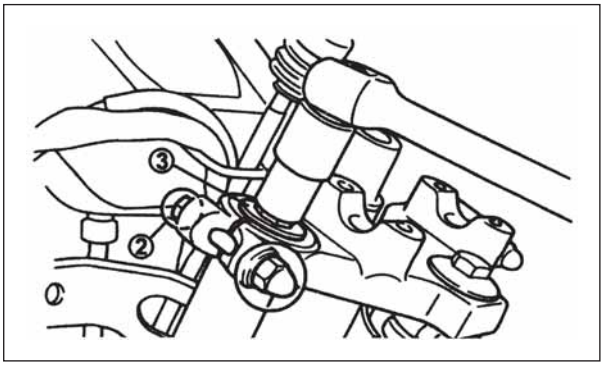
Tighten the bolt temporary

Note

Be sure to justify the inner tube port and bolt port.



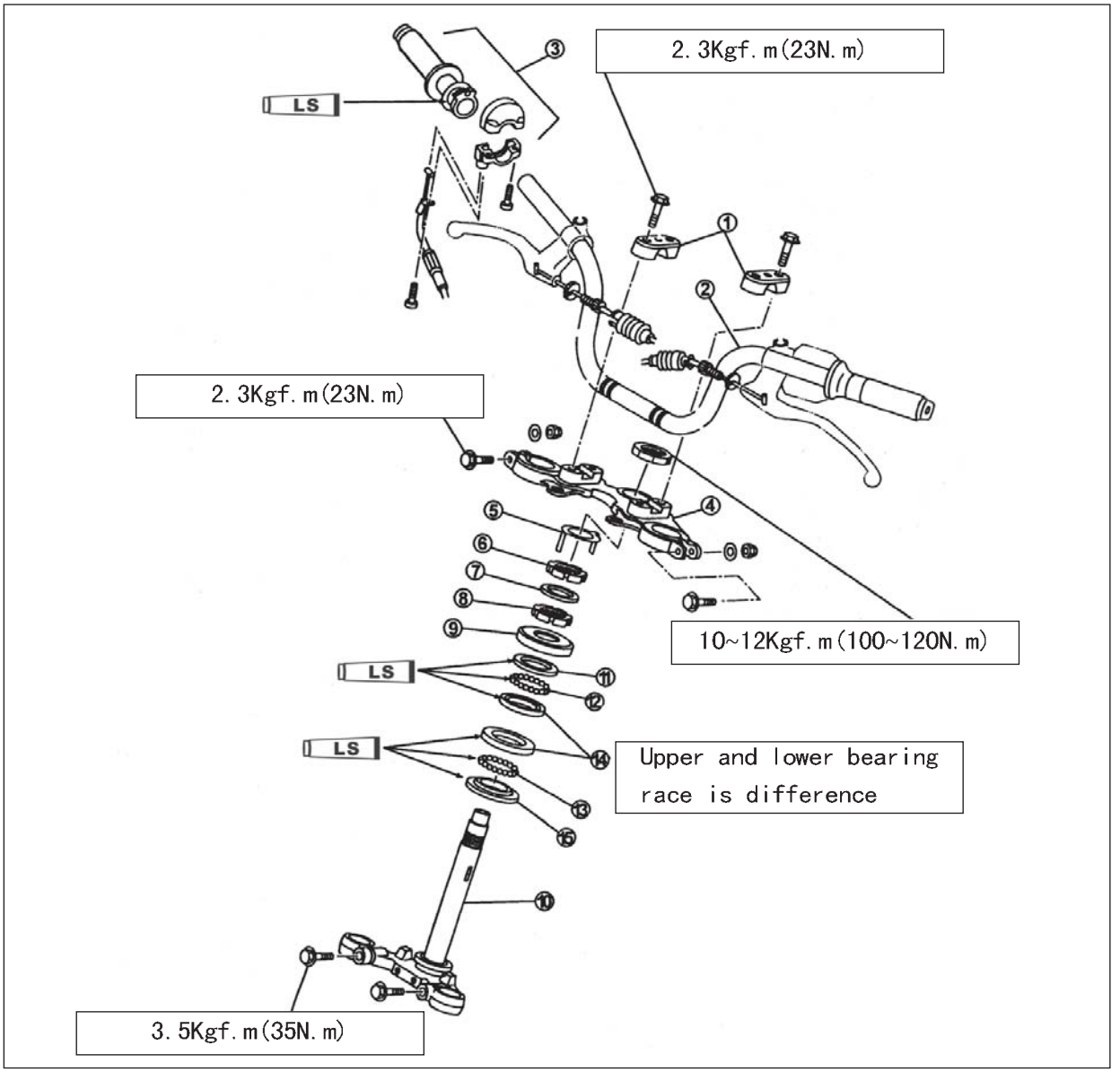
2. Tighten
- Bolt ①
- Bolt ②
- Cap bolt ③



Bolt ① :2.8kgf.m(28N.m)
Bolt ②: 2.3kgf.m(23N.m)
Cap bolt ③: 2.3lgf/(23N.m)

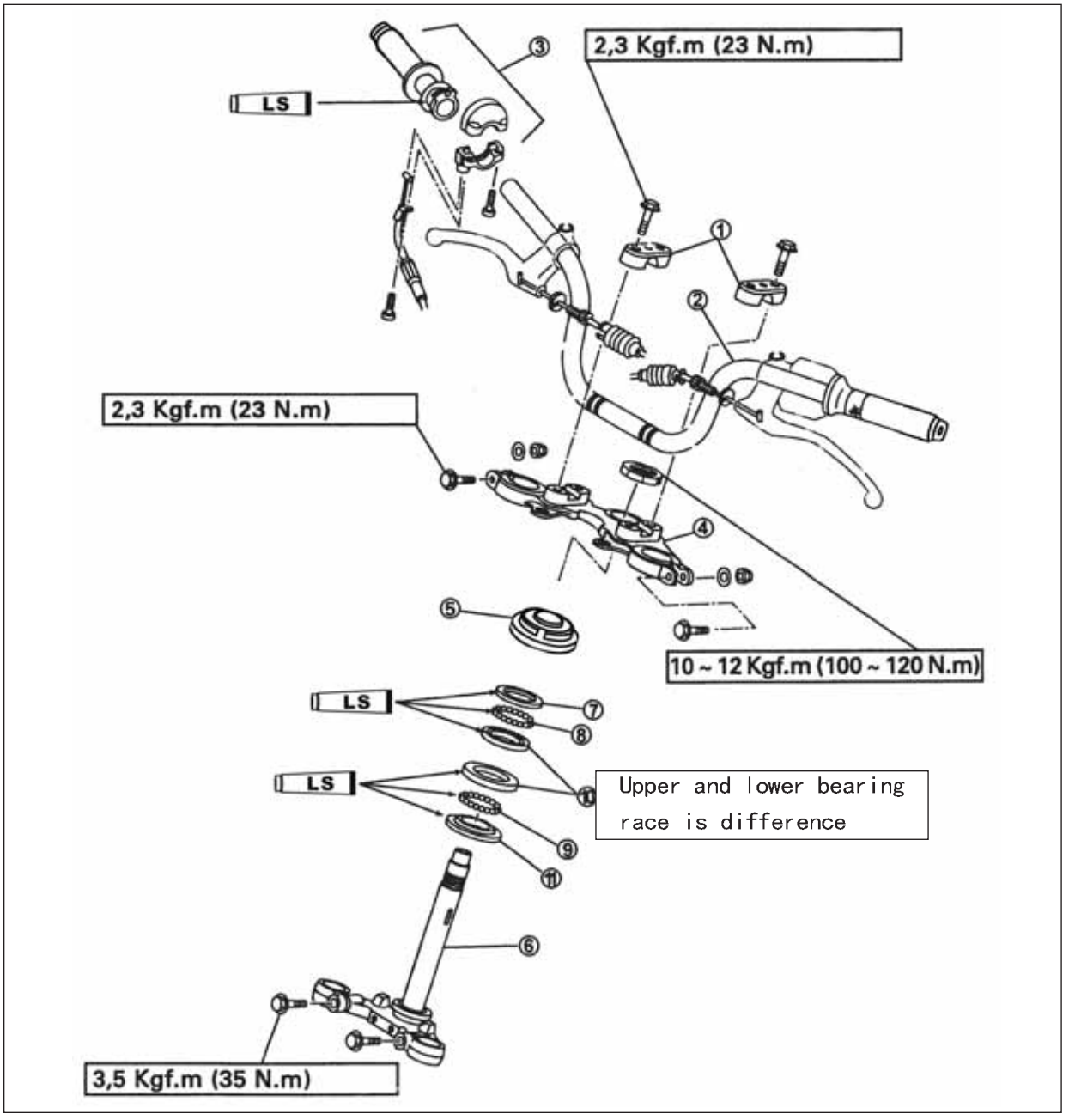
Steering seat and handlebar

Circle lock nut



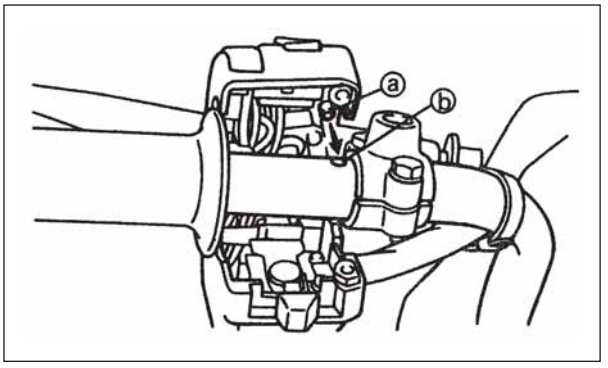
①Handlebar clamp
②Handlebar
③ Right holder lever assy
④Handlebar seat
⑤Thimble
⑥ Ring Nut
⑦ Ring washer
⑧ Ring nut
⑨ Dust – preventative cap
⑩ Steering seat
⑪ Upper ball bearing race (upper)
⑫ Upper Steel ball
⑬ Lower steel ball
⑭ Upper ball bearing race (middle)
⑮ Lower ball bearing race

Dust-preventative cap nut

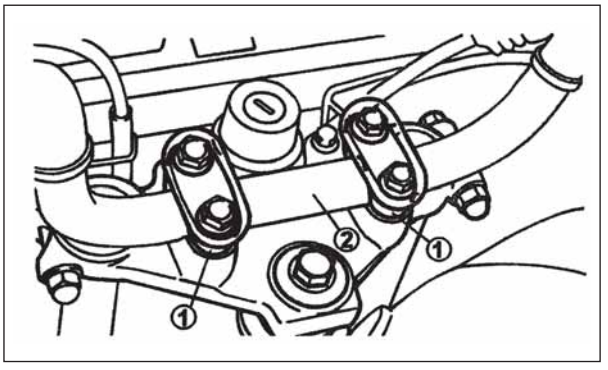


①Handlebar clamp
②Handlebar
③ Right holder lever assy
④Handlebar seat
⑤ Dust-preventative cap nut
⑥ Steering seat
⑦ Upper ball bearing race (upper)
⑧Upper Steel ball
⑨ Lower steel ball
⑩Upper ball bearing race (middle)
⑪Lower ball bearing race

Removal

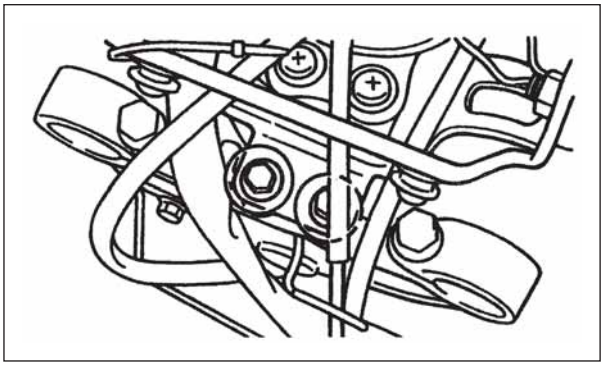


1. Remove
• Remove the switch of left and right handle

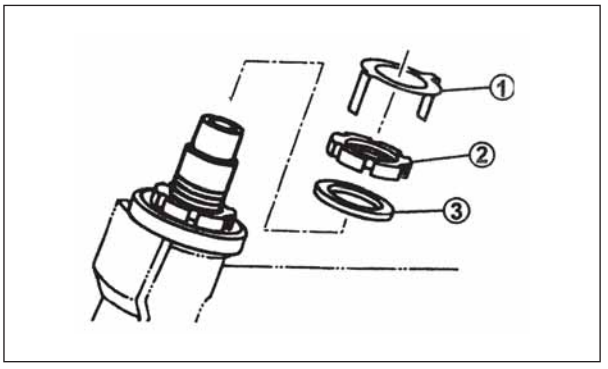


2. Remove
• Handlebar clamp
• Handlebar
• Handlebar throttle seat

3. Remove
• Front wheel

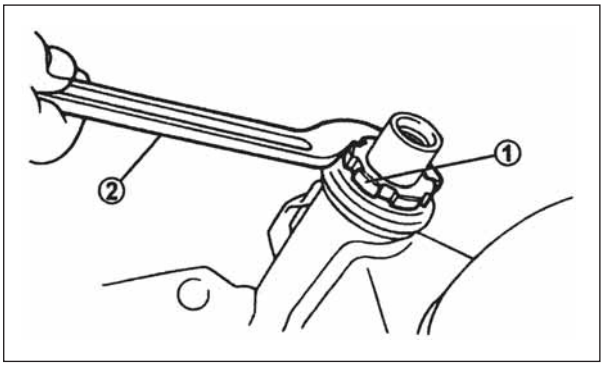


4. Remove
• Front fork



Ring lock nut

5. Remove
• Thimble ①
• Ring nut ②
• Ring washer ③

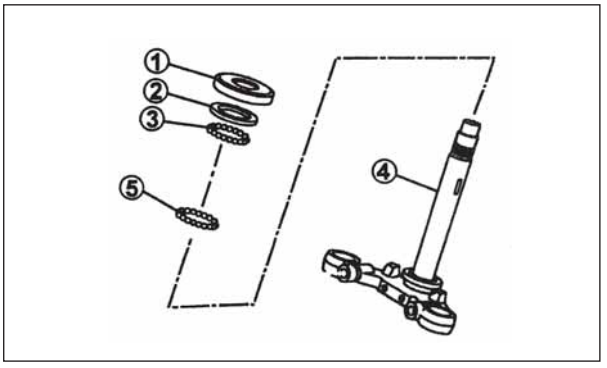


6. Remove
- Ring nut ①
- Remove the ring nut with steering nut wrench ②

	Steering nut wrench

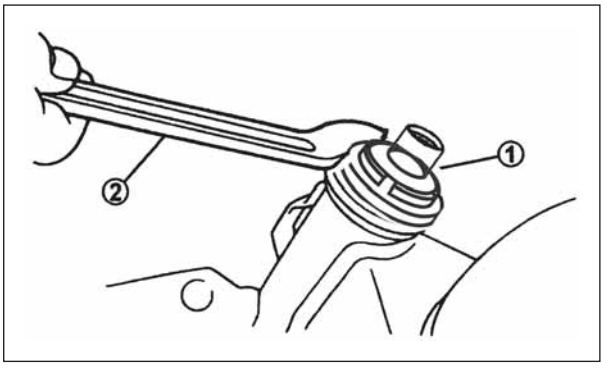
Warning

Never remove the nut with any other instruments except steering nut wrench.



7. Remove
- Ball bearing race cover ①
- Upper ball bearing race (upper)②
- Steel ball(upper)③
- Steering seat ④
- Steel ball (lower)⑤

Dust-preventative cap lock nut

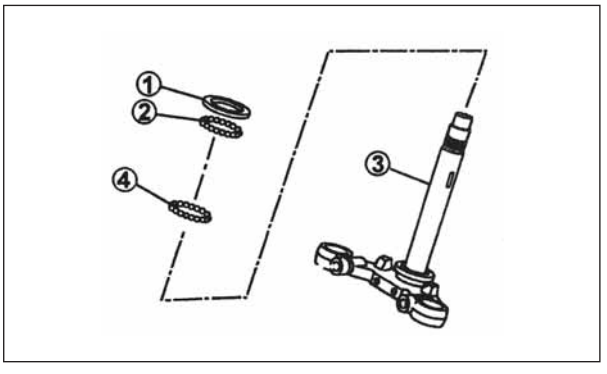


5. Remove
- Dust-preventative cap lock nut
- Remove with steering nut wrench

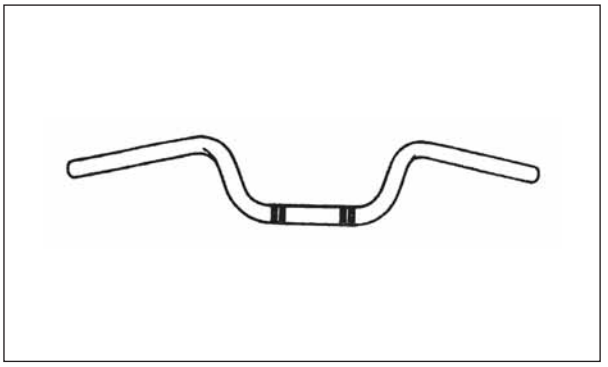
	Steering nut wrench

Warning

Never remove the nut with any other instruments except steering nut wench.



6. Remove
- Ball bearing race cover ①
- Upper ball bearing race (upper)②
- Steering seat ③
- Steel ball (lower)④



Inspect

Inspect handlebar

• handlebar

Bent、Cracks、Damage → Replace

Warning

Do not attempt to straighten a bent handlebar, this may weaken the strength of handlebar and cause danger

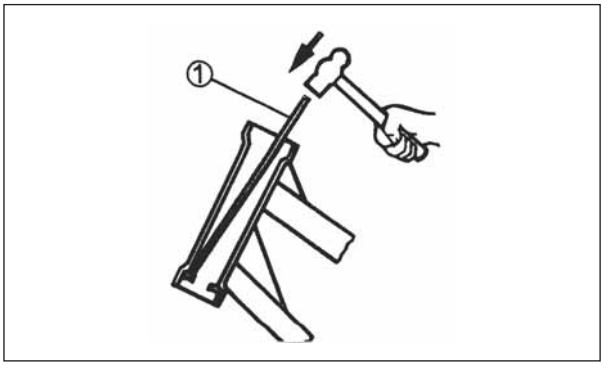
Inspect front steering column

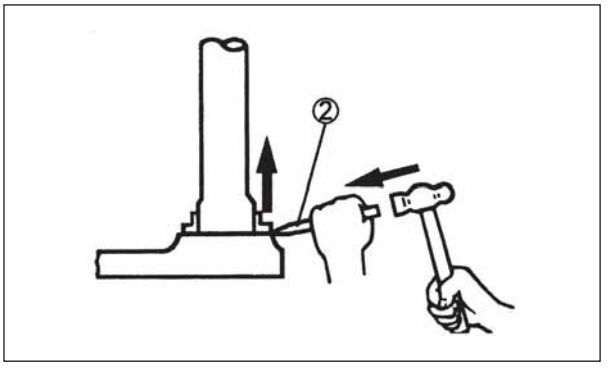
1. Clean out the ball bearing race and steel ball
2. Inspect

• Ball bearing race

• Steel ball

Wear、Corrosive pitting、Damage → Replace as a set





****

Replace step:

• Shown as illustration, the ball bearing race with a long rod and hand hammer, and take it out of the convex slot of frame tube.

• Shown as illustration, remove the ball bearing race of steering of steering seat with plain chisel and hand hammer.

• Install the new dust-preventative seal part, bearing an ball bearing race.

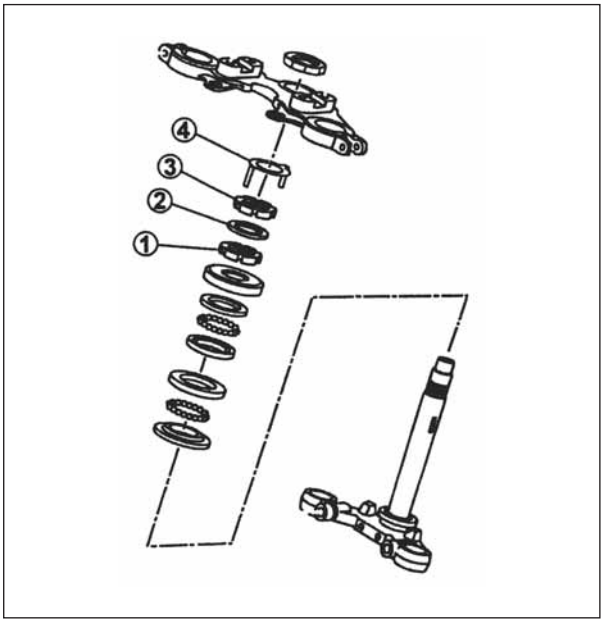
****

Note

• Steel ball race and dust-preventative part should be always be replaced as a set.

• The slant ball bearing race may polish the frame. So be careful to install the race in level state, be sure not to strike the surface of ball and race.

Install



Steering bar

Reverse the "REMOVAL" procedure

1. Lubrication

• Steel ball (lower, upper)

• Bearing race

	Lithium based grease

2. Assembly:

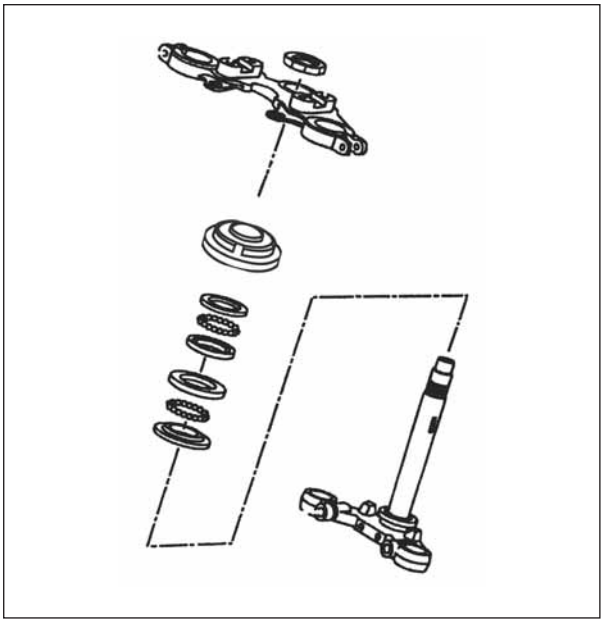
• Ring-nut (lower)

• Ring-washer

• Ring-nut (upper)

• Thimble

After assembly, make adjustment according to the steps of Part III.



Dust-preventative cap lock nut

Reverse the "REMOVAL" procedure

1. Lubrication

• Steel ball

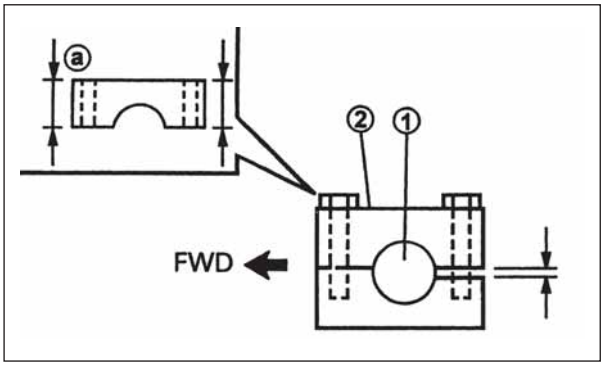
• Bearing race

	Lithium based grease

2. Install

• Dust-preventative cap lock nut

After assembly, make adjustment according to the steps of Part III.



Handlebar

1. Assembly:

• Handlebar ①

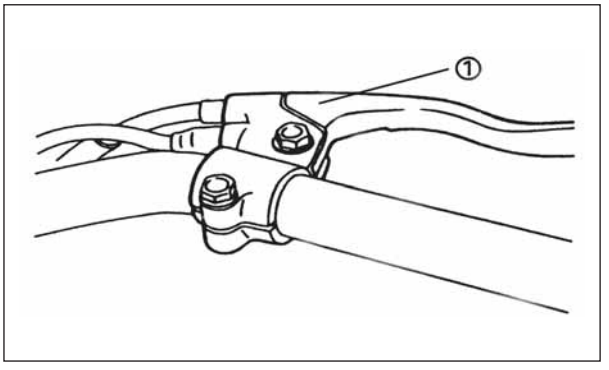
• Handlebar clamp ②

	Tighten torque： 2.3kgf.m(23 N.m)

Note

• Make sure to flexible the front face bolt

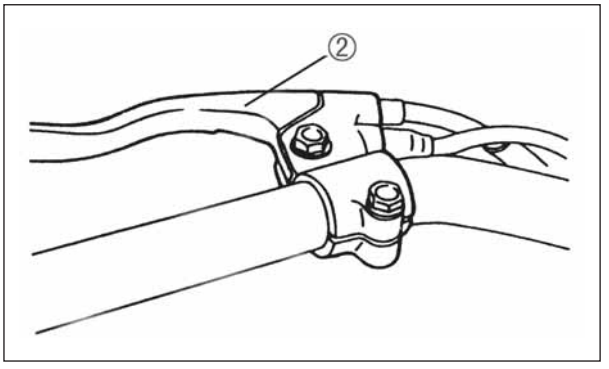
•Make the difference handlebar clamp ⓐ from front to rear to assemble the front face.

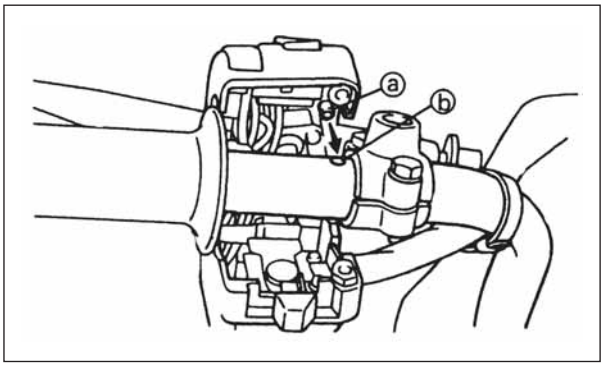


2. Assembly

Front brake lever ①

Clutch holder lever ②



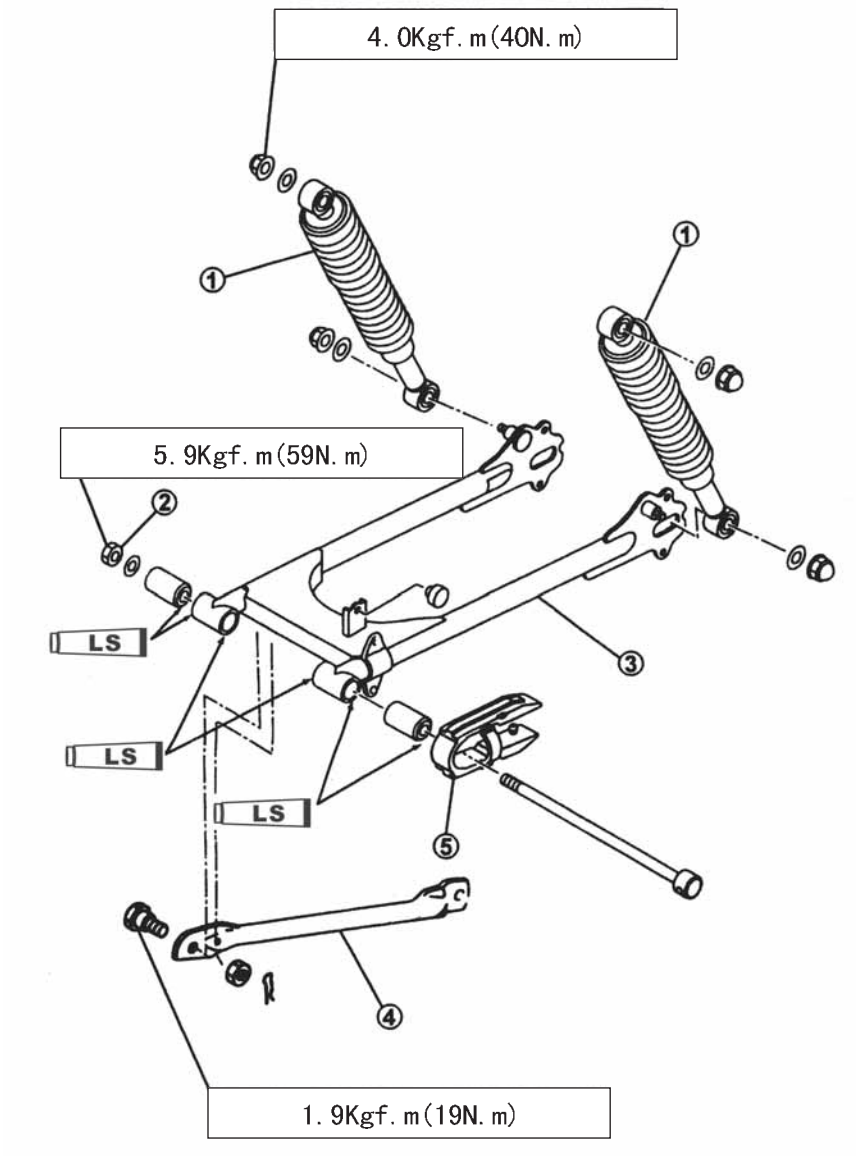


3. Install

• Handlebar switch

Be sure to insert the dowel ⓐ to dowel hole ⓑ.

Rear shock absorber and rear arm

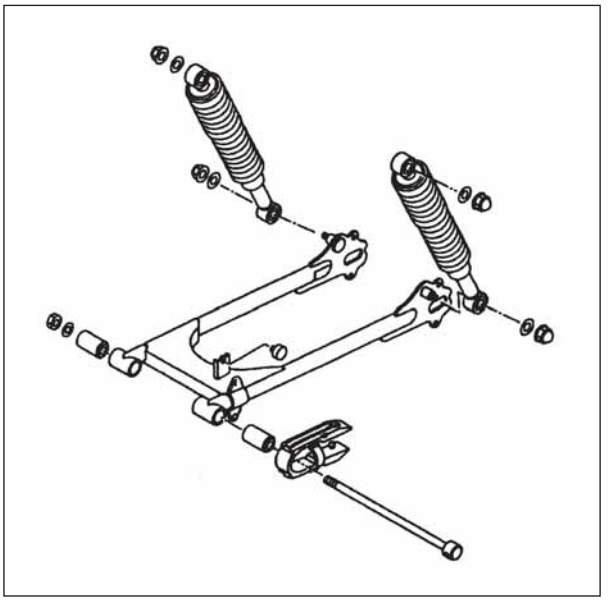


① Rear shock-absorber
② Nut
③ Rear arm
④ Connection rod
⑤ Chain cover

Disassembly

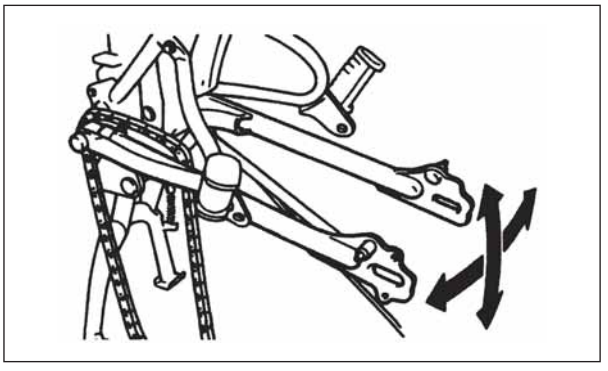
Warning

Stand the motorcycle firmly avoid turning over.



1. Rear shock absorber
2. Disassembly
• Left and right and rear shock absorber
3. Disassembly
• Rear wheel
4. Disassembly
• Chain
5. Disassembly
• Nut
• Connection rod
• Chain cover
• Rear arm

Inspect

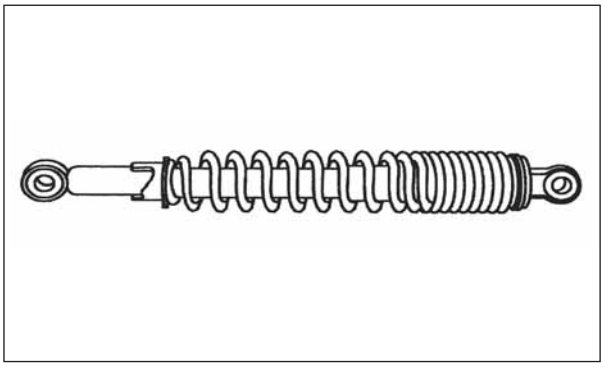


1. Inspect
• The free play of rear arm

If obvious lateral gap is found the internal ferrule should be checked

• Check the free move from upward to downward of rear arm

If the vertical shift is found too tight, clipped or unstable then replace.



2. Inspect
• Rear shock absorber

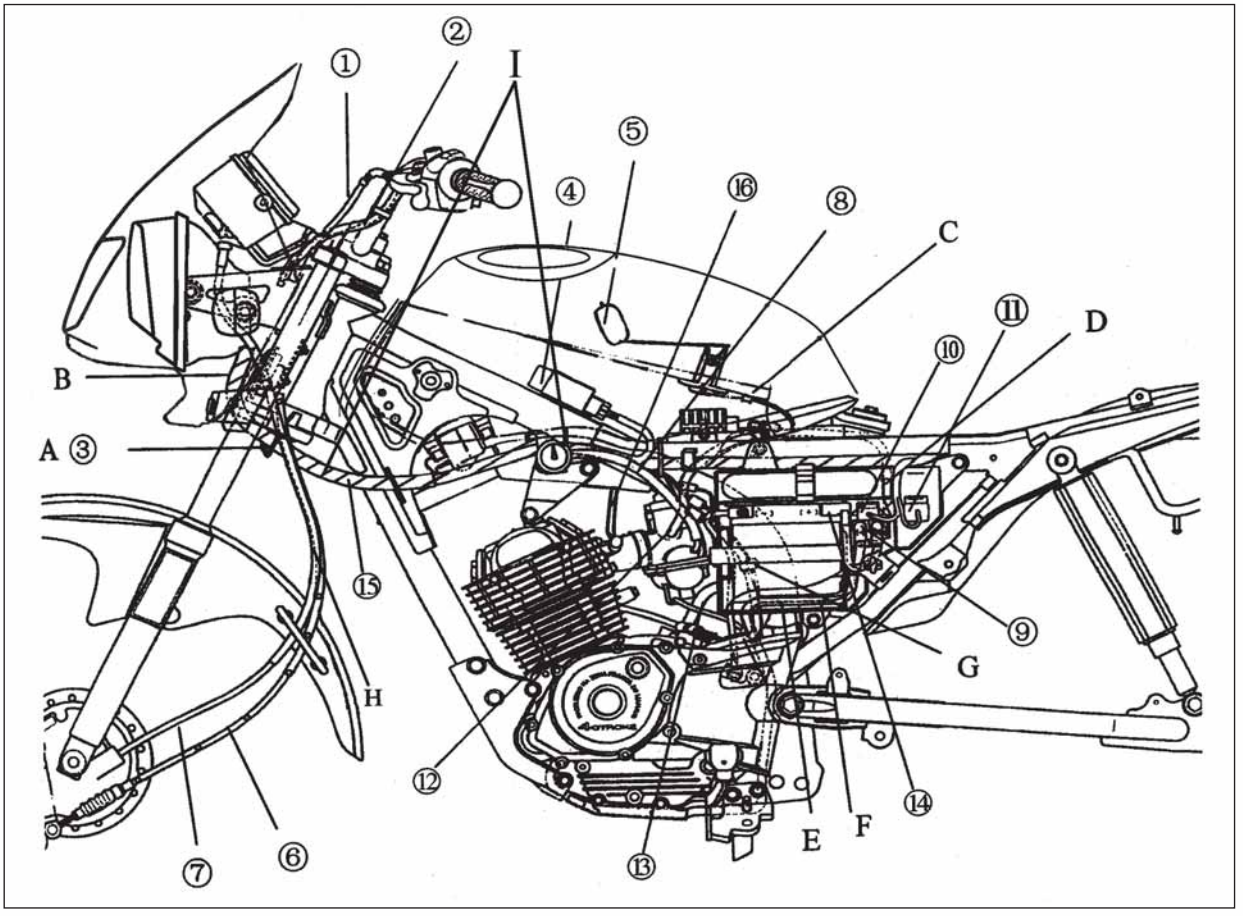
Leakage, deformation → Replace

CHAPTER 6

CABLE AND ELECTRIC APPLIANCE SYSTEM

Cable /harness wire/tube diagram

Drum brake with cowling



① Clutch cable	⑤ Fuel sensor	⑨ Fuse	⑬ Overflow pipe
② Left handlebar switch wire	⑥ Front brake cable	⑩ Start electric relay	⑭ Positive wire
③ Wire clamp	⑦ Speedometer cable	⑪ Flasher relay	⑮ Harness wire
④ CDI	⑧ Fuel pipe	⑫ Carburetor vent pipe	⑯ Negative pressure pipe

A. The harness wire must pass the wire clamp

B. The harness wire and various leads must passed through the back hole of front headlight.and connect in the inside front headlight

C. Tighten the white mark of wire by the frame wire clamp

D. Insert the carburetor vent pipe in the storage battery box clamp

E. The starter motor wire must pass through the inner side of battery

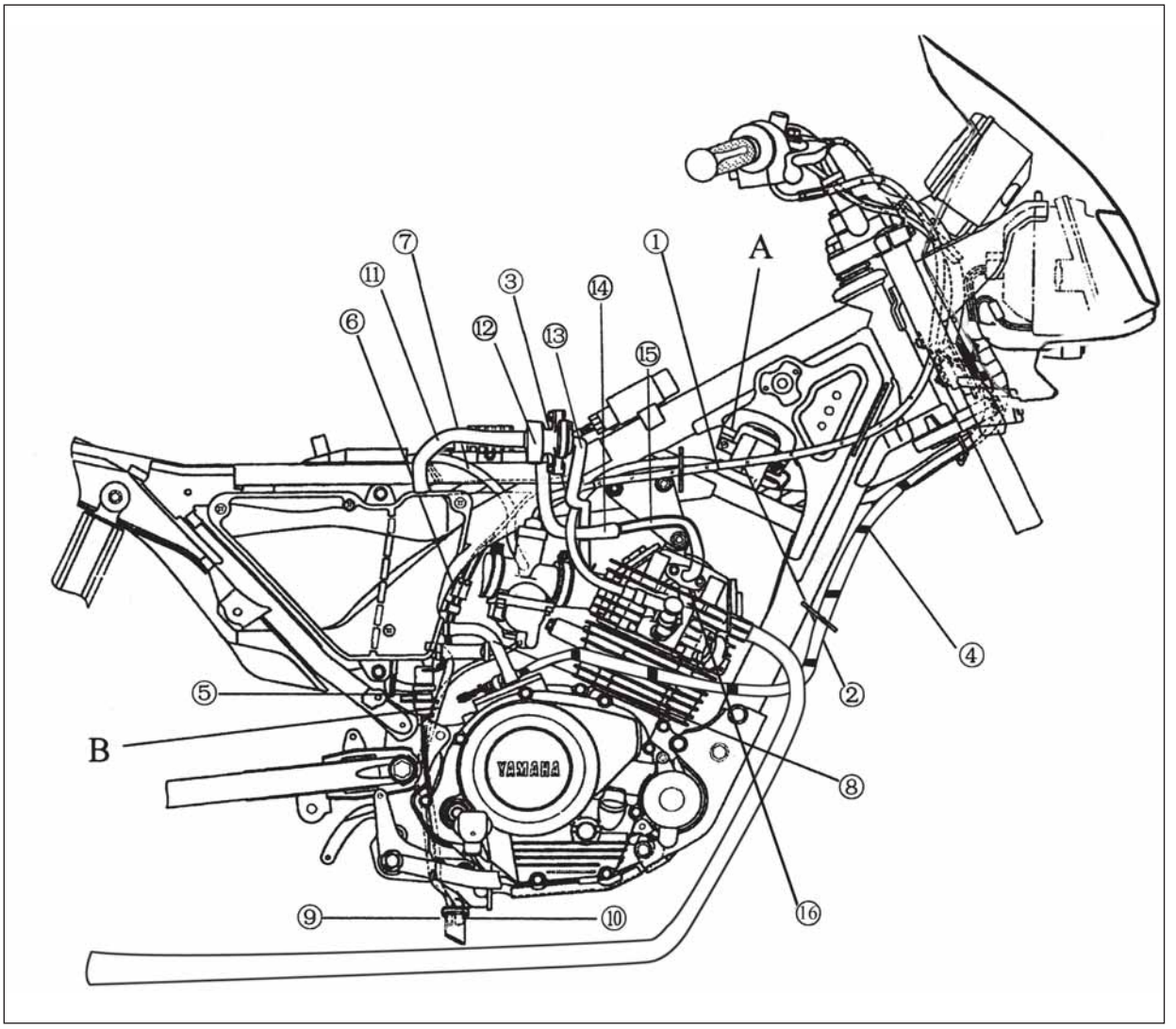
F. Storage battery vent pipe must pass through the inner side of storage battery

G. Magneto lead and brake switch lead must be fixed in here

H. The front brake cable and speedometer cable must pass through the guide

I. Harness wire must pass through this tube

Drum with cowling



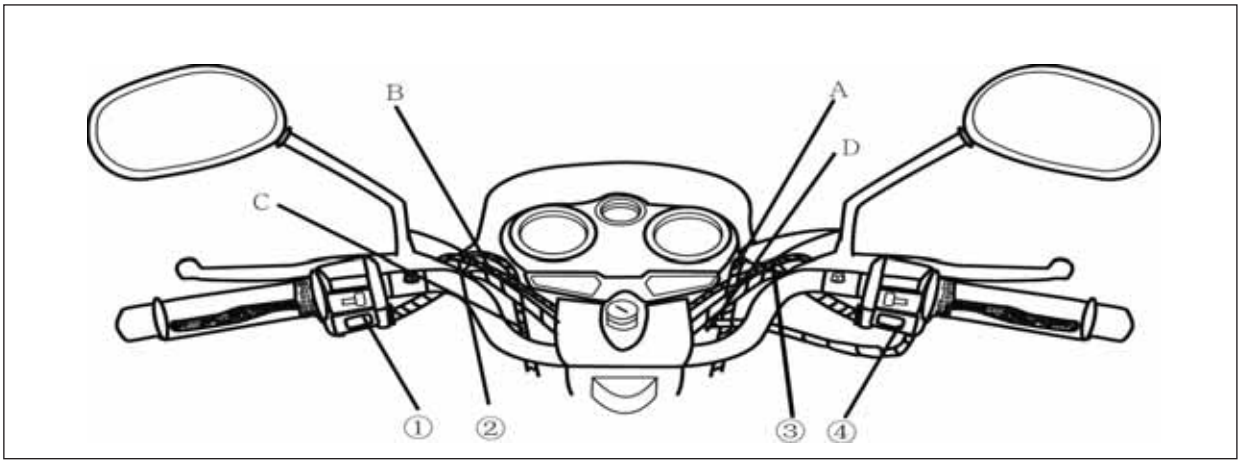
① Throttle cable
② Ignition coil
③ Ignition coil wire
④ Clutch cable
⑤ Rear brake switch
⑥ Rear brake switch lead wire
⑦ Carburetor vent pipe
⑧ Exhaust gas cycle tube
⑨ Carburetor overflow pipe
⑩ Battery vent pipe
⑪ Complementary gas pipe 2
⑫ Complementary gas valve
⑬ Negative pressure pipe
⑭ Complementary gas pipe1
⑮ Syphon assy
⑯ Washer

A.Tighten the ground wire and ignition coil together.

B.Carburetor overflow pipe and Storage battery vent pipe must pass through between the upside of crankcase and engine support.

C.Clutch cable must pass between the right side of engine cylinder and muffler.

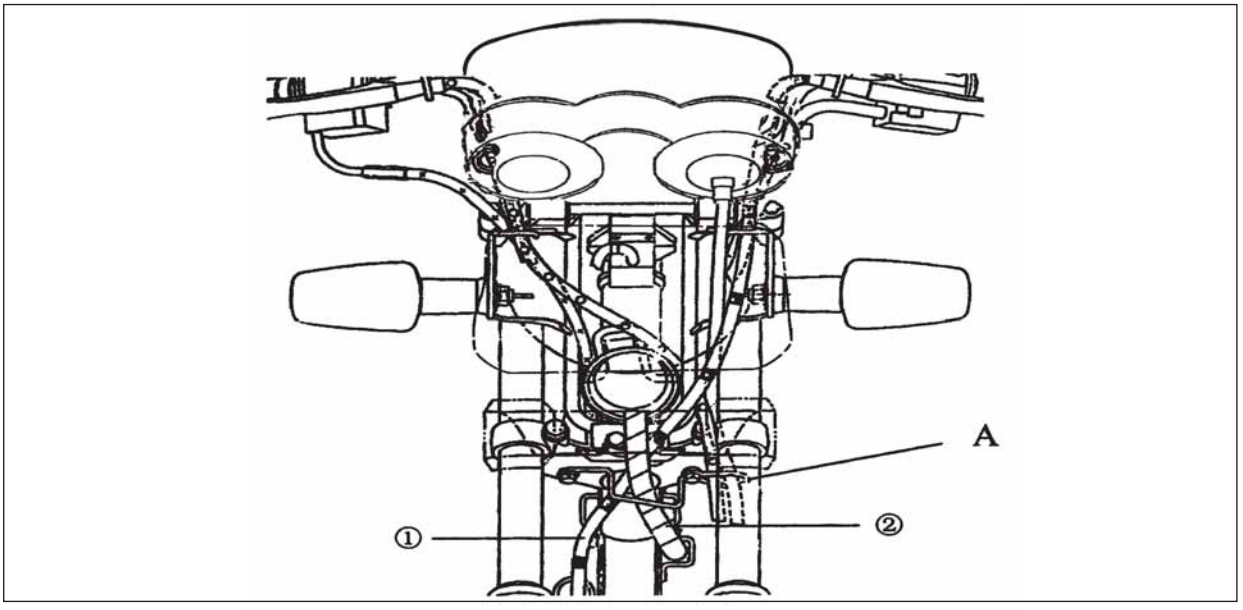
Drum with cowling



① Left handlebar switch
② Clutch switch
③ Front brake switch
④ Right handlebar switch

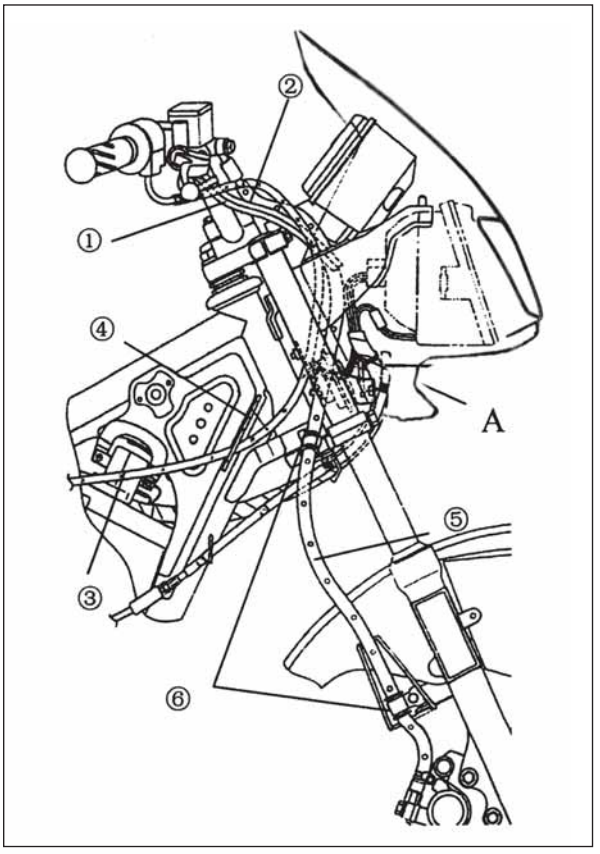
A. Trottle cable brake cable and handbar switch lead wire,must pass through the guide frame
B. Clutch cable, handlebar switch wire and clutch switch wire must pass through the guide frame
C. Be sure to tighten left handlebar switch and clutch switch wire with shell ring.
D. Be sure to tighten right handlebar and brake switch wire with shell ring.

Drum with cowling



① Clutch cable
② Harness wire

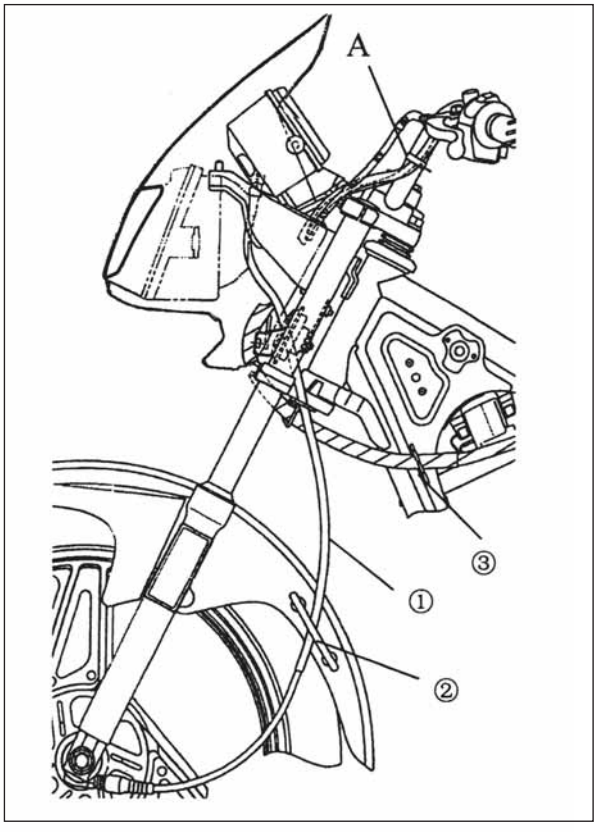
A. Speedometer cable and brake cable must pass through the guide frame



Disk brake with cowling

① Handlebar switch lead-wire
② Front brake switch wire
③ Throttle cable
④ Throttle cable guide frame
⑤ Front brake cable
⑥ Front brake cable fixture clamp

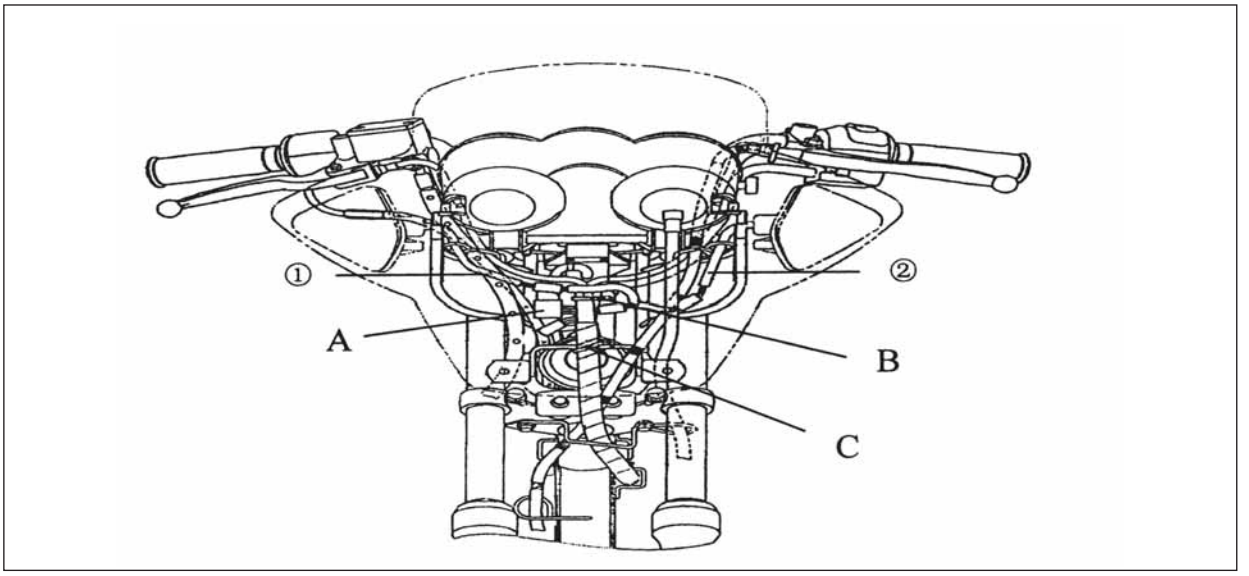
A. Connect with horn



① Speedometer cable
② Cable guide frame
③ Harness wire guide frame

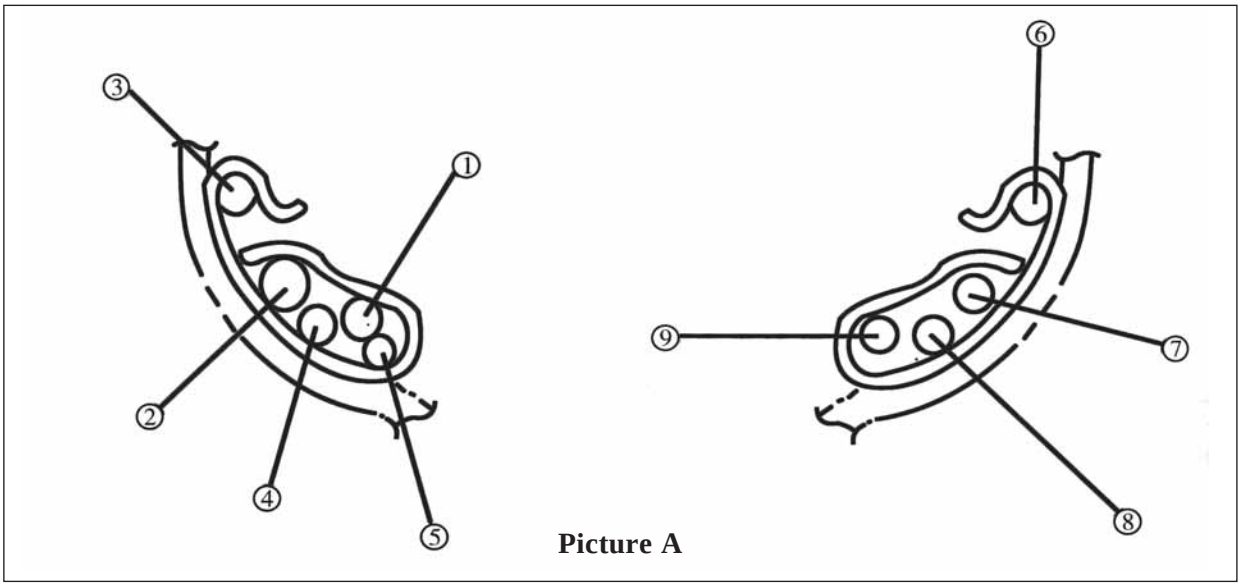
A.Tighten the handlebar switch and clutch switch wire

Disk brake with cowling



① Right flasher wire
② Left flasher wire

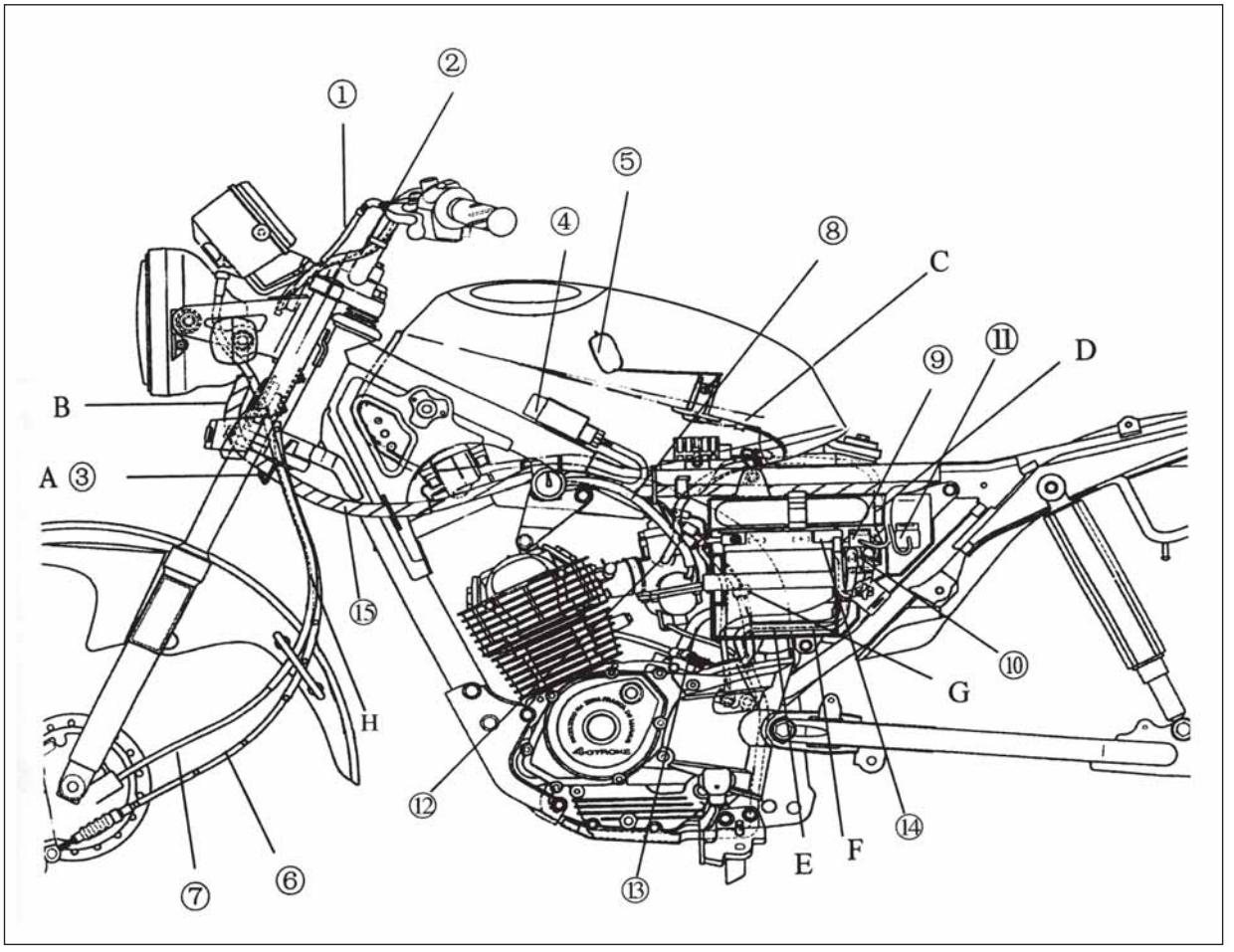
A. To front headlight
B. After connect the wire, strap it up with shell ring at this place and cut off the rest.
C. Harness wire and cowling cover at this place and cut off the rest.



Picture A

① Front brake switch wire
② Brake cable
③ Right flasher wire
④ Throttle cable
⑤ Right handlebar switch wire
⑥ Left flasher wire
⑦ Clutch switch wire
⑧ Left handlebar switch wire
⑨ Clutch cable

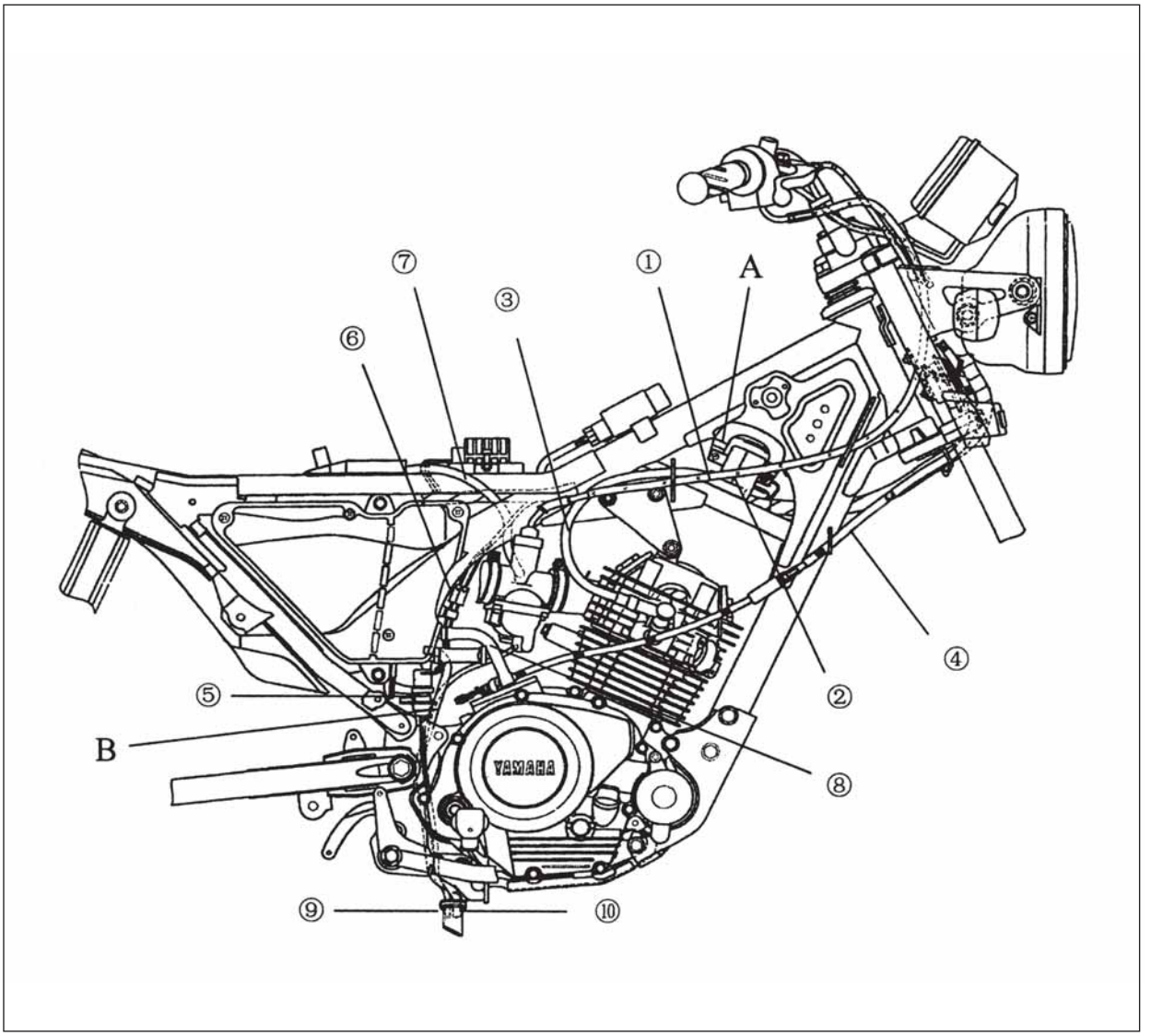
Drum without cowling



① Clutch cable
② Left handlebar switch wire
③ Wire clamp
④ CDI
⑤ Fuel sensor
⑥ Front brake cable
⑦ Speedometer cable
⑧ Fuel pipe
⑨ Fuse
⑩ Starter relay
⑪ Flasher relay
⑫ Carburetor vent pipe
⑬ Carburetor overflow pipe
⑭ Positive wire
⑮ Harness wire

A. The harness must pass the wire clamp
B. Harness wire and various leads must passed through the back hole of front light, and connect in the inside front headlight
C. Tighten the white mark of wire by the frame wire clamp
D. Insert the carburetor vent pipe in the storage battery box clamp
E. The starting motor lead must pass through the inner side of storage battery
F. Storage battery vent pipe must pass through the inner side of storage battery
G. Magneto lead and brake switch lead must be fixed in here
H. Brake cable and speedometer cable must pass through the guide

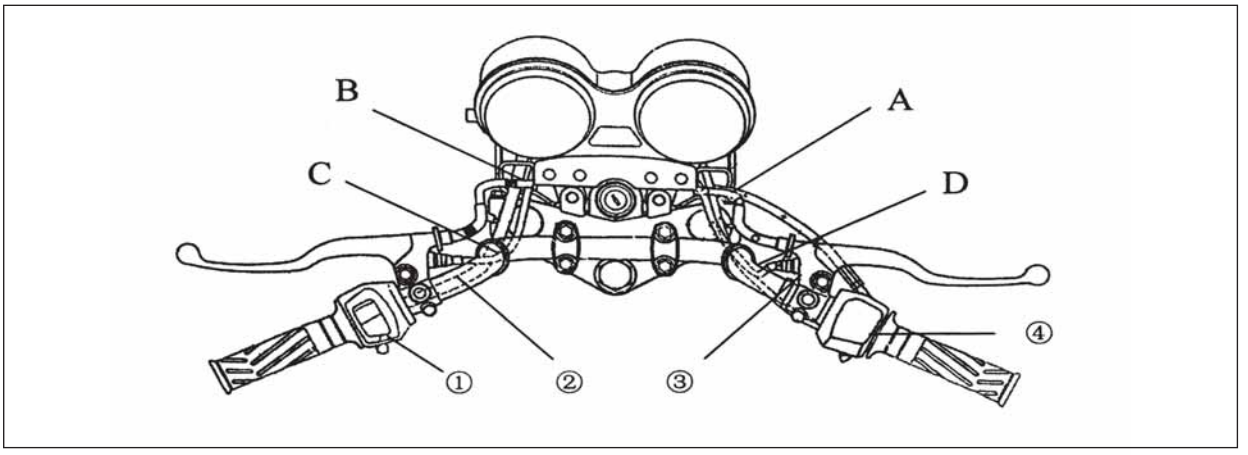
Drum without cowling



① Throttle cable
② Ignition coil
③ Ignition coil wire
④ Clutch cable
⑤ Rear brake switch
⑥ Rear brake switch lead wire
⑦ Carburetor vent pipe
⑧ Exhaust gas circulation pipe
⑨ Carburetor overflow pipe
⑩ Storage battery vent pipe

A. Tighten the ground wire and ignition coil together.
B. Carburetor overflow pipe and Storage battery vent pipe must pass through between the upside of crankcase and engine support.

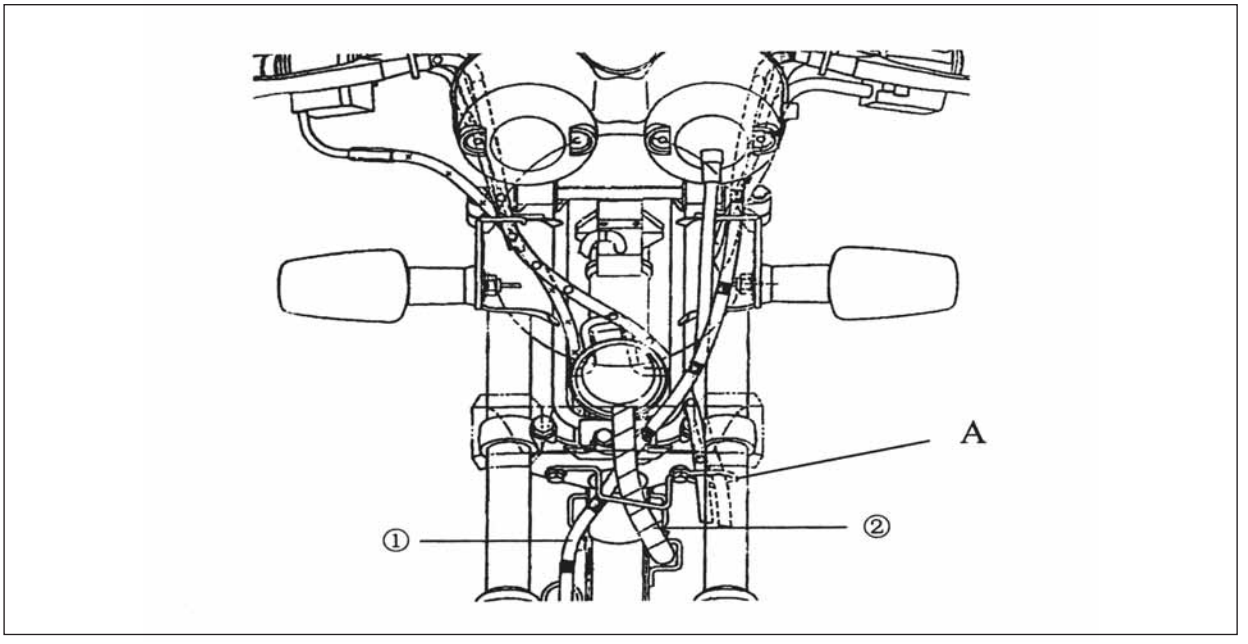
Drum without cowling



① Left handlebar switch
② Clutch switch
③ Front brake switch
④ Right handlebar switch

A. Throttle cable ,brake cable and brake switch lead wire,handlebar switch wire must pass through the guide frame
B. Clutch cable, handlebar switch wire and clutch switch wire must pass through the guide frame
C. Be sure to tighten left handlebar switch and clutch switch wire with shell ring.
D. Be sure to tighten right handlebar and brake switch wire with shell ring.

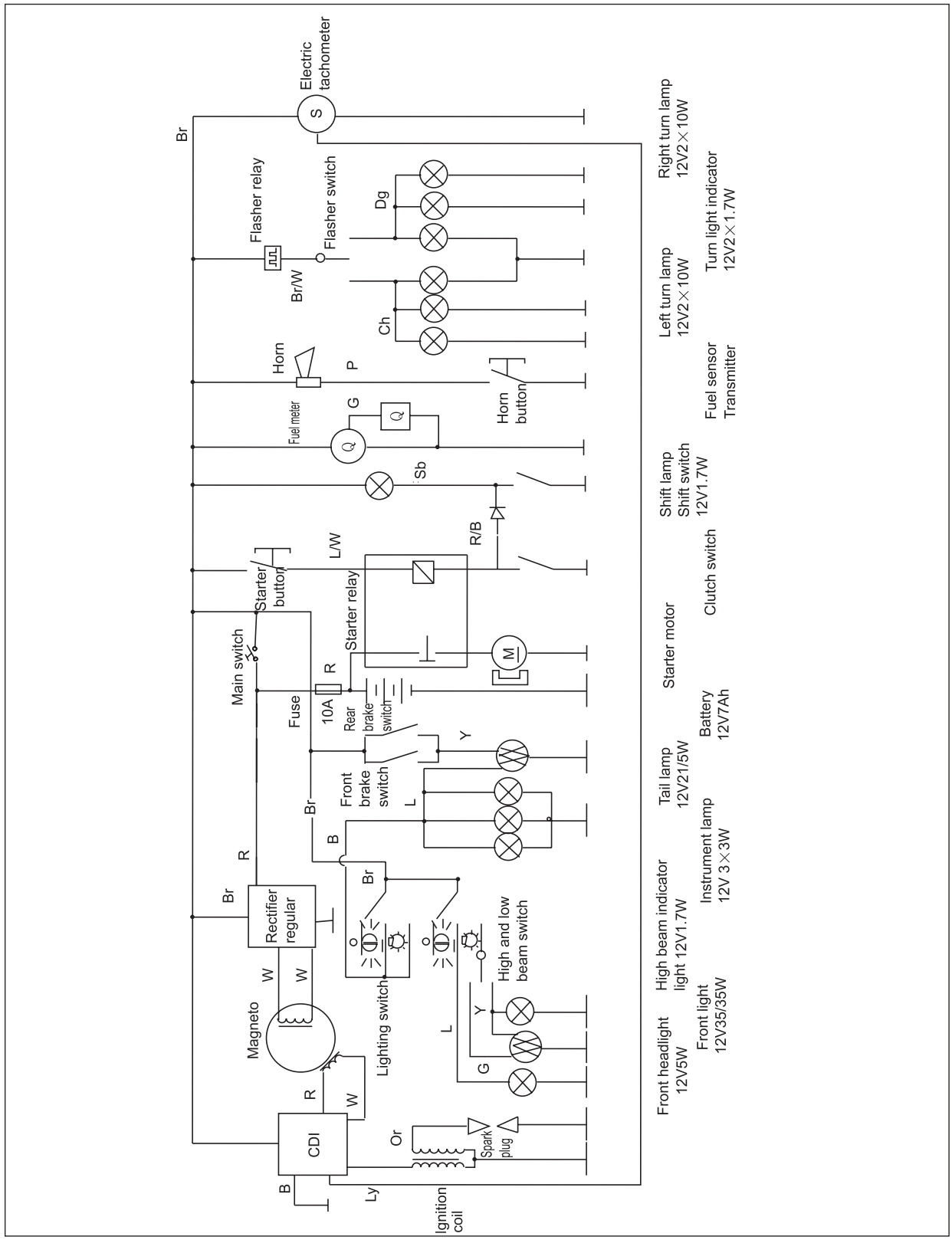
Drum without cowling



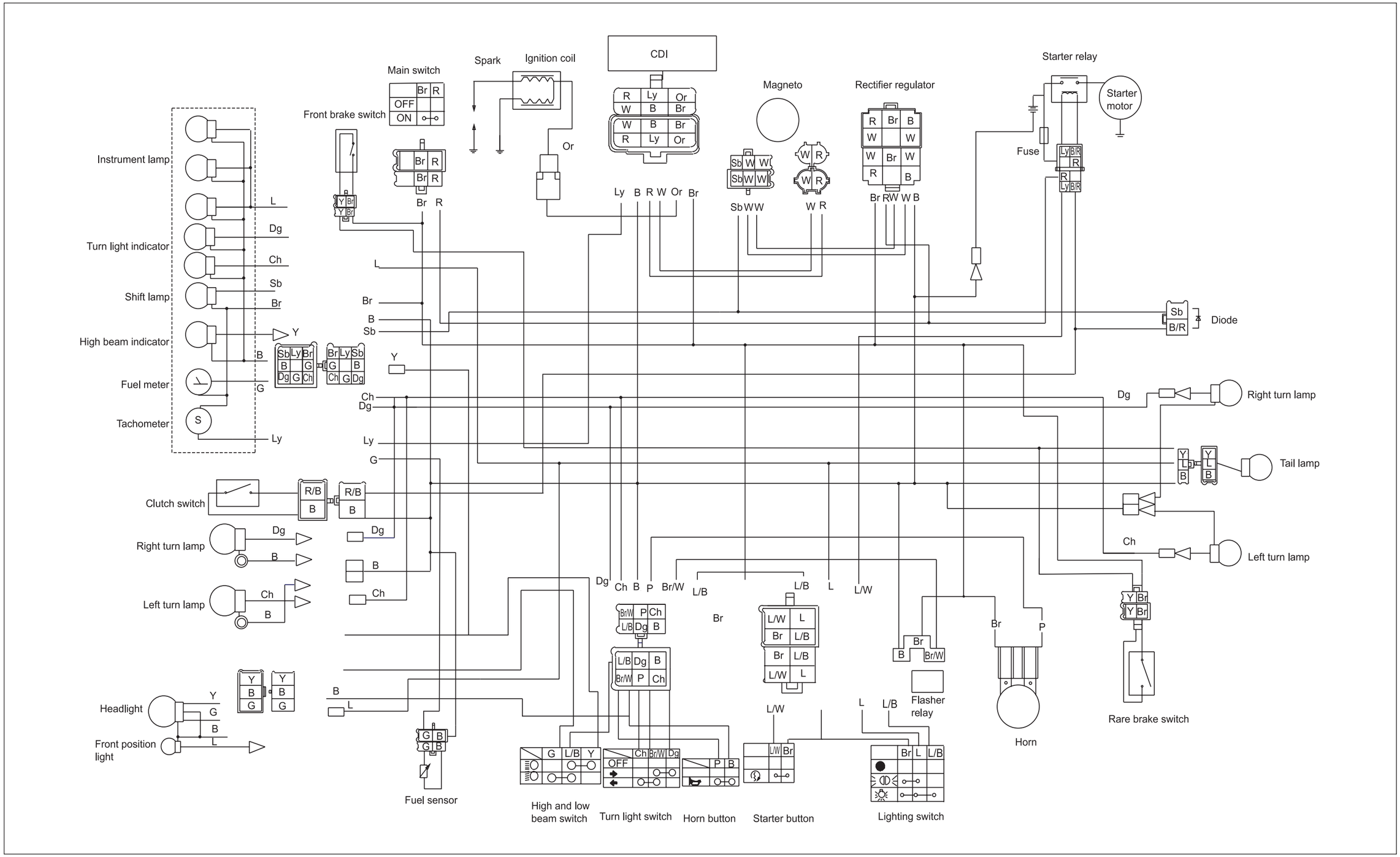
① Clutch cable
② Harness wire

A. Speedometer cable and brake cable must pass through the guide frame

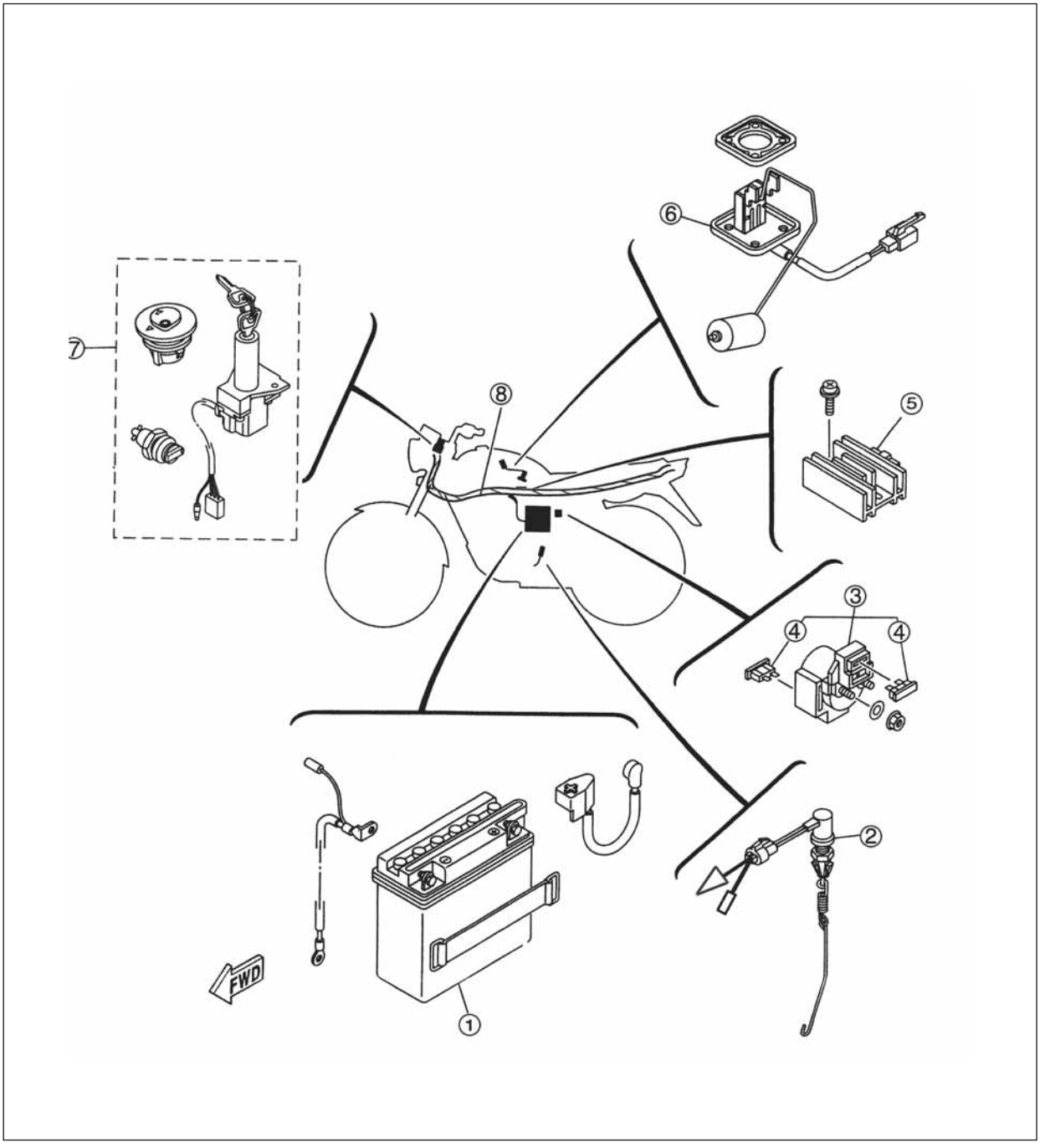
Electric device principle



Electric appliance

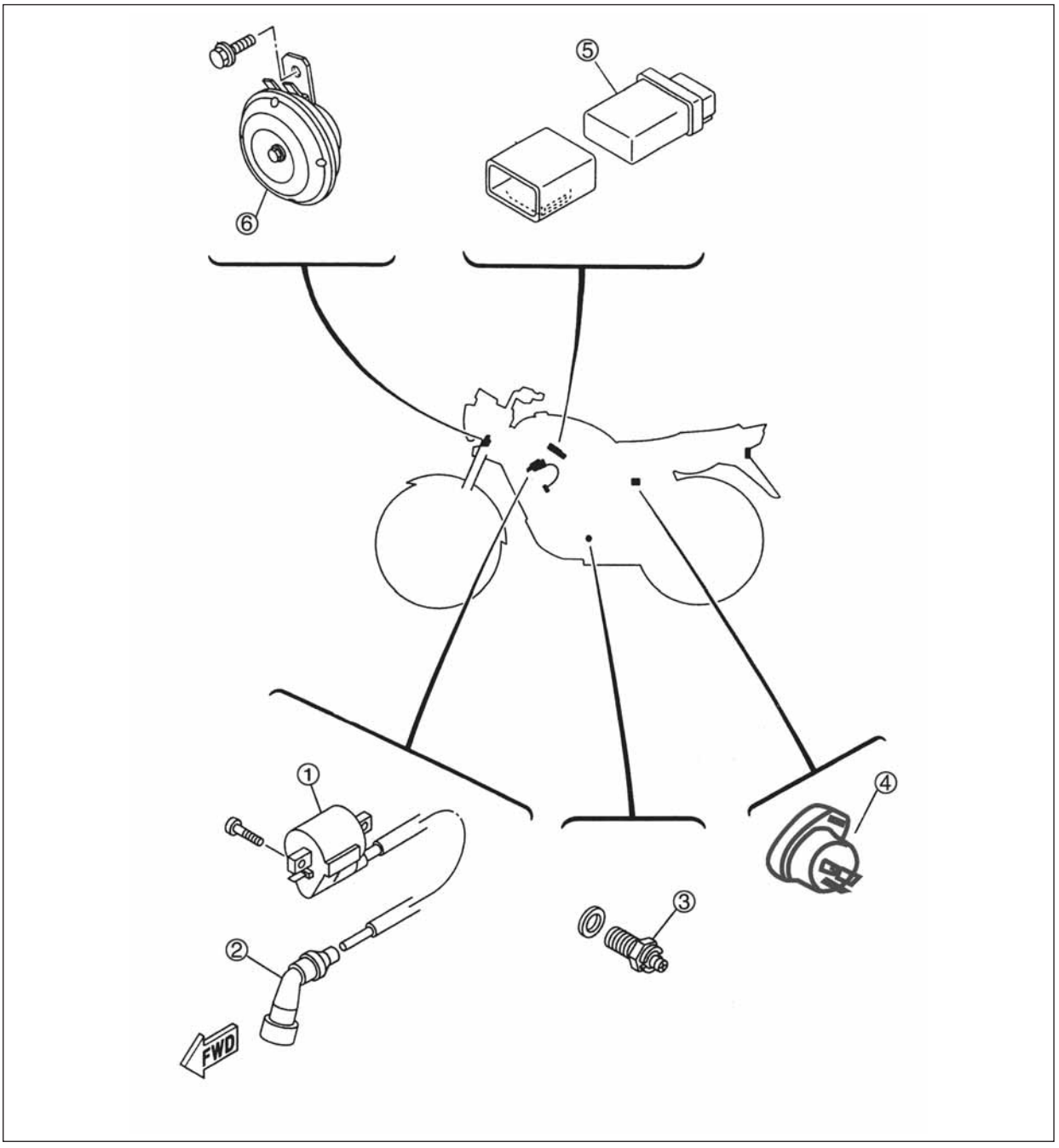


Components of electric appliance

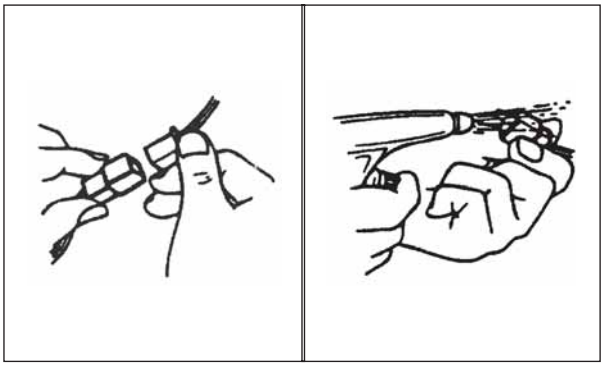


① Storage battery
② Rear brake switch
③ Starting relay
④ safety assy
⑤ Rectifier regulator
⑥ Oil sensor
⑦ Key sets
⑧ Harness wire

Components of electric appliance



①Ignition coil
②Spark plug cap
③Shift switch
④Flasher relay
⑤CDI
⑥Horn



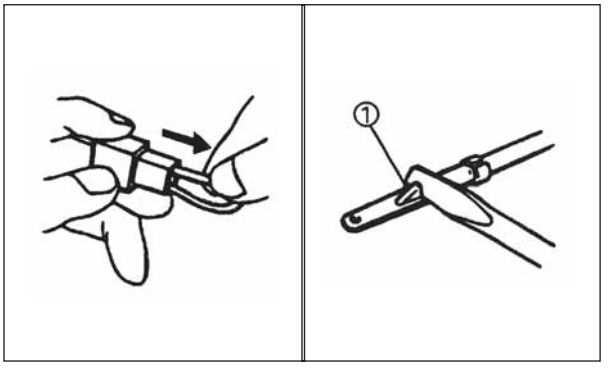
Socket connector inspection

Clean away the dirt, rust and moisture on the socket connectors

1. Disconnect:

• Socket connectors

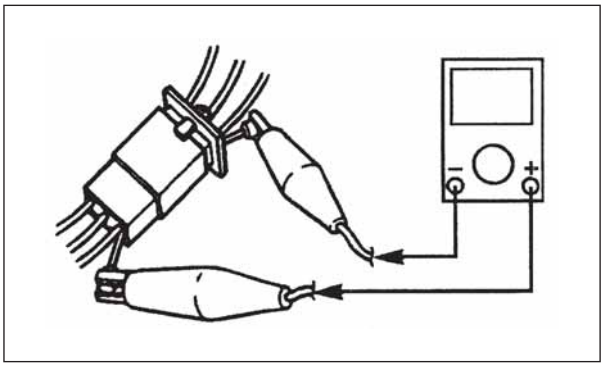
2. Dry every binding post with bowing device



3. Connect and disconnect every socket connector 2～3 times

4. Stretch the wires to check if the wire is disconnected.

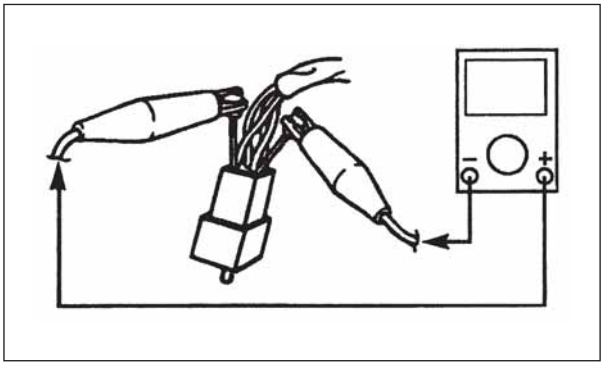
5. If the binding post is drawn out, the pin should be crankled. Insert the binding post into the socket connectors.



6. Connection

• Socket connectors

7. Check if the socket connectors are powered on with a multitester.



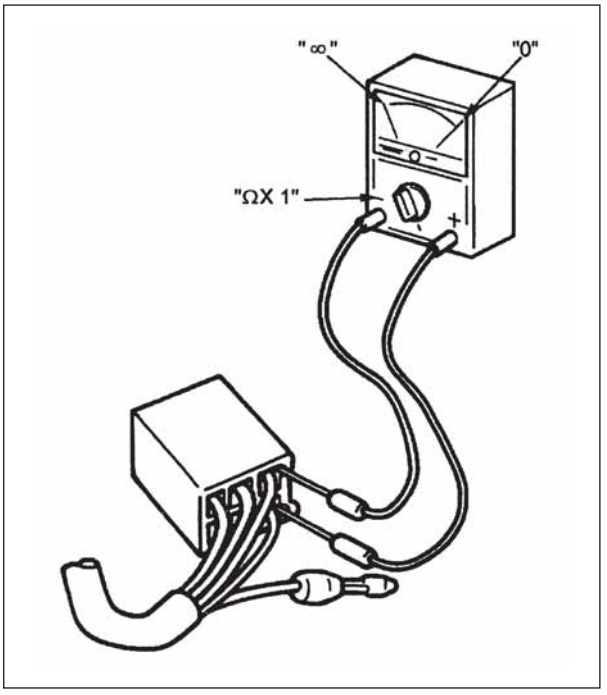
Note

• If the circuit is found not powered, then clean the binding poles.

• Repeat the inspection noted in the above 1～7porcedures after check the wires.

• Do inspect the socket connectors after replacing the CDI device.

• Check the socket connectors with a multitester as shown in the figure.



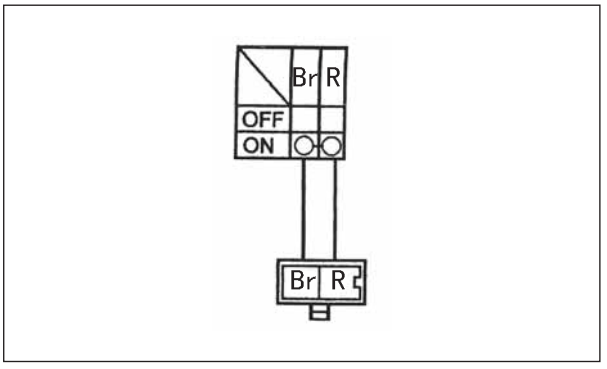
Switch inspection

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

	Pocket tester

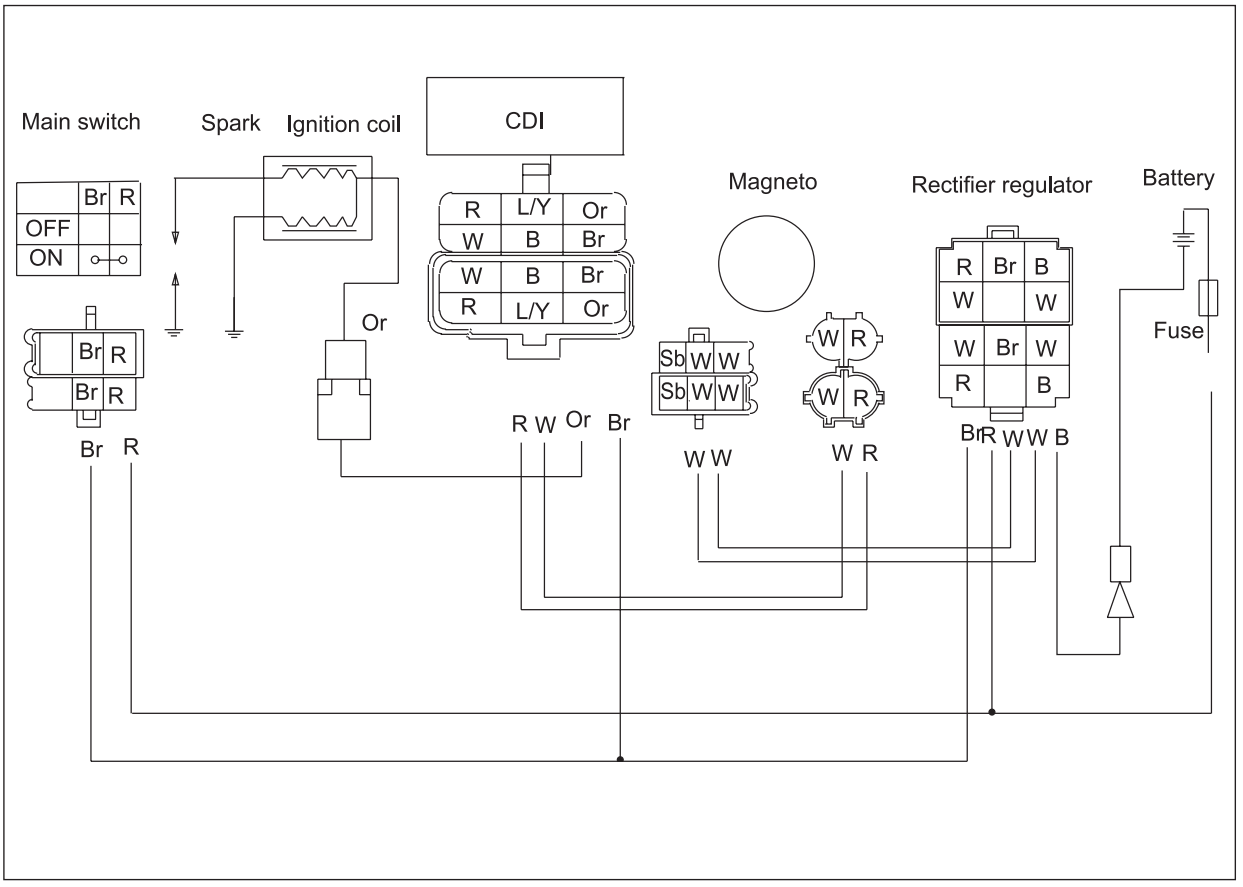
Note

•Should turn on and off the switch many times when inspecting.
• Adjust the multi meter to inspecting
• Adjust the multi meter to O before when inspecting the circuit



The manual explains how to inspect the switch, The left figure indicate the wire and position of switch. The vertical line indicates switch position. The first row indicates color of switch wire. To every switch O-Oindicates the circuit between the wire ends is on. When the switch is adjusted to on the “red” and “brown” wire are on.

Ignition system diagram



Fault obviation

Ignition system inefficiency (no spark or interrupted spark)

Check steps

1. Spark plug
2. Check the spark
3. Spark plug cap resistance
4. Ignition wire
5. Pulse wire resistance
6. Ignition charging resistance
7. Main switch
8. Ignition system circuit

Note

The following components should be disassembled before all fault is obviated

① Side cover ② Seat cushion ③ Fuel tank

The following special tools should be used to obviate the fault

	Ignition test device

	Small-size multitester

1. Spark plug

Check the condition of spark plug
Check the code of spark plug
Check the gap of spark plug
Refer to the section of "spark plug inspection" in part 3

Code of standard spark plug model: CR6HSA

	Spark plug gap: 0.6～0.7mm (0.02～0.03in)

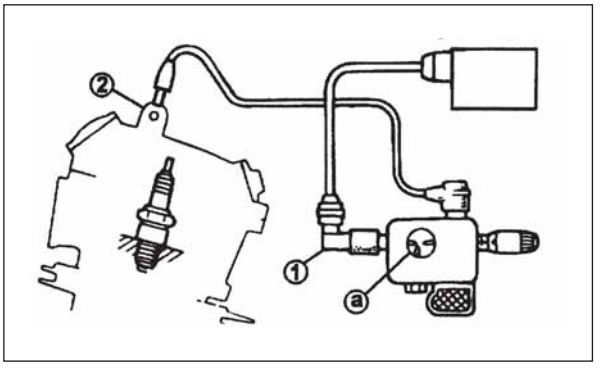
Abnormal → Replace or adjust

Normal ↓

2. Check the spark

Spark plug cap ①→ Ignition coil ammeter
Ignition coil wire → Spark plug ②

Turn the main switch to "ON" position and check weather the spark arc is normal



	Min interval of spark: 6.0mm

Spark arc run up to the prescribed value → Ignition system works well

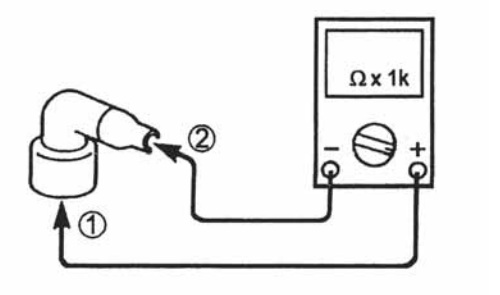
3. Spark plug cap resistance

Disassemble the cap of the spark plug
Connect a small-size(Ω × 1K) to the spark plug cap

Note

Do not pull off the spark plug from the high tension wire
Disassemble in an anticlockwise way
Install in a clockwise way
Before assemble the spark plug cap, check the high-tension wire firstly.
Cut off 5mm of high-tension wire before assembly.

Multimeter⊕lead → Side of spark plug ①
Multimeter⊖lead → High tension wire ②



Spark plug cap resistance:
5K Ω ± 20% (20℃)

Out of stipulation

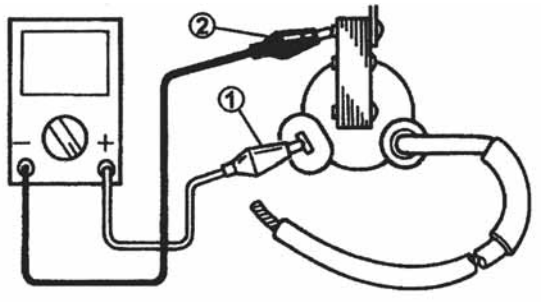
The spark plug cap is faulty and should be replace.

4. Ignition coil first resistance

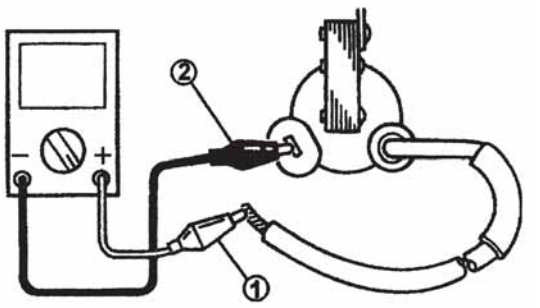
Disassemble the wire of the coil away from the wire harness.
Connect a small-size(Ω × 1K) to the spark plug cap
AC.CDI Ignition

primary coil resistance:
0.3 Ω ± 10% (20℃)

Multimeter⊕lead → Orange spark plug wire ①
Multimeter⊖lead → Ground wire ②



Multimeter ⊕lead → Orange spark plug wire
Multimeter⊖ lead → Ground wire



5. Ignition coil secondary resistance

Disassemble the wire of the coil away from the wire harness.
Connect a small-size(Ω × 1K) to the spark plug cap
AC.CDI Ignition

primary coil resistance:
3.16K Ω ± 10% (20℃)

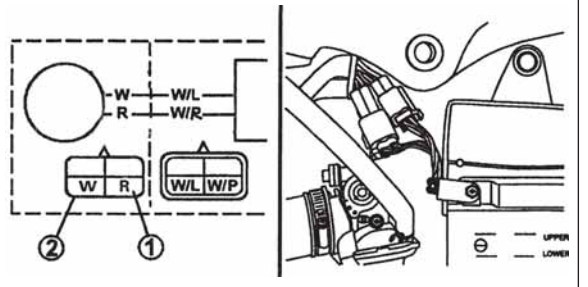
Abnormal

The ignition coil is faulty and should replaced.

Check if the resistance of two coils work normally

6. Source coil resistance

• Disassemble the socket connector of source coil and ignitor away from the wire.
• Connect the small-size multitmeter(Ω × 1000) to eh socket connector of source coil, and the ignition coil.
Multimeter⊕ lead → red
Multimeter⊖ lead → white

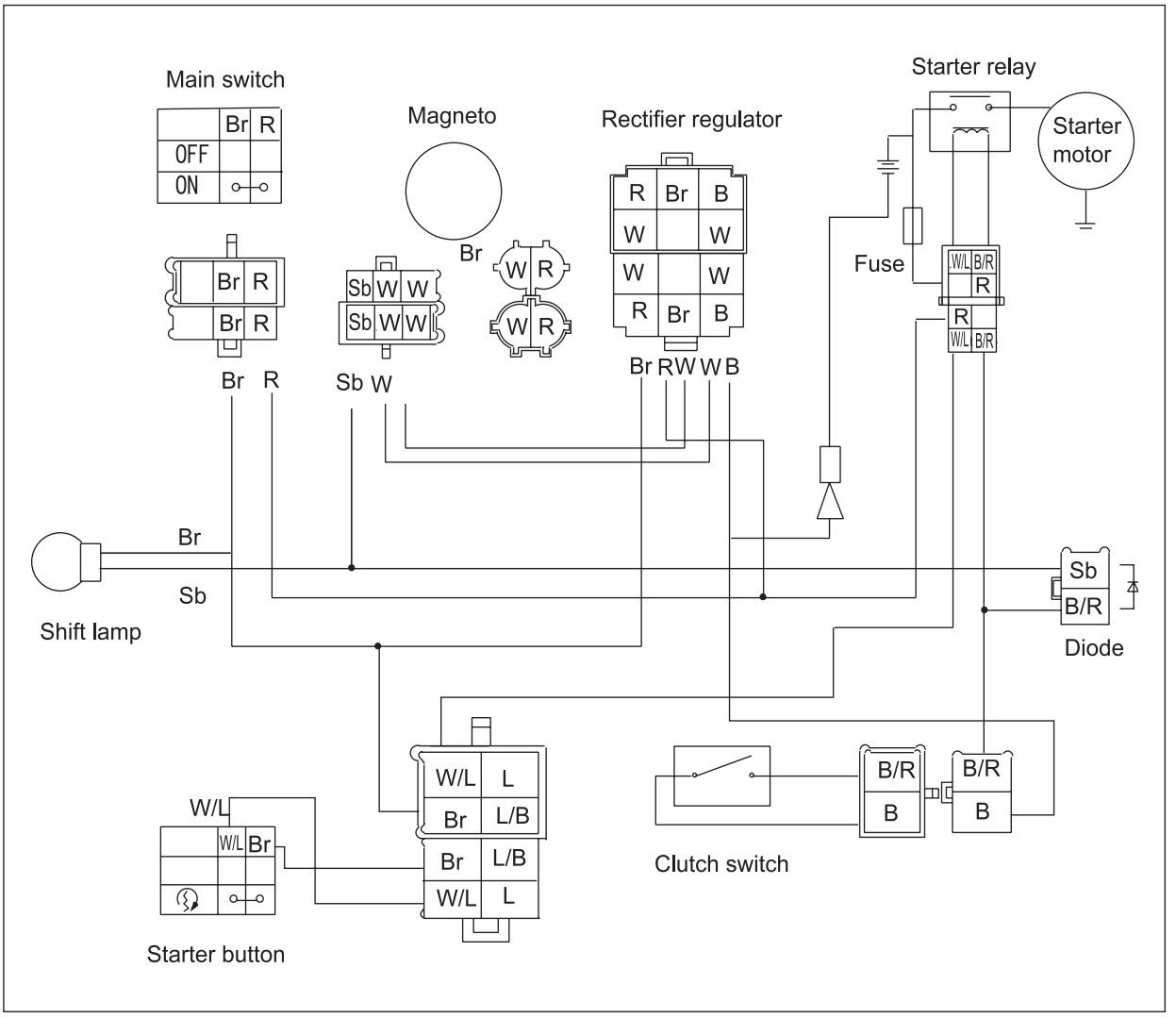


Regulation resistance:
310K Ω ± 20%(20℃)

Out of stipulation

Replace Source coil

Electric start system



Troubleshooting

Starter motor doesn't run

Inspection steps

1. Storage battery
2. Fuse
3. Starter motor
4. Main switch
5. Starter relay
6. Starter switch
7. Neutral switch
8 Clutch switch

Note

The following parts should be disassembled before troubleshooting

① Side cover ② Seat

The following special tools should be used to trouble-shoot

	Small-size multimeter

1.Protecting Device

- Disassemble the protecting device
- Connect a small size multimeter (Ω × 1) to the protecting pipe
- Check if the protecting pipe is powered on

No electrification → The fuse has blown

electrification ↓

2. Storage battery

- Check the storage battery condition
- Please refer to the part III of "Storage battery"

Abnormal →

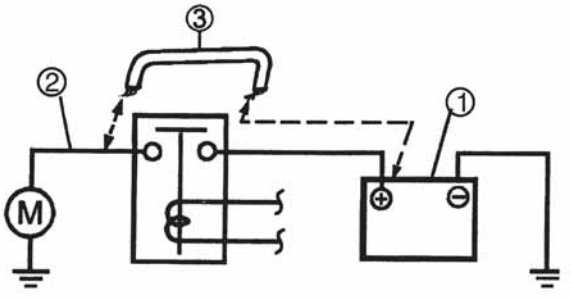
- Refill distilled water
- Clear the binding pole of storage battery
- Charge the battery or replace it

Voltage: 12.5V
Specific gravity of elecrolyte: 1.280,20℃

Normal ↓

3. Starter motor

Connect the binding pole of the battery with the cable of starter motor with crossbond as shown in the figure.



Check if the starter motor works normally.

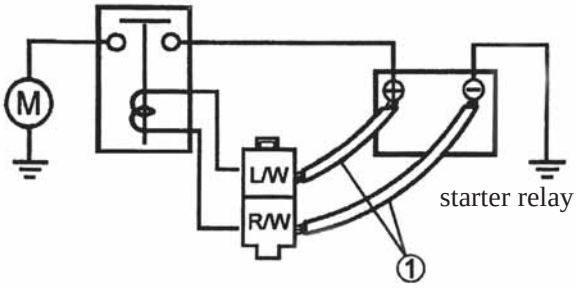
Faulty

The starter motor is faulty and should be checked or replaced.

Run

4. Starter relay

Disassemble the socket connectors of the start Connect the storage battery with the cable strat electric relay with cross-bond as shown in the figure.



Check if the starter relay functions normally

Faulty work

The starter relay is fault and should be replaced

Run

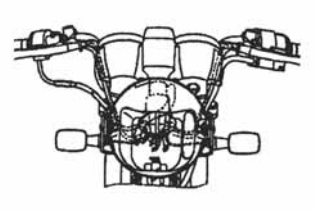
Warning

The cross-bond should have an equel or more capacivity than the wire of the storage battery, otherwise the cross-bond will be fused.

Error spark may occur in the inspection, inflame gas or liquid should be kept away from the around area.

5. Main switch

• Disassemble the socket connectors of the main switch away from the wire harness.
• Check if the switch can connect to "Red / Brown"



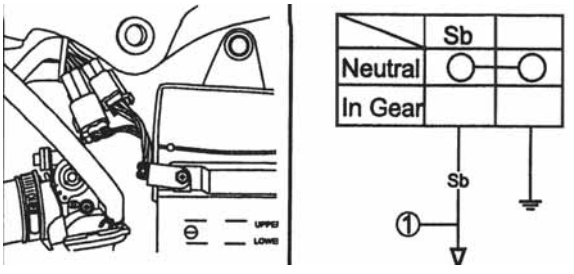
Abnormal

The main switch is faulty, and should be replaced.

Normal

6. Neutral switch

Disassemble the socket connectors of the neutral switch away from the lead wire.
Check if the switch can connect to "light blue ① / ground wire".

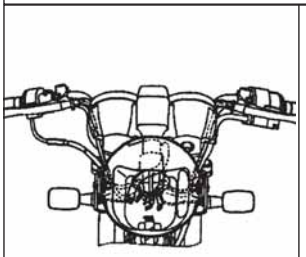


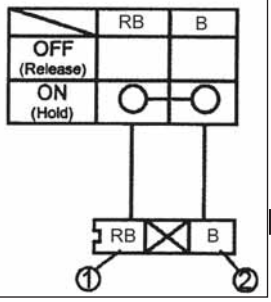
Abnormal

The neutral switch is faulty, and should be replaced.

Normal

7. Clutch switch
Disassemble the socket connectors of the clutch switch away from the lead wire. Check if the switch can connect to "red black ①/ black ②".





Abnormal

The clutch switch is faulty, and should be replaced.

Normal

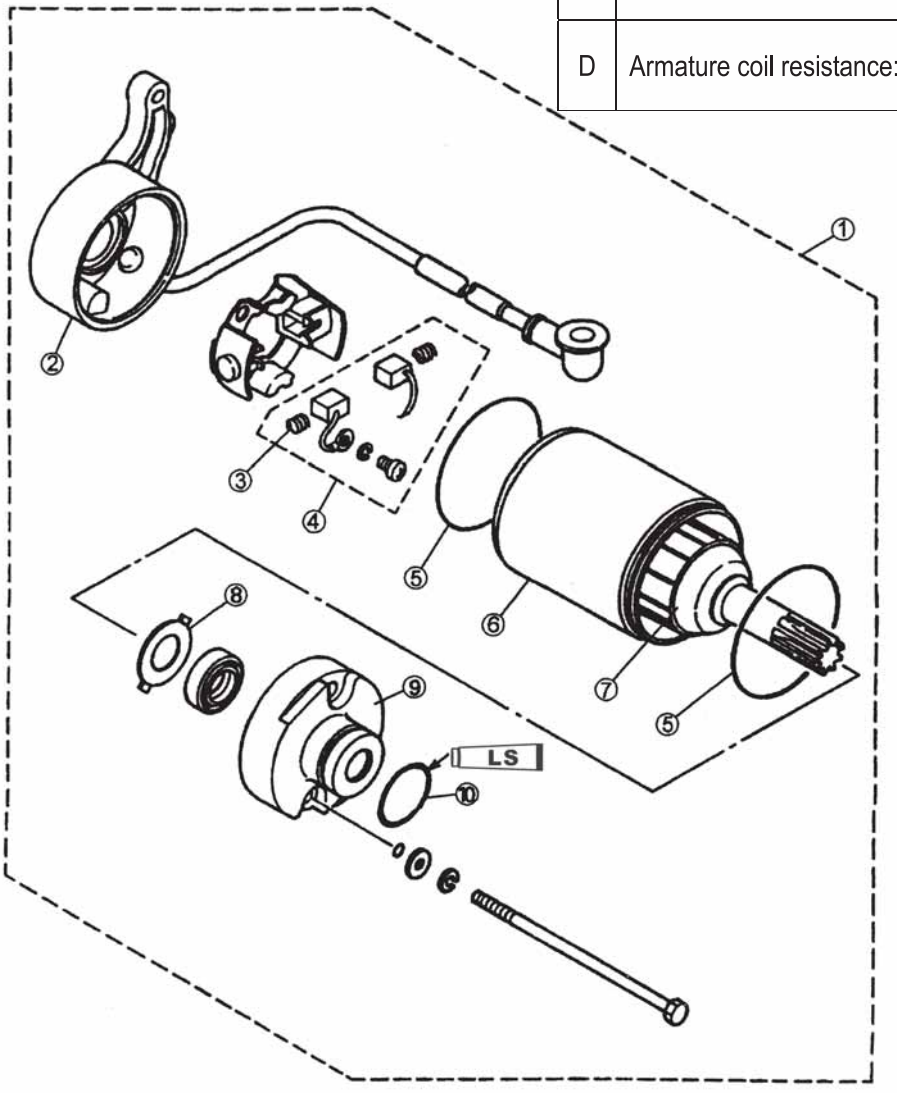
8. Wire connection condition
Please refer to the section of "Electric circuit".

Poor connection

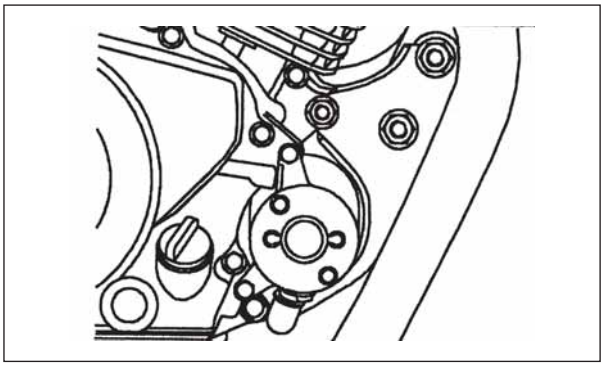
Adjust or replace.

Starting motor

A	The max. length of electric brush: 3.5mm
B	The max. wearing of commutor: 21.0mm
C	Mica slot: 1.5mm
D	Armature coil resistance: 0.017～0.021Ω20℃



① Starting motor assy
② Rear bracket
③ Brush spring
④ Brush assy
⑤ O-ring
⑥ Magnetic yoke
⑦ Armature
⑧ Adjusting washer
⑨ Front bracket
⑩ O-ring



Remove

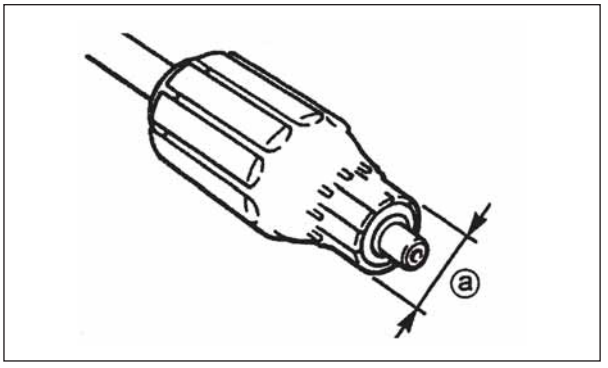
1.Remove
- Starting motor wire
- Starting motor assy

Discharge

1.Before discharge, sign some marks on the front and rear brockets, so that it can easy to check.

2.Remove
- Front brocket
- Washer
- Rear brocket

3.Remove
- Armature
- magnetic yoke
- Brush



Inspection and repairment

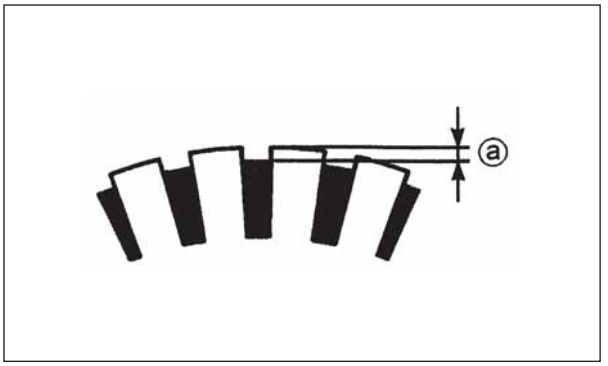
1. Check:
- Commutator

Dirt → Polish with 600# sand paper

2. Measure:
- Diameter of commutator ⓐ

	Wear limit of commutator: 21mm

Out of specification → Replace starting motor



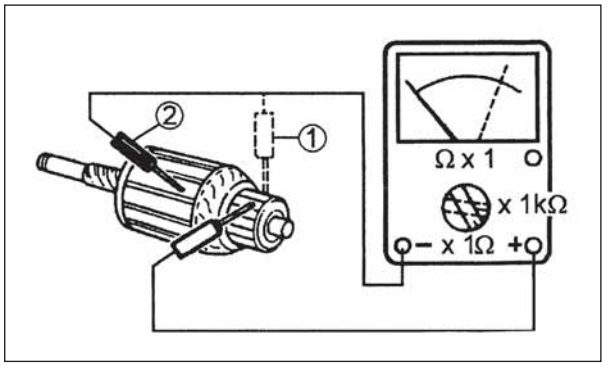
3. Measure:
- Depth of mica sheet undercut ⓐ

	Depth of mica sheet undercut: 1.5mm

Out of specification → Repair mica sheet with hand-saw blade to make meet specification.

Note

In order to ensure the normal work of commutator , the isolation mica sheet of commutator must have undercut.



4.Check

• Armature coil (insulation/continuity)

Defects → Replace starting motor

****

Inspection steps:

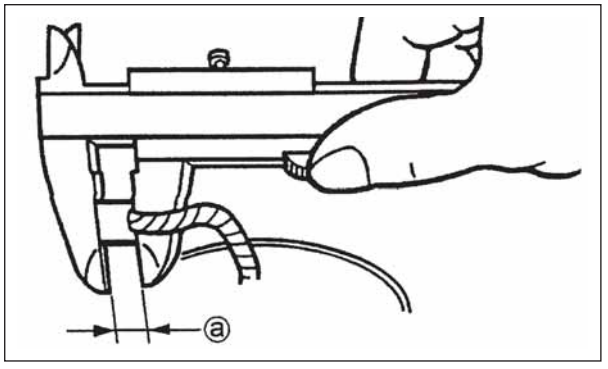
Connect the pocket tester for the continuity checking ① and insulation checking ②

Measure the armature resistance.

	Armature coil resistance: Continuitychecking ① 0.017～0.021 Ω 20℃ Insulation checking ② More than:1M Ω 20℃

If the resistance is incorrect, replace the starting motor.

****



5. Measure:

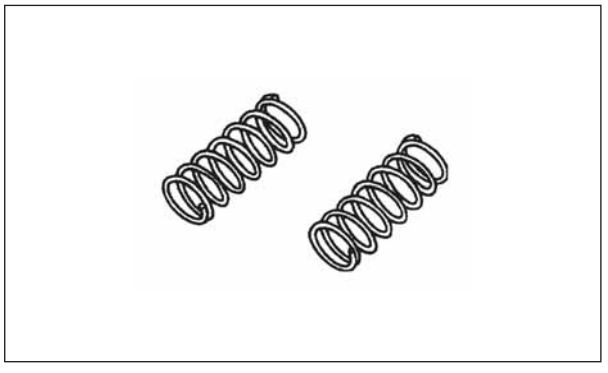
• Brush length ⓐ

	Brush length limit value: 3.5mm

Out of specification → Replace the brush

Note

When replacing brush, pay attention to its side which swrentched

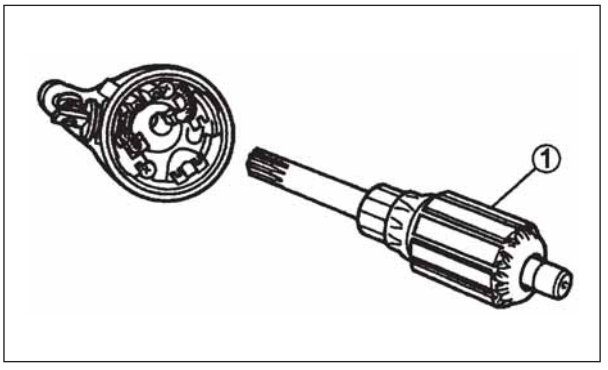


6. Measure

• Brush spring force

	Brush spring force: 560～840g

Fatigue / Out of specification → Replace as a set.



Mount

Mount as the reserves steps as "remove"

1.Mount:

• Brush spring ①

• Brush ②

Note

• When mounting brush the brush wire should round over the projection outside of brush spring clip.

• When mounting brush, make the brush terminal touch slightly the projection of brush spring clip side.

2. Mount

Armature ①

Note

When mounting the armature, press the brush with small screwdriver to avoid damaging it.

3. Install

• O-ring

Note

Replace a new one.

4. Install

• Magnetic yoke

Note

Aimed the marks to the rear brocket's matching mark and then install.

5. Install

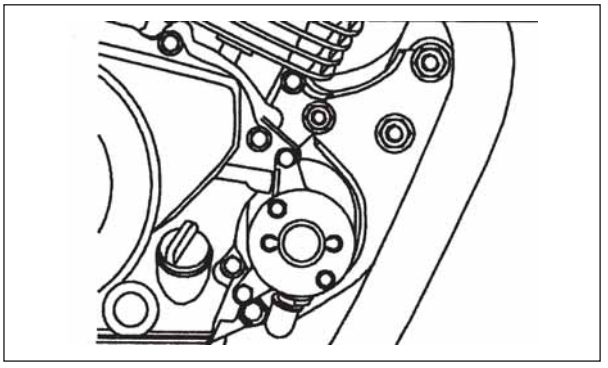
• Washer

• Front brocket

Note

• Aimed the boss of washer to the groove of front brocket, and then install.

• Make the marks of gear and front and rear brockets matching.



	Bolt: 0.5Kgf.m(5N.m)

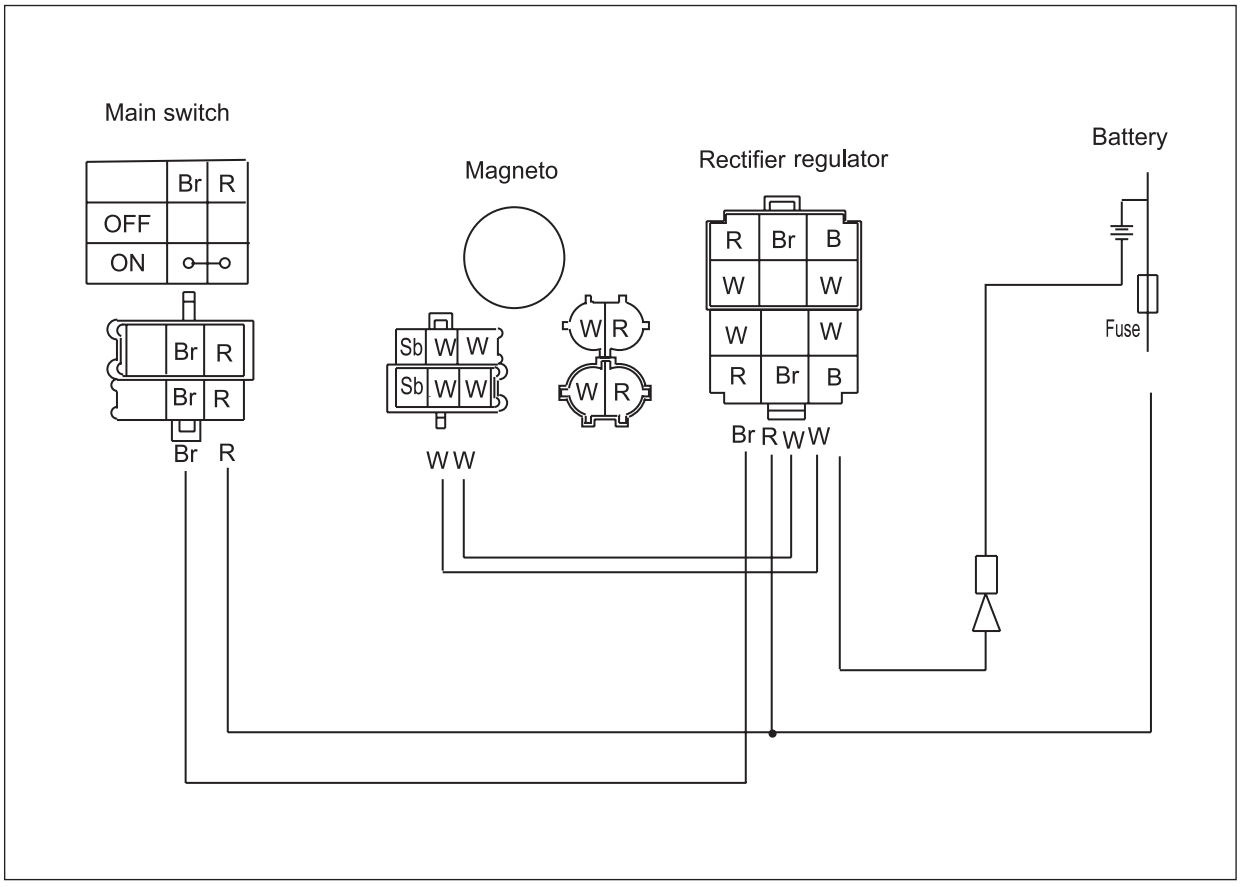
Install

• Starting motor

• Starting motor wire

	Bolt: 0.7Kgf.m(7N.m)

Charging system



Troubleshooting

The battery is not charged

1. Fuse
2.Stratage battery
3. Main switch
4. Light switch
5. high and lower beam switch

Note

Before troubleshooting, the following components should be taken off
① Side cover ② Seats
When troubleshooting, the following special tool should be used.

	Pocket tester

1.Fuse
Check if the fuse tube is electrified.

No continuity → The fuse tube is broken, replace it.

continuity ↓

2. Battery
Check the battery condition.
Voltage: 12.5V Electrolyte specific gravity: 1.280 20℃

Abnormal → Replenish distilled water / Clean battery terminal / Charge or replace battery

Normal ↓

3. Charging voltage

Connect inductive tachometer to spark plug lead.
Connect the pocket tester(DC20V) to the battery

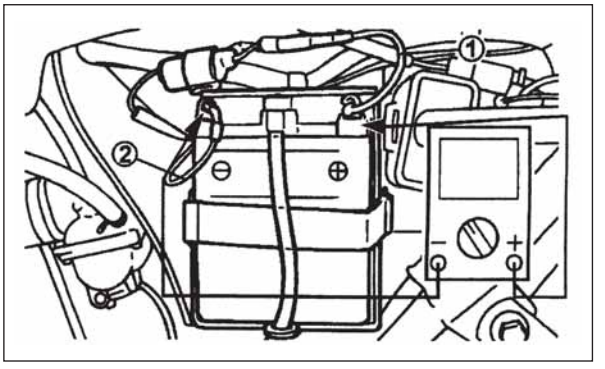
Tester⊕lead → Battery+terminal
Tester⊖lead → Battery-terminal

Start the engine and accelerate to about 5000r/min
Check charging voltage

Charging voltage: 14.0V 5000r/min

Note

Use a fully charged battery.



Meets specification

The charging circuit is correct

Out of specification

4. Ignition, charging coil resistance of battery

Disconnect charging coil coupler form the wire harness.Connect the pocket tester(Ω × 1) to the charging coil.Measure the charging coil resistance.

Tester ⊕lead → White terminal ①
Tester ⊖lead → Green terminal ②

	Charging coil resistance 0.4 Ω ± 20%(20℃)

Out of specification

Charging coil troubleshooting, replace it

Meets specification

5.Wiring connection

Check the connections of the entire charging system.
Refer to "Circuit Diagram".

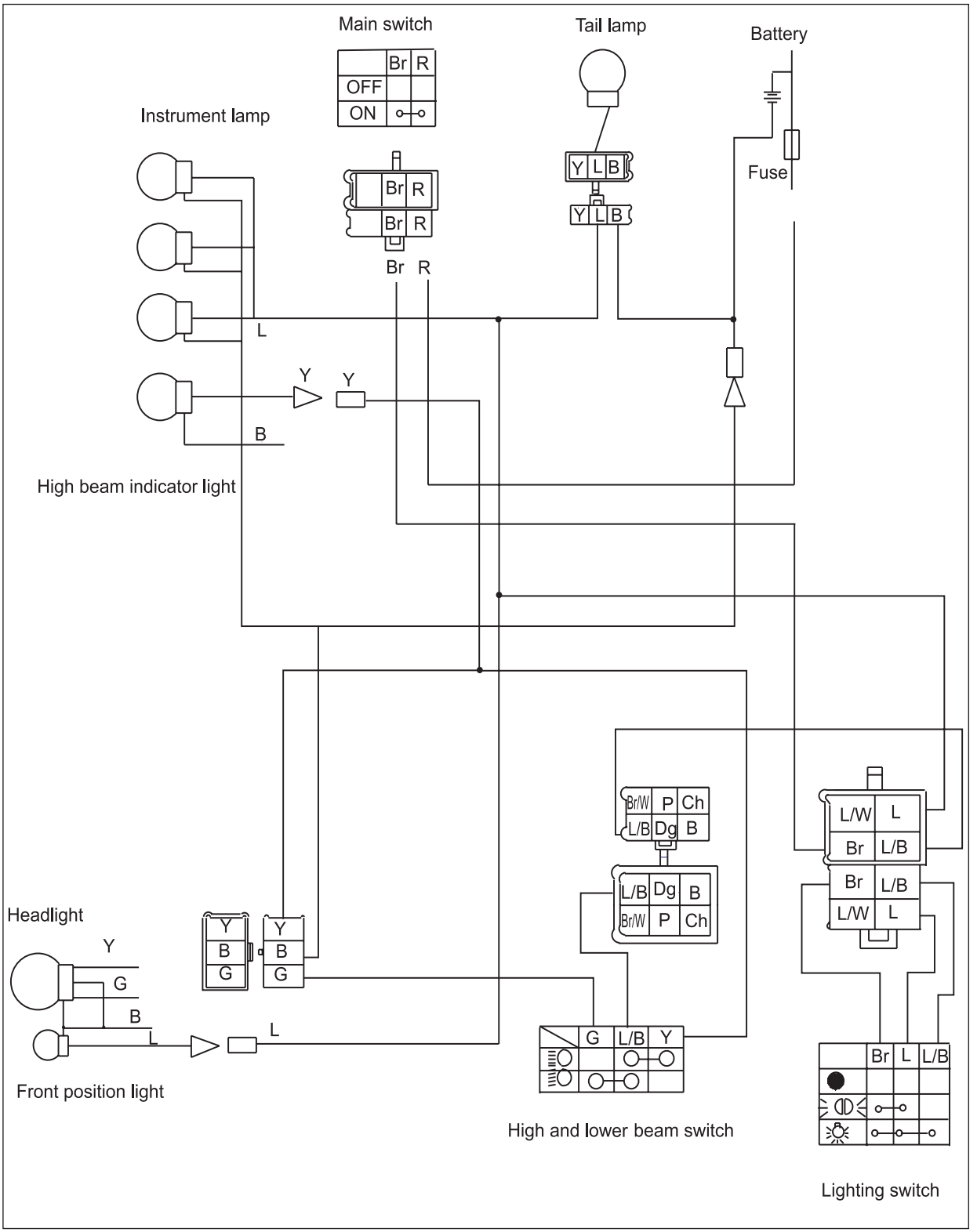
Poor connection

Repair it.

Correct

Re-install the rectifier regulator

Lighting system



Troubleshooting

The headlamp, indicator light, tail lamp and /pr instrument lamp fail to come on

Note

Remove the following parts before troubleshooting

① Side cover ② Seats ③ Front light cover

Use the following special tools for troubleshooting:

	Pocket tester

1. Bulb and bulb socket

Check the bulb and bulb socket for continuity

No continuity → Bulb and /or bulb socket is fail, replace it.

continuity ↓

2. Fuse

Discharge the fuse.
Connect the pocket tester (Ω × 1) the the fuse tube.
Check if the fuse tube is continuity.

No continuity → The fuse tube is broken, replace it

↓

3. Battery

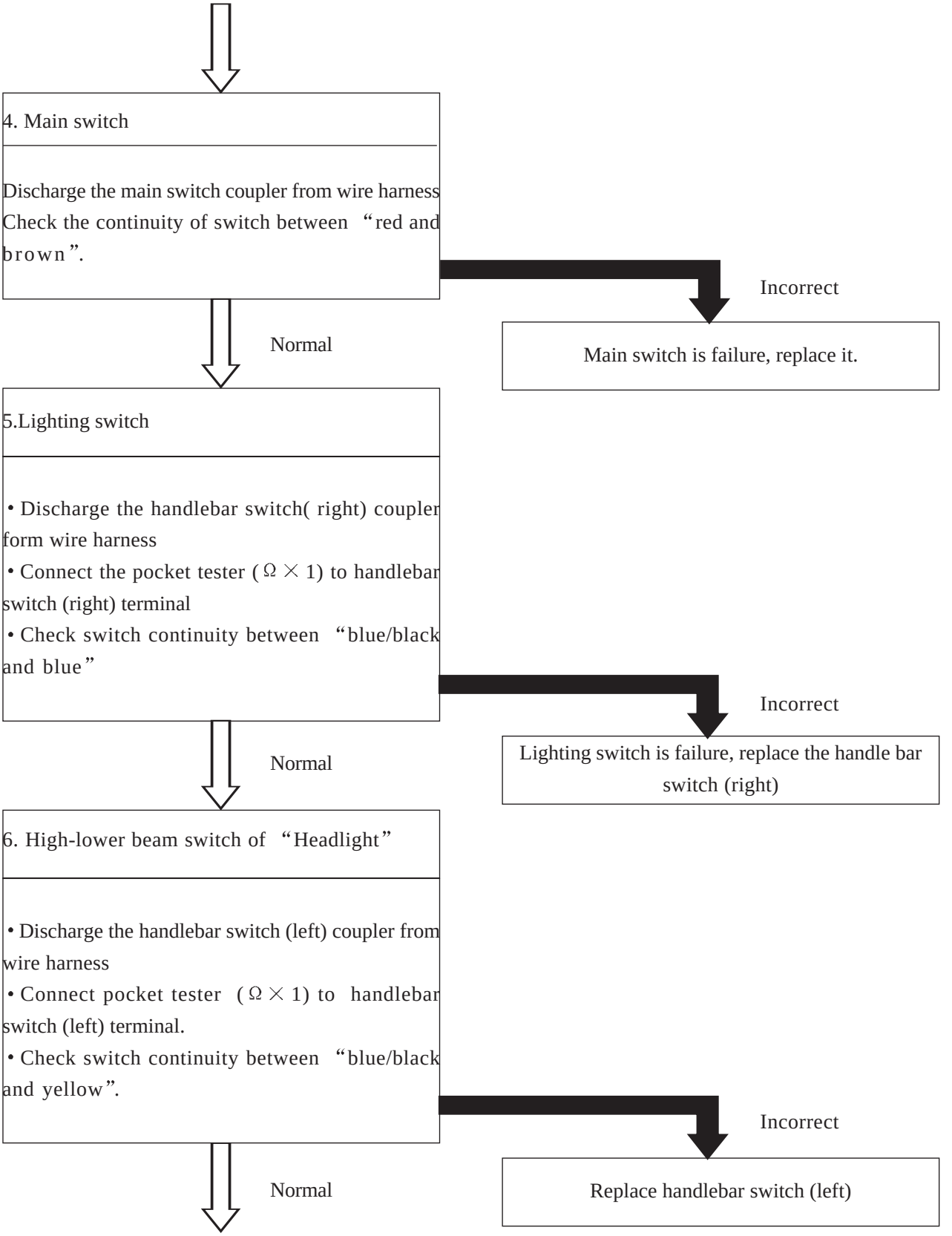
Check the battery condition
Refer to “Battery” section in chapter 3

Eletrolyte specific gravity: 1.280 20℃

Incorrect →

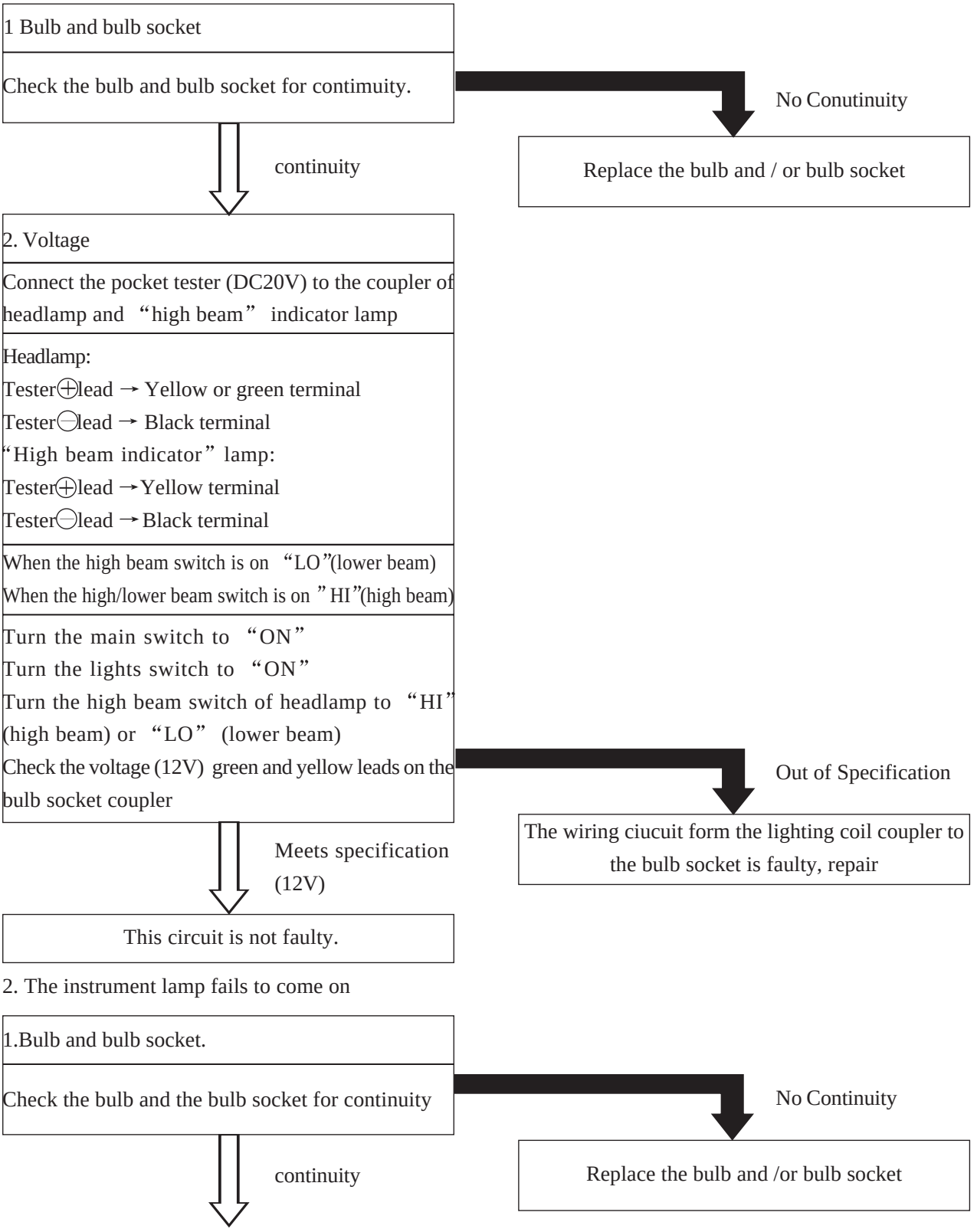
Replenish distilled water
Clean battery terminal
Charge or replace battery.

↓

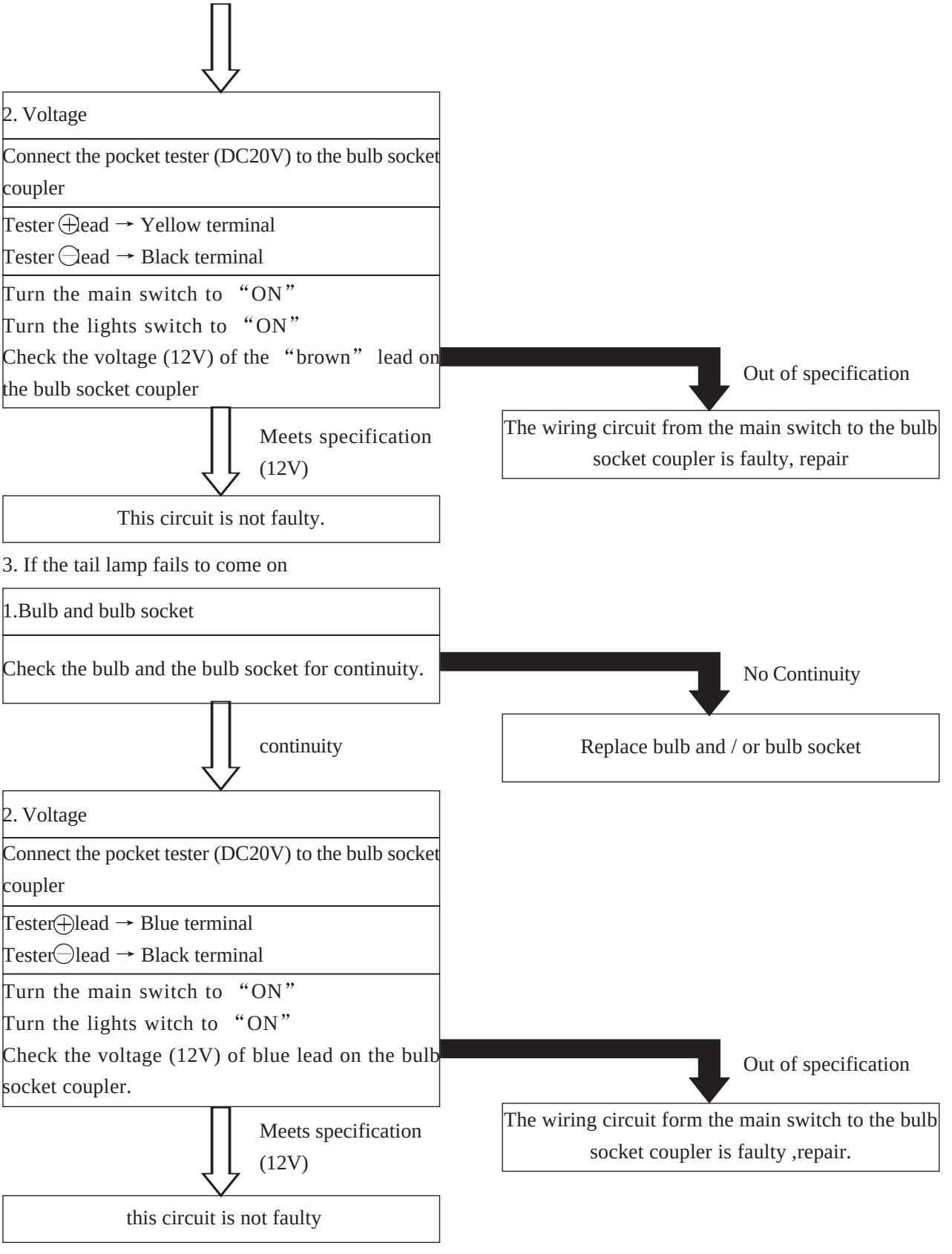

4. Main switch
Discharge the main switch coupler from wire harness
Check the continuity of switch between "red and brown".
Incorrect
Main switch is failure, replace it.
Normal
5.Lighting switch
• Discharge the handlebar switch(right) coupler form wire harness
• Connect the pocket tester (Ω × 1) to handlebar switch (right) terminal
• Check switch continuity between "blue/black and blue"
Incorrect
Lighting switch is failure, replace the handle bar switch (right)
Normal
6. High-lower beam switch of "Headlight"
• Discharge the handlebar switch (left) coupler from wire harness
• Connect pocket tester (Ω × 1) to handlebar switch (left) terminal.
• Check switch continuity between "blue/black and yellow".
Incorrect
Replace handlebar switch (left)
Normal

Lighting system check

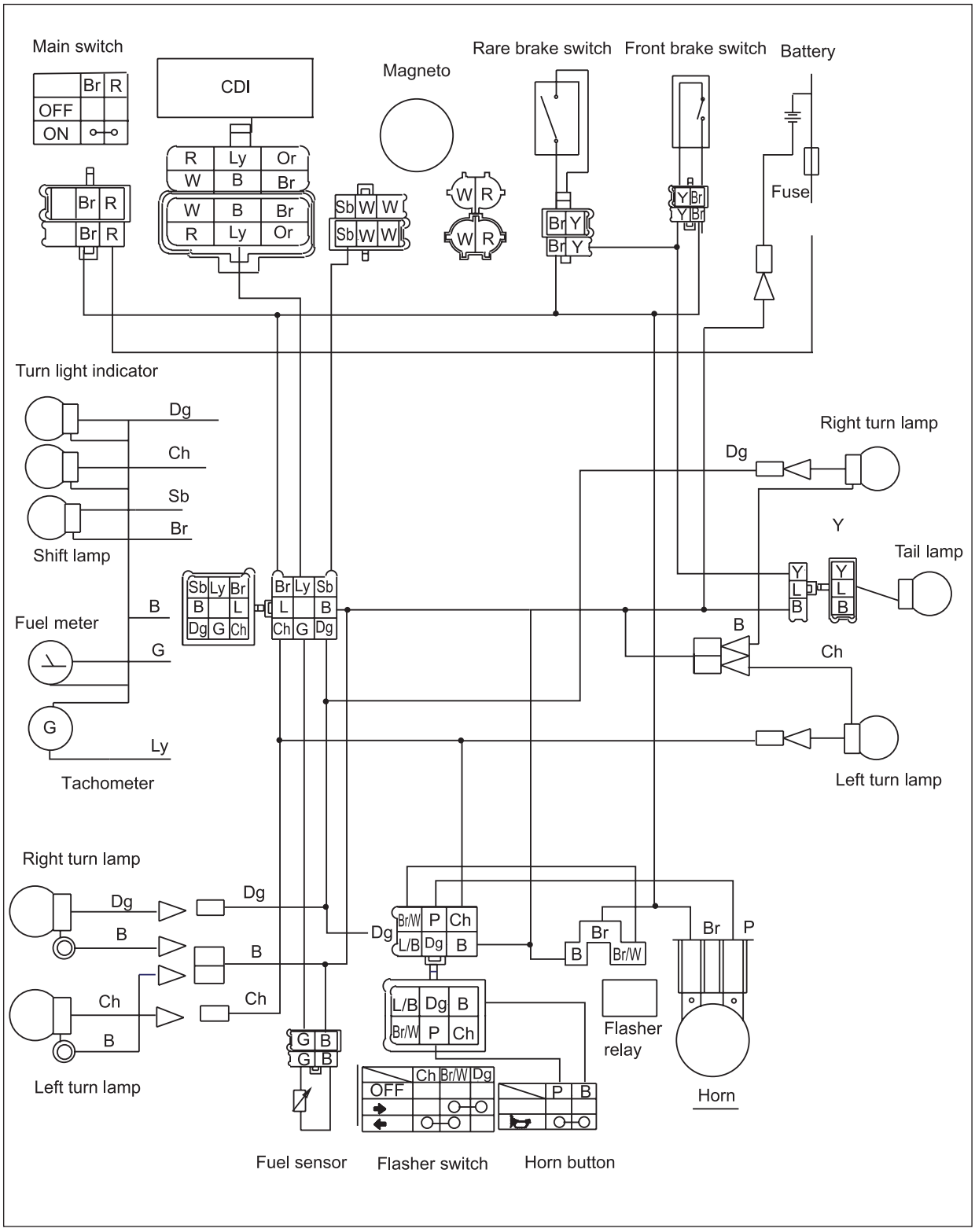
1. If the headlamp and "high beam "indicator lamp fail to come on.



2. The instrument lamp fails to come on


2. Voltage
Connect the pocket tester (DC20V) to the bulb socket coupler
Tester ⊕lead → Yellow terminal
Tester ⊖lead → Black terminal
Turn the main switch to "ON"
Turn the lights switch to "ON"
Check the voltage (12V) of the "brown" lead on the bulb socket coupler
Out of specification
The wiring circuit from the main switch to the bulb socket coupler is faulty, repair
Meets specification (12V)
This circuit is not faulty.
3. If the tail lamp fails to come on
1.Bulb and bulb socket
Check the bulb and the bulb socket for continuity.
No Continuity
Replace bulb and / or bulb socket
continuity
2. Voltage
Connect the pocket tester (DC20V) to the bulb socket coupler
Tester⊕lead → Blue terminal
Tester⊖lead → Black terminal
Turn the main switch to "ON"
Turn the lights witch to "ON"
Check the voltage (12V) of blue lead on the bulb socket coupler.
Out of specification
The wiring circuit form the main switch to the bulb socket coupler is faulty ,repair.
Meets specification (12V)
this circuit is not faulty

Signal system



The troubleshooting

Flasher, brake lamp / or indicator lamp fail to come on. The horn doesn’t work

Check steps:

1. Fuse
2. Battery
3. Main switch
4. Wiring connection

Note

Discharge the following parts before troubleshooting

① Side cover ② Seats

Use the following special tools for trouble shooting:

Pocket tester

1. Fuse

Tale off the fuse

Check the fuse tuber (Ω × 1) to the fuse tube for

No continuity

The fuse tube is broken replace it.

continuity

2. Battery

Check the battery condition

Eletrolyte specific gravity: 1.280 20℃

Incorrect

Replenish destilled water

Clean battery terminal

Charge or replace it

Correct

3. Main switch

Discharge the main switch coupler form wire harness

Check the continuity between “red and brown” on main switch

Incorrect

The main switch is failure, replace it

Correct

4. Wiring connections

Check the entire signal system coupler

Refer to “Circuit Diagram” section

Poor connection

Repair it

Correct

Check each circuit condition of signal system

Refer to “signal system check” section.

Inspection of signal system

1. The horn doesn't work

1.Horn switch

Discharge the handlebar switch (left) coupler from wire harness.Check the continuity between "pink and black" on switch

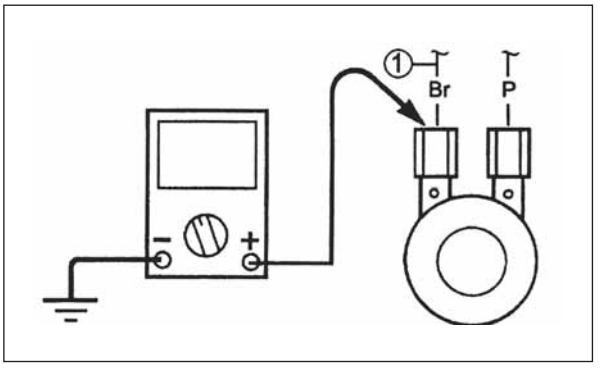
Incorrect

The horn switch is failure, replace the handlebar switch

2.Voltage

Connect the pocket tester (DC20V) to the horn wires.

Tester⊕lead → Brown terminal ①
Tester⊖lead → Ground wire of frame



Turn the main switch to "ON"
Check the horn brown green terminal
Check if the voltage is 12V by pressing the horn button

Out of specification

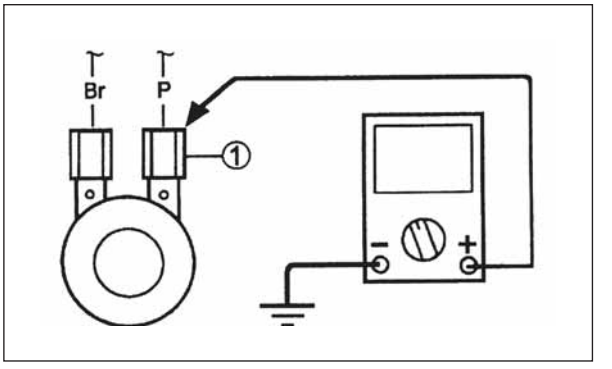
The circuit connection from main switch to the horn terminal is poor, repair it.

Meets specification (12V)

3.The horn

Connect jumper wire to the horn terminal and other end to ground

Tester⊕lead → Pink terminal ①
Tester⊖lead → Ground wire of frame



Turn the main switch to "ON"
Check if the voltage is 12V by pressing the horn button

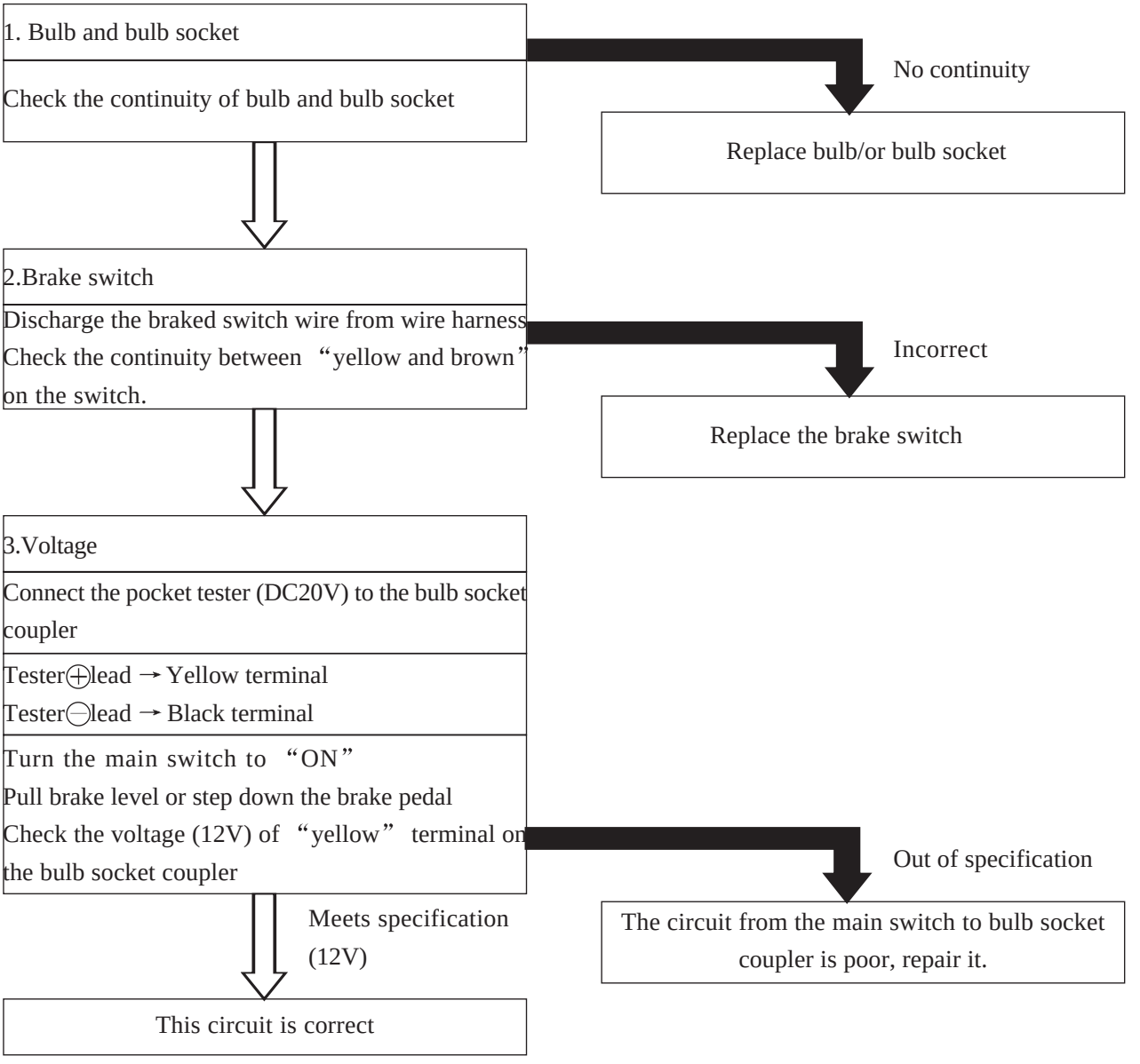
Out of specification

The horn is failure, replace it

The horn doesn't work

Adjust or replace it.

2. The brake lamp fails to come on



3. Turn lamp / or "Turn signal lamp" indicator fails to come on

1.Bulb and bulb socket
Check the bulb and the bulb socket for continuity

No continuity → Replace bulb / or bulb socket

Continuity ↓

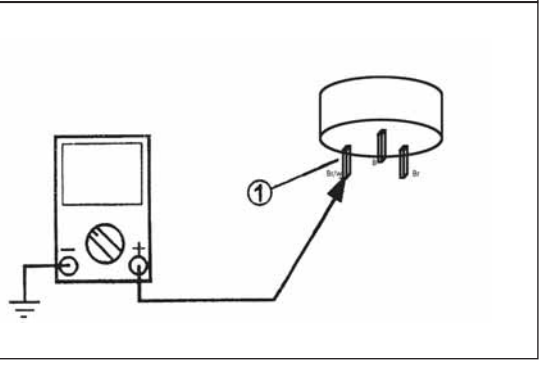
2.Flasher switch
Discharge handlebar switch (left) coupler from wire harness.Check the continuity between "brown/white and dark green" and "brown/white and dark brown" on the switch.

Incorrect → "Turn signal lamp" switch is failure, replace the handlebar switch (left).

Continuity ↓

3. Voltage
Connect the pocket tester (DC20V) to the flashing relay.
Tester⊕lead → Brown terminal Tester⊖lead → Ground wire of frame.
Turn the main switch to "ON" Check the voltage (12V) of "black" terminal on flashing relay terminal

Out of specification → The circuit from the main switch to the flashing relay terminal is poor, repair it.



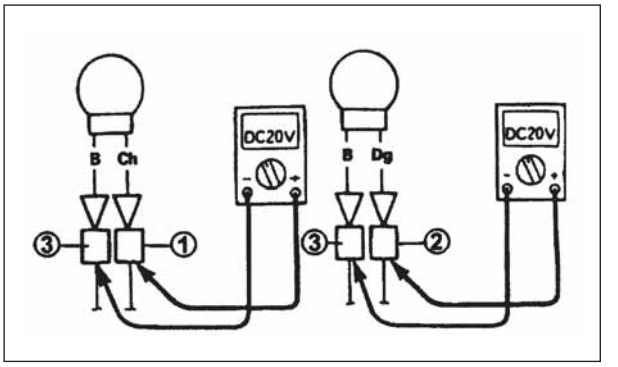
Meets specification ↓

4.Flashing relay
Connect the pocket tester (DC 20V) to the bulb socket coupler.The connection of right turn lamp:
Tester⊕lead → Brown / white terminal Tester⊖lead → Ground wire of frame
Turn the main switch to "ON" .Turn the "Turn signal lamp" switch to "L" or "R".Check the voltage (12V) of brown / white terminal

Out of specification → Replace flashing relay

Pocket tester connecting the flasher relay
Tester⊕lead → Black terminal Tester⊖lead → Ground wire of frame

5.Turn lamp indicator
Connect the pocket tester (DC 20V) to the bulb socket coupler.
The connection of left turn lamp: Tester⊕lead → Dark Brown terminal Tester⊖lead → Ground wire of frame
The connection of right turn lamp: Tester⊕lead → Dark green terminal Tester⊖lead → Ground wire of frame
Turn the main switch to “ON” Turn the “Turn signal lamp” switch to “L” or “R” Check the voltage (12V) of dark brown /dark green terminal



Meets specification

Signal system is correct

Out of specification

6.Wire terminal
Check weather the return wire meets broken. Refer to the signal system return connection.

4. Shift indicator fails to come on

1. Bulb and bulb socket
Check the bulb and bulb socket for continuity

No continuity

Replace the bulb / or bulb socket

continuity

2.Neutral switch
Discharge the neutral switch coupler from the wire neutral. Check the continuity between“ light blue and ground wire” on the shift switch.

Incorrect

If the neutral switch is failure, replace it

Normal

3. Voltage
Connect the pocket tester (DC20V) to the bulb socket coupler
Connect tester ⊕ lead to brown wire Connect tester ⊖ lead to light blue wire
Turn the main switch to "ON" Check the voltage (12V) of "brown" terminal on bulb socket.

Out of specification

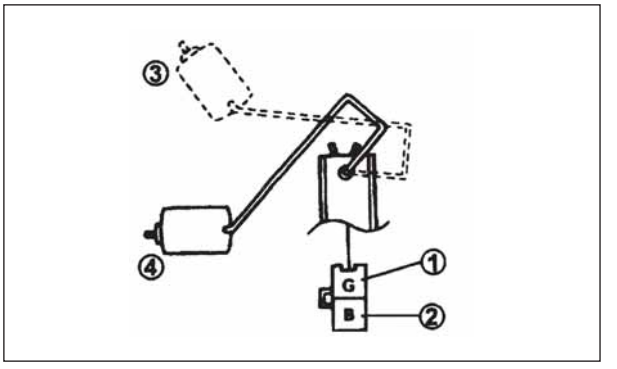
The circuit from the main switch to the bulb socket coupler is poor, repair it

Meets specification

Neutral switch is correct

5. Fuel gauge needle fails to work

1.Fuel sensor
• Discharge the fuel from the fuel tank • Connect the fuel sensor (Ω × 10) to fuel sensor coupler
Tester ⊕ lead → Green terminal ① Tester ⊖ lead → Black terminal ②
Check the resistance of the fuel sensor, and compare with specification
Fuel resistance (upper, ③); 4-10 Ω, 20℃ Oil sensor resistance (lower ④) 90-100 Ω, 20℃



Out of specification

Replace the fuel sensor

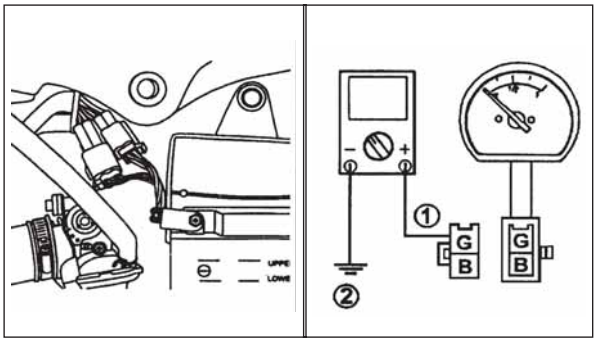
Meets specification

2.Voltage

Connect the pocket tester (DC20V) to fuel gauge terminal

Tester ⊕ lead → Green wire
Tester ⊖ lead → Ground wire

Check the voltage (12V) of brown wire on the fuel gauge terminal



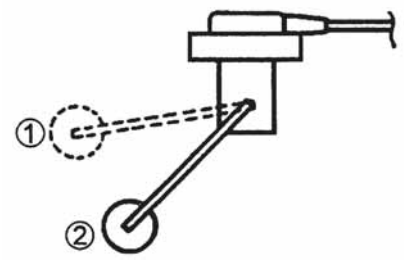
Out of specification

Check all couplers of signal system

Meets specification

3.Fuel gauge

• Connect the fuel sensor to wire connecter
• Move the float from ① to ②



Note

FLoat foam stay three minutes between 1 and 2.Check the fuel sensor needle

• Turn on the main switch to "ON"
• Move the float to check if the oil leveler works well

The needle fails to work

Replace fuel gauge

Float foam position	Oil leveler needle
Upper	F
Lower	E

Needle move

This circuit is correct

CHAPTER 7

TROUBLESHOOTING

Electric Appliance System

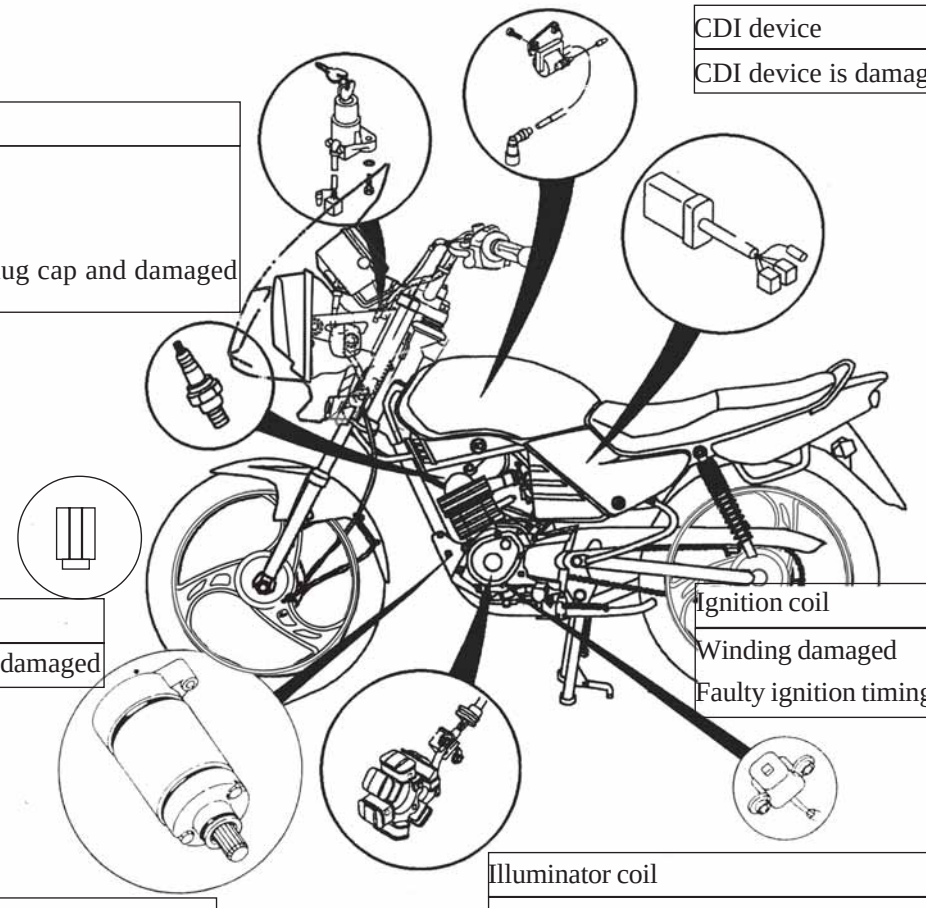
Check entire wire coupler

Ignition coil
- Primary coil or secondary coil is damaged or shortened
- Failure of high pressure wire
- Faulty spark plug cap

Main switch
- Main switch is broken
- Wire is broken or shorted

CDI device
CDI device is damage

Spark plug
- Clogged
- Terminal wet
- Faulty spark plug cap and damaged



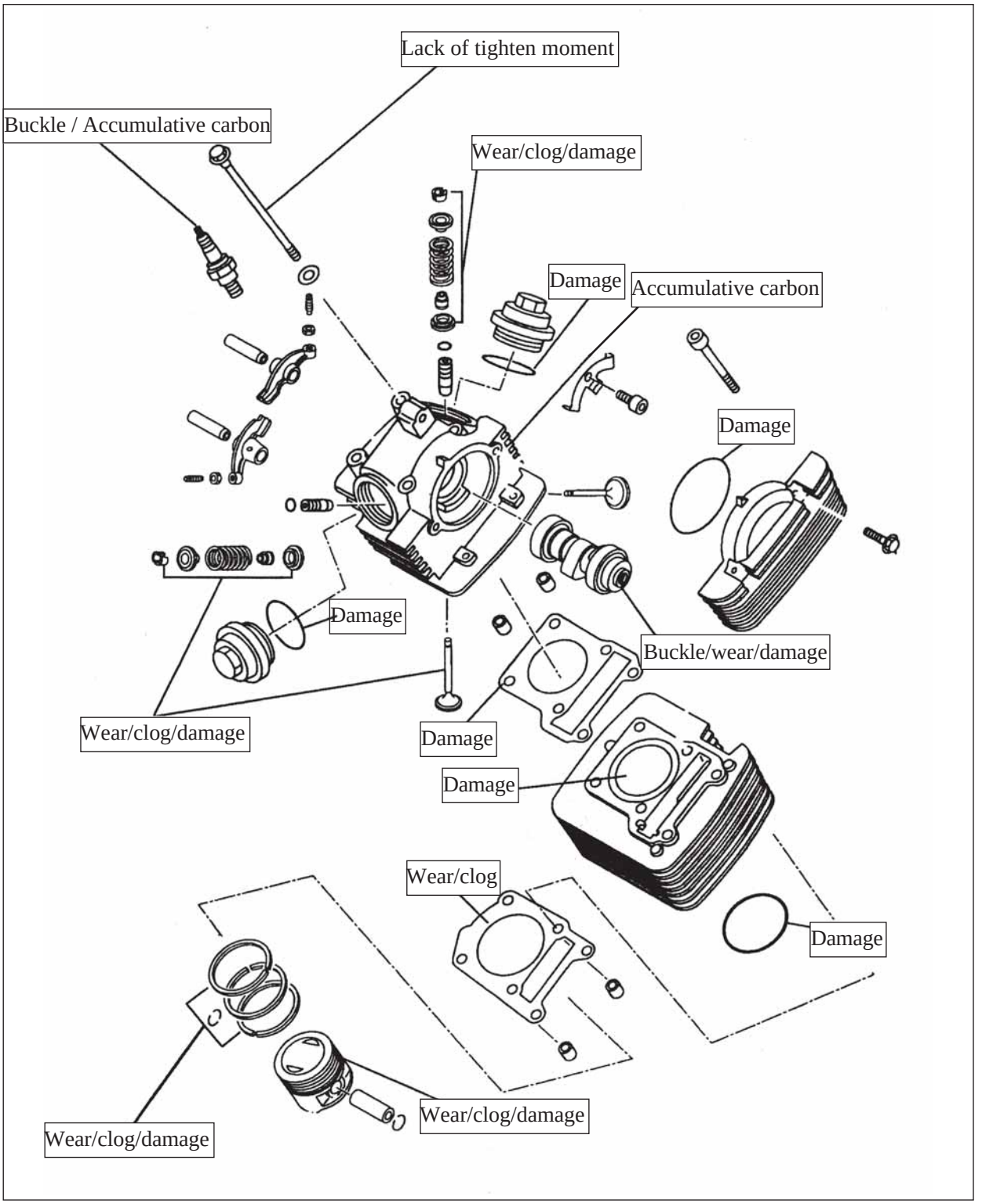
Rectifier adjuster
Rectifier regulator damaged

Ignition coil
Winding damaged
Faulty ignition timing

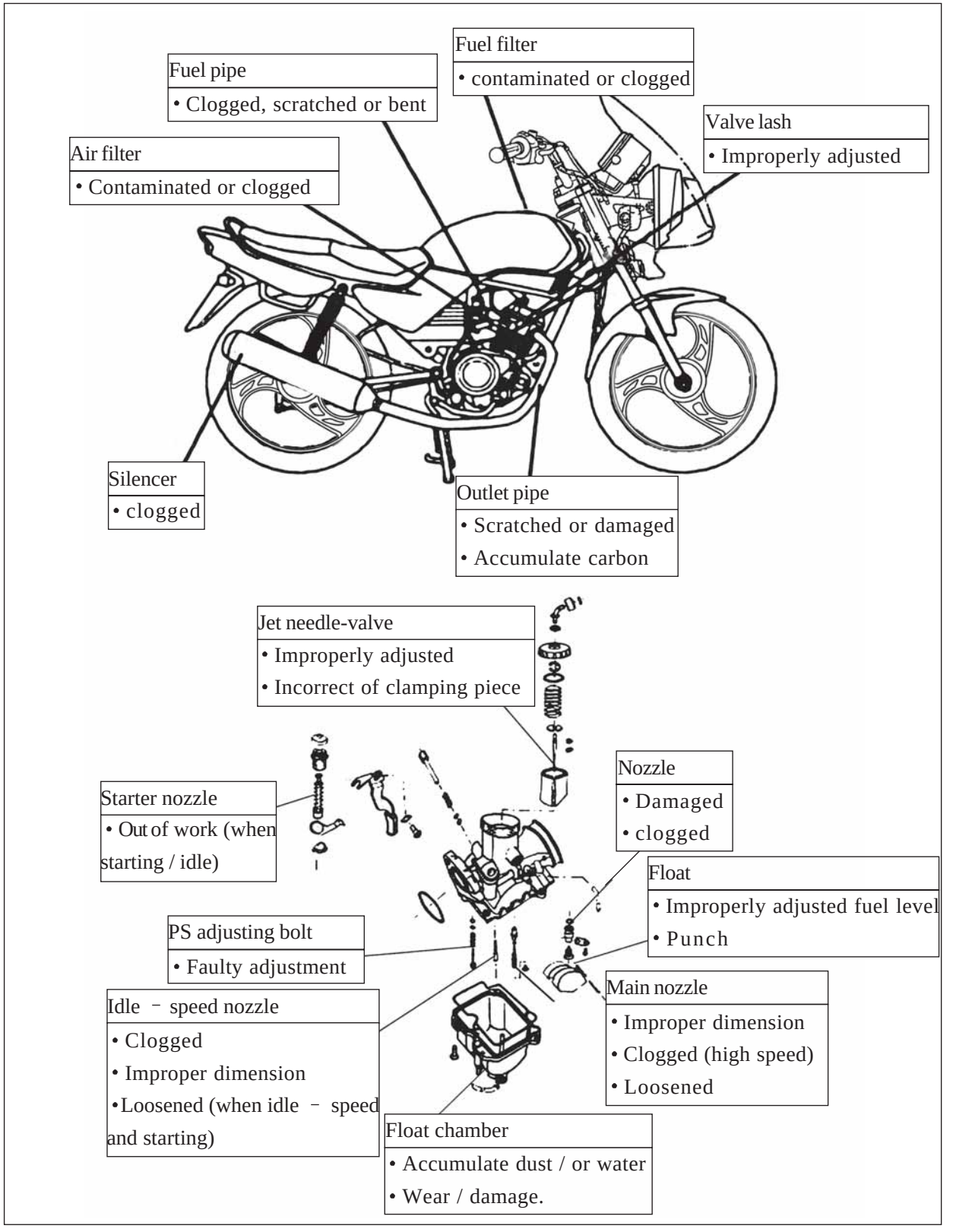
Illuminator coil
Winding damaged

Starting motor
- Faulty starter motor
- Faulty starter electrical
- Faulty starter switch
- Faulty starter relay

Compression System



Intake \Exhaust System



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