BRIEF INTRODUCTION TO FOUR–WHEELED CROSS–COUNTRY VEHICLE MODEL JS400ATV

Four–wheeled cross–country vehicle,model JS400ATV is a full road condition vehicle which can be driven on every kinds of road conditions such as sand beach, grassland, forest, village, construction site. country road etc.This maintenance manual of four–wheeled cross–country vehicle model JS400ATV (Hereafter called cross–country vehicle for short) compiled by Chonging Jianshe Industries C0., Ltd(Group) (hereafter called Jianshe Group for short) is specially provided for seller and technical staff of Jianshe Group.This manual mainly introduce the maintenance, removing and repairing method of cross–country vehicle and provide some relative technology and performance data.Because this manual can´t collect the whole content of cross–country vehicle,it can only help maintainer of Jianshe content of cross–country vehicle, it Can only help maintainer of Jianshe Group and it´s seller have a basic understanding on working principle, maintenance procedure and repairing technology of cross–country vehicle, If you don´t have this knowledge, when repairing cross–country vehicle,the condition of improper assembling and danger occurs after assembling are easily happened.Proper operation and maintenance are the– advance of your safely driving cross–country vehicle, it also can reduce the troubles of cross–country vehicle and keep the best performance of it. The specification,performance and explanation stated in the manual are determined according to newly design of the vehicle, which are subject to changes without notice.

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

In the manua1

Warning Show that if the content of "Warning"isn´t obeyed,the driver, maintainer, checker will be heavily injured,even dead.

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

Maintenance manual of four–wheeled cross–country vehicle model JS400ATV

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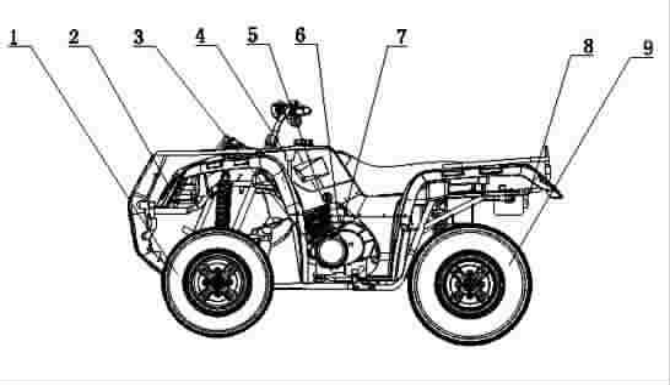
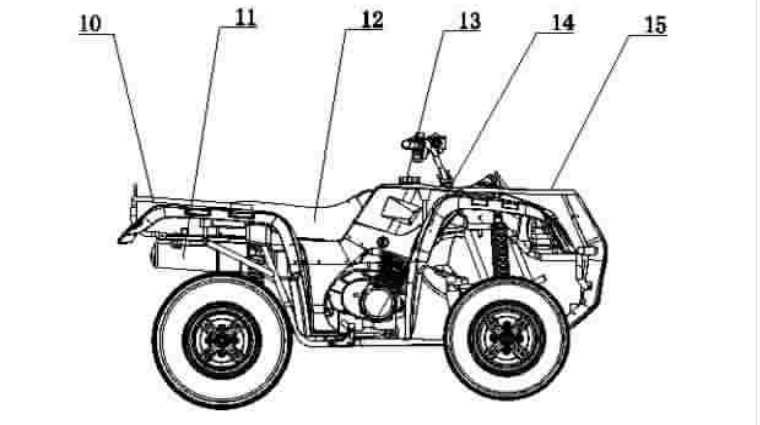
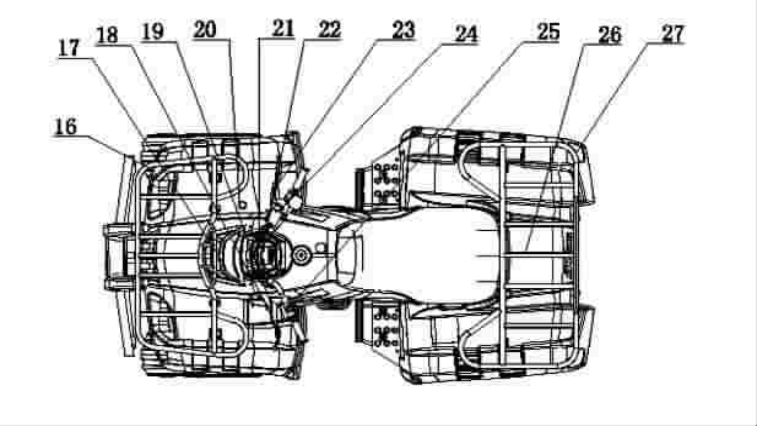
Content

Chapter Ⅰ General description

Section 1 Description







1. Front wheel
2. Headlight
3. Shift pedal
4. Two/four wheels transforming lever
5. Fuel cock
6. Manual starting lever
7. Choke
8. Taillight
9. Rear wheel
10. Rear luggage carrier
11. Exhaust system
12. Cushion
13. Fuel tank cover
14. Rear break pedal
15. Front luggage carrier
16. Front left and right turn signals
17. Meter assay
18. Rear brake lever
19. Parking brake shoe
20. External power source socket
21. Reverse handle
22. Main switch
23. Front brake lever
24. Throttle lever
25. Left switch unit
26. Rear luggage carrier
27. Rear left and right turn signals

Caution：

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

Section 2 Special tools, instruments and meters

(I)Special tools

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

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

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

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

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

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

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

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

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

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

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

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

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

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

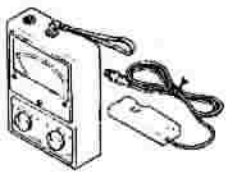
14. Assembling and disassembling disc, mainly used for assembling and disassembling reverse gear.

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

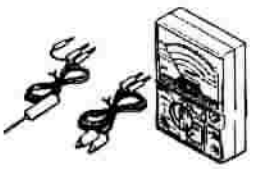
For the above tools, you can select with reference to special tools of the same type of vehicle.

(Ⅱ)Instruments and meters

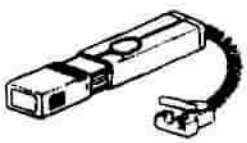
The following instruments and meters can be selected with reference to the same type of vehicle.



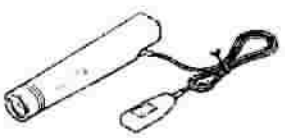
Speedometer of engine
(90890–03113)



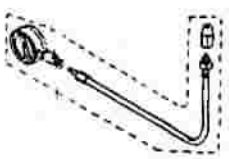
Multimeter



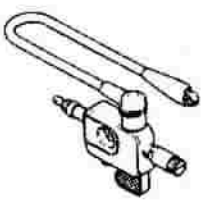
Ignition timing meter
(90890–03141)



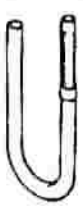
Spark tester of spark plug



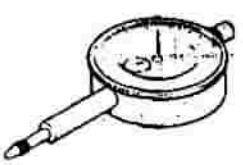
Barometer



Ignition checker

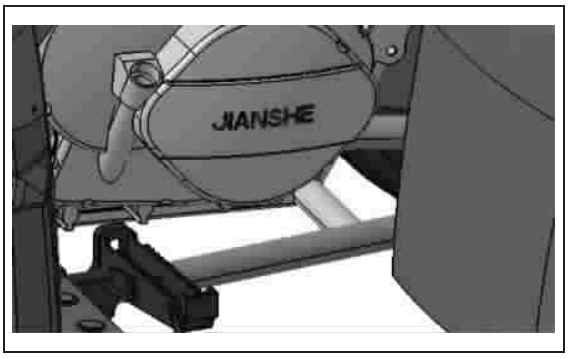


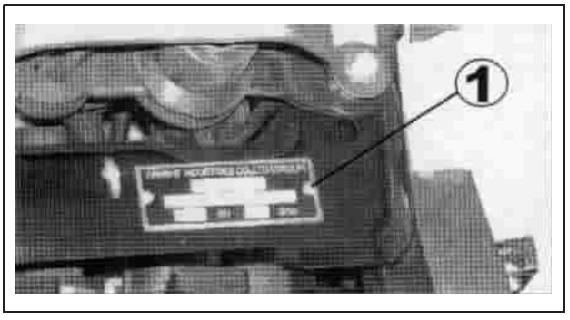
Measuring tool of gasoline
(90890–01312)



Dial indicator

Section 3 Identification code, label of model and engine No.





Identification code

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

Label of model

It is riveted on the frame under the cushion.

P1ease record data on the label to be used when you ordering component for seller of Jianshe Group.

Engine No.

It is engraved on the lug of top middle part of right crankcase of engine.

Section 4 Points for attention in maintenance

1. Preparation when disassembling

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

1.2 Use proper special tool, cleaning device and means.

1.3 Keep all the components away from fire source. Pay attention to the safety.Don´t be burned by the high temperature portion of engine, exhauster and silencer etc.Be sure to take care of each other when operating with other people.

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

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

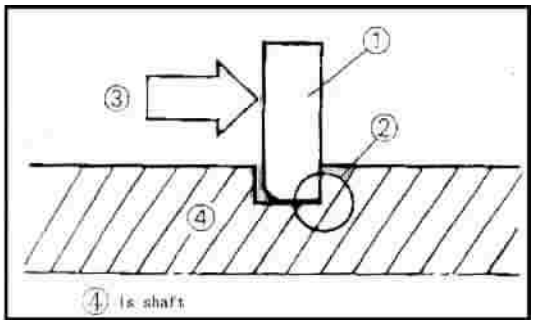
2. Replace the components

When replacing the components, be sure to use qualified products provided by Jinshe Group and use lubricants and grease which brand JS assigned by Jianshe group to lubricate.

3. Oil sea1, shim.O–ring, clip, split pin, elastic washer.

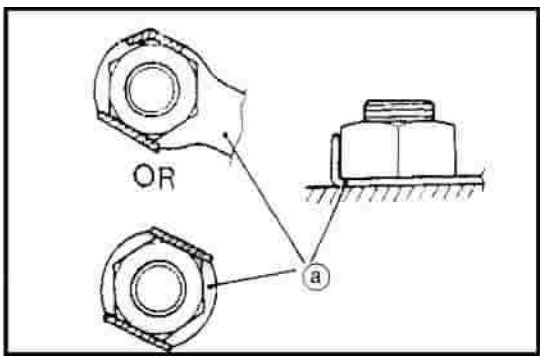
3.1 When disassembling to maintain the engine, in order to ensure that the reassembled engine have good sealing and connecting part is fixed and reliable, all the oil seal, shim, o –ring, clip, split pin and elastic washer should be replaced.be sure to keep lip of oil seal, surface of shim and O –ring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

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



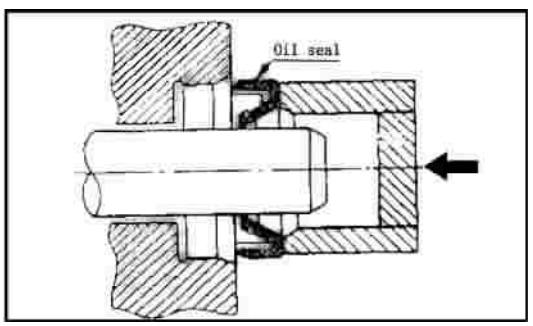
4. Clip

4.1 Before assembling,be sure to check all the clips carefully.Use a new one after removing the clip of piston pin. When mounting clip ring①,make the sharp face② on the opposite position of impacted face③of clip.(See left fig)



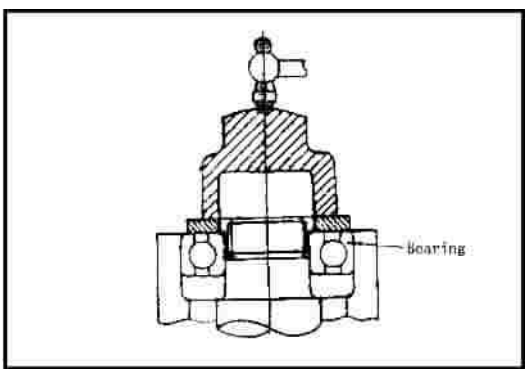
5. Locking washer/shim and location pin

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



6. Bearing and oil seal

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



Caution：

Don´t blow to dry the inside bearing with compressed air, thus would damage the surface bearing.

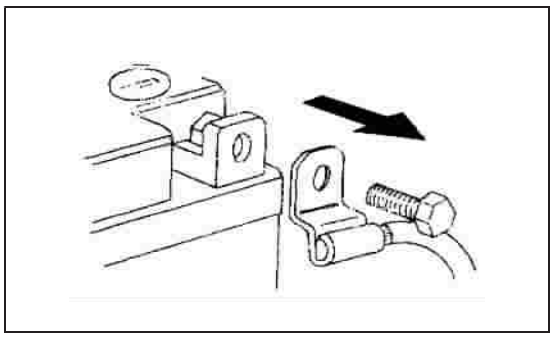


Fig.7.1Removal of negative pole wire of battery

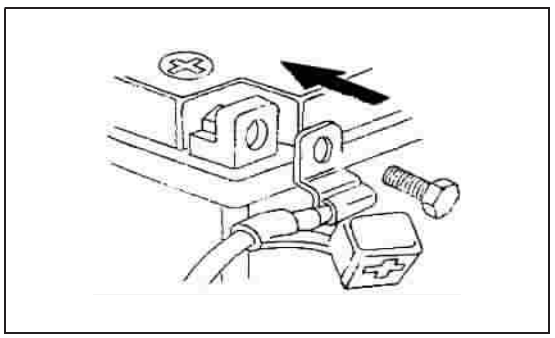


Fig.7.2Connection of positive pole wire of battery

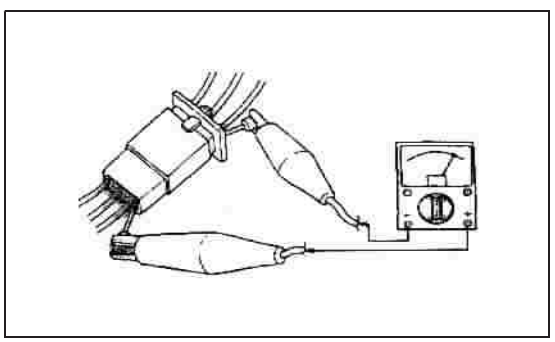


Fig.7.3

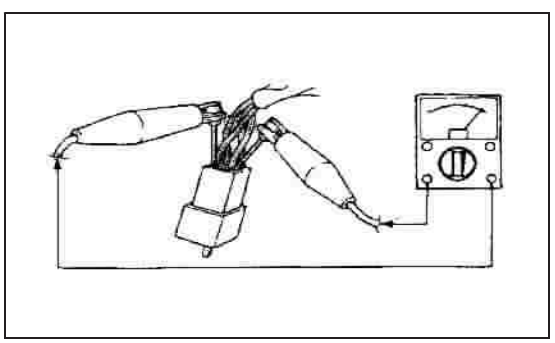


Fig.7.4

7. Check of electric parts

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

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

7.3 When repairing wire on electric parts, first remove the wire on the terminal of negative pole of battery (see fig.7.1). When tightening or loosening bolt of terminal of big capacity battery, don´t let the wrench contact with engine or other metal parts of vehicle body to avoid the electric shock. shock.

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

7.5 Check the terminal of connector

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

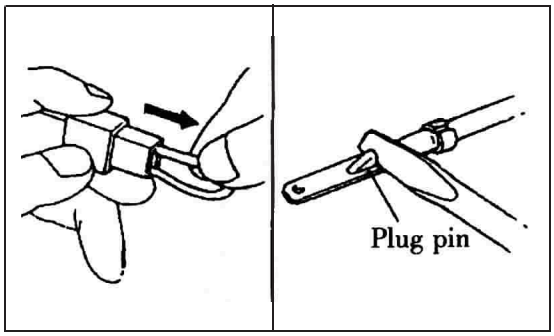
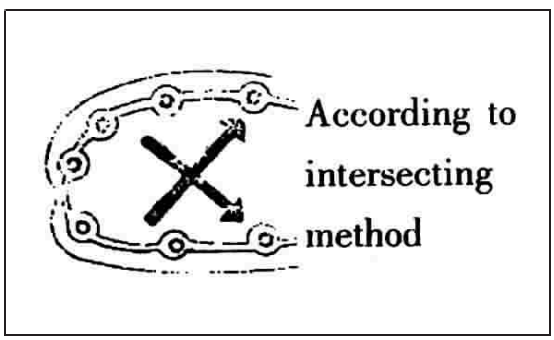


Fig.7.5

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

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

7.7 Wire connector have two kinds, one is Single–head connector,another is multi–head one.Before connecting single–head connector, check if there is broken on the housing of joint, it should be fixed and if there is a broken phenomenon on it.When inserting the joint, it should be fixed, and then put in plastic coating after inserting.



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

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

Section 5 Specification

(一)How to use conversion table of unit

1)How to use conversion table

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

METRIC		MULTIPLY		IMPERIAL
mm		0.03937		in
2mm	x	0.03937	=	0.08in

Conversion table

Conversion between metric and imperial			
	Known unit	Multiply	Product
Torque	m·kg m·kg cm·kg cm·kg	7.233 86.794 0.0723 0.8679	ft·lb in·lb ft·lb in·lb
Weight	kg g	2.205 0.03527	Lb oz
Length	km/hr km m m cm mm	0.6214 0.6214 3.281 1.094 0.3937 0.03937	mph mi ft yd in in
Volume/ capacity	cc(cm3) cc(cm3) lit(liter) lit(liter)	0.03527 0.06102 0.8799 0.2199	oz(IMP liq.) cu·in qt(IMP liq.) gal(IMP liq.)
Others	kg/mm kg/cm2 Centigrade	55.997 14.2234 9/5(℃)+32	lb/in psi(lb/in2) Fahrenheit(°F)

2)Definition of unit

Unit	Read	Definition	Measurement
mm cm	Millimeter Centimeter	10–3 米 10–2 米	Length Length
kg	Kilogram	103	Weight
N	Newton	1kilo x meter/second	Force
Nm m·kg	Newton meter Meter kilogram	Newton x meter Meter x kilo	Torque Torque
Pa N/mm	Pascal Newton per millimeter	Newton x meter 2 Newton/centimeter	Pressure Rigid of spring
L cm3	Liter Cubic centimeter	———	Volume or capacity
r/min	Revolutions per minute	———	Rotational speed

(二)Basic specification

Item	Specification
Dimension：	
Overall length ：	2100mm
Overall width:	1125mm
Overall height：	1175mm
Seat height :	860mm
Whell base :	1240mm
Tread(STD) front :	870mm
Tread(STD) rear :	820mm
Minimum ground clearance :	240mm
Minimum turning radius:	3175mm
Basic weight：	
With oil and full fuel tank:	270kg
Engine type:	Single cylinder oil–cooled/with fan 4–stroke
Displacement:	387.4ml
Bore x stroke:	83mm X 71.6mm
Compression ratio:	8.7：1
Starting system :	Electric and recoil starter
Lubrication system:	Wet sump
Engine oil ：	SAE20W40, SAE10W30 , SAE5W30
Oil type or grade:	SE、SF、SG type or higher
Periodic oil change:	2.9L
With oil filter replacement:	3.0L
Total amount:	3.5L
Final gear oil:	SAE80API"GL–4"Hyp oid gear oil
Differential gear oil	SAE80 or 80W–90API"GL–5 " Hypoid gear oil
Final gear case oilPeriodic oil change:	0.25L
Total amount:	0.27L
Differential gear case oil:	
Periodic oil change:	0.35L
Total amount:	0.4L
Fuel type：	Unleaded fuel
Fuel tank capacity:	13L
Fuel reserve amount:	2.5L
Carburetor type：	Equal vacuum type
Spark plug type:	D8REA
Spark plug gap:	0.6~0.7mm
Clutch type:	Wet, centrifugal automatic
Transmission:	
Primary reduction system:	Spur gear
Primary reduction ratio:	76/24(3.167)
Secondary reduction system:	Shaft drive
Secondary reduction ratio:	28/24x24/18x33/9 (5.704)
Transmission type:	Constant mesh 5–speed forward, 1–speed reverse
Operation:	left foot operation

Item	Specification
Gear ratio：	
1st	40/12(3.333)
2nd	34/18(1.889)
3rd	30/22(1.364)
4th	25/26(0.962)
5th	9/27(0.704)
Reverse gear	22/17x35/15(3.020)
Chassis：	
Frame type	Steel tube frame
Caster angle	4°
Toe–in	0~5mm
Tire：	
Type	Tubeless
Front size	AT25x8–12
Rear size	AT25x10–12
Front tire pressure(cold tire)	22~28Kpa
Rear tire pressure(cold tire)	22~28Kpa
Front suspension	Double wishbone
Rear suspension	Swing arm
Shock absorber：	
Front shock absorber	Coil spring/oil damper
Rear shock absorber	Coil spring/oil damper
Shock absorber：	
Front shock absorber	Coil spring/oil damper
Rear shock absorber	Coil spring/oil damper
Electrical：	
Ignition system	C·D·I
Generator system	A.C. magneto
Battery type/capacity	12N20–BS /12V20AH
Head light	12V 35W/35Wx2
Taillight/brake light	12V 21W/5Wx1
Turn indicator	12V,10Wx4

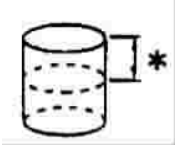
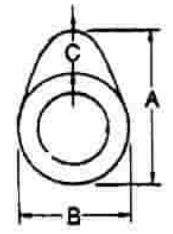
(三)ATV body

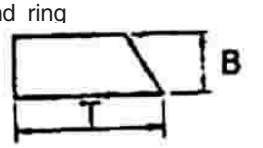
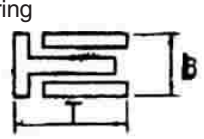
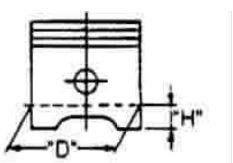
Item		Standard	Limit
Steering Type of steering bearing		Powder metallurgy sliding bearing	
Front wheel	Type	Spock rim, tubeless tire	
	Material of rim	Steel plate	
	Size of tire	AT25x8–12	
	Size of rim	AT12x6.0	
	Radial run out of rim		2.0mm
	Lateral swing of rim		2.0mm
Front brake	Type	Single disc brake	
	Disc outside diameter x thickness	180 x 3.5mm	
	Pad thickness	4.0mm	1.0mm
	Master cylinder inside diameter	14mm	
	Caliper cylinder inside diameter	32mm	
	Brake fluid type	DOT 4	
Rear wheel	Type	Spock rim, tubeless tire	
	Material of rim	Steel plate	
	Size of tire	AT25x10–12	
	Size of rim	AT12x8.0	
	Radial run out of rim		2.0mm
	Lateral swing of rim		2.0mm
Rear brake	Type	Drum type	161mm
	Outside diameter of brake drum	160mm	2.0mm
	Thickness of friction piece	4.0mm	
	Free length back spring of brake shoe	71.0mm	
Brake lever and brake pedal	Free play of brake lever(left)	5–7mm	
	Free play of brake lever(right)	5–7mm	
	Free play of rear brake pedal	20–30mm	
Free play of throttle grip		3–5mm	
Front suspension system	Spring rate(K1)	12N/mm/0–91mm	
	Fork spring free length	320mm	
	Stroke	91mm	
	Pre–tension force of spring is adjustable or not	Adjustable	
Rear suspension system	Spring rate(K2)	32N/mm/0–85mm	
	Fork spring free length	285mm	
	Fitting length	253mm	
	Stroke	85mm	
	Pre–tension force of spring is adjustable or not	Adjustable	
Rear wheel fork	Assembling free play(left–end)		1.0mm
	Assembling free play (right–end)		1.0mm

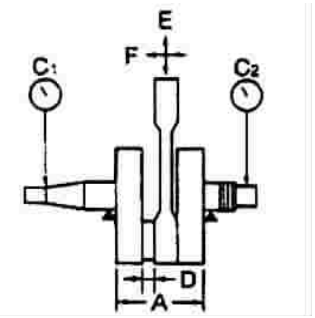
(四)Electric system

Item			Standard	Limit
Voltage of electric system			12V	
Spark plug	Type		D8REA	
	Resistance		10.4kΩ	
	Clearance of spark plug		0.6~0.7mm	
Ignition coil	Resistance of primary coil		At 20℃(68°F), 0.6Ω	
	Resistance of secondary coil		At 20℃(68°F), 11kΩ	
	Clearance of min. spark		7mm	
Ignition system	Ignition timing(before upper stop point)		8°/1000r/min	
	Advancing angle of ignition (before upper stop point)		32°/5000r/min	
	Type of ignition advance		Electric type	
Magneto	Resistance of induction coil/color		At 20℃(68°F), 220~240Ω G/W–R/B	
	Resistance of source coil/color			
	Type of CDI		Electric capacity contact type	
Rectifier	No–loading adjusting voltage		15.8V/9000rpm	
	Voltage–resisting value		200V	
Charging system	Type		A.C magneto	
	Rated output voltage		At 2000r/min 14–15V	
	Coil resistance/color		0.8~1.2Ω W–W–W	
Battery	Specific gravity		1.28	
	Type /capacifity		12N20–BS /12V20Ah	
Broken circuit of circuit system	type		Fuse	
	Main fuse		30A(10Ax3); 15A	
Relay of cut–off current	Coil resistance		4Ω	
Electric starting system	Starting motor	Output power	500W 12V	
		Resistance of armature coils	0.2Ω	
Electric starting system	Starting relay	Ampere	4A	
		Coils resistance	3Ω	

(五)Maintenance specification of engine

Item	Standard	Limit
Axle drive:		
Meshing clearance of last end gear	0.1~0.2mm	
Meshing clearance of middle gear	0.1~0.30mm	
Lubrication system:		
Type of filtering oil	Wire filtering net	
Type of oil pump	Rotor type, pressure splash type lubrication	
Clearance of side	0.04~0.09 mm	0.09mm
End face clearance "A" or "B"	0.15mm	0.20mm
Releasing pressure of safety valve	40~80Kpa	
cylinder:	82.97~83.02 mm (distance between measuring point and upper end face of cylinder is 40mm)	83.15mm
cylinder:  bore size:		
Flatenss of lower endface	Measure the surface warp of every portion on the lower end face of cylinder head with rule	0.05mm
Timing chain:		
Type of timing chain	Roller chain	
Tension type of timing chain	Free adjustment	
Pneumatic camshaft:		
Driving method	Chain driving(left)	
Cam size		
 exhaust: "A"	40.62~40.72mm	
"B"	32.18~32.28mm	
"C"	8.61~8.73mm	
Intake: "A"	40.62~40.72mm	
"B"	32.18~32.28mm	
"C"	8.61~8.73mm	
Rocker arm/rocker arm shaft		
Outside diameter of shaft	l 1.981~11.991	
Inside diameter of rocker arm	12.000~12.018	
Clerance between arm and shaft	0.009~0.037	
Valve spring		
Inside:		
Free length: intake/exhaust	39.9mm	
Setting length when valve is closed :intake/exhaust	33.6mm	

Item	Standard	Limit
Compressing pressure when assembling:intake/exhaust Limit value of squarness :intake/exhaust	counterclockwise	2.5°/1.6mm
Valve spring: Outside spring: Free length:intake/exhaust Setting length when valve is closed::intake/exhaust Compressing pressure when assembling :intake/exhaust Limit value of squareness :intake/exhaust Compressing pressure when assembling ::intake/exhaust	 43.27mm 36.6mm 230~266N Clockwise	 2.5°/1.6mm
Valve, valve seat, valve guide Valve clearance(its cold):intake Valve clearance(its cold):exhaust	 0.06~0.10mm 0.16~0.20mm	
Piston ring: First ring  type size(B×T) Clearance of end face(in assembling) Clearance of side(in assembling) Second ring  type size(B×T) Clearance of end face(in assembling) Clearance of side(in assembling) Oil ring  size (B×T) Clearance of end face(in assembling)	 Bucket–shaped back round 1.2×3.3mm 0.2~0.4mm 0.04~0.08mm Flat type 1.5×3.4mm 0.2~0.4mm 0.03~0.07mm 2.8×2.8mm 0.3~0.9mm	 0.5mm 0.12mm 0.5mm 0.12mm
piston  Piston size"D" Measuring point"H"(from bottom lime of piston´s lower portion) Piston offset Direction of piston pin Clearance between piston pin Outside diameter of hole inside diameter of hole	 82.92~82.97mm 5.5mm 0.5mm 向内 0.04~0.06mm 18.990~18.995mm 19.004~19.015mm	

Item	Standard	Limit
Driving method of balancing block	Gear driving	
Connecting rod of crank  Limit Width of crank"A" Small end free play of connecting rod"F" Big end free play of connecting rod"D" Big end radial clearance of connecting rod"E"	 0.03mm 0.06mm 58.95~59.00mm 0.8~1.0mm 0.35~0.85mm 0.010~0.025mm	 2mm 1mm
Automatic centrifugal clutch: Clutch shoe :quantity Thickness Clutch meshing revolution Clutch stalled revolution Free length of back spring of brake shoe Clutch: Action method of clutch Clutch piece :quantity Thickness Friction piece :quantity Thickness Spring of clutch :quantity Free length	 3 2mm 1800~2000r/min 3150~3500r/min 42.5mm Inside pushing type 6 1.5mm 7 3mm 5 39.5mm	 1.5mm
Shifting mechanism: Shifting method Bending limit of fork guide	 Shift gear cam drum and fork	 0.8mm
Transmission device: Offset limit of spindle Offset limit of transmission output shaft		 0.8mm 0.8mm

Section 6 Electric Wiring Diagram of Vehicle

(一)Technical specifications and requirements , details of related parts and components

1.Technical explanation

A Bind the starting cable, wire of left handlebar switch assy, wire of rear brake switch, front brake hose, wire of front brake switch, throttle cable on the handlebar with handlebar band (two pieces on the left and right sides respectively)

B After inserting the air pipe of oil tank into the hole on the main switch lock case, move it under the right end of the steering bar: note: there should be no jam in the hose;

C The starting cable, wire of left handlebar switch assy, wire of rear brake switch, rear brake cable, front brake hose, front brake switch wire, throttle, reverse cable and main switch wire should pass through the clip assy of the steering bar holder;

D Bind the wire of left handlebar switch assy, wire of rear brake switch, wire or front brake switch, meter wire and cable on the frame with cable band assy 2;

E Bind the fan motor wire, headlight wire, front turn light wire and speed sensor wire on the frame with cable band assy1, the headlight wire and front turn light wire should pass through the rear bracket of the headlight;

F Bind the 2/4 drive position sensor and air pipe of front drive gear box on the frame with cable band assy1(2pieces);

G Bind the horn wire on the steering stem with cable band assy1;

H Bind the 2/4 drive position sensor, air pipe of front drive gear box, horn wire, emergency power plug terminal on the frame with cable band assy1;

J Bind the speed sensor wire on the frame with cable band assy1;

K Bind the shit sensor wire, magneto output wire and cable on the frame with cable band assy2.

L Bind the starting motor wire and cable on the frame with cable band assy2;

M Bind the cable on the frame with cable band assy2;

N Bind the starting motor wire on the frame with cable band assy 2:

P .The air pipe, shift sensor wire, starting motor wire and magneto output wire should pass through the guide frame welding on the frame at this place;

Q. First, the overflow pipe of carburetor should pass through the two rear brackets (on the frame) of the engine, and then place it in the proper position between the engine and the rear arm, note: there should be no jam in the carburetor:

R. Bind the shift sensor wire and magneto output wire on the frame with cable band assy 2;

S. Make the air pipe of carburetor and air pipe of rear brake pass through the hole on the oil tank and insert the wire hole of air filter;

T Make the rear brake cable and air pipe of rear brake pass through the guide frame welding on the frame;

U Make the speed sensor wire pass through between the engine and frame;

V Bind the starting cable, rear brake cable, throttle cable, reverse cable, ignition coil high voltage cable and cable on the frame with cable band assy;

W Bind the cable and the rear brake cable on the frame with cable band assy;

X Bind the wire of rear turn light on the frame (one piece on the left and right sides respectively) with cable band assy1, make the wire of rear turn light pass through the clutch cable clip and the rear bracket of turn light, then connect with rear turn light.

2. Technical requirements

① The diagram indicated the wiring conditions and position of various wires in the vehicle body. When assembling the complete vehicle, wiring is according to this diagram principally.

② For the wiring which is cannot be indicated on the diagram and the fixed places, the necessary technical specifications have been given, comply with it when assembling

③ The places using the plastic clip as specified on the diagram, if it cannot be used temporarily, the band can be used for fastening.

④ The diameter parameters of the diagram are used for reference in operation, and it is not as the strict inspection parameters. For the name code of parts and components specified on the title bar, the components with own parts (wire) only need to indicate the name.

3.Details of relative component

Ser. No.	Code	Name	Q´ty	Rem ark
36	SSC4–280000–0	Transforming cable for two/four wheels	1	
35		Transforming cable for Magneto	1	
34		Cable of starting motor	1	
33		Cable of shift sensor	1	
32		Overflowing hose of carburetor	1	
31	SSC0–000606–0	Rear gear case breather hose	1	
30		Taillight lead	1	
29		Rectification regulator connector	1	
28		CDI connector	1	
27		Emergency signal controller connector	1	
26		Start relay connector	1	
25		Fan motor controller connector	1	
24		Cut–off relay connector	1	
23		Auxiliary relay connector	1	
22		Four ways fuse connector	1	
21		Cylinder head breather hose	1	
20		Fuel tank breather hose	1	
19		Speed sensor lead	1	
18		Auxiliary DC jack connector	1	
17		Horn lead	1	
16	SSC5–000604–0	Differential gear case breather hose	1	
15		Two/four wheel driven sensor	1	
14		Fan motor lead	1	
13		Headlight lead	1	
12		Turn signals lead	1	
11		Meter lead	1	
10		Main switch lead	1	
9	SSC4–291000–0	Reverse control cable 1	1	
8		Handlebar plastic clamp	1	
7	SSC4–21000	Throttle cable	1	
6		Front break hose	1	
5		Front break hose	1	
4	SSC4–23000	Rear break hose	1	
3	QB5–002000	Rear break switch cable	1	
2		Handlebar switch cable	1	
1	SSC4–25000	Starter cable	1	

Ser. No.	Code	Name	Q´ty	Rem ark
60	QH0–000404–0	Clutch cable clamp	1	
59	SSA0–000512–0	Clamp 4	6	
58	SSA0–000509–0	Clamp 1	4	
57	ZA0–016000–0	Cable band assay 2	6	
56	ZA0–015000–0	Cable band assay 1	10	
55	SSC5–340000–0	Four ways fuse	1	
54		Auxiliary relay	1	
53	JS150.00–6	Cut off relay	1	
52	SSC5–330000–0	Negative pole lead	1	
51	SSC5–770000–0	Emergency signal controller	1	
50	F3–D40000–0	CDI	1	
49	SSC5–780000–0	Reverse verbal indicator	1	
48	F3–D40000–0	Rectification regulator	1	
47	SSC5–310000–0	Battery	1	
46	SSC5–501000–0	Fan motor controller	1	
45	SSC5–370000–0	Positive pole lead	1	
44	F3–D30000–0	Start relay	1	
43		Auxiliary DC jack	1	
42		Rear turn signals lead	1	
41	F3–D20000–0	Ignition coil	1	
40	SSC5–320000–0	Carble	1	
39		Thermo unit lead	1	
38		Rear break hose	1	
37		Carburetor hose	1	

(二)Wiring diagram(1)

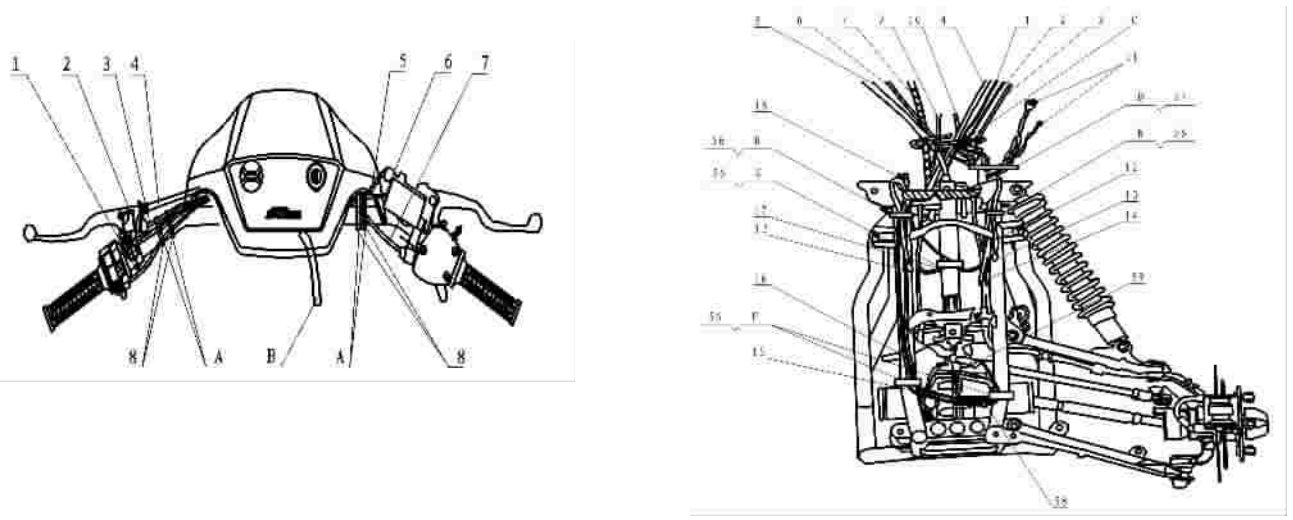


Fig.1

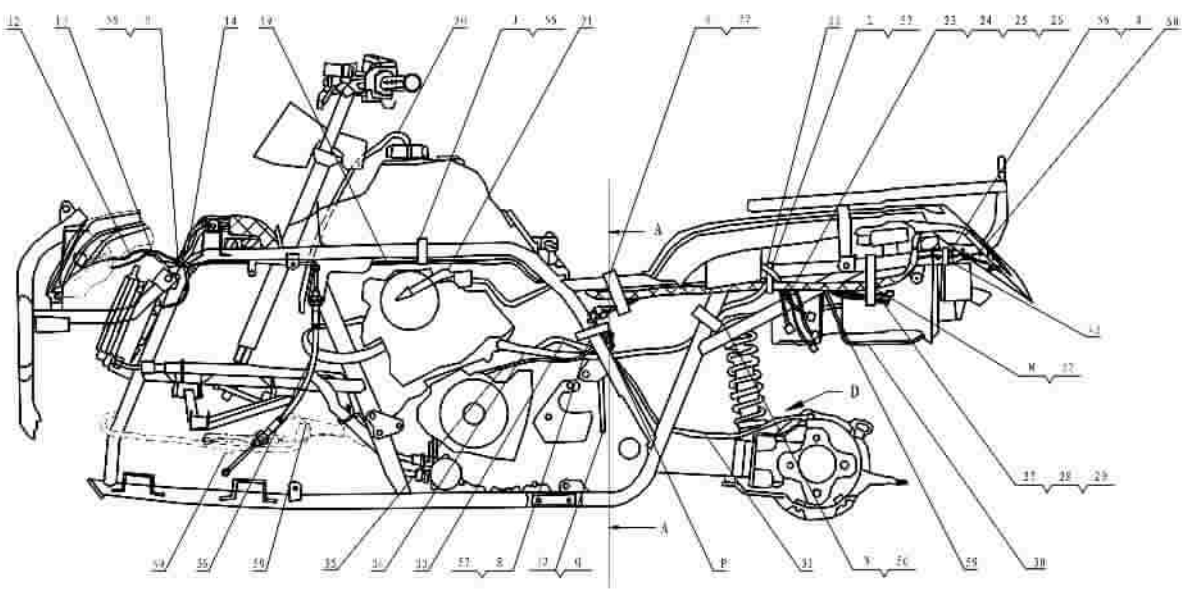
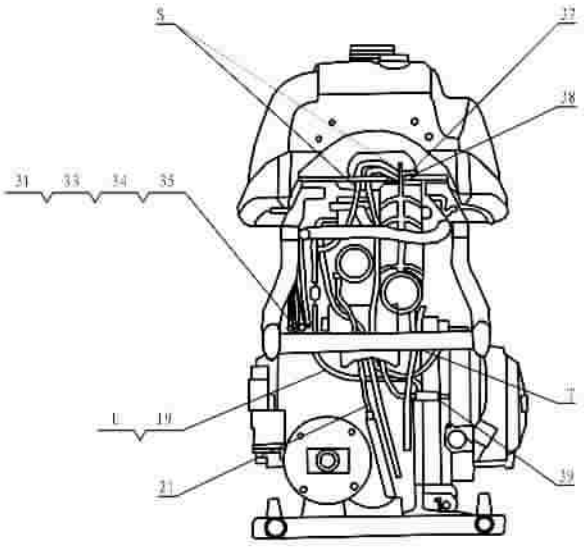
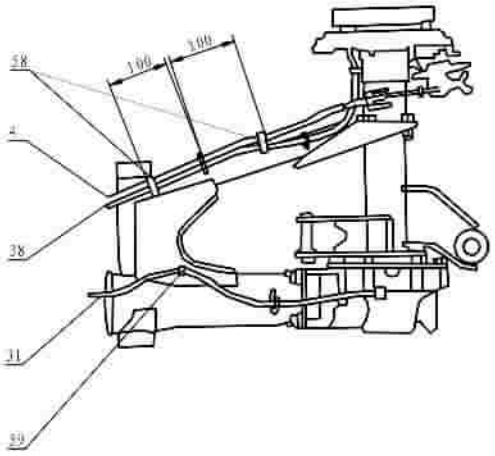


Fig.2

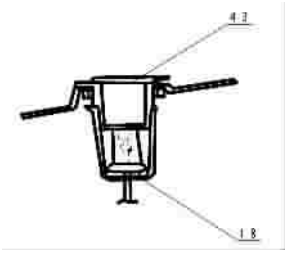
(三)Wiring diagram(2)



A–A



D



B–B

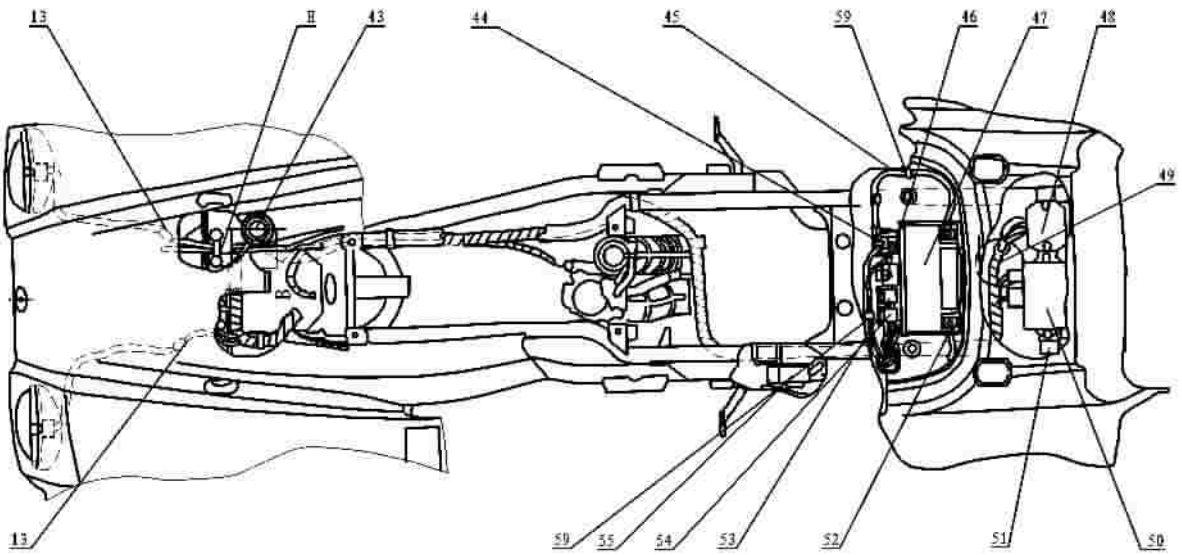


Fig.3

(四)Wiring diagram(3)

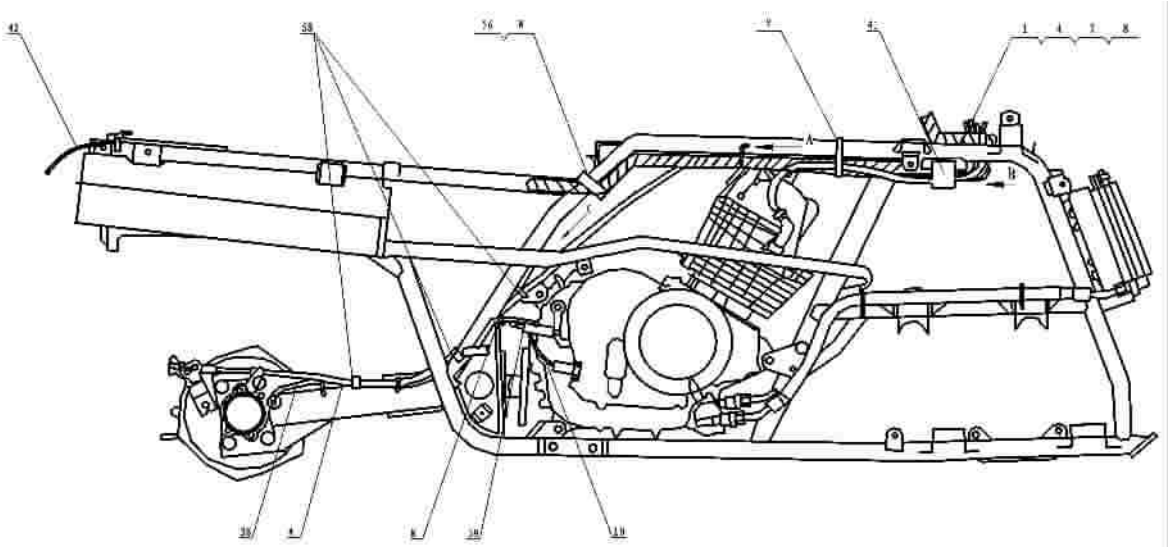
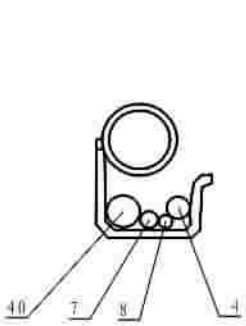
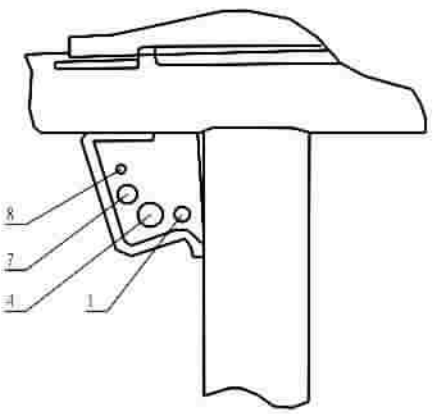


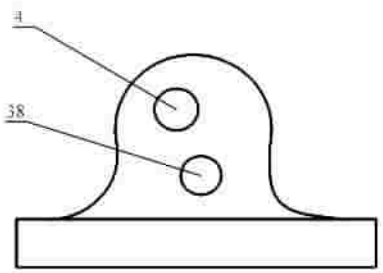
Fig.4



A



B



C

Section 7 Requirements for torque of fastener

(一)ATV body

Torque value of fastener							
Locking component and location of ATV body	Name of component	Size of tread	Q´ty	Tightening torque of fastener of ATV body			Remark
				Nm	m·kg	ft·lb	
Front wheel fork and frame	nut	M35x1.5	2	55	5.5	40	
Steering vertical post and pulling rod	nut	M12x1.25	2	30	3	22	
Pulling rod and nut	nut	M12x1.25	2	25	2.5	18	
Steering vertical post and frame(upper)	Bolt	M8x10	2	23	2.3	17	
Steering vertical post and frame(lower)	nut	M14x1.5	1	91	9.1	66	
Steering vertical post and steering bar	Bolt	M8x50	4	23	2.3	17	
Steering vertical post and steering joint	nut	M12x1.125	2	30	3	22	
Engine upper connecting plate and frame(upper)	nut	M8x16	2	34	3.4	24	
Engine and engine upper connecting plate	nut	M8x55	1	34	3.4	24	
Engine assy and frame(front)	Bolt	M8x85	1	34	3.4	24	
Engine assy and frame(front)	Bolt	M10x85	1	69	6.9	50	
Engine assy and frame(rear upper)	Bolt	M10x100	1	69	6.9	50	
Engine assy and frame(rear lower)	Bolt	M10x100	1	69	6.9	50	
Bumper and frame	Bolt	M8x16	4	34	3.4	24	
Front luggage carrier and bumper	Bolt	M8x12	2	34	3.4	24	
Front luggage carrier and frame	Bolt	M8x16	2	34	3.4	24	
Rear luggage carrier and frame	Bolt	M8x16	4	34	3.4	24	
Exhaust silencer and frame	Bolt	M8x16	2	27	2.7	19	
Front wheel axle and nut	nut	M35	8	64	6.4	46	
Rear wheel axle and nut	nut	M22	8	55	5.5	40	
Front drive half shaft assay and front brake disc head assy	nut	M22	2	150	15	108	
Front drive half shaft assy and front drive gear case unit and steering knuckle	nut	M12x1.25	4	25	2.5	18	
front drive gear case unit and frame	nut	M10	2	64	6.4	46	
Front brake and frame	Bolt	M8x30	1	23	2.3	17	
Front brake and steering knuckle	Bolt	M8x14	4	30	3	33	
Footrest and frame	Bolt	M10x1.25x22	4	65	6.5	50	
footrest supporting plate and frame	Bolt	M8x16	2	30	3	22	
Rear wheel fork and frame(left)	Bolt	M22x1.5	1	130	13	94	

Rear wheel fork and frame(right)	Bolt	M22x1.5	1	6	0.6	4.3	
Rear arm shaft and nut(right)	nut	M22x1.5	1	130	13	94	
Rear shock absorber and frame	nut	M12	1	50	5	36	
Lower cover of gearbox	Bolt	M8x12	2	17	1.7	12	
Fuel tank and frame	Bolt	M6x40	4	10	1	7.2	
Rear brake and frame	Bolt	M8x40	4	28	2.8	20	
Rear brake hub and rear driving gearbox units	nut	M35	1	150	15	108	
Rear wheel axle bushing and rear driving gearbox units	nut	M35	1	150	15	108	
Left and right/upper and lower swing arm and frame	nut	M10	12	45	4.5	32	

(二)Engine

Torque value of fastener

Locking component and location of engine	Name of component	Size of thread	Q´ty	Tightening torque of fastener			remark
				Nm	m·kg	ft·lb	
Cylinder head oil passage check	bolt	M6	1	7	0.7	5.1	
Cylinder head	Cam shaped nut	M10	4	40	4.0	29	Apply oil washer
Cylinder head and Cylinder	bolt	M8	2	20	2.0	14	
Sprocket cover	screw	M6	2	7	0.7	5.1	
Valve cover	bolt	M6	5	10	1	7.2	
Bearing stop plate of camshaft	bolt	M6	2	8	0.8	5.8	Apply oil to washer
Spark plug		M12	1	18	1.8	13	
Cylinder	bolt	M6	1	10	1	7.2	
Balancing shaft gear	nut	M16	1	60	6	43	Apply oil to washer
Starting ratchet disc	bolt	MlO	1	50	5	36	
Locking nut(adjusting screw of valve clearance)	nut	M6	2	14	1.4	10	
Cam timing sprocket	bolt	M10	1	60	6	43	
Chain tension	bolt	M6	2	10	1	7.2	
Chain tension cover	bolt	M11	1	23	2.3	17	
Upper guide plate of chain	bolt	M6	2	10	1	7.2	

Locking component and location of engine	Name of component	Size of thread	Q´ty	Tightening torque of fastener			remark
				Nm	m·kg	ft·lb	
Oil pump	screw	M6	3	7	0.7	5.1	
Oil draining screw plug	plug	M35	1	43	4.3	31	
Fine filter cover of engine oil(draining oil)	bolt	M14	2	50	5	36	
Carburetor seat and cylinder head	bolt	M8	2	20	2	14	
carburetor and carburetor connecting pipe	bolt	M6	1	12	1.2	8.7	
Silencer and frame	bolt	M8	2	27	2.7	19	
Silencer and exhaust	bolt	M8	1	20	2	1.4	
Exhaust pipe	bolt	M6	2	12	1.2	8.7	
Crankcase(closing case)	screw	M8	3	26	2.6	19	
Left crankcase cover	screw	M6	6	7	0.7	5.1	
crankcase cover and Crankcase (closing case)	screw	M6	38	10	1	7.2	
Bearing clamp of right crankcase cover	screw	M6	3	7	0.7	5.1	Apply tightening agent
Bearing clamp of left crankcase cover	screw	M6	3	7	0.7	5.1	Apply tightening agent
Main clutch	nut	M22	1	140	14	100	Apply oil to washer
Assistant clutch spring	bolt	M6	5	8	0.8	5.8	
Assistant clutch hub	nut	M16	1	90	9	65	Use locking washer
Shift cam star–shaped gear	nut	M6	1	12	1.2	8.7	Apply tightening agent
Locking nut (clutch releasing adjustable screw)	nut	M8	1	20	2	14	
Starting surpassing clutch	bolt	M8	6	30	3	22	Apply tightening agent, rivet to prevent loosen

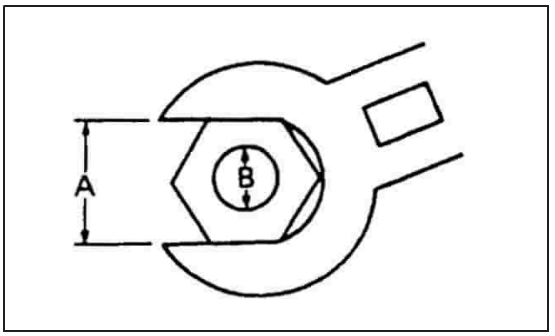
Locking component and location of engine	Name of component	Size of thread	Q´ty	Tightening torque of fastener			remark
				Nm	m·kg	ft·lb	
							loosen
Connecting plate of starting motor	screw	M6	2	10	1	7.2	
Output gear	nut	M22	1	130	13	94	rivet to prevent loosen
Left case bearing clamp of driving shaft	screw	M8	3	25	2.5	18	Apply tightening agene
Rear cover bearing	Inner–hexagonal screw sleeve	M65	1	110	11	80	Apply tightening agene
rear driving bearing	Inner–hexagonal screw sleeve	M55	1	80	8	58	Apply tightening agene
Rear cover	bolt	M8	4	25	2.5	18	
Cross joint nut	nut	M14	2	97	9.7	70	Apply tightening agene
Shift pedal	bolt	M6	1	10	1.0	7.2	
Magneto stator	screw	M6	3	7	0.7	5.1	
Hand–started driving disc	Screw pin	M6	1	12	1.2	8.7	

(三)GENERAL TORQUE SPECIFICATION

General torque specification (standard screw). This table is screw locking specification drawn up by International Standard Association. In order to avoid the twist or unbalancing phenomenon when locking screw, please cross lock or londuit as per appointed orders.

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

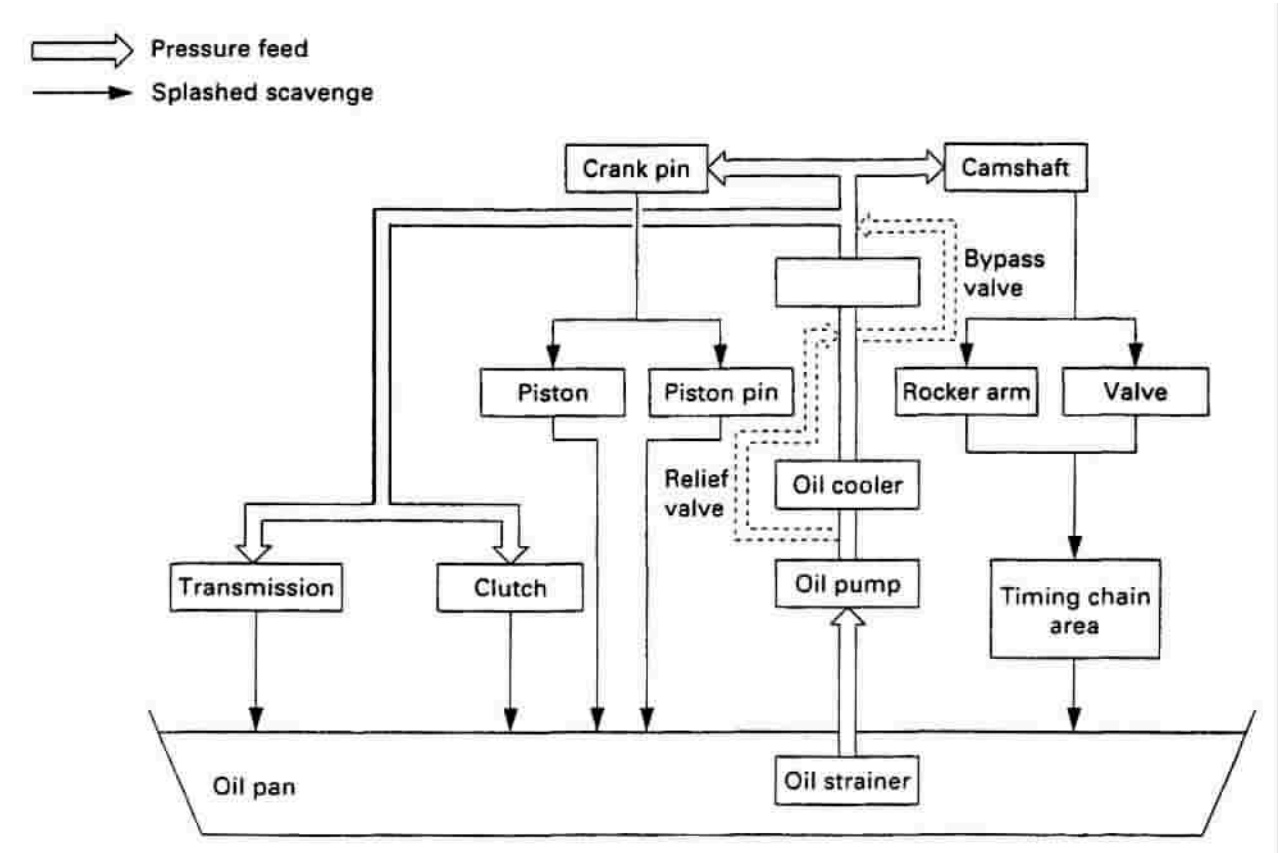
A(nut)	B(screw)	specification of general torque
		m.kg
10mm	6mm	0.6
12mm	8mm	1.5
14mm	10mm	3.0
17mm	12mm	5.5
19mm	14mm	8.5
22mm	16mm	13.0



A" Distance between flats

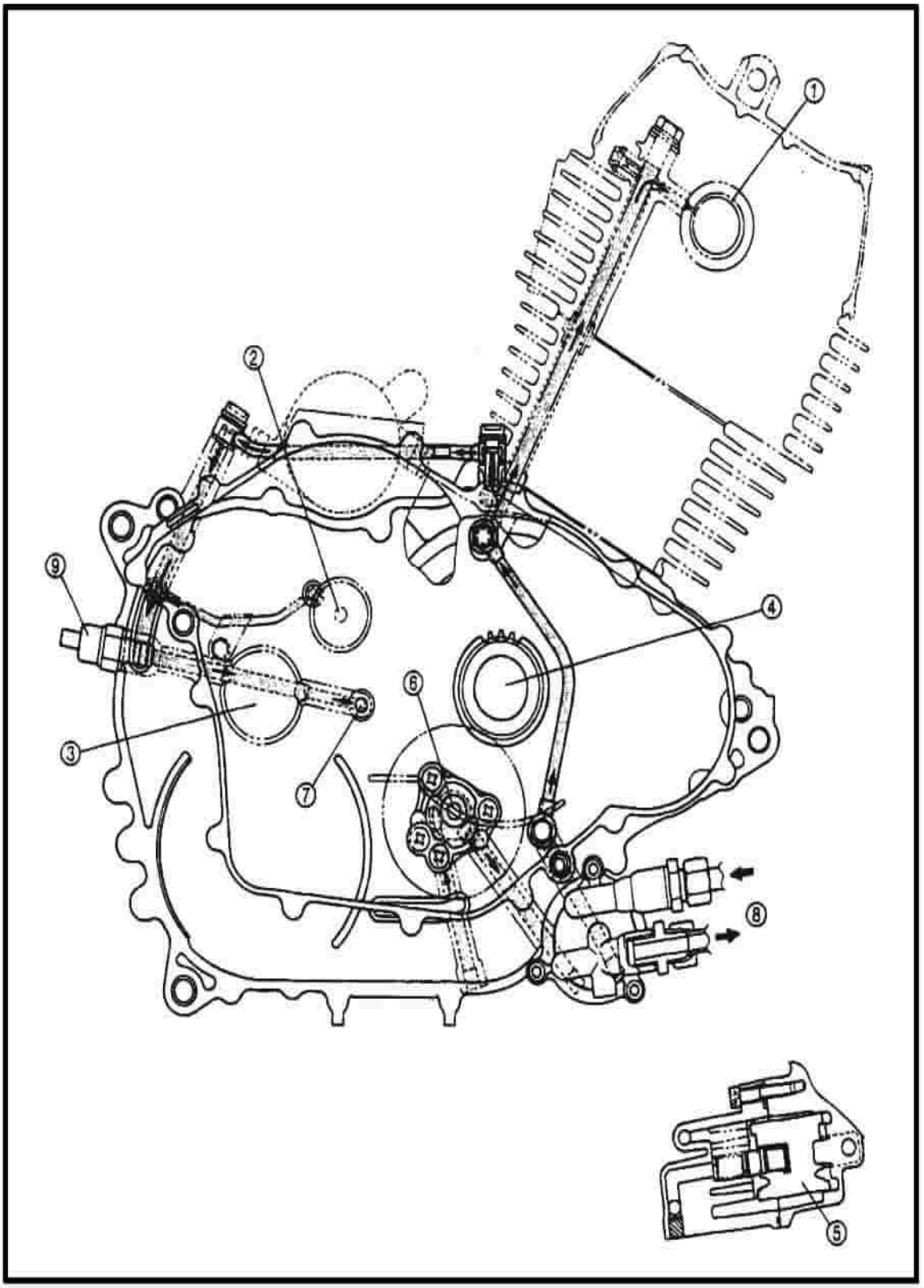
B: Outside thread diameter

(一)lubrication oil way



(二)Lubrication diagram

①cam shaft ②main axle ③drive axle ④crank shaft
⑤oil filter ⑥oil pump ⑦idle axle ⑧oil cooler
⑨thermo switch

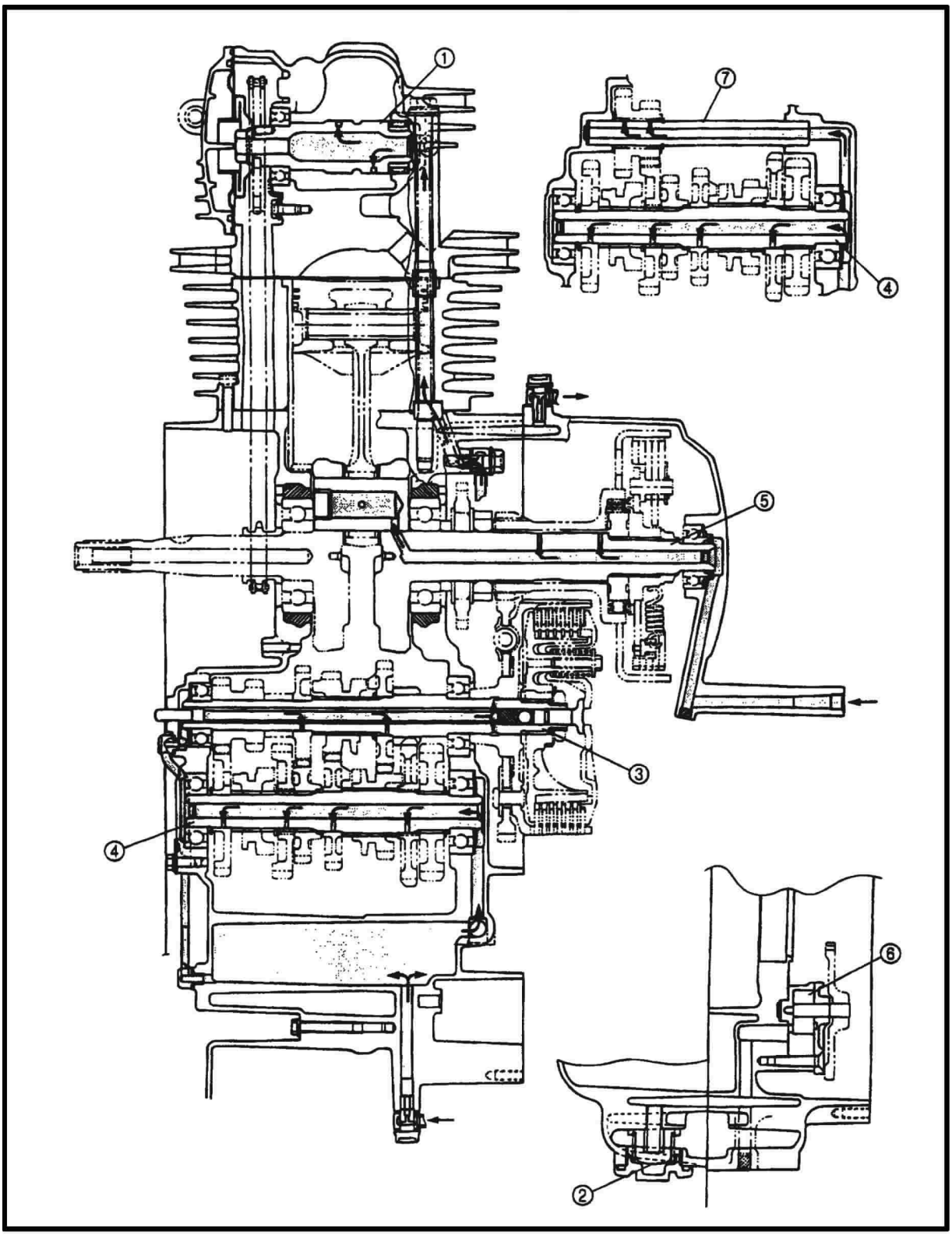


①cam shaft ②oil strainer

③main axle ④drive axle

⑤crank shaft ⑥oil pump

⑦idle axle



Section 9 Lubrication point and type of lubricants

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

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

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

Lubrication point(name of component)		Type of lubricant
Lip of oil	(crank, shaft gear shaft, spindle, shift gear operation shaft)	Light lithium–base grease
All bearing	(crank spindle, driving shaft, output shaft, balancing shaft, shift gear camshaft, pneumatic camshaft)	Lubrication–oil
0–ring	Contact position of O–ring	Light lithium–base grease
Stem end of intake and exhaust valve	Intake and exhaust valve, valve adjusting screw	Lubrication–oil
Fastener of cylinder head	Bolt flange face, thread portion, washer end face	Lubrication–oil
Outside surface of piston pin	Piston, piston pin, small end of connecting rod	Lubrication–oil

Lubrication point(name of component)		Type of lubricant
piston pin		
Outside surface of piston, piston ring	Cylinder block, piston, piston ring	Lubrication–oil
Inner hole of main driving gear of main clutch	Crank, main driving gear	Lubrication–oil
Inner hole of assistant clutch gear unit	Assistant clutch gear unit, spindle	Lubrication–oil
Assistant clutch releasing operation rocker unit	Operation rocker and it´s contact portion	Lubrication–oil
Upper cam plate guide rod	Upper cam plate unit, guide rod	Lubrication–oil
Inner hole of upper cam plate unit	Shift gear shaft, upper cam plate unit	Lubrication–oil
Steel ball bracket unit	Steel ball bracket unit, upper and lower cam plate	Lubrication–oil
Surpassing clutch	Surpassing clutch, main clutch cover, inner spine sleeve	Lubrication–oil
Spindle and inside hole jointing face of right crankcase	Spindle, right crankcase	Lubrication–oil
cylinder	Cylinder, piston	Lubrication–oil
Outside surface of reverse gear	Reverse gear rod, crankcase	Lubrication–oil
Outside surface of short fork shaft	Fork shaft, fork, crankcase	Lubrication–oil
Outside surface of long fork shaft	Fork shaft, fork, crankcase	Lubrication–oil
Outside surface of long fork shaft	Fork shaft, fork, crankcase	Lubrication–oil
Shift gear camshaft portion , contractor	Fork, shift gear cam, crankcase	Lubrication–oil
Outside surface of over–wheel shaft	Over–wheel shaft, crankcase	Lubrication–oil
Bushing inner hole of big gear of electric starter	Bushing, left crankcase	Lubrication–oil
Electric starting clutch	Rolling post and it´s contacting portion	Lubrication–oil

Chapter II MAINTENANCE AND ADJUSTMENT OF VEHICLE

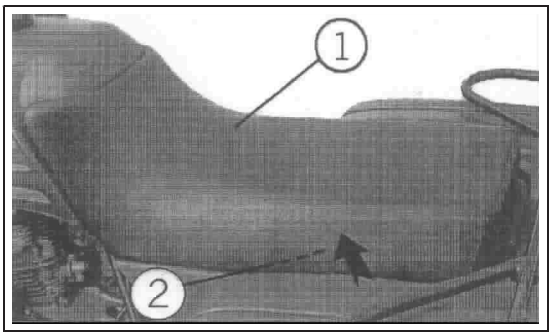
Note：

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

Section 1 Periodic Maintenance/Lubrication

Item	Requirement	Every time			Every	
		1 month	3 month	6 month	6 month	1 year
Valve	Check the valve clearance. Adjust it if necessary	○		○	○	○
Spark plug	Check the clearance and clear the plug. Replace it if necessary	○	○	○	○	○
Air filter	Clean it. Replace it if necessary	Maintain every 20–40hour´s use				
Carburetor	Check the idle or starting state.Adjust it if necessary		○	○	○	○
Cylinder head	Check it there is crack or damage in gas tube.Replace it if necessary			○	○	○
Exhaust system	Check the leakage. Tighten it again if necessary. Replace the gasket if necessary			○	○	○
Spark suppressor	Clean			○	○	○
Oil circuit	Check the cracks or damage of oil tube.Replace it if necessary			○	○	○
Engine oil	Replace.(Preheat the engine before draining the oil)	○		○	○	○
Oil filter	Clean	○		○		○
Oil filter screen	Clean	○		○		○
Gear case oil	Check the oil level and leakage. Replace	○				○
Brake	Check the operation. Adjust it if necessary	○	○	○	○	○
Clutch	Check the operation. Adjust it if necessary	○		○	○	○
Wheel	Check the balance, damage, run–out etc. Replace it if necessary	○		○	○	○
Wheel bearing	Check the looseness and damage. Replace it if damaged	○		○	○	○
Front & Rear suspension system	Check the operation and correct it if necessary			○		○
Steering system	Check the operation and correct it if necessary. Check the toe–in and adjust it if necessary	○	○	○	○	○
Bearing of steering vertical column	Lubricate every 6 months(lithium soap grease)			○	○	○
Connecting piece and fastener	Check all the connecting pieces and fasteners. Correct them if necessary	○	○	○	○	○

·We advise that the maintenance of these items should be conducted by jianshe saler。



Section 2 Disassembly and assembly of Cushion, Fender and Fuel tank

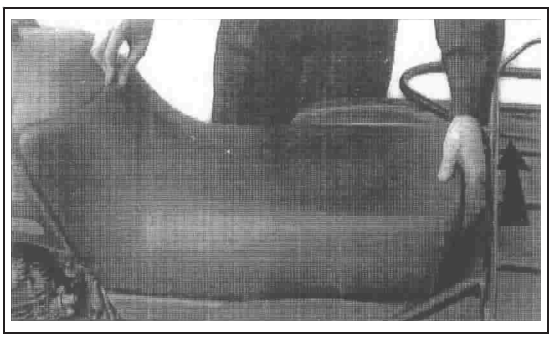
(Ⅰ)Cushion

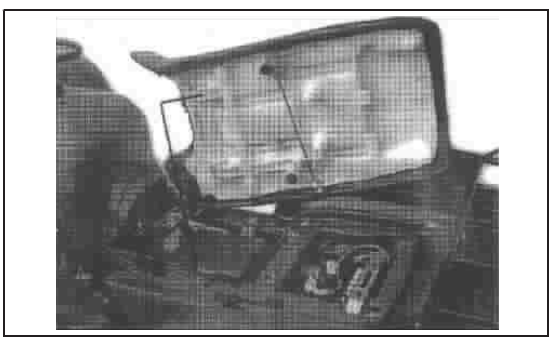
1.Disassembly

(1)Place the vehicle on the horizontal ground.

(2)Disassemble the cushion①:

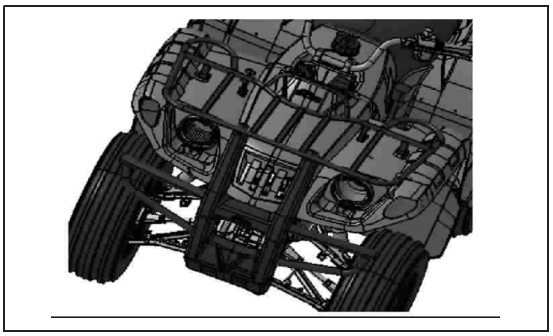
Pull the cushion lock lever ② upward,then raise the tail part of cushion. By that,you can disassemble the cushion.





2.Installation

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

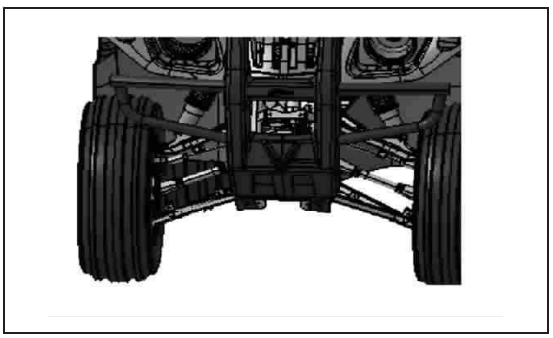


(Ⅱ)Front fender

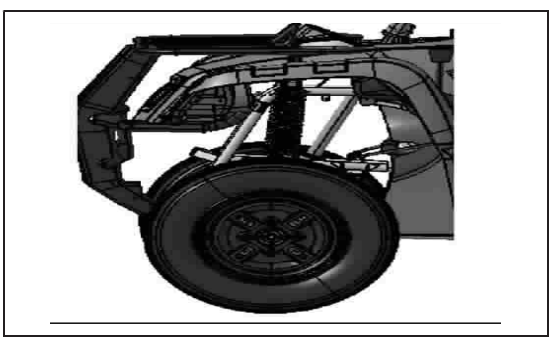
1. Disassembly

(1)Place the vehicle on the horizontal ground.

(2)Disassemble the front luggage carrier①.

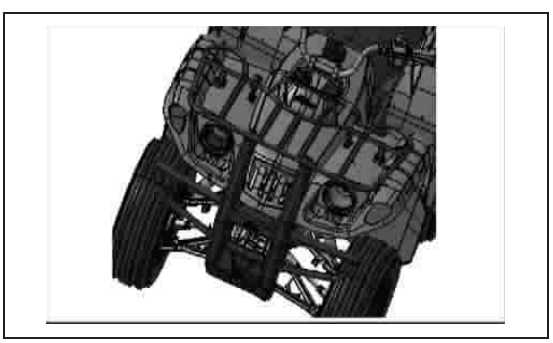


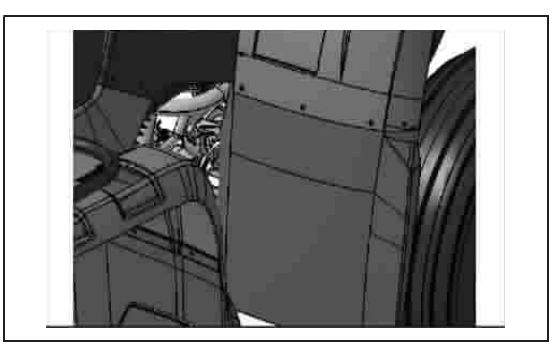
(3)Disassemble the front guarding plate②.



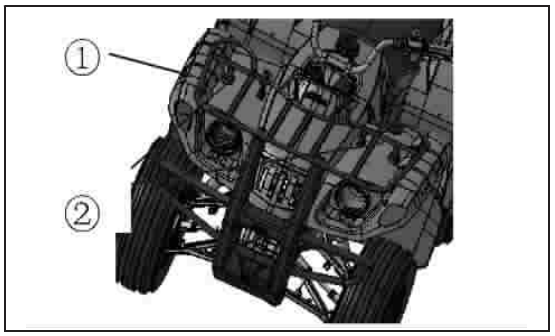
(4)Disassemble the bumper①

(5)Cut off the connecting wire② of headlight.





(6)Disassembl the front fender①



2.Installation：

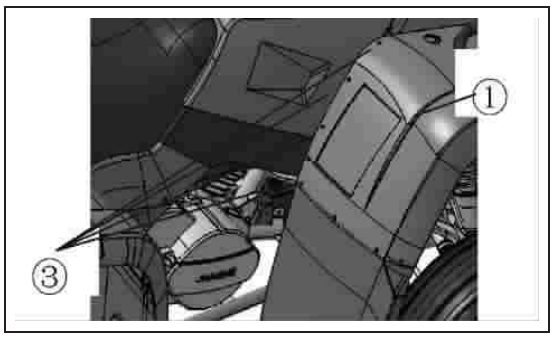
Operate according to reverse procedures of "Disassembly".

(1)Install：

a.Front fender①

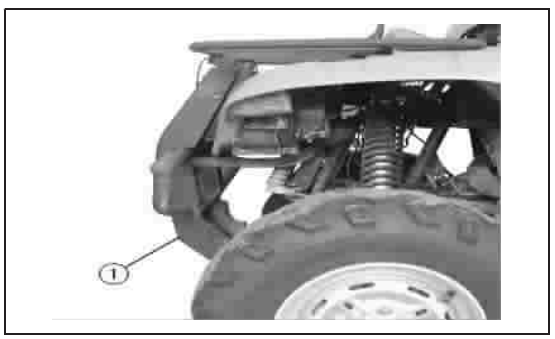
b.Bolt②.The fastening torque is 7N·m

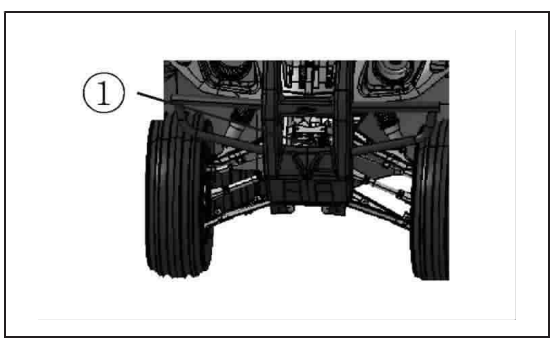
c.Bolt③ ,rubber hood of protecting plate：The fastening torque is 7N·m.



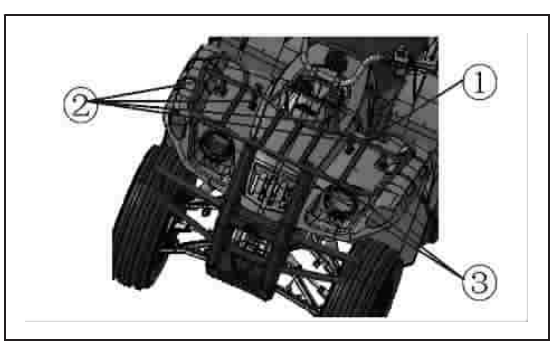
(2)Install the bumper①.

The fastening torque of bolt (bumper and frame) is 16N·m.





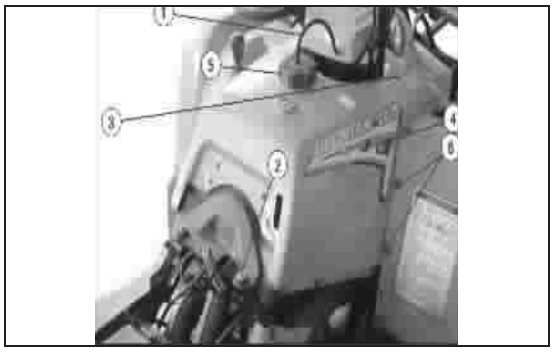
(3)Install the front guard plate①.

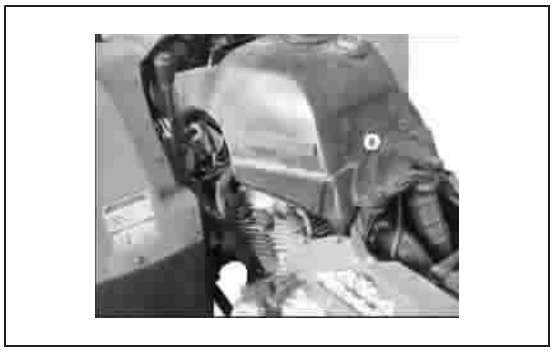


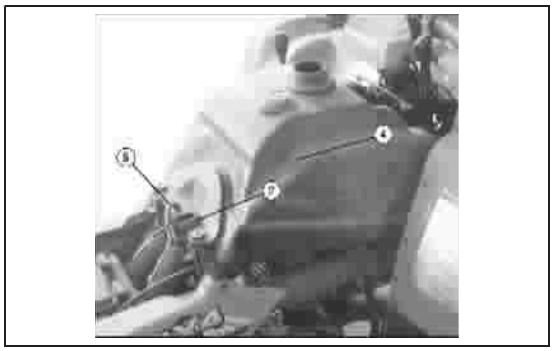
(4)Install the front luggage carrier①.

Bolt② (front luggage carrier and frame).the fastening torque is 34 N·m.

Bolt③(front luggage carrier and bumper).The fastening torque is 11 N·m.







(Ⅲ)Fuel tank

1.Disassembly

(1)Place the vehicle on the horizontal ground.

(2)Disassemble the cushion (see" Cushion disassembly" of this section)

(3)Remove the air hose① on the fuel tank cover.

(4)Remove：

a. Bolt②, flat washer 30,installing bushing of upper cover of fuel tank,washer and rubber hood

2 of fuel tank.

b. Screw③

c.plastic expansion screw assy④.

d.Fuel tank cover⑤.

e.Upper cover of fuel tank⑥.

(5)Remove the rubber pad⑦ of fuel tank, and screw the fuel tank cover onto the fuel tank immediately.

(6)Pull the fuel cock lever to"OFF"position

(7)Remove the fuel inlet pipe⑧

CAUTION

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

CAUTION

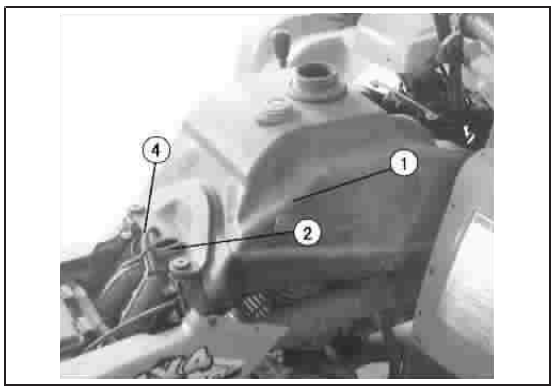
The gasoline is inflammable. Avoid to splash it on the hot engine.

(8)Remove：

Bolt,flat washer 30, rubber hood of fuel tankand installing bushing of fuel tank.

(9)Remove the air inlet pipe② of air filter, supporting air pipe⑤.

(10)Remove the fuel tank④.



2.Installation

Operate according to reverse procedures of " Disassembly", and pay attention to following points：

(1)Install the fuel tank①

(2)Connect

a.Air inlet pipette② and hose④

b.Supporting air rubber pipe④

Caution

The convex part on the ring should be forward when installing the supporting pad③of air pipe.

(3)Install the bolt,bushing of rubber hood and washer.

Fastening torque of bolt：10N·m

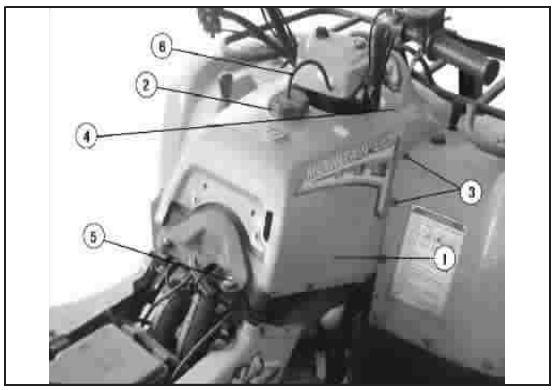
(4)Install：

a.Upper cover of fuel 1ank①

b.Fuel tank cover②

c.Plastic expansion screw assy③

d.Screw④



e.Bolt⑤ and related fasteners and connecting pieces.

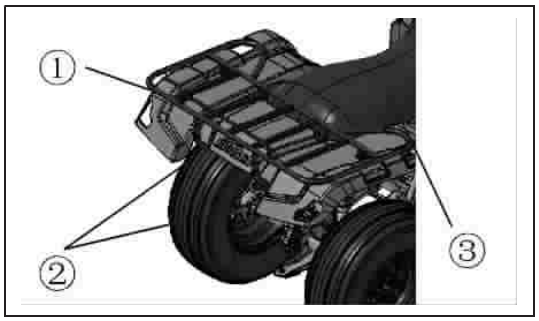
The fastening torque of bolt is 10N·m.

(5)Connect：

·Air hose⑥

(6)Install

·Cushion (see "Cushion installation" of this section)



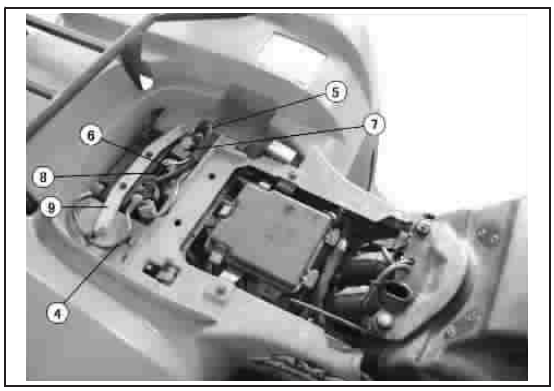
(Ⅳ)Rear fender

1.Disassembly

(1)Place the vehicle on the horizontal ground.

(2)Disassemble the rear luggage carrier ① and its installing bushing②.

(3)Disassemble the cushion ③ (see the centents of cushion disassembly in this section).



(4)Disconnect the negative wire⑤ and positive wire④ of battery.

CAUTION

Should disconnect the negative wire⑤ firstly.

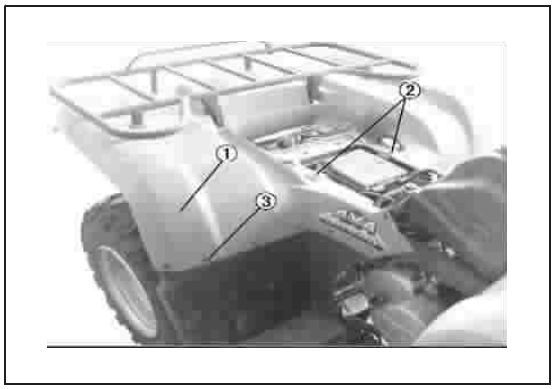
(5)Disassemble the clamp plate⑨ of battery.

(6)Disassemble the starting relay⑥.

(7)Disassemble the cut–off relay⑦.

(8)Take out the battery⑧.

(9)Disassemble the rear fender⑩.



2.Installation

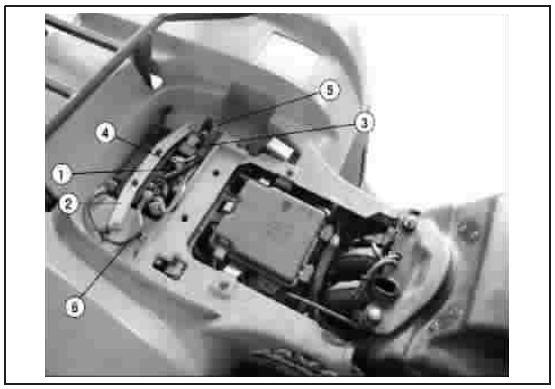
Operate according to reverse procedures of" Disassembly". Pay attention to following points:

(1) Install:

Rear fender①.

Bolt② (rear fender and frame).The torsion is 7N.m.

Bolt ③ and rubber hood of protecting plate (rear fender and frame).The torsion is 7 N.m.



(2)Install:

a.Battery①

b.Battery clamp plate②

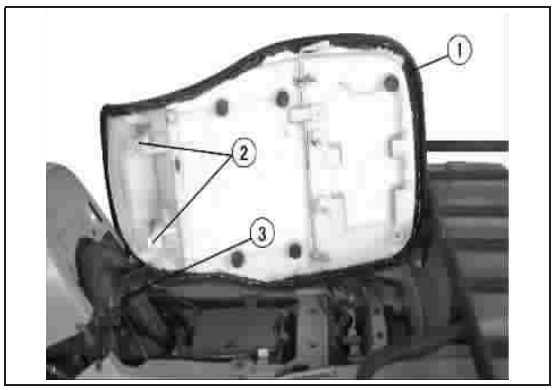
(3)Install:

a.Cut–off relay③

b.Starting relay④

c.Connect the positive wire⑥ of battery.

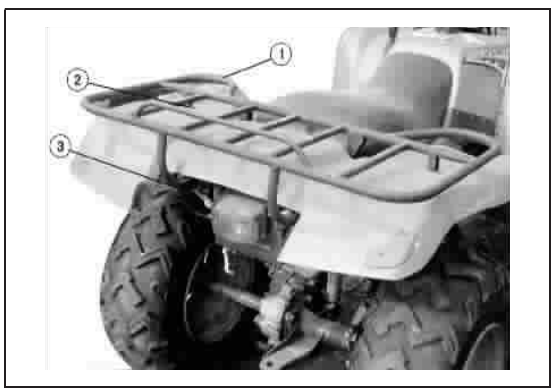
d.Connect the negative wire⑤of battery.



(4)Install the cushion①

Caution

Insert the support lug② of cushion into the plug Seat ③ on the frame, then press down the cushion.



(5)Install the rear luggage carrier①

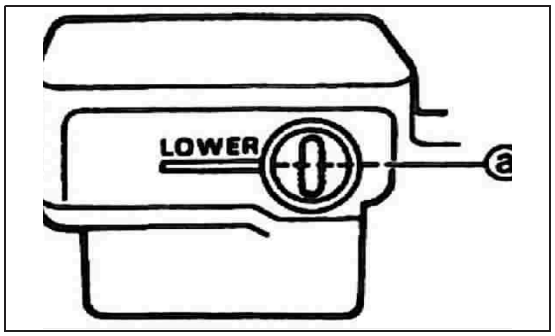
Torque requirement of fasteners:

Bolt②fastening torque:3N·m

Bolt③fastening torque:9N·m

Caution

Remember to install the bushing on the connecting point of luggage carrier and frame.



(Ⅰ)FRONT BRAKE PAD INSPECTION

·FRONT BRAKE FLUID LEVEL INSPECTION

1.Place the machine on a lever surface.

NOTE：

When inspecting the front brake fluid level, make sure that the top of the master cylinder top is horizontal.

2.Inspect：

·Brake fluid lever

Fluid level is under"LOWER"level line@

→Fill up.

Recommended brake fluid： DOT4

NOTE：

If DOT 4 is not available.DOT 3 can be used.

CAUTION：

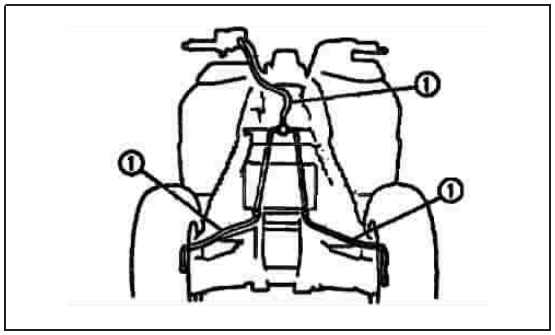
Brake fluid may erode painted surfaces or plastic parts.Always clean up spilled fluid immediately.

WARNING!

·Use only the recommended brake fluid; otherwise,the rubber seals may deteriorate, causing leakage and poor brake performance.

·Refill with the same type of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance。

·Be careful that water does not enter the master cylinder when refilling.Water will significantly lower the boiling point of the fluid and may result in a vapor lock.



·BRAKE HOSE INSPECTION

1.Remove：

·Seat

·Front carrier

·Front fender

Refer to"CUSHION, FENDERS AND FUEL TANK".

2.Inspect：

·Brake hoses①

Cracks/wear/damage → Replace.

3.Check：

·Brake hose clamp

Loosen →Tighten.

4.Hold the machine in an upright position and apply the front or rear brake.

5.Check：

·Brake hoses

Active the brake Lever several times.

Fluid leakage→Replace the hose.

Refer to"FRONT BRAKE"in CHAPTER Ⅲ.

6.Install：

·Front fender

·Front carrier

·Seat

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

WARNING!

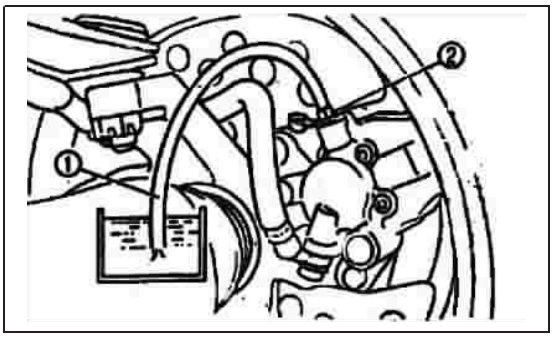
Bleed the brake system if：

·The system has been disassembled.

·A brake hose or brake pipe have been loosened or removed.

·The brake fluid has been very IOW.

·The brake operation has been faulty. A loss of braking performance may occur If the brake system is not properly bled.



Air bleeding steps：

a.Add the proper brake fluid to the reservoir.

b.Install the diaphragm.Be careful not to spill any fluid or allow the reservoir to overflow.

c.Connect the clear plastic hose① tightly to the caliper bleed screw②.

d.Place the other end of the hose into a container.

e.Slowly apply the brake lever several times.

f.Pull the lever in and hold it.

g.Loosen the bleed screw and allow the lever to travel towards its limit.

h.Tighten the bleed screw when the lever limit has been reached.Then release the lever.

i.Repeat steps (e) to (h) until all the air bubbles have disappeared from the fluid.

i.Tighten the bleed screw.

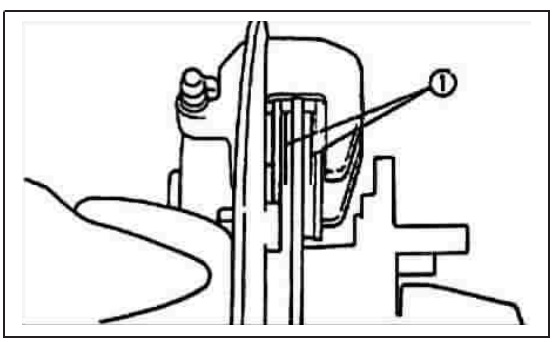
k.Add brake fluid to the proper level.

Refer to "BRAKE FLUID LEVEL INSPECTION".

NOTE：

If bleeding is difficult，it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

–WARNING!



FRONT BRAKE PAD INSPECTION

1.Remove：

·Front wheels

2.I nspect：

·Brake pad

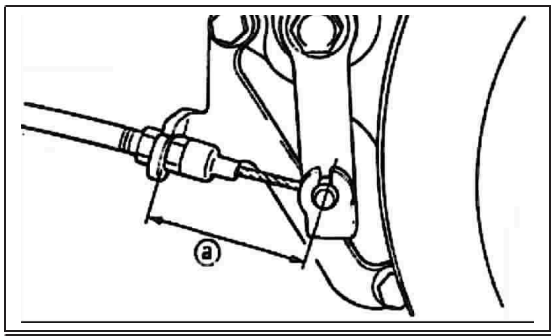
Wear indicators ① almost touch the brake disc→ Replace the brake pads as a set.

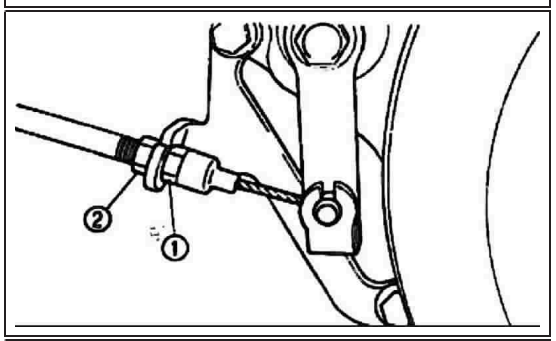
Refer to "FRONT BRAKE" in CHAPTER Ⅲ.

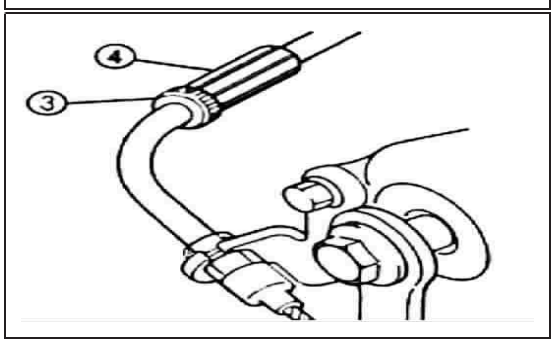
3.Operate the brake lever.

4.Install:

.Front wheels







(Ⅱ)REVERSE CONTROL CABLE ADJUSTMENT

1.Check:

·Reverse control cable end length ○a

Out of specification →Adjust.

Cable end length: 38mm(1.5in)

2.Adjust:

·Reverse control cable end length

Adjustment steps:

·Loosen the locknut①.

·Turn the adjuster ② in or out unit the

Turning in,Cable end length is decreased
Turning out,Cable end length is increased

.Tighten the locknut.

.Check the reverse control cable slack.

If the reverse control cable is slack,adjust it using the locknut③ and the adjuster④.

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

Caution:

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

Caution:

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

Warning:

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

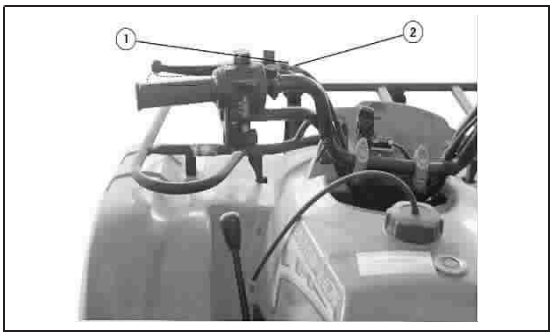
1. Place the vehicle on the horizontal ground.

2. Adjust

·Free clearance of left lever

·Free clearance of rear brake pedal

Adjusting procedure:



Caution：

Before adjusting,tread the rear brake pedal 2–3 times.

·Loosen the locking nut ① completely,and screw in the cable adjusting screw ② completely.

·Loosen the adjusting nut ③ of rear brake cable and adjusting nut ④of rear brake pedal.

·Tighten up the adjusting nut ④ 4 of rear brake pedal until gaining correct clearance ⓐ :

Free clearance Ⓐ(rear brake pedal);20–30mm

·Rotate the adjusting nut ③ of rear brake cable until gaining correct clearance ⓐ :0–1mm

⑤Rear brake arm assy

⑥Pin

·Screw out the adjusting screw ② of rear brake cable until gaining correct free clearance:

Free clearance (left lever)5–7mm

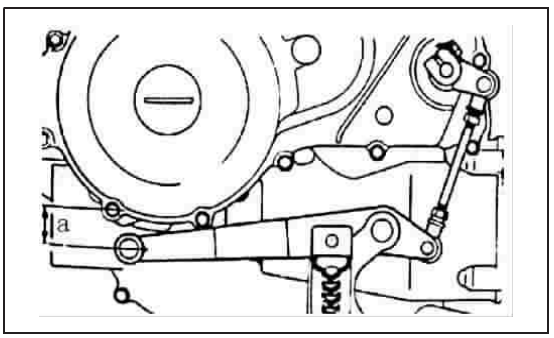
·Screw up the locking nut①

·Check the free clearance of left and rer brake pedal.

If not conforming to standard value,repeat above procedures to adjust.

Warning

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



(Ⅳ)SHIFT PEDAL ADJUSTMENT

1.Check：

·Shift pedal height ⓐ

Out of specification → Adjust.

Shift pedal height:26mm(in)

2.Adiust：

·Shift pedal position

Adjustment steps：

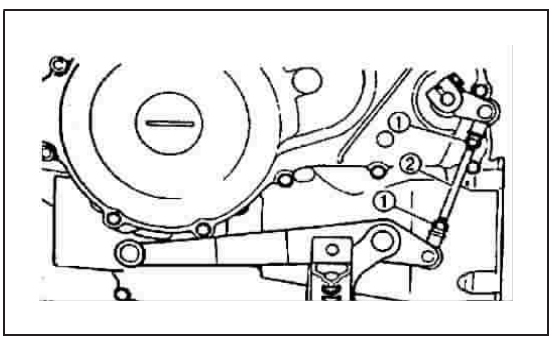
.Remove the shift rod cover

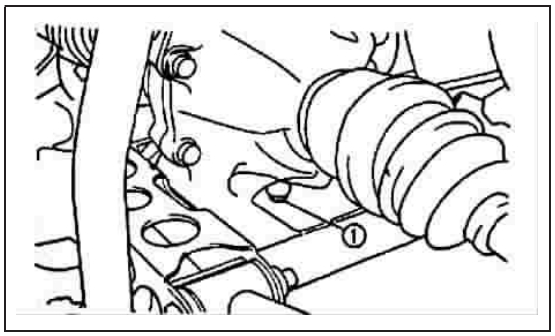
.Loosen the locknut ① .

.Turn the shift pedal rod②in or out to set the correct pedal height.

Turning in：Pedal is lowered

Turning out：Pedal is raised





.Tighten both locknuts.

.Install the shift rod cover.

(V)DIFFERENTIAL GEAR OIL QUANTITY INSPECTION

Caution:

The engine must be in cold state

1.Place the machine on a level surface.

2.Remove:

·oil filling screw plug①

·Sealing washer

3. Observe the oil level:the correct lever should be on the bottom of oil filling hole.If the oil level is too low.please refill the recommended engine oil to specified oil level. Oil capacity:0.35L.

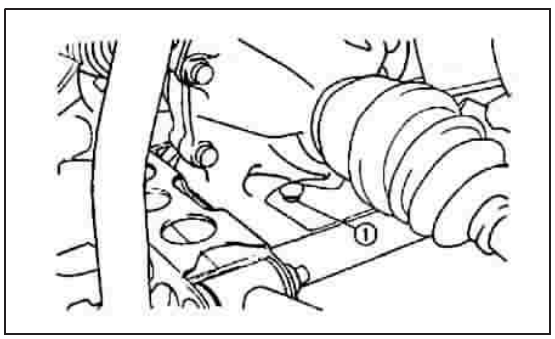
4.Install.

Oil draining screw plug

Torsion of oil draining screw plug:12N.m

Caution:

·If the gear lubrication oil has become dirty, replace it as soon as possible, the dirty lubrication oil and the unqualified lubrication oil will cause the gear to be damaged too early.



1.Place a oil catcher under the front driving gear case.

2.Remove:

·oil filling screw plug①

·Sealing washer

3.Check

·oil filling screw plug

·Sealing washer

If damaged, replace them

4.Install.

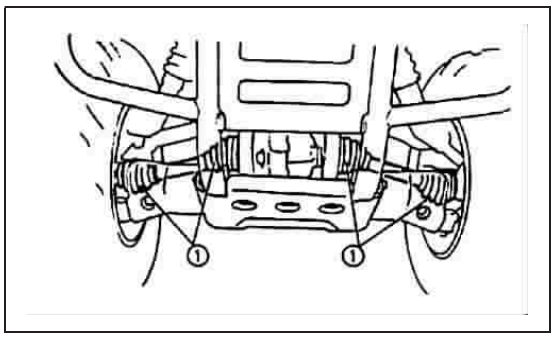
Oil draining screw plug

Torsion of oil draining screw plug:12N.m

5.Refill the recommended engine oil to specified oil level, oil capacity:0.35L

Caution:

After refilling, must check the leakage



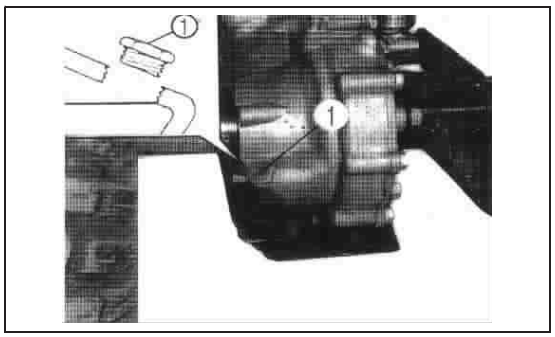
Recommended oil:

SAE 80 API"GL–4"engine oil of hypoid gear If needing,you may use SAE80W90 engine oil of hypoid gear Period replacement 0.35L Total capacity: 0.4L

(Ⅵ)CONSTANT VELOCITY JOINT DUST BOOT INSPECTION

Check Dust boots①

Damage → Replace.



(Ⅶ)Lubricating oil level inspection of rear driving gear case

Check the lubricating oil level of rear driving gear case. Refill the oil if the level is low:

Caution

The engine must be i n cold state (at normal temperature.)

Checking procedure:

·Place the vehicle on the flat ground.

·Place a oil catcher under the rear driving gear case.

·Remove the oil filling screw plug①and sealing washer

·Observe the oil level:The correct lever should be on the bottom of oil filling hole.

·If the oil level is too low.Please refill the recommended engine oil to specified oil level. Refer to the section "Replacement of engine oil of real driving gear case".

·Check the damage of sealing washer.If damaged, replace it.

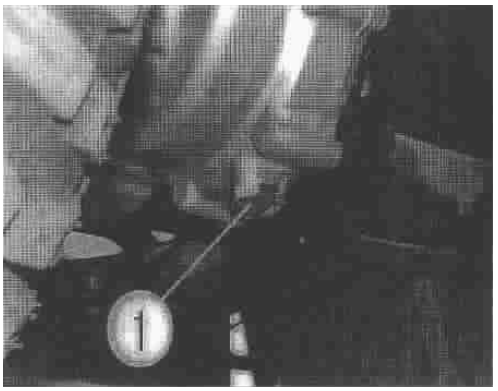
·Install the sealing washer and oil filling screw plug ①.

Caution

·Install the sealing washer firstly before installing the oil filling screw plug.

·After installing the oil filling screw plug. Check the leakage.

Torsion of oil filling screw plug:23 N.m



(Ⅷ)Replacement of engine oil of rear driving gear case

1.Place the vehicle on the flat ground.

2.PIace a oil catcher under the rear driving gear case.

3.Remove:

·lover cover of gear case

·oil filling screw plug

·oil draining screw plug ①

Drain out the engine oil of the rear driving gear case

4.Check:

·Sealing washer(oil filling screw plug position)

·Sealing washer (oil draining screw plug position) If damaged, replace them

5.Install:

Oil draining screw plug (rear driving gear case)

Torsion of oil draining screw plug:23N.m

6.Oil filling screw plug

Caution

Avoid the foreign matter to enter the driving gear case.

Recommended oil: SAE80API"GL–4"engine oil of hypoid gear If needing, you may use SAE80W90 engine oil of hypoil gear Period replacement:0.35L Total capacity:0.4L

7.Install:

·Oil filling screw plug(rear draining gear case)

Caution

After refilling, check the leakage.

Torsion of oil filling screw plug:23N.m

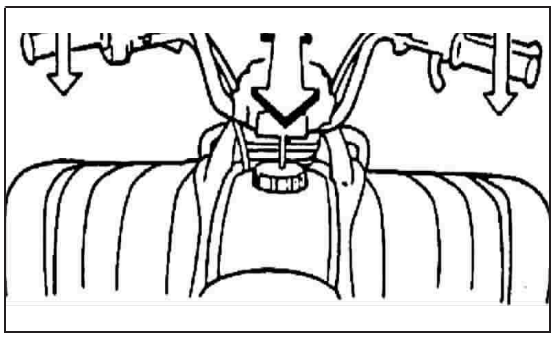
(Ⅸ)Rubber sleeve inspection of rear wheel fork

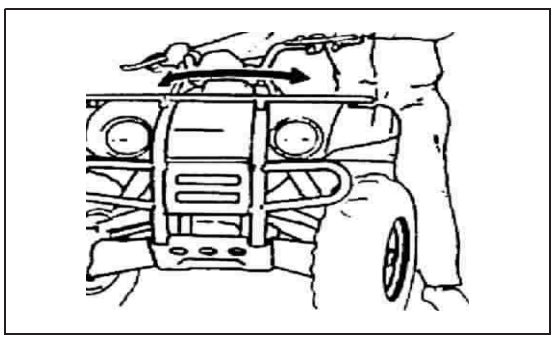
Check

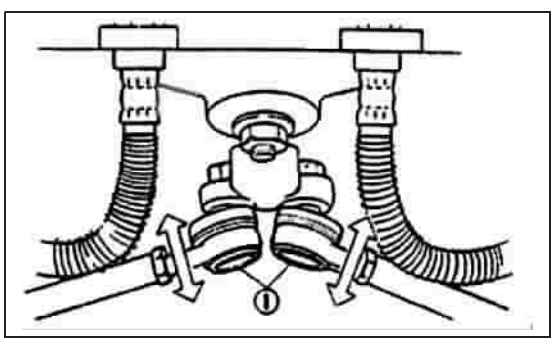
·Rubber sleeve①

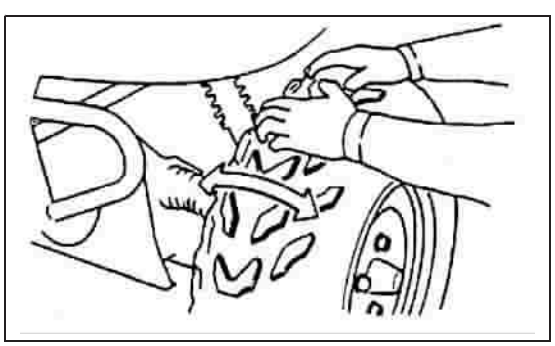
If damaged or worn,replace it.

Refer to section 7 "Rear shock absorber and rear wheel fork´´of chapter 3 Ⅲ









(X)STEERING SYSTEM INSPECTION

1. PIace the machine on a lever surface.

2. Check:

·Steering assembly bushings

Move the handlebar up and down,and/or back and forth.

Excessive play →Replace the steering shaft bushings.

Refer to section 5 "Steering system" of chapter Ⅲ.

3. Check:

·Tie–rod ends

Turn the handlebar completely to either the left or right,and then,while slowly turning the handlebar in the opposite direction,move the tie–rod up and down to check for vertical play.Tie–rod end has vertical play

→Replace the tie–rod end.

Refer to section "Steering system" of chapter 3.

4. Raise the front end of the machine so that there is no weight on the front wheels.

5.Check:

·Ball joints and/or wheel bearings

Move the wheels laterally back and forth.

Excessive free play →Replace the front arms (upper and lower)and/or wheel bearings.

(XI) TOE–IN ADJUSTMENT

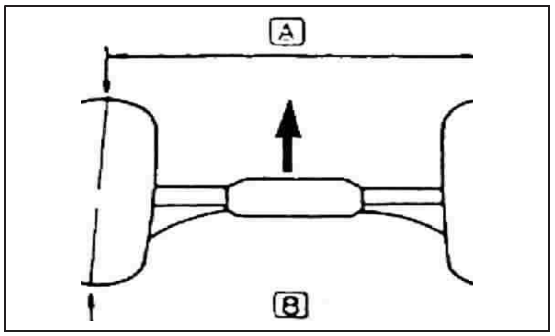
1.Place the machine on a lever surface.

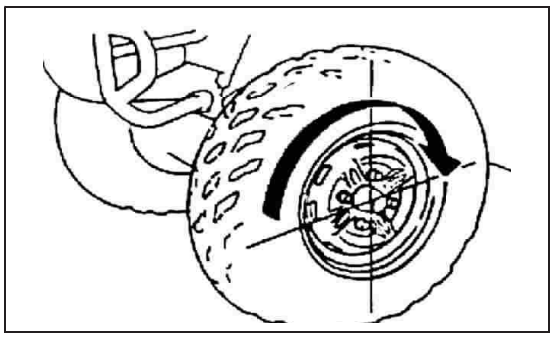
2.Measure:

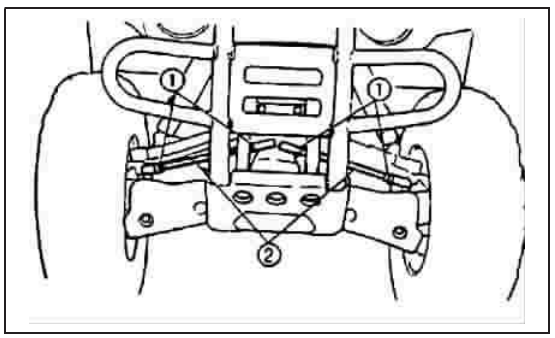
·Toe–in

Out of specification→Adjust.

Toe–in measurement steps:







NOTE：

Before measuring the toe–in，make sure that the tire pressure is correct.

·Mark both front tire tread centers.

·Raise the front end of the machine so that there is no weight on the front tires.

·Face the handlebar straight ahead.

·Measure the width A between the marks.

·Rotate the front tires 180° until the marks are exactly opposite one another.

·Measure the width B between the marks.

·Calculate the toe–in using the formula given below.

Toe–in=B–A

Toe–in standard :0~5mm

·If the toe–in is incorrect.Adjust it

3. Adjust：

Adjustment steps：

·Mark both tie–rods ends.

This reference point will be needed during adjustment.

·Loosen the locknuts (tie–rod end) ① of both tie–rods.

·The same number of turns should be given to both the right and left tie –rods ② until the specified toe–in is obtained.This is to keep the Length of the rods the same.

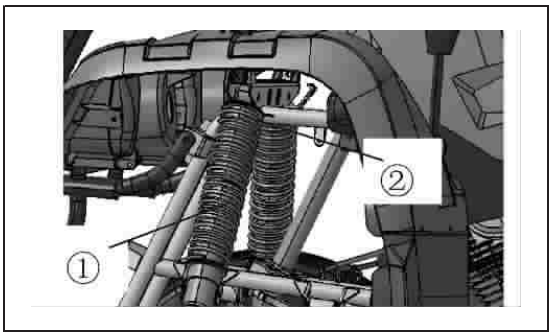
·Tighten the rod end locknuts of both tie rods. Locknut (rod end):30Nm (3.0m.kg,22ft.lb)

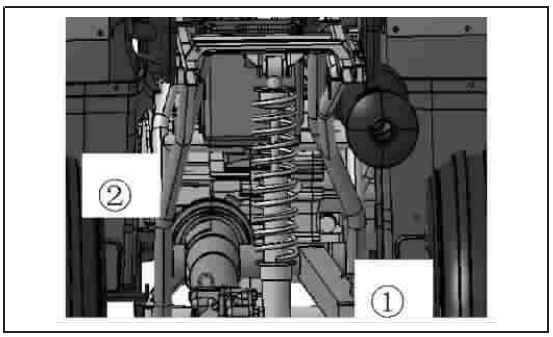
WARNING:

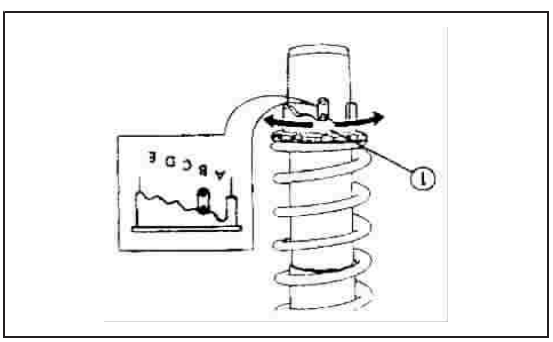
·Be sure that both tie–rods are turned the same amount.If not，the machine will drift right or left even though the handle –bar is positioned straight.This may lead to mishandling and an accident.

·After setting the toe–in to specification，run the machine slowly for some distance with both hands lightly holding the handlebar and check that the handlebar responds correctly.If not，turn either the right or left tie–rod within the toe–in specification.

4. Lift the front end of the vehicle so as to ensure no any load on the front wheel.







(XII)Inspection of front/rear shock absorber

1.Rest the motorcycle on the flat ground

2.Inspection：

·Oil leakage①

If the heavy oil leakage of front/rear shock absorbers is found→Replace it.

·Front/rear shock rod②

If scraped/damaged →Replace the front/rear shock absorber

Refer to Section of "Front shock Absorber and Front wheel Fork" or Section of "Rear shock Absorber and Rear Wheel Fork"

3.Inspection：

·Operation

Shock the front/rear shock absorbers up and down two times.

If it is not active in operation, replace the component.

Refer to Section of "Front shock Absorber and Front wheel Fork" or Section of "Rear shock Absorber and Rear Wheel Fork"

（X Ⅲ ）Adjustment of front/rear shock absorber

WARNING：

Always adjust both front shock absorber spring preload to the same setting. Uneven adjustment can cause poor handling and loss of stability。

Spring preload of front/rear shock absorber Adjustment:

Turn the adjuster ① to increase or decrease the spring preload.

Caution:

The spring preload of front/rear shock absorber can be adjusted to be applied to needs.hobby. Weight of the operator and driving conditions.

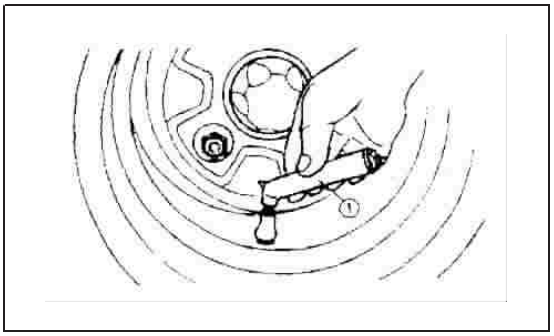
Standard position：B

A–Softest E–Hardest

（XⅣ）Inspection of tire

Warning：

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



·Tire characteristics

1)Quality characteristics of tire will affect the driving reliability of ATV.The following types of tires approved by Jianshe Group Co.,Ltd can be used safely by this motorcycle.If adopt other tires,it will cause the disadvantageous effect.So they are out of recommendation.。

	Manufacturel	Dimension	Type
Front	Wanda or Zhengxin or Yiruohua	AT25x×8–12	Wanda or Zhengxin or Yiruohua
Rear	Wanda or Zhengxin or Yiruohua	AT25×10–12	Wanda or Zhengxin or Yiruohua

·Tire pressure

1)Recommended tire pressure.

Front : 25 kpa (0.25kgf/cm2)

Rear: 25 kpa (0.25kgf/cm2)

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

The Min.tire pressure

Front: 22kpa (0.22kgf/cm2)

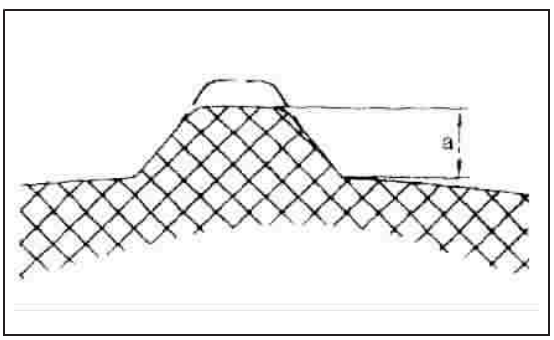
Rear: 22 kpa (0.22kgf/cm2)

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

Front 250kpa (2.5kgf/cm2)

Rear 250kpa (2.5kgf/cm2)

After installing the tire to the rim.the over high.Pressure will cause explosion.Filling pressure should be conducted slowly and carefully,the over fast filling pressure will cause the tire to explosion.



NOTE:

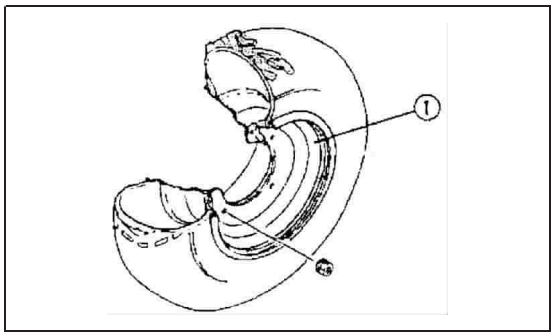
1) The max load of the vehicle is 210kg (including driver, cargo and accessories)

2) Kit bag: 2 kg

3) The Max load of horizontal dragging (the total weight includes dragging goods and cargo): 410kg

4) The vertical load on the dragging connector:15kg

·When dragging the cargo with vehicle , be sure to pay attention to the balance and stability of the vehicle.



(XV)Inspection of rim

Inspection of rim①:

·Rubber sleeve

If cracked/bent/damaged,replace it

Caution:

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

Warning:

Never attempt to repair the rim

Section 4 Maintenance and Adjustment of Electrical Appliance

(Ⅰ)Inspection of battery

Warning:

The electrolyte is dangerous article,which includes sulphovinic acid,so it is poisonous and corrosive

.Please operate by the following steps:

a. Avoid the body touching the electrolyte so as to protect the eye from burn or damage

·b.Wear the protective glasses when operating near the battery

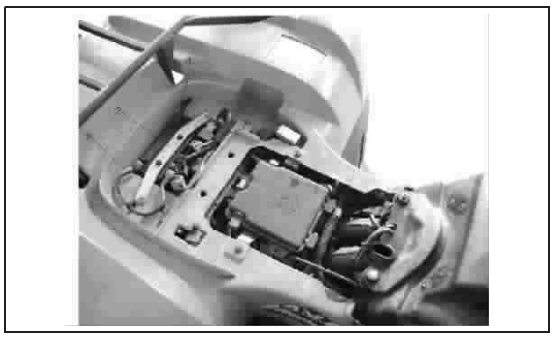
Avoiding measures(External):

a.Wash the skin with water.

b. Wash the eyes for 15 minutes with water, them conduct treatment at hospital

.Avoiding measures (Internal):

Drink a plenty of water or milk.magnesia oxide,egg and rapeseed oil, and conduct treatment as early as possible.



The battery can produce explosive gas, so follow the following protection measures:

a.Be sure to keep the ventilation when changing the battery

b.Keep it away from spark, flame, (such as welding equipment, burning cigarette, ect).

c. smoking is strictly prohibited when charging or operating the battery to keep the battery and electrolyte away from children.

1. Removal (Refer to the content of Section Two of this chapter.)

·Cut Off

Refer to" Removal of cushion" of this chapter

·Battery electrode (negative electrode ①, positive electrode②)

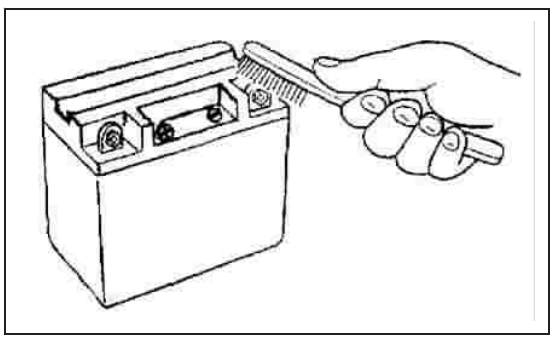
Warning:

First remove the negative electrode1

3.Removal:

a.Battery clamp plate④

b.Battery clamp plate③



Caution:

Before using a new battery, be sure to charge to ensure the optimum condition of the vehicle.

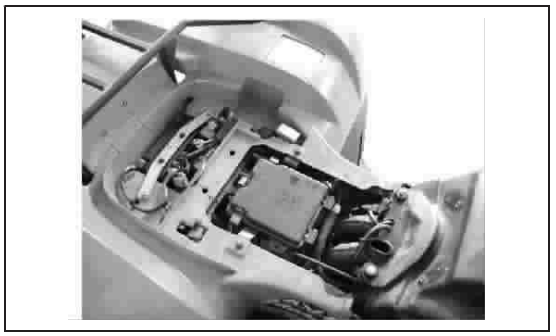
4.Inspection of battery electrode

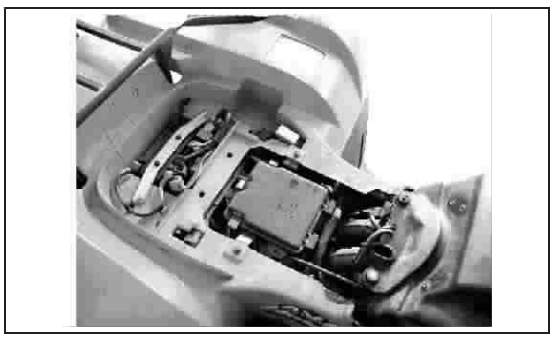
If the dirt is found, clean off with brush

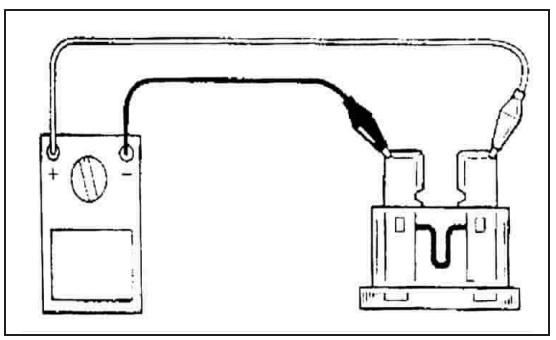
If it is not connected well, correct it.

Caution:

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







5.Inspection of battery

If damaged,replace it

6.Installment of battery③

7.Connect

·Battery electrode(positive electrode1、negative electrode②)

First connect the positive electrode①

8.Installment:

a.Battery clamp plate④

b.Cushion

(Ⅱ)Inspection of fuse

Caution:

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

1.Inspection steps

·Remove the fuse①

·Connect the small-size test instrumentation to measure if the fuse is connected well.

Caution:

Set the test instrumentation at the position of "52x 1"

Small size test instrumentation:

9/NYU-03112

90890-03112

·If the indicating meddle indicates toward∞. the fuse hose broken,needing to be replaced.

2.Replacement of fused fuse

Replacement steps:

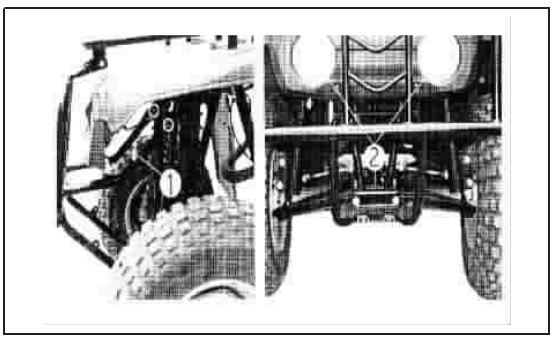
.Cut off ignition and circuit

.Install the qualified fuse

.Start the power,for electrical appliance inspection.

.If the fuse fused, inspect the system again

Refer to" Electrical Appliance" of Chapter Ⅳ



3.Installment of fuse cover

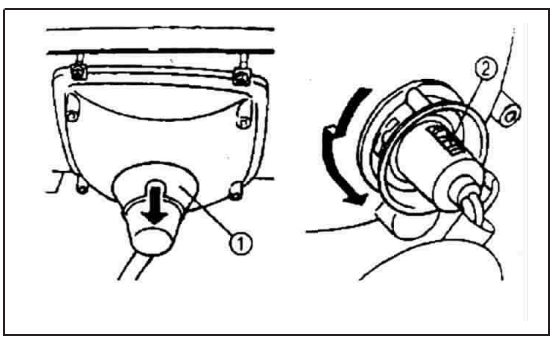
(Ⅲ)Replacement of headlight lamp

1.Cut off

.Connecting wire terminal of headlight①

2. Removal

Unit of headlight②



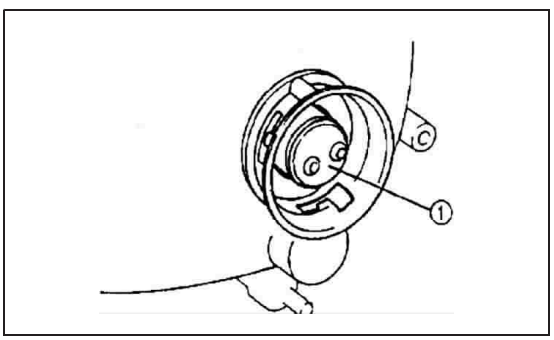
3.Take out the lens①

4.Removal the lens seat②

Rotate countercolockwise when taking out the lens①.

Caution:

When removing the light head hold the front side of the headlight with hand

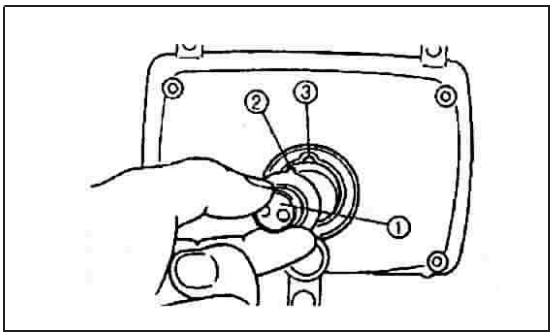


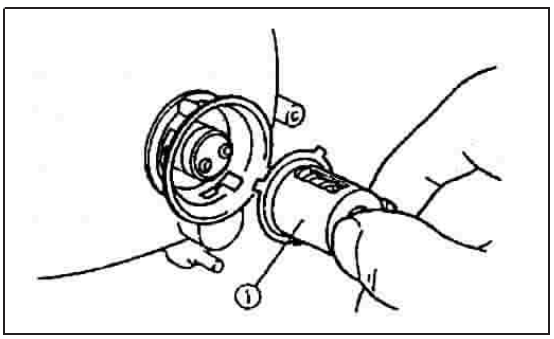
5.Removal:

Lamp①

Warning:

The inflammables is not allowed to approach the lamp which is on, and the lamp is very hot, never touch it before cooling.





6.Installment

Lamp1 (new)

Caution:

Be sure that the projective part on the lamp2 is engaged with the convex groove ③ on the light seat.

Caution:

Never touch the glass part to avoid the camp to touch the fuel. Otherwise.the lamp will be affected in light permeability. Service life and Illuminating value.If there is some oil, clean off with cloth mixed with alcohol.

7. Connect

Light seat1

Caution:

Make sure that the projective part on the lamp is. engaged coith the coving groove on the light seat.

8.Install the lens to the light seat.

9.Installment

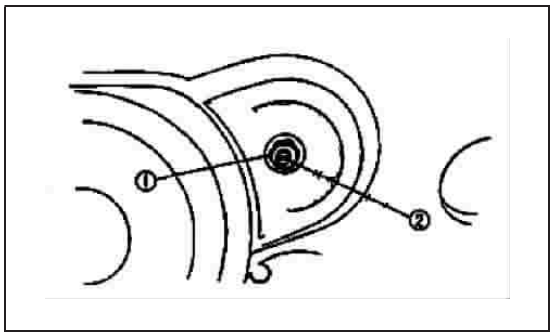
·Headlight

Caution:

Install the rubber hole –guard ring of the headlight connecting wire column to the headlight

10.Connect

·Connecting wire terminal of headlight.



(Ⅰ)CLUTCH ADJUSTMENT

1. Adjust:

Free play

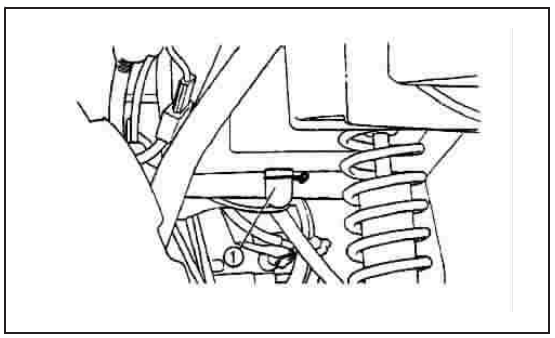
Adjustment steps:

Loosen the locknut ①.

Slowly turn the adjuster ② counterclockwise until resistance is felt. Then turn it clockwise 1/8 of a turn.

NOTE:

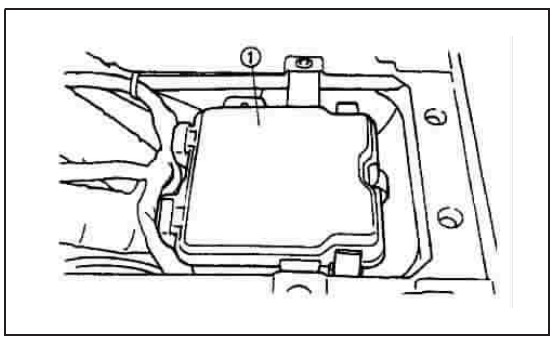
Turn the adjuster counterclockwise decrease the clutch free play and turn clockwise to increase the free play.



(Ⅱ)Clean of air filter

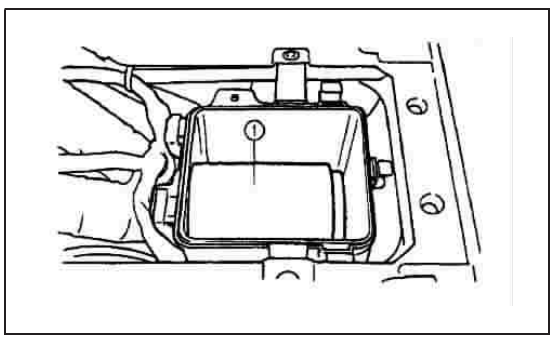
CAUTION:

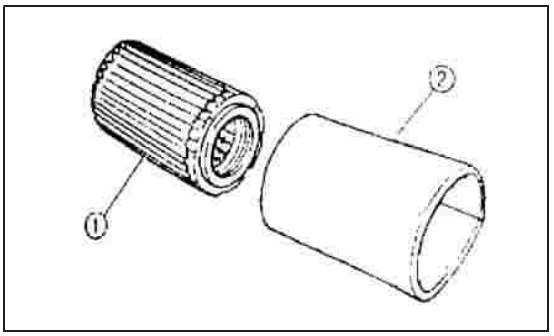
There is a inspection cup① on the bottom of the air filter, if the dust or water deposited in the cap, clean the filter core and filter box of air filter.

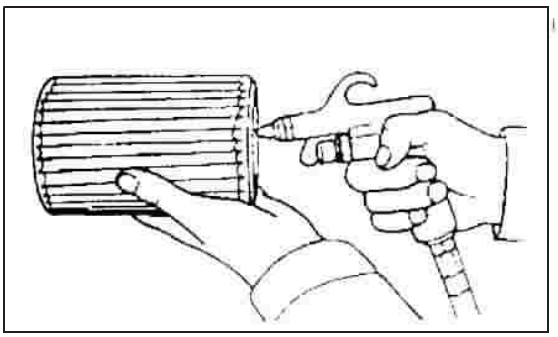


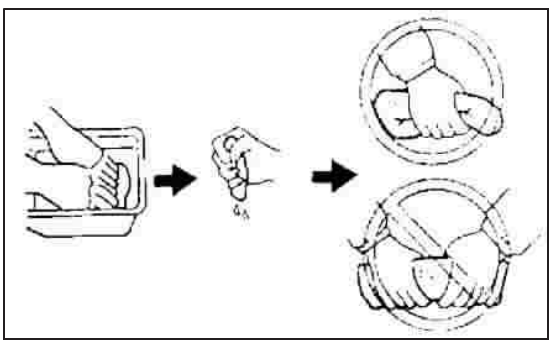
1、Remove the cushion

2、Remove the air filter box cover①,air filter components.









3. Remove:

Air filter element ①

Foam cover ②

CAUTION:

The engine should never be run without the air filter; excessive piston and/or cylinder wear may result.

4. Inspect:

a. Air filter element ①

b. Foam cover ②

If damaged–> Replace it.

5. Clean:

Air filter element

Use compressed air to blow off dust from the inner surface of the element.

6、Clean of the foam filter core:

A、Clean with water completely and slightly.

B、Squeeze the surplus water of foam and dry it.

Note:

When squeezing the water on the foam, be sure to be slight.

7、Installment:

A、Install the foam core to the foam supporting cylinder to combine a air filter assy。

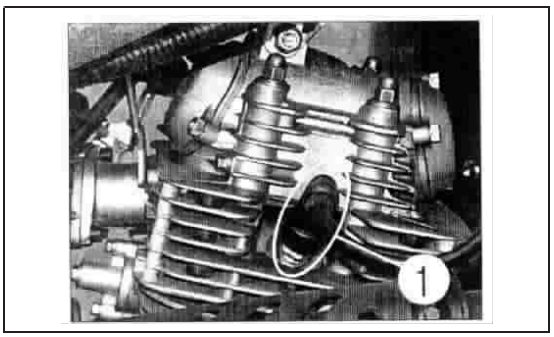
B、Install the air filter assy.

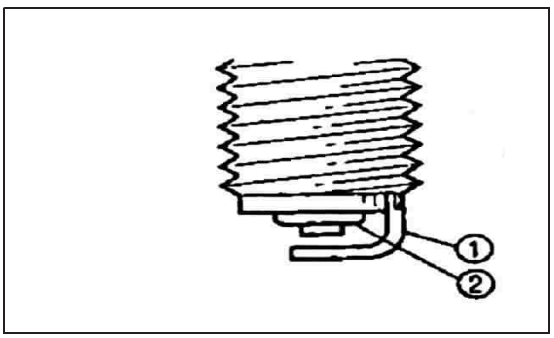
C、Install the air filter cover.

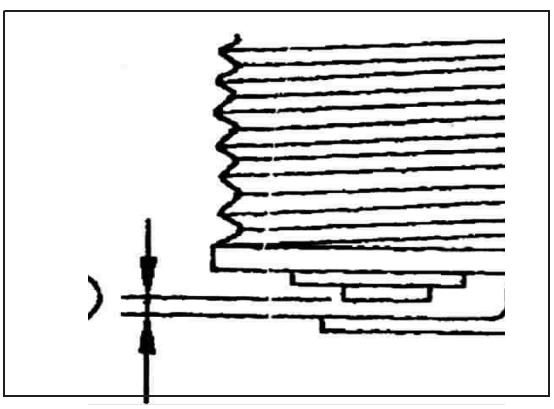
CAUTION：

Make sure that close fit surface of air filter is engaged with close fit surface of air leakage is not allowed.

8、Installment of cushion







(Ⅲ)Inspection of spark plug

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

2、Remove the spark plug①

The standard spark plug type: DTRTC,If not correct, replace it.

3、Inspection of spark plug

a、Electrode(1)

wear/damage→replace

B、Insulator② color

Brown or light brown in normal condition. If the color is clearly different →check the engine.

4、Clean of spark plug with spark plug cleaner of brush.

5、Measure the spark plug clearance①

Measure with feeler gauge. If out of specification, adjust.

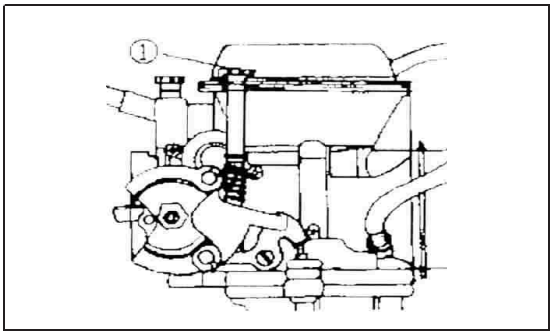
Sparkplug standard clearance:0.6–0.7mm

6、Installment of spark plug

A、Clean the washer surface and spark plug surface before installing the spark plug.

B、Tighten up the spark plug with hand before install it according to the specification.

Tightening torque of spark:17.5N·m



(Ⅳ)Adjustment of idle speed

1、Rest the vehicle on the flat ground

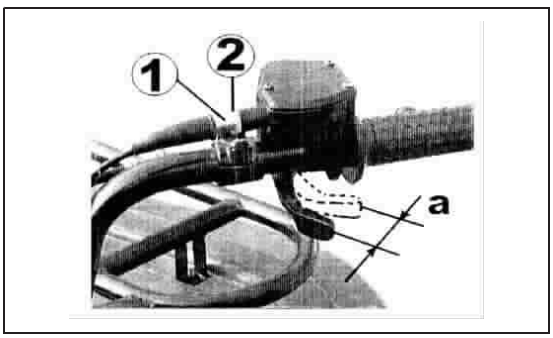
2、Start the engine and prewarm it at the speed of 1000 –2000r/min, after several minutes, increase the engine speed to 4000–5000r/min。

3、Set the specified idle speed through adjusting the throttle adjusting screw①.Screw in to increase the engine speed and screw out to decrease the speed.

Specified idle speed ：1450–1550r/min

4、Measure the engine speed with measuring meter.

5、Make sure that the free clearance of throttle grip is within 3 –5mm。 Otherwise, readjust the idle speed.



(Ⅴ)Adjustment of free clearance of throttle grip throttle grip.

CAUTION：

First adjust the engine idle speed when adjusting throttle grip.

1、Rest the vehicle on the flat ground.

2、Inspection

·Free clearance of throttle grip a，If out of specification ––> adjust free clearance of throttle grip:3–5mm

3、Adjustment

Adjustment steps of free clearance of throttle grip.

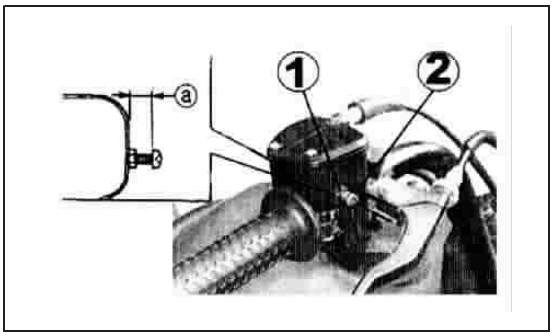
a、Loosen the locking nut②

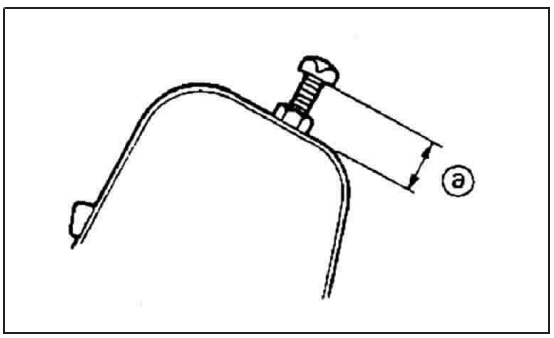
B、Turn the adjusting bolt① up to the free clearance of throttle grip a is 3–5mm

C、Tighten up the locking nut ②

CAUTION：

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





(Ⅵ)Adjustment of speed limiter：

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

1、Adjustment speed limiter length a

a、Loosen the locking nut①

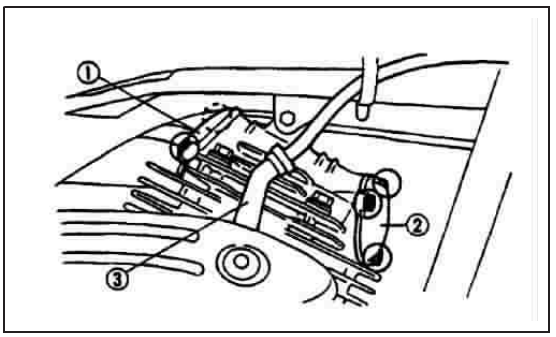
b、Adjust the adjusting screw② clockwise or counterclockwise to make a obtain the specified length of 12mm.

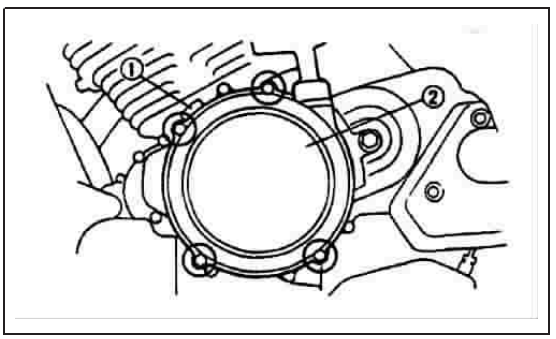
C、lock the locking nut①

Warning：

a. For the beginner of driving, pay extra attention to screw in the speed limiter inward and screw out with improvement of driving skill, never remove the adjusting screw of speed limiter.

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





(Ⅶ)Valve clearance adjustment

Note:

The valve clearance must be adjusted when the engine is cool to the touch.

Adjust the valve clearance when the piston is at the Top Dead Center (T.D.C.) or the compression stroke.

1 .Remove:

Seat

Front carrier

Front fender

Fuel tank

2. Remove:

Tappet cover (intake) ①

Tappet cover (exhaust) ②

3. Disconnect:

Spark plug cap ③

4. Remove:

Spark plug

5. Remove:

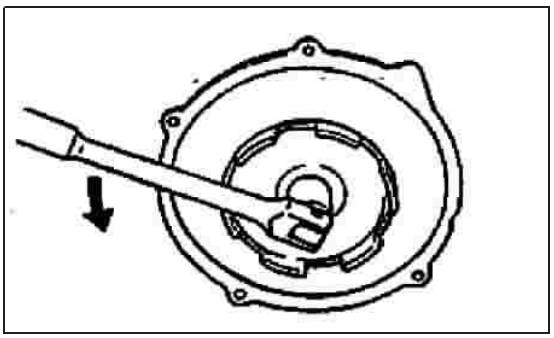
Timing plug ①

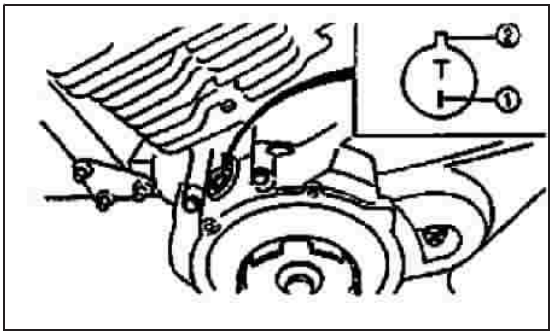
Recoil starter ②

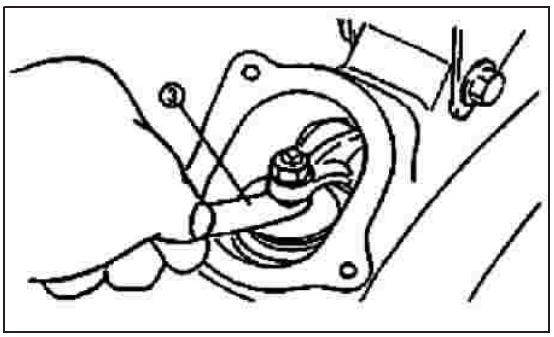
6. Check:

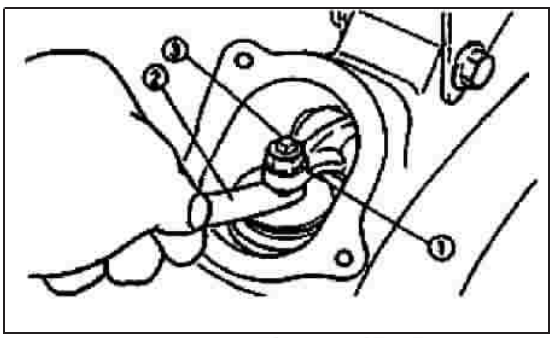
Valve clearance

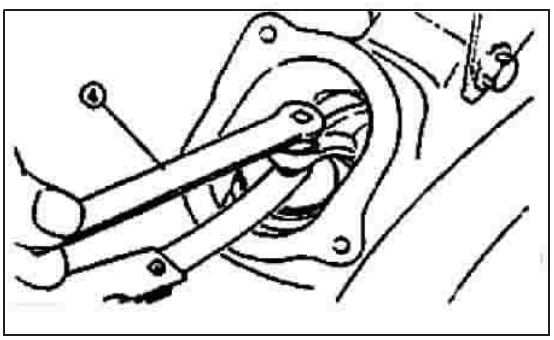
Out of specification –> Adjust.











Checking steps:

Turn the crankshaft counterclockwise with a wrench.

Align the "T" mark ① on the rotor with the stationary pointer ② on the crankcase cover. When the "T" mark is aligned with the stationary pointer, the piston is at Dead Center (T.D.C.).

NOTE:

Top T.D.C. on the compression stroke check:

Both rocker arms must have a valve clearance when the rotor match mark ① is aligned with the stationary pointer match mark ②.

If not, give the crankshaft one counterclockwise turn to meet the above condition.

Measure the valve clearance using feeler gauge ③.

Adjust:

Valve clearance

Adjustment steps:

Loosen the Locknut ①.

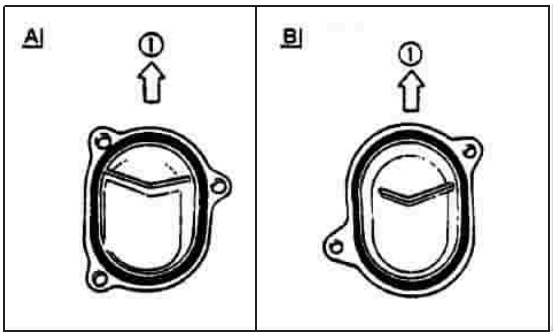
Insert a feeler gauge ② between the adjuster end and the valve end. Turn the adjuster ③ clockwise or counterclockwise with the valve adjusting tool until the proper clearance is obtained. Hold the adjuster to prevent it from moving and then tighten the locknut.

Locknut:

20 Nm

Measure the valve clearance.

If the clearance is incorrect, repeat the above steps until the proper clearance is obtained.



Install:

Timing plug

Spark plug

Tappet covers (exhaust)

Tappet cover (intake)

Spark plug: 18Nm

NOTE:

Install the tappet covers with the ridge facing up ①.

A Exhaust

B Intake

Install:

Fuel tank

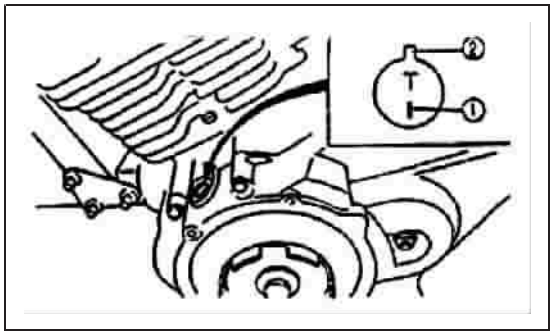
Front fender

Front carrier

Seat

(Ⅷ) Adjustment of timing chain tension

Adjustment free.



(Ⅸ)Inspection of ignition timing

Notice：

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

1、Put the vehicle on the flat ground.

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

3、Mount induction engine tachometer (90890–03113)

4、Mount correct timed ignition meter on connection line of spark plug cap (90890 – 003141)

5、Inspection of ignition timing.

Inspection steps：

A. take off plug

B. Start the engine, and make the engine run at 1450r/min–l 550r/min idle speed.

WARNING:

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

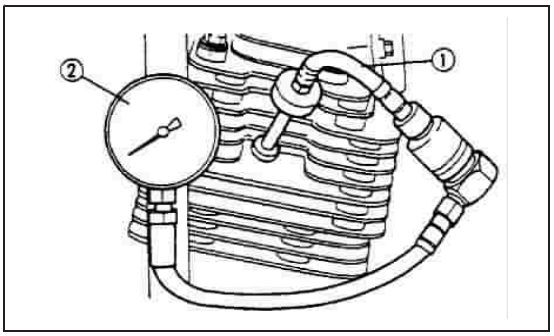
C、Check if the mark② on the crankcase is in the range ③ of ignition under the magneto rotor indication. If it is out of range, check if the rotor and pulse coil is loosen or damaged.

CAUTION：

Ignition timing can´t be adjusted.

6、Mount plug

7、Take off ignition timing meter induction engine tachometer.



(X)Measuring of compressive force

CAUTION:

Inadequate compressive force will reduce the engine performance.

Before measuring compressive force. Valve clearance should be adjusted first.

1. Put the vehicle on the flat ground.

2. Take off spark plug.

3. The following is steps of measuring compressive force:

A. Install pressure gauge ① and change connector.

B. Turn the throttle lever to Max point.

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

WARNING:

When staring the engine, the spark p must be connected to ground for avoiding spark.

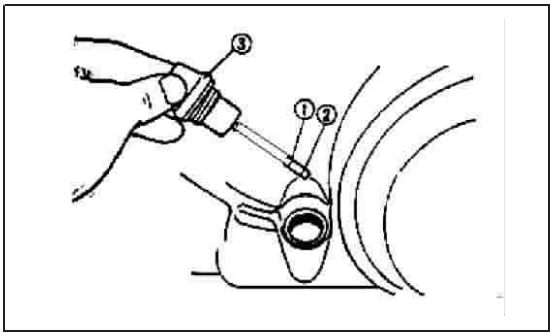
C. When checking, the read of pressure gauge:

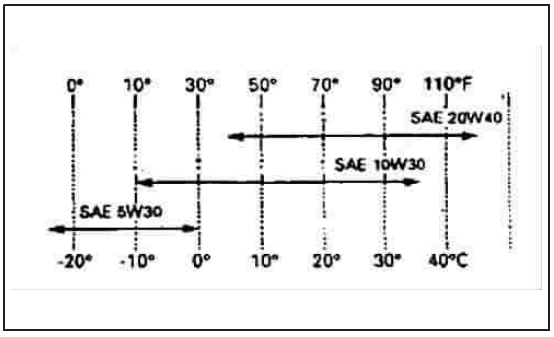
Compressive force on sea level:

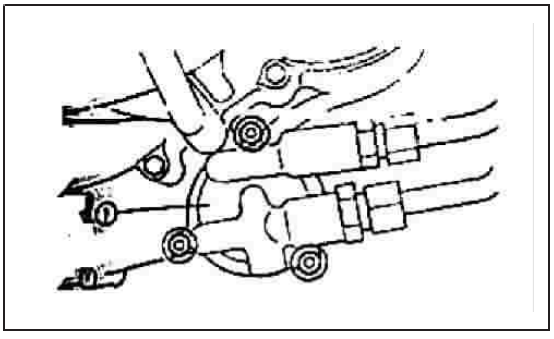
Standard value:900kpa(9.0kg/c㎡)

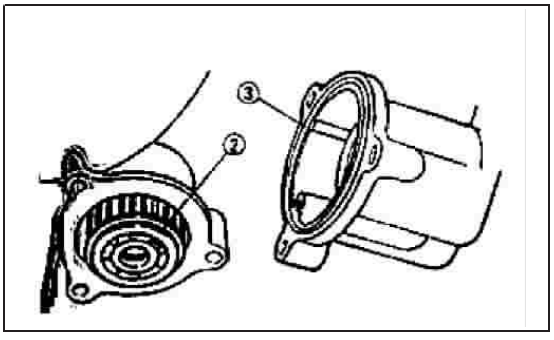
min. value:800kpa(8.0kg/c㎡)

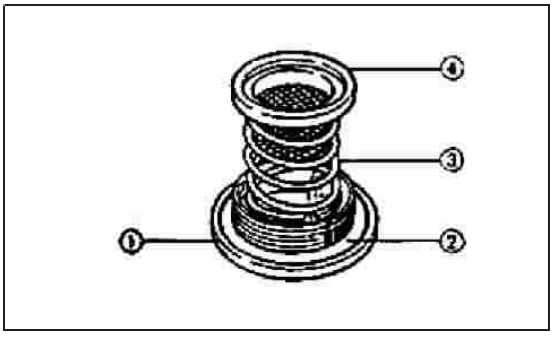
Max. value:1000kpa(10.0kg/c㎡)











(XI) . Inspection oil quantity of engine

1. Place the machine on a level surface.
2. Inspect: Engine oil level

Oil level should be between the maximum ① and minimum ② marks.

Oil level low–> Add oil to the proper level

NOTE:

Do not screw the dipstick③ in when inspecting the oil level.

Recommended oil:

Follow the left chart.

NOTE:

Recommended oil classification:

API Service "SE"、"SF"type or equal oil, such as :"SF–SE–CC"、"SF–SE–SD"etc.

(XII)Replacement of engine oil and inspection of oil flow

Caution:

Engine oil can be used to lubricate clutch , but don´t use any chemical additive in machine oil, because the additive can lead to clutch out of work.

Don´t permit any foreign matter into crankcase.

1. Put the vehicle on the flat ground.
2. Pre–heat the engine for several minutes, then stop it .
3. Put a container under the engine.
4. Take off oil dipstick, draining plug① to drain the engine oil.

Replacement steps:

Remove the oil filter cover ① and oil filter element ②. Check the O–rings ③; if they are cracked or damaged, replace them with new ones. Install the oil filter element and oil filte cover.

Bolt(oil filter cover):10Nm

Install:

Drain plug(engine oil)

CAUION:

Before reinstalling the drain plug ① do no1 forget to install the O–ring ②, compression spring ③ and oil strainer ④.

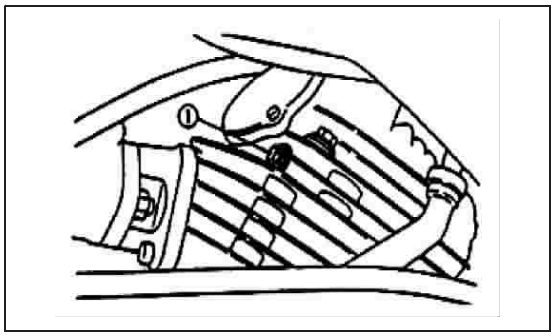
Drain plug(engine oil):32Nm

Fill:

Crankcase

Appendix:Total:3.0L

Periodic change oil:2.8L



Inspect:

Engine (for oil leaks)

Oil level

10. Inspect:

Oil flow

Inspection steps:

Slightly loosen the oil gallery bolt① in the cylinder head.

Start the engine and keep it idling until oil begins to seep from the oil gallery hole. If no oil comes out after one minute, stop the engine immediately so the engine winot seize.

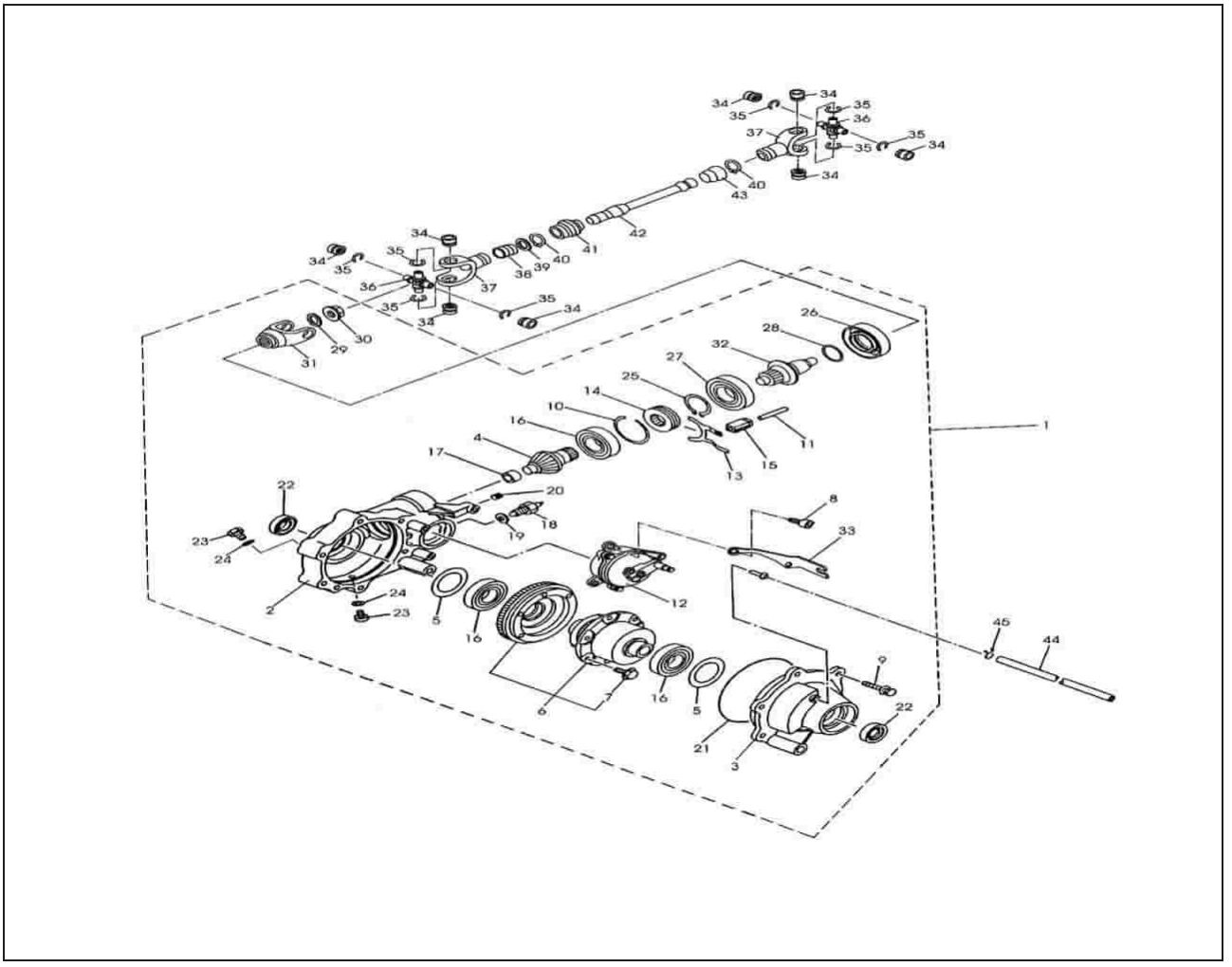
Check the oil passages, oil filter, and pump for damage or leakage. Refer to " INSPECTION AND REPAIR" in CHAPTER 4

Restart the engine after solving the problem(s), and recheck the oil pressure.

Stop the engine and tighten the oil gallery bolt (with gasket) to specification.

Chapter Ⅲ REPAIR AND MAINTENANCE OF VEHICLE BODY

Section 1 Front Driving Gear Case and Driving Shaft



1. Front drive gear box assy 2. Front drive box body 3. Front drive box cover 4. Driving gear axle 5. Thrust(0.15) 6. Differential 7. Bolt M8×1.25×18 8. Screw 9. Bolt M8×25 10. Clip 1 11. Slid block axle 12. Two/four wheel transition mechansim 13. Yoke 14. Inner spline sleeve 15. Gear rack 16. Bearing 6007 17. Roller bearing 18. Idle swich 19. Washer 20. ScrewM8×10 21. O-ring14.0×2.65 22. Oil seal 23. Screw plug 24. Seal washer 25. Clip2 26. Oil seal 27. Bearing 16008 28. O-ring280×2.65 29. Washer 14-140HV 30. Nut M14×1.5 31. Front joint of boardl joint 32. Spline axle 33. Lower fixing board of cable 34. Roller bearing 35. Clip ring 36. Cross-axle assy 37. Rear joint unit (front driver of universal joint) 38. Pressing spring 39. Washer 40. Circlip 41. Wave tube of front drive axle 42. Front drive axle 43. Front drive axle protecting cover 44.Breather pipe of front drive gear box 45.Steel wire clip of Breather pipe

(Ⅰ)Removal steps

1.Place the machine on a level surface.

2.Apply the parking brake.

3.Drain:

·Differential gear oil

Refer to "DIFFERENTIAL GEAR OIL QUANTITY INSPECTION " in CHAPTER Ⅱ.

4.Block the rear wheels,and elevate the front wheels by placing a suitable stand Under the frame.

5.Reinove:

·Front wheels

·Front wheel hubs

Refer to "FRONT AND REAR WHEELS" in this CHAPTER.

·Steering knuckles

Refer to "STEERING SYSTEM" in this chapter.

6.Remove:

·Differential gear case guard

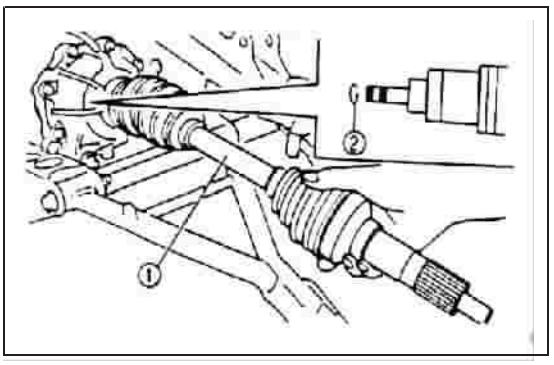
7. Remove:

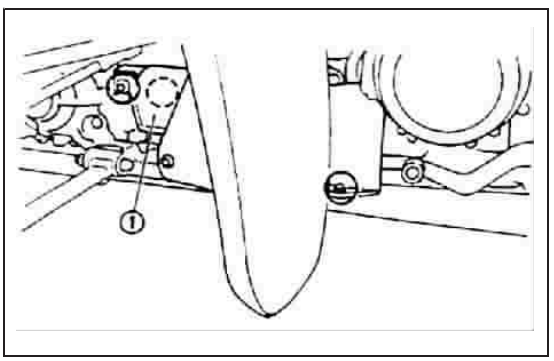
·Constant velocity joints①

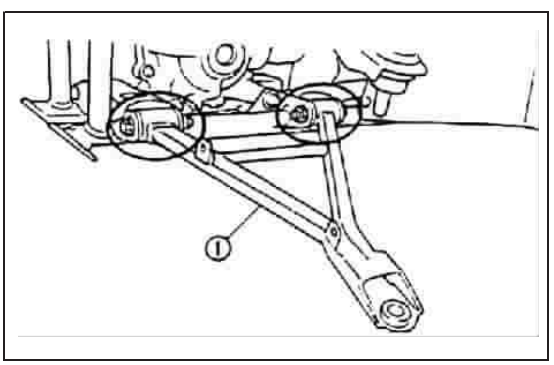
·Circlips(double off–set joints)○2

8. Removre

·Front drive shaft protector①

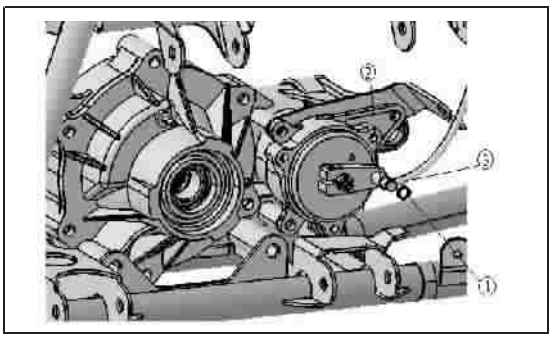


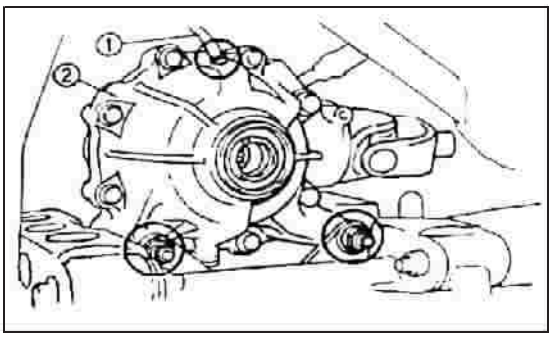


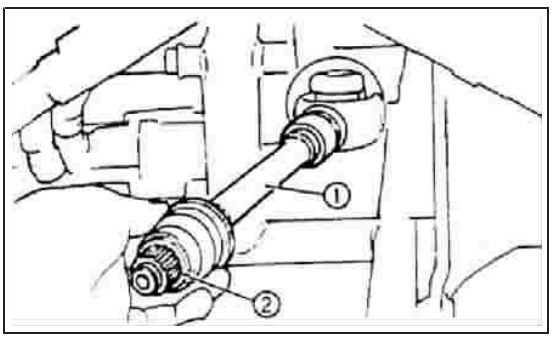


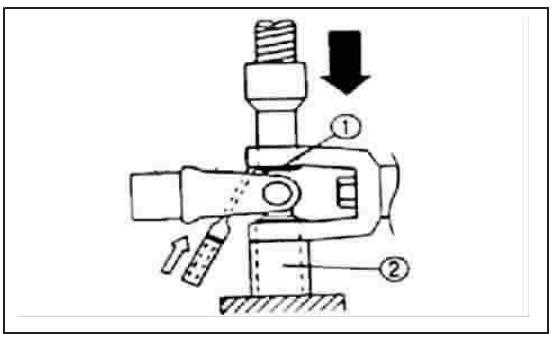
9. Removre

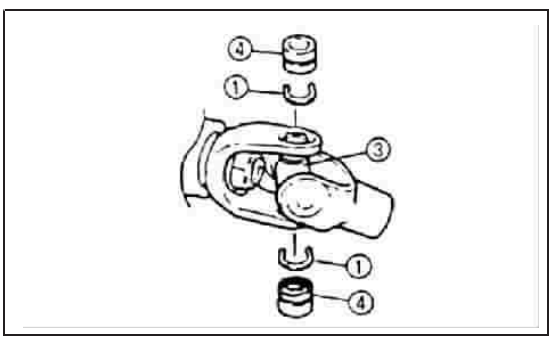
·Lower arms①











10. Remove：

·Transforming control mechansism for two/four wheels

a.Retaining ring①

b.Gasket②

Remove Trasnforming cable for two/four wheels③

11.Disconnect：

·Differential gear case breather hose①

12.Remove：

·Differential gear case②

13.Remove：

·Front drive shaft①

·Spring②

·Washer

·Circlips

·Rubber cover

(Ⅱ)DISASSEMBLY

Differential gear

1.Remove：

·Universal joint

Universal joint removal steps：

·Remove the circlips①.

·Place the U–joint in a press.

·With a suitable diameter pipe②beneath the yoke③,press the bearing④into the pipe as shown.

NOTE：

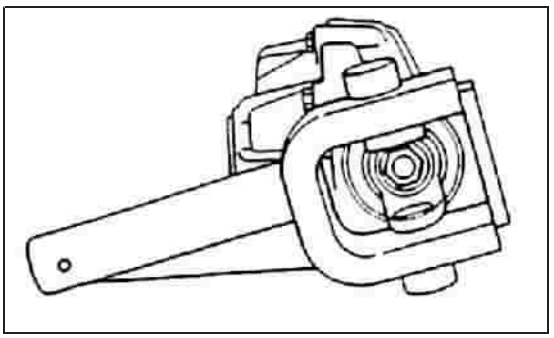
It may be necessary to lightly tap the yoke with a punch.

·Repeat the steps for the opposite bearing.

·Remove the yoke.

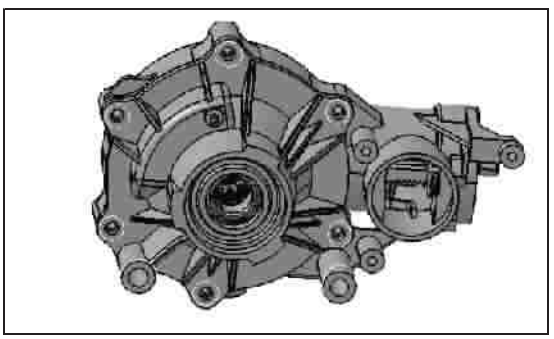
NOTE：

It may be necessary to lightly tap the yoke with a punch.



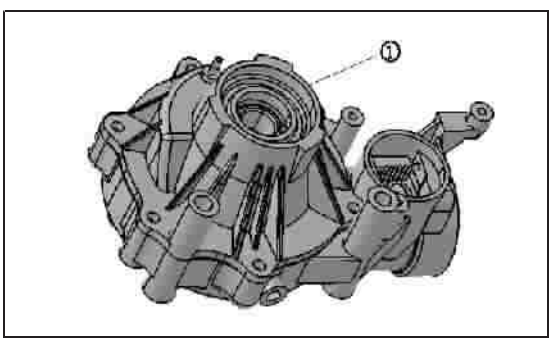
2.Attach：
·Universal joint holder
(onto the universal joint yoke)

3.Remove：
·Nut①
.Universal joint yoke②
·Oil seal③



4.Remove：
.M8 bolts (bearing housing)
.M10 bolts (bearing housing)

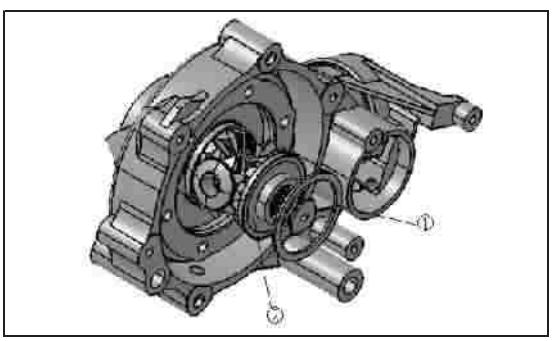
NOTE：
Working in a crisscross pattern，loosen each bolt 1/4 of a turn.Remove them after all of them are loosened.



5.Remove：
.Bearing housing①

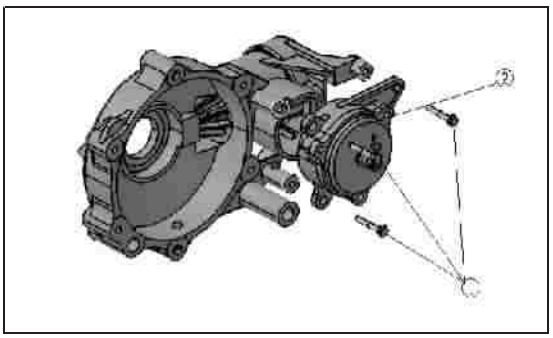
6.Remove：
.Shim(s)(1eft)①
.Differential gear assembly②

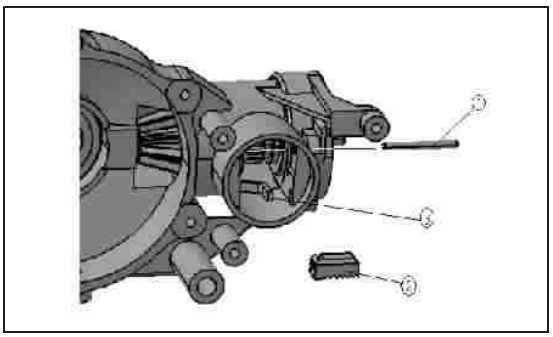
7.Remove：
·Ring gear①

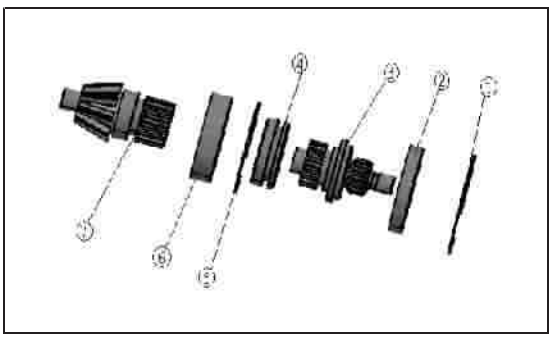


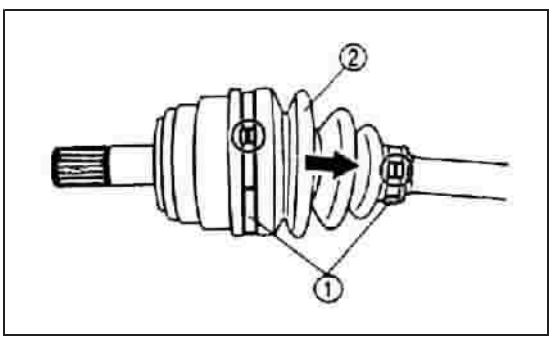
NOTE：
The ring gear and the differential gear cover should be fastened together.Do not disassemble the differential gear.

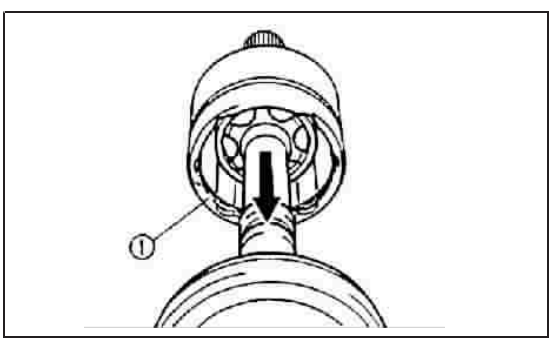
NOTE：
The differential gears are assembled into a proper unit at the factory by means of specialized equipment.Do not attempt to disassemble this unit.Disassembly will result in the malfunction of the unit.。











8. Remove:
·Screw①
·Trasnforming control mechansism for tow/four wheels②

NOTE:
Trasnforming control mechansism for tow/four wheels are assembled into a proper unit at the factory by means of specialized equipment,Do not attempt to disassemble this unit.

9. Remove:
·Slid block axle①
·Gear rack②
·Yoke③
10. Remove:
·Clip①
·bearing②
·spline shaft③
11. Remove:
·Inner spline sleeve④
12. Remove:
·Clip⑤
·bearing⑥
·Driving gear axle⑦

Caution:
Drive pinion gear removal should be performed only if bearing replacement is necessary.Do not reuse the bearings or races after removal.

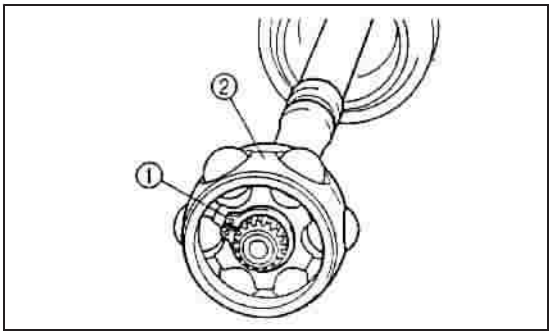
Constant velocity joint

1.Remove:
·Bands(double off-set joint)①

NOTE:
After removing the bands,slide the dust boot ②(double off-set joint)to the ball joint side.。

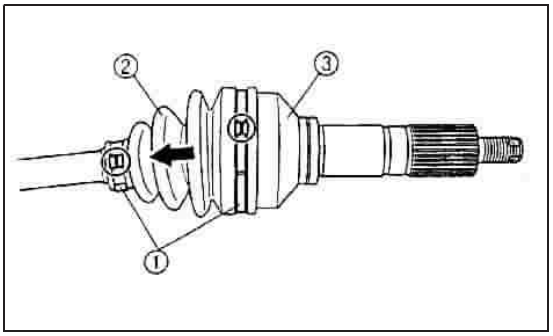
2.Remove:
·Circlip①

NOTE:
After removing the circlip,pull out the shaft with the bearing



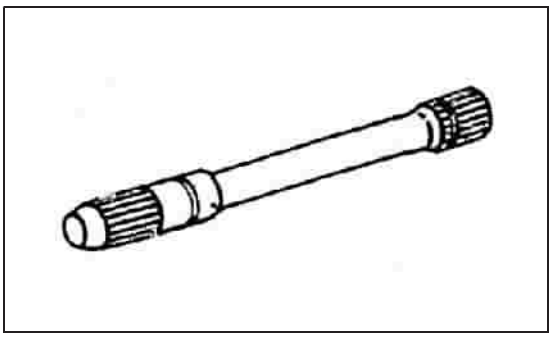
3.Remove：
.Snap ring①
.Ball bearing②
.Dust boot (double off–set joint)

4.Remove：
.Bands(ball joint)①
.Dust boot(ball joint)②
(from the ball joint assembly③))

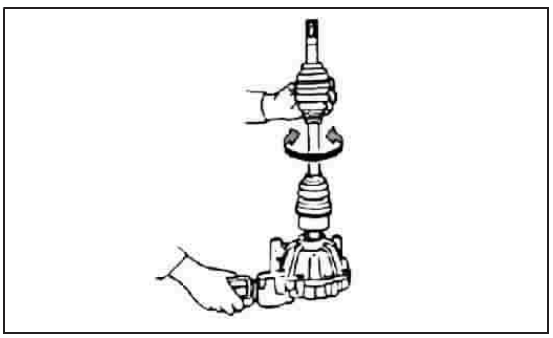


(Ⅲ)INSPECTION

Differential gear
1.Inspect：
.Gear teeth
Pitting/galling/wear →Replace front drive gear and ring gear as a set
·Bearing
Pitting/damage→Replace.
·Oil seal
·O–ring
Damage→Replace.
2.Inspect：
.Drive shaft splines
.Universal joints
·Front drive gear splines
Wear/damage→Replace.
·Spring
Fatigue→Replace.
Move the spring up and down
3.Inspect：
.Front drive shaft
Bends→Replace.



Warning：
Do not attempt to straighten a bent shaft；this may dangerously weaken the shaft.



4.Check：
·Differential gear operation
Unsmooth operation –Replace the differential gear assembly.
Insert the double Off –set ioint into the differential gear，and turn the gear back and forth.

Constant velocity joint

1.Inspect：

·Double off–set ioint spline

·Ball joint spline

·Shaft spline

Wear/damage→Replace.

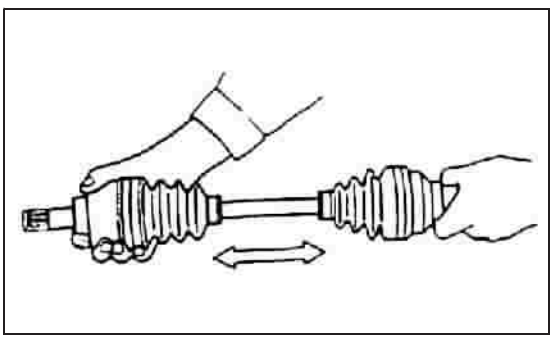
2.Inspect：

·Dust boots

Cracks/damage→Replace.

Caution:

Always use a new boot band.



3.Inspect：

·BallS and ball races

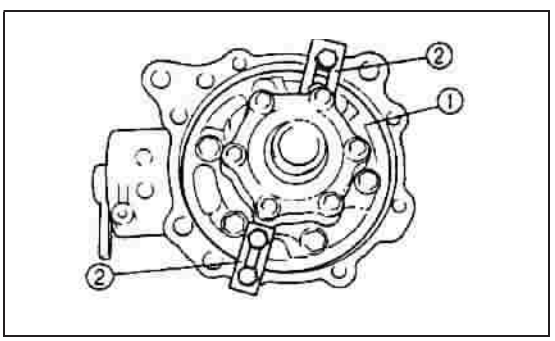
·Inner surface of double off–set joint

Pitting/wear/damage→Replace.

4.Check：

·Free play(thrust movement)

Excessive play–Replace the joint assem–bly.



(Ⅳ)MEASUREMENT AND ADJUSTMENT

Differential gear lash measurement

1.Remove：

·Universal joint yoke

·Bearing housing

2.Secure the ring gear①with the plates② and bolts(8 mm)as shown.

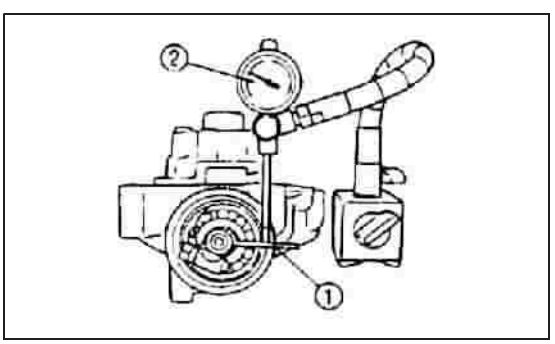
3.Attach：

.Gear lash measurement tool①

·Dial gauge②

Gear lash measurement tool：

P/N.YM–01231,90890–01231

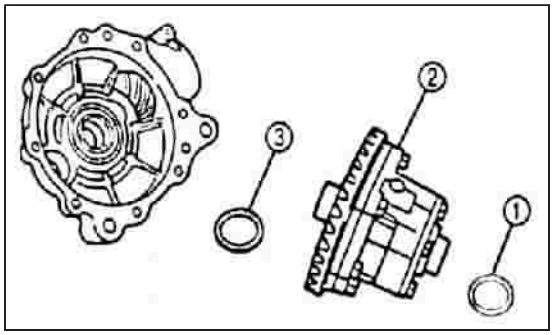


4.Measure：

·Gear lash

Gently rotate the constant velocity joint from engagement to engagement.

Over the specified limit–Adjust.



	差速器推力垫片
厚度 (mm)	0.15
	0.30
	0.40
	0.50
	0.60

NOTE：

Measure the gear lash at four positions.

Rotate the ring gear 90°each time.

Differential gear lash:

0.08–0.24mm

(0.003–0.009in)

Differential gear lash adjustment

1.Remove：

·Shim(s)(1eft)①

.Differential gear assembly②

·Shim(s)(right)③

2.Adjust：

·Gear lash

Gear lash adjustment steps：

·Select the suitable shims using the following chart.

Too–1ittle gear lash Reduceshim thickness.

Too–1arge gear lash Increaseshim thickness

INSPECTION

When installing the differential gear. reverse the "REMOVAL" procedures. Note the following points.

1.Lubricate：

·Drive shaft splines

·Oil seal

·O–ring

·bearing

The lubrication oil is lithium base grease

2. Installment

a. Driving gear

·Bearing

·Driving gear axle

·Clip

b.Trasnforming mechansism for tow/four wheels

·Inner spline sleeve

·Yoke

·Gear rack

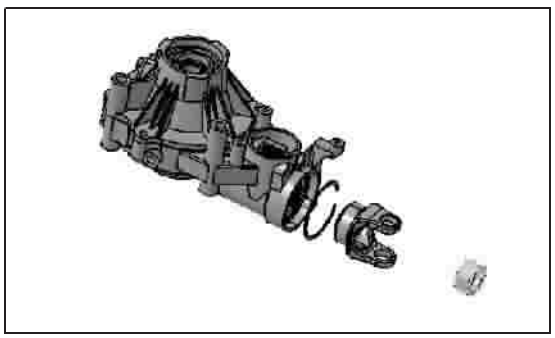
·Slid block axle

·Trasnforming mechansism for tow/four wheels

·Down locking board of cable

·Screw M8

Screw（Trasnforming mechansism for tow/four wheels）:23N·m



c. spline axle

·spline axle

·bearing

·clip2

·O–ring

d.differential

·thrust pad

·bearing

·differential

·O–ring

·front drive box cover

·bolt M8

Bolt torque:23N·m

3. Installment

·Universal joint

Universal joint Installation steps：

·Install the opposite yoke into the Universal joint.

·Apply wheel bearing grease to the bearing.

·Install the bearing onto the yoke.

NOTE：

Always use a new oil seal.

·Needle bearing/Cross shaft assy

CAUTION：

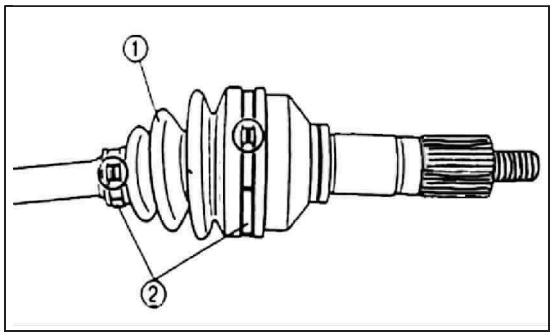
Check each bearing, the neelles can easily fall out of their races, Slide the yoke back and forth on the bearing; the yoke will not go all the way onto a bearing if a needle is out of place.

·Press each bearing into the Universal joint using a suiutable socket.

NOTE:

The bearing must be inserted far enough into the Universal joint so that the circlip can be installed

·Istall the circlips into the groove of each bearing



Constant velocity joint

NOTE:
Lubricate the ball joint: Lithium base grease

1. Installment
·Dust boot(ball joint)①
·Bands (ball joint)②

NOTE:
After installing the bands, bend the band ends to secure them

2. Installment
·Dust boot(double off–set joint)
·insert the shaft into the boot
·Ball bearing
·Snap ring

3. Lubricate
·Ball bearing

NOTE:
Lithium base grease

4. Installment
·Ball bearing with shaft
·Circlip(to the double off–set joint)
·Dust boot
·Clip

NOTE:
Before installing the ball bearing, apply Lithium base grease into the double off –set joint

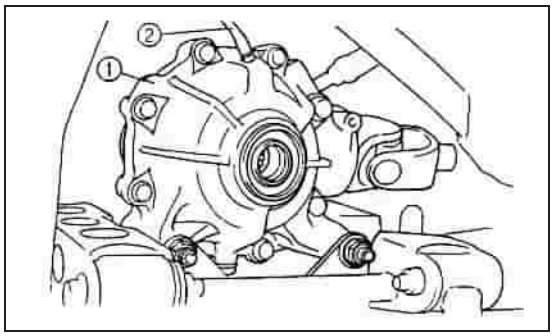
5. Check
·Free play 13~17mm
Refer to "Check"

INSTALLATION

When installing the differential gear. reverse the"REMOVAL"procedures. Note the following points.

1.Lubricate：

·Drive shaft splines



Lithium–soap base grease

2.InstaLL：

·Differential gear case①

Nut(differential gear case)：64N·m

3.Connect：

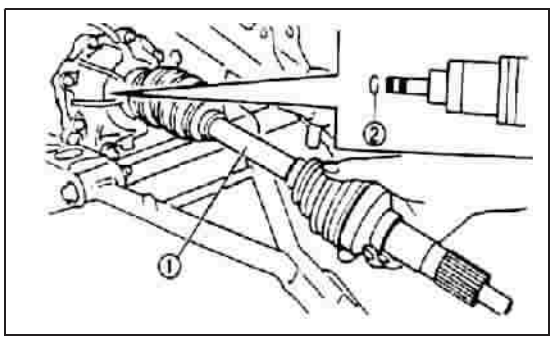
·Differential gear case breather hose②

4.Install：

·Circlip(double off–set joint)②

Warning：

Always use a new circlip



5.Lubricate：

·Constant velocity joints

·Oil seals

Lithium–soap base joints

6.Install：

·Constant velocity joints①

7.Install：

·Steering knuckles

Refer to "STEERING SYSTEM" in this CHAP–TER.

·Front wheel hubs

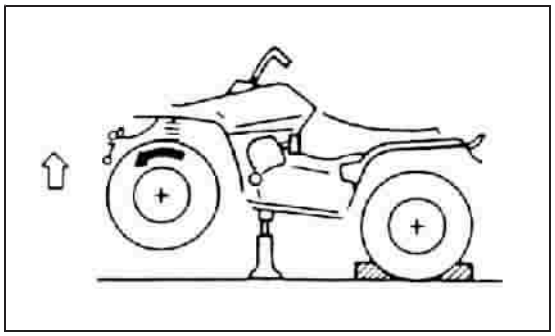
·Front wheels

Refer to"FRONT AND REAR WHEELS" in this CHAPTER.

8.Fill：

·Differential gear oil

Refer to "DIFFERENTIAL GEAR OIL QUANTITY INSPECTION" in CHAPTER Ⅱ.



DIFFERENTIAL GEAR OPERATION

1.Block the rear wheels,and elevate the front wheels by placing a suitable stand under the frame.

2.Remove the wheel cap and cotter pin from the axle nut(right or left).

3.Measure the starting torque of the front wheel (i.e.,differential gear preload)with the torque wrench.

NOTE:

- **Repeat this step several times to obtain an average figure.**
- **During this test,the other front wheel will turn in the opposite direction.**

Front wheel starting torque: (differential gear preload) New unit: 17~25N·m Minimum: 10N·m

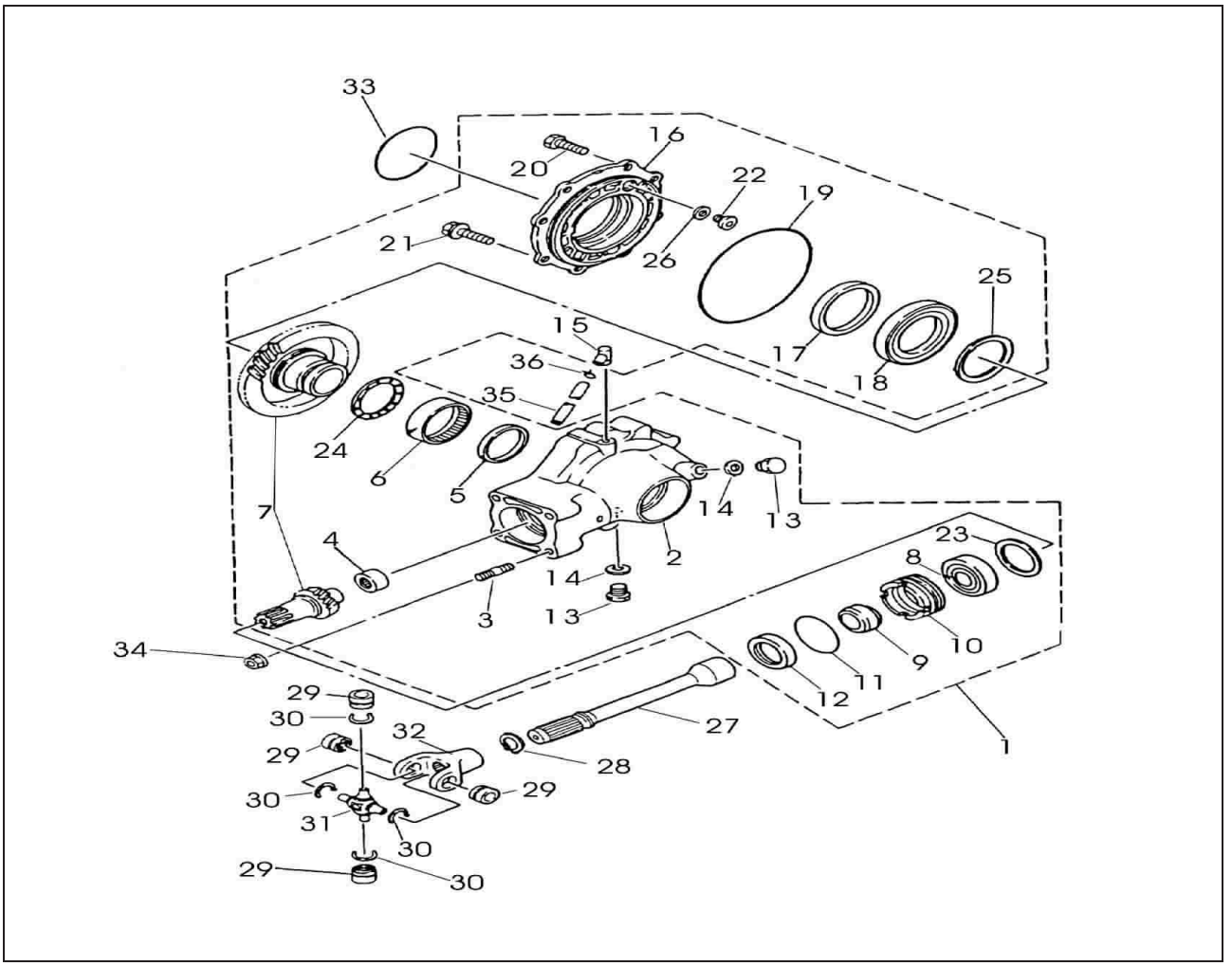
4.Out of specification,replace the differential gear assembly.

5.Within specification,install the cotter pin and wheel cap.

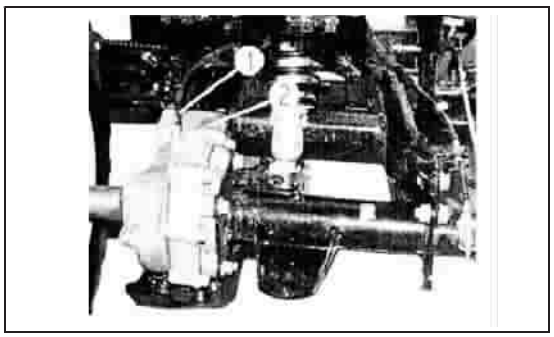
NOTE:

Always use a new cotter pin.

Section 2 Rear Driving Gear Case and Driving Shaft



1. Rear drive gear box assy 2. Drive gear box 3. Double–head bolt 4. Needle bearing (small) 5. Oil sealing 6. Needle bearing (big) 7. Bevel gear 8. Rolling bearing6305 9. Bushing 10. Bearing race 11. O–ring 12. Oil sealing of bearing race 13. Screw plug 14. Gasket 15. Vent joint 16. Drive gear box cover 17. Oil sealing of drive gear box cover 18. Rolling bearing 16013 19. O–ring155×2.65G 20. Bolt assyM8×25 21. Bolt M10×1.25×45–6g 22. Limit block 23. Thrust shim(0.15) 24. Thrust shim(1.6) 25. 25.Ring gear shim(0.4) 26. Adjusting shim 27. Rear drive shaft 28. Retaining22 29. Needle bearing 30. Clip 31. Cross shaft assy 32. Universal rear joint 33. O–ring85×3.55G 34. Nut M10×1.25 35. Airflow pipe of rear gear box 36. Airflow pipe clip of rear brake



(Ⅰ)Disassembly

Support the vehicle firmly and ensure no turnover

1. Drain the oil:

The oil of rear driving gear case

Refer to 3rd section "Replacement of engine oil of rear driving gear case" of chapter 2.

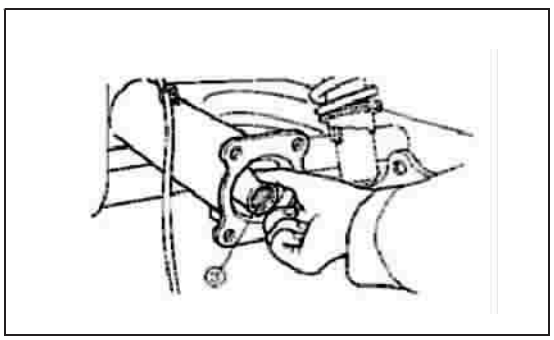
2.Disassemble

1) Cushion

2) Rear luggage carrier

3) Rear fender

Refer to 2nd section"rear fender"of chapter



3.Disassemble

1) Rear wheel (1eft)

2) Connecting plate of rear wheel

3) Rear wheel (right)

4) Rear brake and rear brake hub

5) Rear wheel shaft

Refer to "Rear wheel/rear brake/rear wheelShaft" of this chapter

4.Disconnect:

Air pipe ① (rear driving gear case)

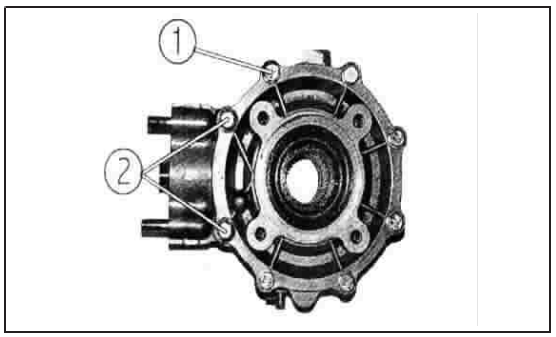
5.Disassemble

Rear driving gear case body ②

Caution:

1) When the driving gear case is removed from the rear wheel fork, the transmission shaft ③ may drop out.

2) Pay attention not to lose these components.



1.Disassembly

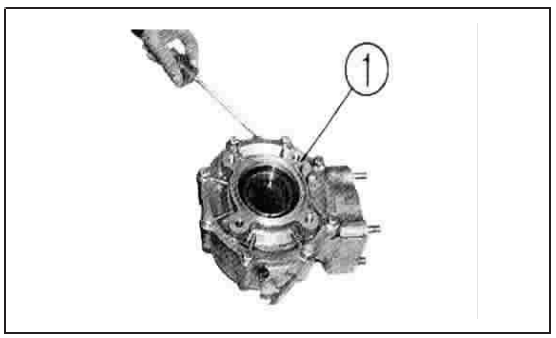
a.Remove

bolt1M6

bolt2M8

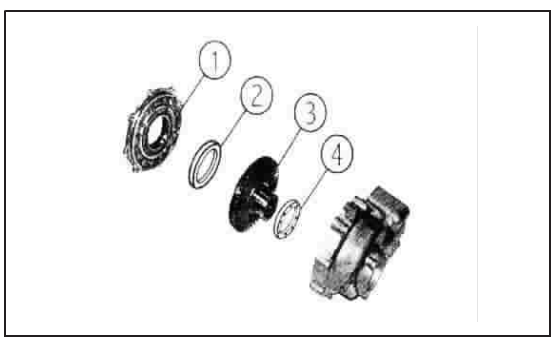
Caution：

Remove the bolts alternately.Loosen each bolt by 1/4 circle.and remove them after all of them are loosened.



b.Disassemble：

1) Rear driving gear case body①
2) Annular gear pad②
3) Shift gear③
4) Thrust plain pad④

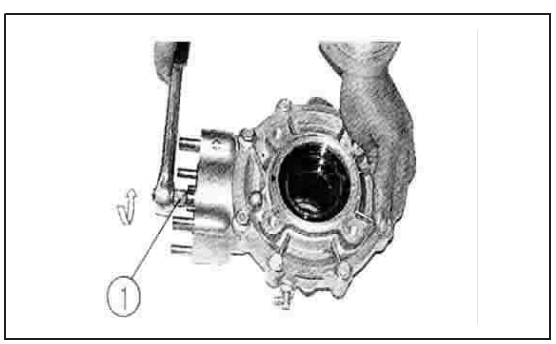


C.Disassemble：

Bearing gasket (transmission shaft–last grade)

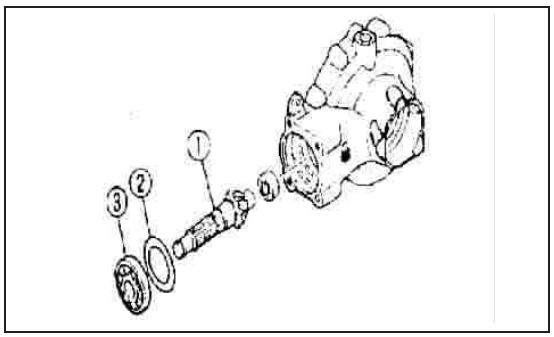
Caution:

There are left handed threads on the bearing gasket. Rotating it clockwise may loosen the bearing gasket.



Caution:

When reinstalling the bearing gasket. use special wrench①.

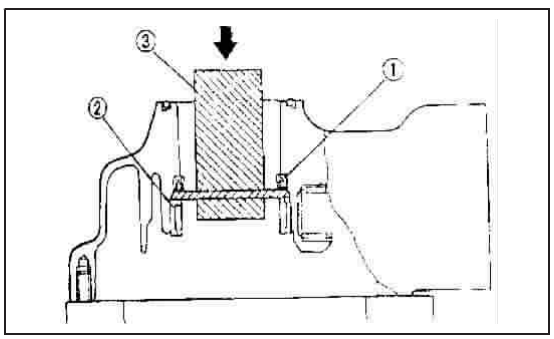


d、Disassemble

Tap the main driving gear lightly with soft hammer，and remove the main driving gear① (with thrust pad○2 and bearing③)

Caution:

If it is necessary to replace the gear，should remove the main driving gear firstly. Do not use the original bearing thrust pad. Replace them.

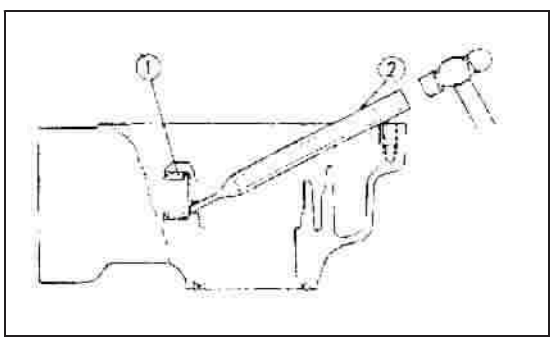


e、Disassemble：

1) Oil seal1

2) Bearing2 (shift gear)

Use proper pressure assemble tool ③ to rear driving gear case，and support it properly.



f、Disassemble：

Bearing○1(main driving gear)

Disassembling procedures：

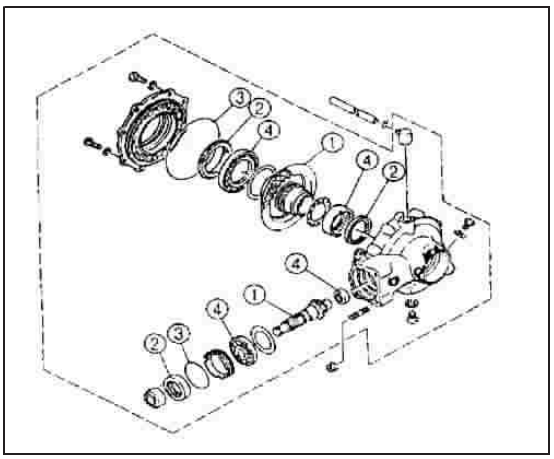
1)Warm the real"driving gear case to 150℃

2) Remove the outer circle of bearing with a proper punching pin○2.

3) Remove the inner circle of bearing of main driving gear.

NOTE:

It is very difficult to remove the inner circle of the main driving gear bearing.In general, it is unnecessary to remove it.



(Ⅱ)Inspection:

1、Check the gear teeth of bevel gear pair ① Cave/scratch→replace the main driving gear and shif gear in set

2、Check oil seal 2

3、Check O-ring 3

If damaged,replace it.

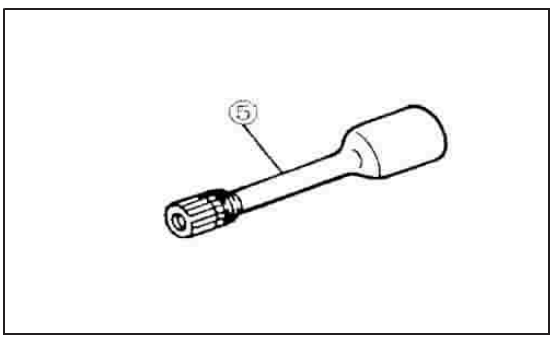
4、Check the bearin 4

If damaged,replace it.

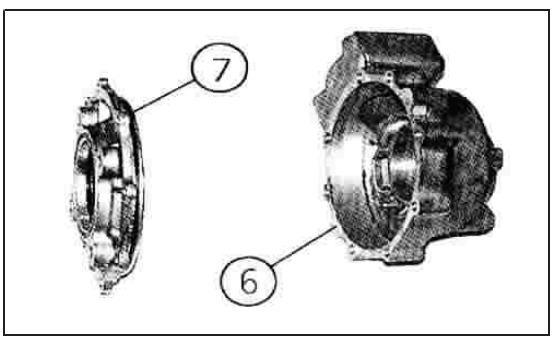
Caution:

ⓐ The bearing can be used repeatedly. But Jianshe Group advise you to replace it. Don´t use the oil seal repeatedly.

ⓑ When replacing the main driving gear and (or) shift gear, be sure to adjust them. Refer to "Pad choice of main driving gear and shift gear" 0f this section



5、Check the transmission shaft ○5 (spline) If worn or damaged,replace it.

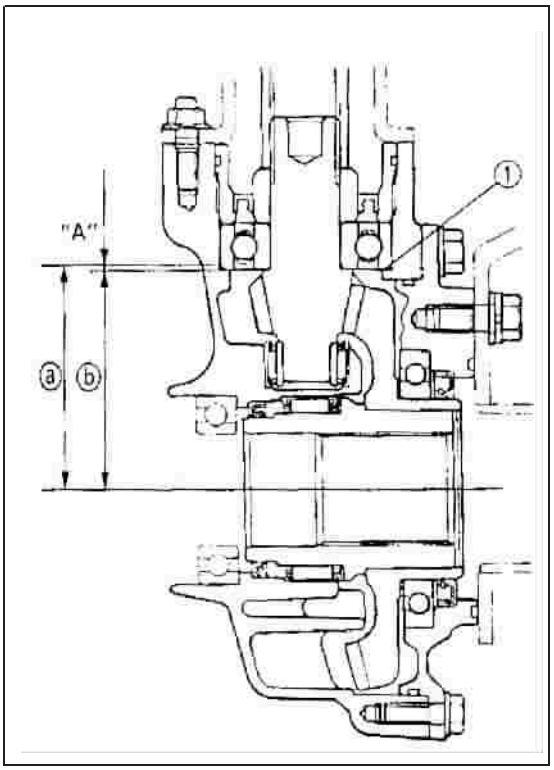


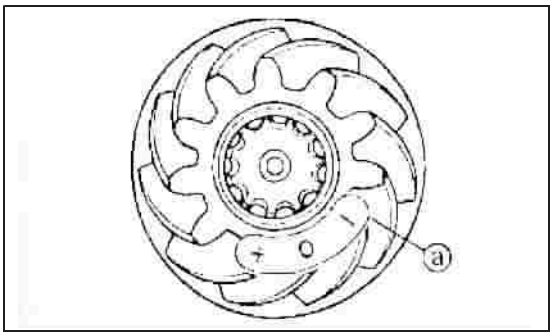
6、Check the driving gear case body ⑥ and driving gear case cover⑦.

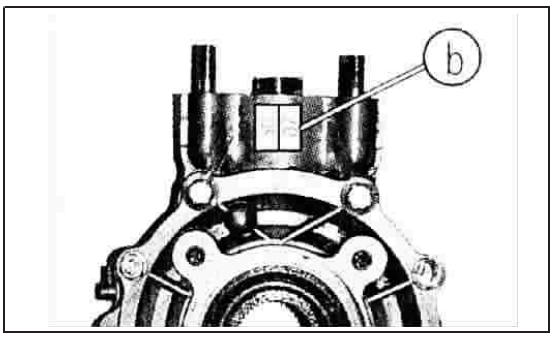
If there is crack or damage,replace them.

Caution:

When replacing the driving gear case body and cover be sure to adjust the pad of main driving gear and shift gear.Refer to "Pad choice of main driving gear and shift gear" of shis chapter.







(Ⅲ)Pad choice of main driving gear and shift gear

1、Choice of main driving gear pad①:

Work out the main driving gear pad thickness "A"=ⓐ–ⓑ

ⓐ=84 add or subtract the number engraved on the main driving gear

ⓑ=83.5 add or subtract the number engraved on the driving gear case body.

Caution:

The unit of all the numbers engraved on the main driving gear and drving gear case body is 1/100mm.

For example:

1)If on the main driving gear engraved "+01" ⓐ=84+0.01=84.01

2) If on the driving gear case body engraved "10"

ⓑ=83.5+0.10=83.60

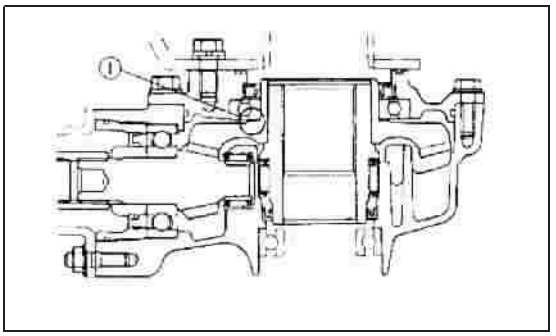
3) So: "A"=0.41

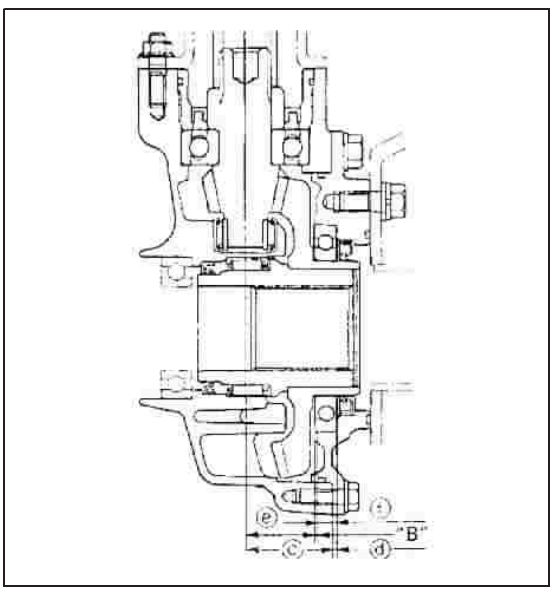
4)Amend the pecent digit and chose proper pad. In above example,the resulted value is 0.41, but the meter indicates to amend 1 of pecentage digit to 0.so the pad thickness is 0.40mm.

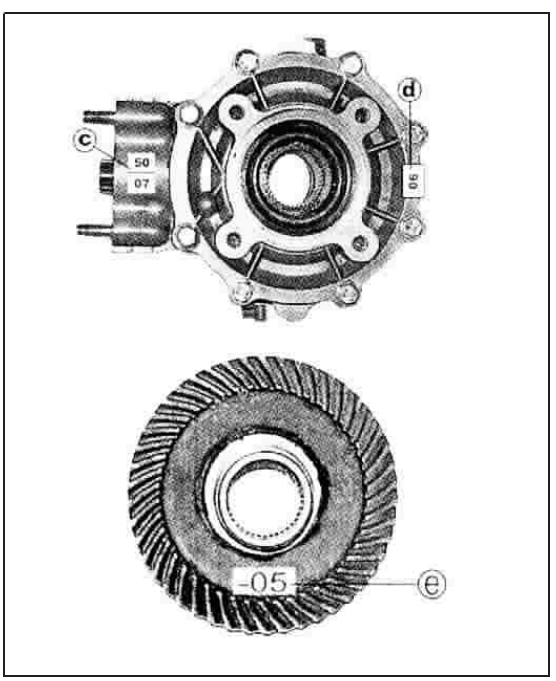
Number on percent digit	Amending value
0,1,2	0
3,4,5,6,7	5
8,9	10

The pad has following thickness

Main driving gear pad	Amending value
thickness (mm)	0.15 0.50 0.30 0.60 0.40







2、Choice of shift gear pad.

Shift gear pad①

Chosing procedures：

Work out the pad thickness"B"from following formula

"B"=ⓒ+ⓓ−(ⓔ+ⓕ)

ⓒ="45.5"add or subtract the number engraved on the driving gear case body.

ⓓ="1" add or subtract the number engraved on the driving gear case cover.

ⓔ="35" add or subtract the number on the shift gear

ⓕ=bearing thickness（regarding unchangeable）="11.00mm"

For example：

1）the number engraved on the driving gear case body is "07"

ⓒ=45.5+0.07=45.57 mm

2) the number engraved on the driving gear case cover."06"

ⓓ=1+0.06=1.06 mm

3) the number engraved on the shift gear is "−05"

ⓔ=35−0.05=34.95

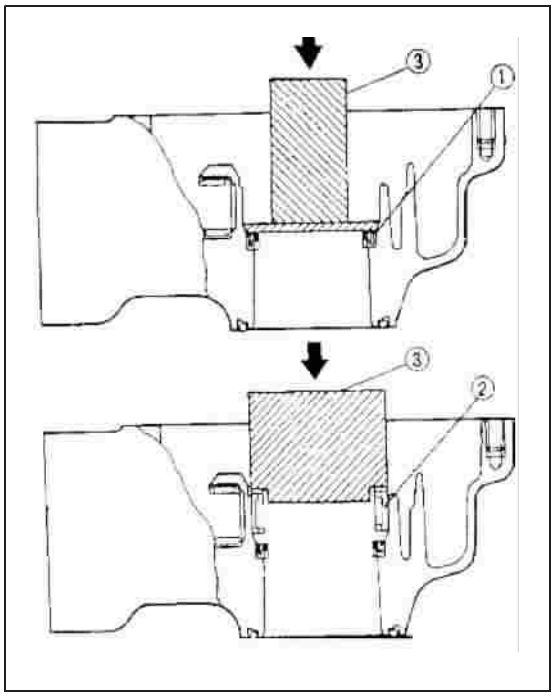
4) ⓕ=11.00

5)So the pad thickness"B"。

"B"=(45.57+1.06)−(34.95+11)=0.68

Number on pencent digit	Amending value
0,1,2	0
3,4,5,6,7	5
8,9	10

Shift gear pad		
thickness (mm)	0.25	0.40
	0.30	0.50



(Ⅳ)Installation:

The procedure is the reversal of "disassembly" but pay attention to followihg points:

1、Install the needle bearing (small) on main driving gear:

Procedures:

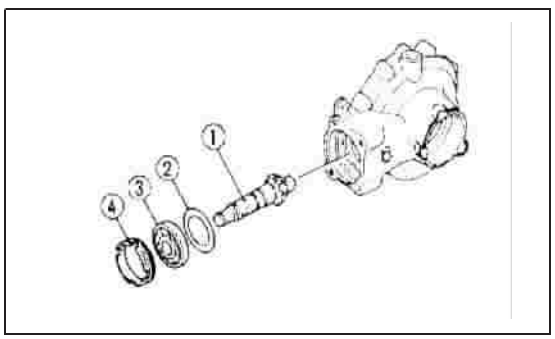
a、Warm the case body to 150℃

b、Assemble the out circle of needle bearing with proper holddown

Install the inner circle of needle bearing onto the shift gear

2、Install oil seal①

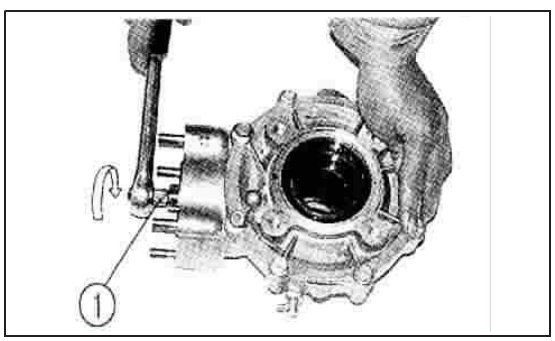
3.Install the outer circle of needle bearing (bigger) 2 of shift gear onto the driving gear case body



Warning

Must use new oil seal

Install main driving gear① (pad② and bearing ③) and install bearing gasket4, Calculate the size of pad.



Caution:

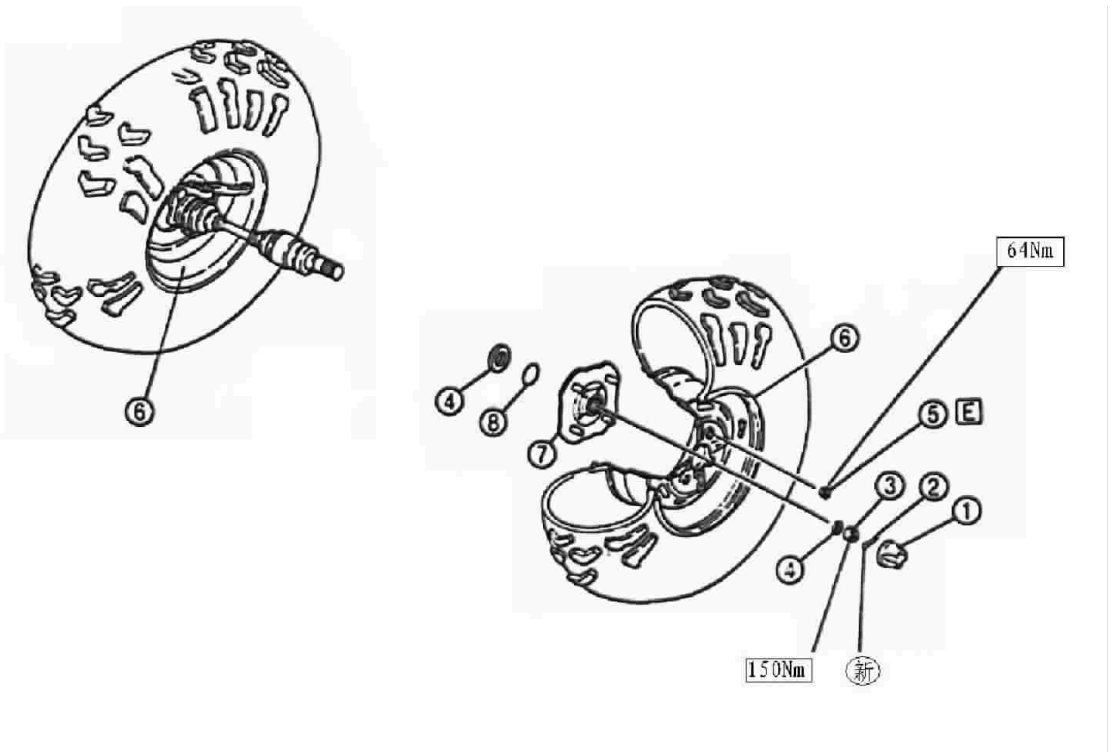
ⓐThe bearing gasket is left handed,so tighten it up by rotating counter clockwise

ⓑ before Installing the bearing gasket ,apply grease on O-ring

ⓒWhen Installing the bearing gasket, tighten it with special tool。

Section 3 Front Wheel and Front Brake

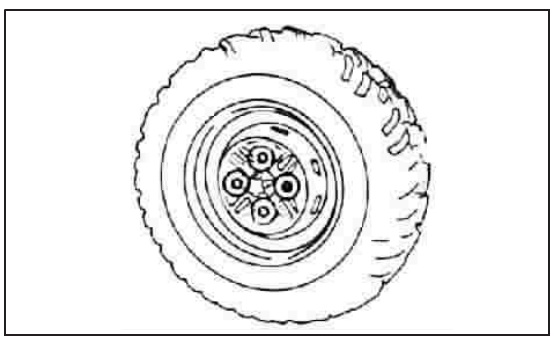
Front Wheel



①Dust cover of front and rear wheels ②Cotter pin 4X30 ③Rear wheel axle nut
④Washer ⑤Connecting nut of front and rear wheels ⑥Front wheel rim assy
⑦Front brake disc heder assy ⑧O–ring

Technical parameter

Ser.No.	Item			Parameter
1	Tire specification		front	AT25 8-12
2	Rim dimension		front	12 6.0AT
3	Tire air pressure	Standard value	front	25kPa
		Min value	front	22kPa
		Max value	front	28kPa
4	Flunout		Radia run out	2mm
			End face run out	2mm
5	Wear limit of tire			3mm
6	Wear limit of friction disk			2mm



(Ⅰ)Disassembly

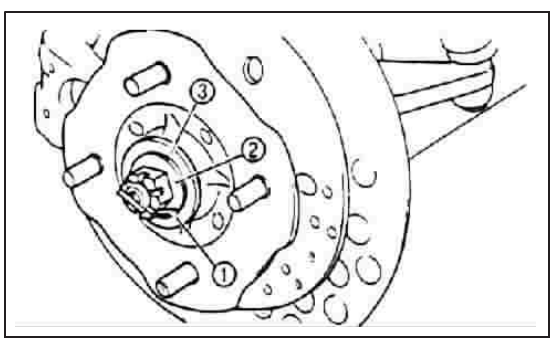
Front wheels

1. Place the machine on a level surface.

2.Loosen:Nuts (front whee)

Apply the front brake.

3.Block the rear wheels,and elevate the front wheels by placing the suitable stand Under the frame.



4.Remove:

.Nuts (front wheel)

·Front wheel

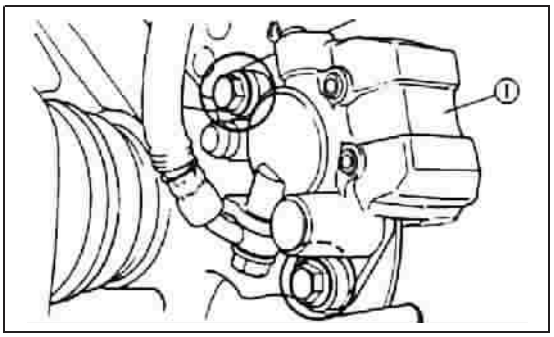
5.Remove:

·Wheel cap

·Cotter pin①

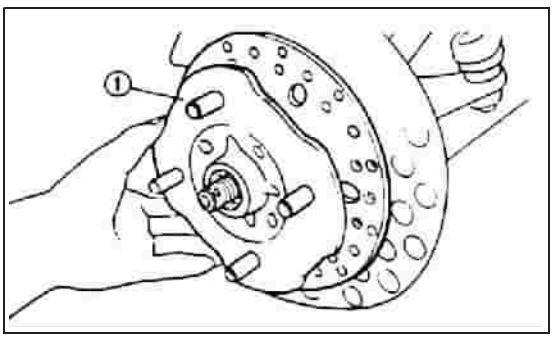
.Nut(wheel hub)②

·Washer③



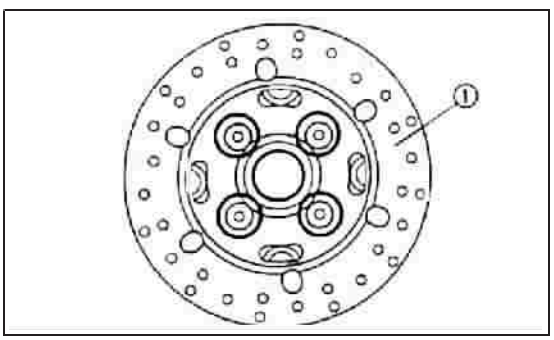
6.Remove：
.Front brake caliper①

NOTE：
Do not depress the brake lever when the wheel is off the brake pads will be machine otherwise the forced shut.



7.Remove：
.Front wheel hub①(with brake disc)

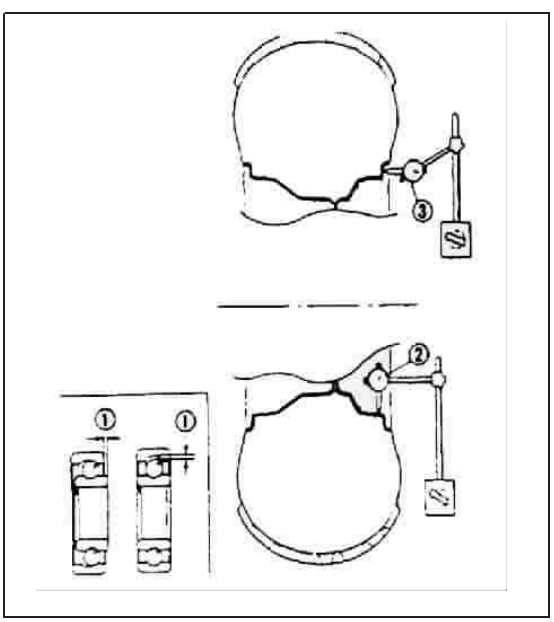
8.Remove：
·Front brake disc①



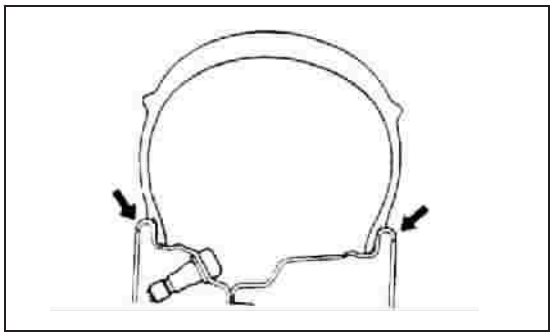
(Ⅱ)INSPECTION

1.Inspect：
·Wheel
2.Measure：
·Wheel runout
Over the specified limit→Replace the wheel or check the bearing play

Rim runout limits:	
Radial	2.0mm(0.08in)
Lateral	2.0mm(0.08in)

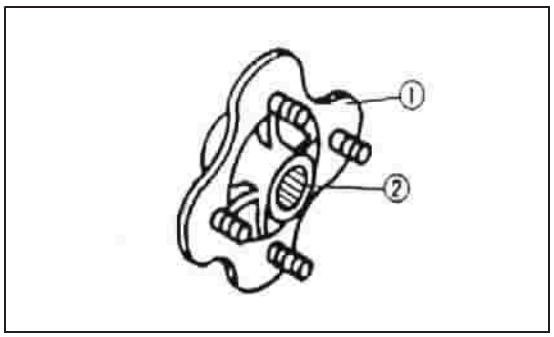


3.Check：
·Wbeel balance
Out of balance→Adjust



Warning

After replacing the tire, ride conservatively to allow the tire to be properly seated in the rim. Failure to do SO may cause an accident resulting in machine damage and possible operator injury.



4.Inspect:

·Wheel hub①

Cracks/damage→Replace.

·Splines(wheel hub)②

Wear/damage→Replace

(Ⅲ)INSTALLATI0N

When installing the front and rear wheels, reverse the "REMOVAL" procedure. Note the following points.

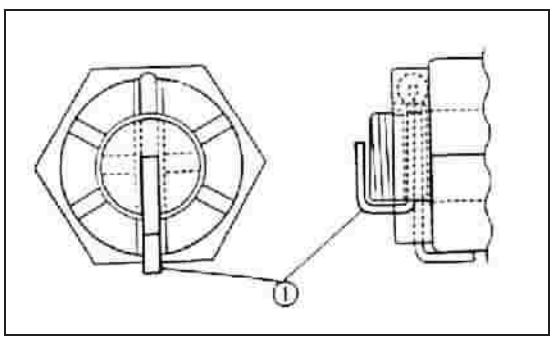
Front wheel

1.Tighten:

·Axle nut(front wheel)

2.Install:

·Cotter pin①



NOTE:

Do not loosen the axle nut after torquing it. If the axle nut groove is not aligned with the cotter pin hole, align the groove with the hole by tightening the axle nut.

Always use a new cotter pin.

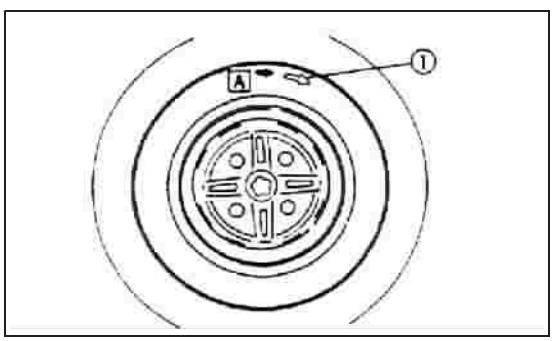
3.Adi uSt:

·Front brake free play

Refer to "FRONT BRAKE ADJUSTMENT "in this CHAPTER.

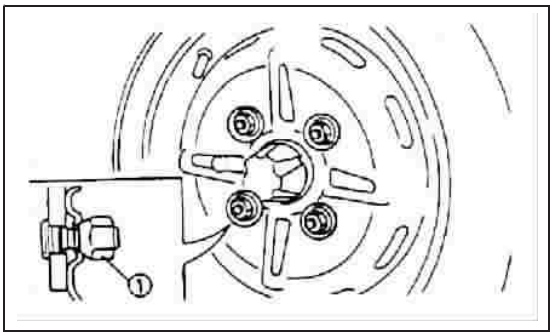
4.1nstall:

·Front whee



NOTE:

The arrow mark ① on the tire must point in the direction of rotation A of the wheel.



5.Tighten：

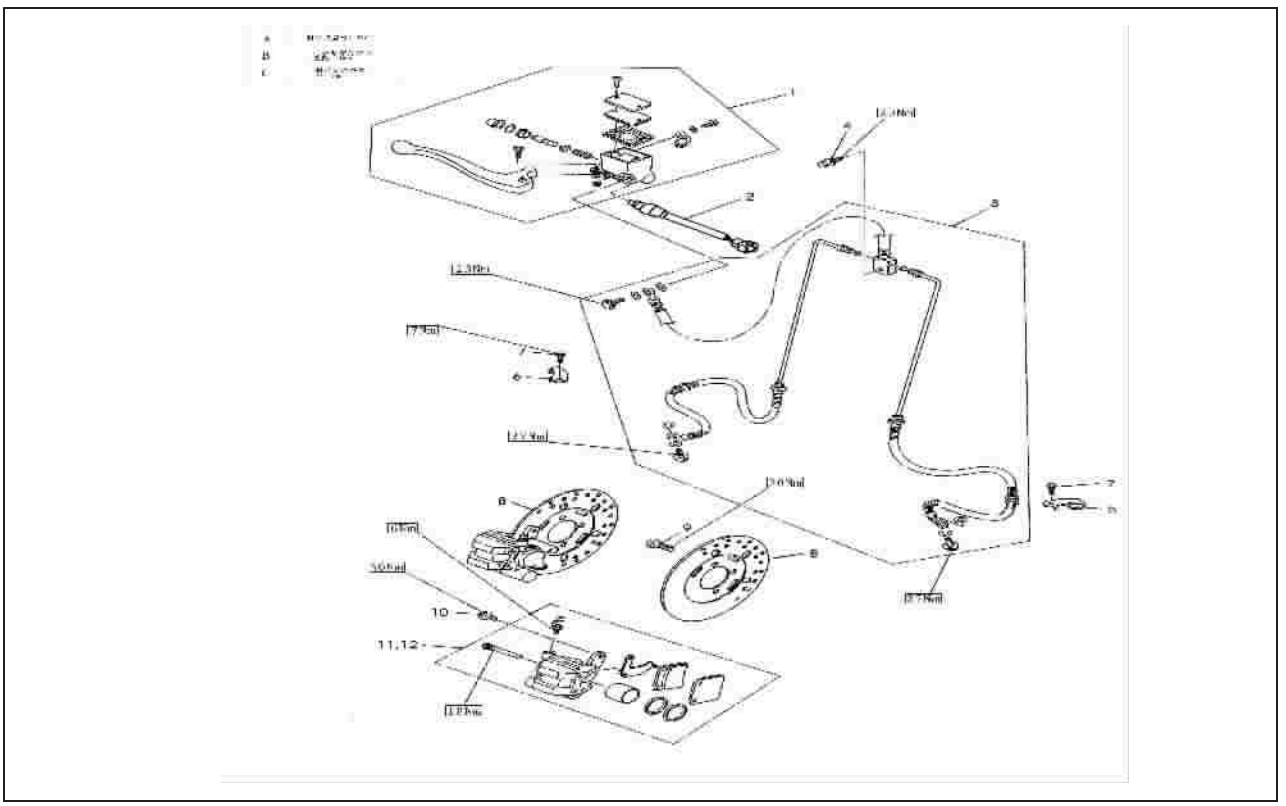
·Nuts(front wheel)①

Warning：

Tapered wheel nuts ① are used for both the front and rear wheels.Install the nut with its tapered side towards the wheel.

Nut(front wheel) 64Nm(6.4m·g,46ft.lb)

Front Brake



1.Main pump　2.Front brake switch　3.Fuel pipe unit　4.Bolt M8X30

5. Front brake tube hook ③　6 Front brake tube hook④　7.Bolt M6X30

8.Brake disc　9.Attachment screw of brake disc　10.Bolt M8X14

11.Left branch pump　12.Right branch pump

CAUTION:

Disc brake components rarely require disassembly.

DO NOT:

·Disassemble components unless abso1utely necessary.

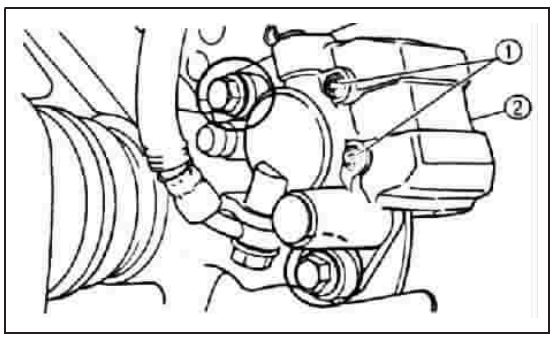
·Use solvents on internaI brake components.

·Use contaminated brake fluid for cleaning.Use only clean brake fluid.

·AIlow brake fluid to come in contact with the eyes,otherwise eye injury may occur.

·AIlow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.

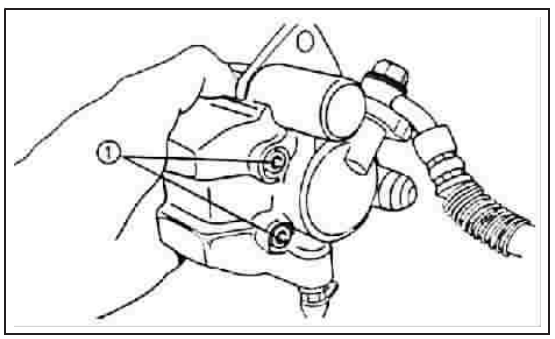
·Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained,cleaned, and then properly filled and bled after reassembly.



(Ⅰ)BRAKE PAD REPLACEMENT

NOTE:

It is not necessary to disassemble the brake cdliper and braking hose to replace the brake pads



1.Remove:

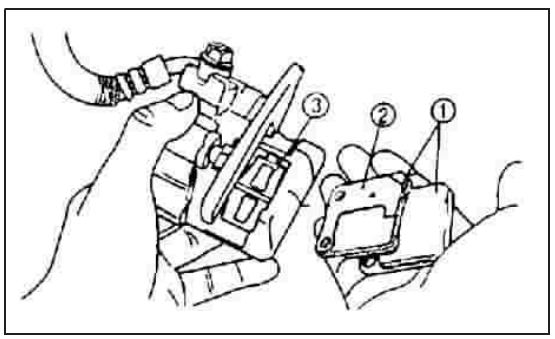
·Front wheel

2.Loosen:

·Retaining bolts①

3.Remove:

·Front brake caliper②



4.Remove:

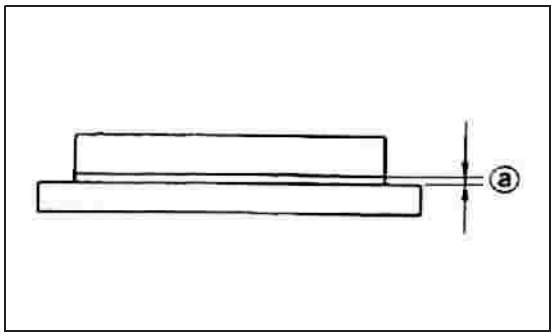
·Retaining bolts①

5.Remove:

·Brake pads①

(with pad shim②)

·Pad spring③



NOTE:

·When pad replacement is required, also replace the pad spring and shim.

·Replace the pads as a set if either is found to be worn to the wear limit@.

Wear limit@:

1.0mm (0.04in)

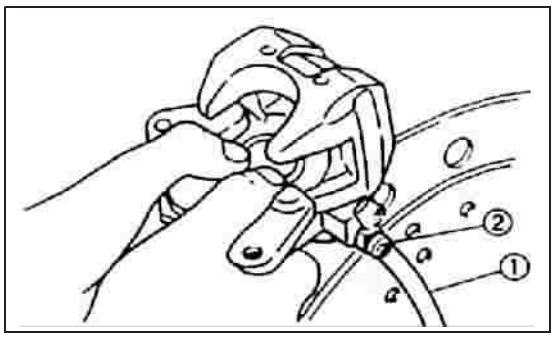
6.Install:

·Pad shim

(onto inside brake pad)

·Pad spring

·Brake pads



(Ⅱ)Installation steps:

·Connect a suitable hose ① tightly to the caliper bleed screw ② .Then,place the other end of this hose into an open container.

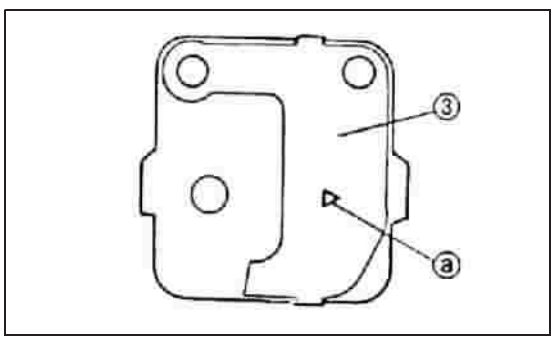
·Loosen the caliper bleed screw and push the pistons into the caliper with the finger.

·Tighten the caliper bleed screw②.

Caliper bleeds screw:

6Nm(0.6m·kg,4.3ft·lb)

·Install the pad shim ③ (new)onto the brake pad(new).



NOTE:

The arrow mark④on the pad shim must point in the direction of the disc rotation.

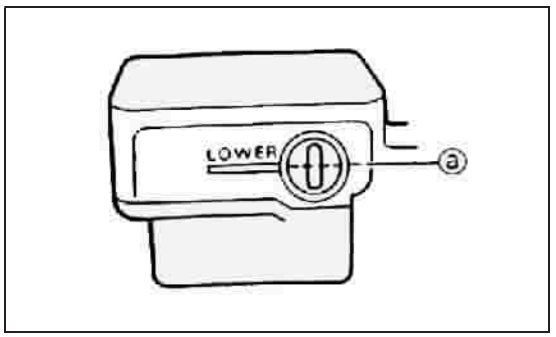
·Install the pad spring (new)and brake pads (new).

7.Install:

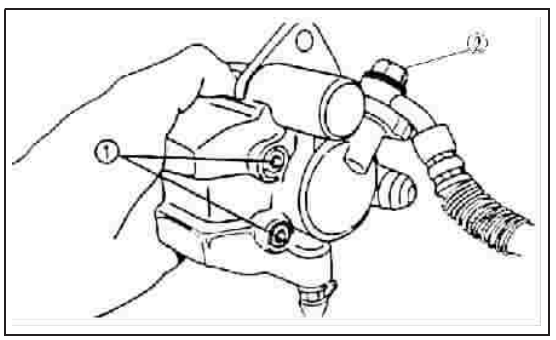
·Retaining bolts

·Front brake caliper

Retaining bolts: 18Nm(1.8m·kg, 13ft·lb) bolts(Front brake caliper): 30Nm(3.0m·kg, 22ft·lb)



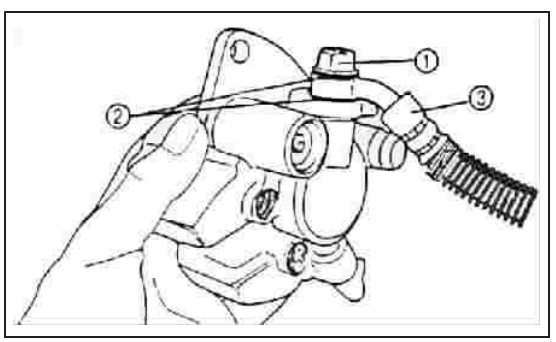
8.1nstall：
·Front wheel
9.Inspect：
·Brake flUid level
Refer to "FRONT BRAKE FLUID LEVEL INSPECTION" in CHAPTER Ⅱ. "LOWER" level line
10.Check：
·Brake lever operation
A soft or spongy feeling →Bleed brake system.
Refer to "AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)" in CHAPTER Ⅱ.



CALIPER DISASSEMBLY:

NOTE：
Before disassembling the front brake callper, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

1.Remove：
·Front wheel
2.Loosen：
·Union bolt①
·Retaining bolt(caliper bracket)②
3.Remove：
·Front brake caliper
·Retaining bolts
·Brake pads
(with pad shim)
·Pad spring
Refer to"BRAKE PAD REPLACEMENT".



4.Remove：
·Union bolt①
·Copper washers②
·Brake hose③

NOTE:

Place the open end of the hose into a container and pump the oil fluid out carefully.

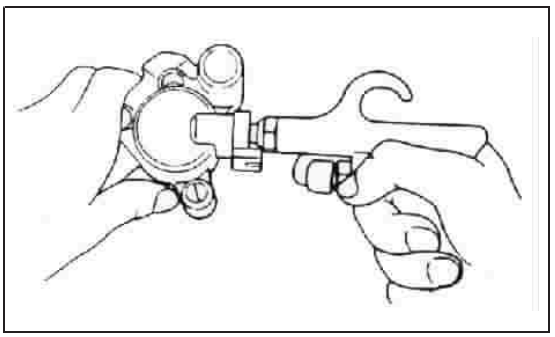
5.Remove:

·Caliper body ①

·Caliper bracket ②

NOTE:

Before removing the caliper body from the bracket.Disconnect the dust boot from the guide shaft on the bracket.



6.Remove:

·Piston

·Piston seals ①

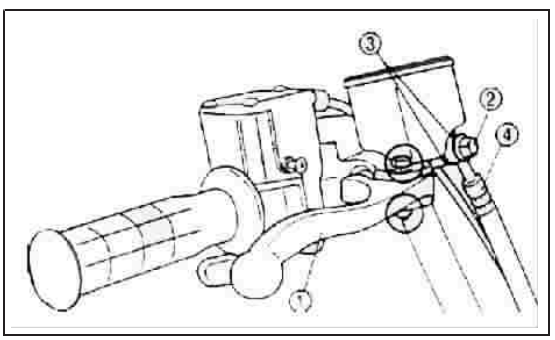
Removal steps:

·Blow compressed air into the hose joint opening to force out the caliper piston from the caliper body.

·Remove the piston seals.

Never try to pry out the piston.

MASTER CYLINDER DISASSEMBLY



NOTE:

Before disassembling the front brake master cylinder, drain the brake hose, master cylinder, brake caliper and reservoir tank of their brake fluid.

1.Remove:

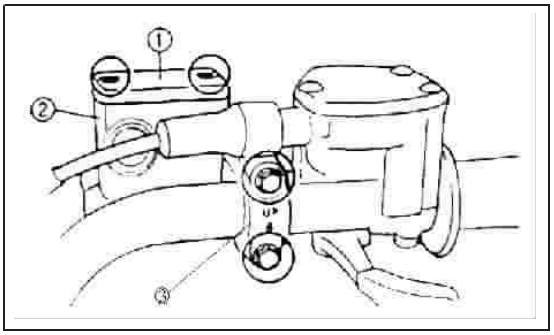
·Brake lever①

·Spring

·Union bolt②

·Copper washers③

·Brake hose④



NOTE：

Hold a container under the master cylinder and under the hose end to COIIect remaining brake fluid.

2.Remove：

·Brake master cylinder reservoir cap①

·Brake master cylinder reservoir diaph ram holder

·Brake master cyiinder reservoir diaphram

·Brake master cylinder ②

3.Remove：

·Dust boot ①

·Circlip ②

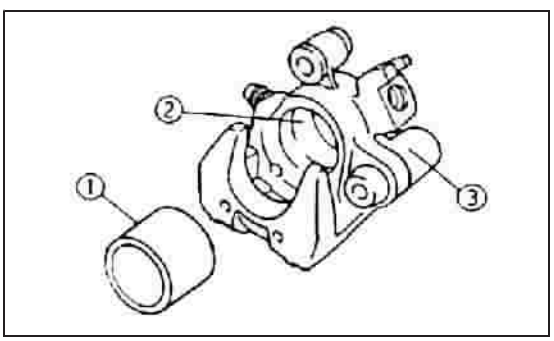
·Brake master cylinder kit ③

NOTE:

Drain the excess fluid.

(Ⅲ)INSPECTION AND REPAIR

Recommended brake component replacement schedule	
Brake pads	As required
Piston seal	Every two years
Brake hoses	Every two years
Brake fluid	Replace only when brakes are disassembled



Warning：

All internal parts should be cleaned in new brake fluid only.Do not use solvents as they will cause seals to swell and distort.

1.Inspect：

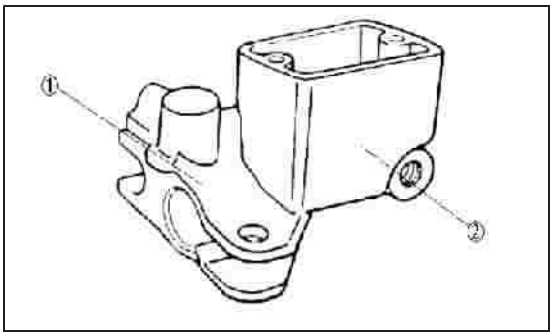
·Caliper piston①

Scratches/rust/wear→Replace caliper assembly.

·Caliper cylinder②

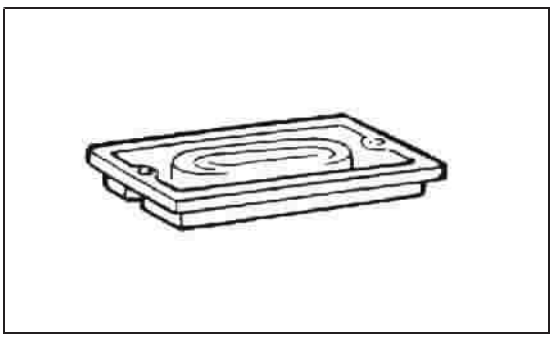
Wear/scratches→Replace caliper assembly.

·Caliper body③
Cracks/damage→Replace.
·Oil delivery passage(caliper body)
BIOW out with compressed air.
Warning:Replace the piston seal whenever the caliper is disassembled.



2.inspect:
·Brake master cylinder
Wear/scratches →Replace the brake master cylinder assembly.
·Brake master cylinder body
Cracks/damage→Replace.
·Oil delivery passage (master cylinder body) blow out with compressed air.

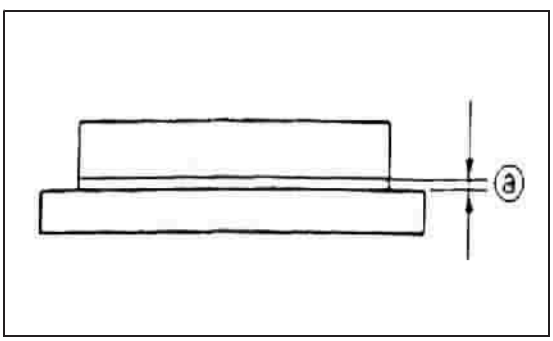
3.Inspect:
·Brake master cylinder kit
Scratches/wear/damage→Replace as a set.



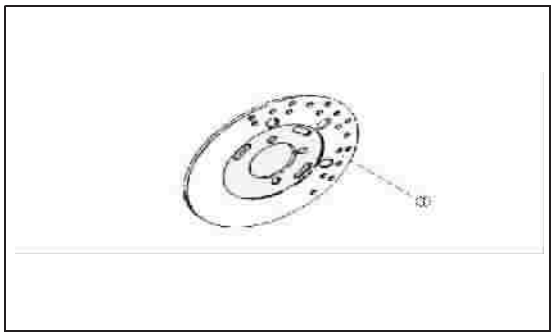
4.Inspect:
·Brake master cylinder reservoir diaphragm
Wear/damage→Replace.

5.Inspect:
·Brake hose
Cracks/wear/damage→Replace.

6.Measure:
·Brake pads(thickness) ⓐ
Out of specification→Replace.



NOTE:
·When pad replacement is required, also replace the pad spring and shims.
·Replace the pads as a set if either is found to be worn to the wear limit ⓐ.



CALIPER ASSEMBLY

Warning:

.All internal parts should be cleaned in new brake fluid only.

.Internal parts should be lubricated with brake fluid when installed.

Recommended brake fluid: DOT4

.Replace the piston seals whenever a caliper is disassembled.

1.1nstall:

.Piston seals①

.Inspect:

·Brake diSC

Galling/damage→Replace.

8.Measure:

·Brake disc deflection

Out of specification→Inspect wheel runout. If wheel runout is in good condition,replace the brake disc(s).

Maximum deflection:0.15mm

·Brake disc thickness ⓐ

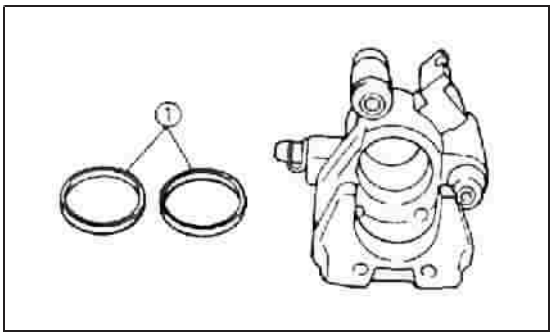
Out of specification→Replace.

Minimum thickness:3.0mm

①Dial gauge

NOTE:

Tighten the bolts (brake disc) in stage using a crisscross pattern.:30Nm



CALIPER ASSEMBLY

Warning:

.All internal parts should be cleaned in new brake fluid only.

.Internal parts should be lubricated with brake fluid when installed.

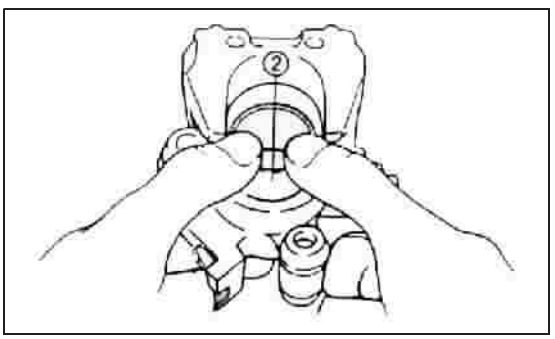
Recommended brake fluid: DOT4

.Replace the piston seals whenever a cali–per is disassembled.

1.1nstall:

·Piston seals①

·Piston②



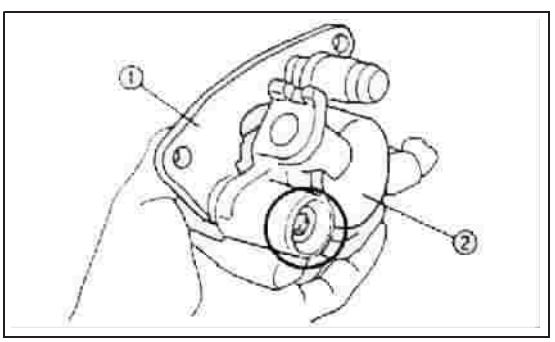
Warning:

Always use new piston seals.

2.Install:

·Caliper bracket①

·Caliper body②



NOTE:

Apply the lithium soap base grease onto the caliper guide shaft and retaining bolt

3.Install：
·Brake caliper①(temporarily)
·Copper washers②
·Brake hose③
·Union bolt④
Union bolt：27Nm

CAUTION：
When installing the brake hose on the cali. per，make sure that the brake pipe touches the projection on the brake caliper.

Warning：
·Proper hose routing is essential to insure safe machine operation.
·Always use new copper washers.

4.Remove：
·Brake caliper

5.Jnstall：
·Pad spring
·Brake pads(with pad shim)
·Retaining bolts
·Front brake caliper
Refer to "BRAKE PAD REPLACEMENT".
Retaining bolt fcaliper bracket)：
28 Nm 12.8 m·kg，20 ft·lb)
Retaining bolt：
18 Nm f1.8 m·kg，13 ft·lb)
Bolt(front brake caliper)：
30 Nm(3.0 m·kg，22 ft·lbl

6. Fill
·Reservoir tank

Recommended brake fluid：DOT4

NOTE:

If DOT 4 is not availabIe,3 can be used.

CAUTION:

Brake fluid may erode painted surfaces or plastic parts.Always clean up spilled fluid immediately.

Warning:

·Use only the designated quality brake fluid: otherwise,the rubber seals may deteriorate causing leakage and poor brake performance.

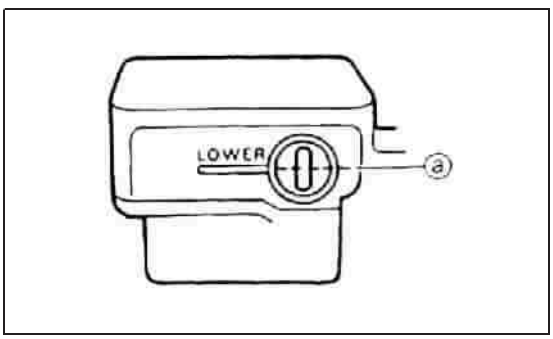
·Refill with the same type of brake fluid mixing fluids may result in a harmfuI chemicaI reaction and Iead to poor performance.

·Be carefuI that water does not enter the master cylinder when refilling.Water will significantly lower the boiling point of the fluid and may result in vapor lock.

7.Air bleed:

·Brake system

Refer to "AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)" in CHAPTER Ⅱ.



8.Inspect:

·B rake fluid level

Fluid level is Under"LOWER"level line → Replenish.

Refer to "FRONT BRAKE FLUID LEVEL INSPECTION" in CHAPTER Ⅱ.

ⓐ"LOWER"level line

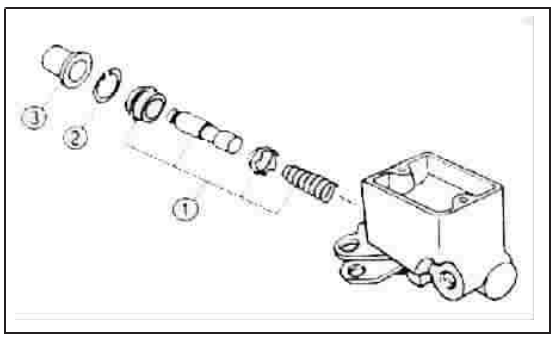
Warning:

·All internal parts should be cleaned in new brake fluid only.

·Internal parts should be lubricated with brake fluid when installed.

·Replace the piston seals and dust seals whenever a brake master cylinder is disassembled.

Recommended brake fluid:DOT4



1.Install:

·Brake master cylinder kit①

·Circlip②

·Dust boot③

2.1nstall:

·Brake master cylinder①

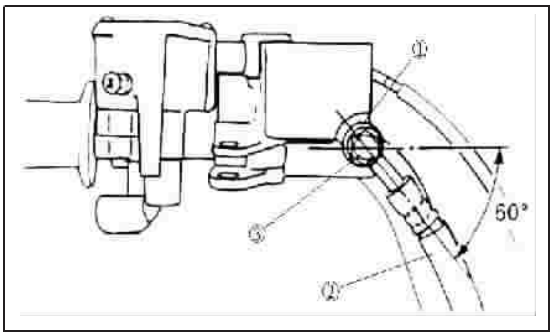
CAUTION:

·Install the brake master cylinder holder with the "UP" mark facing upward.

·Align the end of the brake master cylinder holder with the punch mark ⓐ in the handlebar.

·Tighten first the upper bolt,then the lower bolt.

Bolt(brake master cylinder holder): 7 Nm(0.7 m·kg,5.1 ft·lb)

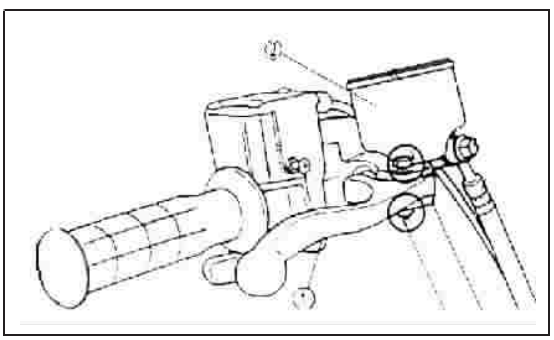


3.Install:
·Copper washers
·Brake hose
·Union bolt
Union bolt:27Nm(2.7m·kg,19ft·lb)

NOTE:
·Tighten the union bolt while holding the brake hose as shown.
·Check that the brake hose does nOt touch other parts fthrottIe cabIe, wire harness, leads, etc.) by turning the handlebar left and right, and correct lf necessary.

Warning:
·Proper hose routing is essential to insure safe machine operation.
·Always use new copper washers.

4.InstalI:
·Brake lever



5.Fill:
·Brake master cylinder reservoir

Recommended brake fluid:DOT4

NOTE:
If DOT 4 is not available, 3 can be used.

CAUTION:
Brake fluid may erode painted surfaces or plastic parts.Always clean up spilled fluid immediately.

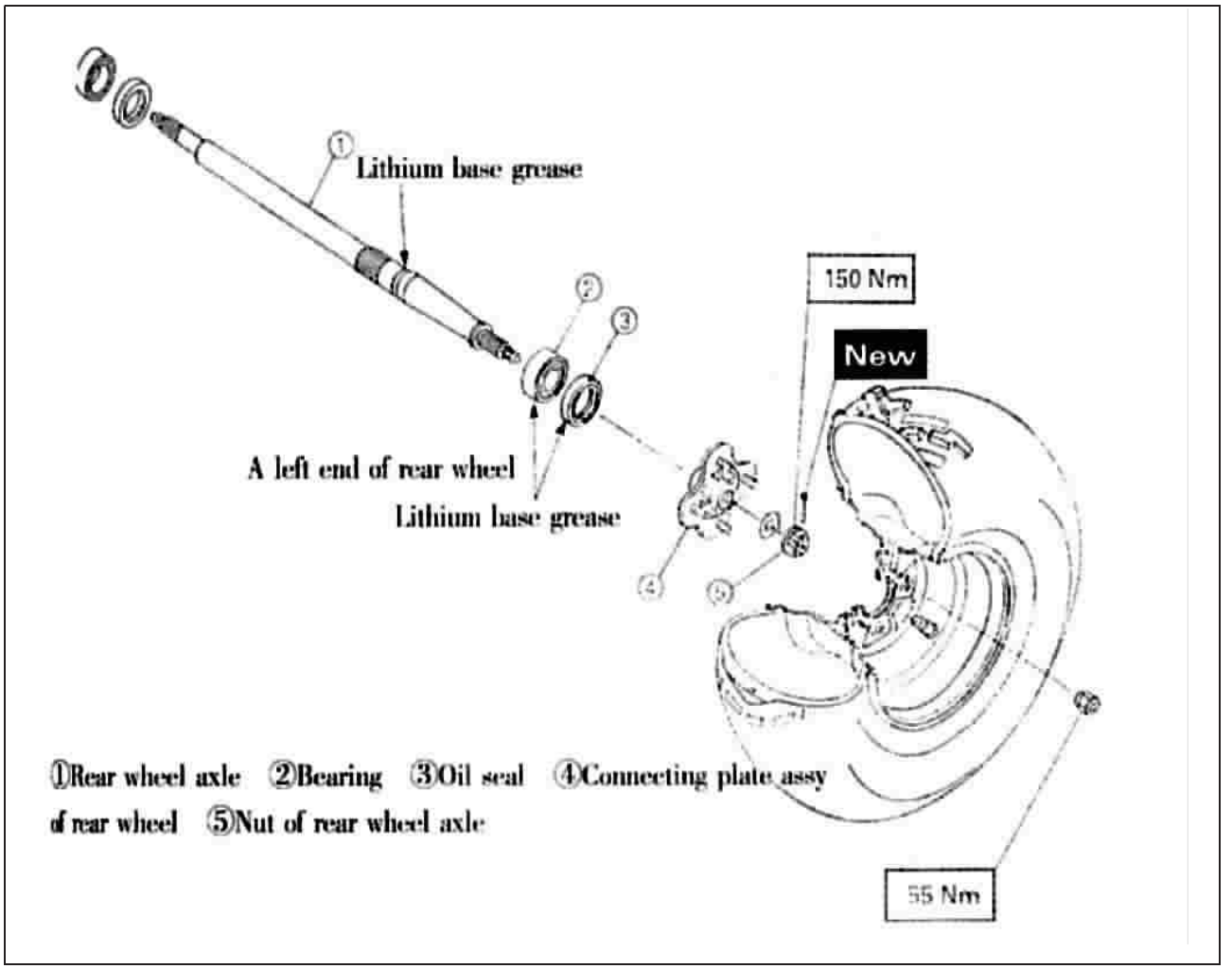
Warning:
·Use only the designated quality brake fluid: otherwise,the rubber seals may deteriorate, causing leakage and poor brake performance.

·Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.
·Be careful that water does not enter the master cylinder when refilling.Water will significantly lower the boiling point of the fluid and may result in vapor lock.

6.Air bleed:
·Brake system
Refer to "AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)" in CHAPTER Ⅱ.

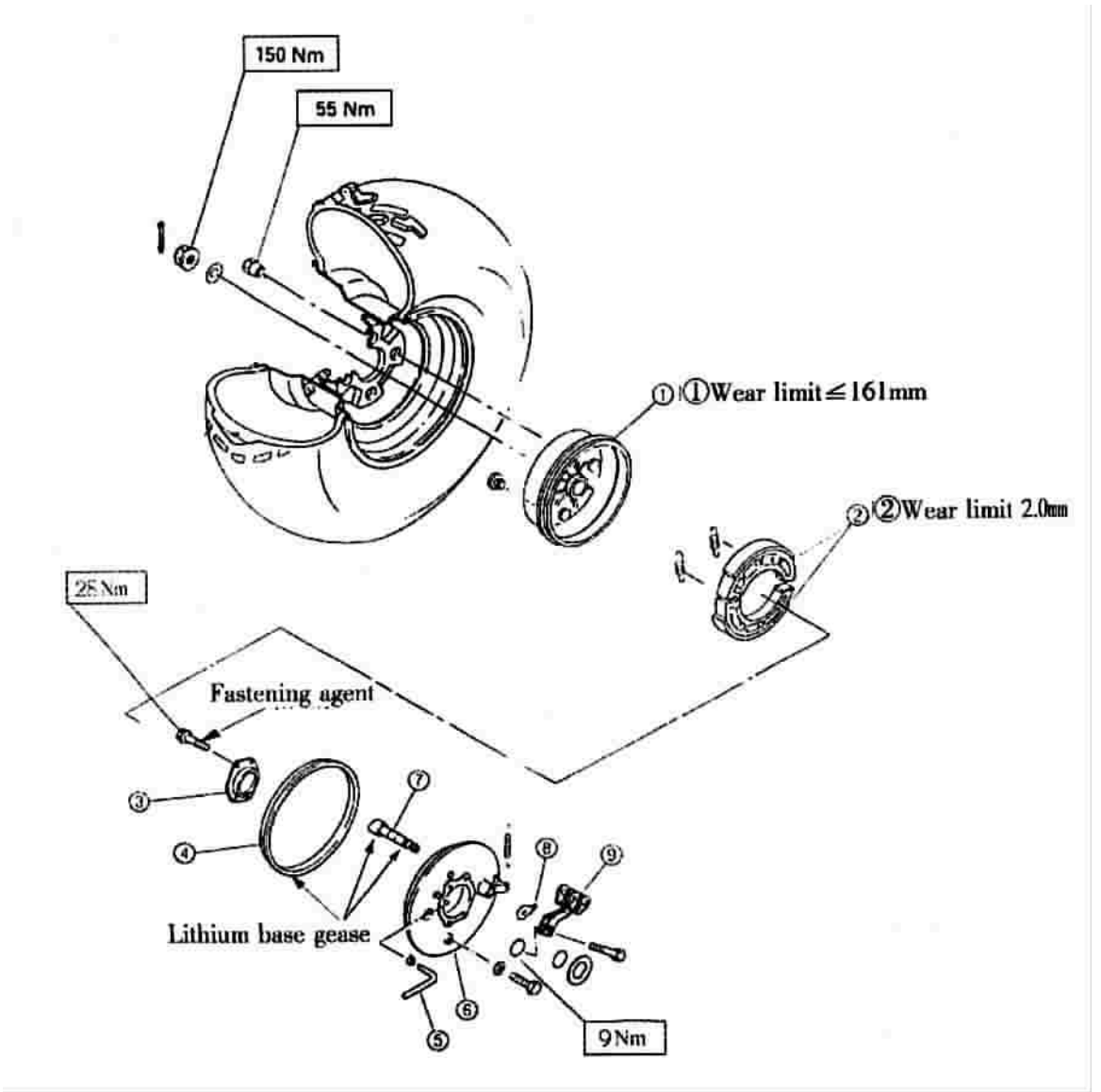
7.Inspect:
·Brake fluid level
Fluid level is Under "LOWER" level line → Replenish.
Refer to "FRONT BRAKE FLUID INSPECTION" in CHAPTER Ⅱ.
ⓐLOWER"level line

Section 4 Rear wheel/rear brake/rear wheel axle



Technical parameter

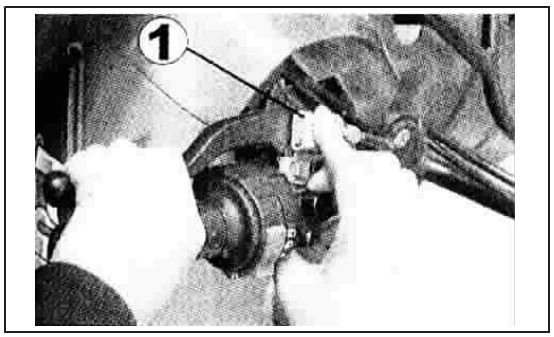
Ser.NO	Item		Parameter
1	Tire specification		AT 25x10–12
2	Rim dimension		AT 12x8.0
3	Tire air pressure (normal temperature)	Standard value	25kpa(Standard value)
		Min value	22 kpa(Min value)
		Max value	28kpa(Max value)
4	Flunout	Radia run–aut	2mm
		End face run–act	2mm
5	Wear limit of tire		2mm
6	Wear limit of friction disk		2mm
7	Rear Brake hub wear limit		161mm

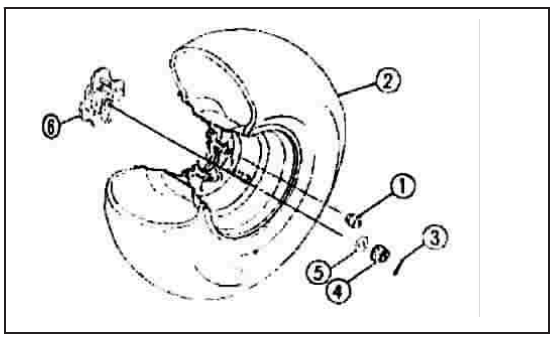


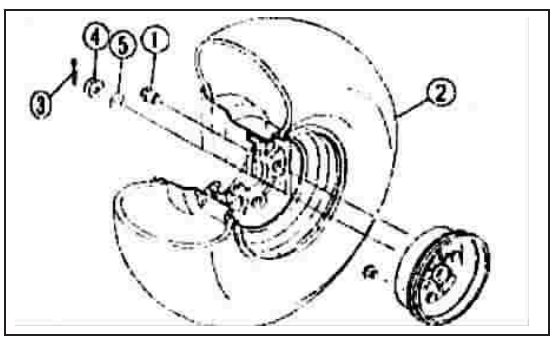
①Rear brake hub　②Brake shoe　③Bearing block

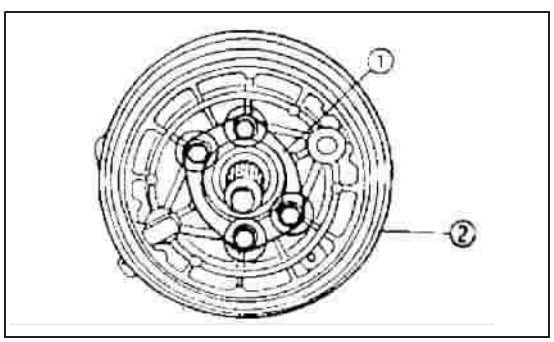
④Dust–proof seal　⑤Air pipe　⑥Rear brake cover assy

⑦Rear brake cam shaft　⑧Brake indicating plate　⑨Rear bra









(Ⅰ)Removal steps:

1、Rest the motorcycle Oil a flat ground.Press the rear brake clip①.

2、Loosen the connecting nuts of front and rear wheels.

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

Warning:

In order to avoid the parts falling, which will cause danger.during the ronloval process,rest the vehicle firmly.

4、Removal(the Ser.NO is corresponding to the Ser.N0 Oil the draving)

①connecting nut of front and rear wheels
②Left rear wheel
③Split pin
④Rear wheel axle nuts
⑤Washer
⑥Rear wheels conlmeting plate

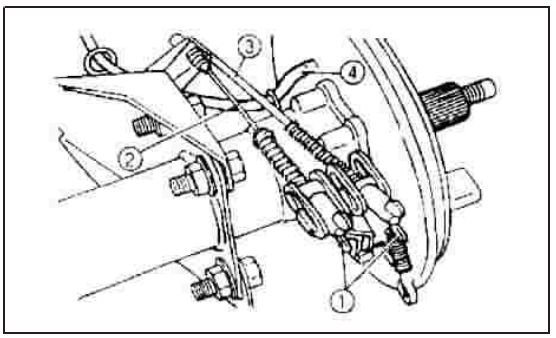
5、Removal (tlle Sel´.No Ser.No on the drawing)

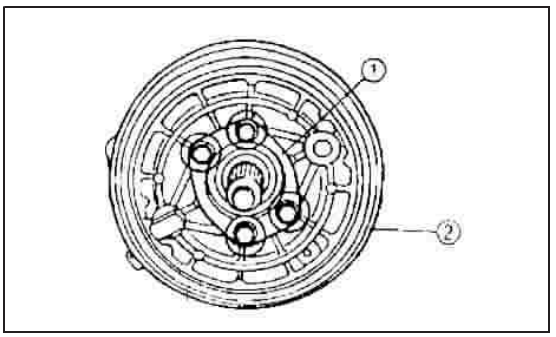
①connecting nut of front and rear wheels
②Right rear wheel
③Split pin
④Rear wheel axle nuts
⑤Washer

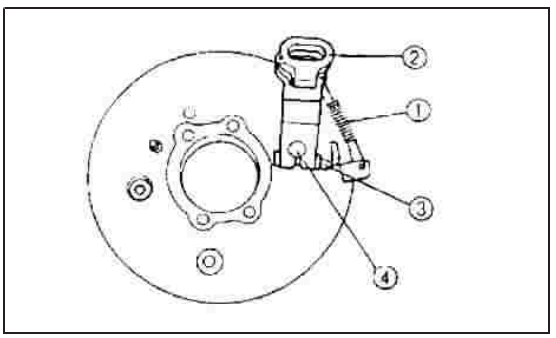
6、Loosen the rear brake clip

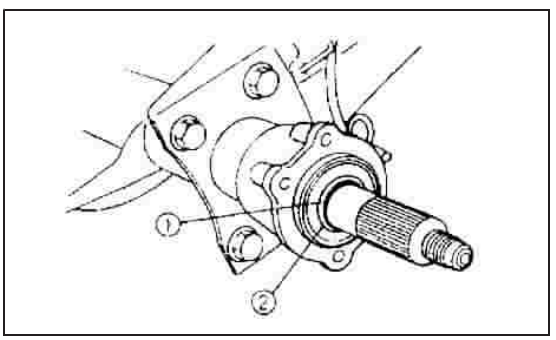
7.Removal:

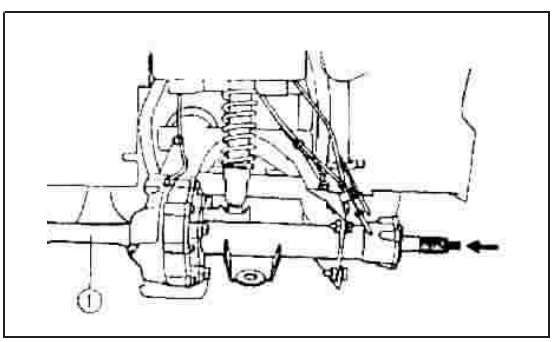
Brake shoe assy①











8.Removal：(the Ser.No as shown on the drawing)

①Adjusting nut，pin and spring of rear brake arm and rear brake tension rod assy.

9、Removal：

②Rear brake cable

③Rear brake Tension rod assy

④Air pipe of rear brake

10、Removal：

①Rear brake bearing block

②Rear brake hub

11、Removal：

①Tellsion spring

②Rear brake arm

③Brake indicating plate

④Rear brake CHill shaft

12、Removal：

①O–ring 30x1.8G

②Plain pad of rear brake cover

13、Removal：

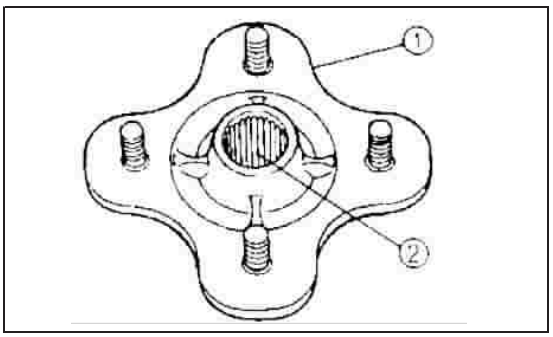
①Rear w|leel axle：Beat the right end of the rear,wheel axle slightly，pull the rear wheel. Axle from left end.

Caution：

Take 0ut the rear wheel axle from the end of rear wheel axle bushing and gear box with soft hammer

Warnning:

During taking out rear wheel axle，in order to protect the thread and gear grouve from damage. Do not beat the rear wheel axle directly with hammer.



(Ⅱ)Inspection steps:

1、Inspection

When inspecting the real wheel,refer to"tire Inspection Rim inspection"Section of chapter Two

2、Measurement:

a.Radial runout of rim

b.Tire surface

Refer to "Front wheel and Front Brake Inspection´´Section of this chapter

3、Inspection

①Rear wheel connection plate①,If cracks or damage is found,replace it.

② Involute spline on rear wheel connecting plate②.If worn or damaged,replace it.

4、Inspection:

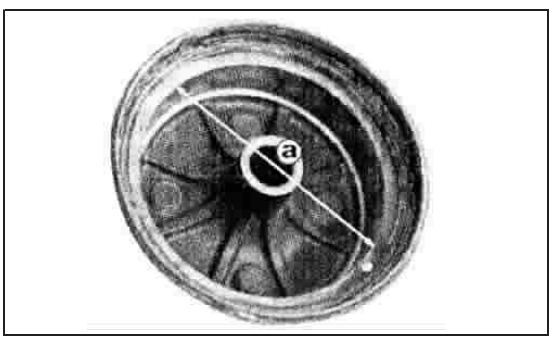
Friction plate of rear brake

5、Measurenlenl

Thickness of brake friction plate See the"Front wheel and Front brake Ispection Section of this chapter.

Attached:The thickness of brake friction plate is:4.0mm(0.16in)

<Wear limit>:2.0 mm(0.08in)



6、Inspection

Tension spring of brake shoe See the "Front wheel and Front brake Inspection Section of this chapter

7、Measurement

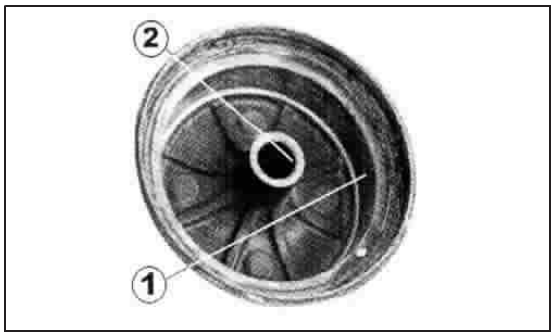
Internal diameter of rear brake hub@ If out of the specification.replace the hub

Attached:

Intemal diameter of rear brake hub: 160mm

<Wear limit>:

161mm



8、Inspection (The Ser.No as shown on the drawing)

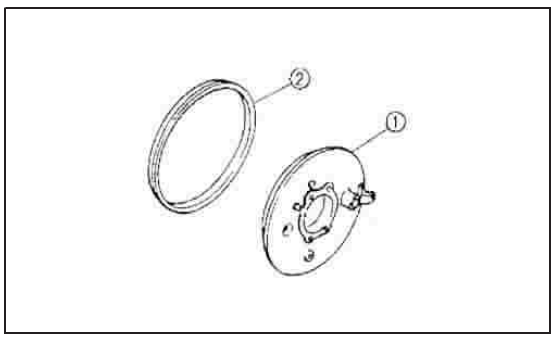
①Inner surface of rear brake hub

If thesr is sortie engine oil or scraped markings, remove it and treat it,the mothod of treat is as the follows.

Removal of engine oil:Clean with colth dipped in volatile diluent or volatile solvent.

Removal of scraped marking:Wipe slightly and with even force the scraped marking till to remove it.

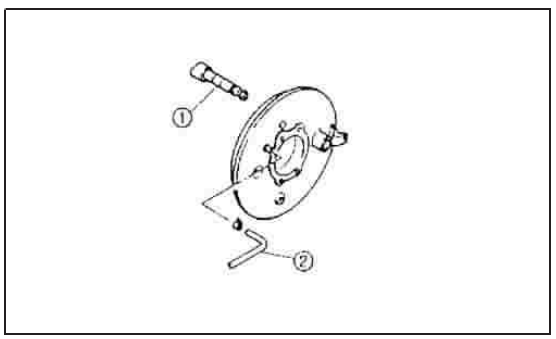
②Gear groove of rear brake hub If worn or damaged,replace it.



9、Inspecliml

①If there is some crakes.bend or damage. on brake cover,replace it.

②If the dust– roof seal is worn or damaged, replace it.

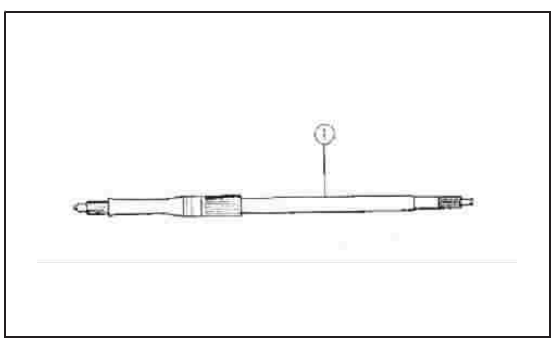


10、Inspection

①If there is worn,scraped marking or damage on the cam shaft of rear brake ,replace it.

② If the air pipe of rear brake is clogged, remove this pipe and clean the dirt, if damaged, replace it.

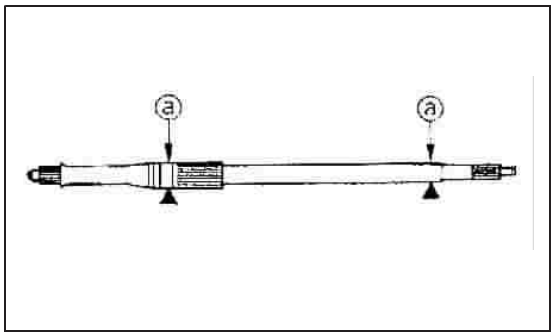
11、clean the air hole on the rear brake cover with compressed air.



12、Inspection of rear wheel axle①

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

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



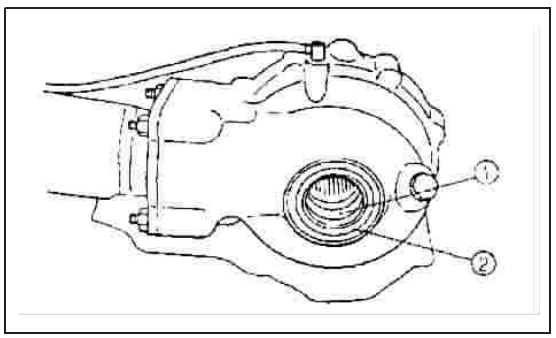
13、Measurement

The radial rullout of the pisition@ on therear wheel axle,if out of specification,replace it.

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

Warning:

If lhe axle is beJit,do not straighten it forcefully



14、Inspetion::

①Bearing on the rear wheel axle

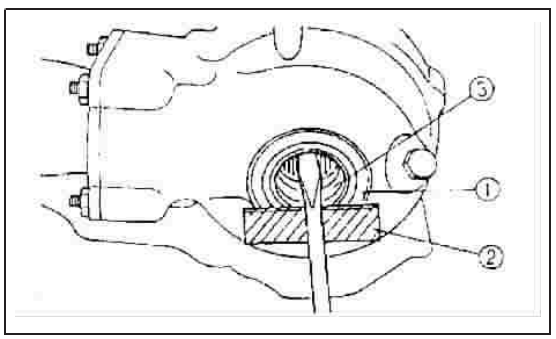
Rotate the rear wheel axle, if the axle shakes left and right in the bearing on runout axially.It indieates that the bearing is heavily worn,needing to be replaced.

②if the oil seal is worn ordamaged replace it.

Replacement steps of bearitlg and oil seal:

a:Clean around the bearing of gear case end.

b:Remove the oil sedl ① with plain screwdriver.



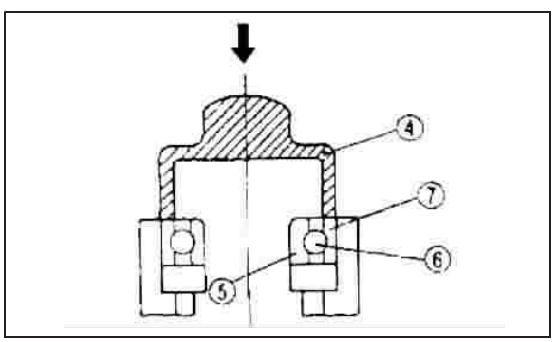
Caution:

In order to protect the oil seal out edge from damage during the removal process, place a wood block②under ther screwdriver.

Remove the bearing③under ther screwdriver.

Remove the bearing④ with corresponding tool.

The installment of new bearing and oil seal is in Reverse

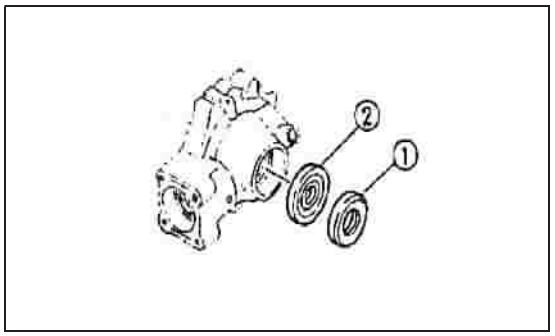


Caution:

Druing the installment. the pressing tool of bearing④ should be matched with the outer diameter of bearing outer race⑦ and that of 0il seal.

Warning:

Never beat the inner race⑤and bearing ball⑥. the pressing tool needs to touch with bearing outer race⑦.



(Ⅲ)Installment steps:

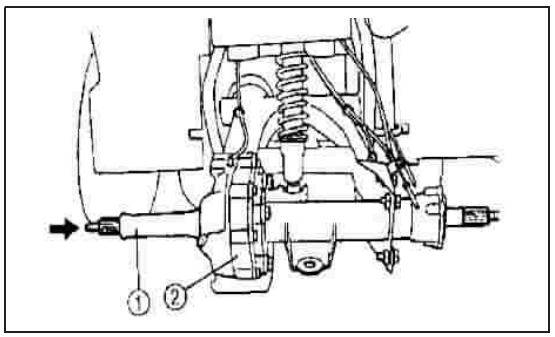
The reversal steps of "removal steps", that is installment steps. Pay attention to the following points when installing:

1、Lubrication part

①Oil seal lip of rear wheel axle.

②Bearing of rear wheel axle.

The corresponding spline tooth of rear wheel Axle The lubrication oil is l ithium base grease



2、Instalhnent

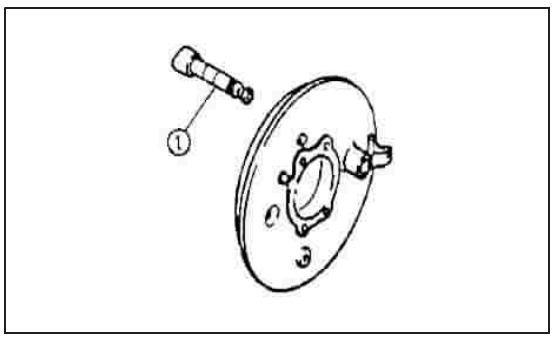
Instalhnent 0f rear wheel axle①

Caution:

Before installing the rear wheel axle, loosen allbolts on the driving gear case②; Hold the rear wheel axle with hand to inake it enter the gear groove of gear case.Apply On the left end of the axle slightly with soft hummer.

Warning

In order to protect the axle thread and spline tooth of axle, never beat the end face of axle directly with hummer.



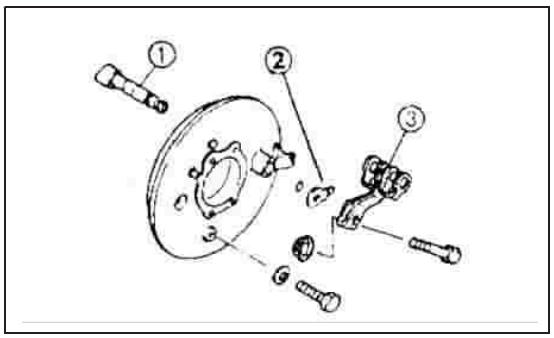
3、Installment

Plain pad of rear brake cover

O-ring 30x1.8G

4、Labrication of rear brake caln shaft.

The lubrication oil is lithium base grease

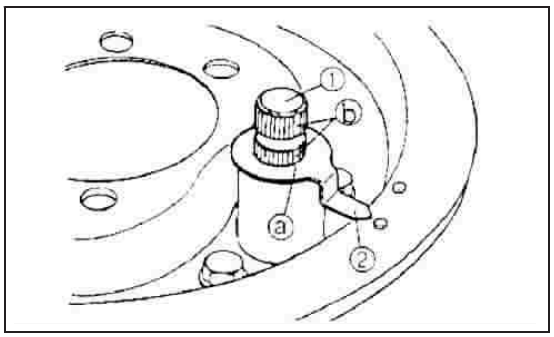


5、Installment

①cam shaft of rear brake①

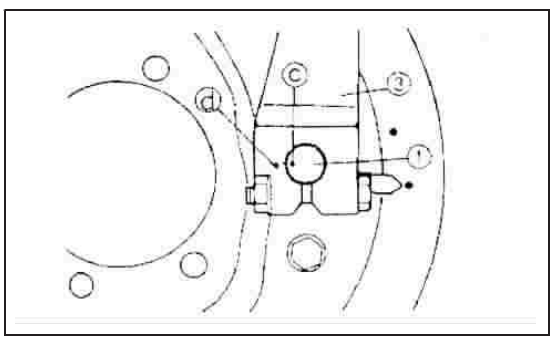
②Indicating plate of brake②

③Rear brake arm assy③



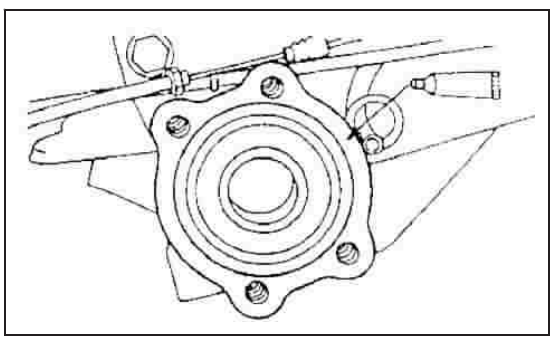
Caution:

When installing the brake indicating plate ② to rear brake can shaft①, be sure to align the projective part ⓐ of brake indicating plate ② with the concave part ⑥ of rear brake caim shaft①



At the same time, align the punch mark ⓒ. on the rear brake cam shaft with that d of the rear brake arm assy③.

The torque of rear arm assy: 9Nm

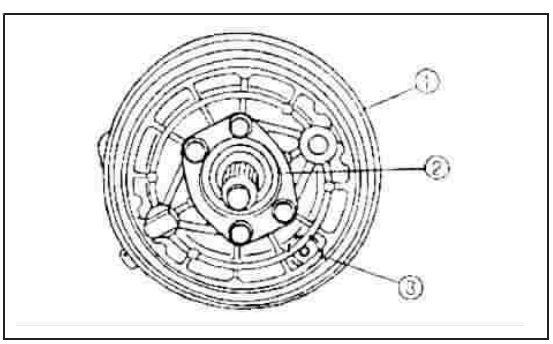


6、Application

Sealing agent: Be suitable for the rear brake cover assy and rear wheel axle bushing surface.

Attached: Sealing agent:

P/N: ACC–QUICK–GS–KT



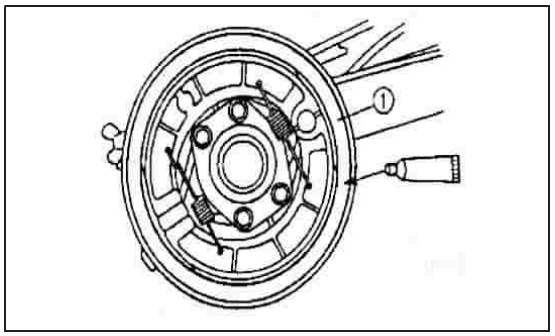
7、Installment

①Rear brake cover assy①

②Bearing block of rear brake②

Caution:

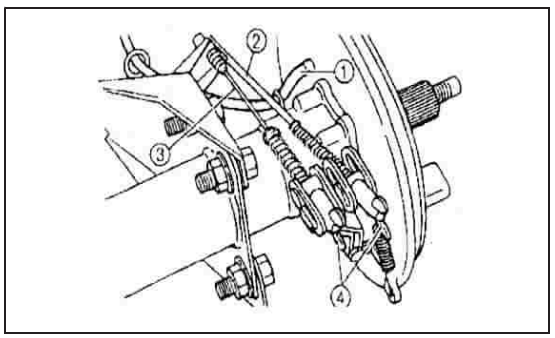
Install the rear brake cover with bolt③, the torque of bolt installment is: 28Nm



8、Installment
Brake shoe assy

9、Lubrication
Dust–proof seal
Lubrication oil for dust–proof seal：
lithium base grease.

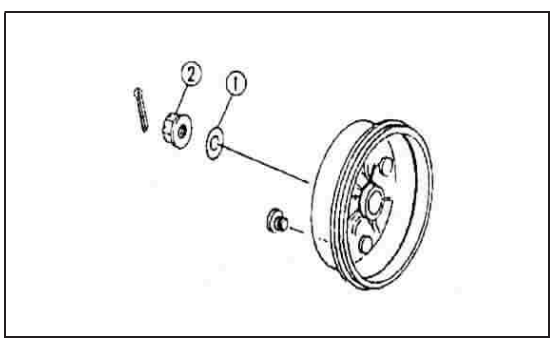
Warning:
The lubrication oil is not allowed to be used for brake shoe assy, the lithium base grease is used for rear brake hub spline groove.



Warning:
The lubriation oil is not allowed to be used for spline On the right end of rear wheel axle, otherwise,druing the work. the surplus lubrication oil will leave on the brake shoe. affecting the brake performance.

10、Installment：
Rear brake hub

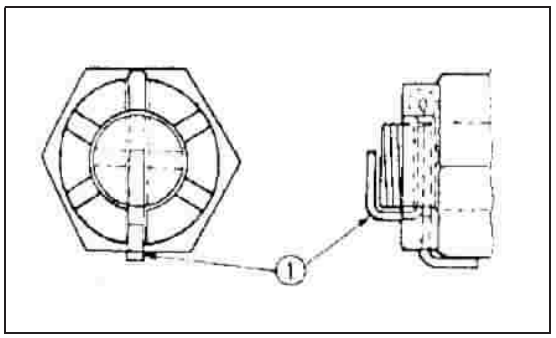
11、Installnlenl (The Ser No.as shown on the drawing)
①Air pipe○1 of rear brake
②Rear brake tension rod assy
③Rear brake cable



12、Instalhnent
Spring
Pin
Adjusting nuts④of rear brake tension rod assy and rear brake cable.

13、Installment
①Washer 16
②Nut M16

14、Tighten up nut M16
Attached：②Torque of nut M16：150Nm



15、Installment

Split pin4x30①

After fastening the forque,the nut Oil the rear wheel axle is not allowed to be loose. If the nut concave groove of is not align with the splint hole On the screw rod,make it by tightening up the nut

Warning:

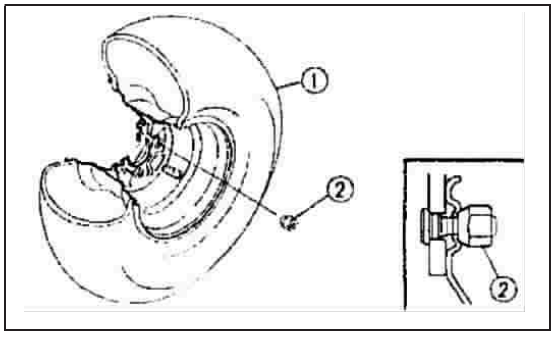
Always use the new split pin

16、Installment

Righ rear wheel①

Connecting nut of front and rear wheels②

Attached: the torque of the connecting nut of front and rear wheels is 55Nm



Caution:

The rotating direction of the wheel is the arrow marking direction on the tire. For this. refer to "Front wheel and Front Brake" section of this chapter

Warning:

When installing the core nut to the rear wheel. be sure to face its core edge to the wheel.

17、1nstallment

connecting plate of rear wheel①

Washer 16②

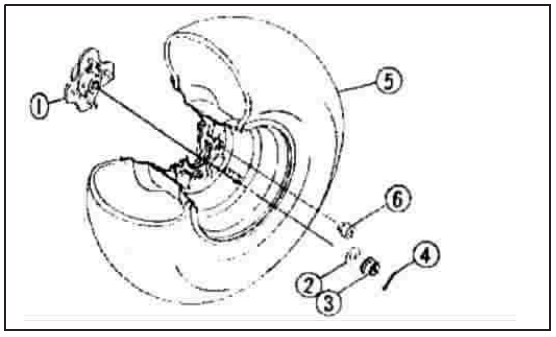
Rear wheel axle nut M16③

Split pin 4x30④

left rear wheel⑤

Connecting nut of front and rear wheels⑥

Refer to "Rear wheel" section of this chapter



18、Adjustment

Rear brake pedal clearance

Rear brake cable clearance

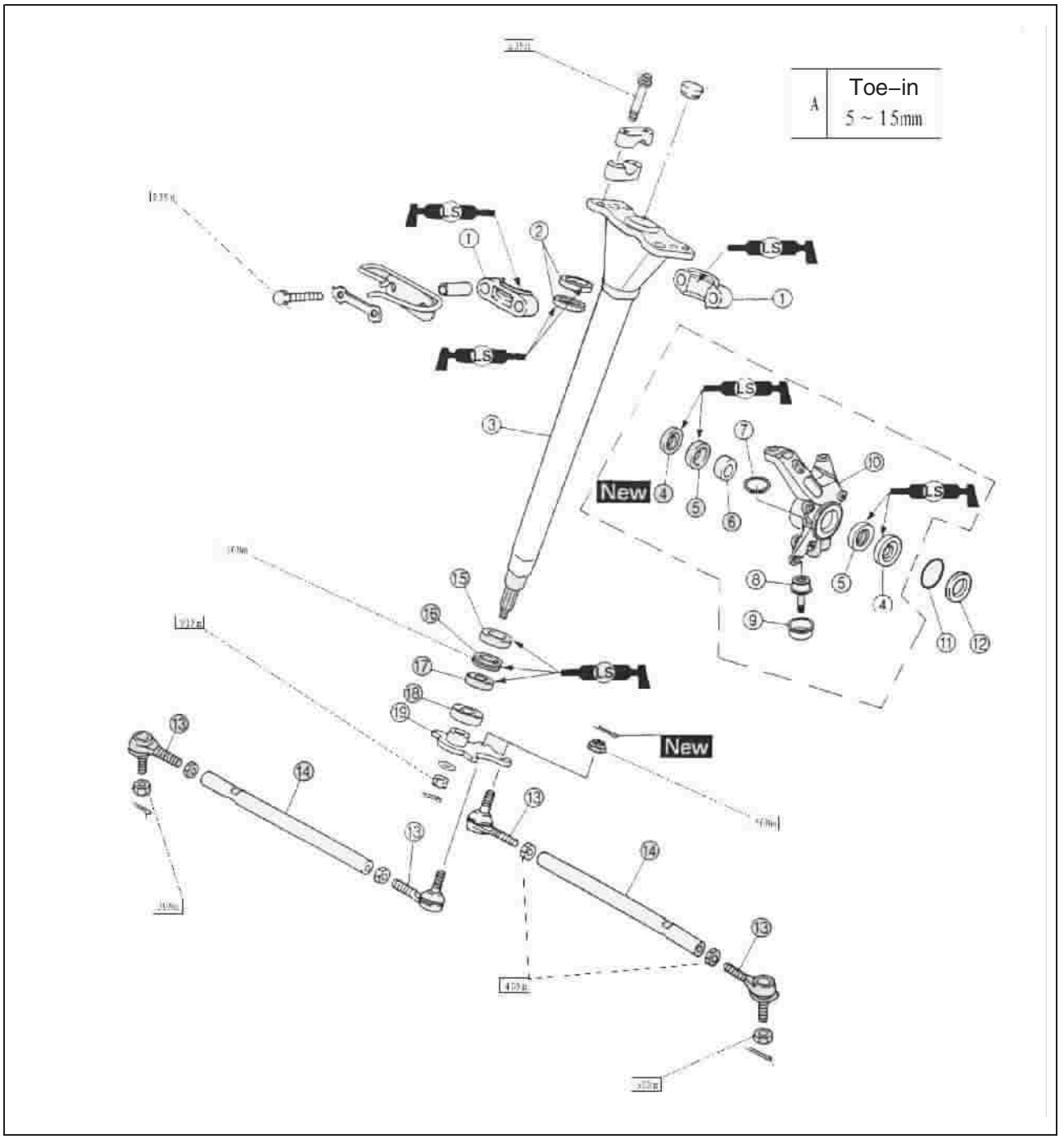
Refer to "Adjustment of left Lever and Rear Brake Pedal Free clearance" Section of chapter Two.

Attached Rear brake pedal clearance:

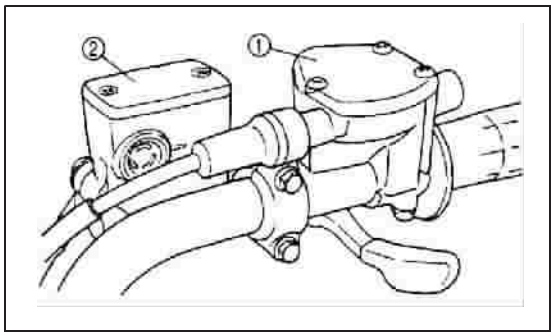
20–30mm

clearance of 1eft 1ever centre:5.0–8.0mm

Section 5 Steering Operation System



(1)Holder of steering vertical stem (2)Oil seal 1 (3)Vertical rod assy (4))Oil seal 2 (5)bearing (6)Washer (7)Cotter pin (8)Ball pin (9)Dust cover (10)Universal joint (11)O –ring (12)Washer (13)Ball pin (14)Steering tension rod (15)Oil seal 3 (16)Bearing race (17)bearing (18)Oil seal 4 (19)Steering limit plate assy



(Ⅰ)Removal steps

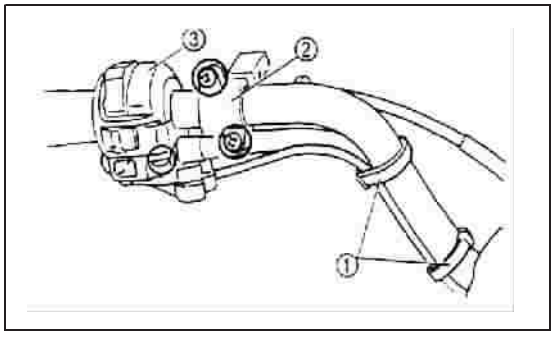
1.Remove:

·Front carrier

·Front bumper

.Front fender

Refer to "Cushion, FENDERS AND FUEL TANK" in CHAPTER Ⅱ.



2.Remove:

·Throttle lever assembly①

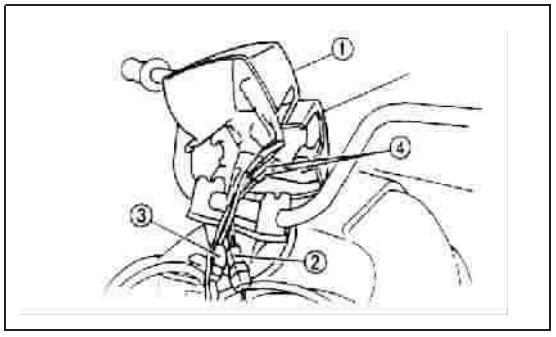
·Master cylinder assembly②

3.Remove:

·Bands①

·Rear brake lever holder②

·Handlebar switch③



4.Remove:

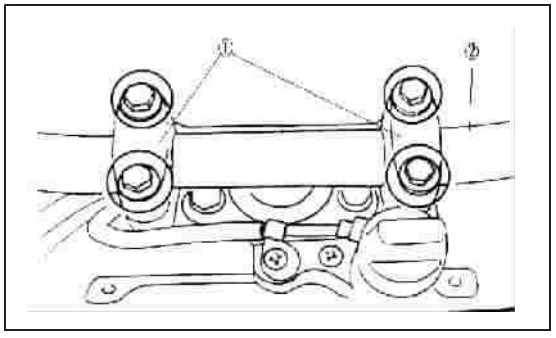
·Handlebar cover①

5.Disconnect:

·Main switch coupler②

·Indicator light coupler③

·Oil temperature warning light connectors④

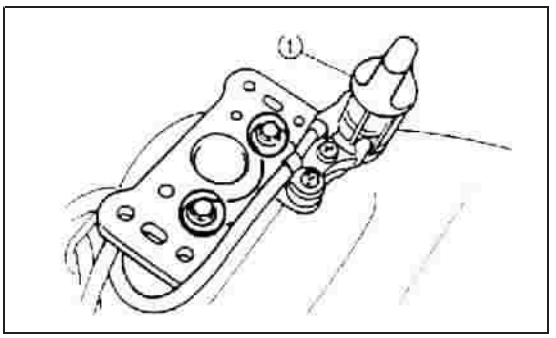


6.Remove:

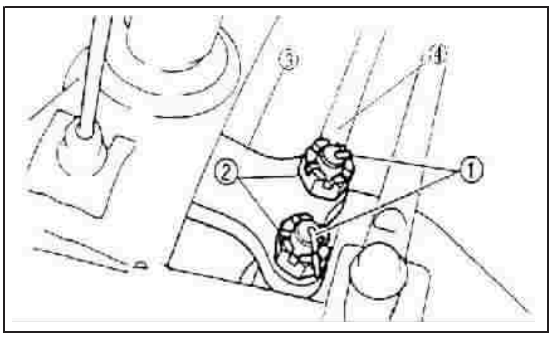
·Handlebar holder(upper)

·Handlebar holder(lower)

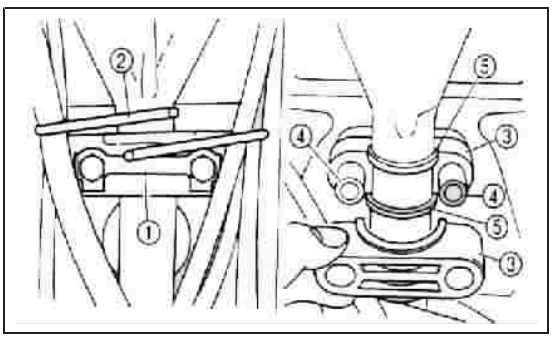
·Handlebar①



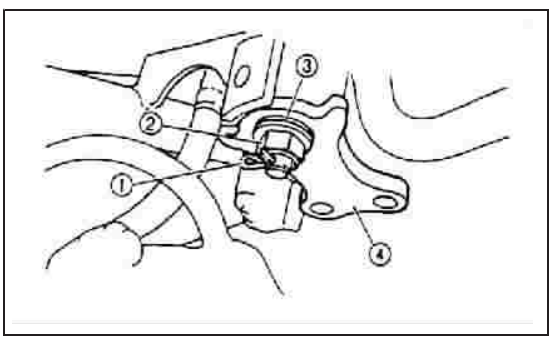
7.Remove:
.Reverse control knob①



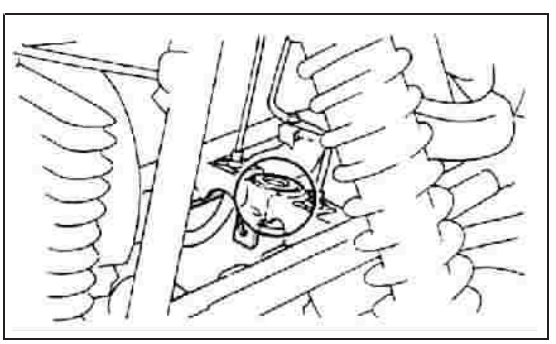
8.Remove:
·Cotter pins①
.Nuts(tie–rod end)②
.Tie–rod ends
·Steering shaft



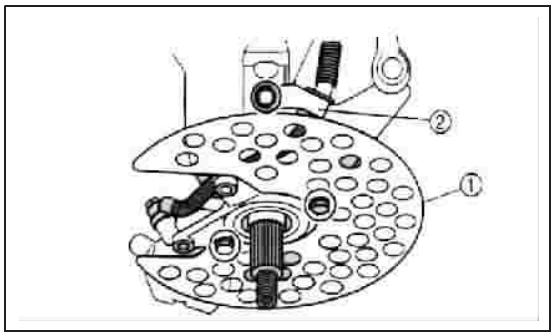
9.Straighten:
.Lock washer tabs
1 0.Remove:
·Lock washer①
·Cable holder②
.Steering shaft bushings③
·Collars④
.Oil seals⑤



11.Remove:
·Clip①
.Nut(steering shaft)②
·Plain washer③
·Pitman arm④

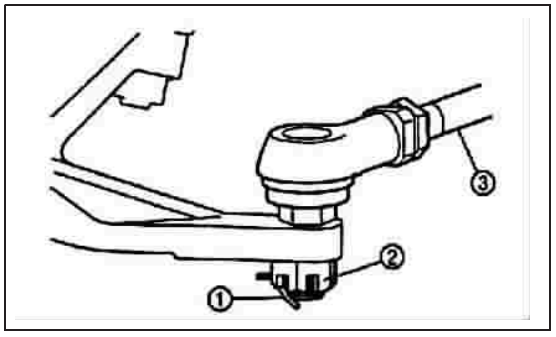


12.Remove:
.Oil seals
·Bearing retainer
Use a damper rod holder.
·Bearing:
Damper rod holder :
P/N.YM–01327,90890–01327



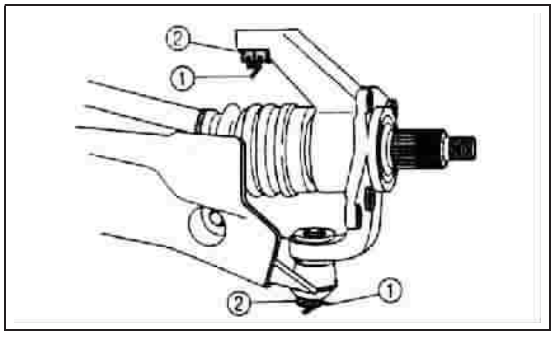
13.Remove：
·Front wheels
·Front wheel hubs
Refer to "FRONT AND REAR WHEELS"

14.Remove：
·Brake disc guard①
·Brake hose holder②



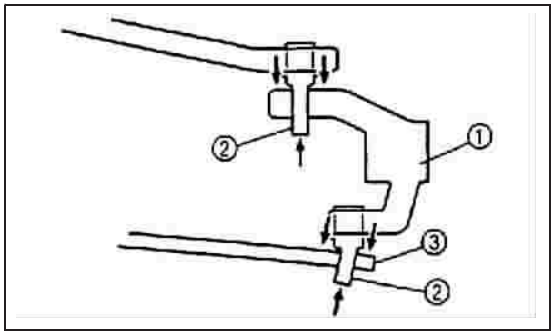
15.Remove：
·Cotter pin①
·Nuts(tie–rod end)②
·Tie–rod③

16.Remove：
·Cotter pins①
·Nuts(steering knuckle)②

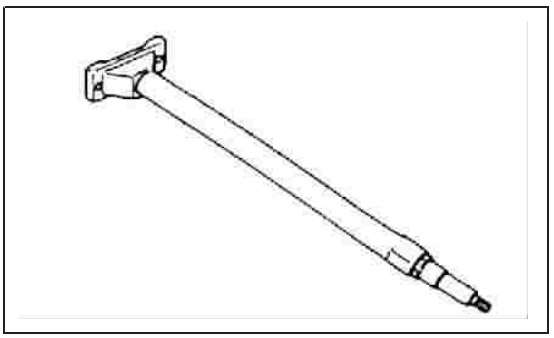


17.Remove：
·Steering knuckle①

NOTE：
Use a general puller to separate the ball joint ②and steering knuckle ① Or lower arm ③.



·Washer
·O–ring



(Ⅱ)INSPECTION STEPS

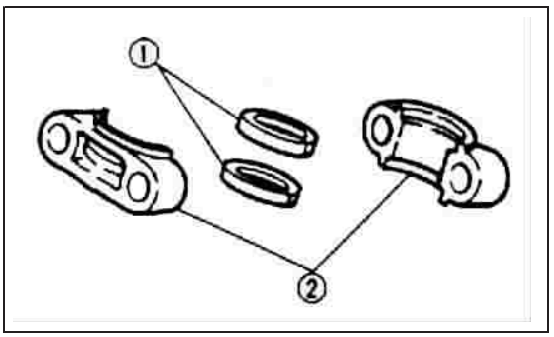
1.Inspect:

·Steering shaft

Bends→Replace.

Warning:

Do not attempt to straighten a bent shaft this may dangerously weaken the shaft.

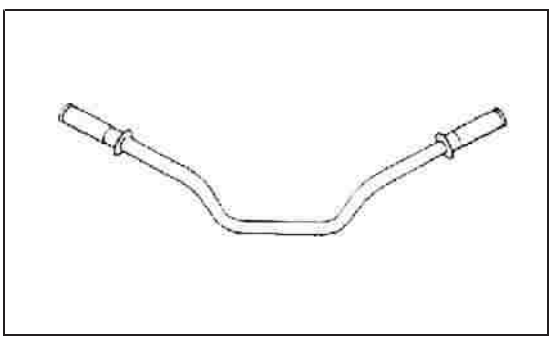


2.Inspect:

·Oil seals①

.Steering shaft bushings②

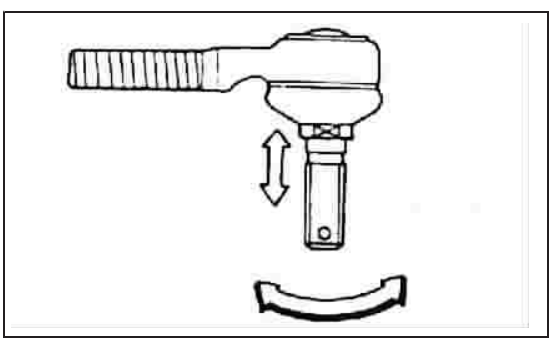
Wear/damage→Replace.



3.Inspect:

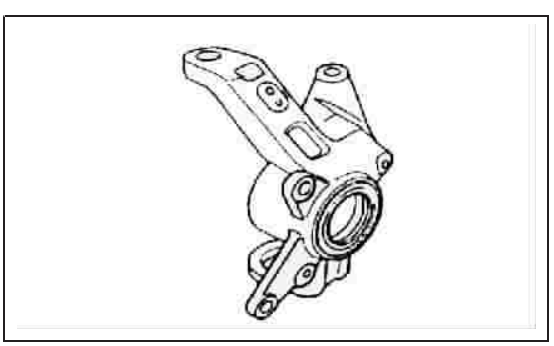
.Handlebar

Bends/cracks/damage→eplace.



Warning:

Do not attempt to straighten a bent handlebar as this may dangerously weaken the handlebar.



4.Check:

.Tie-rod free play and movement

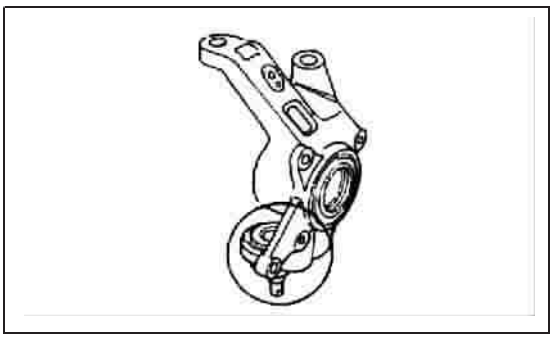
Free play→Replace the tie-rod end.

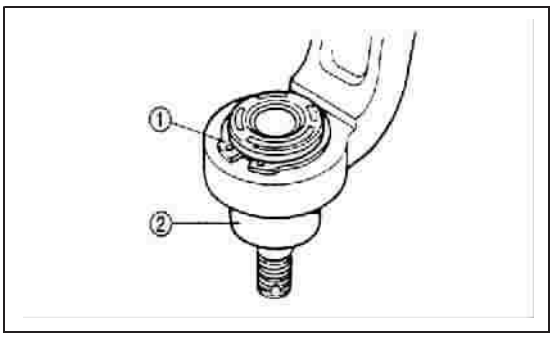
Turns roughly→Replace the tie-rod end.

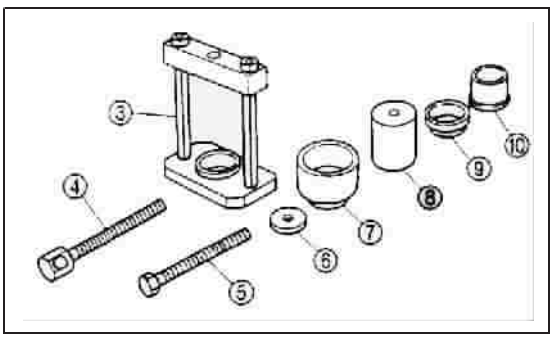
5.Inspect:

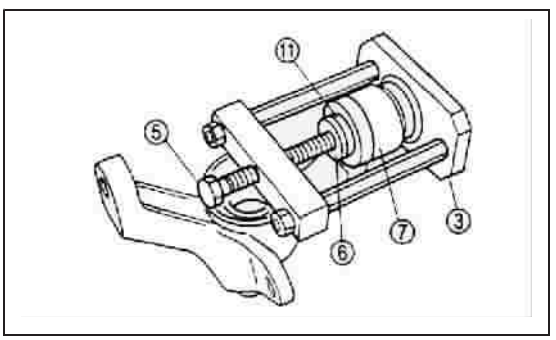
·Steering knuckle

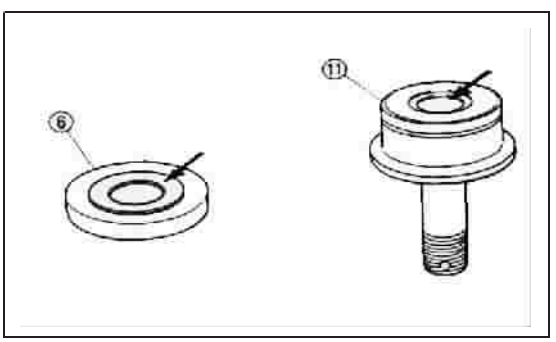
Damage/pitting→Replace.











6.Inspect：

·Ball joint

Damage/pitting→Replace the ball joint.

Free play→Replace the ball joint.

Turns roughly→Replace the ball joint

Ball joint replacement steps：

·Clean the outside of the steering knuckle.

·Remove the steering knuckle oil seal.

·Remove the circlip①and rubber boot②.

Use the ball ioint remover and installer Set.

Ball joint remover/installer set： P/N.YM ─ 01474/90890-01474 Ball joint remover/installerattachment set： P/N.YM-01477		
③	Body	YM-01474 90890-01474
④	Long bolt	YM-01474 90890-01474
⑤	Short bolt	YM-01477
⑥	Remover washer	YM-01477
⑦	Remover spacer	YM-01477
⑧	installer tachment	YM-01477
⑨	installer spacer	YM-01477
⑩	Installer guide	YM-01477

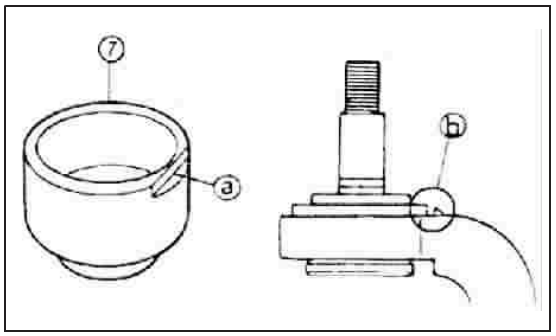
·Install the body ③ ,short bolt ⑤ , remover washer⑥and remover spacer⑦onto ball joint.

NOTE：

·Remover washer ⑥ must be aligned with the projection on the head of the ball joint. Surface ⓐ of the remover spacer ⑦ must be aligned with surface ⓑ of the steering knuckle.

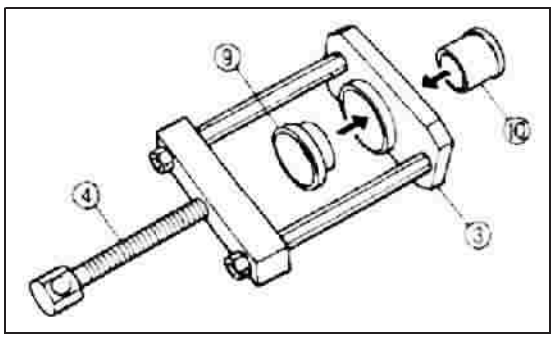
·Hold the body③in place while turning in the short bolt⑤to remove the ball joint ⑪ from the steering knuckle.

·Remove the ball joint remover/installer.



·Install the long bolt④, installer spacer ⑨ and installer guide⑩onto the body③.

·Attach the assembled ball joint remover/ installer, new ball joint ⑫ and installer attachment ⑧ to the steering knuckle ⑬ .



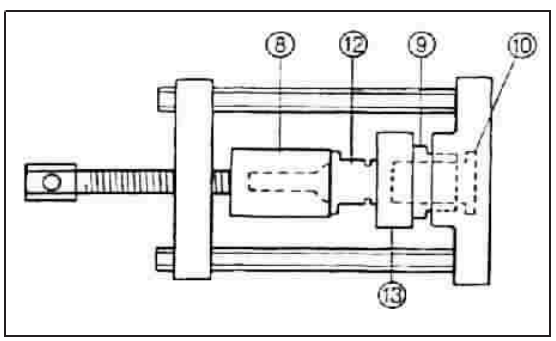
NOTE:

DO not tap or damage the top of the ball joint.

·Hold the body③in place while turning in the long bolt④to install the new ball joint ⑫ into the steering knuckle ⑬ .

·Remove the ball joint remover/installer. Apply lithium –soap base grease to the new ball joint ⑫ .

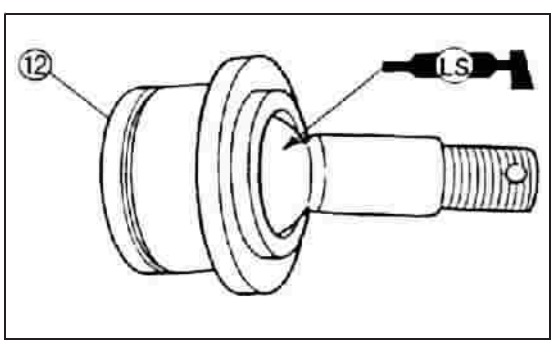
·InstaIJ a new rubber boot and new circlip.



NOTE:

Always use a new ball joint set.

·Install a steering knuckle oil seal.



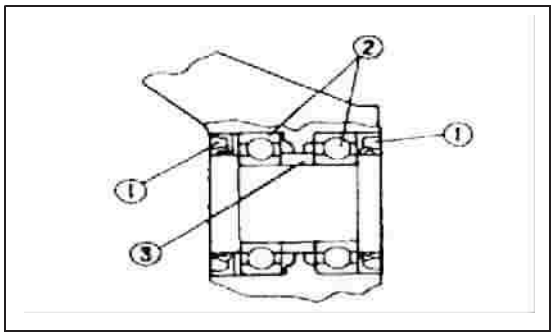
7.Inspect:

·Front wheel bearings

Bearings allow play in the wheel hubs or the wheel turns roughly→Replace.

·Oil seals

Damage→Replace.



Front wheel bearing replacement steps:
·Clean the outside of the steering knuckle.
·Remove the oil seals①.
·Drive out the bearings②.

Warning:
Eye protection is recommended when using striking tools.

·Remove the spacer③.
·Apply lithium base grease to the bearings and Oil seals.
·Install the spacer to the steering knuckle.
·Install the new bearings.

NOTE:
Install the outside bearing first.

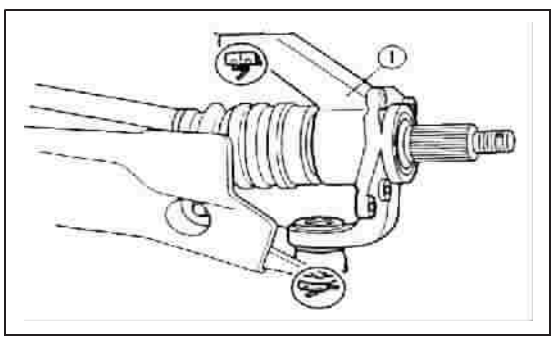
Warning:
DO not strike the center race or balls of the bearing.Contact should be made only with the outer race.

·Install a new oil seal.

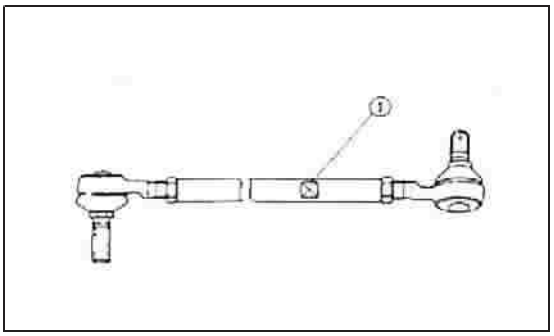
NOTE:
When installing the oil seals the seal side of the Oil seal faces out.

(Ⅲ)INSTALLATION

Reverse the"REMOVAL"procedure.
Note the following points.
1.Lubricate:
·Bearing
·Oil seal
·Steering shaft bushing
Lithium–soap base grease



2.Install:
·Washer
·O–ring
·Steering knuckle①
Nut (steering knuckle–front arm):
25 Nm(2.5 m·kg,18 ft·lb)

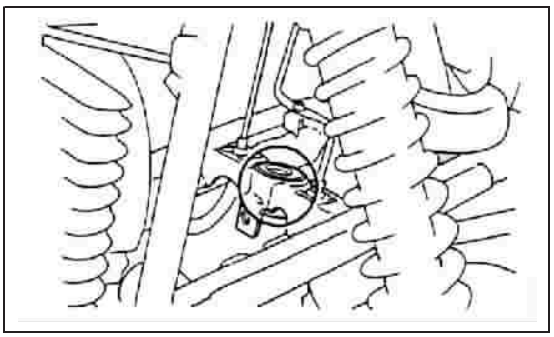


Warning:
Always use a new cotter pin.

3.Install:
·Tie–rods (1eft and right)

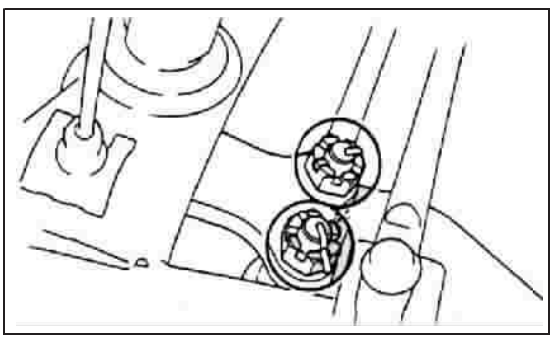
NOTE:
The tie–rod which must be installed on the out side has grooves①.

Nut (tie–rod end):
30Nm (3.0m·kg,22ft·lb)



Warning:
Always use a new cotter pin.

4.Install:
·Front wheel hubs
·Front wheels
Refer to"FRONT AND REAR WHEELS"
5.Install:
·Bearing
·Bearing retainer
Use the damper rod holder.
·Oil seal
Damper rod holder: P/N.YM–01327, 90890–01327

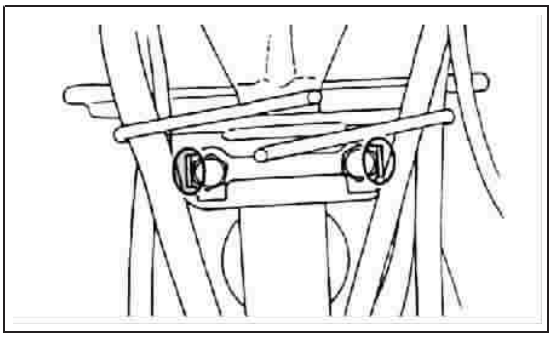


Bearing retainer:: 40N·m

6.Install:
·Steering shaft
·Pitman arm

Nut(pitman arm):: 91N·m
Nut(tie–rod end): 30N·m

Warning:
Make sure the brake hoses and pipes are properly routed, and are not damaged or twisted.

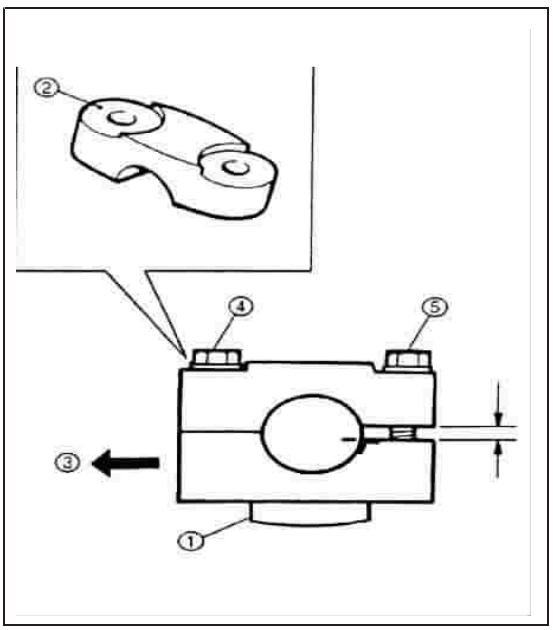


7.Install:
·Steering shaft bushings
·Cable guide

Bolt(steering shaft bushing):23N·m

Warning:
Always use a new lock washer.

8.Bend the lock washer tab along a flat side of the bolt.

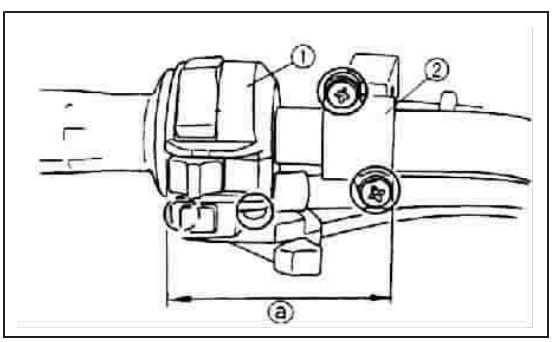


NOTE:
Pass the cables and hoses through thecable guide.

9.InstaLL:
·Handlebar
·Handlebar holders(upper and lower)

NOTE:
·Insert the projection①of the handlebar holder (lower)into the steering shaft hole.
·The upper handlebar holder should be installed with the punched mark②forward③.

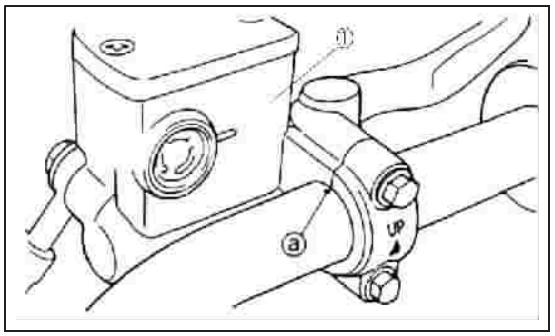
Warning:
First tighten the bolts④on the front side of the handlebar holder,and then tighten the bolts⑤on the rear side.



Bolt(handlebar holder): 23N·m

10.Install
·Handlebar switch①
·Lever holder②

NOTE:
Install the lever holder as shown.
ⓐ80 mm(3.1 in)



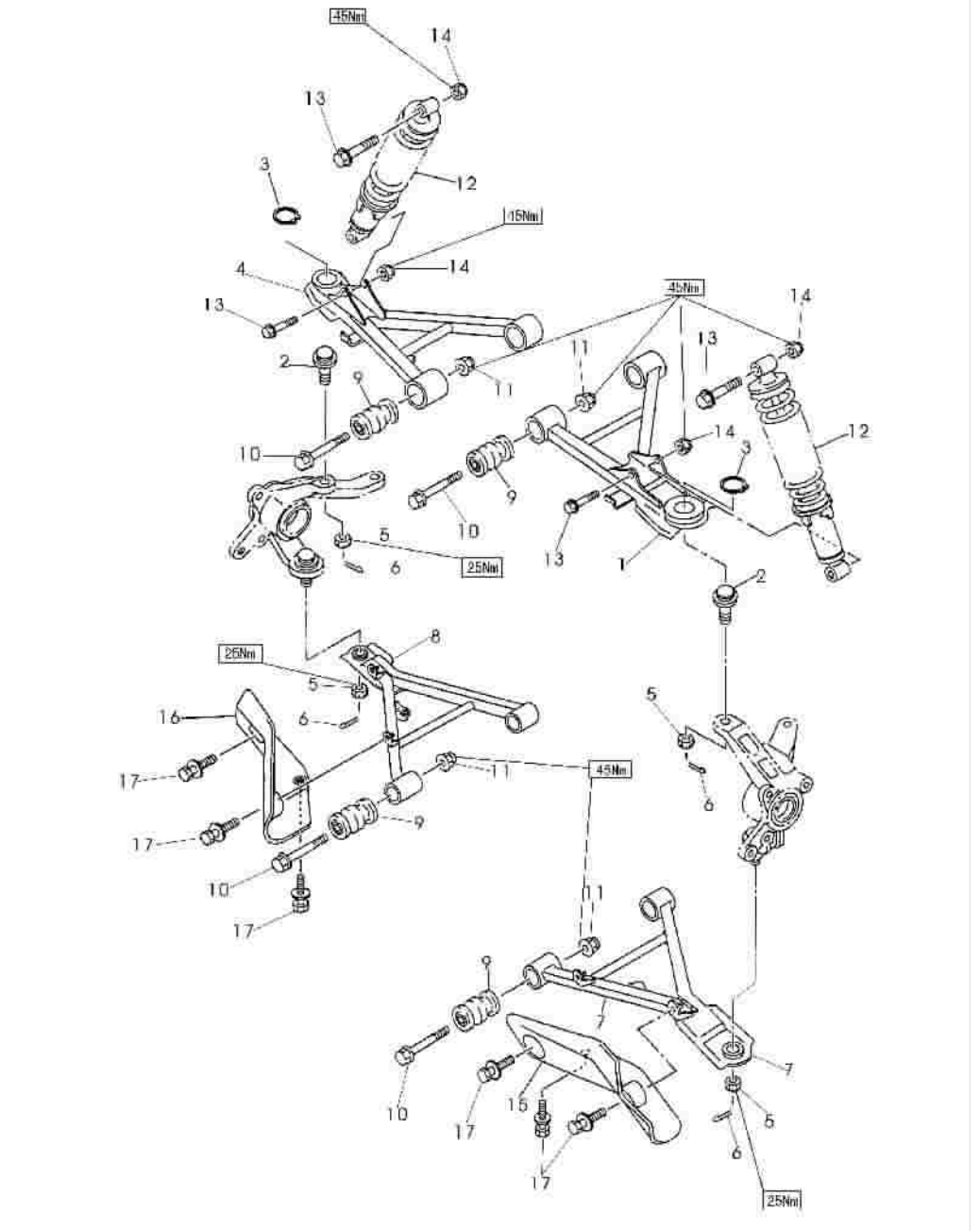
11.Install：
·Throttle lever assembly.
·Brake master cylinder assembly.

NOTE：
·Align the end of brake master cylinder holder with the punch mark ⓐ in the handlebar.
.The''UP''mark on the master cylinder bracket should face up.

12.Install：
·Front fender
·Front bumper
·Front carrier
·seat
Refer to "Cushion, FENDERS AND FUEL TANK" in CHAPTER Ⅱ.

13.Adjust：
·Toe–in
Refer to "TOE –IN ADJUSTMENT" in CHAPTER Ⅱ.

Section 6 Front shock absorber and Front wheel fork



1.Left uppers swaying arm welding 2.Ball pin assy 3.Circlip 4.Right uppers swaying arm welding 5.Slutted nut 6.Cotter pin 7. Left lower swaying arm welding 8. Right lower swaying arm welding 9.Bushing assy 10.Bolt M10×70 11.Nut M10 12.Front shock aberber 13. Bolt M10×50 14. Nut M10 15.Protecting board of front swaying arm(left) 16. Protecting board of front swaying arm (right) 17. Bolt CM6×20

(Ⅰ)Disassembly

1.Remove:

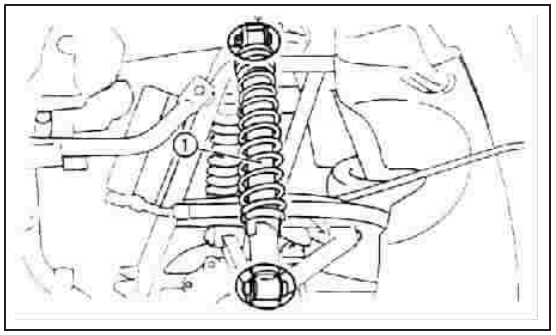
·Front wheels

·Front wheel hubs

Refer to"FRONT AND REAR WHEELS".

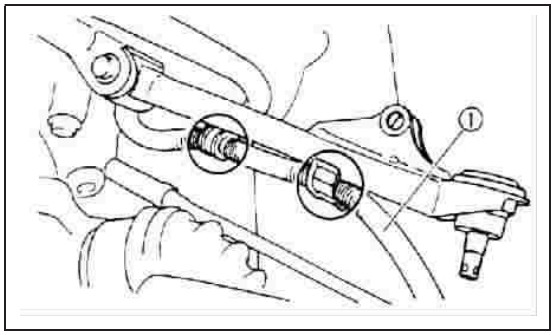
·Steering knuckle

Refer to"STEERING SYSTEM".



2.Remove:

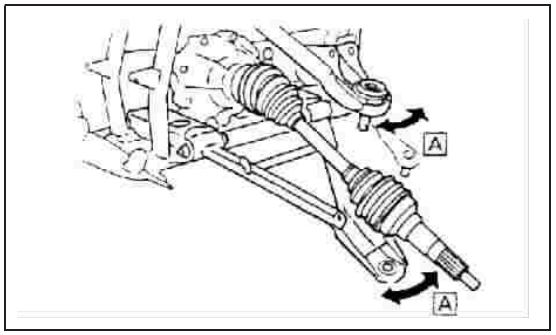
·Front shock absorber①



3.Unhook:

·Brake hose①

(frOm clamp)



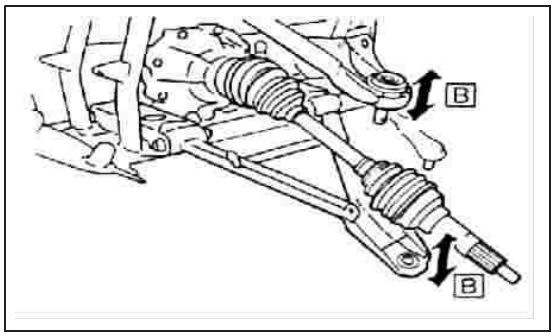
4.Check:

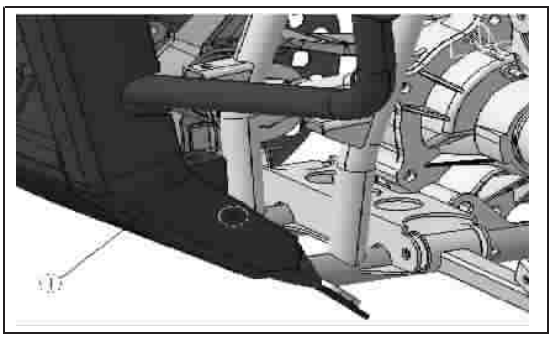
·Front arm free play

Checking steps:

·Check the front arm side play A by moving it from side to side. If side play iS noticeable,check the bushings.

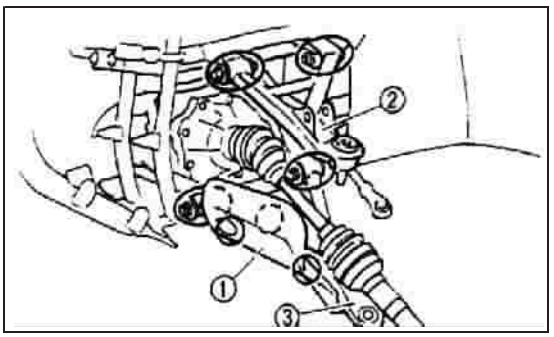
·Check the front arm vertical movement Bby moving it up and down. If the vertical movement is tight, binding or rough, check the bushings.





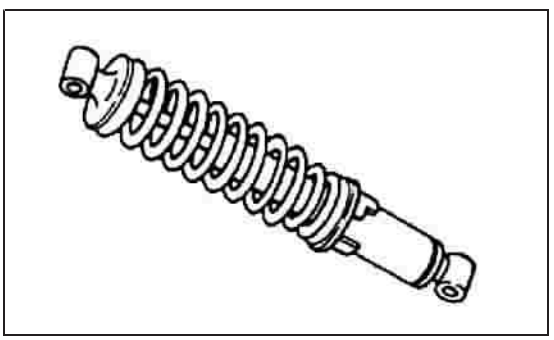
5.Remove：
·Differential gear case guard①

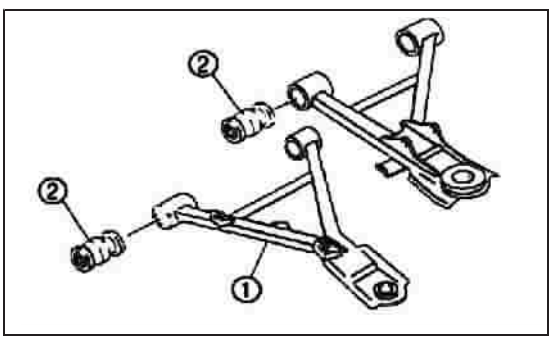
6.Remove：
·Protector①
·Front upper arm②
·Front lower arm③



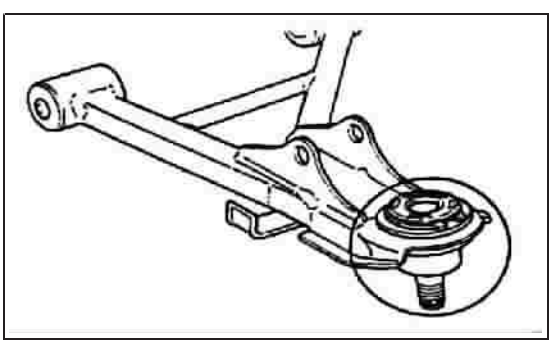
(Ⅱ)INSPECTION

1.Inspect：
·Shock absorber rod
Bends/damage→Replace the shock absorber assembly.
·Shock absorber assembly 0il Leaks → Replace the shock absorber assembly.
·Spring
Fatigue →Replace the shock absorber assembly. Move the spring up and down.

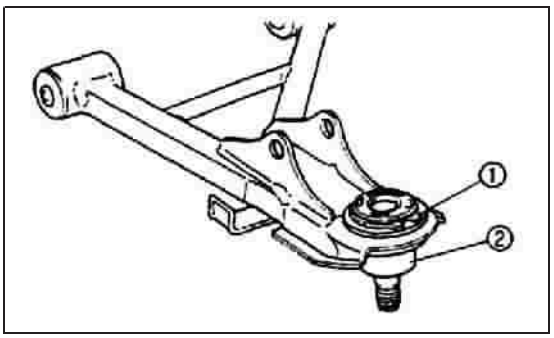


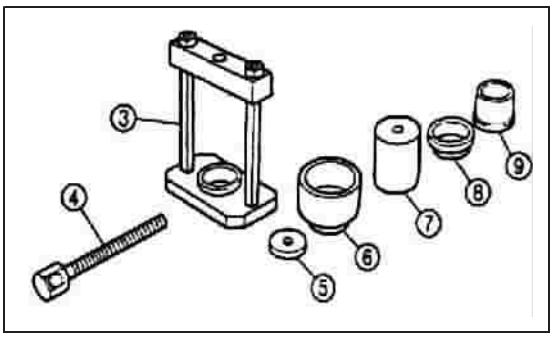


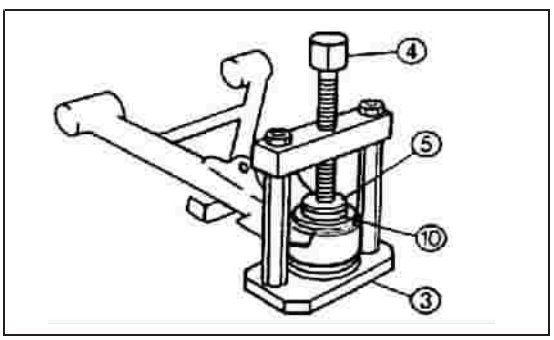
2.Inspect：
·Front arm①
Bends/damage→Replace.
·Bushings②
Wear/damage→Replace.

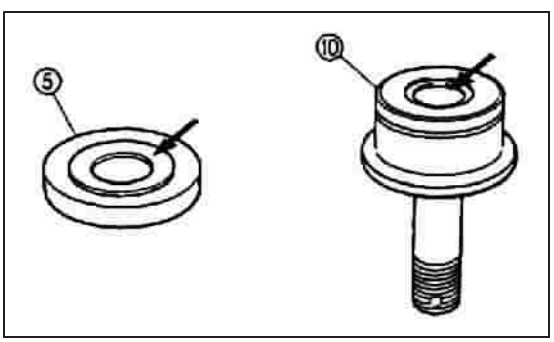


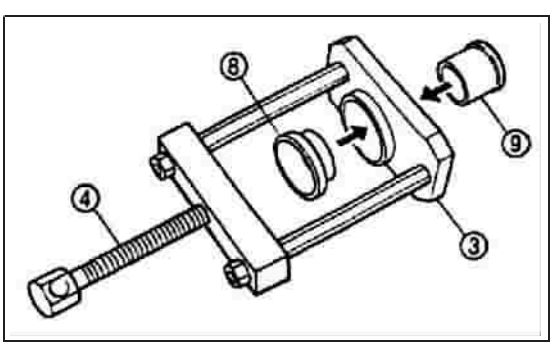
3.Inspect：
·Ball joint
Damage/pitting→Replace the ball joint.
Free play→Replace the ball joint.
Turns roughly→Replace the ball joint.











Ball joint replacement steps:

Ball joint replacement steps:

·Clean the outside of the front lower arm.

·Remove the circlip①and rubber boot②.

Use the ball Joint remover and installer set.

Ball joint remover/installer set: P/N.YM — 01474/90890-01474 Ball joint remover/installerattachment set: P/N.YM-01477		
③	Body	YM-01474 90890-01474
④	Long bolt	YM-01474 90890-01474
⑤	Short bolt	YM-01477
⑥	Remover washer	YM-01477
⑦	Remover spacer	YM-01477
⑧	installer tachment	YM-01477
⑨	installer spacer	YM-01477
⑩	Installer guide	YM-01477

·Install the body③,long bolt④,remover washer⑤and remover spacer⑥ onto ball joint.

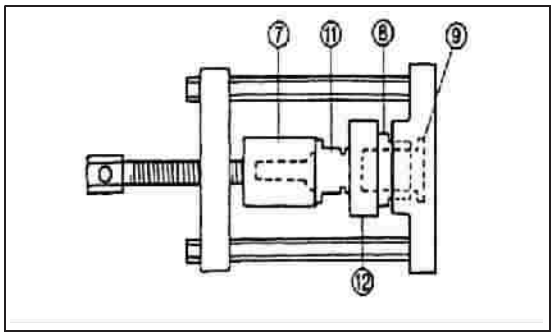
NOTE:

Remover washer ⑤ must be aligned with the projection on the head of the ball joint.

·Hold the body③in place while turning in the long bolt④to remove the ball joint⑩ from the front lower arm.

·Remove the ball joint remover/installer.

·Install the long bolt④,installer spacer⑧and installer guide⑨onto the body③.



·Attach the assembled ball joint remover/installer, new ball joint ⑪ and installer attachment⑦to the front lower arm ⑫ .

NOTE:

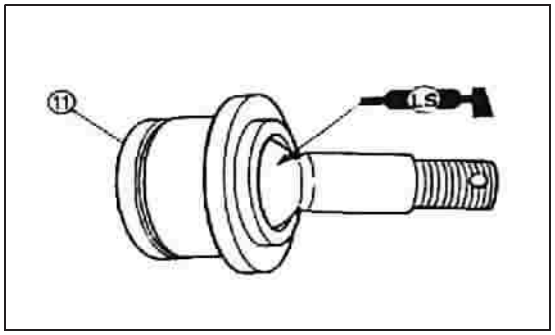
DO not tap or damage the top of the ball joint.

·Hold the body③in place while turning in the long bolt④to install the new ball joint ⑪ into the front lower arm ⑫ .

·Remove the ball joint remover/installer.

·Apply lithium–soap base grease to the new ball joint ⑪ .

·Install a new rubber boot and new circlip.



NOTE:

A1ways use a new ball joint set.

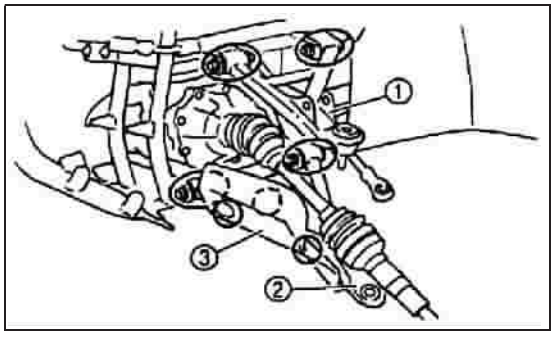
(Ⅲ)INSTALLATI0N

Reverse the "REMOVAL" procedure.

Note the following points.

1.Lubricate:

·Pivot bolts(front arm)



2.Install:

·Front upper arm①

·Front lower arm②

·Bolts

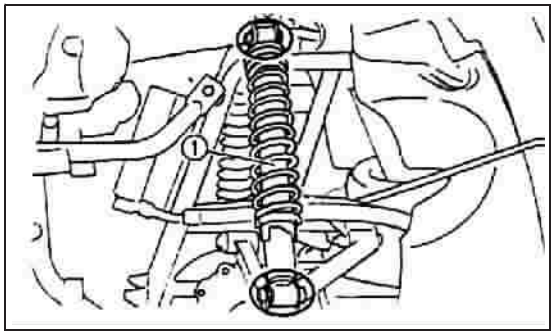
·Nuts

·Protector③

NOTE:

·Be sure to position the bolts(upper and lower) so that the bolt head faces outward.

·Temporarily tighten the nuts(front arm).



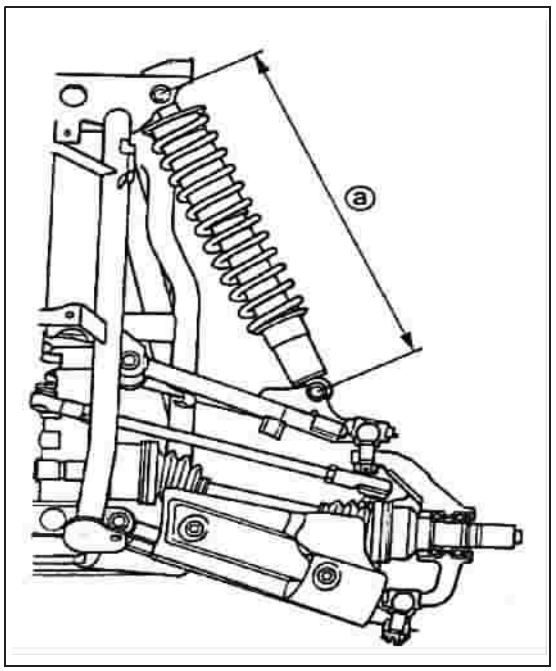
3.1nstall:

·Front shock absorber①

4.Install:

·Steering knuckle

Refer to "STEERING SYSTEM"



5.Tighten:
·Nuts (front arm)

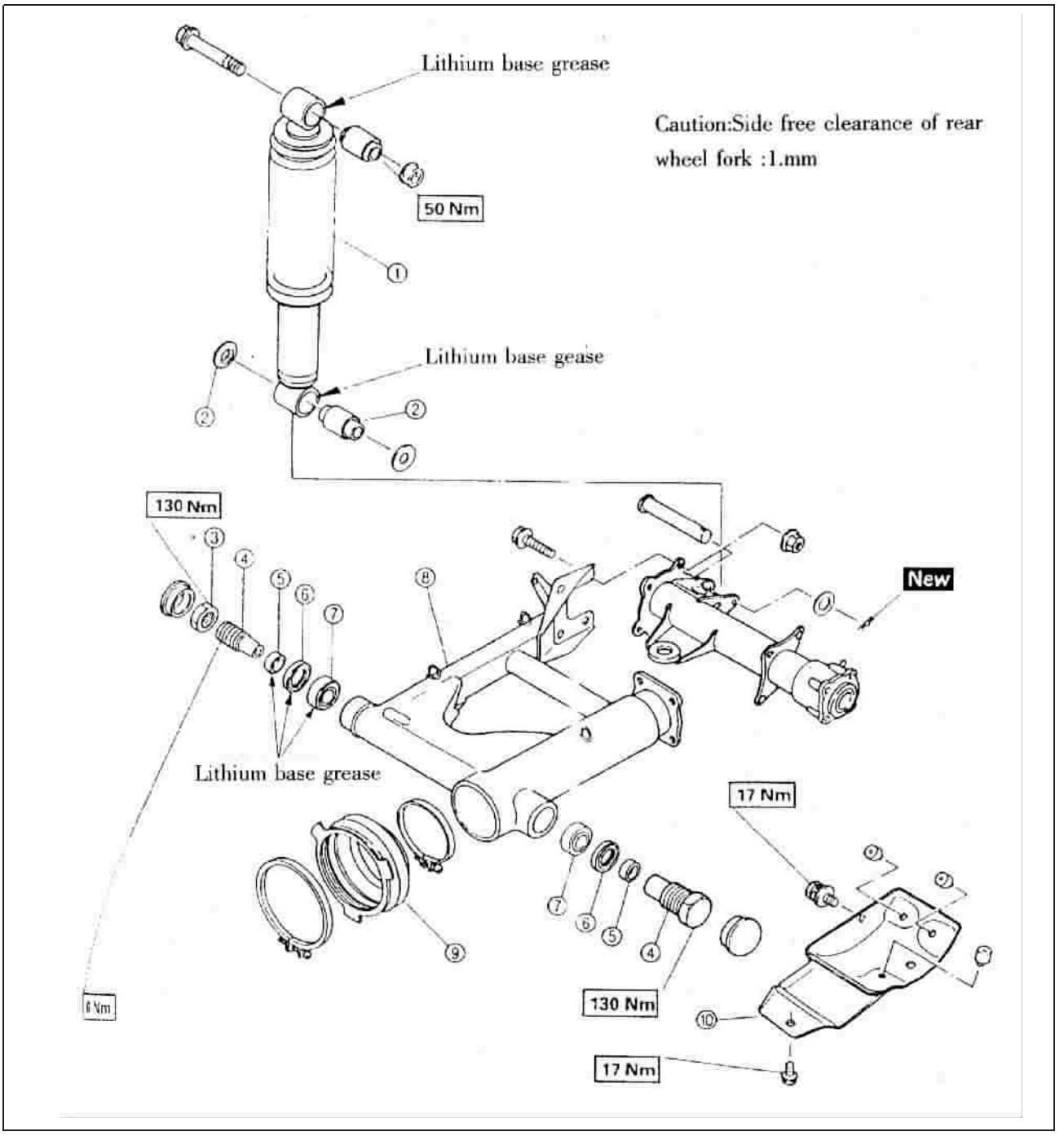
NOTE:
Before tightening the nuts, adjust the length ⓐ to 340 mm(13.4 in).

Nut(front arm):45N·m (4.5m·kg,32 ft.lb)

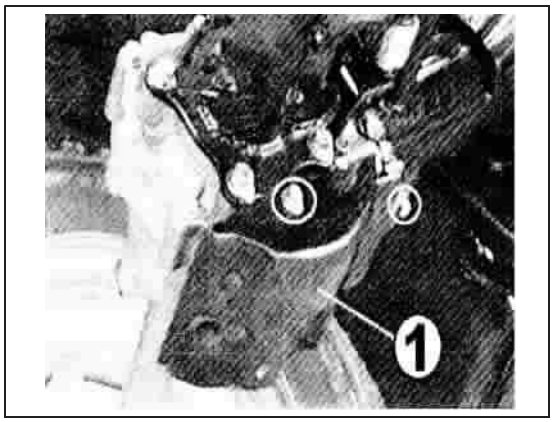
6.Install:
·Front wheel hubs
·Front wheels
Refer to "FRONT AND REAR WHEELS".

7.Adjust:
·Toe-in
Refer to "TOE -IN ADJUSTMENT" in CHAPTER Ⅱ.

Section 7 Rear shock absorber and Rear wheel fork



①Rear shock absorber ②Rubber washer assy of rear whock absorber ③Rear arm nut M22 ④Rear arm joint bolt ⑤axle bushing⑥oil sealing ⑦bearing 30203 ⑧Rear wheel frok assy ⑨Rubber tube ⑩Lower cap of gear cas

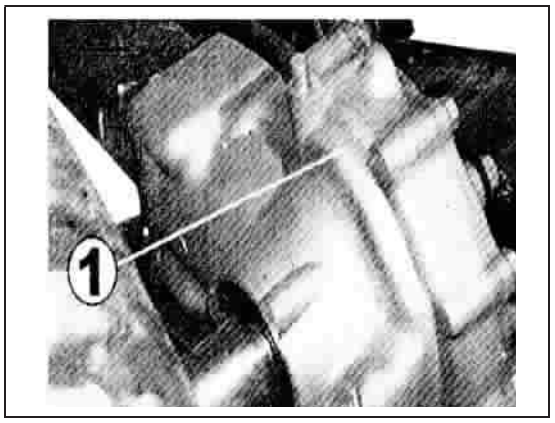


(I)Disassembling steps

1、Take off left rear wheel,rear wheel joint plate right rear wheel,rear brake hub,rear brake and rear wheel axle.

Refer to"Disassembly of rear wheel/rear brake and rear wheel axle"section in this chapter.

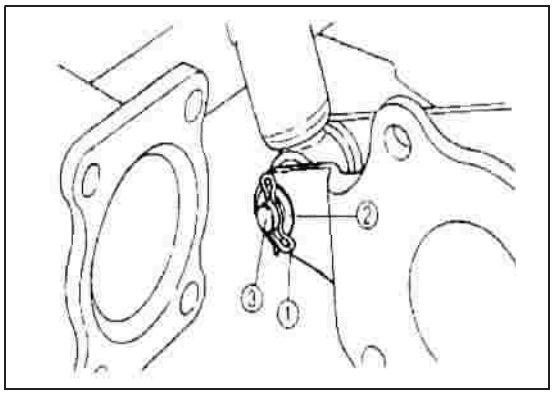
2、Take off lower cap ① of gear case



3、Take off the rear driving gear case sub-assembly①

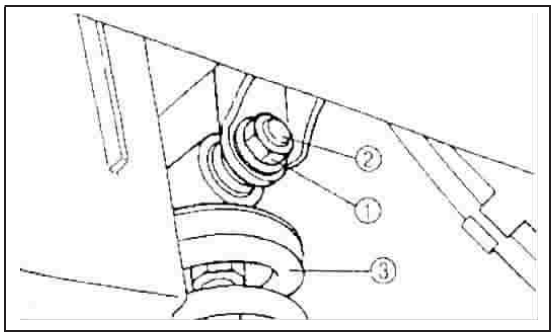
Refer to"Dischargment of rear driving gear case Sub-assembly and driving shaft´´section of this chapter.

4、Take off split pin 3.2×24①、washer 12②、and rear shock absorber pin shaft③



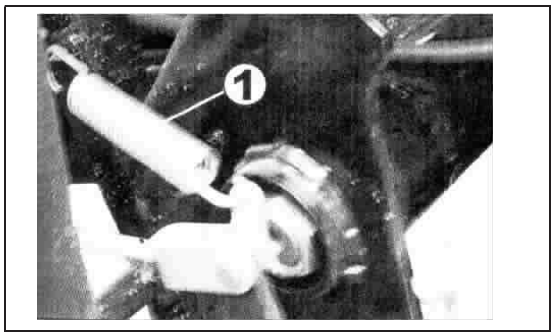
Caution:

When take off rear shock absorber pin shaft③ hold rear wheel fork in order to rear wheel fork don´t drop when taking off the rer shock absorber pin shaft③.



5、Take off nut① On the rear shock absorber, bolt②、rear shock absorber③

6、Take off rear brake tension spring①



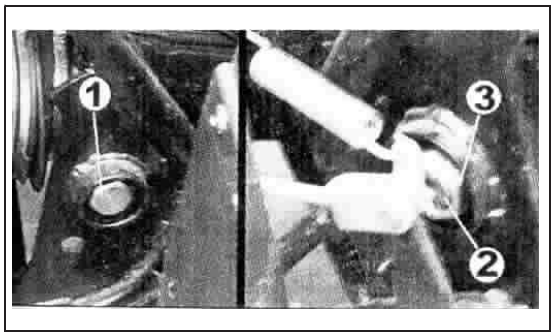
7、Take off dusty cap on rear arm axle (①, ② point)

8、Check the free clearance of real。Wheel fork cheeking steps.

a:Cheek the torque value of rear arm joint bolt①and the torque value of rear arm bolt② and nut ③of rear wheel fork right side.

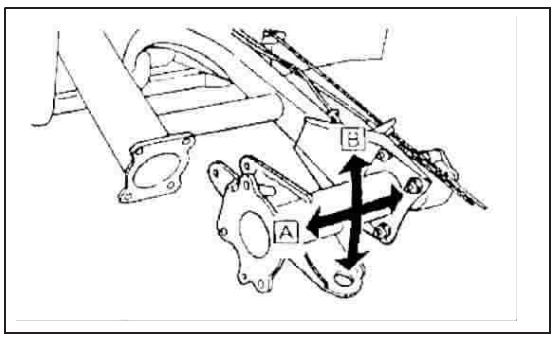
Attached:Torque of rear arm joint bolt ① and nut③ is 130N.m

Torque of rear arm joint nut② is 6Nm

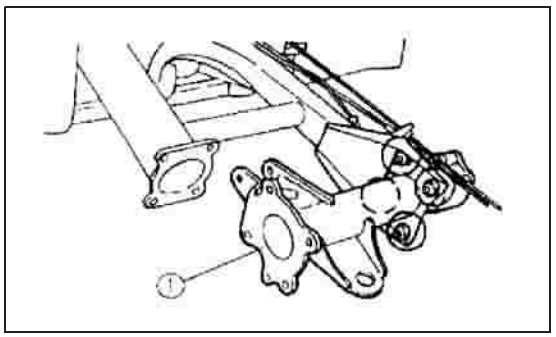


b:Move the rear wheel fork across to check the side clearalIce A If the clearance is big, check the relevant parts of bush bearing 30203 and frame.

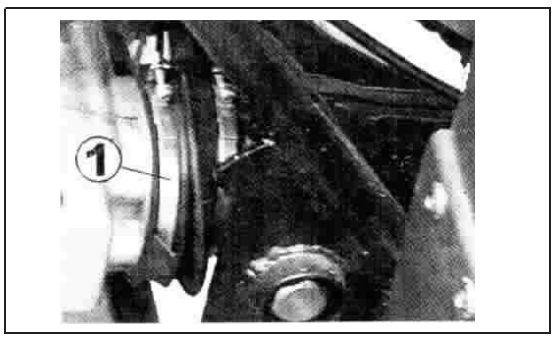
Attaehed:Free clearance value is less than 1.0mm



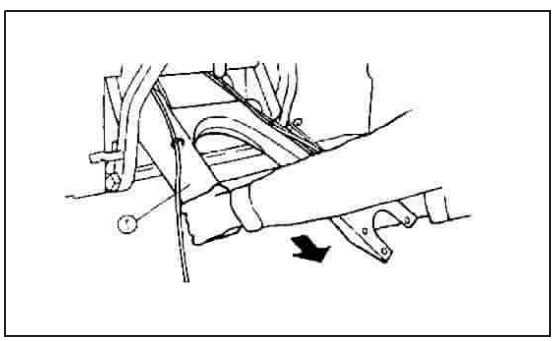
c:Move the rear wheel fork up and down to check the vertical clearance.If the clearauce is too tight limited or uneven, check the relevant parts of bush bearing 30203 and flame.



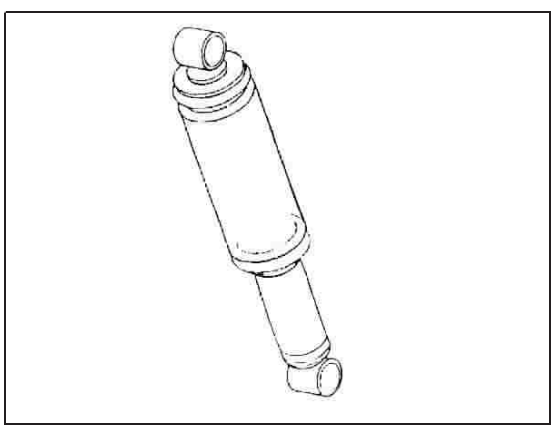
9、Take off rear bush①



10、Take off driving axle clamp assy(front)①, rear arm nut(right side)and rear arm joint bolt.



11、Take off rear wheel fork assy①



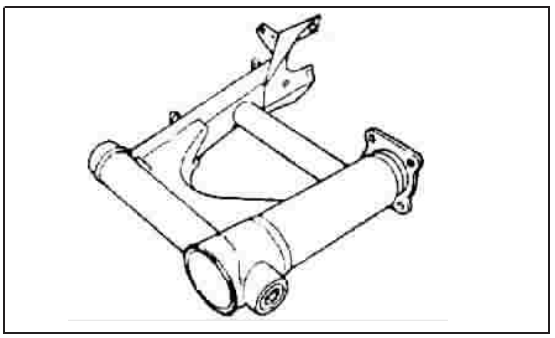
(Ⅱ)Checking steps

1、Check

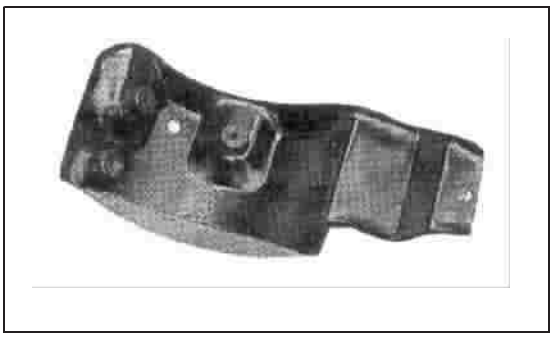
a:If rear shock absorber is leakage, if any, replace it.

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

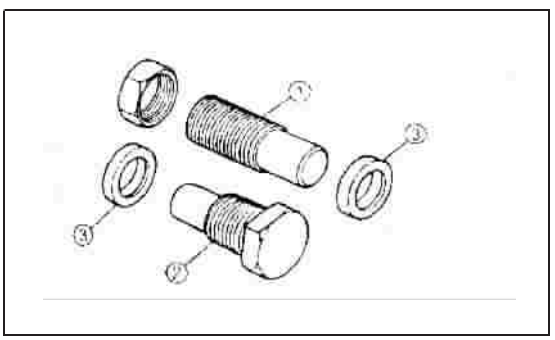
C:Pull the spring up and down to check if the spring is fatigue or damaged, if any, replace rear shock absorber.



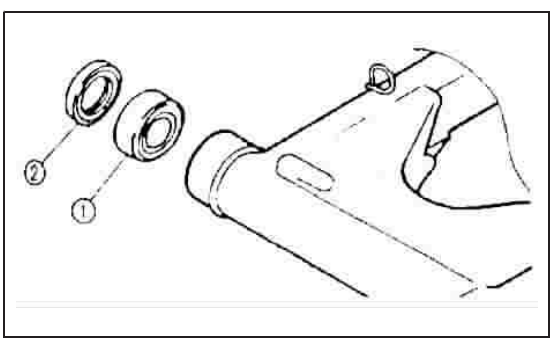
2、Check if the rear wheel fork assy is crack bend and damaged,if any,replace it.
Check if the rear wheel bush is craek,bend and damaged. If there is one of these problems, replace it.



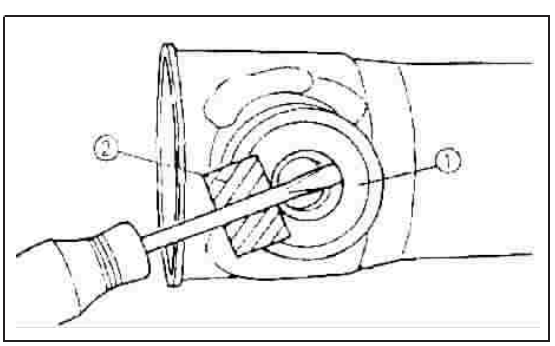
3、Check the gear case lower cap,if there is one of crack bend damagement problems, replace this part.



4、check the rear arm joint bolt①and rear arm joint bolt②and bush③. If one of these parts is worn or damaged,replace it.

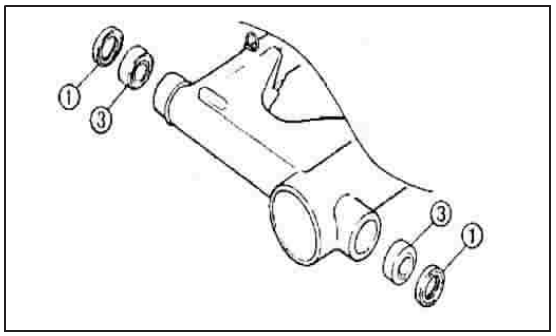


5、Check the bearing 30203 ① of rear wheel fork assy, if ther is free clearance during the bearing matclles with the rear wheel fork, or uneven swirl, replace the bearing. Check the oil sealing ②,if it is worn or damaged,replace it.



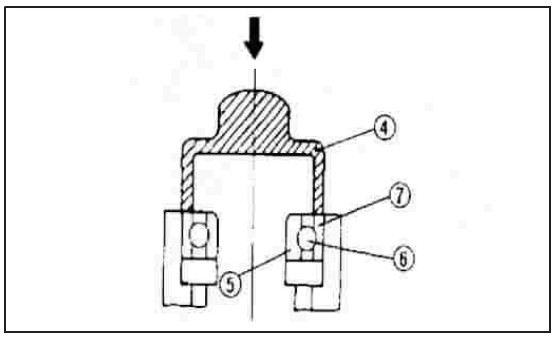
Replaing steps of bearing 30203 and oil sealing.
a.Clean the bearing round
b.Take off the oil sealing ① with flat screwdriver

Caution:
Put a wooden block ② at the outer side in order to protect the outer side.



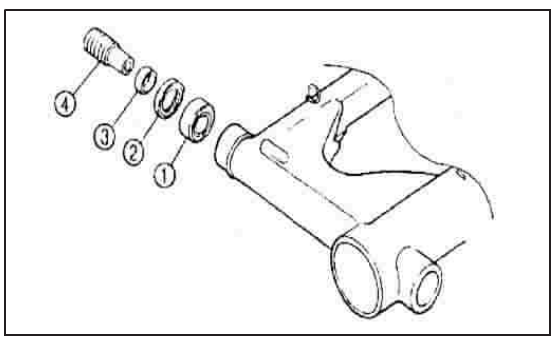
Take off bearing ③
with usually bearing tool
The reverse step of"bearing and oil sealing. replacing step"is the mounting step of new bearing and new oil sealing.

Caution：
Use a pressure tooling④which is match with outer diameter of bearing race ⑦ and oil sealing.

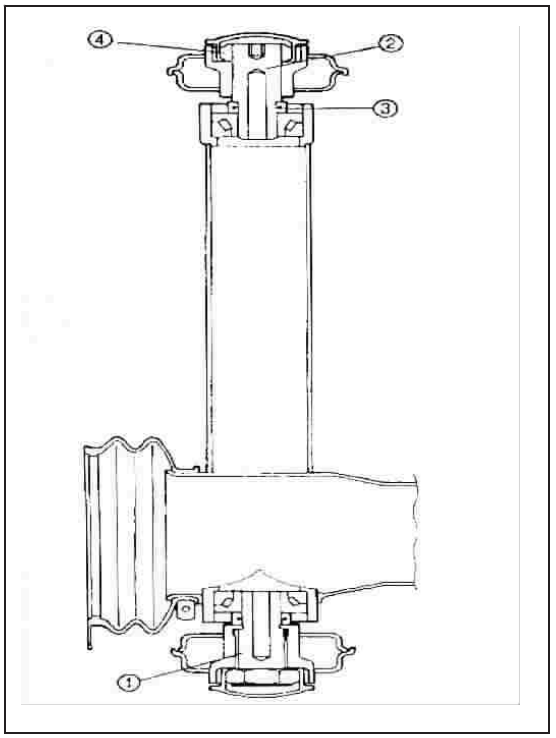


Warning:
Don´t strike the bearing inner race 5 and roller, the pressure tooling ④ is only contact with outer race ⑦.

(III)Mounting steps：
The reverse steps of"dissembly "is the mounting step. but the following points must be paid attention during the installation：
1、Lubricate the bearing①、oil sealing②、bush ③、and rear arm joint bolt④. Lubrication oil is Lithium buse grease.



2、Mount the real wheel fork assy，rear wheel forkbushing and rear arm joint bolt.



3、Fix the rear arm joint bolt①(1eft),rear arm joint bolt②(right)and bush③。

Fixing steps:

a:Fix the left rear arm joint bolt①by standard torque.

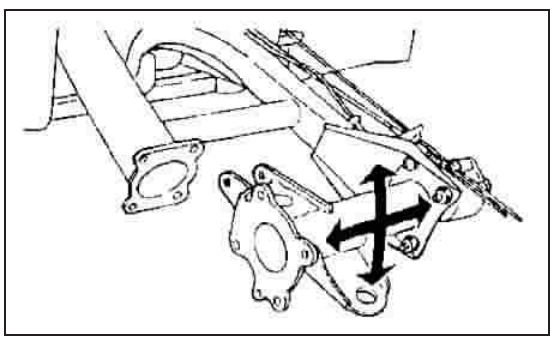
Attached:Bolt torque value:1 30Nm

b:Fix the right rear arm joint bolt②untill it contact with its bush③

AttachedL:Bolt torque:6Nm

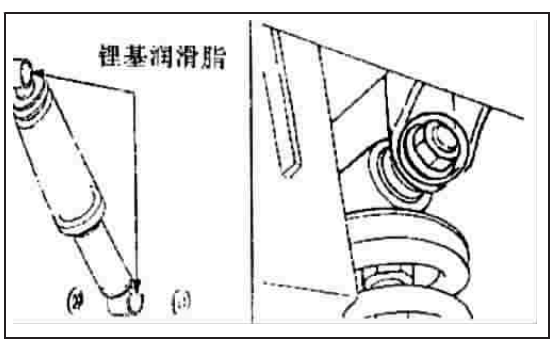
c:Fix right rear arm nut④by standard torque.

Attached:Rear arm nut torque:130Nm



4、Check rear wheel fork free clearance

Refer to the 8 step in"disassembly"



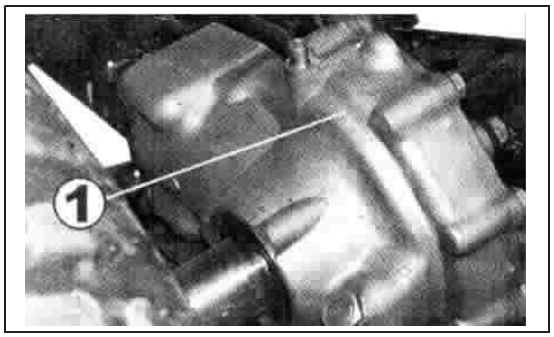
5、Lubricate the upper and lower end surface of rear shock absorber(see figure).

Use Lithium base grease as lubrication oil.

6、Mount rear shock absorber

Upper nut torque of rear shock absorber: 50Nm.

7、Mount split pin



8、Mount the rear driving gear case sub－assembly

①

Refer to"Installation of rear driving gear case Sub–assebly and driving shaft"section of this chapter.

9、Mount the rear wheel axle,rear brake, rear

brake hub,right rear wheel, rear wheel joint plate and left rear wheel.

Refer to"Installation of rear wheel/rear brake/ rear wheel axle"section of this chapter.

Chapter IV Electric Appliance

Section 1 Electric assy

1、Reverse indicator light

2、Neutral indicator light

3、Oil temperature warning light

4、Main switch lock

5、Rear brake switch

6、Handlebar switch (left)

7、Starter relay

8、Rectifier/regulator

9、CDI unit

10、Taillight

11、Battery

12、Fan motor control unit

13、Cut off relay

14、Cut off control

15 、Four fuse box

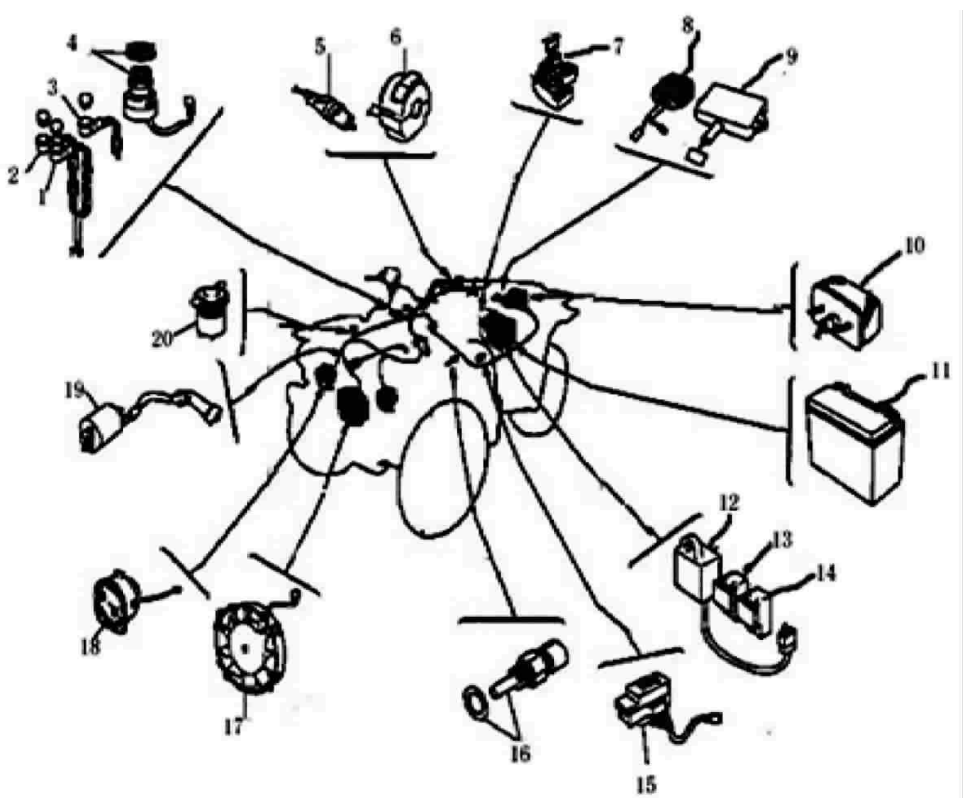
16 、Oil temperature thermo units

17 、Cooling Fan

18、Headlight

19 、Ignition units

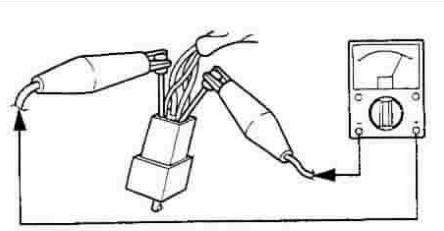
20 、External power source sockets



Section 2 Inspect switch

(I)Inspect switch

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



Remark:

- ·Adjust the multimetet´to"0"before inspecting
- ·adjust the muhimete~´to"Q×1"when inspecting the circuit.
- ·Should turn on and off the switch many times when inspecting.

	Br/L	R
OFF		
ON	O	O

O O

The manual explains how to inspect the switch. The left figure indicate the wire end position of switch.The vertical line indicates switch position.The first row indicates color of switch wire.To every switch, "Q_O" indicates the circuit

between the wire ends is on.

①When the switch is adjusted to"OFF". The" red" and "brown" wire are not on.

②When the switch is adjusted to"ON",the"red" and " brown" wire are on.

(II)Inspect the switch circuit

Rear to ´Inspect switch".Inspect if the circuit between wire and wire end is on

If the contact is poor or the circuit is off→repair or replace.

The position of combination device has been drawn a circle.

1Light switch

2Engine stop switch

2Starting switch

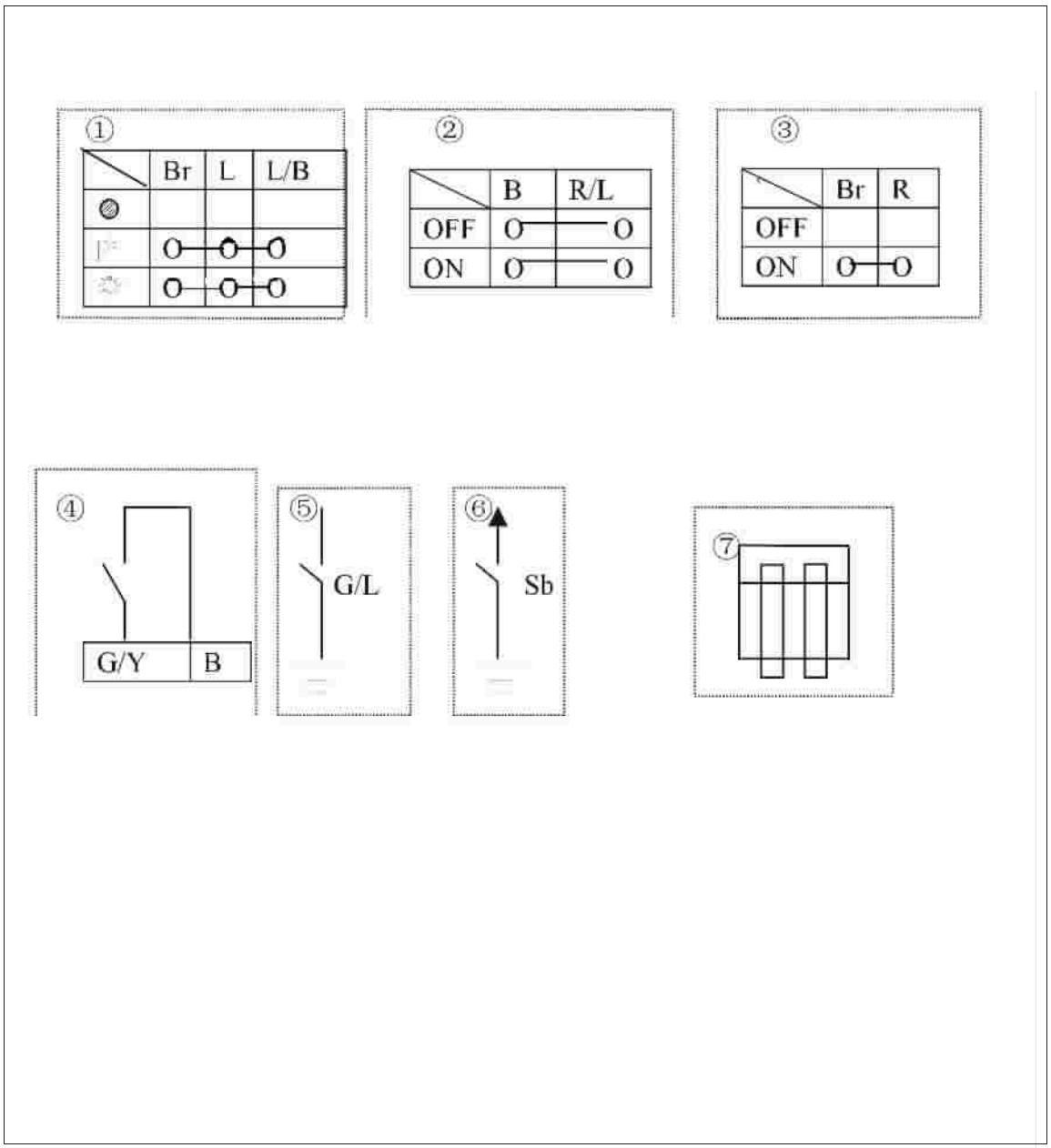
4Main switch

5Rear brake switch

6Reverse switch

7Neutral switch

8Protecting device



Section 3 Check Lamp (headlight)

Check the lamp condition

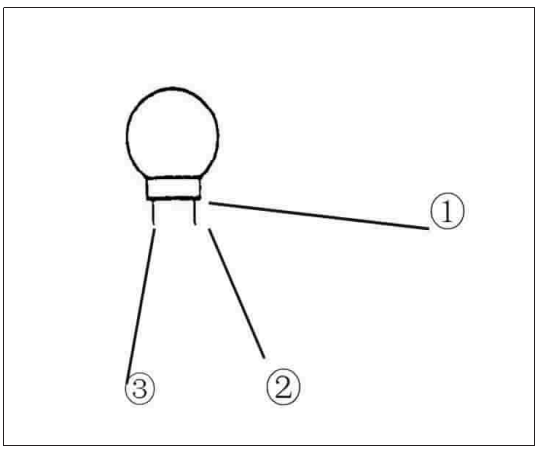
1、Remove the lamp

Caution：

Pay attention to support the lamp seat.Don´t pull the lead wire，otherwise it will be broken.

Caution：

When the headlight lights up，please remove the inflammable and your hand from the 1amp. Because it will be very hot，you can touch it only until it is cool.



2. Check if the circuit of lamp terminal is on.

Checking steps:

·Adjust the choice knob of pocket mutimeter to"R×1"

·Connect the multimeter pen to corresponding lamp wire end.Firstly connect the multimeter pen (+)to wire end○1 and pen (—)to wire end②to check the circuit between①and②.Then connect the multimeter pen (+)to wire end①pen (—)to wire end@.to check the circuit between①and⑧.If it displays"∞"one time.replace the lamp.

3. Mount a checked lamp to check the lamp seat.The same as checking the lamp，connect the multimeter pen to related lamp seat wire and check the circuit by the same method as above.

Color indication:

Br–Brown

R–Red

B–Black

B/W–Black/White

Bl–Blue

G–Green

Y–Yellow

Br/W–Brown/White

R/W–Red/White

o–orange

Sb –Sky blue

G/Y–Green/Yellow

G/Bl–Green/Blue

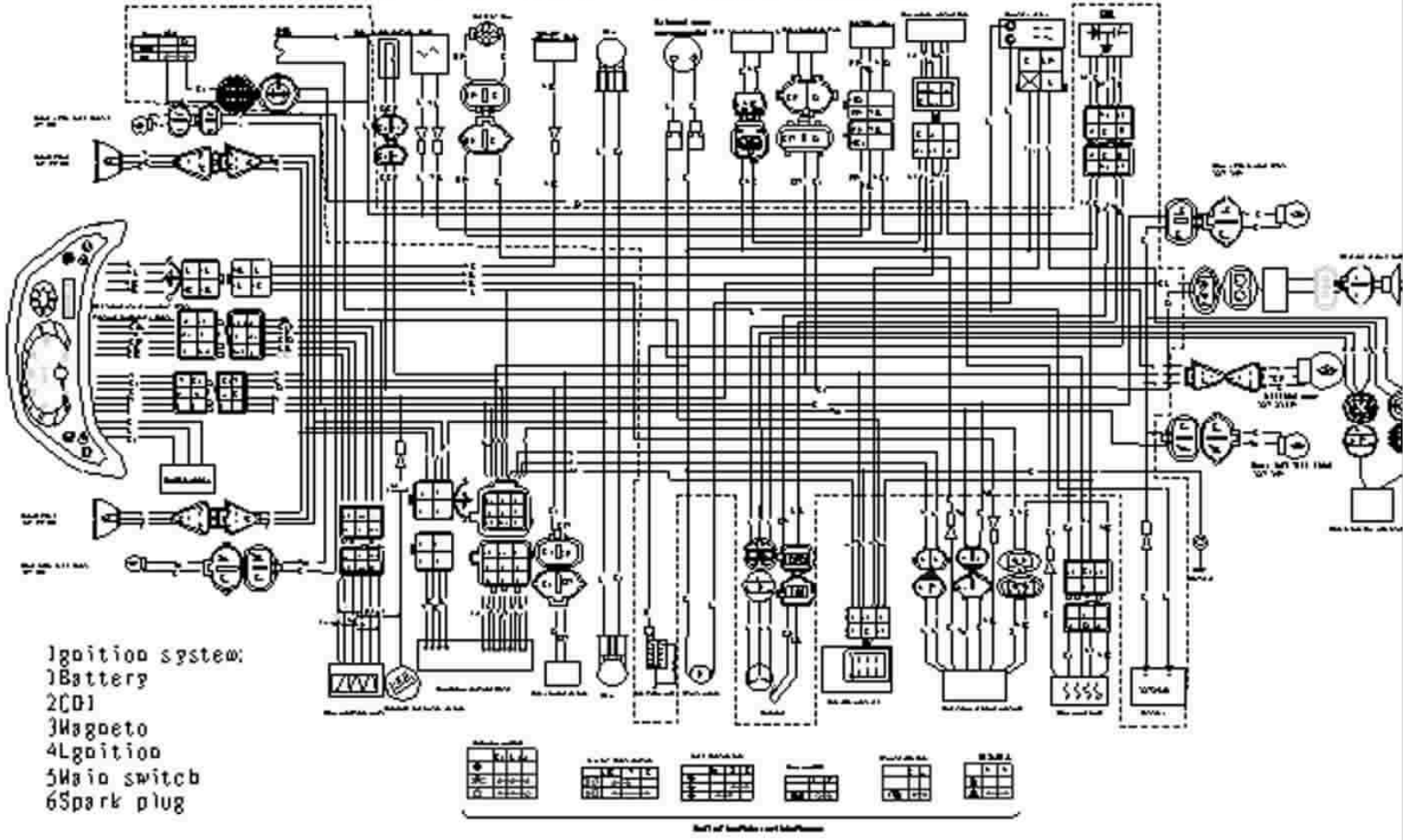
Y/R–Yellow/Red

Y/R–Yellow/Red

Y/G–Yellow/Green

B/Y–Black/Yellow

Ignition system circuit diagram



Section 4 Troubleshooting the ignition system failure

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

Step

Check

1.Spark plug

2.Ignition spark clearance

3.Resistance value of spark plug cap

4.resistance value of ignition coil

5.Engine stop switch system

6Main switch

7Resistance value of triggering coil

8Resistance value of charge coil

9circuit connection (whole ignition

Remark:

Remove following components before troubleshooting

1) Cushion

2) Front frame

3) Front fender

Check and repair with following special tools

1Spark plug

Check the spark plug condition

Check the spark plug type

Check the spark plug clearance

Standard spark plug D8RTC

Spark plug clearance

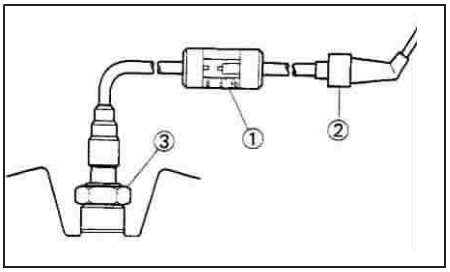
0.6~0.7mm(0.024~0.028in)

Incorrect → Repaire or replace the Spark plug

Correct ↓

2Ignition spark clearance

Remove the Spark plug cap from the plug-Connect as shown in figure ① Spark testing instrument②Spark plug cap③Spark plugRotate the main switch to"ON"Check the ignition spark clearance Press down the starting switch to start the engine. and increase the spark clearance until the engine can not be started.



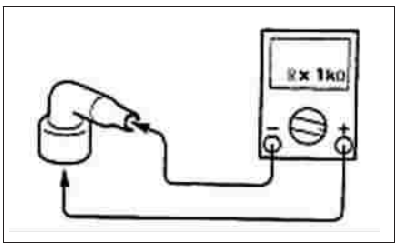
Min spark clearance
7.0mm(0.24in)

Conforming to specification

Ignition system has no problem

Not conforming to specification
Or no spark

3Resistance of Spark plug cap
Remove the spark plug capConnect the pocket multimeter to spark plug cap



Conforming to specification

Inspect if the resistance of spark plug conform to specification

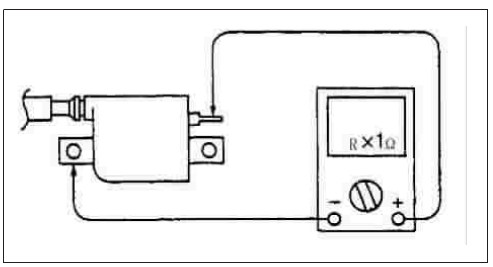
resistance of spark plug cap 20℃ (68℉)10.4KΩ

Not conforming to specification

Replace spark plug cap

Conforming to specification

4Resistance of ignition coil
Remove the ignition coil connector cableConnect the pocket multimeter (R×1Ω)to ignition coil

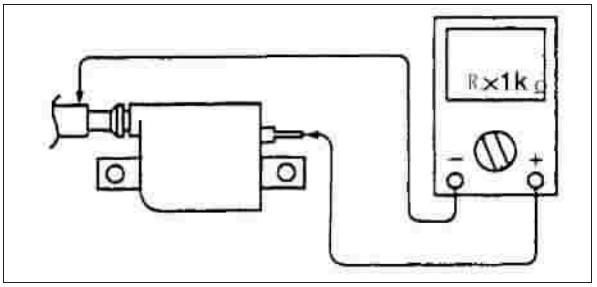


Inspect if the second coil resistance conforms to specification

Secondary coil resistance：

At 20℃(68℉)0.6Ω

Connect the multimeter (R×1KΩ)to ignition coil



Inspect it the second coil resistance conforms to specification

secondary coil resistance：

At 20℃(68℉)11KΩ

Not conforming to specification → Replace ignition coil

All conforming to specification

5Engine stop switch

Reefer to" check switch"

Abnormal → Replace main switch

All conforming to specification

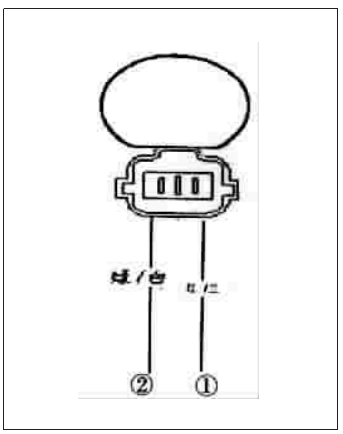
6Resistance value of triggering coil

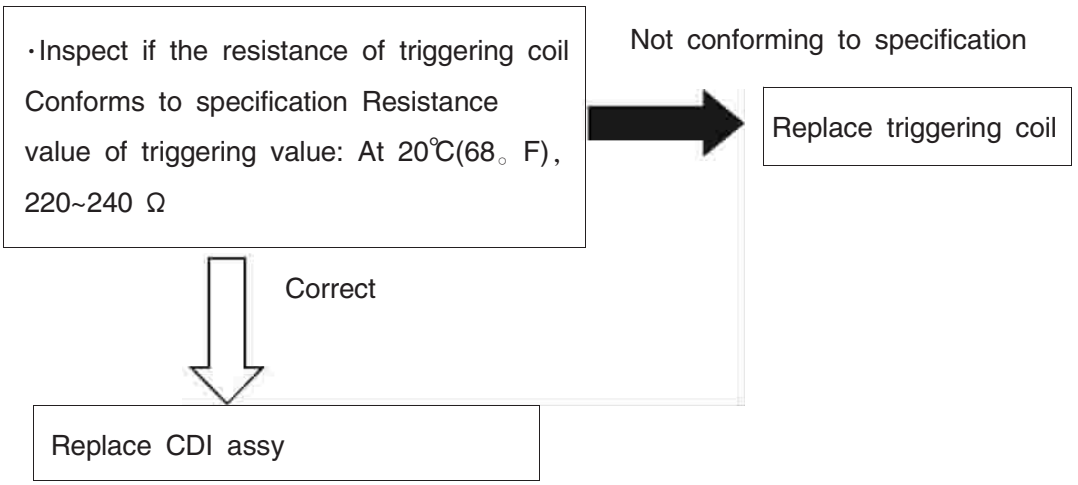
·Remove CDI magneto connector from cable

·Connect the multimeter(、f~x100)to wire end of triggering coil

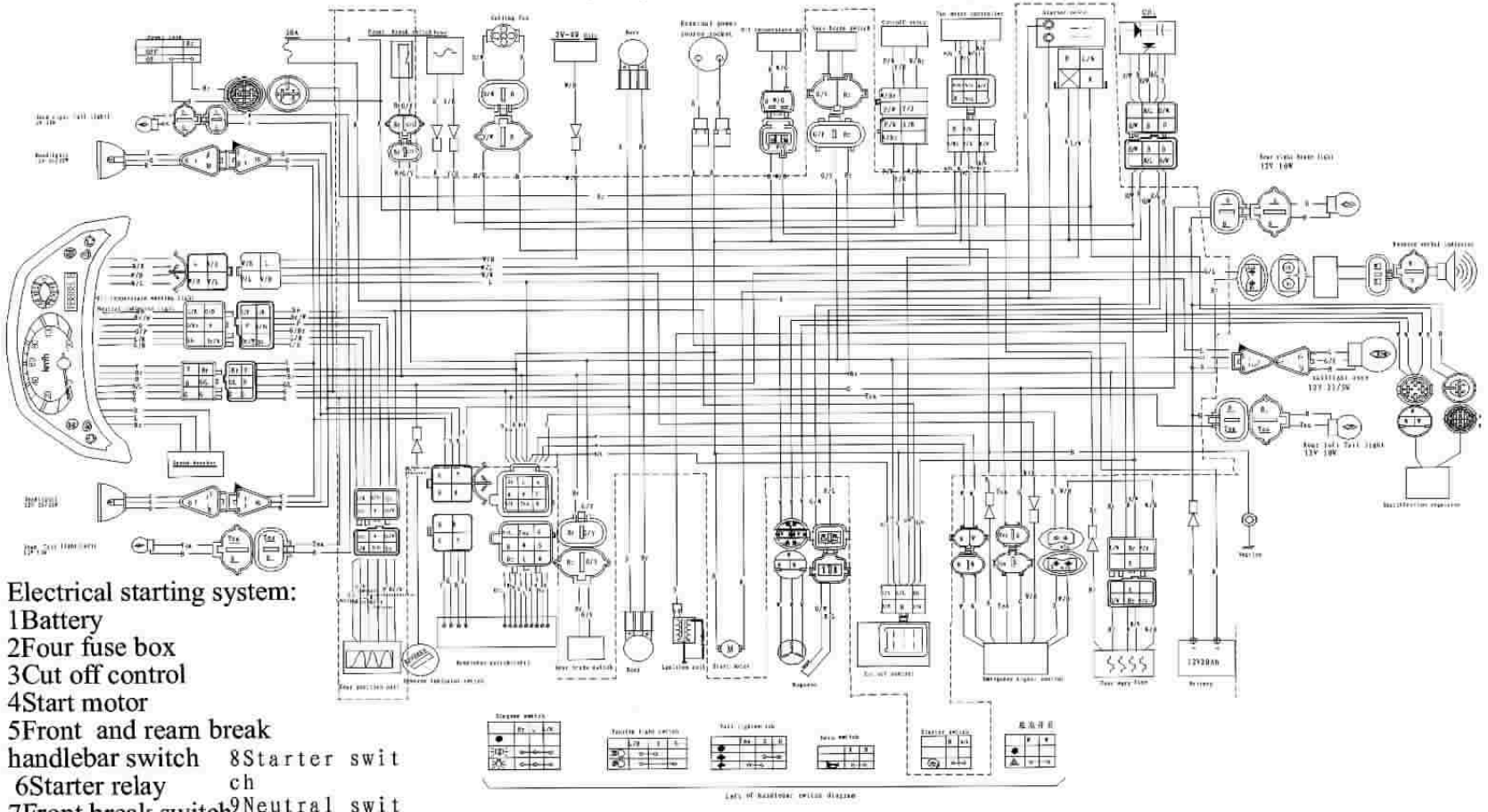
Multimeter pen(+)→blue wire end①

Multimeter pen(—) → black wire end②




·Inspect if the resistance of triggering coil Conforms to specification Resistance value of triggering value: At 20℃(68。F), 220~240 Ω
Not conforming to specification
Replace triggering coil
Correct
Replace CDI assy

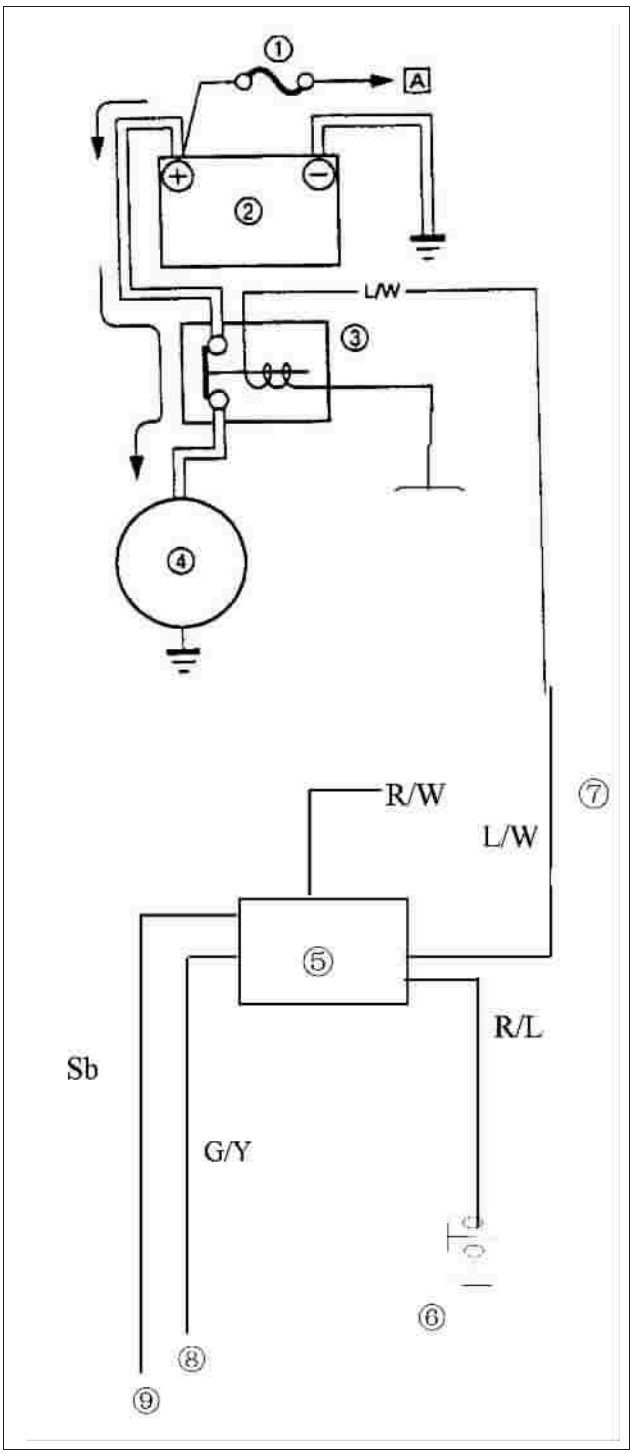
Electrical starting system circuit diagram



Electrical starting system:
1Battery
2Four fuse box
3Cut off control
4Start motor
5Front and ream break handlebar switch
6Starter relay
7Front break switch
8Starter switch
9Neutral switch
10Main switch lock

Section 5 Running of starting circuit

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



·Driving device is at neutral position(neutral switch is closed) or Tension rear brake Switch rear brake is closed)

When the vehicle is in driving or reverse state,and the rear i)rake is in idle state。the cut––off relay will prevent starting device from running.0n this condition.cut relay is closed. which leading the current can´t reach to starting motor.

①Fuse
②Battery
③Start relay
④Start motor
⑤Cut–off relay
⑥Start switch
⑦To battery
⑧To front/rear brake switch
⑨To neutral switch

A To main switch

Section 6 Troubleshooting electric starting system

If starting motor doesn´t work

Steps

1.Safety
2.Battery
3.Starting
4.Cut–off
5.Starting
6.Main switch
7.Neutral switch
8.Rear brake switch
9.Starting switch
10.Circuit connection(Whole starting sy.Stem

Pocket–multimeter

Remark:

·Remove the following parts before troubleshooting

1) Cushion
2) Front flame
3) Front fender

1.Safety
Refer to "check of switch"

No electrification → Replace the safety

Pass

2.Battery

·Check the battery condition
Refer to"check battery´in chaptm3

No electrification → Clean the battery terminalRecharge or replace battery

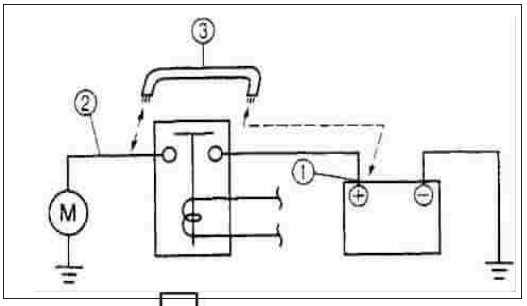
Voltage of open circuit
At 20~C(68。F),12.8V or much more

Pass

3startingmotor .Connect positive terminal①of battery with cal]le②of starting motor by wire ③.Inspect the running condition of starting motor

·Jumper wire must have the same or bigger loading capability than battery wire,otherwise it would be burned.

·This kind of testing is similar to making electric spark.therefore.no inflammable air on liquid



No rotation

Repair or replace starting motor

Operation

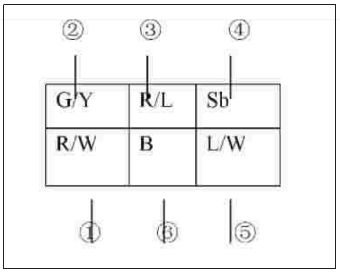
4.Power off relay

·Remove the relay from cable·Connect portable multimeter(R×1 Ω) and battery(12V)to、wire end of Power off relay.

Multimeter pen(+)wire end ⑥.

Multimeter pen(—) wire end the ①②③④⑤ circuit is not on.

Multimeter pen(+) wire end ⑥ and Multimeter pen (—) wire end ②The circuit is on.



The circuit is on

5.Starting relay

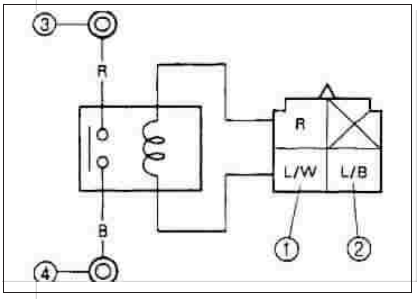
·Remove t11e Connector of starting relay from cable·Connect the multimeter(R×1 Ω) and battey (12V)to terminal of power off relay.

Multimeter pen(+)→blue/white wire end ①

Multimeter pen (—) →black/blue wire direction② the circuit is on.

Multimeter pen(+)→(red) wire end③

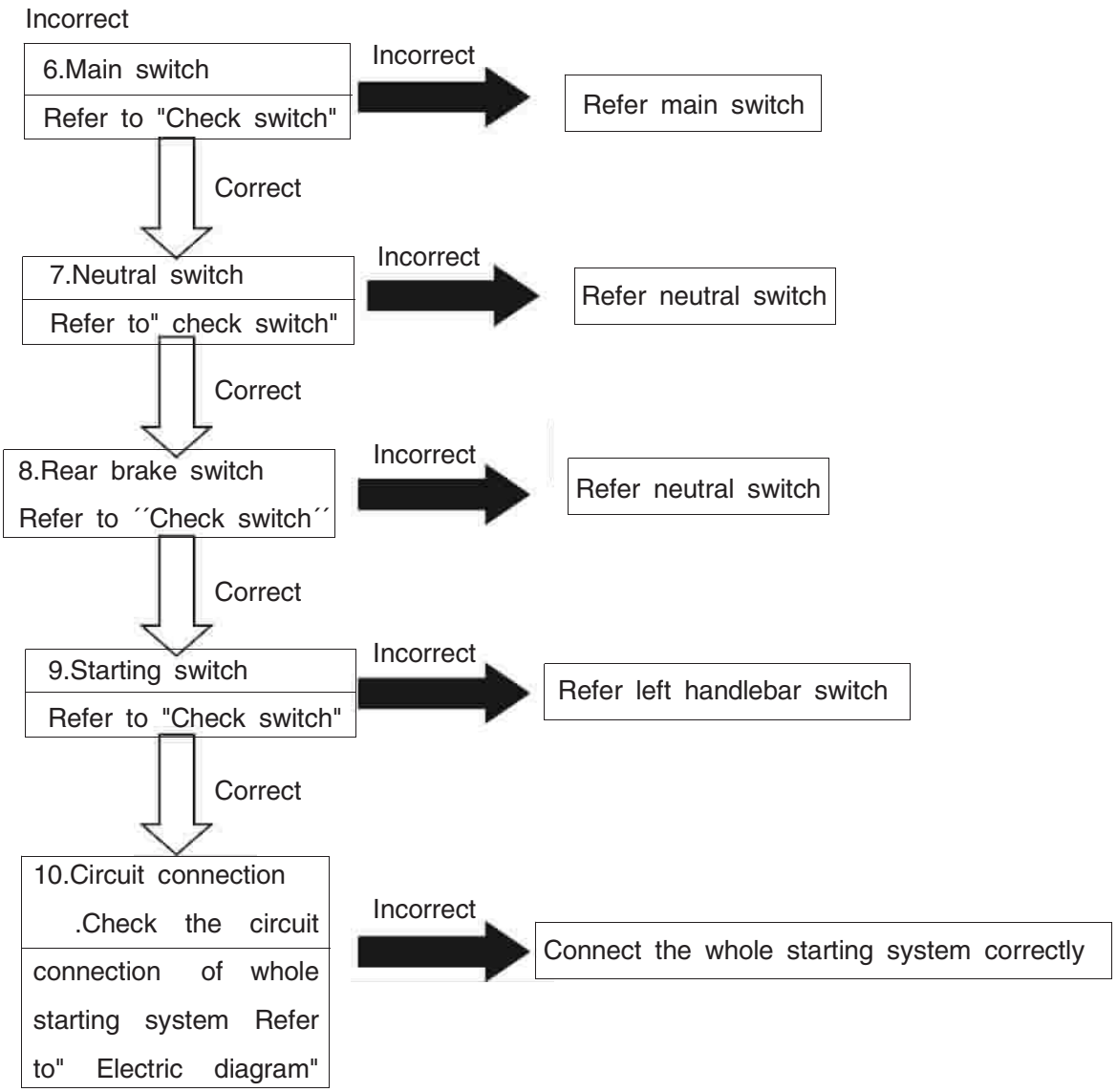
Multimeter pen (—) →(black) wire end④ thecircuit is not on.

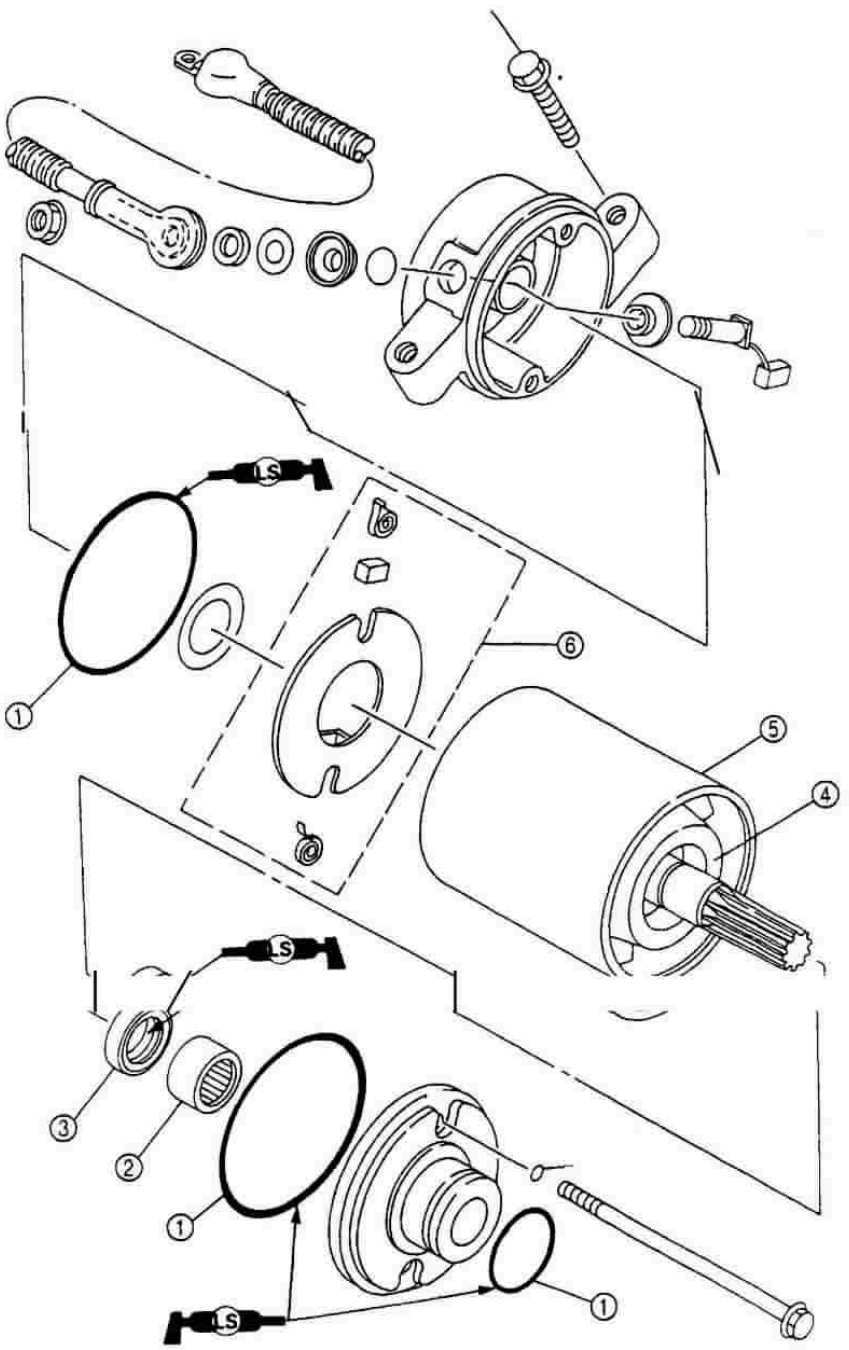


The circuit is not on

replace starting off relay

The circuit is on

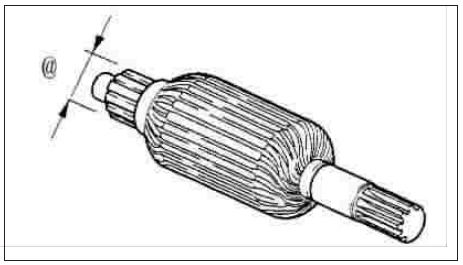

Incorrect
6.Main switch
Refer to "Check switch"
Incorrect
Refer main switch
Correct
7.Neutral switch
Refer to" check switch"
Incorrect
Refer neutral switch
Correct
8.Rear brake switch
Refer to ´´Check switch´´
Incorrect
Refer neutral switch
Correct
9.Starting switch
Refer to "Check switch"
Incorrect
Refer left handlebar switch
Correct
10.Circuit connection
.Check the circuit
connection of whole
starting system Refer
to" Electric diagram"
Incorrect
Connect the whole starting system correctly



①O-ring②Bearing③Oil seal④Armature coil assembly⑤Yoke assembly⑥Brush set

Sequence	Component name/part name	Q´ty	Remark
	Starting motor disassembly	1	Remove the components according to following sequence
	Starting motor wire	1	
	Starting motor connecting wire	1	
	Starting motor/O–ring	1/1	
	The same disassembly as above		Refer to Starting motor installation
	Bracket 1	1	
①	Washer/pad	1	
②	Bracket 2	1/1	Installation sequence is reversal of disassembly
③	Pad		
④	Electric brush/brush spring		
⑤	Armature winding	2/2	
⑥	Magnet steel	1	

Section 8 Check starting Motor



1.Check

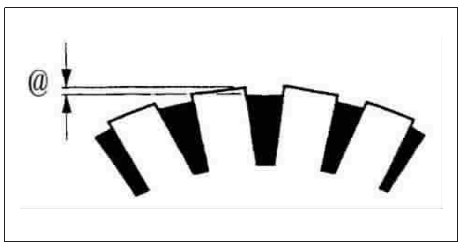
·Reverser

Not clean→clean with#600 sand paper

2.Measure

·Reverser diameter@

Not conforming to specification→change the starting motor



Outer diameter 28mm(1.10in) (wear range) 26mm(1.06in)

3.Measure

·Mica cut sheet@

.Not conform to specification →Scrape the mica with square scraper

	Mica cut sheet:0.7mm(0.028in)

Remark:

Scrap the mica with square scraper to get proper dimension to fit the reverser.

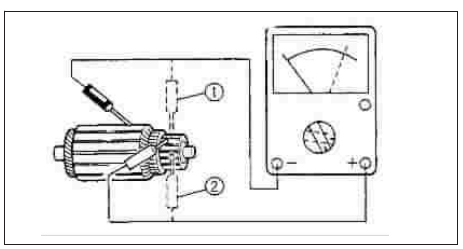
4.Check

·Armature winding (isolation/power on)

Failure Replace starting motor

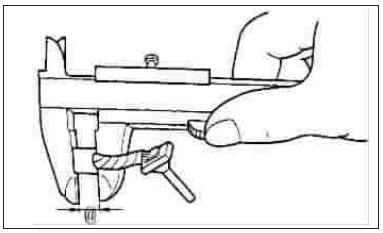
Check procedure of armature winding

·Connect the multitester to check power Oil① and isolation②condition



Inner resistance of armature winding power on condition check:At20℃(68℉),0.2 ΩInsulation check:At0℃(68℉),exceed 1MΩ

·If the resistance is incorrect,replace the motor.



5.Measure

·Length@ of brush(every one)

Out of specification →replace it

Length of brush : 10mm(0．39 inches)

Range of wear : <6mm(O．14 inches)>

6.Measure

·Brushing spring force

Fatigue/out of specification →replace whole device

Brushing spring force: 326～970g(3．2～3.8N)

7.Check

·Oil sealing

·Bushing

·O–ring

Wear/damage →replace it

Installation of starting motor：

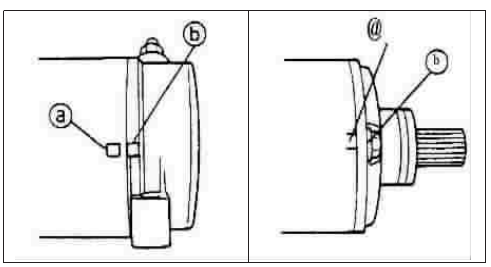
1.Mount

·Magnetic steel

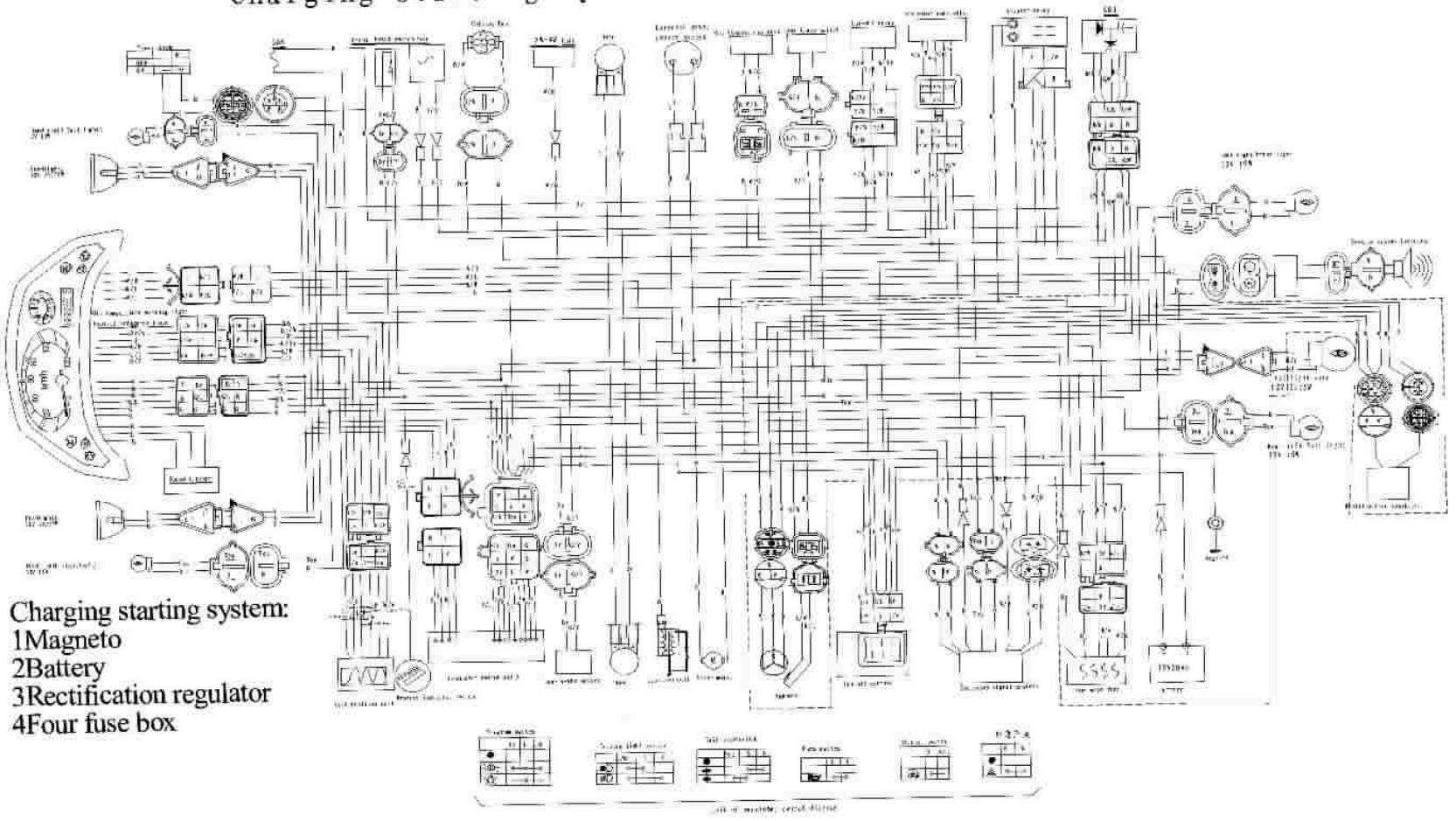
·Bracket

Remark:

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



Charging starting system circuit diagram



Charging starting system:
1Magneto
2Battery
3Rectification regulator
4Four fuse box

Section 9 No charging in the battery

Steps

Check：

1、Safety　　5、Rectification regulator

2、Battery　　6、Coupling of circuit

3、Charging voltage　(Whole charging system)

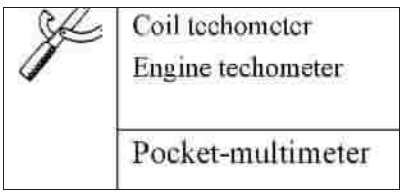
4、Stator coil

Remark

·Remove some parts before maintenance

1) Cushion

·Repair with following special tooling



1、Safety

Refer to" Inspection of switch"

N0electrmcation → Replace the safety

Pass

2、Battery

·Check battery condition

Voltage：

12.8V or more at 20℃(68。F)

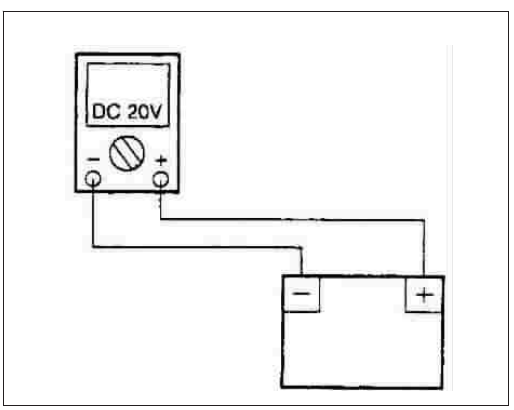
Incorrect → ·Clean battery terminal ·Recharge Or replace battery

correct

3、Charging voltage

·Connect entire tachometer to the wire of spark plug ·Connect pocket tester(DC20V) to the battery

Pocket multimeter (+) →Battery + Pocket multimeter(—) → Battery —



·Start the engine and accelerate to 2000r/m or so. Charging voltage: 14--15V at 2000r/m

Remark:

Use battery with full capacity

Meet specification → N0 failure on charging cireuit

Out of specification

4、Resistance value for stator coil

·Take out the lighting coil of AC magneto from inserted

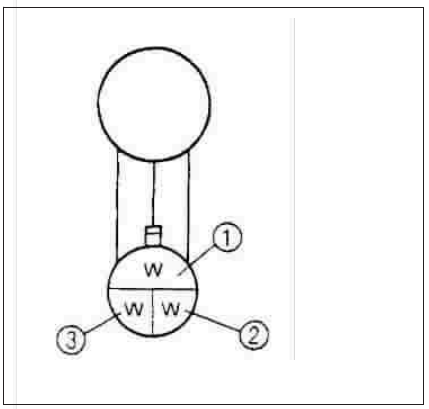
·Connect pocket multiconeter to stator coil(Rx1)

Pocket multimeter (+)→white terminal①

Pocket multimeter (—) → white terminal②

Pocket multimeter(+)→white terminal③

Pocket multimeter (—) → white terminal①



Measure the resistance value of stator coil

At 20℃(68℉),0.8 Ω~1.2Ω

Meet specification

Out of specification → Replace parts of stator coil

Meet specification

5、Coupling of circuit

·Cheek the whole coupling 0f charging wire. Refer to ´Electric diagram"

Poor connection → Connect the charging system correctly

Correct

Replace rectified adjuster

Diagram of lighting system circuit diagram

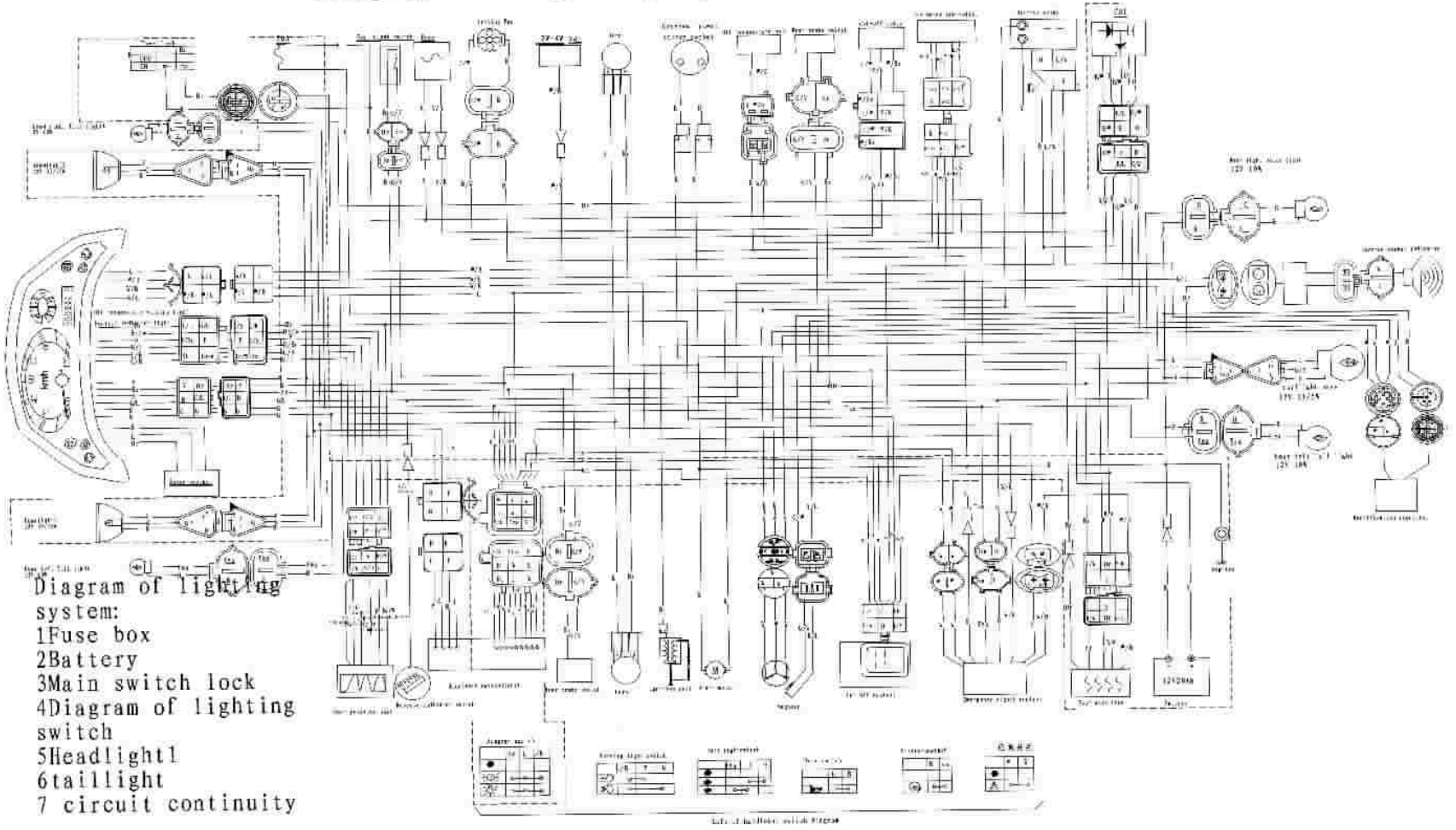


Diagram of lighting system:
1Fuse box
2Battery
3Main switch lock
4Diagram of lighting switch
5Headlight1
6taillight
7 circuit continuity

Section 10 Troubleshooting

If the headlight or taillight is not work

Steps

Check：

1、Safety　　4、Lamp switch

2、Battery　　5、Headlight

3、Main switch　　6、Trail light

7Coupling of wires (for entire lighting system)

Remark：

.Remove out the following parts before

Maintenance of troubleshooting

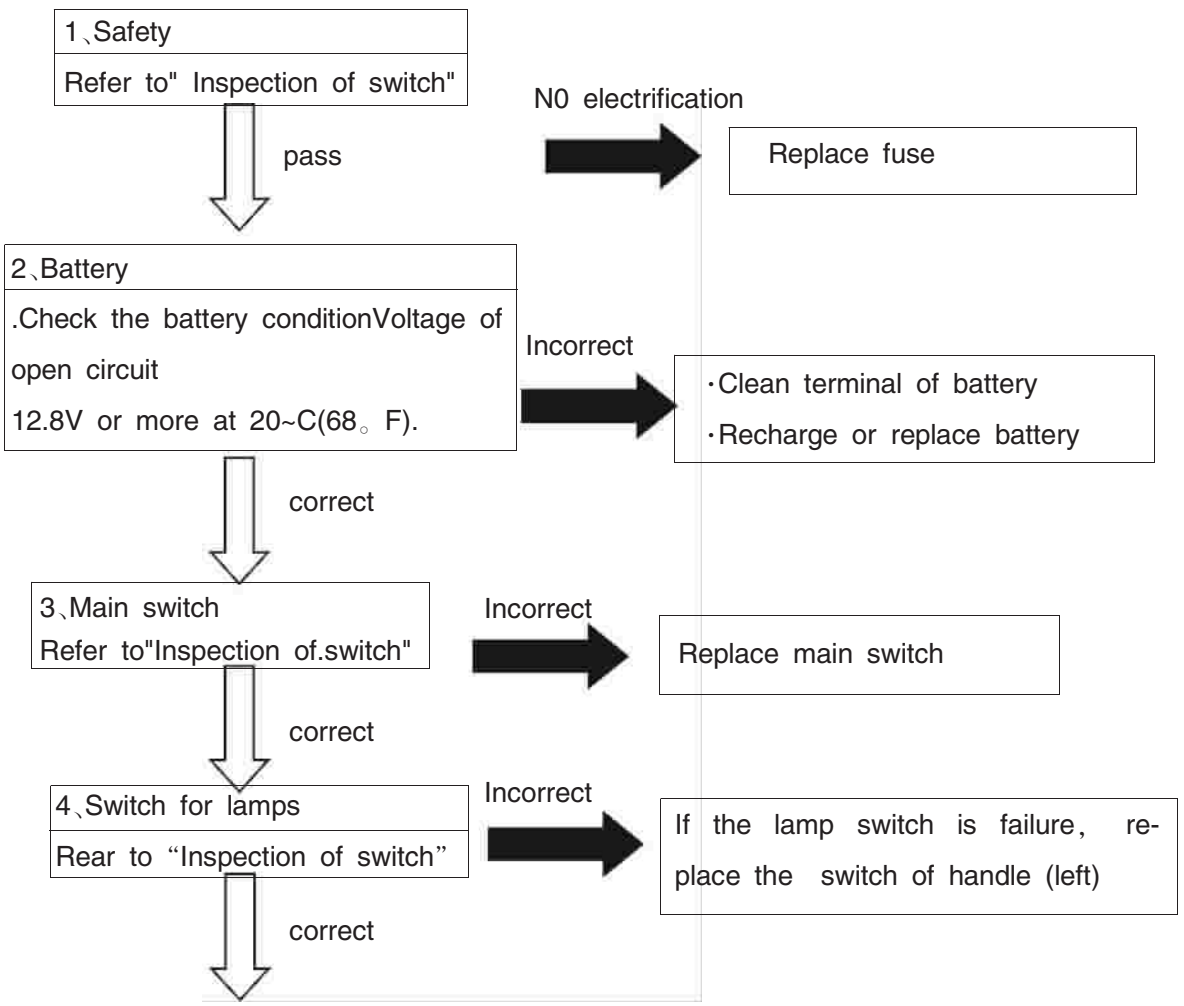
1) Cushion

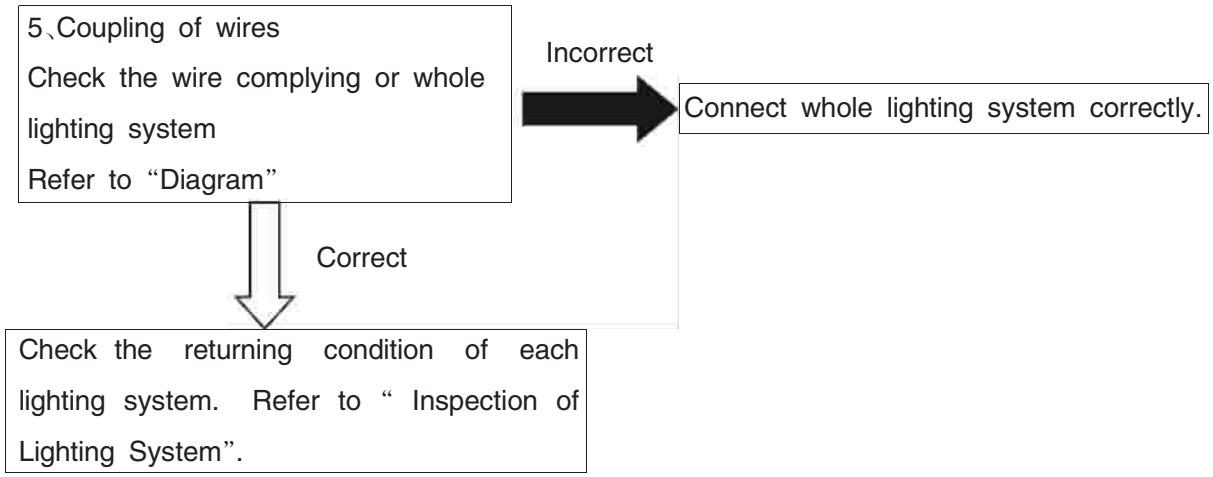
2) Front luggage carrier

3) Front covering parts

Use special tooling for troubleshooting

Pocket multimeter




5、Coupling of wires
Check the wire complying or whole lighting system
Refer to “Diagram”
Incorrect
Connect whole lighting system correctly.
Correct
Check the returning condition of each lighting system. Refer to “ Inspection of Lighting System”.

Section 11 Inspection of Lighting system

(I)If the headlight is out of work

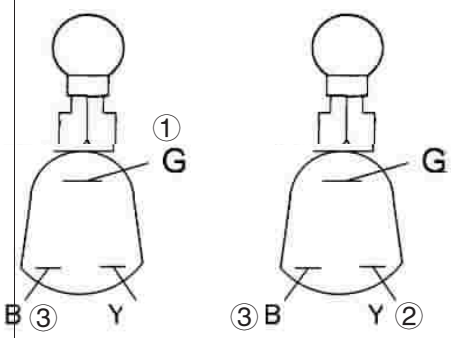
1、Bulb and bulb socket

·Check the bulb and bulb socket condition

→ Replace bulb and bulb socket

2、Voltage

Connect multimeter to the coupler of he socket(DC,20V).



Multimeter (+)→green terminal①or yellow terminal②

Multimeter(–)→black terminal③

·Adjust main switch to"ON´´position. Adjust lamp switch to“LO” 0r“HI”,position.

·Check the voltage of “green”and “yellow”wires in coupler of bulb socket

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

Meet specification ↓

No failure on circuit

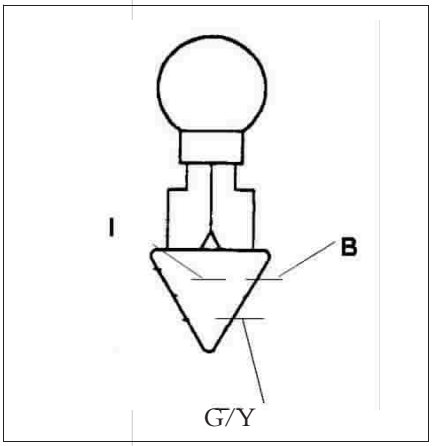
(1I)If the taillight is out of work

1、Bulb and bulb socket
·Cheek if the bulb and bulb socket is correct

No electrification → Replace bulb and bulb socket

Meet specification ↓

2、Voltage
·Connect the pocket tester (DC 20V)to the terminal of tail lamp.
Multimeter(+)→blue terminal
Multimeter(–)→black terminal
Multimeter(+)→green/yellow terminal
Multimeter(–)→black terminal



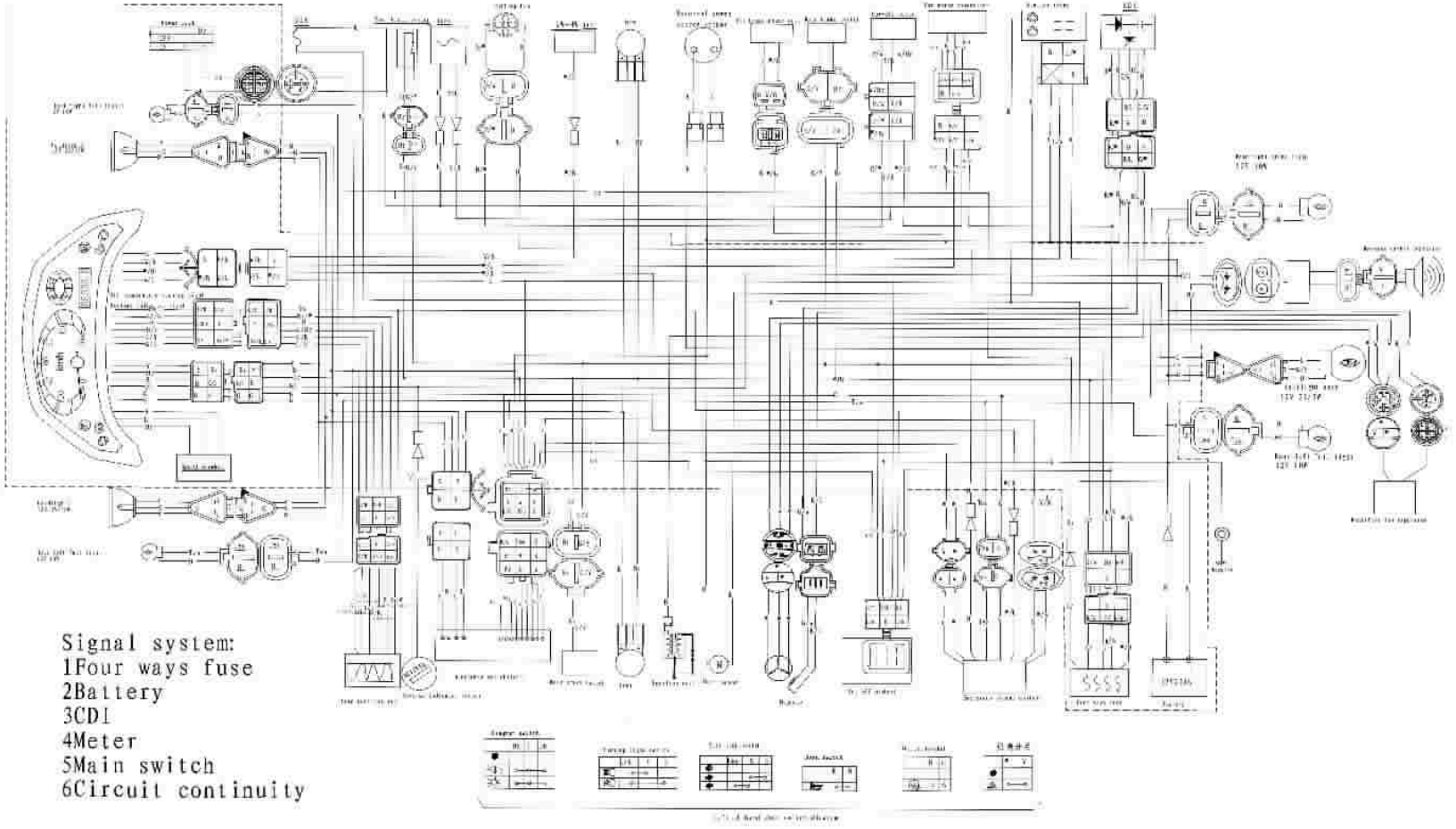
·Adjust main switch to ON position
·Adjust lamp switch to "LO" or"HI" position
·Check the voltage of blue and green/ yellow wire in coupler of bulb socket(12V)

Out of specification → There is failure on the circuit froIn main switch to bulb socket coupler repair it

meet specification ↓

No failure on this circuit

Signal system circuit diagram



Signal system:
1Four ways fuse
2Battery
3CDI
4Meter
5Main switch
6Circuit continuity

Section 12 Troubleshooting

(I) If indicated lamp is out of work

Steps

Check:

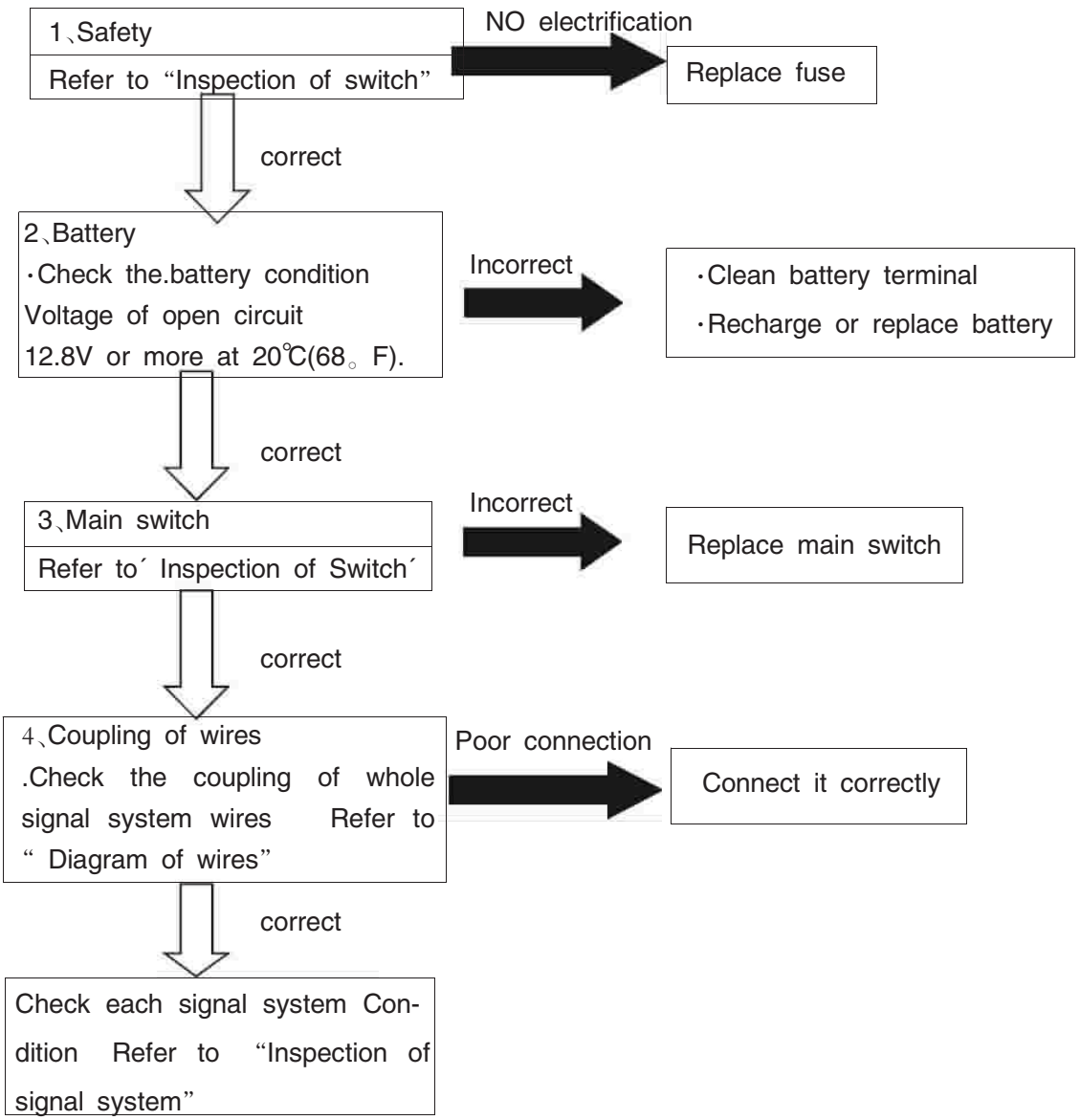
1、Safety
2、Battery
3、Front switch
4、Coupling of wires (Whole signal system)
5Meter
6Main switch

Remark:

·Remove the following parts before troubleshooting.

1) Cushion
2) Front flame·
3) Front pedal

·Use specific tooling for trouble shooting



Section 13 Inspection of Signal system

(1) if the neutral indicated lamp is out of work

1、Bulb and bulb socket

·Check if bulb and bulb socket circuit is correct

No electrifieation → Replace bulb and/bulb socket

Correct ↓

2、Neutral switch

Rear to" Inspection of switch"

No electrification → Replace neutral switch

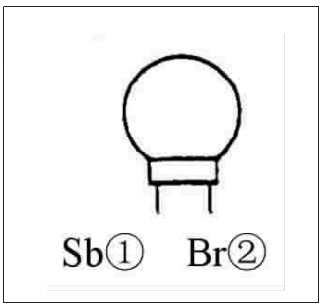
Correct ↓

3、Voltage

·Connect pocket tester (DC 20V)to the terminal of bulb socket

Multimeter (+) →brown terminal ②

Multimeter(—) →sky blue terminal①



·Adjust main switch to"ON"position.

·Check voltage(12V)

Out of specification → If there is failure on the circuit from main switch to the bulb socket coupler, repair it.

Meet specification ↓

No failure On this circuit

(II)If the reverse indicated lamp is out of work

1、Bulb and bulb socket
·Check if the bulb and bulb socket is correct

No electrification → Replace bulb and bulb socket

Pass ↓

2、Reverse switch
·Refer to´ Inspection of switch´

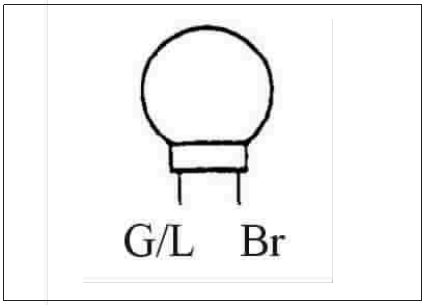
No electrification → Replace reverse switch

Pass ↓

3、Voltage

·Connect pocket multimeter(DC 20V)to the taillight terminal

Multimeter(+)→green/blue terminal
Multimeter(—) → brown terminal



·Adjust main switch "ON"position
·Check voltage(12V)

Out of specification → If there is failure oil the circuit from main switch to bulb socket coupler, repair it.

Pass ↓

No failure on this circuit

(111)If the HB indicated lamp is out of.Work

1、Bulb and bulb socket
·Check if the bulb and bulb socket circuit B are correct.

No electrocution → Replace bulb and bulb socket

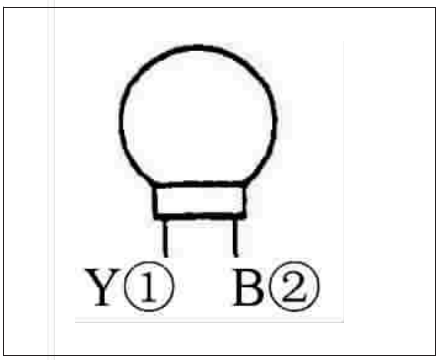
Pass ↓

2、High or lower beam switch
Refer to" Inspection of switch"

No electrocution → Replace handlebar switch(1eft)

Pass ↓

3、Voltage
·Connect pocket tester (DC 20V)to the tail lamp terminal
Pocket tester(+)→yellow terminal ①
Pocket tester(—) → black terminal ②



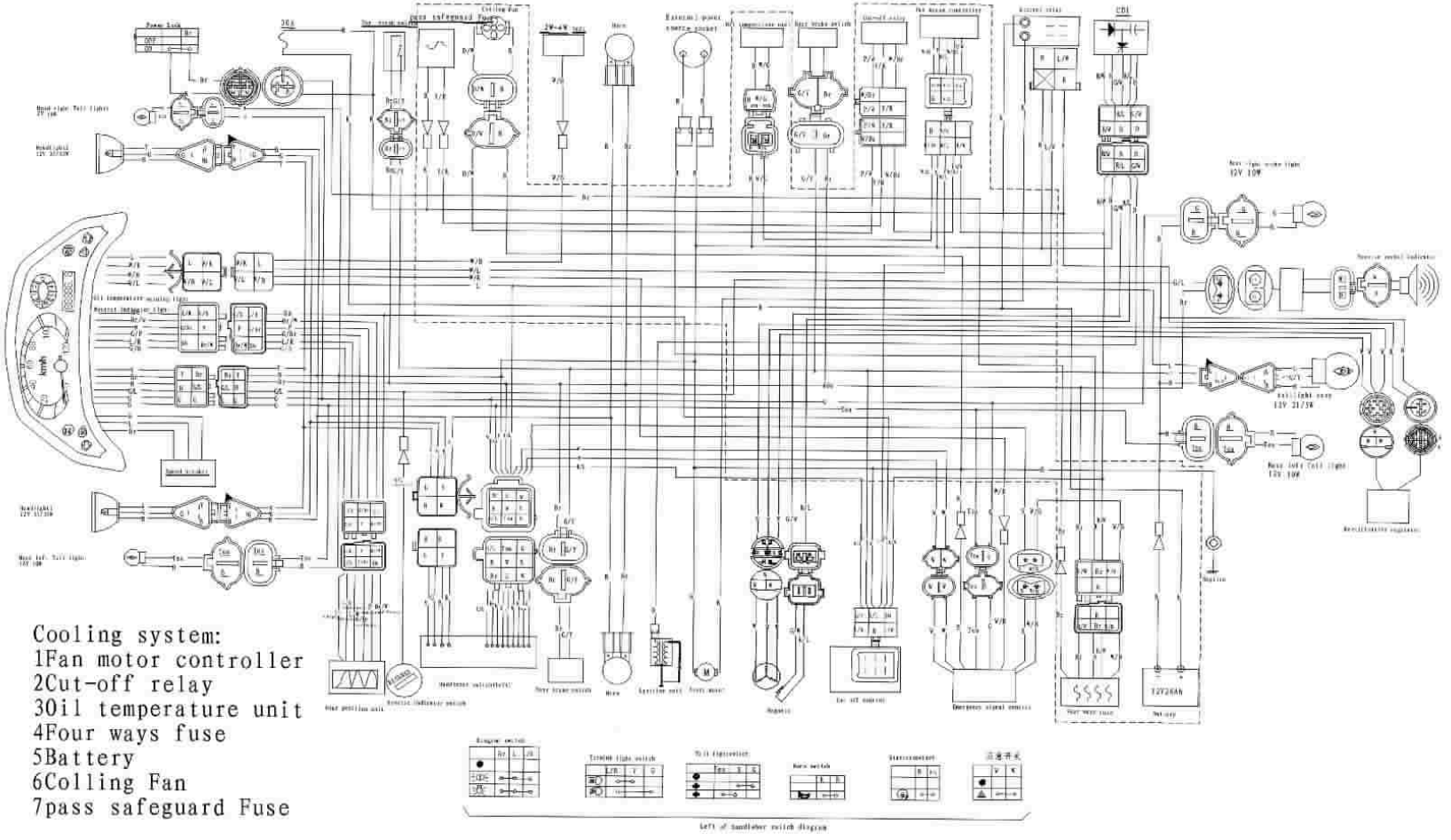
·Adjust main switch to" ON´´position
·Check voltage(12V)

No electrocution → If there iS failure on the circuit from the main switch to the bulb socket coupler repair it.

Meet specification ↓

No failure on this circuit

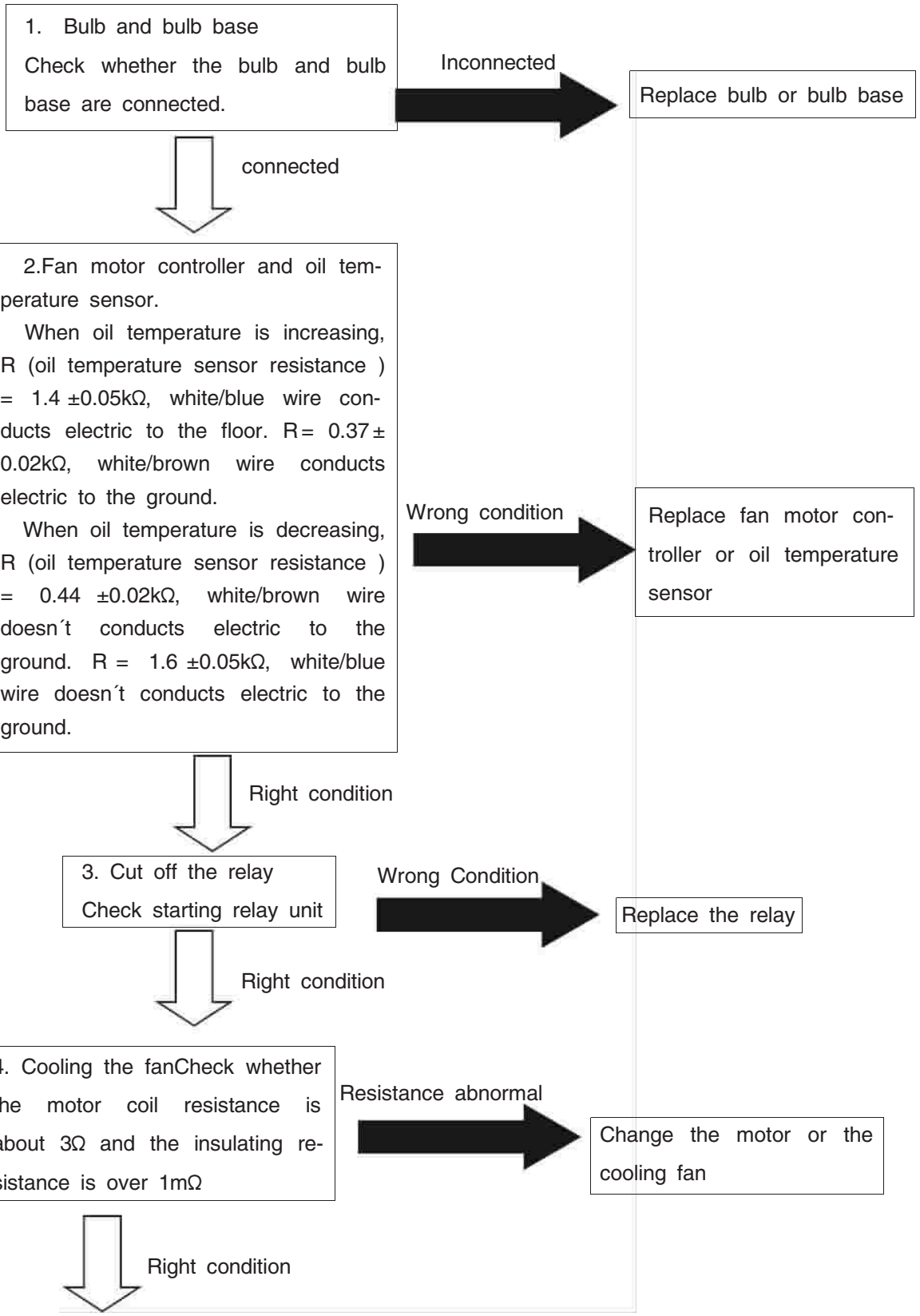
Cooling system circuit diagram

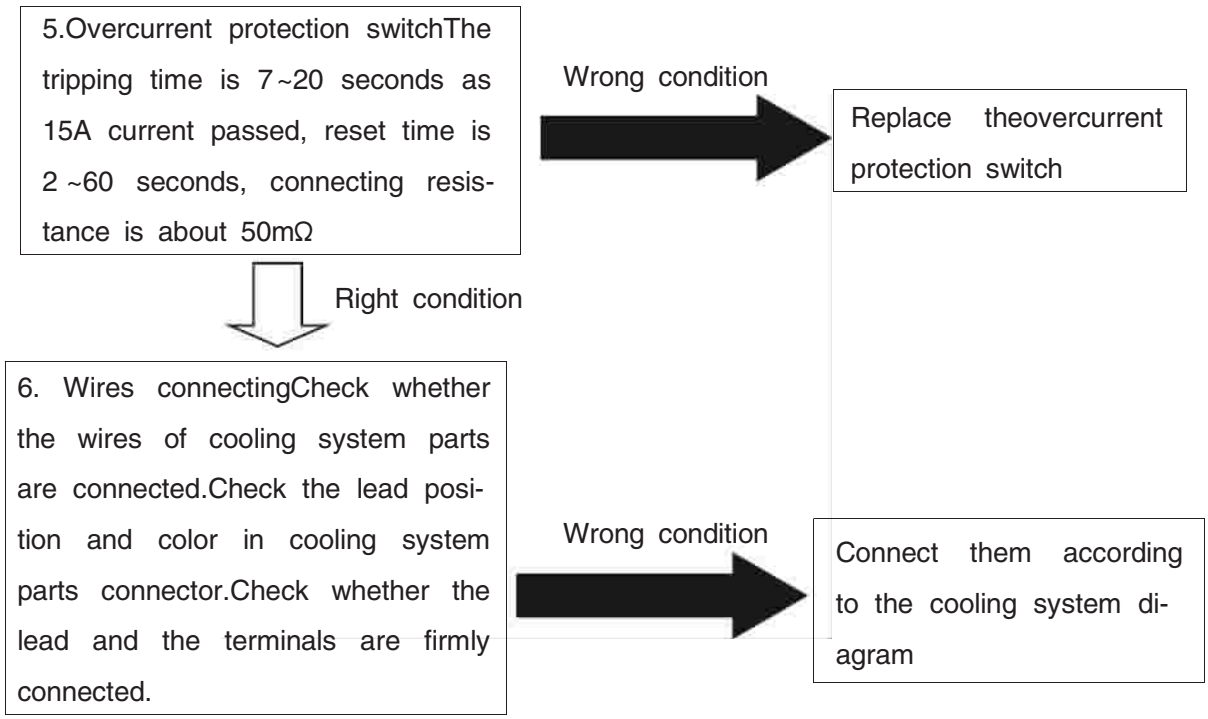


Cooling system:
1Fan motor controller
2Cut-off relay
3Oil temperature unit
4Four ways fuse
5Battery
6Colling Fan
7pass safeguard Fuse

Section 14 Cooling System Check

1. Oil temperature indicator doesn´t work




5.Overcurrent protection switchThe tripping time is 7~20 seconds as 15A current passed, reset time is 2~60 seconds, connecting resistance is about 50mΩ
Wrong condition
Replace theovercurrent protection switch
Right condition
6. Wires connectingCheck whether the wires of cooling system parts are connected.Check the lead position and color in cooling system parts connector.Check whether the lead and the terminals are firmly connected.
Wrong condition
Connect them according to the cooling system diagram

Chapter Ⅴ Engine Overhaul

ENGINE REMOVAL

SEAT, CARRIERS, FENDERS AND FUEL TANK

1.Remove:

Seat

Front carrier

Front fender

Fuel tank

Rear carrier

Rear fender

ENGINE OIL

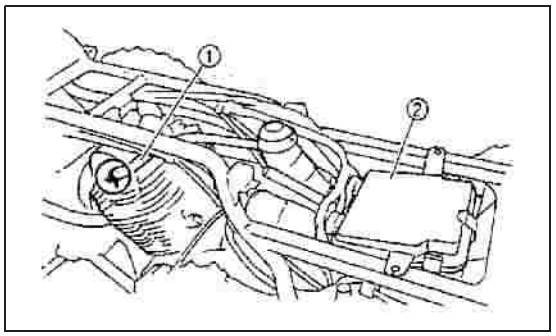
1.Drain:

Engine oil

CARBURETOR

1.Remove:

·Carburetor assembly

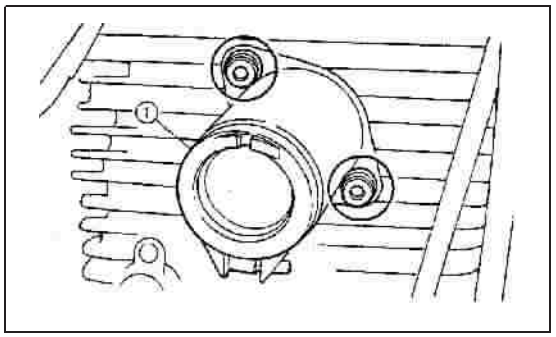


2.Remove:

●Cylinder head breather hose ①

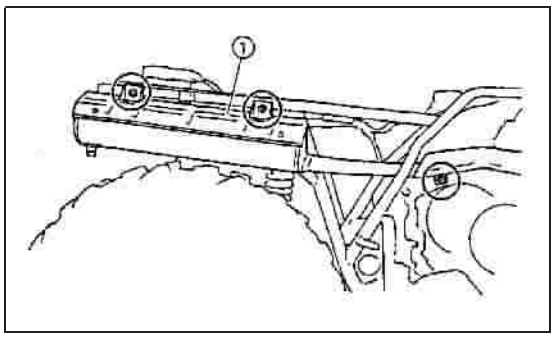
●Air filter case②

(With air duct and carburetor joint)



3.Remove:

● Intake manifold①

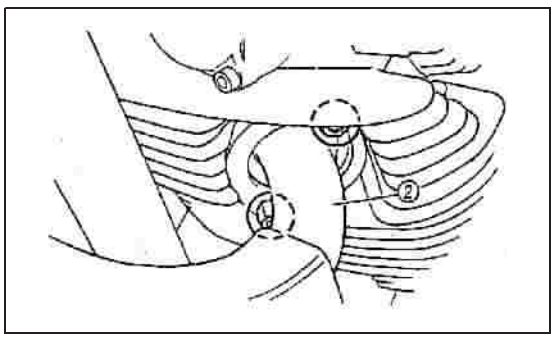


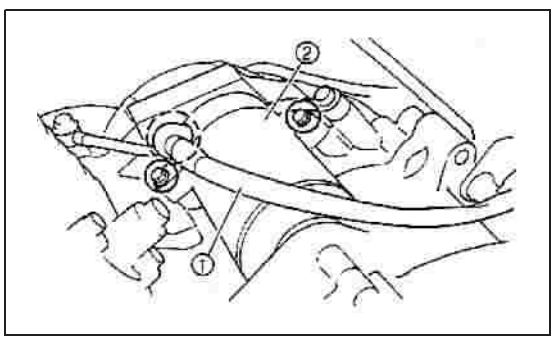
EXHAUST PIPE AND MUFFLER

1. Remove:

●Muffler①

●Exhaust pipe Gasket②





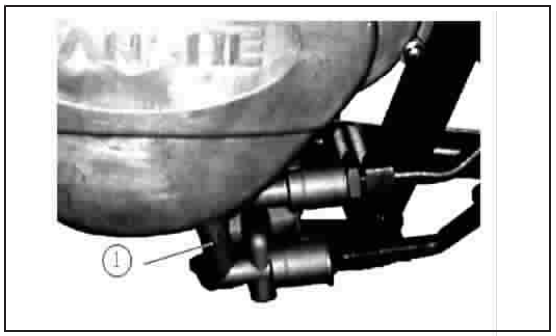
STARTER MOTOR

1. Disconnect:

●Starter motor lead ①

2.Remove:

●Starter motor ②

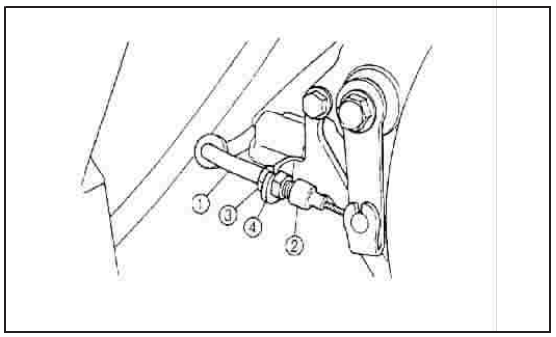


OIL FILTER

1.Remove:

●Oil filter cover ①

●Oil filter element



1.Remove:

●Reverse control cable ①

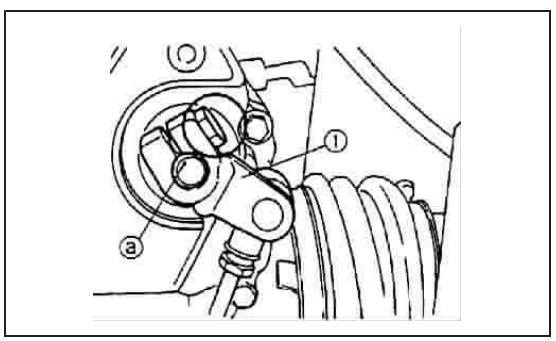
Removal steps:

●Pull back the boot②

●Remove the adjuster③

● Disconnect the reverse control cable from the cable holder④

●Unhook the cable end



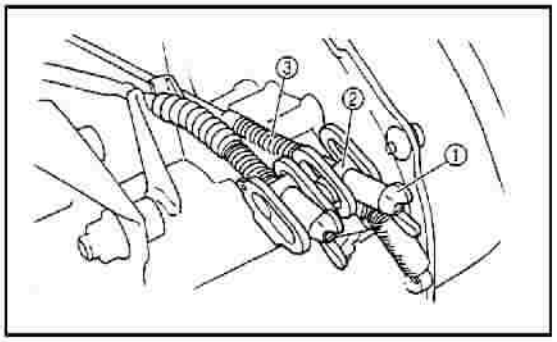
SHIFT PEDAL AND FOOTREST

1.Remove:

●Shift pedal link①

NOTE:

For easier installation, mark the position a on the shift shaft which aligns with the slot on the shift pedal link

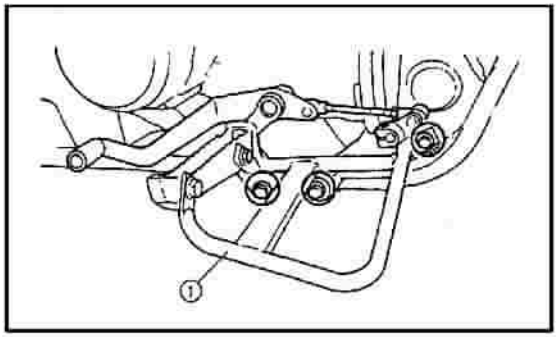


2、Remove:

●Adjuster (brake pedal) ①

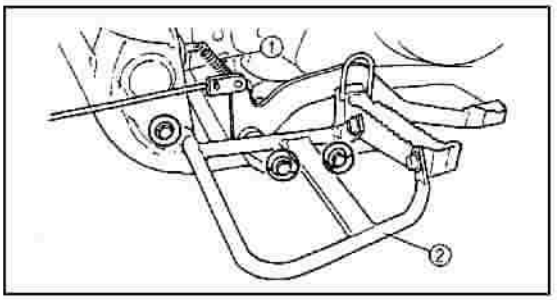
●Pin ②

●Spring③



3.Remove:

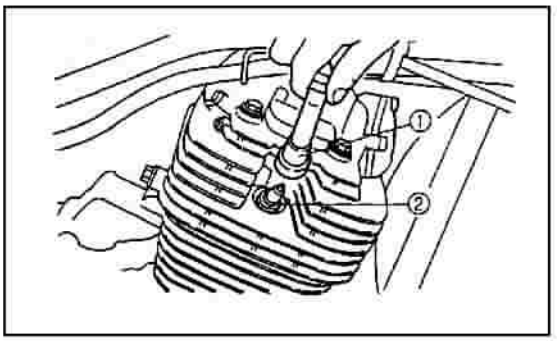
●Footrest (left) ①



4.Remove:

●Spring①

●Footrest (right)②



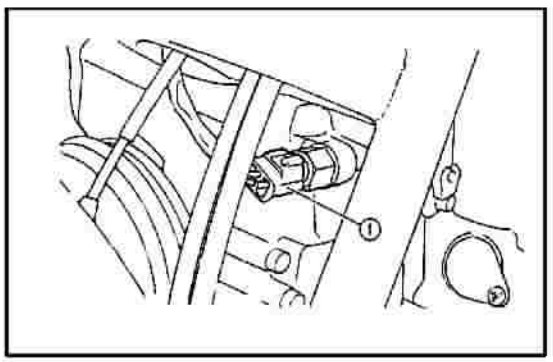
SPARK PLUG

1.Disconnect:

●Spark plug cap ①

2.Remove:

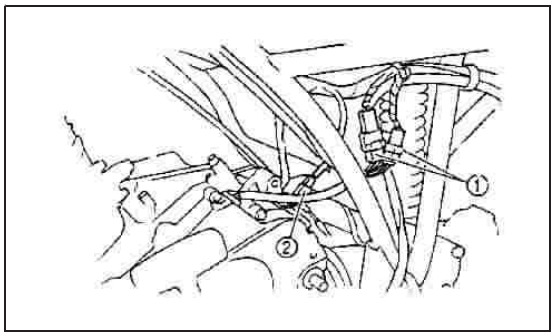
●Spark plug ②



LEADS

1.Disconnect:

●Thermo unit coupler ①



2.Disconnect:

●CDI magneto couplers①

●Gear position switch coupler②

REAR SHOCK ABSORBER AND SWINGARM

1.Place the machine on a level surface.

2.Block the front wheels and celebrate the rear wheels by placing a suitable stand under the frame.

3.Remove:

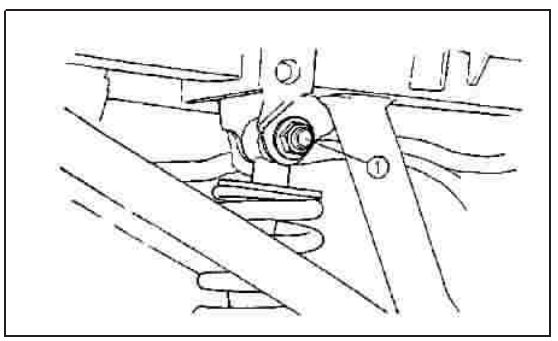
●Rear wheels

●Rear brake drum

●Brake shoe plate

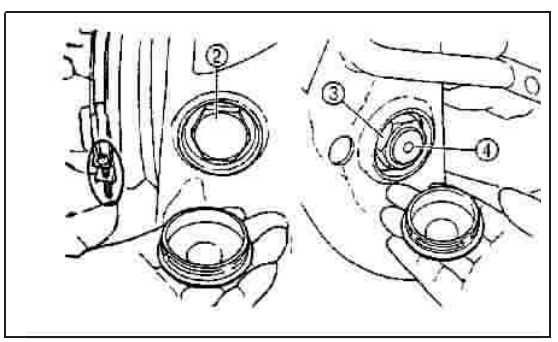
●Rear axle

●Final gear case assembly



4.Remove:

● Bolt ①(rear shock absorber–upper)



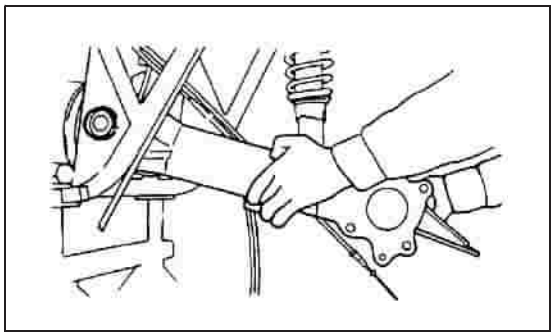
5.Remove:

●Clamp (rubber boot) ①

●Pivot shaft (left) ②

●Locknut (pivot shaft–right)③

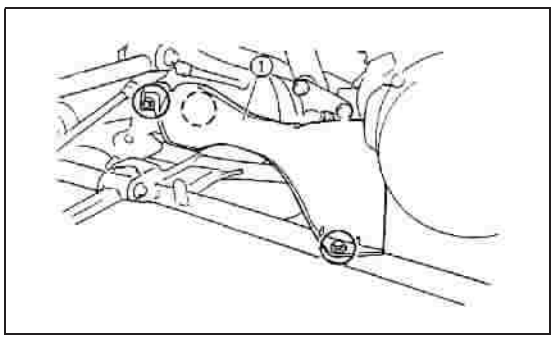
●Pivot shaft (right) ④



6.Pull the breather hoses and parking brake cable out of their guides.

7.Remove:

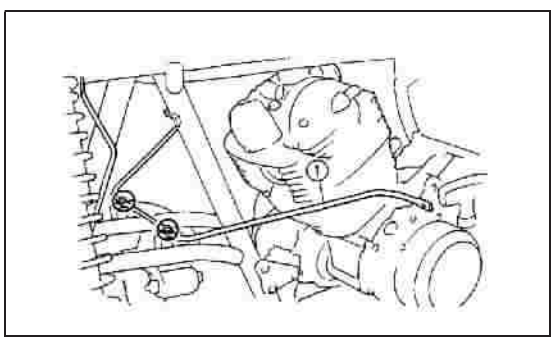
●Rear shock absorber and swingarm



FRONT FENDER BRACKET

1.Remove:

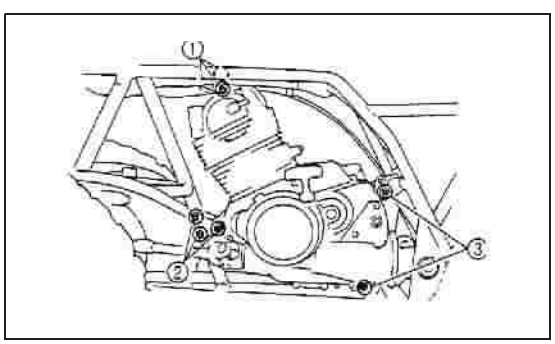
●Front drive shaft protector①



FRONT FENDER BRACKET

1.Remove:

● Front fender bracket ①



ENGINE REMOVAL

1.Remove:

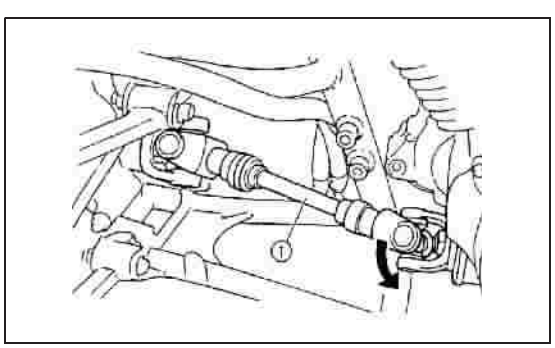
●Bolts (engine mounting–top)①

●Engine stay (upper)

●Bolts (engine mounting–front)②

●Engine stay (front)

●Bolts (engine mounting–rear) ③



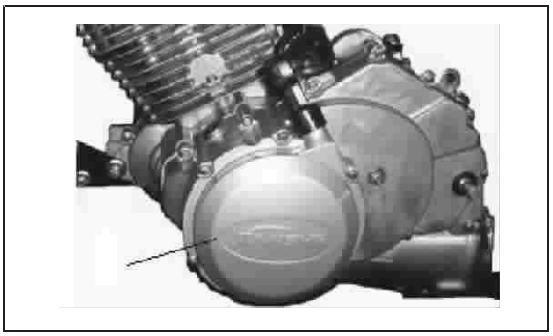
2.Remove:

●Front drive shaft ①

3.Remove:

●Engine

(From the left side)



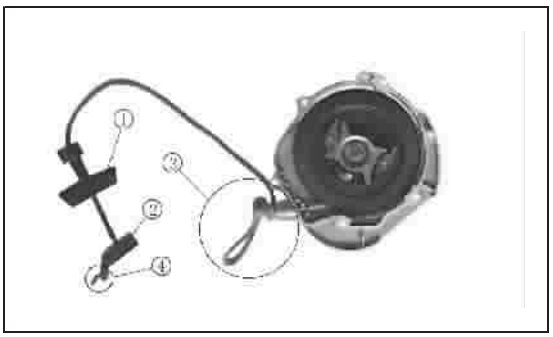
ENGINE DISASSEMBLY

RECOIL STARTER

1.Remove:

●Recoil starter assembly ①

●Gasket



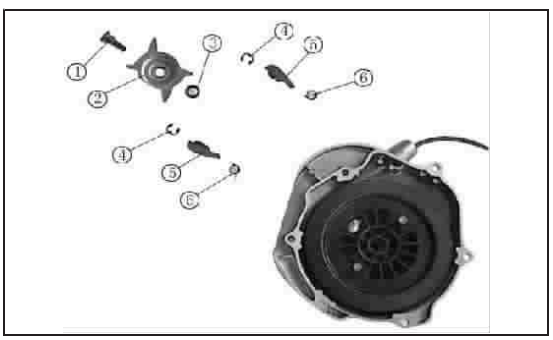
2.Remove:

●Cap ②

●Starter handle ①

NOTE:

Before untying the knot ④ above the starter handle, make a knot ③ in the rope so that the rope is not pulled into the case.



3.Remove

●Screw pin①

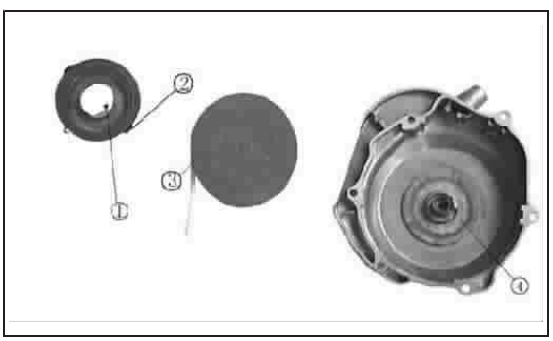
●Guide plate ②

●Compressing spring ③

●Circlip ④

●Driving jaw ⑤

●Torsion spring ⑥



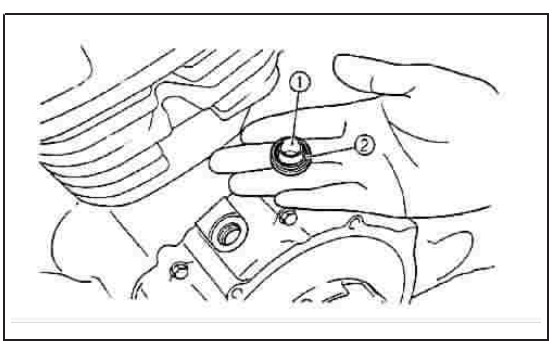
4.Remove

●Coiling spring ①

●Coiling spring backboard ②

●Driving plate assy ③

● Left side cover assy ④

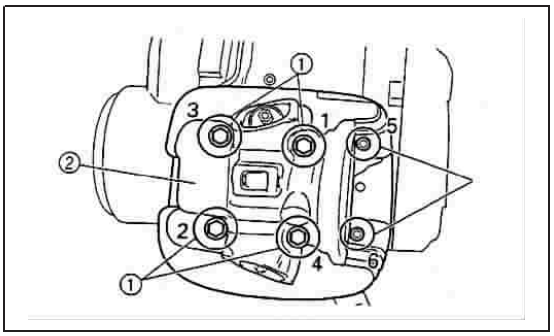


CYLINDER HEAD AND CYLINDER

1. Remove:

●Timing plug ①

●O–ring ②



10.Remove:

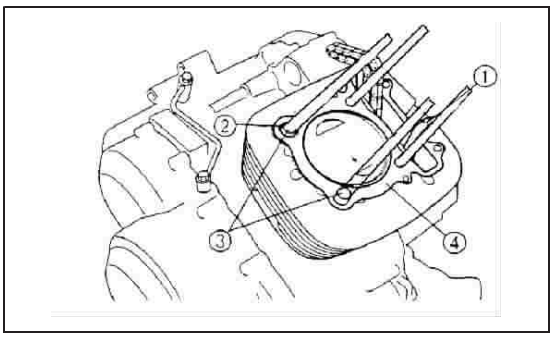
● Bolt (cylinder) ①

● Cylinder ②

● Gasket (cylinder) ③

● Dowel pins ④

● O–ring ⑤



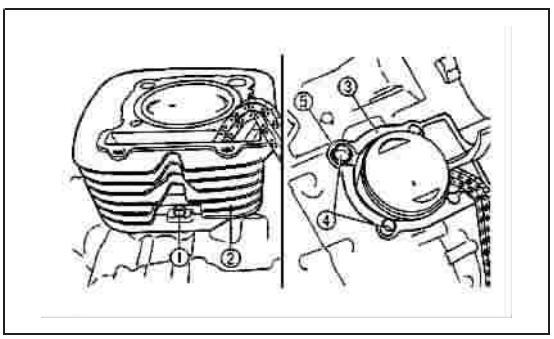
PISTON

1 .Remove:

● Piston pin clip ①

NOTE:

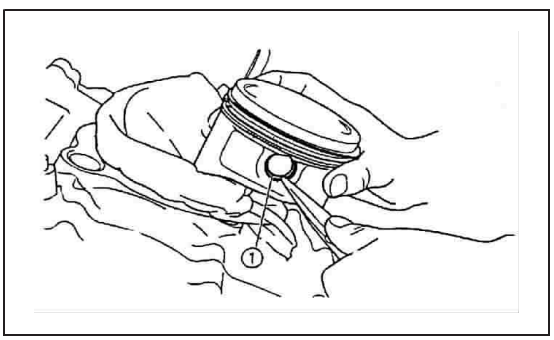
Before removing the piston pin clip, cover the crankcase with a clean rag so the clip will not accidentally drop into the crankcase.



2.Remove:

● Piston pin ①

● Piston ②

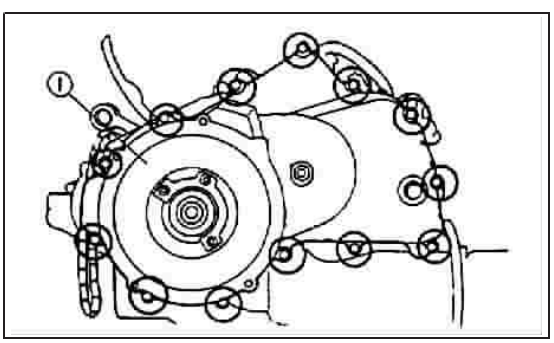


RANKCASE COVER (LEFT)

1.Remove:

● Starter pulley ①

Use the rotor holder ② to hold the starter pulley.



2.Remove:

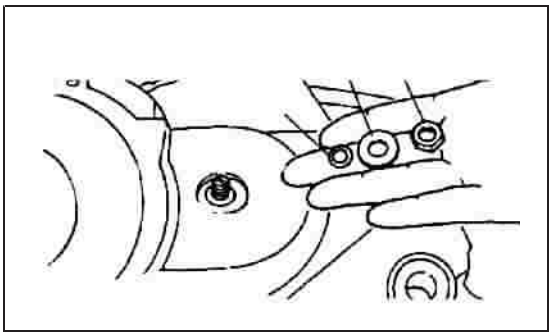
● Crankcase cover (left) ①

● Gasket

● Dowel pins

NOTE:

When removing the crankcase cover, the plain washer will fall off. Take care not to lose it.

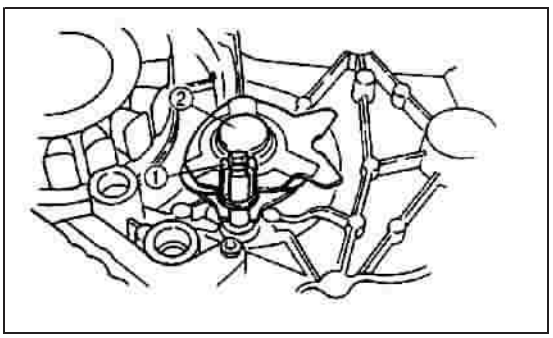


3.Remove:

●Locknut ①

●Washer ②

●O–ring ③



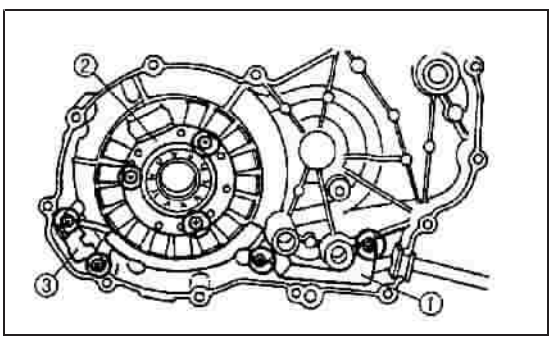
4.Remove:

●Stopper collar ①

●Shift guide assembly ②

NOTE:

When removing the left crankcase cover, the stopper collar ① can easily fall off. Make sure that you do not lose this part.



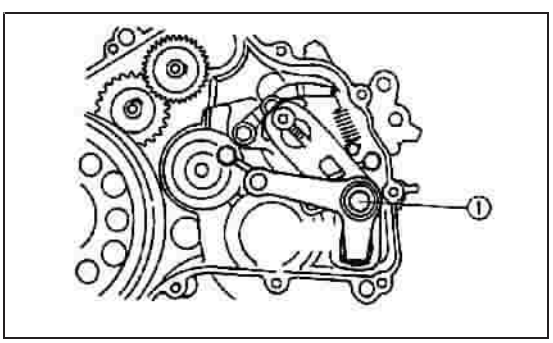
5.Remove:

●Lead holder ①

●Stator assembly ②

●Pickup coil assembly ③

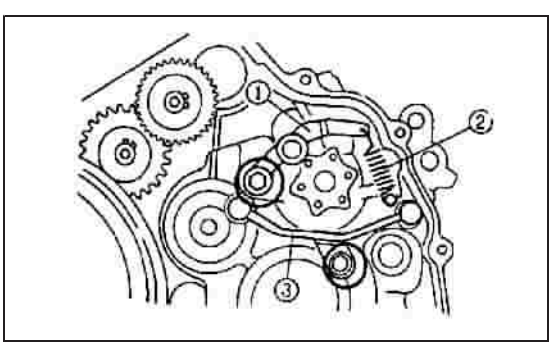
SHIFT SHAFT AND STARTER IDLE GEAR



1.Remove:

●Shift shaft assembly ①

●Washer



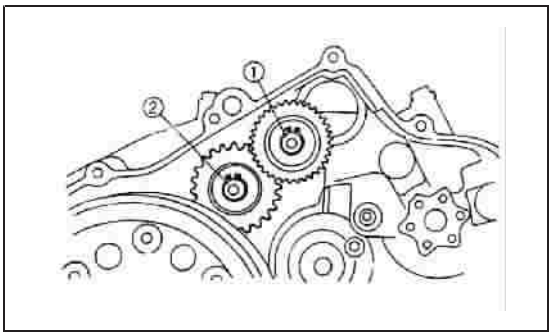
2.Remove:

●Stopper lever ①

●Spring ②

●Oil delivery pipe 3 ③

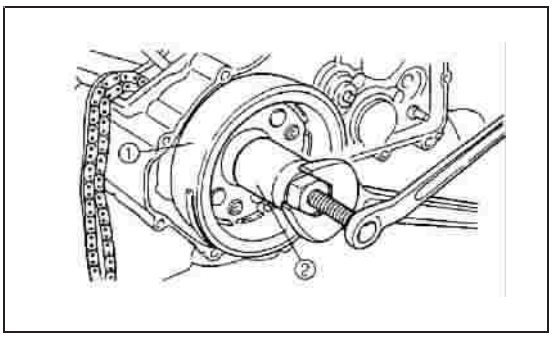
●O–rings



3.Remove:

● Starter idle gear 1 ①

● Starter idle gear 2 ②

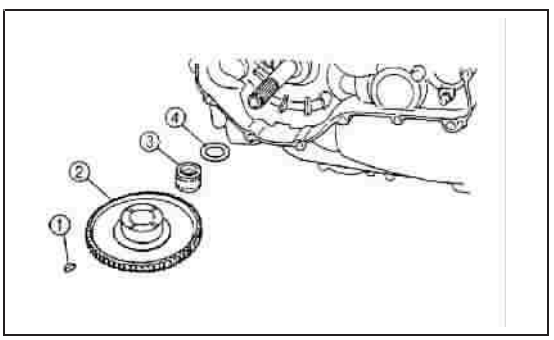


CDI ROTOR AND TIMING CHAIN

1.Remove:

● CDI rotor ①

Use a flywheel puller ②



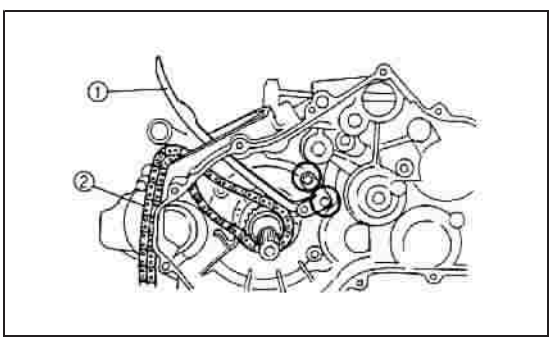
2.Remove:

● Woodruff key ①

● Starter wheel gear ②

● Bearing ③

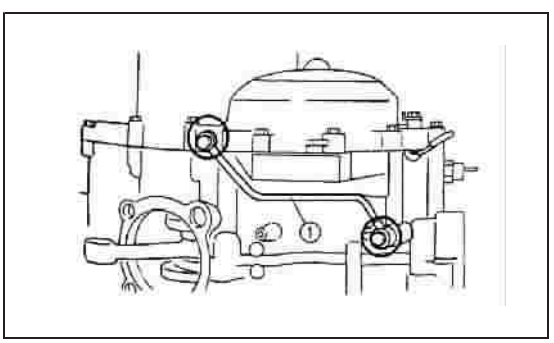
● Plain washer ④



3.Remove:

● Timing chain guide (intake) ①

● Timing chain ②

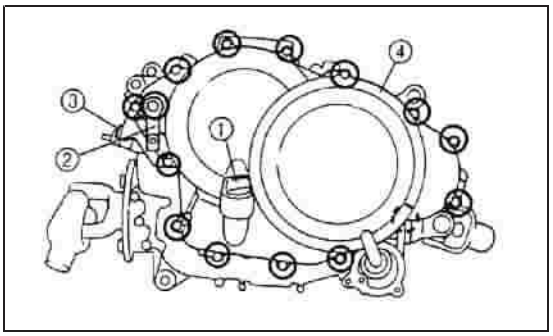


CRANKCASE COVER (RIGHT)

1.Remove:

● Oil delivery pipe ①

● Copper washers

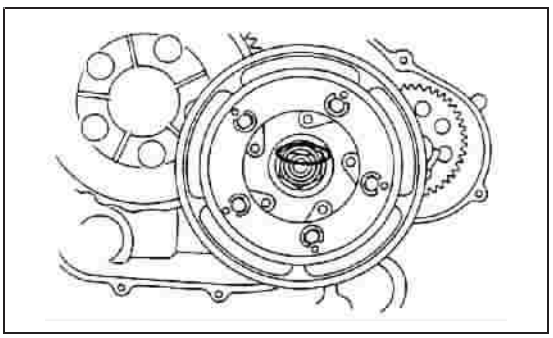


2.Remove:

- ●Dipstick ①
- ●Reverse control lever ②
- ●Reverse control cable holder ③
- ●Crankcase cover (right) ④
- ●Dowel pins
- ●Gasket

NOTE:

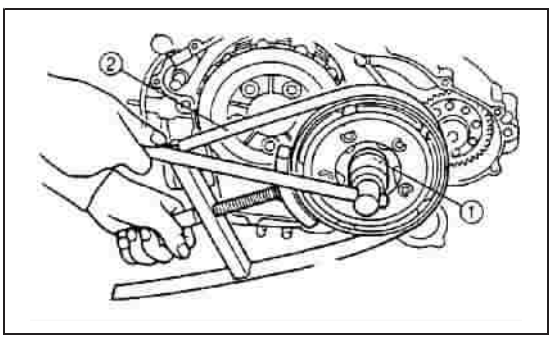
- **●Working in a crisscross pattern, loosen each bolt 1/4 of a turn. Remove them after all of them are loosened.**
- **● Before removing the crankcase cover, remove the dipstick.**



CLUTCH

1.Straighten:

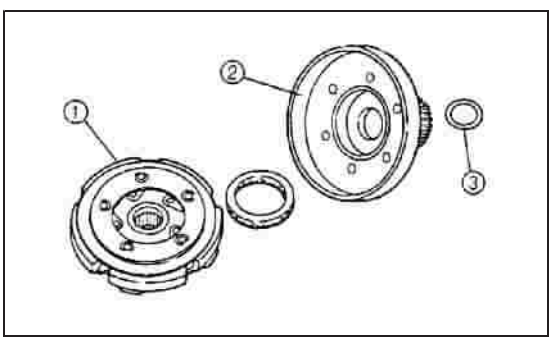
● Punched portion of the nut (primary Clutch)



2.Remove:

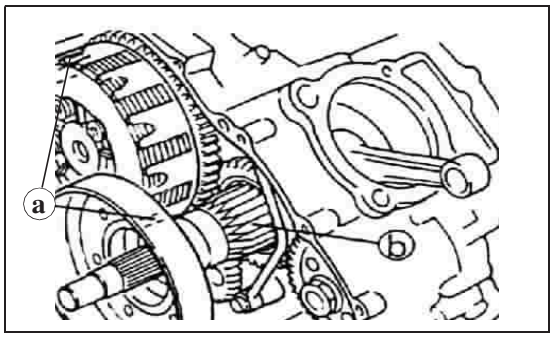
●Nut (primary clutch) ①

Use a sheave holder ② to hold the clutch housing.



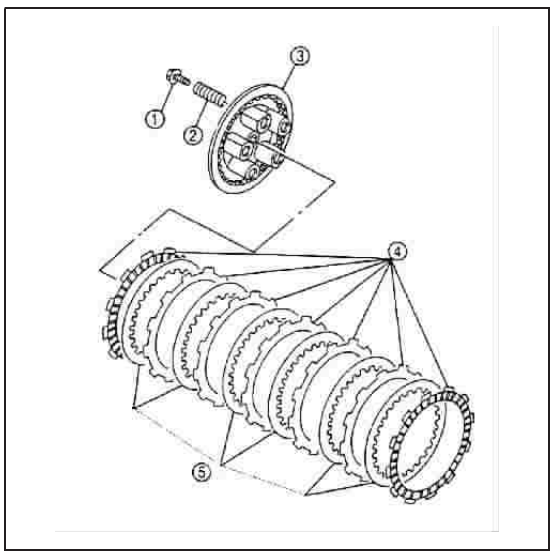
3.Remove:

- ●Clutch carrier assembly ①
- ●Clutch housing ②
- ●Plain washer ③



NOTE:

When removing the primary clutch housing, align the indentations in the secondary clutch housing @ and the primary gear (b) with each other.

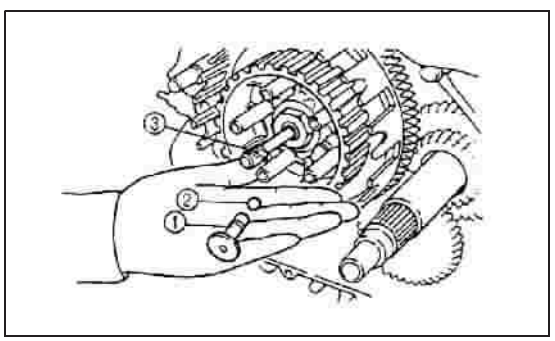


4.Remove:

- Bolts (pressure plate)①
- Clutch springs②
- Pressrure plate ③
- Friction plates④
- Clutch plates⑤

NOTE:

Loosen the plate bolts in a crisscross pattern.

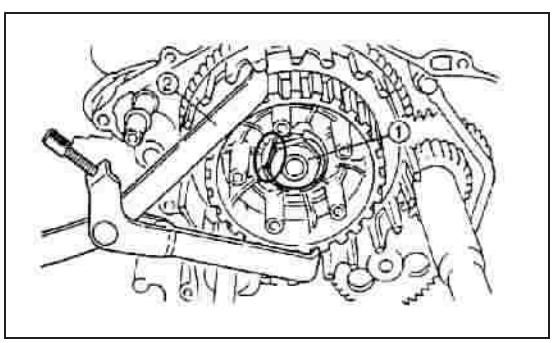


5.Remove:

- Push rod 1 ①

(with O–ring)

- Ball ②
- Push rod 2 ③



6.Straighten:

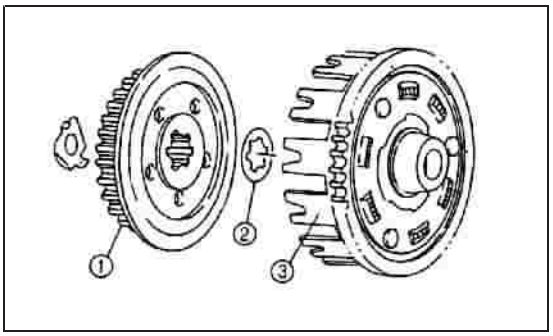
- Lock washer tabs (clutch boss)

7.Remove:

- Nut (clutch boss) ①

Use a clutch holding tool ② to hold the clutch boss.

- Lock washer

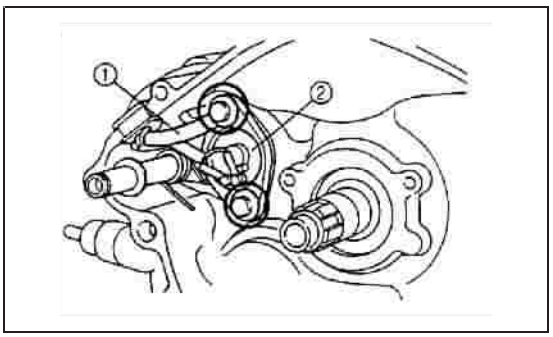


8.Remove:

● Clutch boss ①

● Thrust washer ②

● Clutch housing ③

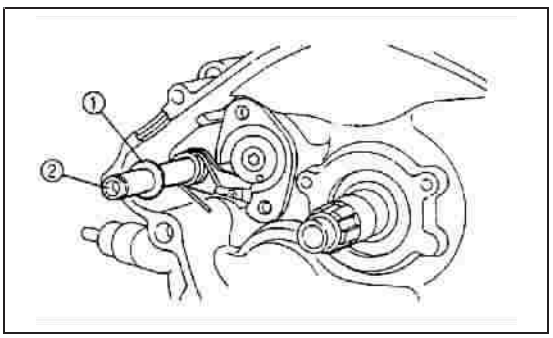


REVERSE SHIFT BRACKET

1.Remove:

● Lead holder ①

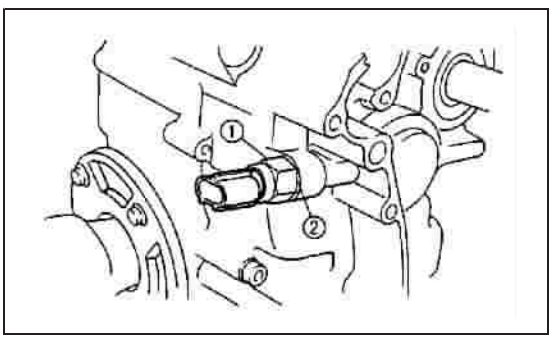
● Gear position switch ②



2.Remove:

● Washer ①

● Reverse shift bracket assembly ②



3.Remove:

● Thermo switch ①

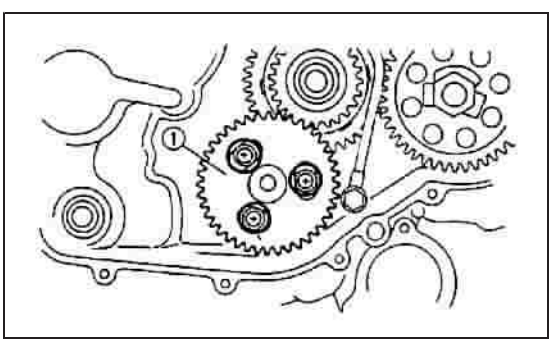
● Copper washer ②

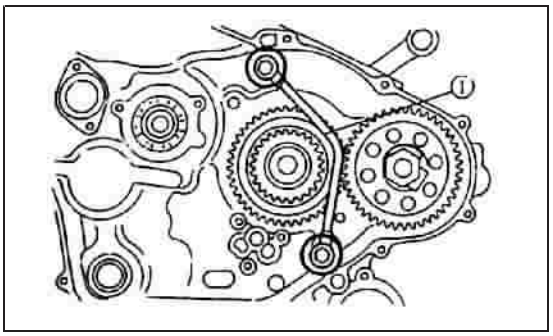
OIL PUMP AND BALANCER DRIVE GEARS

1.Remove:

● Oil pump assembly①

● Gasket (oil pump)

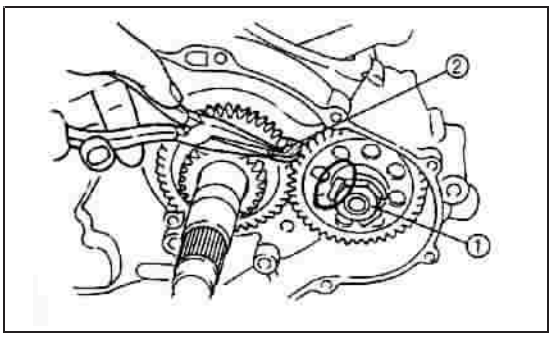




2.Remove:

●Oil delivery pipe 1 ①

●Copper washers



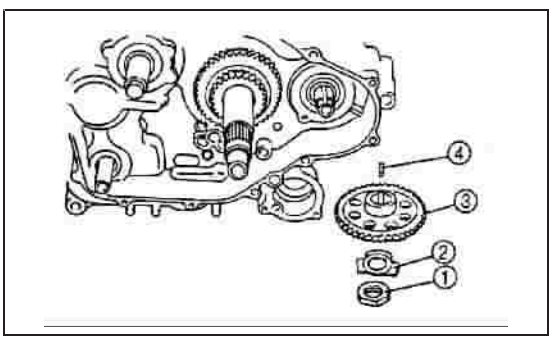
3.Straighten:

● Lock washer tabs (balancer driven 4. Loosen:

●Nut (balancer driven gear) ①

NOTE:

Place a copper plate ② between the teeth of the driven gear and drive gear to lock them.



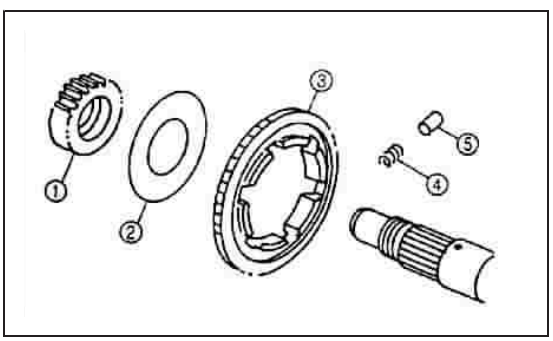
5.Remove:

●Nut (balancer driven gear) ①

●Lock washer ②

●Balancer driven gear ③

●Straight key ④



6.Remove:

●Oil pump drive gear ①

●Holding plate ②

●Balancer drive gear ③

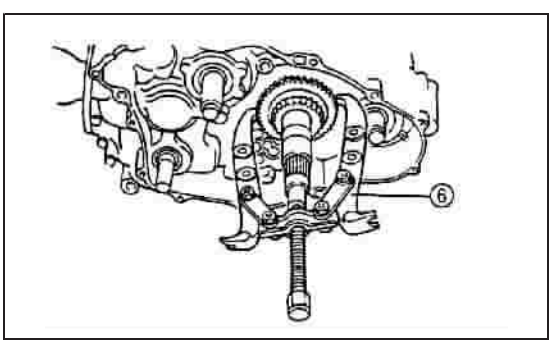
●Springs ④

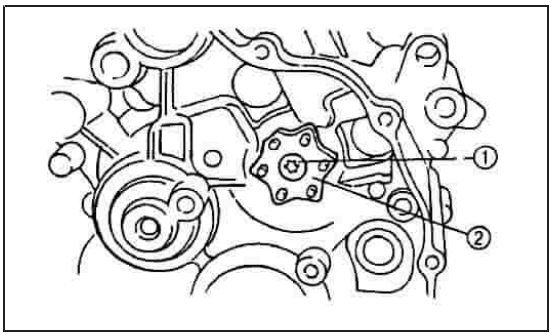
●Pins ⑤

NOTE:

● The balancer drive gear has six springs and three pins. Use care so they do not fall out when removing the balancer drive gear.

● Using a two –leg puller ⑥ when removing the oil pump drive gear ① and balancer drive gear ③.



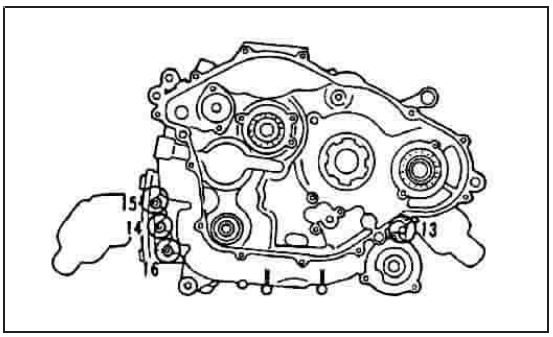


CRANKCASE (LEFT)

1.Remove:

● Torx screw ①

● Shift cam segment ②



2.Remove:

● Bolts (crankcase)

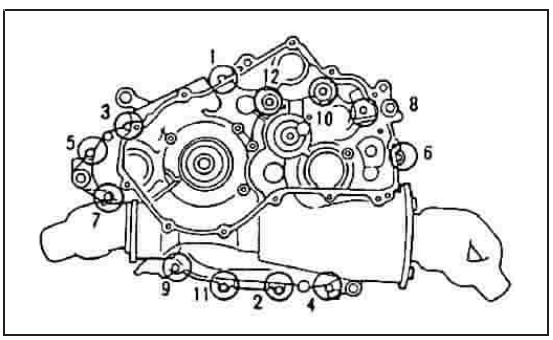
NOTE:

● Working in a crisscross pattern, loosen all of the bolts 1/4 of a turn each. Remove them after all of them are loosened.

● Loosen the bolts in decreasing numerical order.

1 – 13 :M6 bolts

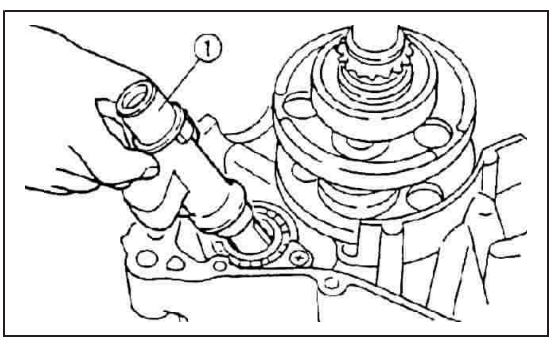
14 – 16: M8 bolts



3.Remove:

● Crankcase (left)

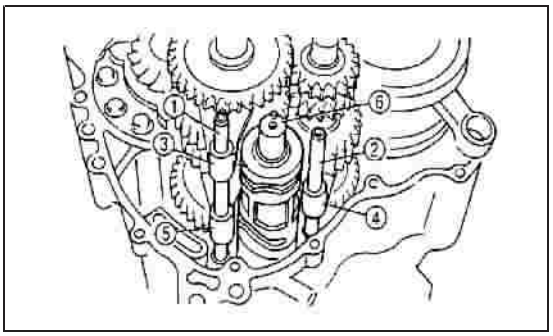
● Dowel pins



BALANCER WEIGHT AND TRANSMISSION

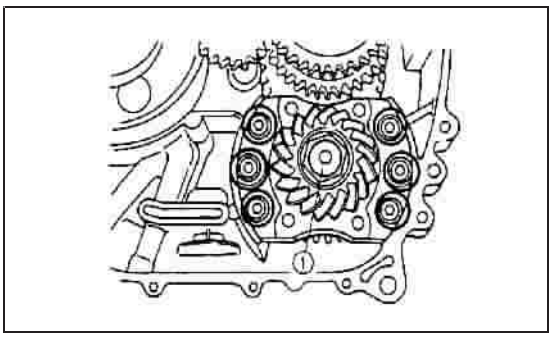
1.Remove:

● Balancer weight ①



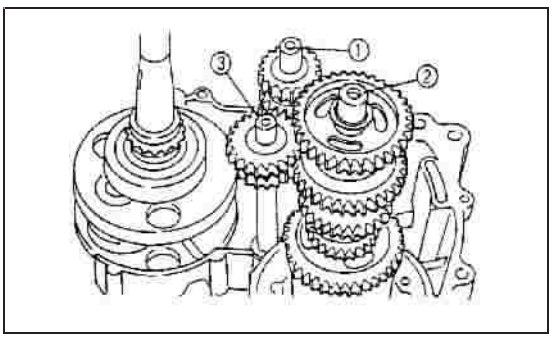
2.Remove:

- ●Guide bar #1 (longer)①
- ●Guide bar #2 (shorter) ②
- ●Shift fork "L" ③
- ●Shift fork "C" ④
- ●Shift fork "R" ⑤
- ●Shift cam ⑥



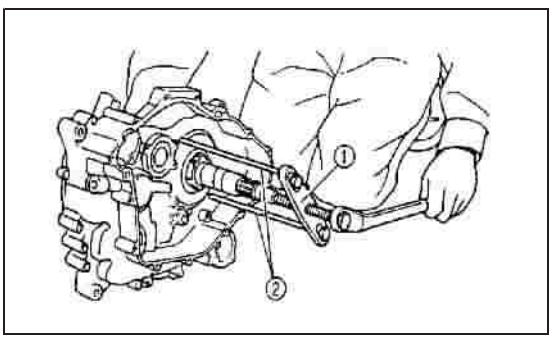
3.Remove:

- ●Middle drive shaft assembly ①
- ●Middle driven gear



4.Remove:

- ●Main axle assembly ①
- ●Drive axle assembly ②
- ●Reverse wheel gear assembly ③

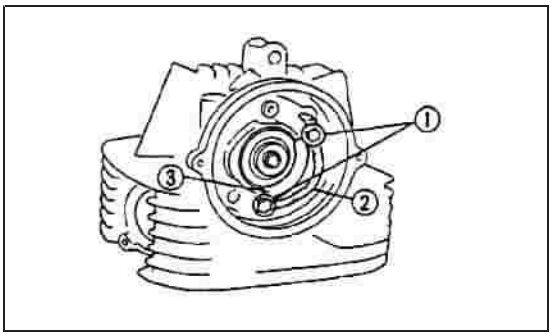


CRANKSHAFT

1 .Remove:

- ●Crankshaft

Use a crankcase separating tool ① and slide hammer bolt ②.



CAMSHAFT,ROCKER ARM AND VALVE

1.Straighten:

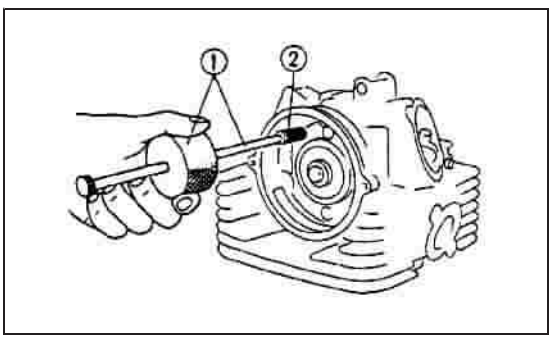
●Lock washer tabs

2.Remove:

●Bolts (camshaft) ①

●Lock washer ②

●Retainer ③



3.Attach:

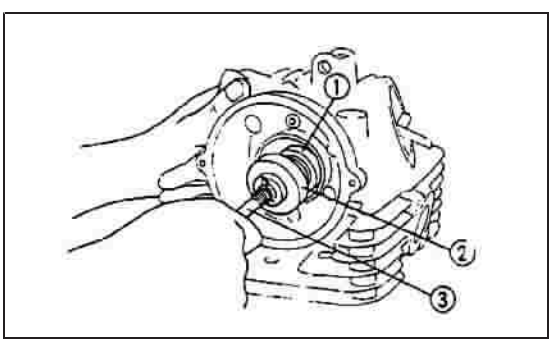
●Slide hammer set ①

4.Remove:

●Rocker arm shafts ②

●Rocker arms

●Wave washers



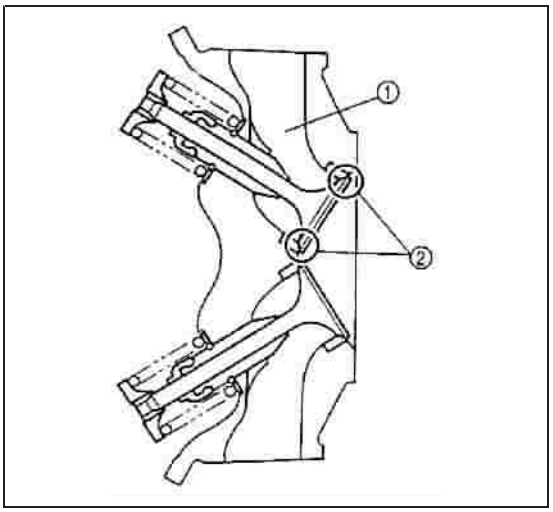
5.Remove:

●Camshaft ①

●Camshaft bearing ②

NOTE:

Screw in a M10 bolt ③ into the thread hole on the camshaft, and pull out the camshaft.



6.Check:

●Valve sealing

Leakage at valve seat –-> Inspect the valve face, valve seat and valve seat width.

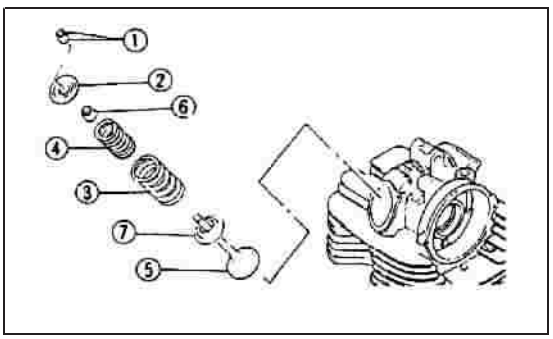
NOTE:

Before removing the internal parts (valve,valve spring, spring seat, etc.) of the cylinder head, the valv sealing should be checked.

Checking steps:

● Pour s clean solvent into the intake and exhaust ports.

●Check the valve sealing.There should be no leakage at the valve seats②



7.Remove:

●Valve cotter ①

●Spring retainer ②

●Valve spring (outer) ③

●Valve spring (inner) ④

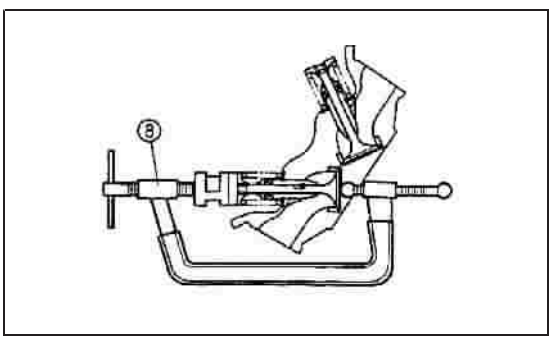
●Valve ⑤

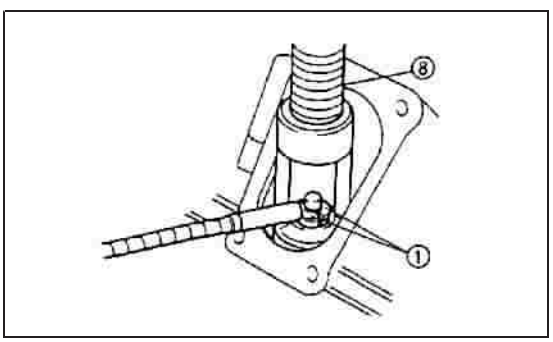
●Oil seal ⑥

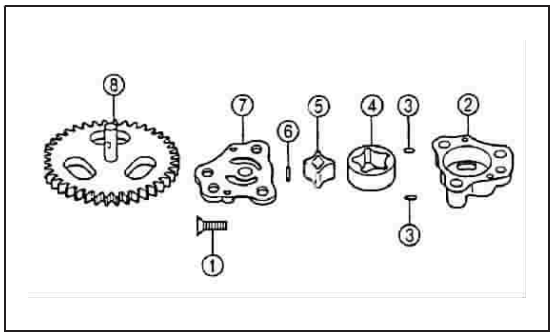
●Spring seat ⑦

NOTE:

Compress the valve spring using a valve spring compressor ⑧ to remove the valve cotters ①.



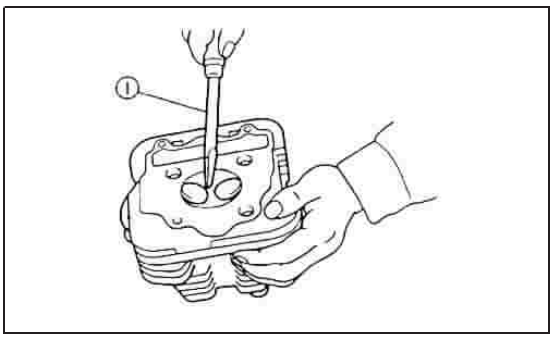




OIL PUMP

1.Remove:

- ●Screw ①
- ●Pump housing ②
- ●Dowel pins ③
- ●Outer rotor ④
- ●Inner rotor ⑤
- ●Pin ⑥
- ●Pump cover ⑦
- ●Pump shaft ⑧



INSPECTION AND REPAIR

CYLINDER HEAD

1.Eliminate:

●Carbon deposit

(from the combustion chamber)

Use a rounded scraper ①.

NOTE:

Do not use a sharp instrument to avoid damaging or scratching:

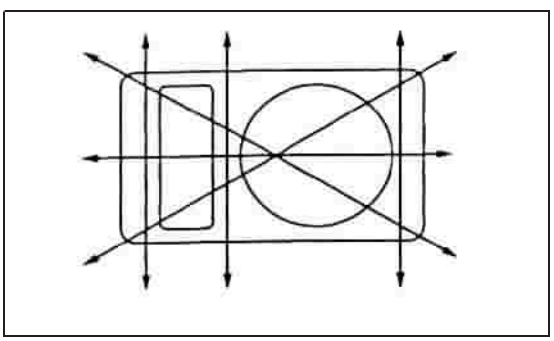
●Spark plug threads

●Valve seat

2.Inspect:

●Cylinder head

Scratches/damage ––> Replace.

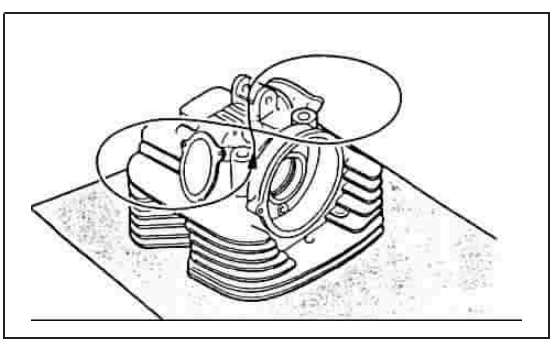


3.Measure:

●Warpage

Out of specification ––> Resurface.

Cylinder head warpage:less than 0.05mm.



4.Resurface:

●Cylinder head

Resurfacement steps:

● Place a 400 –600 grit wet sandpaper on the surface plate, and resurface the head using a figure–eight sanding pattern.

NOTE:

Rotate the head several times to avoid removing too much material from one side.

VALVE SEAT

1.Eliminate:

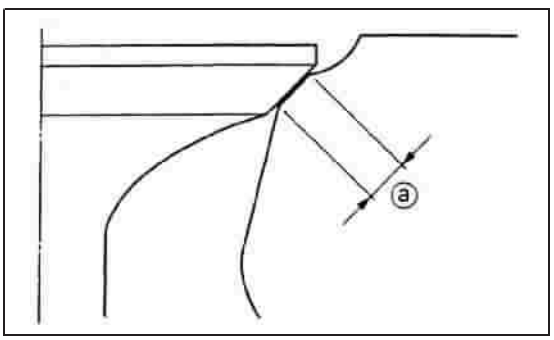
●Carbon deposit

(from valve face and valve seat)

2.Inspect:

●Valve seat

Pitting/wear ––>Replace the cylinder head and valve.



3.Measure:

●Valve seat width

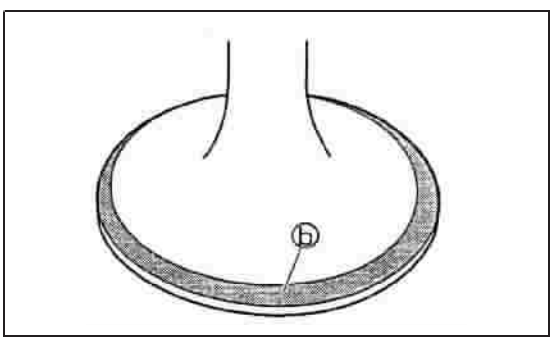
Out of specification ––> Replace the cylin – der head and valve.

Intake valve seat width:1.2–1.4mm,

Limit:1.6mm

Exhaust valve seat width:1.2–1.4mm

Limit:1.6mm



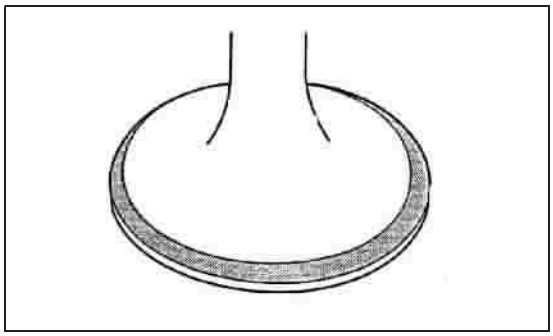
4.Lap:

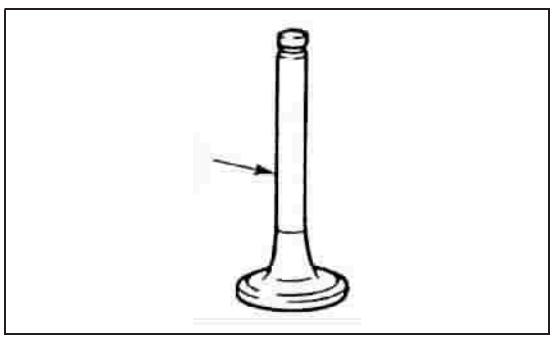
●Valve face

●Valve seat

NOTE:

When replacing the cylinder head, valve and valve guide, the valve seat and valve face should be lapped.





Lapping steps:

● Apply a coarse lapping compound to the valve face.

NOTE:

Be sure that no compound enters the gap between the valve stem and guide.

● Apply molybdenum disulfide oil to the valve stem.

● Install the valve into the cylinder head.

● Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the compound.

NOTE:

To obtain the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

● Apply a fine lapping compound to the valve face and repeat the above steps.

NOTE:

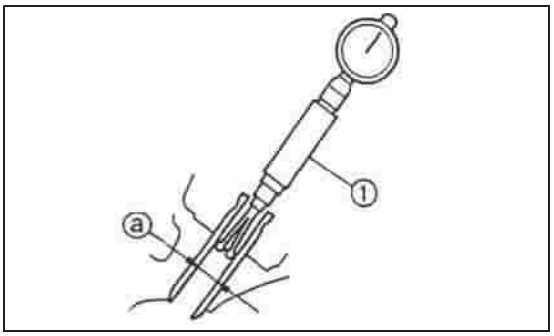
Be sure to clean off all of the compound from the valve face and valve seat after every lapping operation.

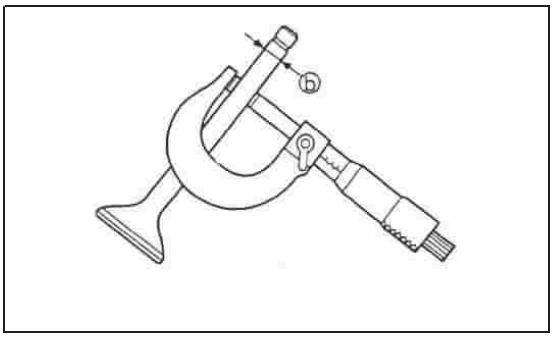
● Apply mechanic´s blueing dye (dykem) to the valve face.

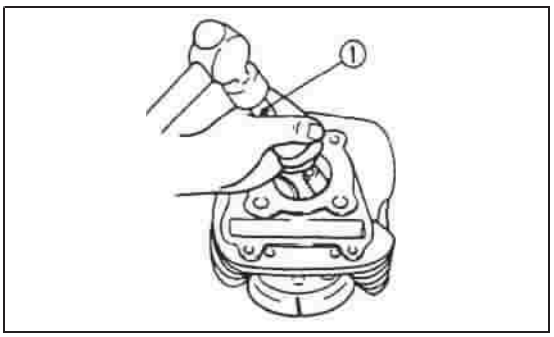
● Install the valve into the cylinder head.

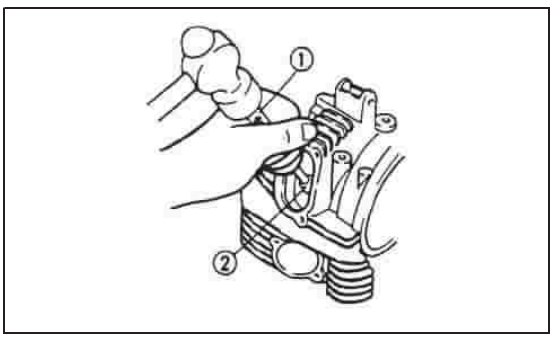
● Press the valve through the valve guide and onto the valve seat to make a clear pattern.

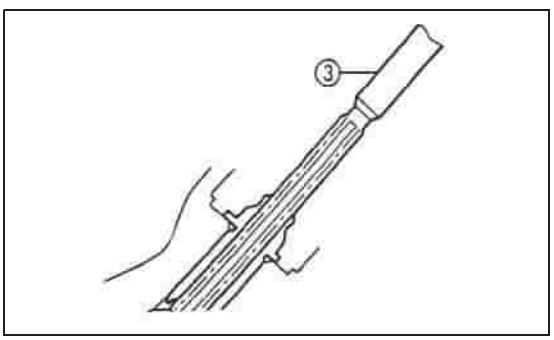
● Measure the valve seat width again.











VALVE AND VALVE GUIDE

1.Measure:

● Stem–to–guide clearance

Stem –to –guide clearance =Valve guide inside diameter a –Valve stem diameter b

Out of specification –––> Replace the valve guide.

Intake stem –to guide clearance:0.01 – 0.037mm,Limit:0.08mm

Exhaust stem –to guide clearance:0.03 – 0.057mm,Limit:0.10mm

① Bore gauge

2.Replace:

● Valve guide

Replacement steps:

NOTE:

Heat the cylinder head in an oven to 100 ℃ (212 ° F) to ease guide removal and installation and to maintain correct interference fit.

● Remove the valve guide using a valve guide remover ①.

● Install the valve guide (new) using a valve guide installer ② and valve guide remover①.

● After installing the valve guide, bore the valve guide using a valve guide reamer ③ to obtain proper stem–to–guide clearance.

3.Eliminate:

●Carbon deposits

(from valve face)

4.Inspect:

●Valve stem

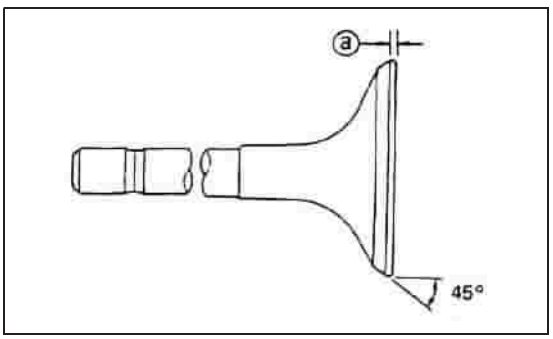
Broken/damage –> Replace.

●Valve face

Pitting/wear–>Grind the face.

●Valve stem end

Mushroom shape or diameter larger than rest of the stem –> Replace.



5.Measure:

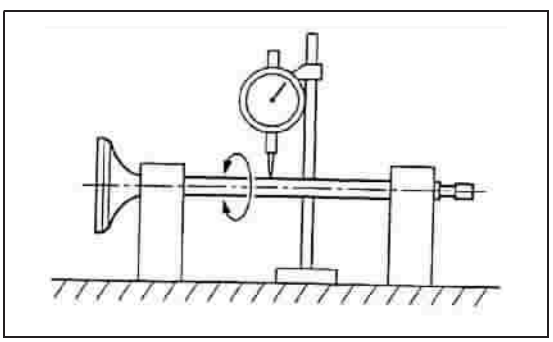
●Margin thickness a

Out of specification –> Replace

Margin thickness:

Intake:1.0–1.4mm

Exhaust:0.8–1.2mm



6.Measure:

●Runout (valve stem)

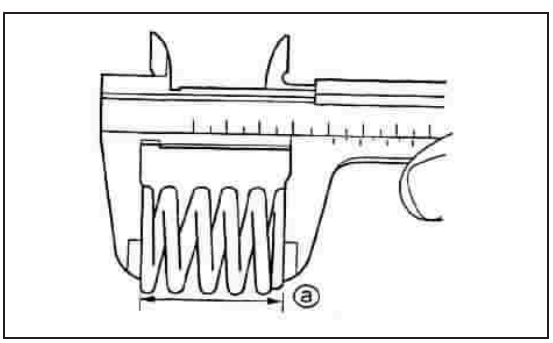
Out of specification –> Replace.

Stem runout limit:0.02mm

NOTE:

● Always replace the guide if the valve is replaced.

● Always replace the oil seal if the valve is Removed.



VALVE SPRING

1.Measure:

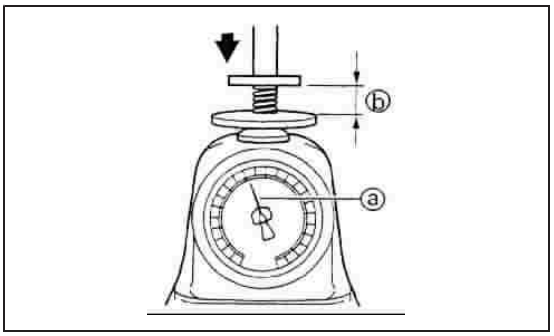
Valve spring free length a Out of specification–>Replace.

Inner spring freelength:39.9mm

Limit:37.9mm

Outer spring free length:43.27

Limit:41.27mm



2.Measure:

●Valve spring installed force a

Out of specification –> Replace.

b Installed length

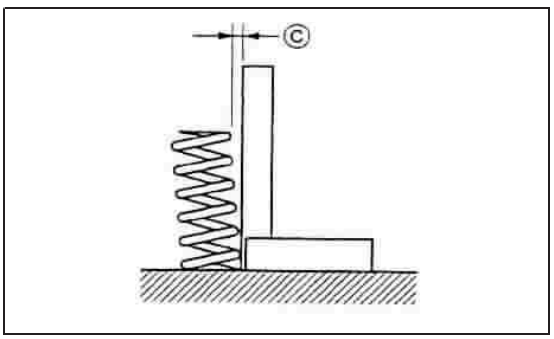
Valve spring installed force

Inner spring

b:33.6mm a:10.7–12.3kg

Outer spring

b:36.6mm a:23.0–26.6kg



3.Measure:

●Spring tilt c

Out of specification –> Replace.

Inner spring tilt c: less than 1.6mm

Outer spring tilt c: less than 1.6mm

CAMSHAFT

1.Tnspect:

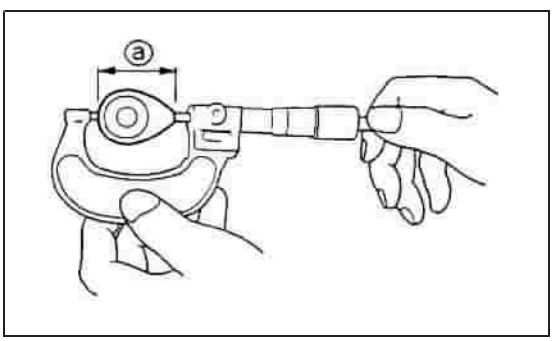
●Camshaft bushing

●Camshaft needle bearing (in cylinder head)

Wear/damge–>Replace.

●Cam lobes

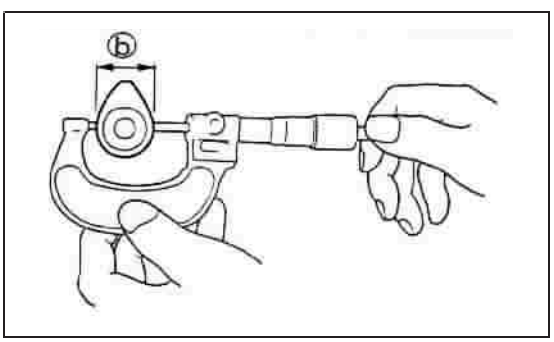
Pitting/scratches/blue discoloration replace.



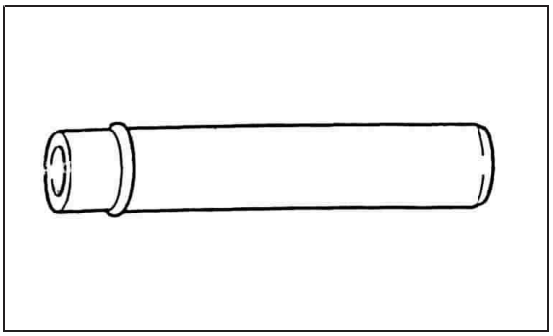
2.Measure:

●Cam lobes length a and b.

Out of specification–>Re Replace



	Cam lobe limit a	Cam lobe limit b
Intake	40.52mm (1.595 in)	32.08mm (1.263 in)
Exhaust	40.52mm (1.595 in)	32.08mm (1.263 in)

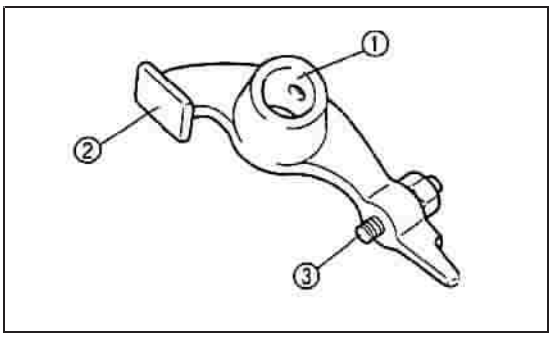


ROCKER ARM AND ROCKER ARM SHAFT

1.Inspect:

●Rocker arm shaft

Blue discoloration/grooves ––> Replace,then inspect the lubrication system.



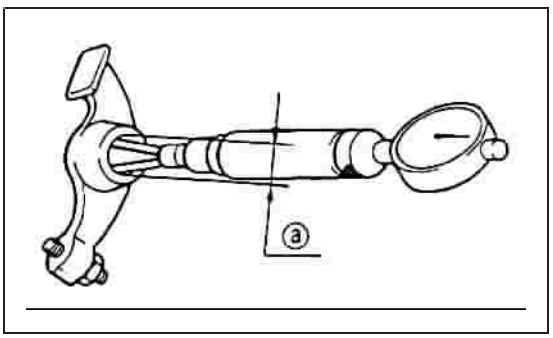
2.Inspect:

●Bore (rocker arm shaft) ①

●Cam lobe contact surface ②

●Adjuster surface ③

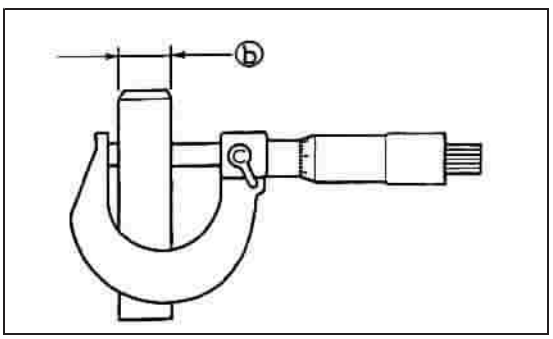
Pitting/scratches/blue discoloration/wear → Replace, then inspect the lubrication system.



3.Inspect:

●Wave washer

Damage/expanded –––> Replace.

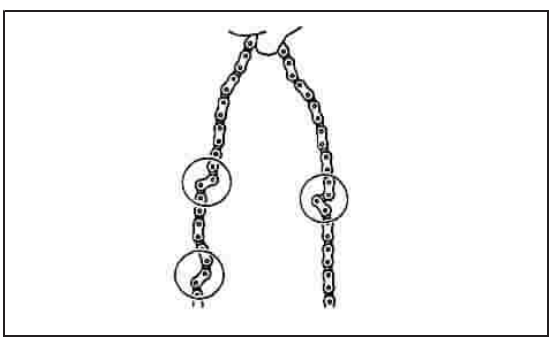


4.Measure:

●Arm–to–shaft clearance

Out of specification –––> Replace as a set.

Arm –to –shaft clearance =Bore size (rocker arm shaft) a –Outside diameter (rocker arm shaft) b Arm –to –shaft clearance：0.009 ~ 0.037mm；less than 0.08mm.

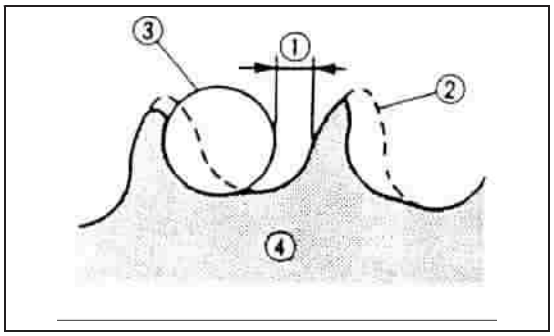


TIMING CHAIN TENSIONER

1.Inspect:

●Timing chain

Cracks/stiff ––>Replace the timing chain and camshaft sprocket as a set.



2.Inspect:

●Camshaft sprocket

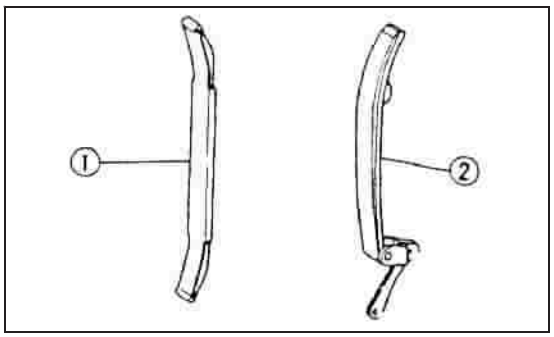
Wear/damage –> Replace the camshaft sprocket and timing chain as a set.

① 1/4 of a tooth

② Correct

③ Roller

④ Sprocket

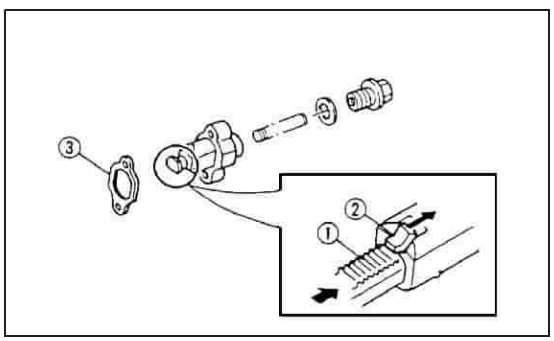


3.Inspect:

●Exhaust side timing chain guide ①

●Intake side timing chain guide ②

Wear/damage –> Replace.



4.Inspect:

●Tensioner rod ①

●One–way cam ②

●Gasket ③

Damage –> Replace.

TAPPET COVER AND SIDE COVER (CYLINDER HEAD)

1.Inspect:

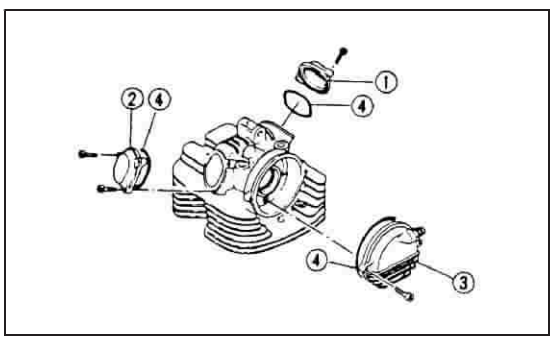
●Tappet cover (intake) ①

●Tappet cover (exhaust) ②

●Side cover (cylinder head) ③

●O–ring ④

Cracks/damage –> Replace.

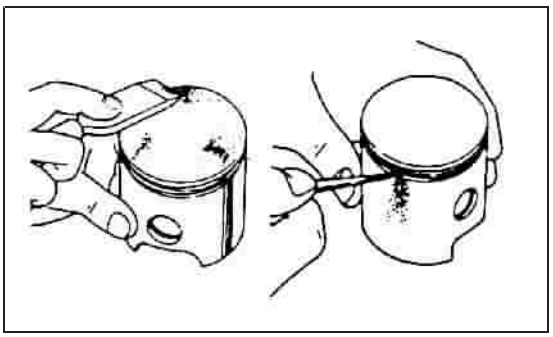


CYLINDER AND PISTON

1.Inspect:

●Cylinder and piston walls

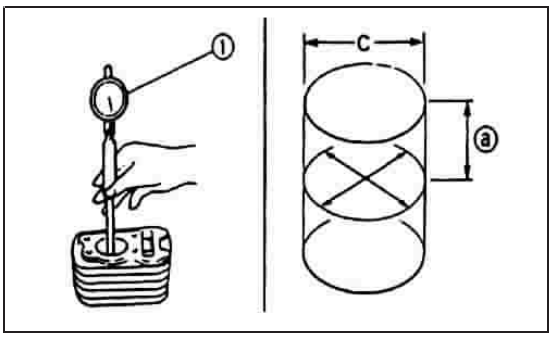
Vertical scratches –> Rebore or replace the cylinder and piston.



2.Eliminate:

● Carbon deposits

(from the piston crown and ring grooves)



3.Measure:

● Piston–to–cylinder clearance

Measurement steps:

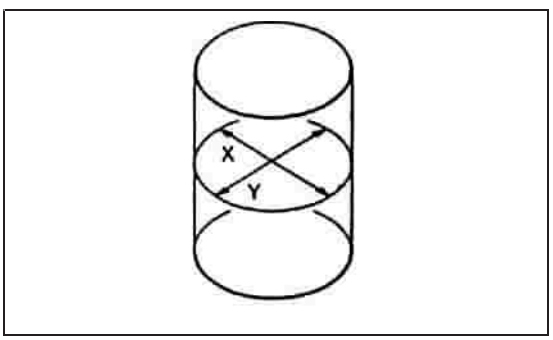
First step

● Measure cylinder bore "C" with a cylinder bore gauge ①.

a=40 mm (1.6 in) from the top of the cylinder

NOTE:

Measure cylinder bore "C" in parallel to and at right angles to the cylinder matching surface. Then, find the average of the measuremeats.

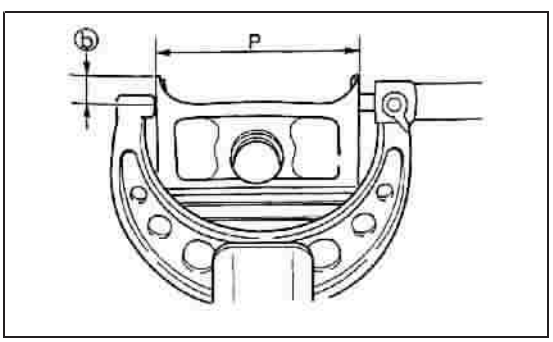


Cylinder bore"C"=(X+Y)/2

Standard 82.98–83.02mm

Wear limit 83.15mm

● If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.



2nd step

● Measure piston skirt diameter "P" with a micrometer.

Piston skirt diameter "P"

Standard 82.92–82.97mm

B=5.5mm

● If out of specification, replace the piston and piston rings as a set.

3rd step

● Find the piston–to–cylinder clearance with the following formula.

Piston–to–cylinder clearance =Cylinder bore "C" –Piston skirt diameter "P"

Piston–to–cylinder clearance:0.04–0.06mm

Limit:0.15mm

● If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

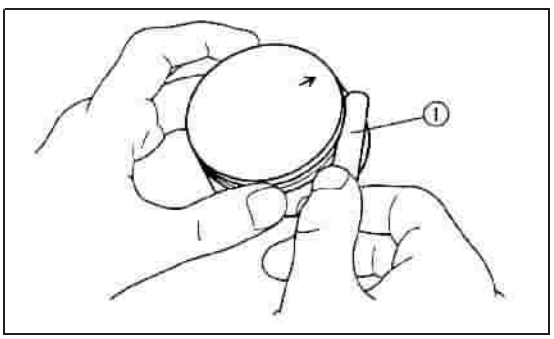
PISTON RING

1 .Measure:

● Ring side clearance

Use a feeler gauge ①.

Out of specification ––> Replace the piston and rings as a set.



NOTE:

Clean carbon from the piston ring grooves and rings before measuring the side clearance.

	Side clearance	
	Standard	Limit
Topring	0.04~0.08mm(0.002~0.003in)	0.12mm(0.005in)
2ndring	0.03~0.07mm(0.001~0.003in)	0.12mm(0.005in)

2.Position:

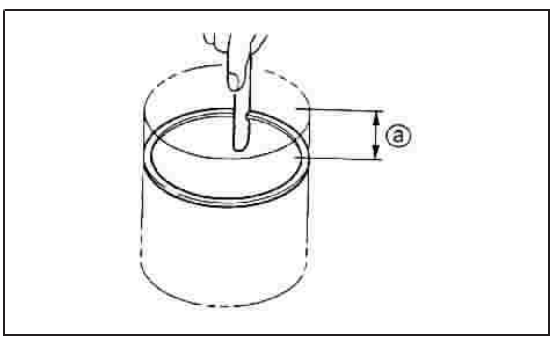
● Piston ring

(in cylinder)

NOTE:

Insert a ring into the cylinder and push it approximately 40 mm (1.6 in) into the cylin– der. Push the ring with the piston crown so that the ring will be at a right angle to thecylinder bore.

a=40mm (1.6 in)



3.Measure:

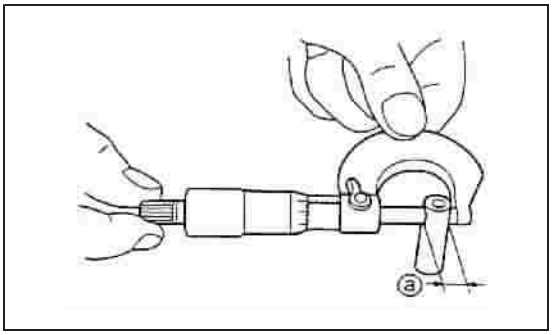
● Ring end gap

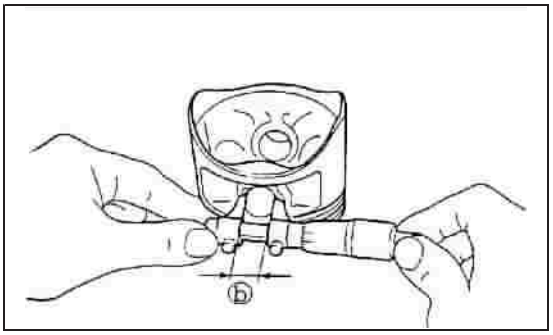
Out of specification–> Replace.

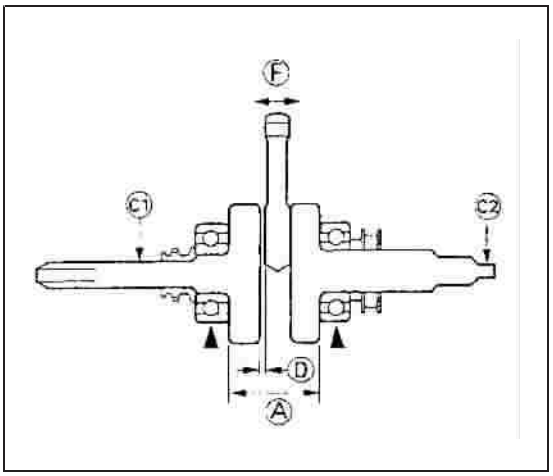
NOTE:

You cannot measure the end gap on the expander spacer of the oil control ring. If the oil control ring rails show excessive gap, replace all three rings.

	End gap	
	Standard	Limit
Top ring	0.2~0.4mm	0.5mm
2nd ring	0.2~0.4mm	0.5mm
Oil ring	0.3~0.9mm	







PISTON PIN

1.Inspect:

●Piston pin

Blue discoloration/grooves

Replace, then inspect the lubrication system.

2.Measure:

●Piston pin–to–piston clearance

Measurement steps:

●Measure the piston pin outside diameter a. If out of specification, replace the piston pin.

●Measure the piston inside diameter b.

●Calculate the piston pin–to–piston clearance with the following formula.

Piston pin –to –piston clearance =Bore size (piston pin) b –Outside diameter (piston pin) a

●If out of specification, replace the piston.

Piston pin–to–piston clearance:0.009–0.025mm

Limit:0.07mm

CRANKSHAFT

1.Measure:

● Crank width AOut of specification ––> Replace the crankshaft.

Crank width:58.95–59.00mm

●Side clearance D

Out of specification ––> Replace the crankshaft.

Big end side clearance:0.35–0.85mm

limit:1mm

●RunoutC

Outofspecification–> Replace the crankshaft

Runout limit:

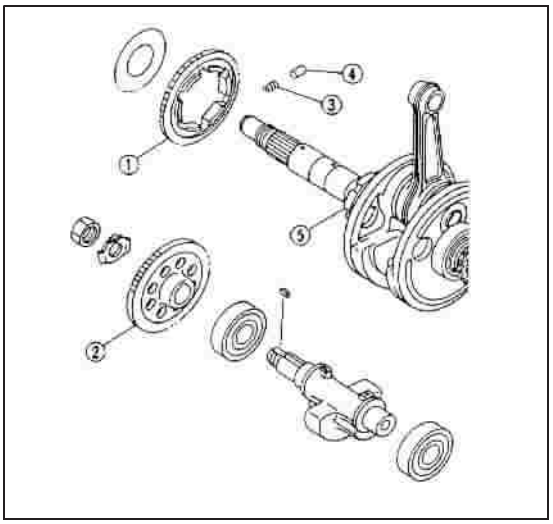
C1:0.03mm C2:0.06mm

●Small end free play F

Out of specification ––> Replace the big end bearing, crank pin, connecting rod and/or side washer as a set.

Small end free play:

Standard:0.8–1.0mm Limit:2.0mm



BALANCER DRIVE GEAR AND DRIVEN GEAR

1.Inspect:

●Balancer drive gear teeth ①

●Balancer driven gear teeth ②

●Springs ③

●Dowel pins ④

Fatigue/wear/damage –-> Replace.

●Buffer boss ⑤

Fatigue/wear/damage –> Replace the crankshaft.

PRIMARY GEARS

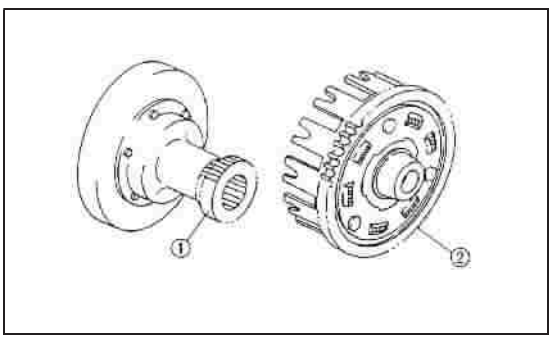
1.Inspect:

●Primary drive gear teeth ①

●Primary driven gear teeth ②

Wear/damage –-> Replace both gears.

Excessive noise during operation –->Replace both gears.



PRIMARY CLUTCH

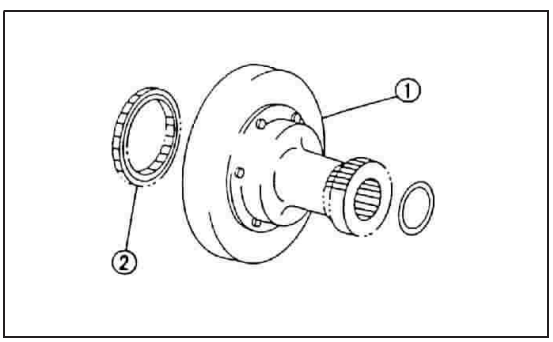
1.Inspect:

●Clutch housing ①

Heat damage/wear/damage –-> Replace.

●One–way clutch bearing ②

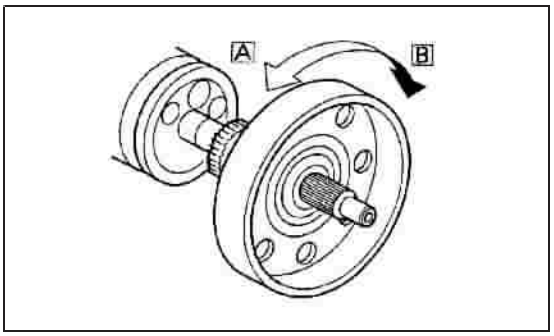
Chafing/wear/damage –--> Replace.



NOTE:

● Replace the one –way clutch assembly and clutch housing as a set.

● The one –way clutch bearing must be installed with the flange side facing in.



Primary clutch operation

● Install the clutch housing to the crankshaft and hold the crankshaft.

● When turning the clutch housing counter clockwise A, the clutch housing should turn freely.

If not, the one–way clutch assembly is faulty. Replace it.

● When turning the clutch housing clockwise B, the clutch housing and crankshaft should be engaged.

If not, the one–way clutch assembly is faulty. Replace it.

2.Inspect:

●Clutch shoe

Heat damage ––> Replace.

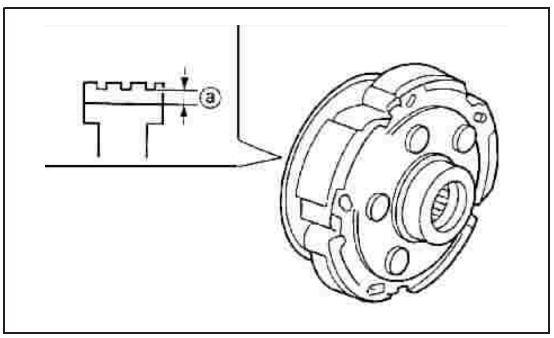
3.Measure:

●Clutch shoe thickness

Out of specification –––> Replace.

Clutch shoe thickness:2.0mm.

Clutch shoe wear limit a:1.5mm.



SECONDARY CLUTCH

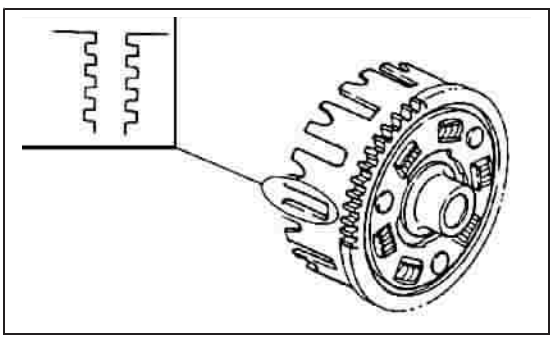
1.Inspect:

●Clutch housing dogs

●Cracks/pitting (edges)

Moderate –> Deburr.

Severe ––> Replace clutch housing.



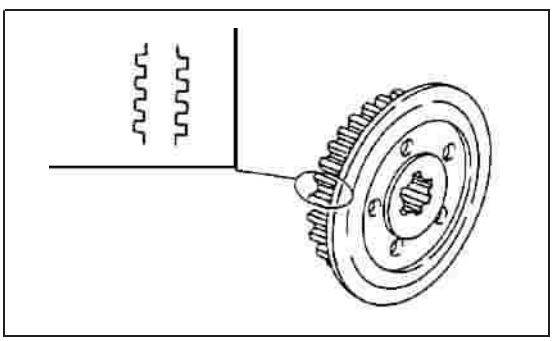
NOTE:

Pitting clutch on the friction plate dogs of the housing will cause erratic operation.

2.Inspect:

●Clutch boss splines

Scoring/wear/damage–> Replace the clutch boss.



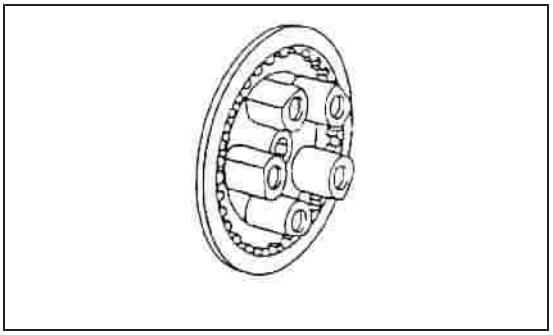
NOTE:

Scoring on the clutch plate splines will cause erratic operation.

3.Remove:

●Pressure plate

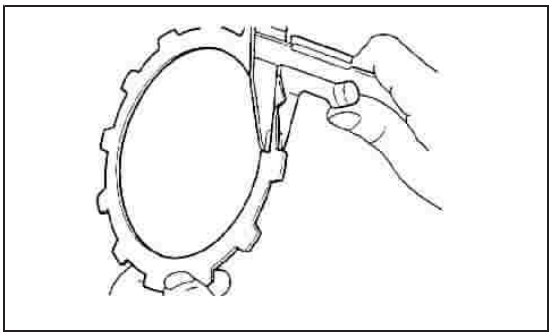
Cracks/damage –-> Replace.



4.Inspect:

●Friction plate

Damage/wear –-> Replace the friction plates as a set.



5.Measure:

●Friction plate thickness

Measure at all four points.

Out of specification –>Replace the friction plates as a set.

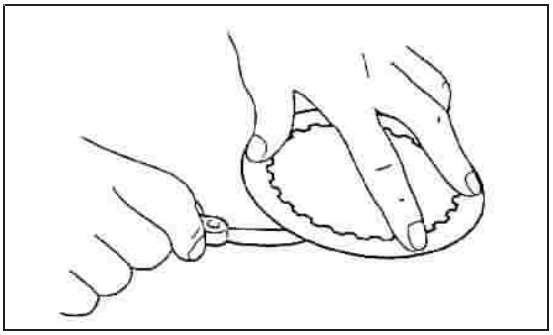
Thickness:2.94–3.06mm.

Limit:2.8mm

6.Inspect:

●Clutch plate

Damage –––> Replace the clutch plates as a set.



7.Measure:

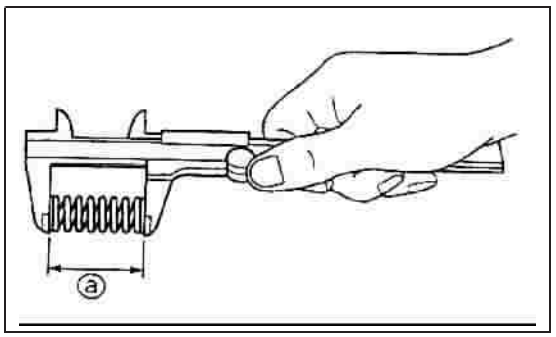
●Clutch plate warpage

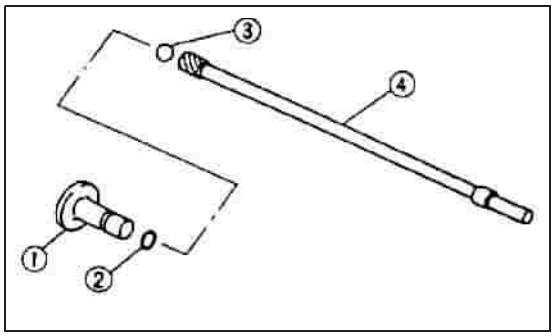
Use a surface plate and a feeler gauge.

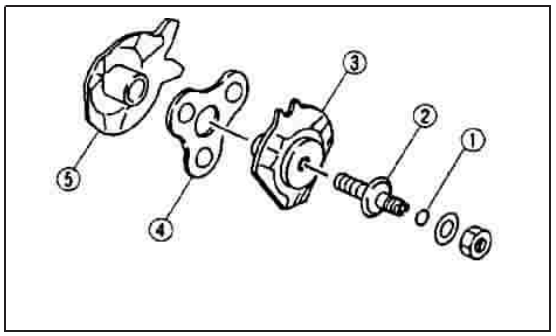
Out of specification –> Replace.

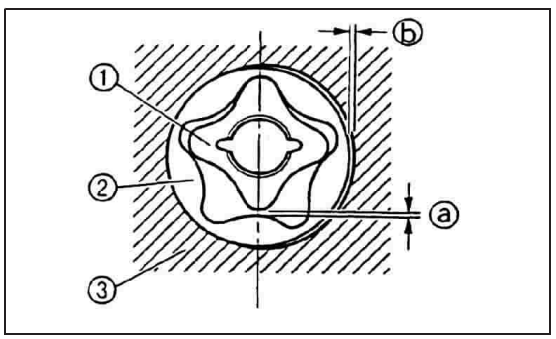
Clutch plate thickness:1.4–1.6mm

Clutch plate warp limit:0.2mm









8.Inspect:

●Clutch spring

Damage –> Replace the springs as a set.

9.Measure:

●Clutch spring free length a

Out of specification –––> Replace the springs as a set.

Free length a:40.1mm,Limit:39mm。

10.Inspect:

●Push rod #1 ①

●O–ring ②

●Ball ③

●Push rod #2 ④

Wear/cracks/damage –> Replace

11.Inspect:

●O–ring ①

●Adjuster ②

●Shift guide #2 ③

●Pawl holder ④

●Shift guide #1⑤

Bends/crack/damage –> Replace.

OIL PUMP

1.Measure:

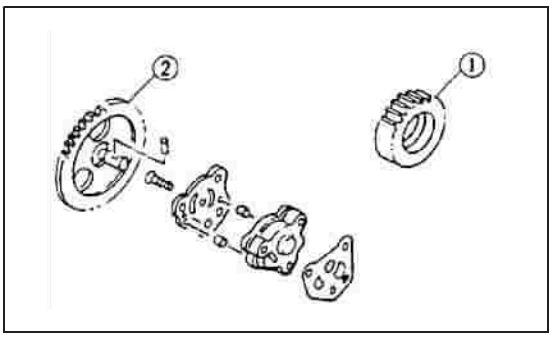
● Tip clearance a (between the innerrotor ① and the outer rotor ②)

●Side clearance b(between the outer rotor ② and the pumphousing ③)

Out of specification –> Replace the oil pump.

Tip clearance a:0.15mm

Side clearance b:0.04–0.09mm

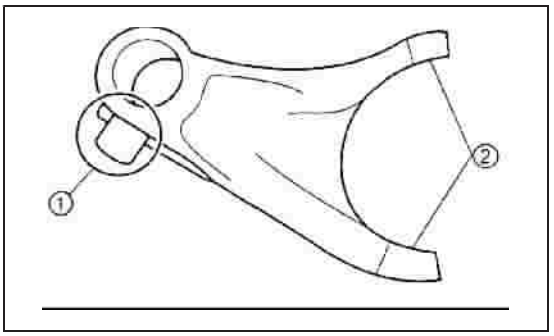


2.Inspect:

●Oil pump drive gear ①

●Oil pump driven gear ②

Cracks/wear/damage–> Replace.



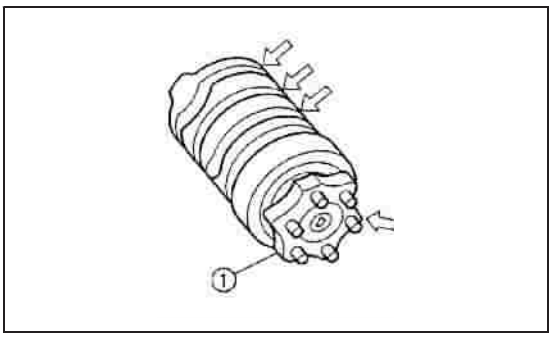
SHIFTER AND TRANSMISSION

1.Inspect:

●Shift fork cam follower ①

●Shift fork pawl ②

Scoring/bends/wear –-> Replace.

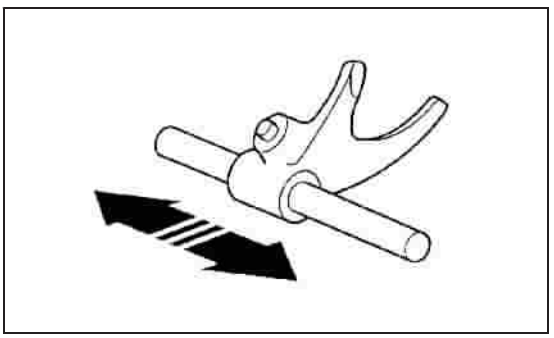


2.Inspect:

●Shift cam groove

●Shift cam segment ①

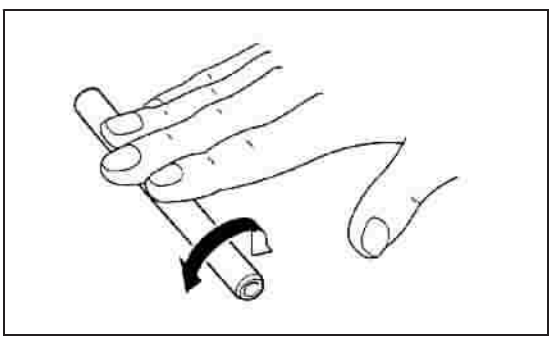
Wear/damage –> Replace.



3.Check:

●Shift fork movement

Unsmooth operation –> Replace the shift fork and/or guide bar.



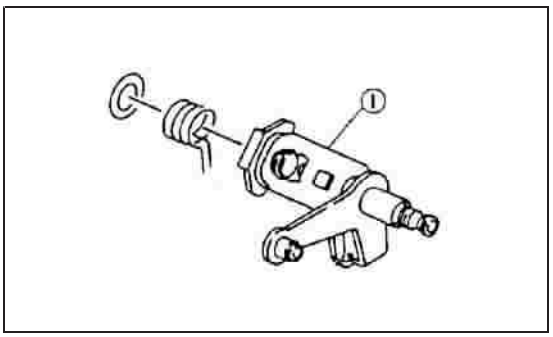
4.Inspect:

●Guide bar

Roll the guide bar on a flat surface.

Bends –> Replace.

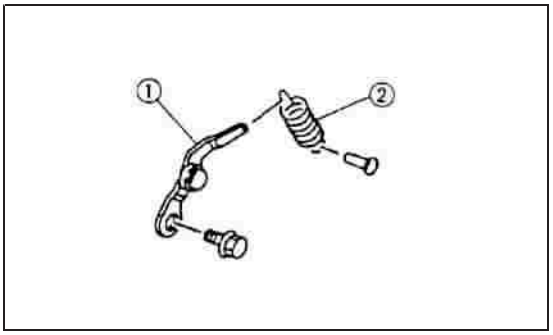
Warmong :Do not attempt to straighten a bent guide bar.



5.Inspect:

●Shift shaft ①

Bends/wear/damage –-> Replace.



6.Inspect:

●Stopper lever ①

Roller turns roughly –-> Replace.

Bends/damage –-> Replace.

7.Inspect:

●Return spring ②

Cracks/damage –-> Replace.

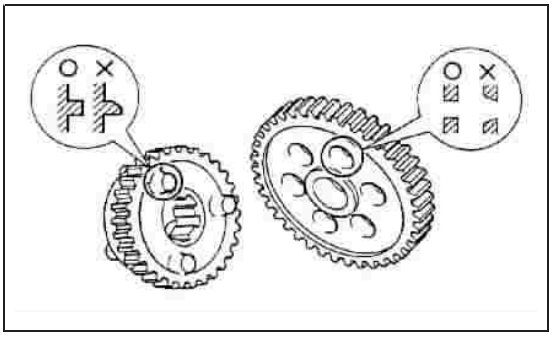
8.Inspect:

●Gear teeth

Blue discoloration/pitting/wear –––>Replace.

●Mated dogs

Rounded edges/cracks/missing portions –––> Replace.



9.Check:

●Gear movement

Unsmooth operation –-> Replace.

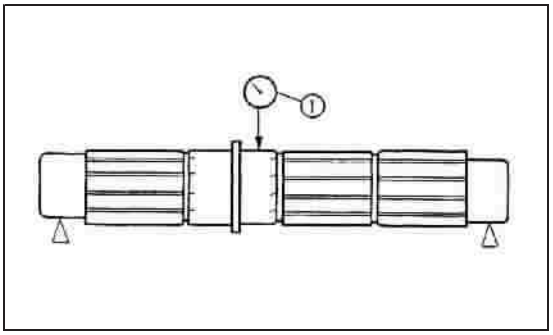
10.Check:

●Proper gear engagement (each gear) (to its counterpart)

Incorrect –> Reassemble.

●Gear movement

Roughness –-> Replace.



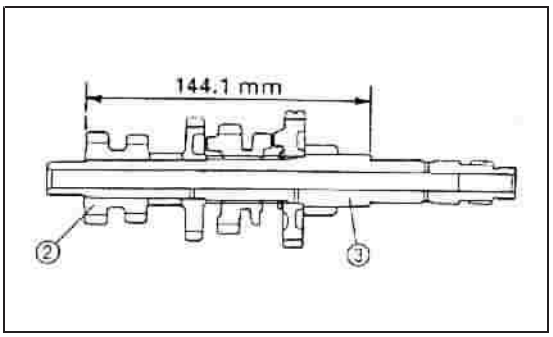
11.Measure:

●Axle runout

Use a centering device and a dial gauge ①.

Out of specification –-> Replace.

Runout limit:Less than 0.08mm



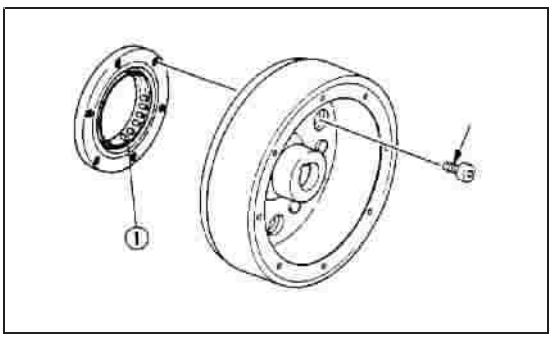
Transmission gear reassembiling point:

Press the 2nd pinion gear ② into the main axle ③, as shown in the illustration.

12.Inspect:

●Circlips

Bends/looseness/damage−−>Replace.



STARTER DRIVES

1.Inspect:

●Starter one−way ①

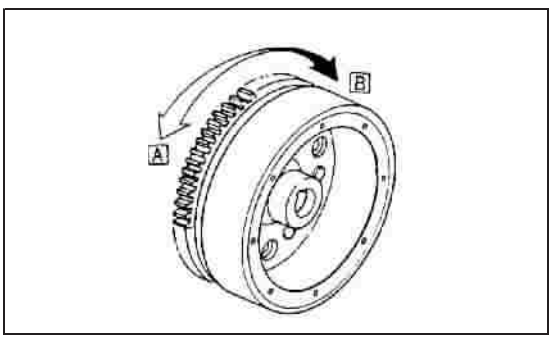
Cracks/damage−−>Replace.

NOTE:

The arrow mark on the starter clutch must face inward, away from the CDI rotor.

Bolts (starter clutch):30Nm

Starter clutch operation



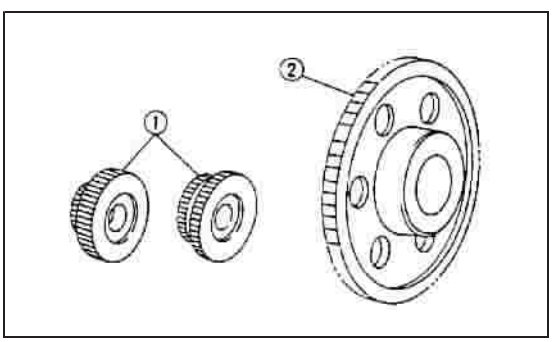
● Install the starter wheel gear to the starter clutch and hold the starter clutch.

● When turning the starter wheel gear counterclockwise A, the starter clutch and the wheel gear should be engaged.

If not, the starter clutch in faulty. Replace it.

● When turning the starter wheel gear clockwise B, the starter wheel gear should turn freely.

If not, the starter clutch is faulty. Replace it.

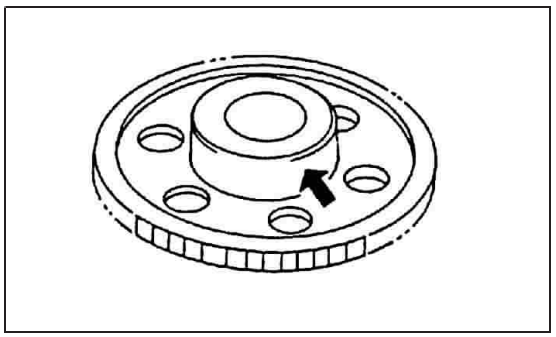


2.Inspect:

●Starter idle gear teeth①

●Starter wheel gear teeth②

Burrs/chips/roughness/wear−−>Replace.

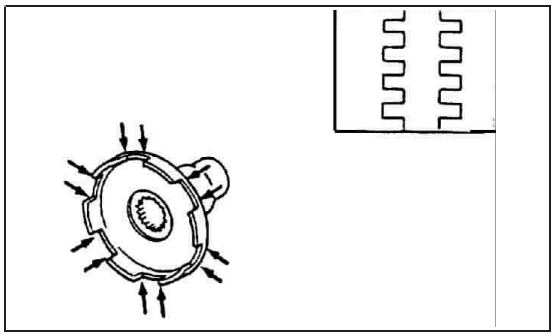


3.Inspect:

●Starter wheel gear

(contacting surface)

Pitting/wear/damage –-> Replace.

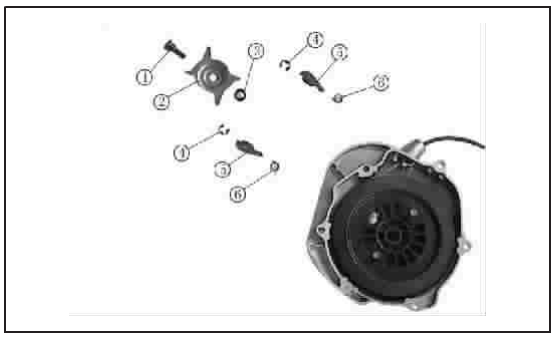


STARTER PULLEY AND RECOIL STARTER

1.Inspect:

●Starter pulley

Cracks/pitting –-> Deburr or replace.



2.Inspect:

●Screw pin①

●Guide plate ②

●Circlip ④

●Driving jaw ⑤

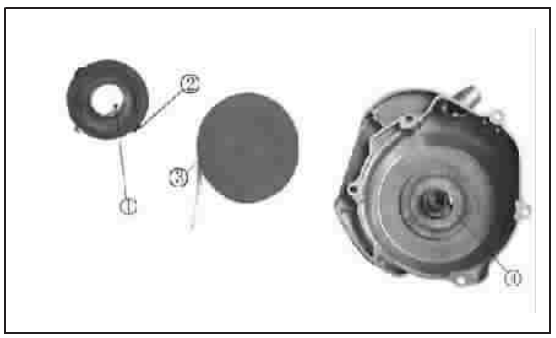
●Rope ⑧

Wear/damage –> Replace.

●Torsion spring ⑥

●Compressing spring ③

Fatigue –> Replace.



3.Inspect:

●Coiling spring ①

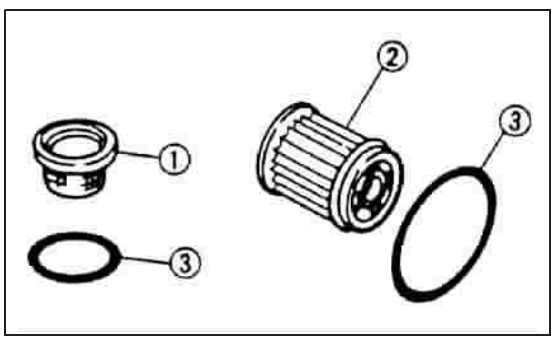
Fatigue –> Replace.

●Coiling spring backboarcl ②

●Driving plate assy ③

●Left sidecover assy ④

Wear/damage –> Replace.



OIL STRAINER, OIL FILTER AND OIL DELIVERY PIPES

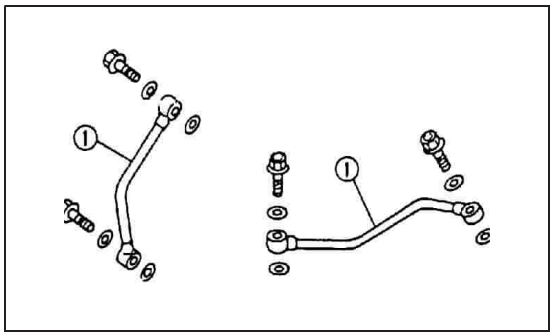
1 .Inspect:

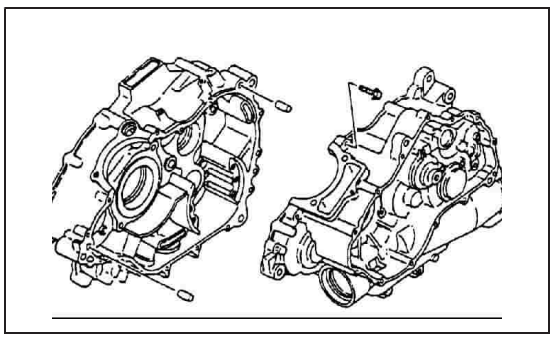
●Oil strainer ①

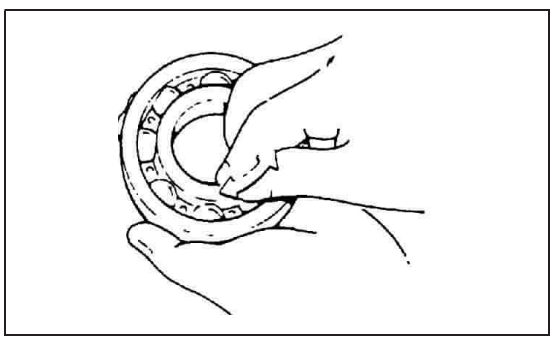
●Oil filter ②

●O–rings ③

Damage –-> Replace.







2.Inspect:

●Oil delivery pipes ①

Cracks/damage –-> Replace.

Clogged–> Blow out with compr.essed air

CRANKCASE

1.Thoroughly wash the case halves in a mild solvent.

2.Clean all the gasket mating surfaces and crankcase mating surfaces thoroughly.

3.Inspect:

●Crankcase

Cracks/damage –> Replace.

●Oil delivery passages

Clogged–> Blow out with compressed air.v

BEARINGS AND OIL SEALS

1.Inspect:

●Bearing

Clean and lubricate, then rotate the inner race with a finger.

Roughness –-> Replace.

2.Inspect:

●Oil seals

Damage/wear –-> Replace.

CIRCLIPS AND WASHERS

1 .Inspect:

●Circlips

●Washers

Bends/looseness/damage –-> Replace.

MIDDLE GEAR SERVICE

(1)Universal joint yoke

(2)Oil seal

(3)Bearing housing

(4)Shim(s)

(5)O−ring

(6)Bearing

(7)Bearing retainer

(8)Middle driven pinion gear

(9)Damper cam

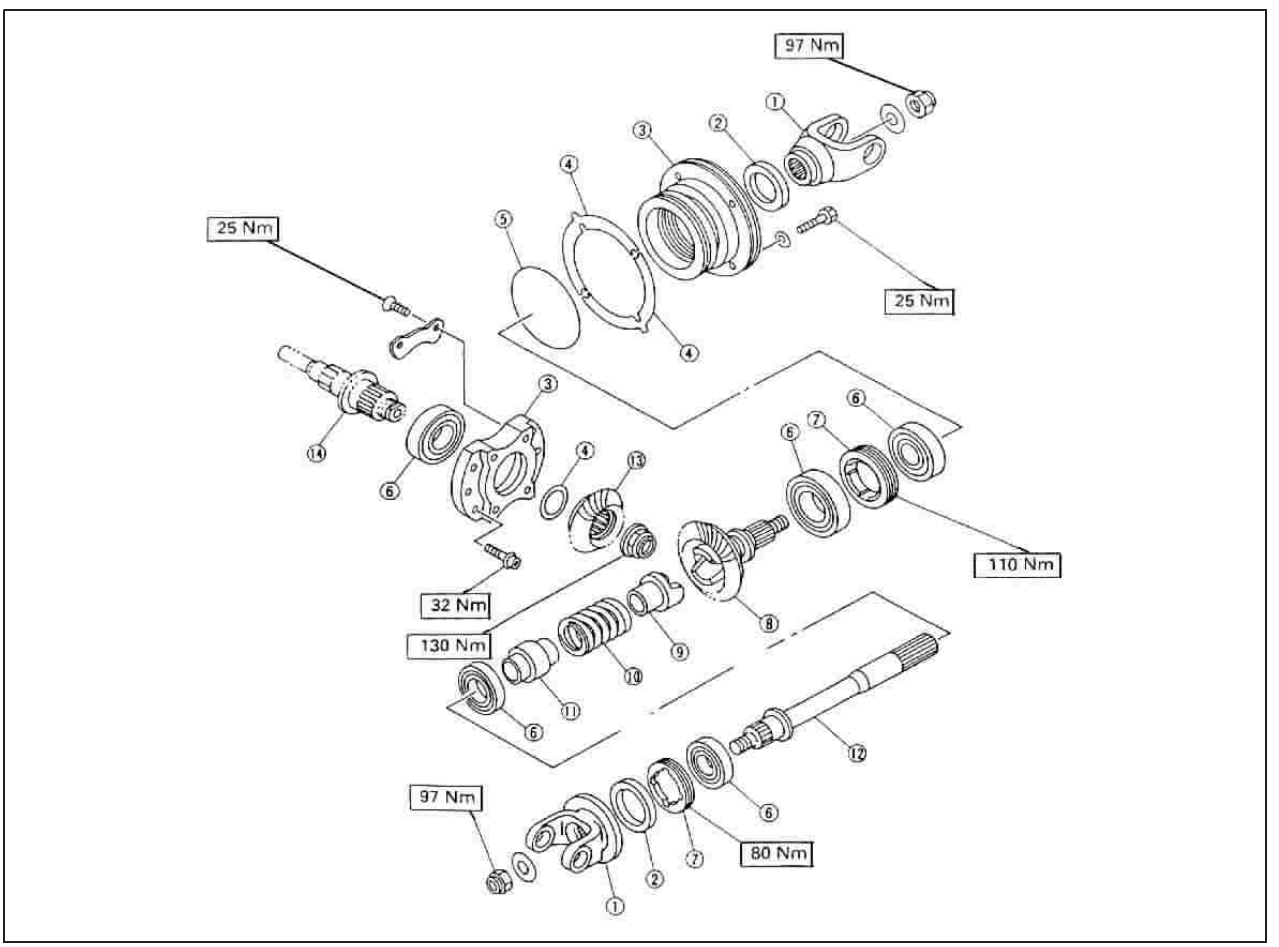
(10)Spring

(11)Gear coupling

(12)Middle driven shaft

(13)Middle drive pinion gear

(14)Middle drive shaft

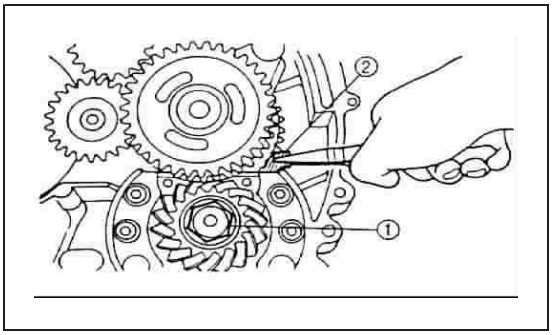


REMOVAL

1.Remove:

●Engine

Refer to "ENGINE REMOVAL".



2.Remove:

●Crankcase (left)

DISASSEMBLY

Middle drive shaft assembly

1.Straighten:

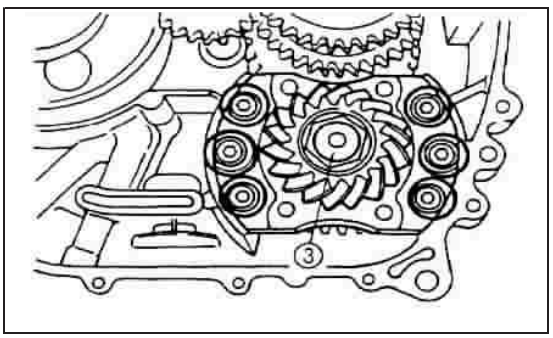
● Punched portion of the nut (middle drive pinion gear)

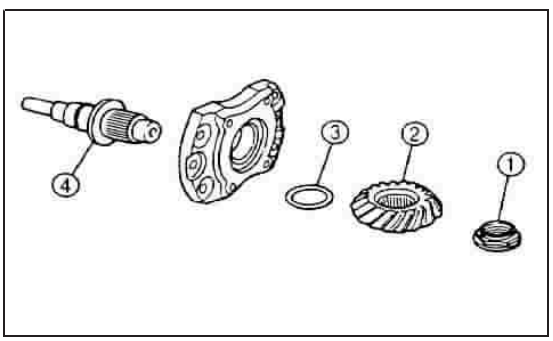
2.Loosen:

●Nut (middle drive pinion gear) ①

NOTE:

Place a copper plate ② between the teeth of the drive gear and the driven gear to lock them.

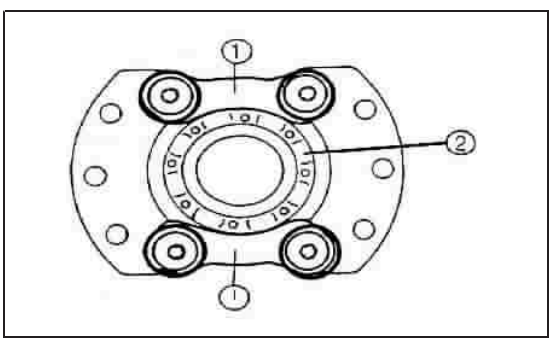




3.Remove:

●Middle drive shaft assembly ③

●Middle driven gear



4.Remove:

●Nut (middle drive pinion gear) ①

●Middle drive pinion gear ②

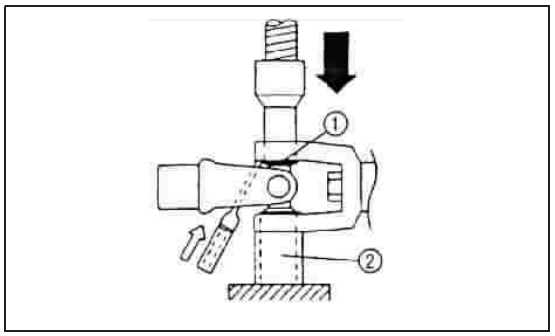
●Shim(s) ③

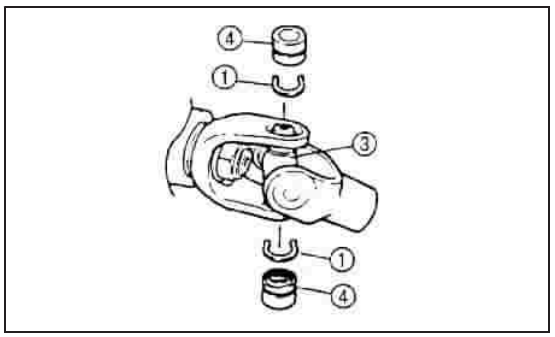
●Middle drive shaft ④

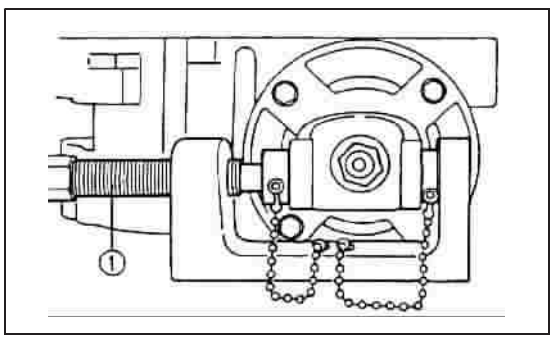
5.Remove:

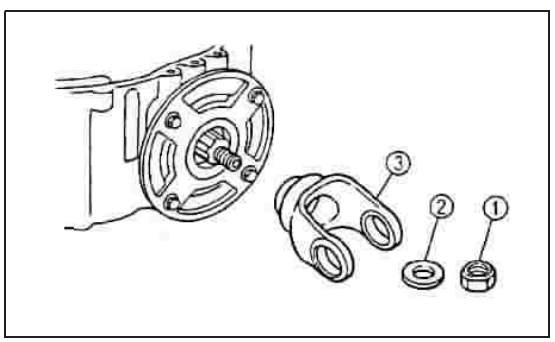
●Bearing retainer ①

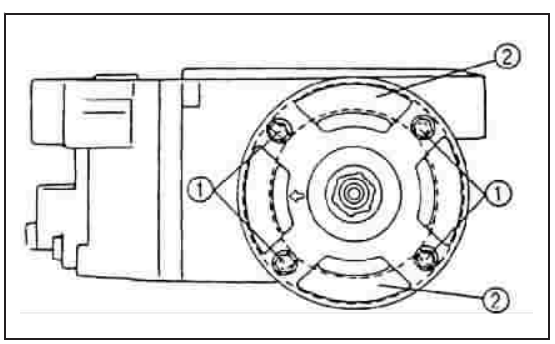
●Bearing ②











Middle driven shaft assembly

1 .Remove:

●Universal joint

Universal joint removal steps:

●Remove the circlips ①.

●Place the U–joint in a press.

● With a suitable diameter pipe ② beneath the yoke ③, press the bearing ④ into the pipe as shown.

NOTE:

It may be necessary to lightly tap the yoke with a punch.

●Repeat the steps for the opposite bearing.

●Remove the yoke.

NOTE:

It may be necessary to lightly tap the yoke with a punch.

2.Attach:

●Universal joint holder

(onto the universal joint yoke)

3.Remove:

●Nut①

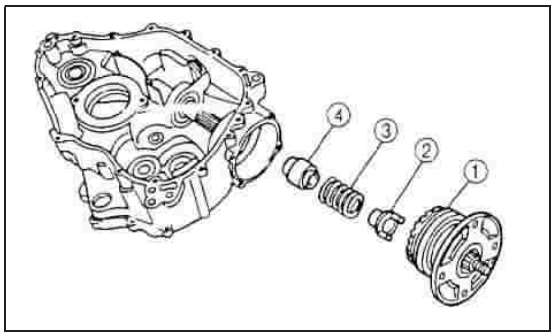
●Washer ②

●Universal joint yoke ③

4.Remove:

●Bolts (bearing housing) ①

●Shims ②



5.Remove:

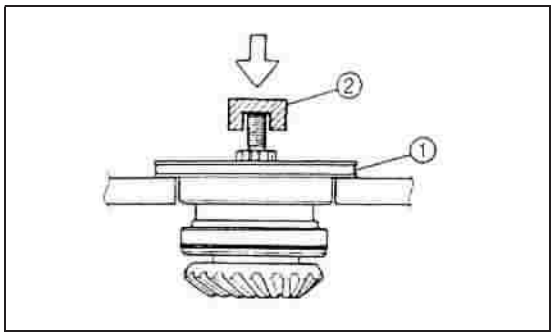
● Middle driven pinion gear with bearing housing①

Lightly tap the end of the axle with a soft hammer.

●Damper cam ②

●Damper spring ③

●Gear coupling ④



6.Remove:

●Bearing housing assembly①

Bearing housing removal steps:

● Clean the outside of the middle driven shaft.

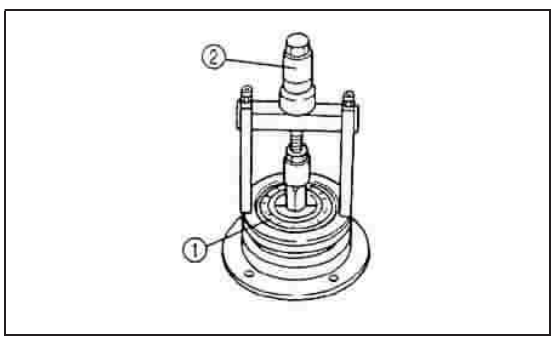
● Place the middle driven shaft onto a hydraulic press.

● Press the shaft end and remove the bearing housing.

CAUTION:

● Never directly press the shaft end with a hydraulic press, this will result in damage to the shaft thread.

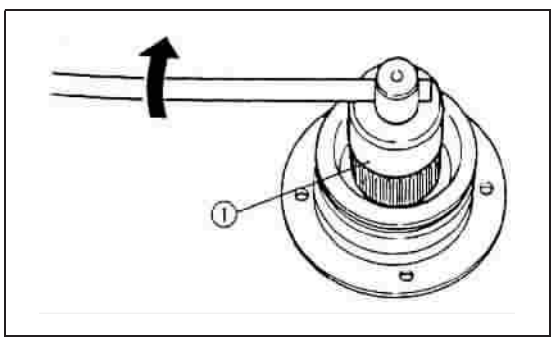
● Install the suitable socket ② on the shaft end to protect the thread from damage.



7.Remove:

●Bearing ①

Use the bearing puller ②.



8.Remove:

●Oil seal

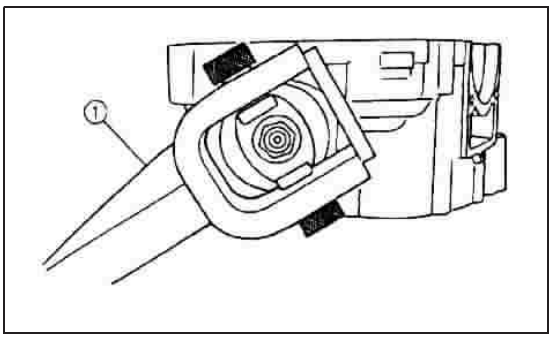
●Bearing retainer

●Bearing

Use the bearing retainer wrench ①.

NOTE:

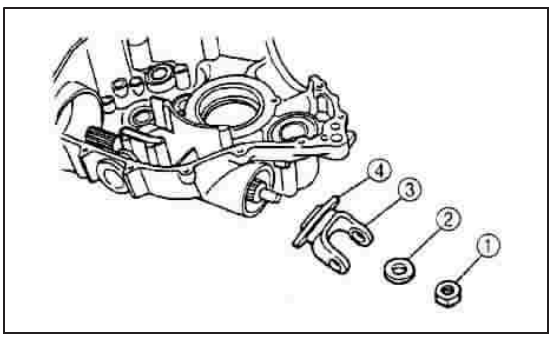
Bearing retainer has left–hand threads.



9.Attach:

●Universal joint holder ①

(onto the universal joint yoke)



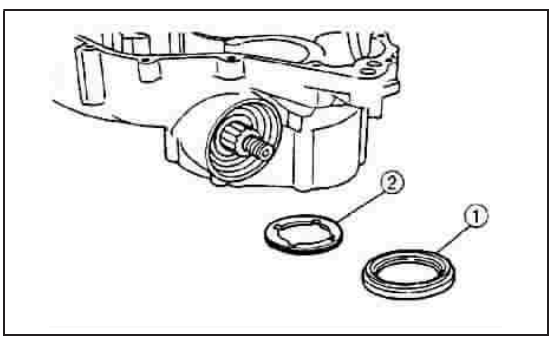
10.Remove:

●Nut①

●Washer ②

●Universal joint yoke ③

●Dust cover ④



11.Remove:

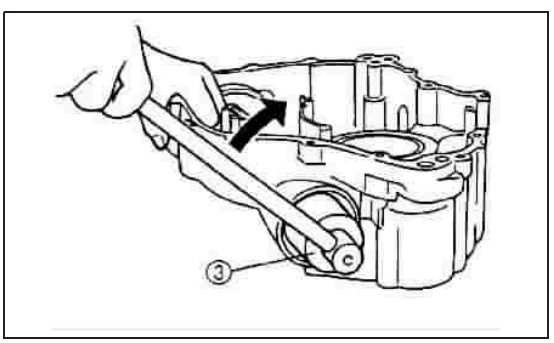
●Oil seal ①

●Bearing retainer ②)

Use the ring nut wrench ③.

NOTE:

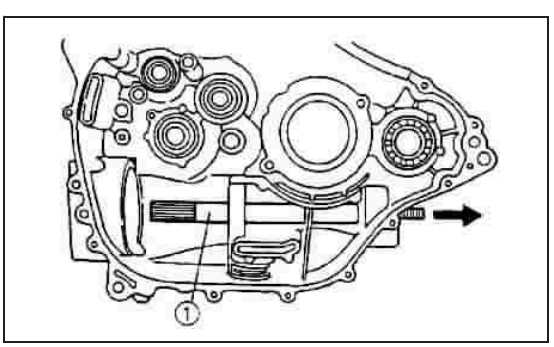
Bearing retainer has left–hand thread.

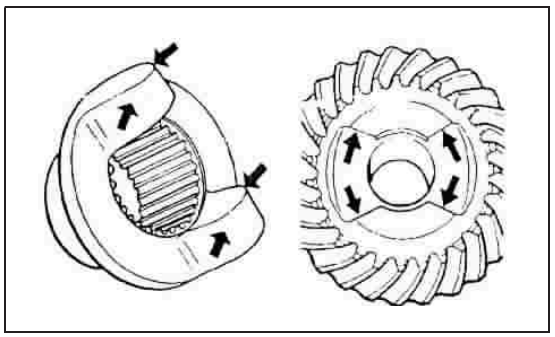


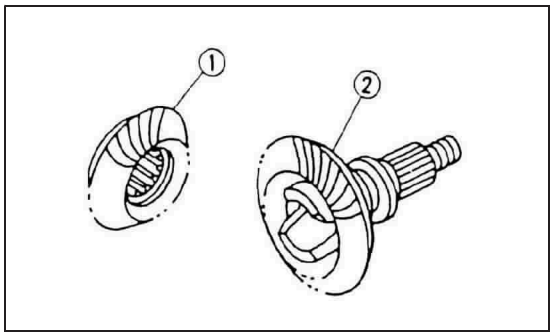
12.Remove:

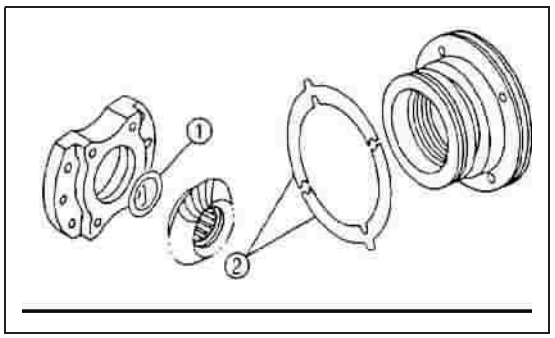
●Middle drive shaft ①

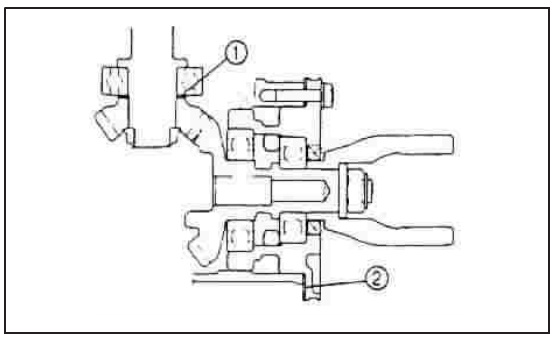
(with bearing)











INSPECTION

1.Inspect:

●Damper cam surfaces

Wear/scratches –-> Replace damper and driven pinion gear as a set.

2.Inspect:

●Damper spring

Damage/cracks –> Replace.

3.Inspect:

●Gear teeth (drive pinion gear) ①

●Gear teeth (driven pinion gear)②

Pitting/galling/wear –-> Replace.

4.Inspect:

●O–ring

Damage–> Replace.

●Bearings

Pitting/damage–> Replace.

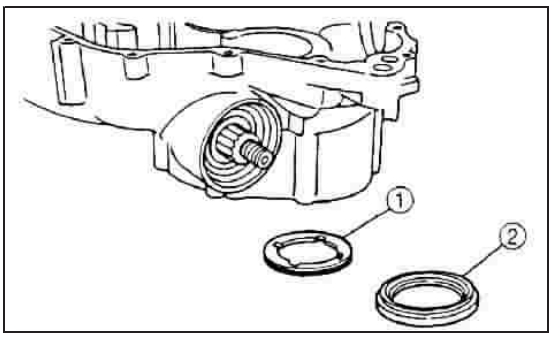
5.Check:

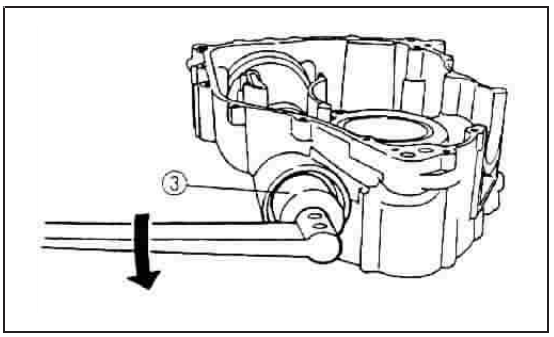
●U–joint movement

Roughness–> Replace U–joint.

MIDDLE DRIVE AND DRIVEN GEAR SHIM SELECTION

When the drive and driven gear,bearing housing assembly and/or crankcase replaced, be sure to adjust the gear shim ② Shim ① thickness：0.5mm， Shim ② thickness"B"：0.2～1.0mm.





ASSEMBLY

Reverse the "DISASSEMBLY" procedures.

Note the following points.

Middle driven shaft assembly

1.Install:

●Bearing retainer ①

●Oil seal ②

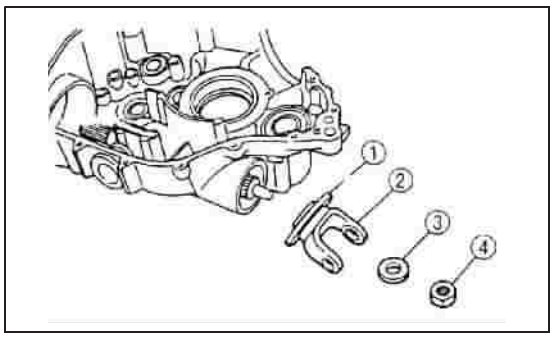
Use the ring nut wrench ③,

NOTE:

Bearing retainer has left–hand thread.

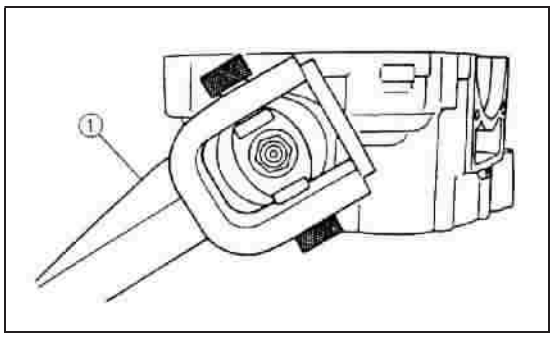
CAUTION:

Always use a new oil seal.



2.Install:

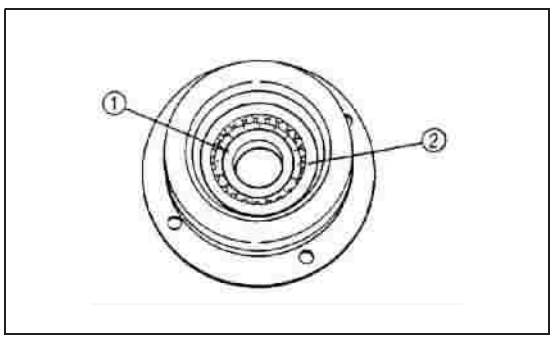
- ●Dust cover ①
- ●Universal joint yoke ②
- ●Washer ③
- ●Nut ④



3.Attach:

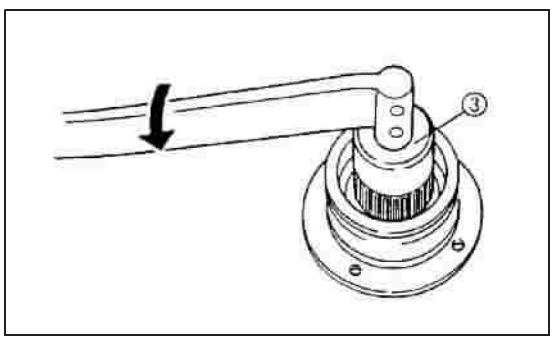
- ●Universal joint holder ①

(onto the universal joint yoke)



4.Tighten:

Nut (universal joint yoke)



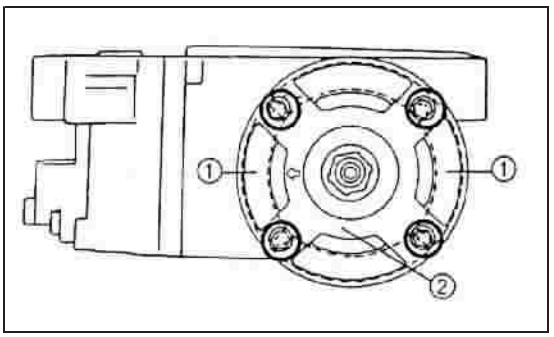
5.Install:

- ●Bearing ①
- ●Bearing retainer ②
- ●Oil seal

Use the bearing retainer wrench ③.

NOTE:

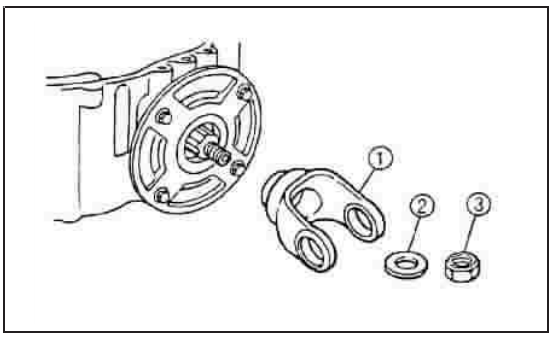
Bearing retainer has a left–hand thread.



6.Install

●Shims ①

●Bearing housing ②

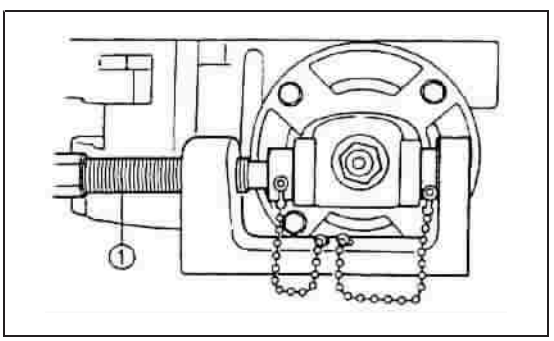


7.Install

●Universal joint yoke ①

●Washer ②

●Nut③



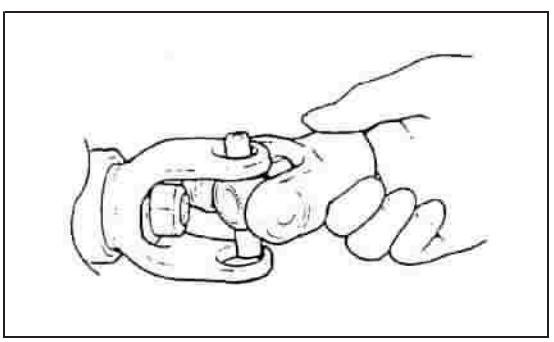
8.Attach:

●Universal joint holder ①

(onto the universal joint yoke)

9.Tighten:

●Nut



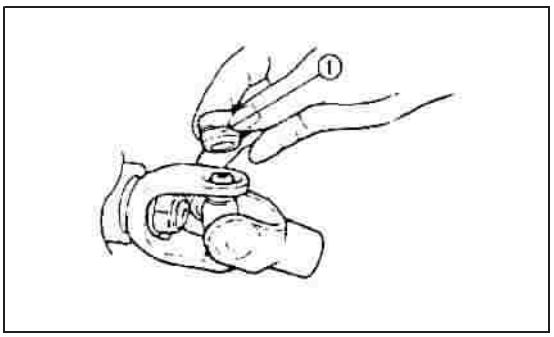
10.Install:

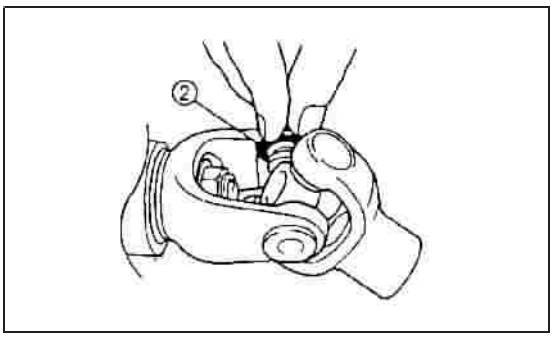
●Universal joint

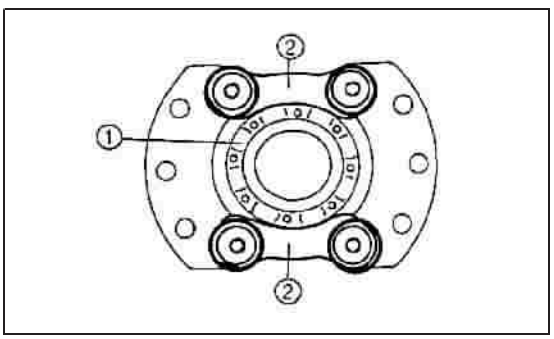
Universal joint installation steps:

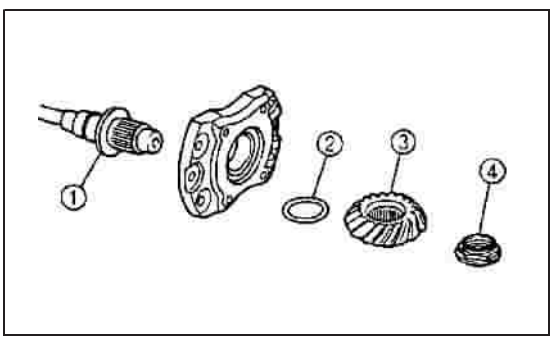
●Install the opposite yoke into the U–joint.

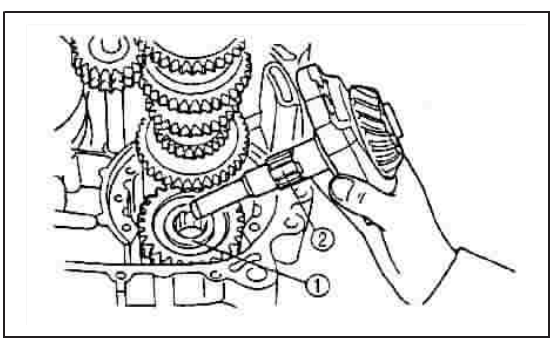
●Apply wheel bearing grease to the bearings.











●Install the bearing ① onto the yoke.

CAUTION:

Check each bearing. The needles can easily fall out of their races. Slide the yoke back and forth on the bearings; the yoke will not go all the way onto a bearing if a needle is out of place.

●Press each bearing into the U–joint using a suitable socket.

NOTE:

The bearing must be inserted far enough into the U–joint so that the circlip can be installed.

● Install the circlips ② into the groove of each bearing.

Middle drive shaft assembly

1.Install:

●Bearing①

●Bearing retainer ②

2.Install

●Middle drive shaft ①

●Shim(s) ②

●Middle drive pinion gear③

●Nut (middle drive pinion gear) ④

NOTE:

Always use a new nut (middle drive pinion gear).

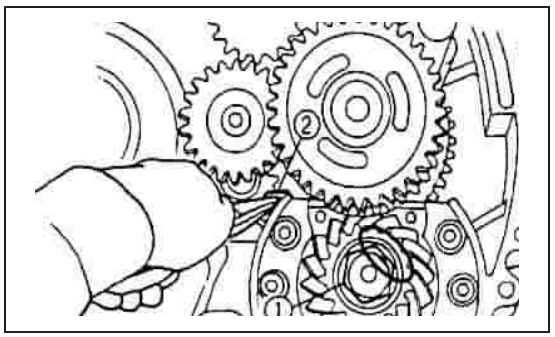
3.Install:

●Middle driven gear ①

●Middle drive shaft assembly ②

NOTE:

When installing the middle drive shaft assembly, fit it onto the splines on the middle driven gear.



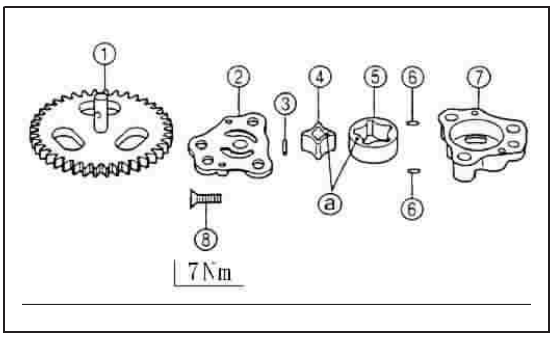
4.Tighten:

●Nut (middle drive pinion gear) ①

NOTE:

Place a copper plate ② between teeth of thedrive gear and driven gear to lock them.

5.Lock the threads with a drift punch.



WARNING:

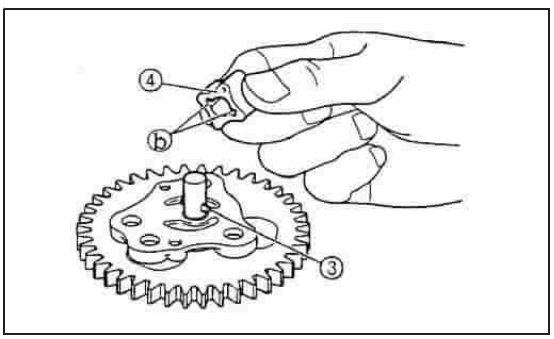
For engine reassembly, replace the following parts with new ones.

- O–ring
- Gasket
- Oil seal
- Copper washer
- Lock washer
- Circlip

OIL PUMP

1.Lubricate:

- Inner rotor
- Outer rotor
- Pump shaft

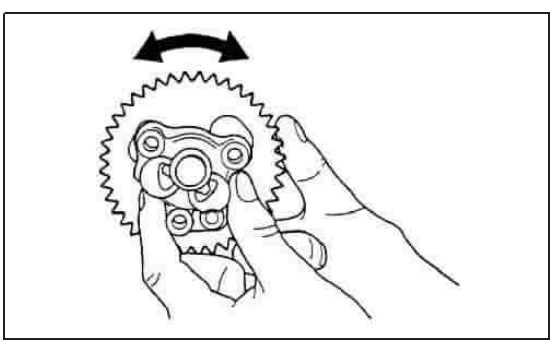


2.Install:

- Pump shaft ①(to pump cover ②)
- Pin③
- Inner rotor ④
- Outer rotor ⑤
- Dowel pins ⑥
- Pump housing ⑦
- Screw ⑧

NOTE:

- **When installing the inner and outer rotors, make sure that the punch mark a on these parts faces towards the driven gear.**
- **When installing the inner rotor, align the pin ③ in the pump shaft with the groove b on the inner rotor ④.**



3.Check:

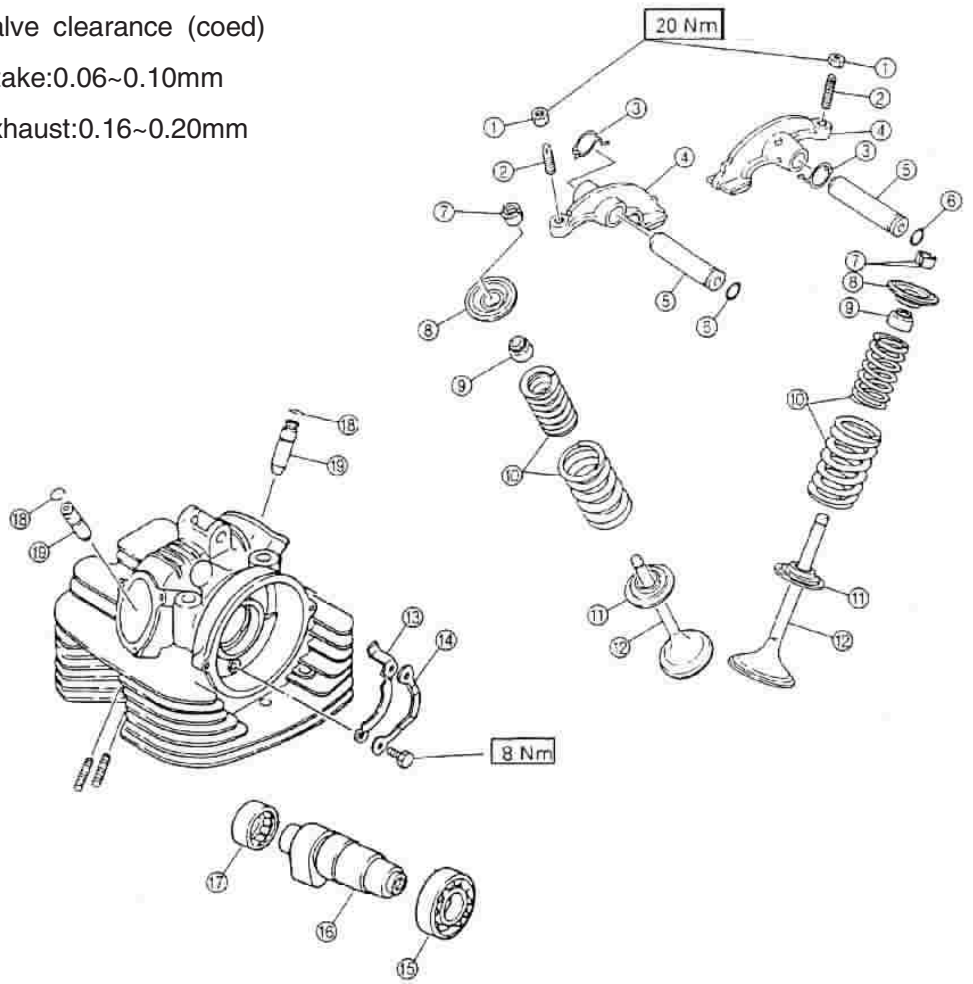
- Oil pump operation

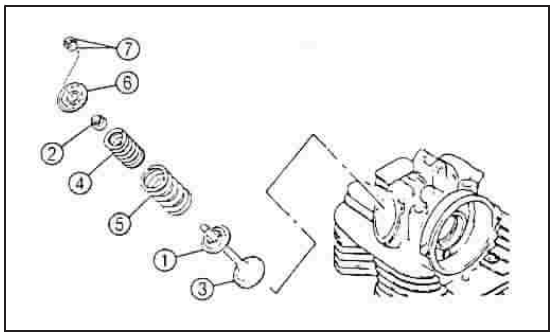
Unsmooth –> Inspect and replace the defective parts.

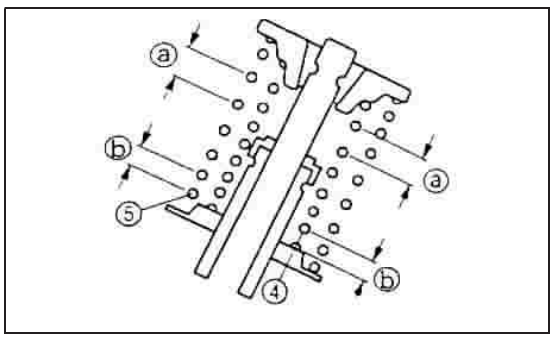
VALVE, CAMSHAFT AND ROCKER ARM

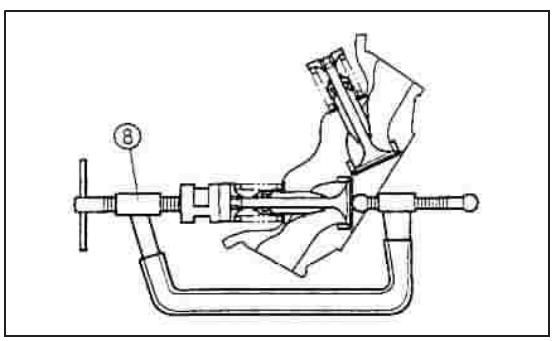
(1)Locknut (valve adjusting)
(2)Adjuster (valve adjusting)
(3)Wave washer
(4)Rocker arm
(5)Rocker arm shaft
(6)O–ring
(7)Valve cotter
(8)Valve spring retainer
(9)Oil seal
(10)Valve spring
(11)Valve spring seat
(12)Valve
(13)Bearing retainer
(14)Lock washer
(15)Bearing
(16)Camshaft
(17)Bearing
(18)Circlip
(19)Valve guide

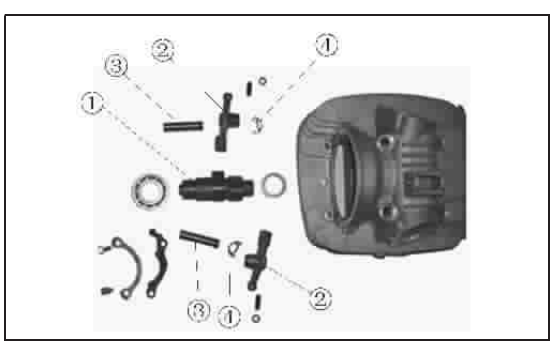
Valve clearance (coed)
Intake:0.06~0.10mm
Exhaust:0.16~0.20mm











VALVE, ROCKER ARM AND CAMSHAFT

1.Apply:

● High –quality molybdenum disulfide oil (to the valve stem and oil seal)

2.Install:

●Valve spring seat ①

●Oil seal ②

●Valve ③

●Valve spring (inner) ④

●Valve spring (outer) ⑤

●Spring retainer ⑥

●Valve cotters ⑦

NOTE:

Install the valve spring with the wider gapped coils facing up as shown.

a Larger pitch

b Smaller pitch

NOTE:

Compress the valve spring with spring compressor ⑧ and then,install the valve cotters.

3.Apply:

●Engine oil(to the bearing of the camshaft)

●High–quality molybdenum disulfide oil(to the rocker arm and shaft)

4.Install:

●Camshaft (compression stroke as shown)①

●Rocker arm ②

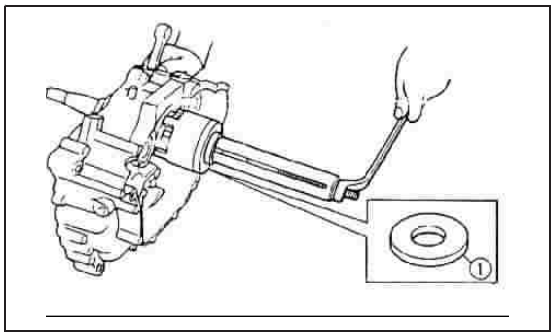
●Rocker arm shaft ③

●Wave washer ④

NOTE:

Bend the lock washer tab along a flat side of the nut.

WARNING:Always use a new lock washer.



CRANKSHAFT

1.Install:

●Crankshaft

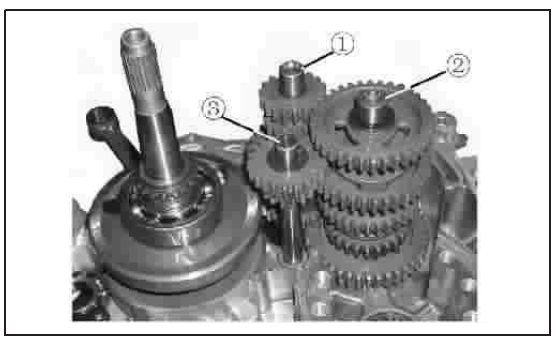
NOTE:

● Install a suitable steel plate ① between the crank pot spacer and crankshaft installer set or buffer boss installer set.

● Hold the connecting rod at Top Dead Center (T.D.C.) with one hand while turning the nut of the installing tool with the other. Operate the installing tool until the crankshaft bottoms against the bearing.

CAUTION:

Apply engine oil to each bearing to protect the crankshaft against scratches and to make installation easier.



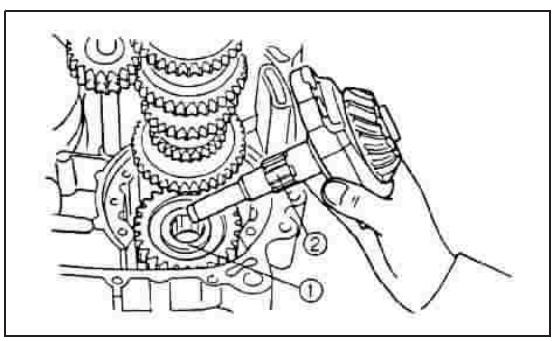
TRANSMISSION AND BALANCER WEIGHT

1.Install:

●Main axle assembly ①

●Drive axle assembly ②

●Reverse wheel gear assembly ③



2.Install:

●Middle driven gear ①

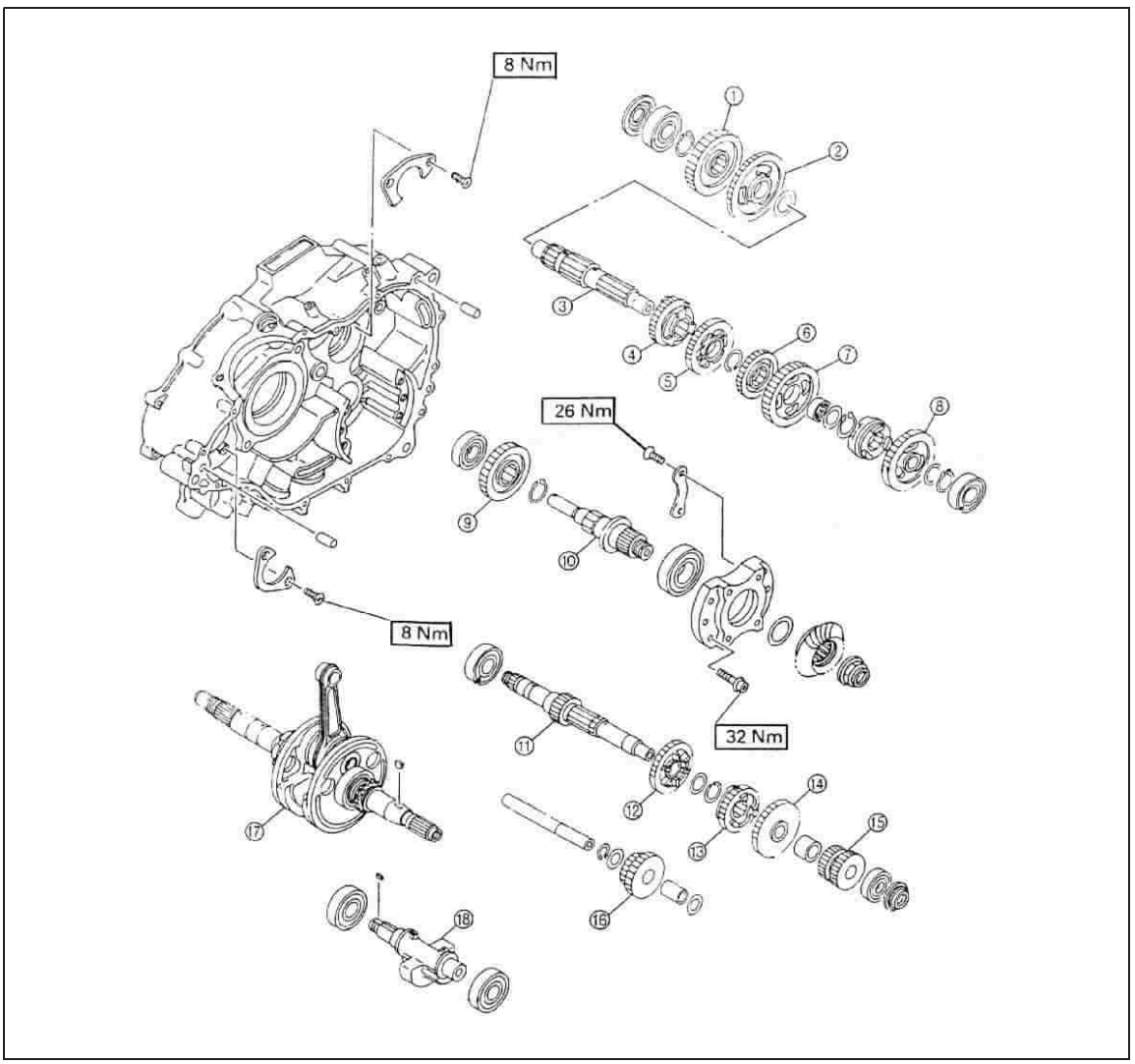
●Middle drive shaft assembly ②

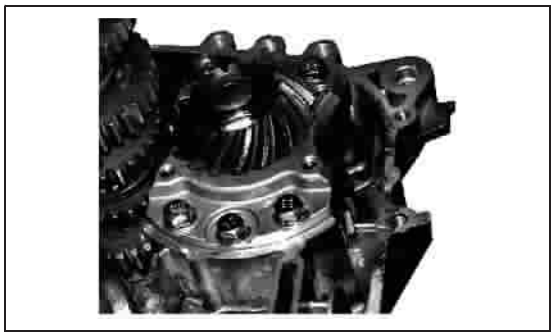
NOTE:

When installing the middle drive shaft assembly, fit it onto the splines on the middle driven gear ①.

CRANKSHAFT AND TRANSMISSION

(1)Middle drive gear
(2)1st wheel gear
(3)Drive axle
(4)4th wheel gear
(5)3rd wheel gear
(6)5th wheel gear
(7)Reverse wheel gear 1
(8)2nd wheel gear
(9)Middle driven gear
(10)Middle drive shaft
(11)Main axle
(12)4th pinion gear
(13)3rd pinion gear
(14)5th pinion gear
(15)2nd pinion gear
(16)Reverse wheel gear 2
(17)Crankshaft
(18)Balancer weight





3.Install:

●Shift cam ①

●Shift fork "R" ②

●Shift fork "C" ③

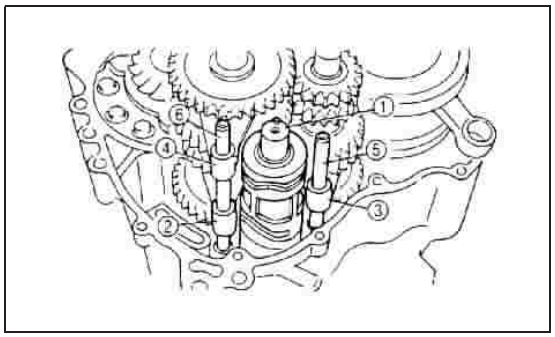
●Shift fork "L" ④

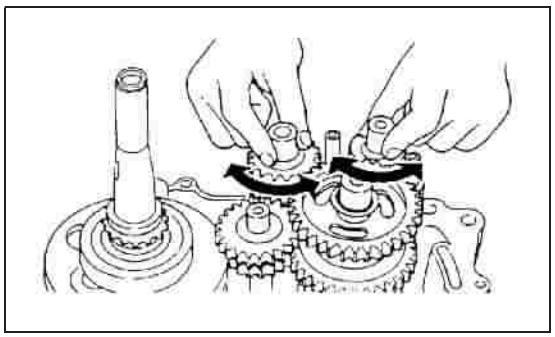
●Guide bar #2 (shorter)⑤

●Guide bar #1 (longer) ⑥

NOTE:

Each shift fork is identified by a number cast on its side. All the numbers should face the right side.





4.Check:

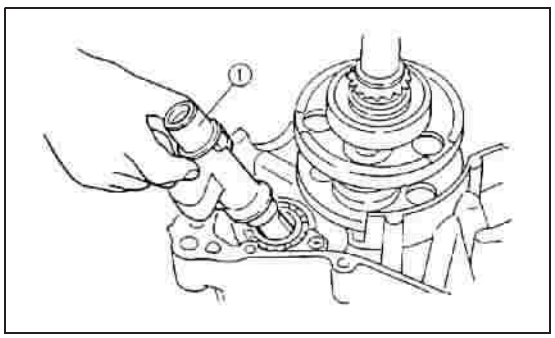
●Transmission and shifter operation

Unsmooth operation –-> Repair.

NOTE:

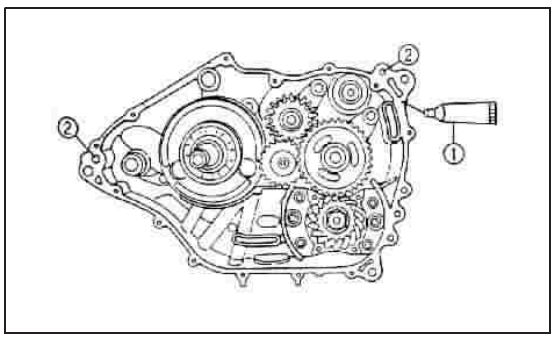
●**Oil each gear bearing thoroughly.**

●**Shift the main transmission into neutral.**



5.Install:

●Balancer weight ①

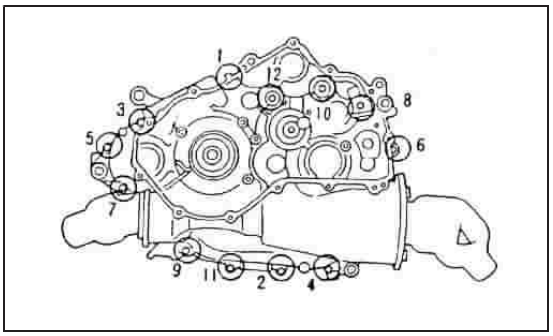


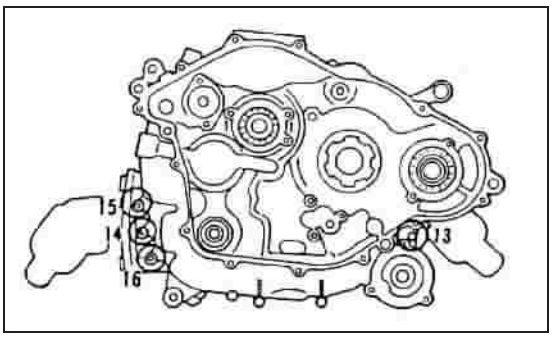
CRANKCASE (LEFT)

1.Apply:

●Sealant ①

(to the mating surfaces of both case halves)





2.Install:

●Dowel pin ②

3.Fit the left crankcase onto the right case. Tap lightly on the case with a soft hammer.

CAUTION:

Before installing and torquing the crankcase holding bolts, be sure to check whether the transmission is functioning properly by manually rotating the shift cam either way.

4.Tighten:

●Bolts (crankcase)

NOTE:

● Tighten the bolts starting with the lowest numbered one.

●Apply sealant to the bolt threads ⑧, ⑨, ⑪.

M6 bolt(crankcase):10Nm

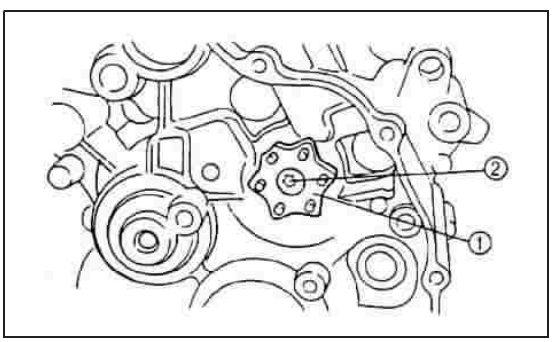
M8bolt(crankcase):26Nm

1~13:M6 bolts 14~16:M8 bolts

5.Apply:

●4–stroke engine oil

(to the crank pin, bearing and oil delivery Hole)



6.Check:

●Crankshaft and transmission operation

Unsmooth operation –> Repair.

7.Install:

●Shift cam segment ①

●Torx screw ②

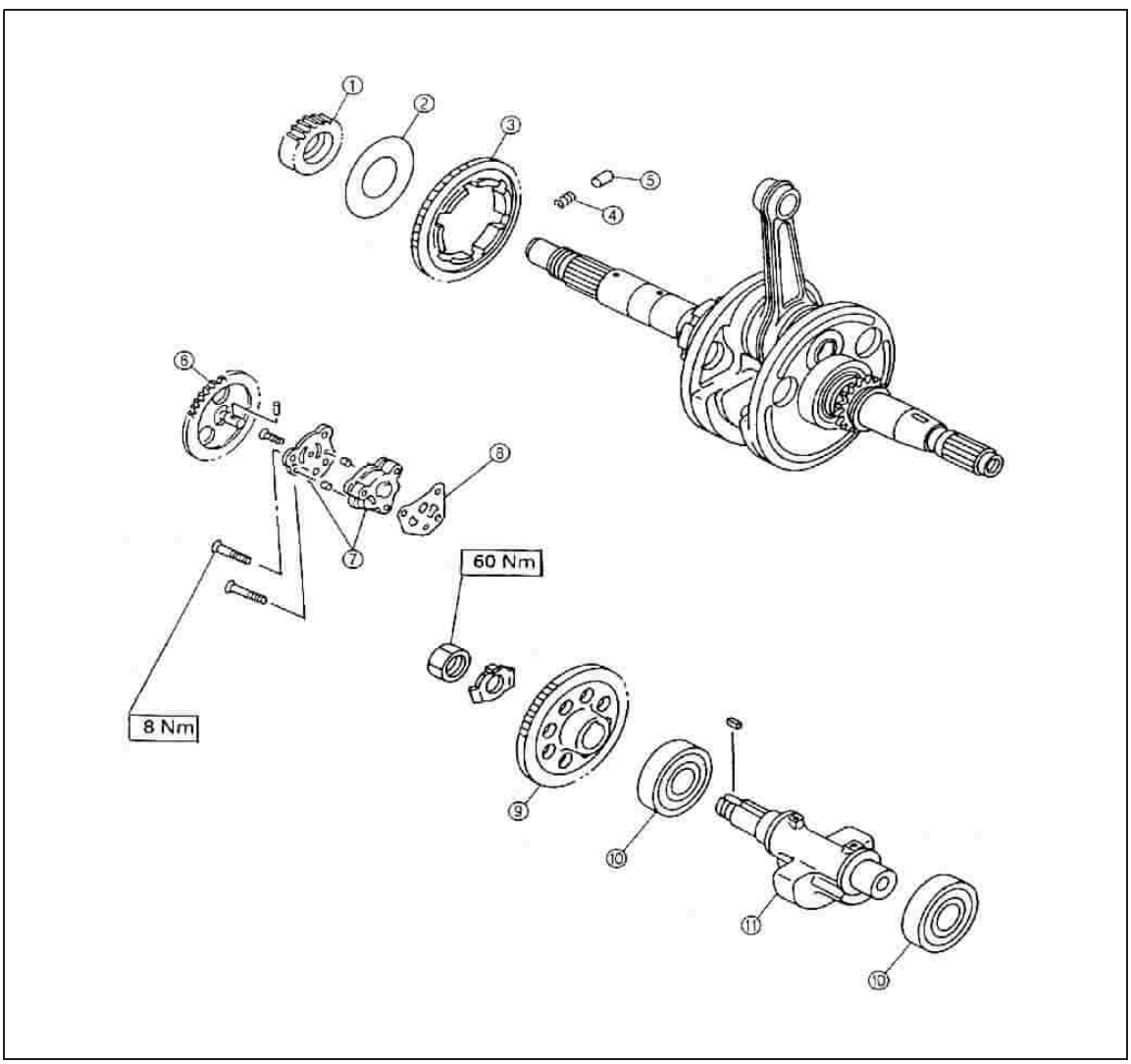
8.Check:

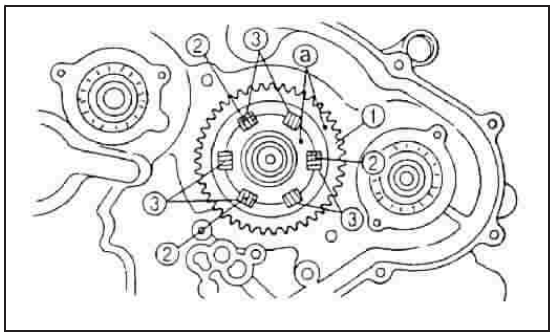
●Transmission and shifter operation

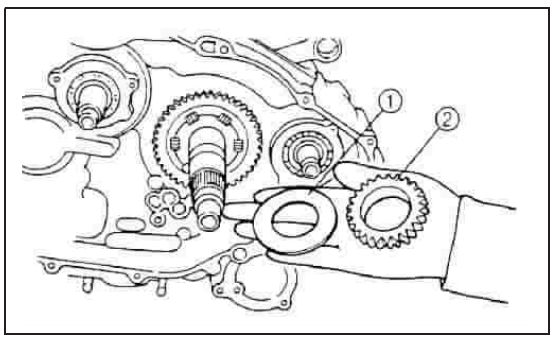
Unsmooth operation –-> Repair.

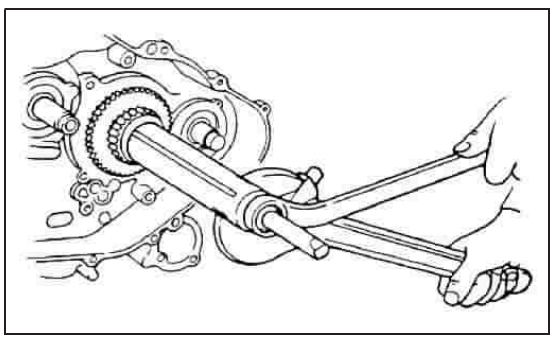
BALANCER DRIVE AND DRIVEN GEARS AND OIL PUMP

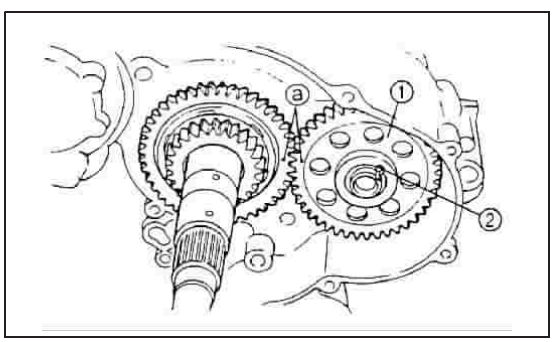
(1) Oil pump drive gear
(2) Washer
(3) Balancer drive gear
(4) Spring
(5) Pin
(6) Oil pump driven gear
(7) Oil pump assembly
(8) Gasket
(9) Balancer driven gear
(10) Bearing
(11) Balancer weight











BALANCER DRIVE GEARS AND OIL PUMP

1.Install:

- Balancer drive gear ①
- Pins ②
- Springs ③

NOTE:

- **The balancer drive gear damper assembly is composed of six springs ③ and three pins ②. Insert a spring into the buffer boss, then insert a spring with a pin in it.**
- **Align the punch marks a on the buffer**

2.Install:

- Holding plate ①
- Oil pump drive gear ②

3.Install:

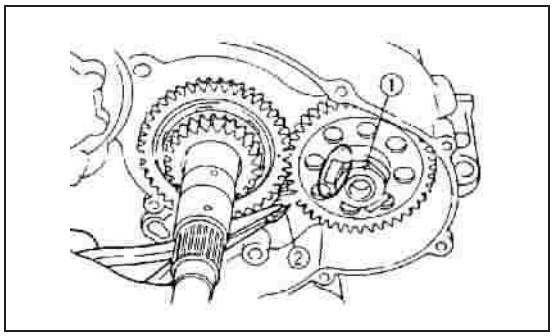
- Balancer driven gear ①
- Straight key ②
- Lock washer
- Nut (balancer driven gear)

NOTE:

- **Align the punch marks a on the drive and driven gear.**
- **Be sure the tab of the lock washer engages the slot on the balancer shaft.**

WARNING

Always use a new lock washer.



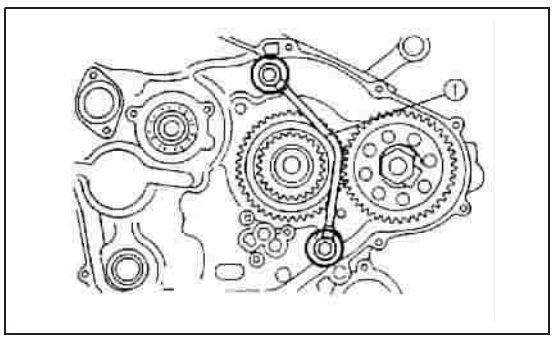
4.Tighten:

●Nut (balancer driven gear) ①

NOTE:

Place a copper plate ② between the teeth of the driven gear and drive gear to lock them.

5.Bend the lock washer tabs.



6.Install

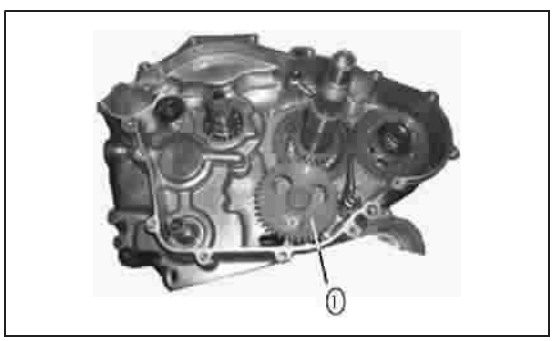
●Copper washers

●Oil delivery pipe 1 ①

Bolts (oil delivery pipe 1):16Nm

WARNING

Always use new copper washers.



7.Install:

●Gasket (oil pump)

●Oil pump assembly ①

WARNING:

Always use a new gasket.

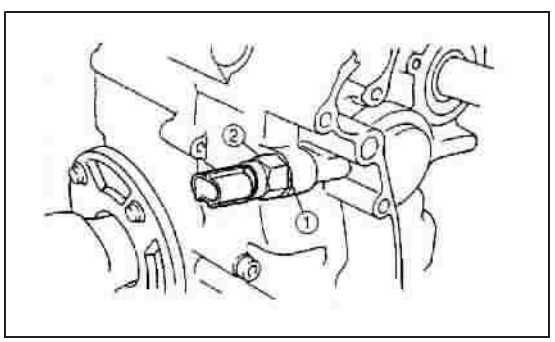
REVERSE SHIFT BRACKET

1.Install:

●Copper washer ①

●Thermo unit ②

Thermo unit:20Nm



2.Install

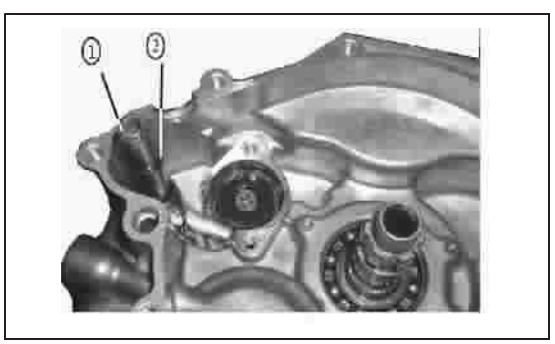
●Reverse shift bracket assembly ①

●Washer ②

NOTE:

● Hook the spring ends on the reverse shift bracket and crankcase.

●Mesh the reverse shift bracket with the shift cam as shown.



CLUTCH

(1) Pressure plate

(2) Friction plates

(3)(4) Clutch plates

(5) Push rod

(6) O–ring

(7) Clutch boss

(8) Thrust washer

(9) Clutch housing (secondary)

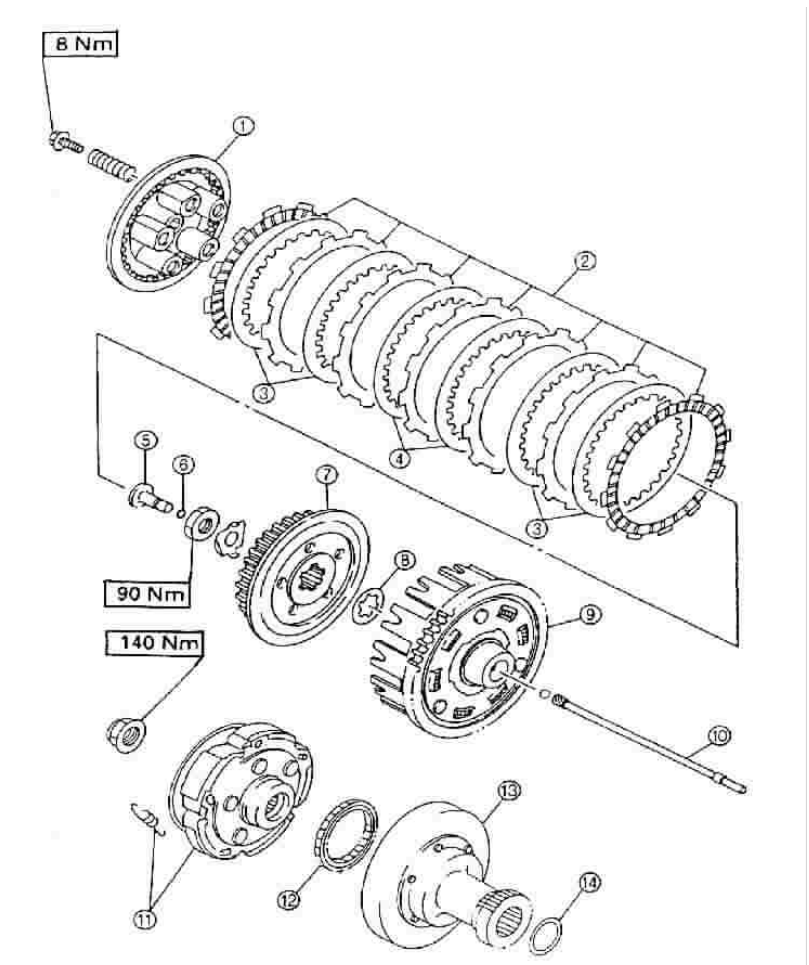
(10) Push rod #2

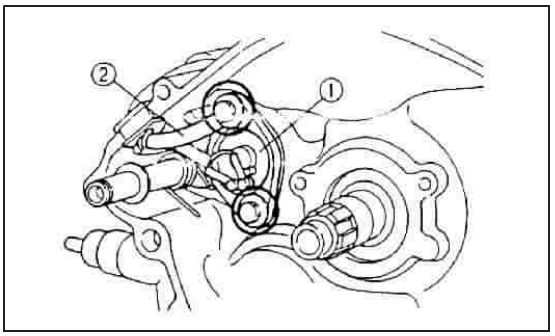
(11) Clutch carrier assembly

(12) One–way clutch bearing

(13) Clutch housing (primary)

(14) Plain washer





3.Install:

●Gear position switch ①

●Lead holder ②

Bolt(gear position switch):6Nm

CLUTCH

1.Install:

●Clutch housing ①

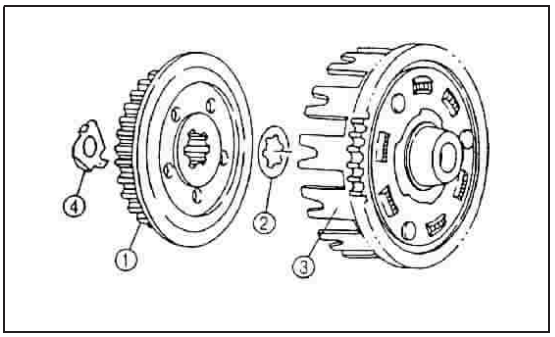
●Thrust washer ②

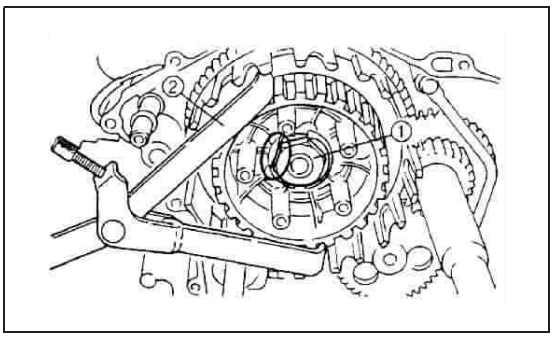
●Clutch boss ③

●Lock washer④

WARNING:

Always use a new lock washer.





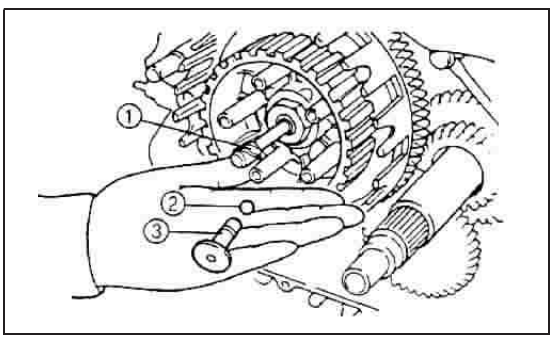
2.Install:

●Nut (clutch boss) ①

Nut (clutch boss):90Nm

Use a clutch holding tool ② to hold the clutch boss.

3.Bend the lock washer tabs.



4.Install:

●Push rod #2 ①

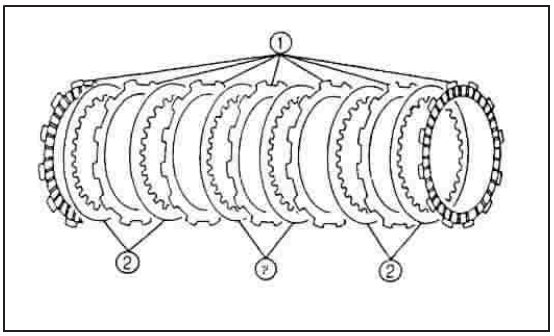
●Ball ②

●Push rod #1 ③

(with O–ring)

NOTE:

Apply lithium soap base grease to the ball and push rods #1, #2.



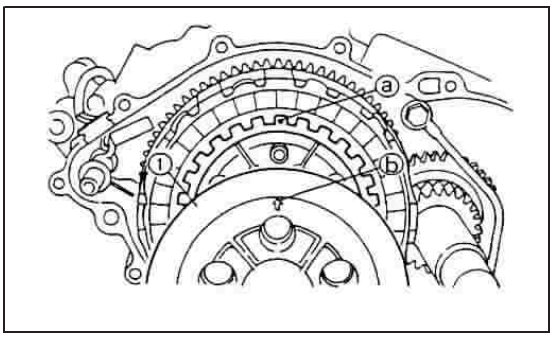
5.Install:

●Friction plates ①

●Clutch plates ②

NOTE:

Mount friction and clutch plate alternately.



6.Install:

●Pressure plate ①

●Clutch springs

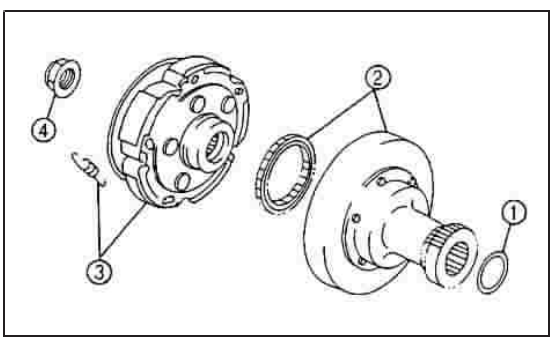
●Bolts (pressure plate)

NOTE:

● **Align the punched mark a on the clutch boss with the arrow mark b on the pressure plate.**

● **Tighten the bolts (pressure plate) in stage, using a crisscross pattern.**

Bolt(pressure plate):8Nm



7.Install:

●Plain washer ①

●Clutch housing comp ②

●Clutch carrier assembly ③

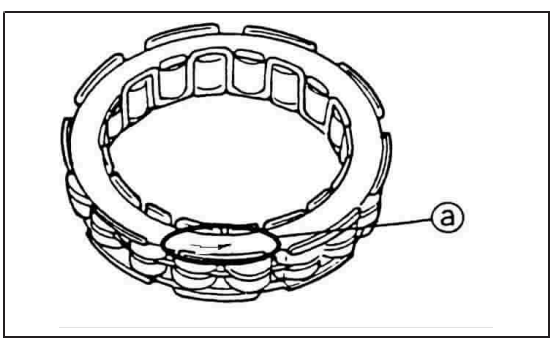
●Nut (primary clutch) ④

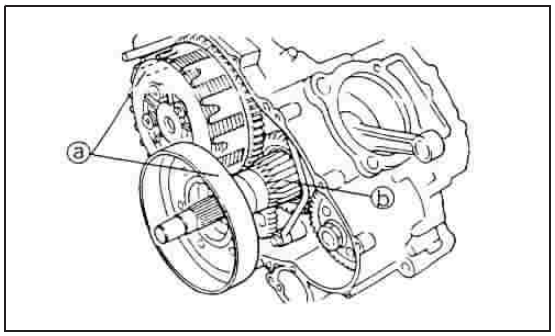
WARNING:

Always use a new nut (primary clutch).

NOTE:

● **The one –way clutch bearing should be installed in the primary clutch housing with the mark "OUT SIDE" a facing toward the clutch carrier assembly.**





● The secondary clutch housing has two notches a machined into it to permit the primary drive gear behind the primary clutch to clear the secondary clutch.

●Align one of these notches with the primary gear b before installing the primary clutch assembly.

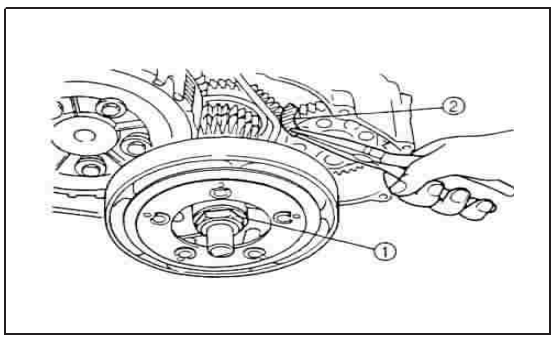
8.Tighten:

●Nut (primary clutch) ①

NOTE:

Place a copper washer ② between the teeth of the balancer drive gear and balancer driven gear to lock them.

Nut (primary clutch):140Nm



9.Lock the threads with a drift punch.

WARNING:

Always use a new nut.

CRANKCASE COVER (RIGHT)

1.Install:

●Gasket ①

●Dowel pins ②

WARNING:

Always use a new gasket.

2.Install:

●Crankcase cover (right) ①

●Reverse control cable holder ②

●Reverse control lever ③

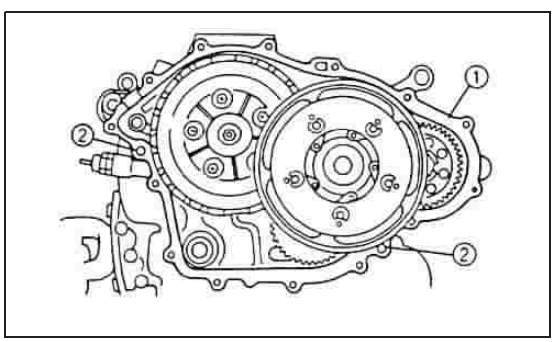
●Dipstick ④

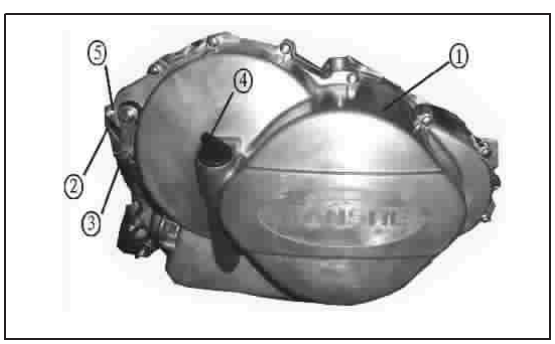
NOTE:

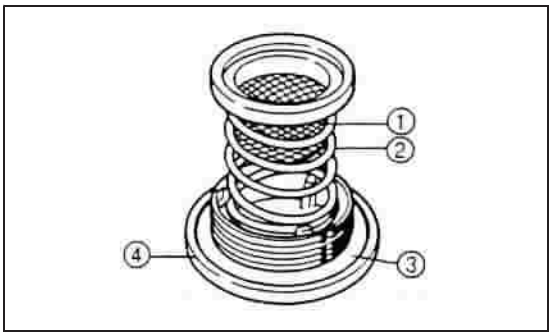
●Apply the sealant to threads of the bolt⑤.

●Tighten the bolts in stages, using a crisscross pattern.

Bolts(crankcase cover–right):10Nm







3.Install:

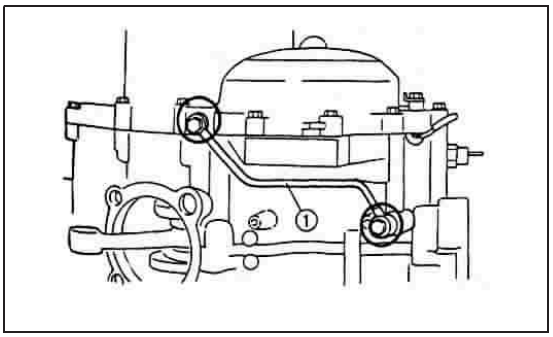
●Oil strainer ①

●Spring ②

●O–ring ③

●Drain plug ④

Draim plug:32Nm



4.Install:

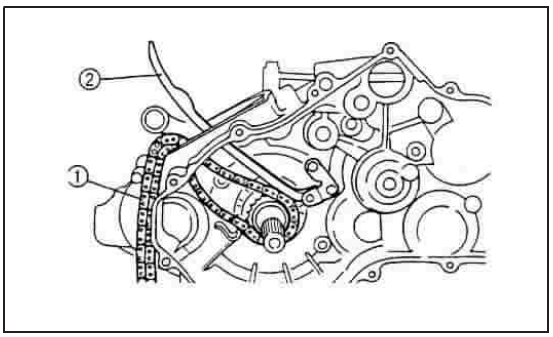
●Copper washers

●Oil delivery pipe 2 ①

WARNING:

Always use new copper washers.

Unit bolt:18Nm



TIMING CHAIN AND CDI ROTOR

1.Install:

●Timing chain ①

●Timing chain guide (intake) ②

Timing chain guide (intake):10Nm

NOTE:

Fasten a safety wire to the timing chain to prevent it from falling into the crankcase.

CDI ROTOR AND STARTER

(1) Starter idle gear #1

(2) Starter idle gear #2

(3) Woodruff key

(4) Bearing

(5) Washer

(6) Starter wheel gear

(7) Starter clutch

(8) CDI rotor

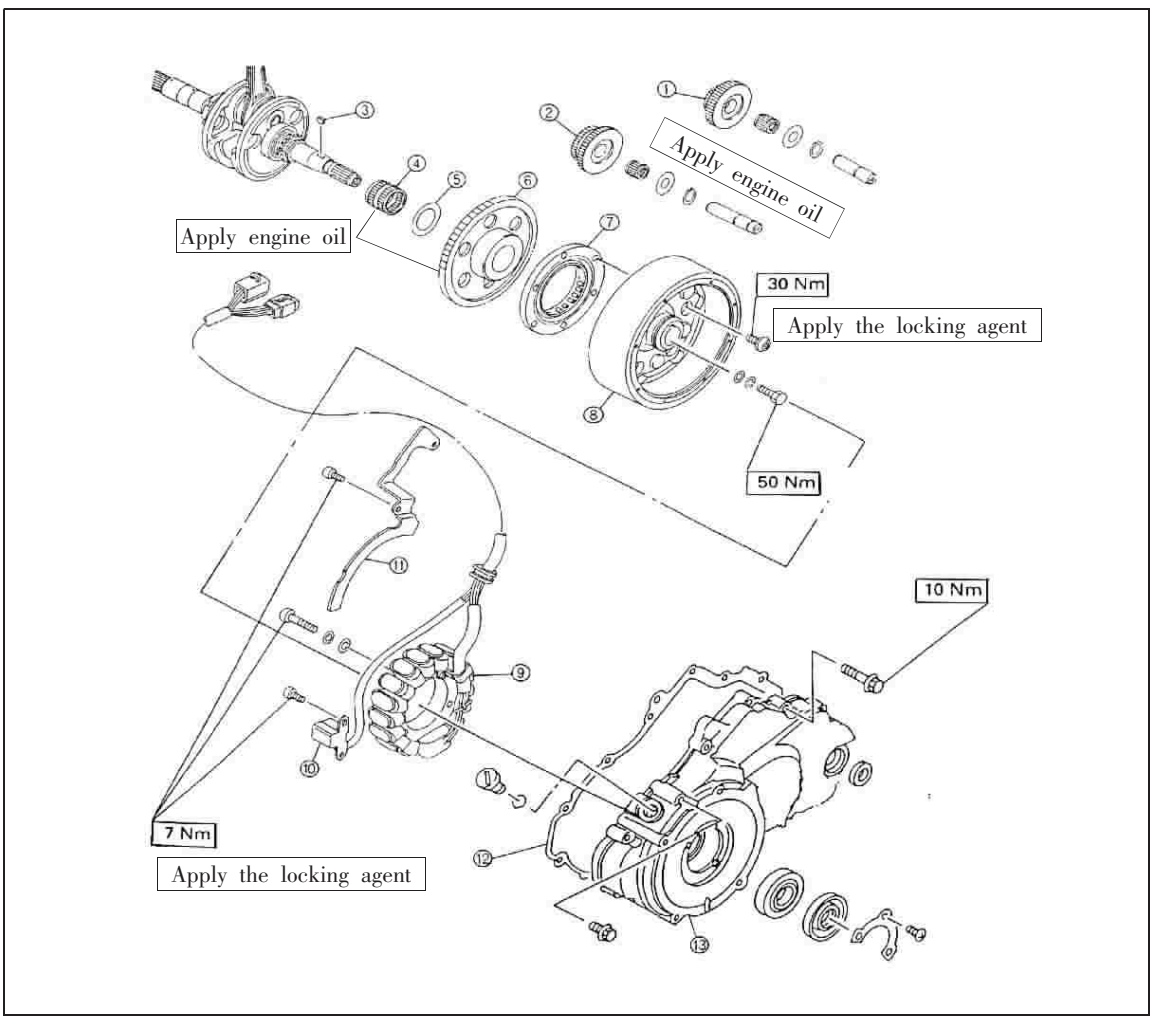
(9)Stator assembly

(10)Pickup coil assembly

(11)Lead holder

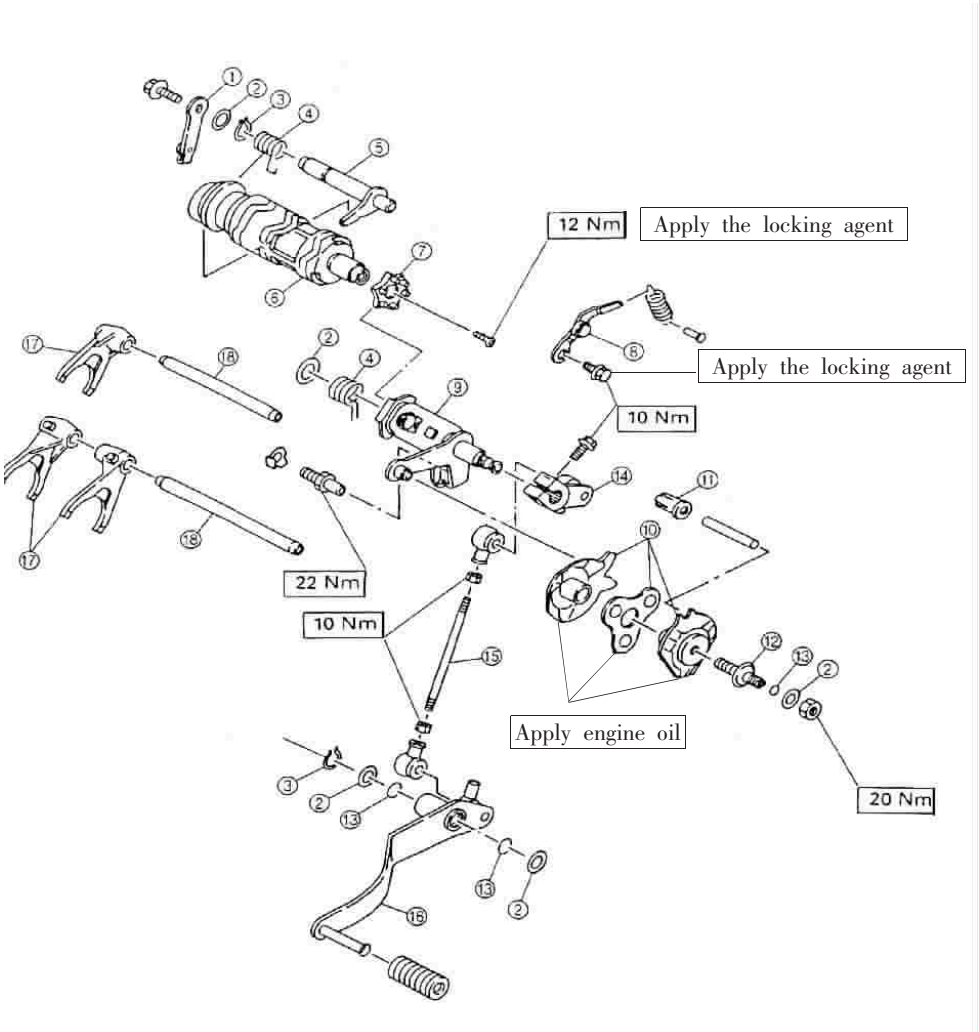
(12)Gasket

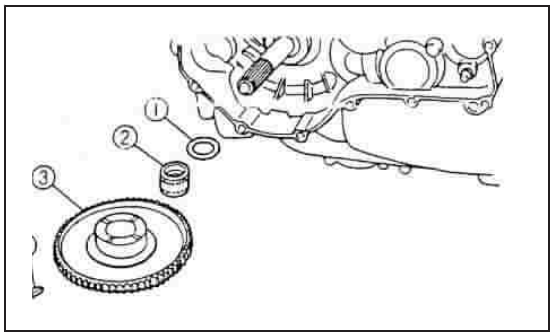
(13)Crankcase cover (left)



SHIFTER

(1) Reverse control lever
(2) Washer
(3) Circlip
(4) Spring
(5) Reverse shift bracket
(6) Shift cam
(7) Shift cam segment
(8) Stopper lever
(9) Shift shaft
(10) Shift guide assembly
(11)Stopper collar
(12)Adjuster
(13)O–ring
(14)Shift pedal link
(15)Shift rod
(16)Shift pedal
(17)Shift fork
(18)Shift fork guide bar





2.Install:

● Plain washer ①

● Bearing ②

● Starter wheel gear ③

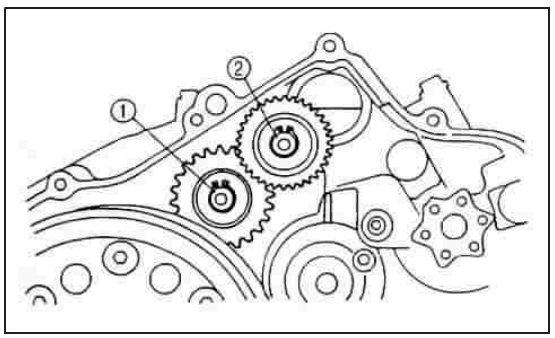
● Woodruff key ④

● CDI rotor

NOTE:

● Before installing the rotor, clean the outside of the crankshaft and the inside of the rotor.

● After installing the rotor, check that the rotor rotates smoothly. If not, reinstall the key and rotor.



STARTER IDLE GEAR AND SHIFT SHAFT

1.Install:

● Starter idle gear #2 ①

● Starter idle gear #1 ②

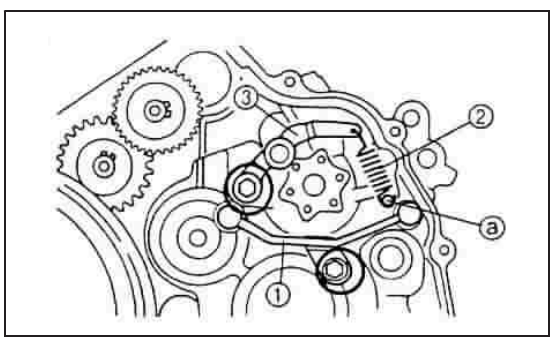
2.Install:

● O–rings

● Oil delivery pipe 3 ①

● Spring ②

● Stopper lever ③



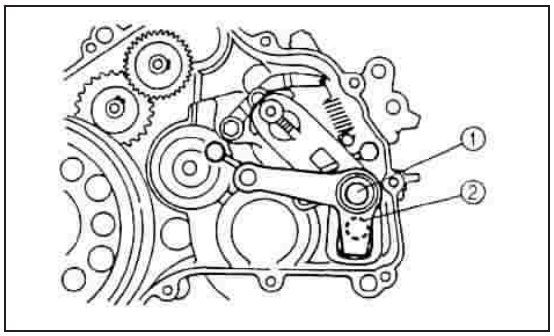
Bolt (oil delivery pipe 3):10Nm

Bolt (stopper lever):10Nm

NOTE:

● Hook the spring ends on the stopper lever ③ and crankcase boss a.

● Mesh the stopper lever ③ with the shift cam stopper.



3.Install:

●Washer

●Shift shaft assembly ①

NOTE:

Hook the spring ends onto the stopper②.

CRANKCASE COVER (LEFT)

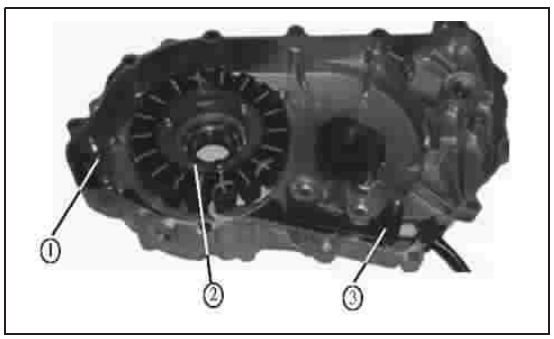
1.Install:

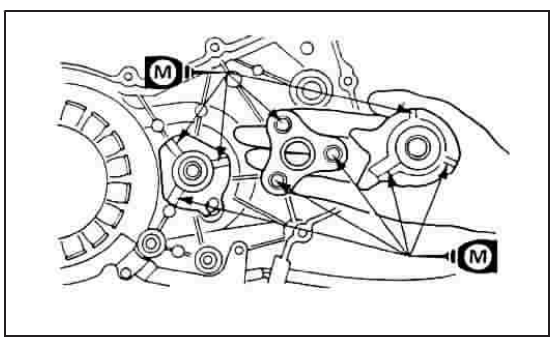
●Pickup coil assembly ①

●Stator assembly ②

●Lead holder ③

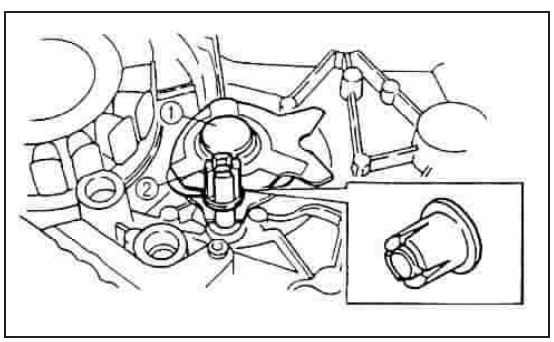
Bolt(stator assembly)7Nm
Bolt(pickup coil)7Nm
Bolt(lead holder)7Nm





2.Apply:

● Molybdenum disulfide oil (to shift guide assembly)



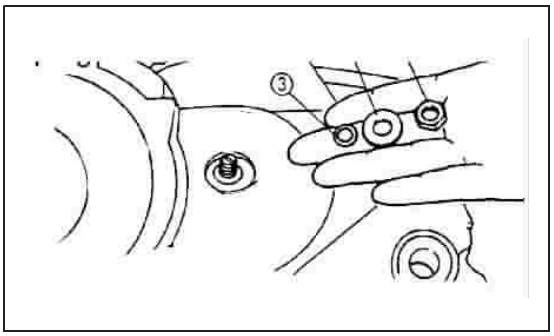
3.Install:

●Shift guide assembly ①

●Stopper collar ②

NOTE:

Install the shaft in the stopper collar as shown in the illustration, so that the tip of the shaft protrudes from the stopper collar.

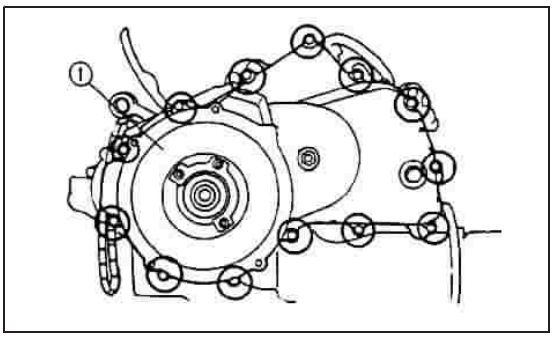


4.Install:

●O–ring ①

●Washer ②

●Locknut ③



5.Install:

●Dowel pins

●Gasket (new)

●Crankcase cover (left) ①

Crankcase cover (left):10Nm

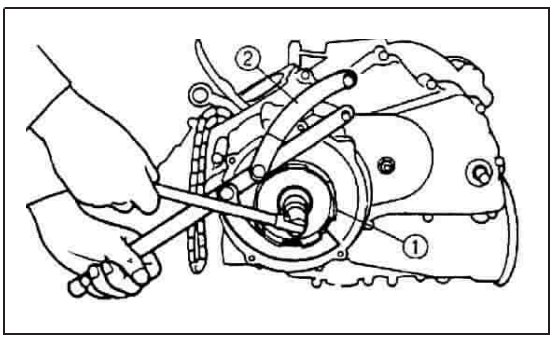
NOTE:

● When installing the crankcase cover (left), use a long rod to hold the CDI rotor in position from the outside. This will make assembly easier. Be careful not to damage the oil seal.

●Tighten the bolts in stages, using a crisscross pattern.

WARNING:

Always use a new gasket and a new copper washer.



6.Install

●Starter pulley ①

Starter pulley:50Nm

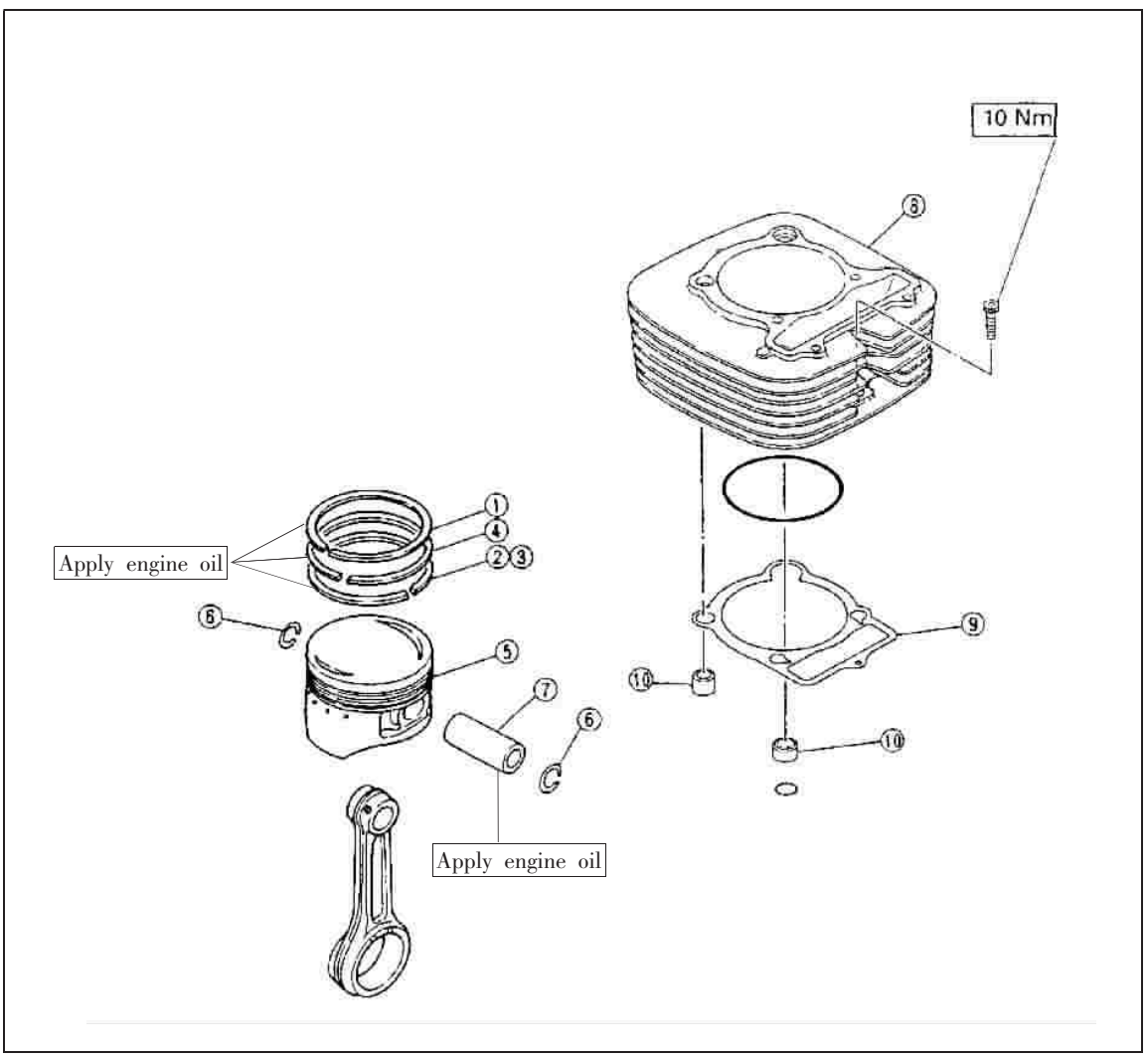
Use a rotor holder ② to hold the starter pulley.

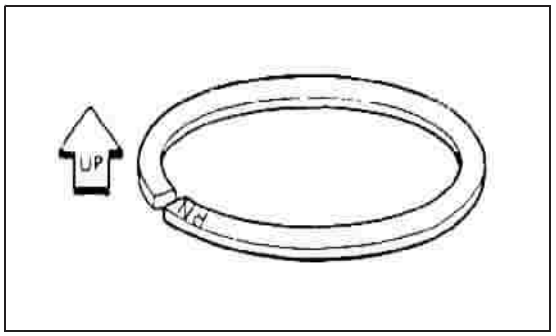
NOTE:

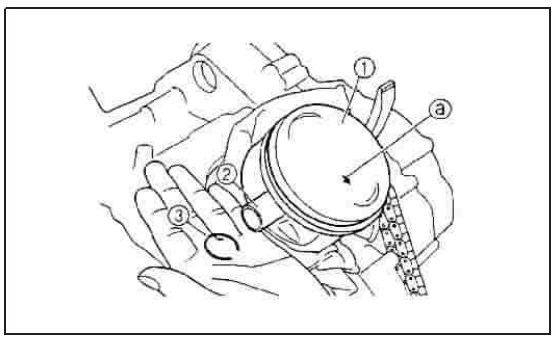
Before installing the starter pulley, do not forget to install the O–ring.

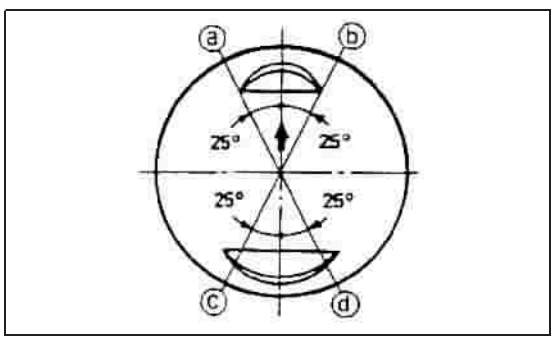
PISTON AND CYLINDER

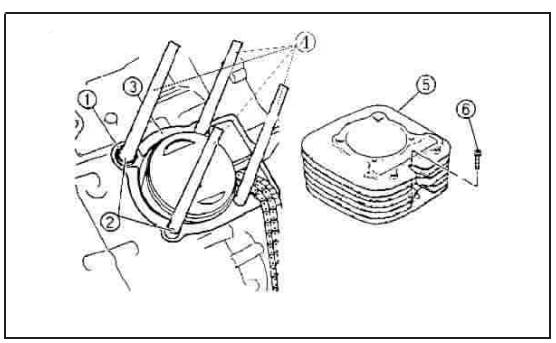
① Top ring
② Oil ring (lower)
③ Oil ring (upper)
④ Second ring
⑤ Piston
⑥ Circlip
⑦ Piston pin
⑧Cylinder
⑨ Gasket
⑩ Dowel pin











PISTON

1.Install:

●Piston rings (onto the piston)

NOTE:

Be sure to install the rings so that the manufacturer´s marks or numbers are located on the top side of the rings.

2.Install:

●Piston ①

●Piston pin ②

●Piston pin clip ③

NOTE:

●Apply engine oil to the piston pins.

● Be sure that the arrow mark a on the piston points to the exhaust side of the engine.

● Before installing the piston pin clip, cover the crankcase with a clean rag to prevent the piston pin clip from falling into the crankcase.

CAUTION:

Always use a new piston pin clip.

3.Position:

●Top ring

●2nd ring

●Oil ring

Offset the piston ring end gaps as shown.

a Top ring end

b Oil ring end (lower)

c Oil ring end (upper)

d 2nd ring end

CYLINDER AND CYLINDER HEAD

1.Install:

●Bolt ④

●O–ring ①

●Dowel pins ②

●Gasket (cylinder) ③

●Cylinder ⑤

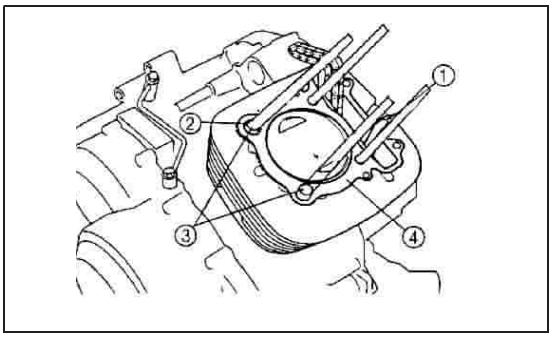
●Bolt (cylinder) ⑥

CAUTION:

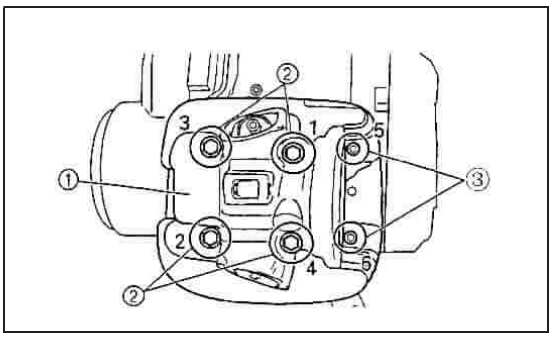
Always use a new gasket (cylinder).

Bolt(cylinder):10Nm

2.Install:



- ●Timing chain guide (exhaust) ①
- ●O–ring②
- ●Dowel pins ③
- ●Gasket(cylinder head) ④(new)



3.Install:

●Cylinder head ①

NOTE:

Attach a wire to the timing chain so that it does not fall into the crankcase.

- **●Nuts(cylinder head)②**
- **●Bolts (cylinder head)③**

NOTE:

- **●Apply 4–stroke engine oil onto the washers.**
- **● Tighten the nuts starting with the lowest numbered one.**

Nut (cylinder head)–M10：40Nm

Bolt (cylinder head)–M8：20Nm

CYLINDER HEAD

(1) Spark plug

(2) Tappet cover (intake)

(3) Tappet cover (exhaust)

(4) O–ring

(5) Cylinder head

(6) Gasket

(7) Timing chain tensioner

(8) Timing chain guide (intake)

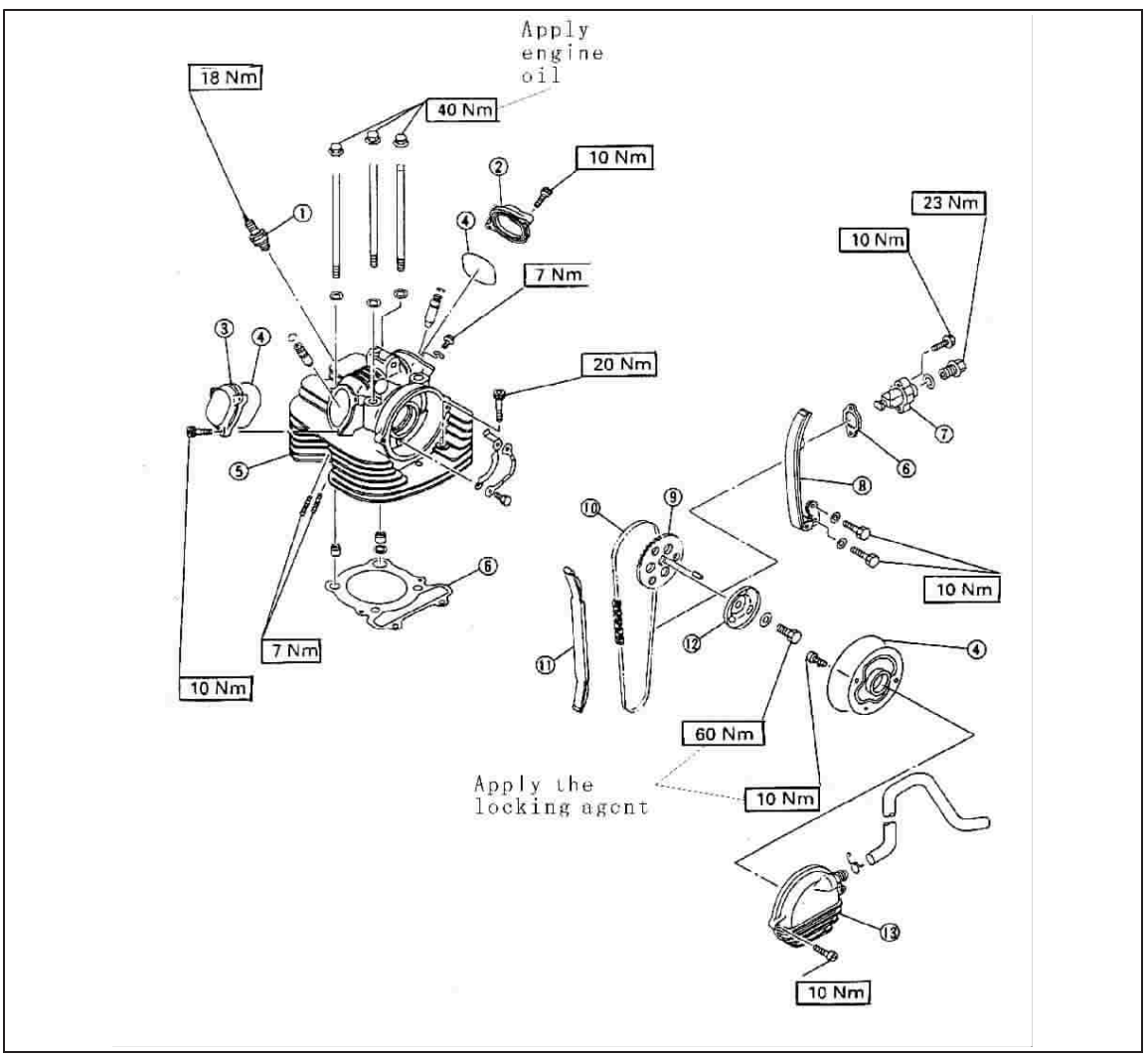
(9) Camshaft sprocket

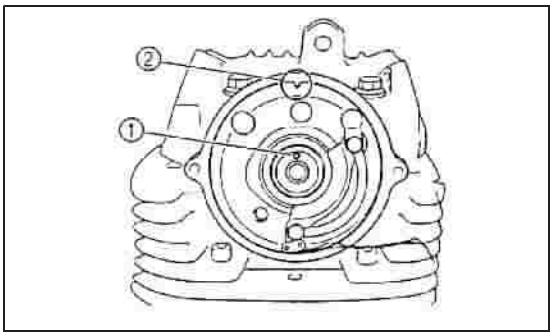
(10) Timing chain

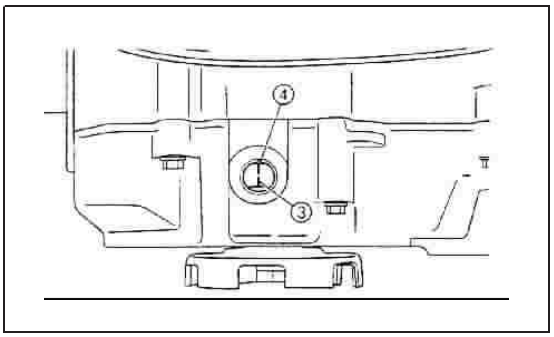
(11)Timing chain guide (exhaust)

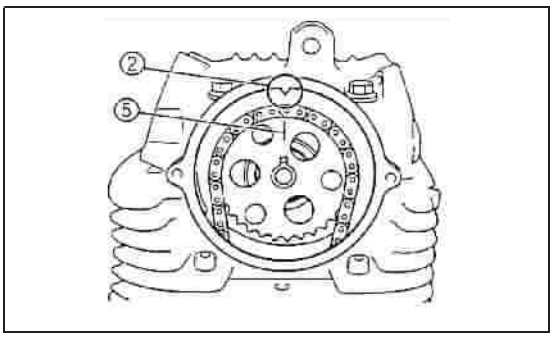
(12) Camshaft sprocket cover

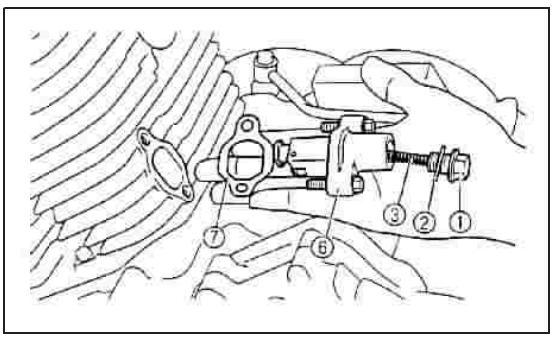
(13)Side cover

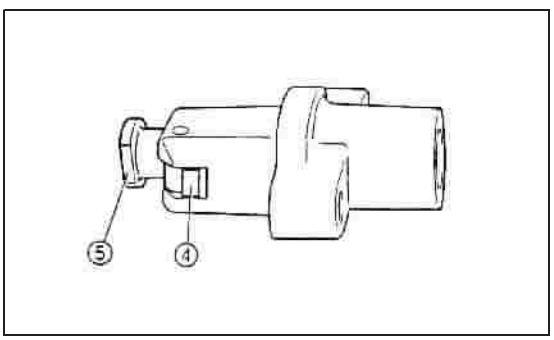












4.Install

●Camshaft sprocket

Camshaft sprocket installing steps:

● Rotate the camshaft to align the camshaft pin ① with the cylinder head match mark②.

●Turn the starter pulley until the "T" mark ③ is aligned with the stationary pointer on the crankcase cover.

● Place the timing chain onto the camshaft sprocket

● Install the camshaft sprocket onto the camshaft and finger tighten the sprocket bolt.

NOTE:

Be sure the match mark ⑤ on the camshaft sprocket is aligned with the match mark ② on the cylinder head.

● Force the camshaft clockwise and counterclockwise to remove timing chain slack.

● Insert a screwdriver into the timing chain tensioner hole and push the timing chain guide inward.

● While pushing the timing chain guide, be sure that the camshaft sprocket match mark ⑤ is aligned with the cylinder head match mark ②.

● If the marks are aligned, tighten the camshaft sprocket bolt. If the marks are not aligned, change the meshing position of the camshaft sprocket and timing chain.

5.Install:

●Timing chain tensioner

Installation steps:

● Remove the tensioner cap bolt ①, plain washer ② and spring ③.

●Release the timing chain tensioner oneway cam ④ and push the tension rod ⑤.

●Install the tensioner ⑥ with a new gasket ⑦ into the cylinder.

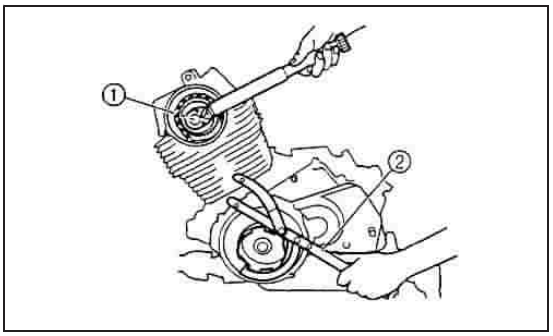
Bolt(tensioner body):10Nm

CAUTION:

Always use a new gasket.

●Install the spring ③, plain washer ② and tensioner cap bolt ①.

Tensioner cap bolt:23Nm



6.Install:

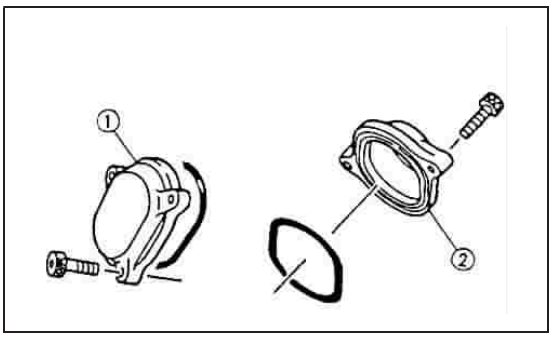
●Camshaft sprocket cover

7.Tighten:

●Bolt (camshaft sprocket)①

Bolt(camshaft sprocket):60Nm

Use a rotor holder ② to hold the starter pulley.

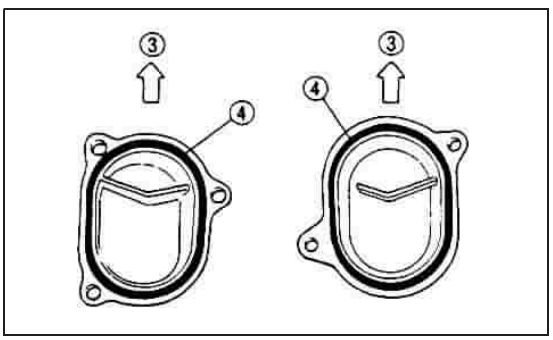


8.Check:

●Camshaft sprocket mark

●Rotor "T" mark

Out of alignment –-> Adjust.



9.Install:

●O–ring (exhaust tappet cover)

●Tappet cover (exhaust) ①

●O–ring (intake tappet cover)

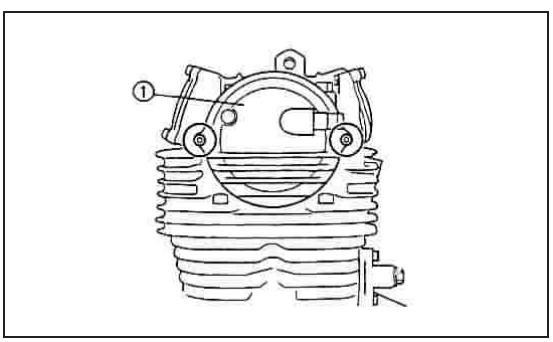
●Tappet cover (intake) ②

NOTE:

● Install the tappet covers with the ridge facing up ③.

● Check the O –rings ④ for damage. If damaged, replace.

Tappet cover:10Nm

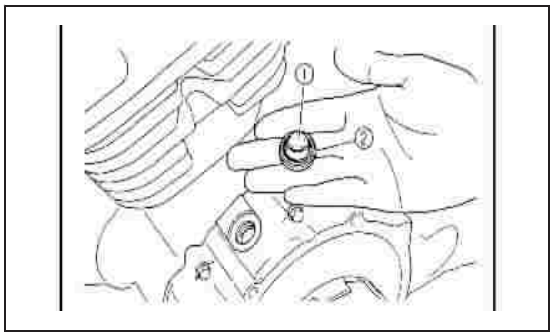


10.Install:

●O–ring (side cover)

●Side cover (cylinder head) ①

Side cover (cylinder head):10Nm



11.Install:

●Timing plug ①

●O–ring ②

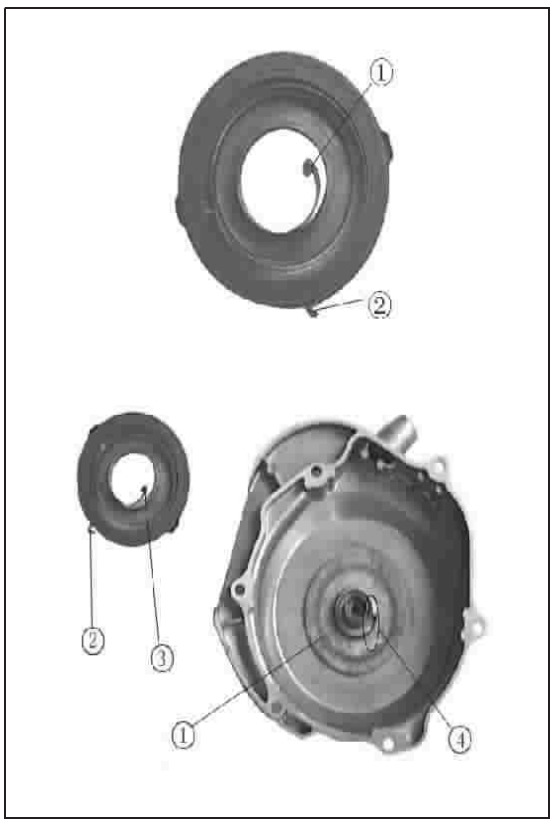
RECOIL STARTER

1.Mount:

●Coil spring backboard assy

Caution:

Hang the coil spring hook hanger ②into the split of spring backboard,and wind the coil spring in counterclockwise.



2.Install:

●Washer ①

●Coil spring backboard assy ②

Caution:

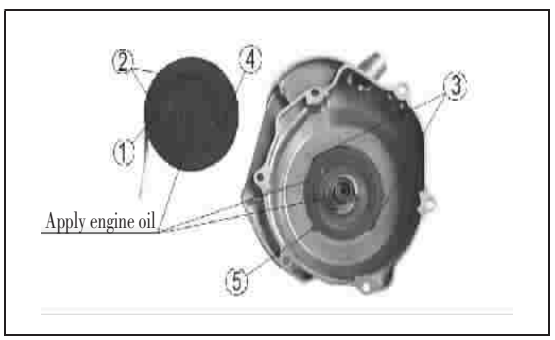
End of the coil spring is hung the inner race of left side–cover coil spring.

3.Wind the rope in the drive disc groove 5 circles by clockwise.

4.Lubricate:

●Coil spring backboard assy

●Drive disc

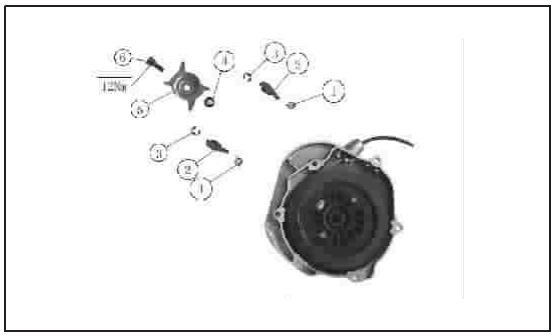


5.Mount:

●Drive disc ①

Caution:

The projection ③ need to be mounted into two hole groove ② and the coil spring hook hanger ⑤ also need to be mounted into the hole groove ④.



6.Mount:

●Torsion spring (starting ratchet pawl) ①

●Starting ratchet pawl ②

●Hog ring ③

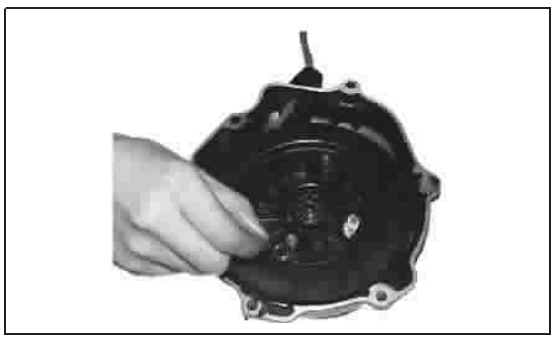
●Compress spring ④

●Guide plate ⑤

●Screw pin ⑥

Caution:

When mounting torsion spring (starting ratchet pawl),make the end ⑦ of torsion spring align to groove a on the drive disc.



7.Turn the drive disc three circles by clockwise and pre–tighten the coil spring.

8.Mount:

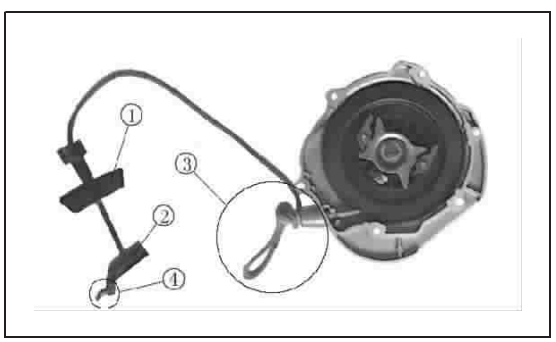
●Starting lever ①

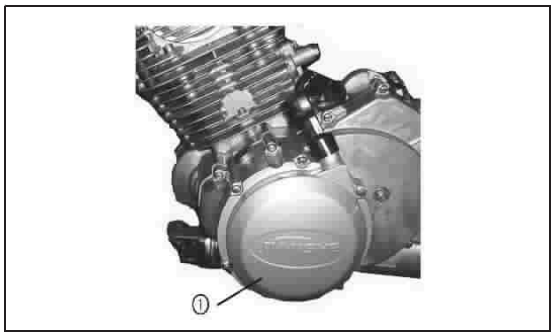
●Cover ②

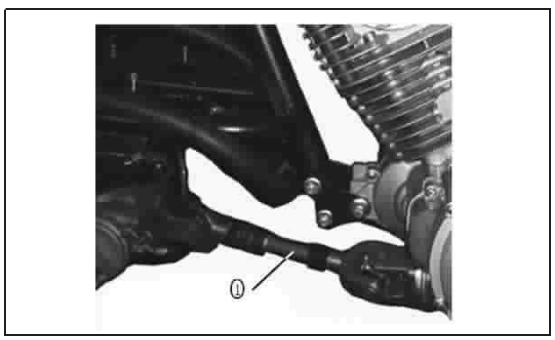
Caution:

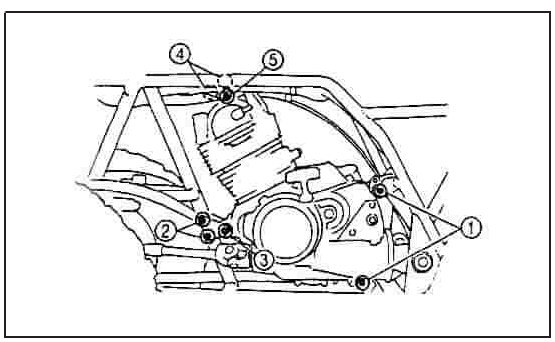
Make the rope accross the hole of left side,and knit it in order to the rope is not pulled into left side cover.

●After kniting ④,and untie it ③.









Intall:

Gasket

Recoil starter assembly ①

REMOUNTING THE ENGINE

When remounting the engine, reverse the pe-moval procedure. Note the following points.

Securely support the machine so there is no danger of it falling over.

1.Install:

●Engine

(from the left side)

2.Install:

●Front drive shaft ①

NOTE:

When installing the front drive shaft, nove the engine to the right (clockwise).

3.Tnstall:

●Bolts (engine mounting—rear) ①

●Engine stay (front)

●Bolts (engine mounting stay—front) ②

●Bolt (engine mounting—front) ③

●Engine stay (upper)

●Bolts (engine mounting stay—top) ④

●Bolt (engine mounting—top)⑤

NOTE:

● All mounting bolts ①、②、③、④、and ⑤ should be installed from the right of the machine.

● Install all of the bolts and nuts first and then tighten the bolts and nuts to specifications in the following order.

1st.Bolt (engine mounting stay—top):34Nm

2st.Nut (engine mounting—rear):69Nm

3st.Nut (engine mounting stay—front)34Nm

4th.Nut (engine mounting—front):69Nm

5th.Nut (engine mounting—top)34Nm

4.Install:

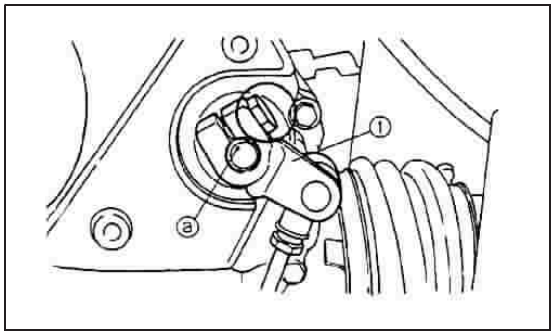
●Rear shock abslorber and swingarm

●Pivot shaft (left)

●Pivot shaft (right)

●Locknut (pivot shaft—right)

●Covers

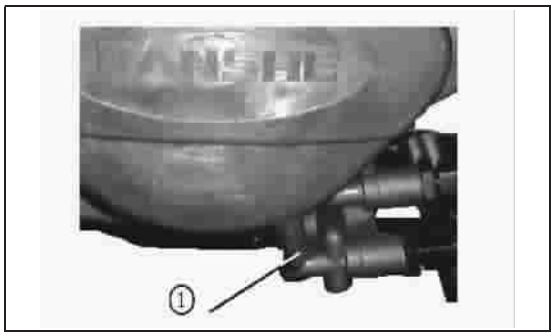


5.Pass the breather hoses and parking brake cable throught their guides.

6.Install:

●Spark plug

Spark plug:18Nm



7.Install:

●Footrest (left and righ)

Bolt (footrest):64Nm

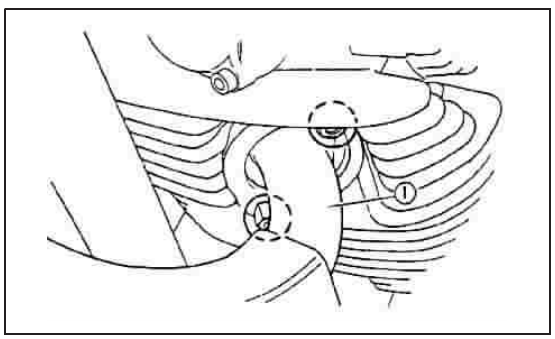
8.Install:

●Shift pedal link①

NOTE:

Align the mark a on the shift shaft with the slot b on the shift pedal link.

Bolt (shift pedal link):10Nm



9.Install:

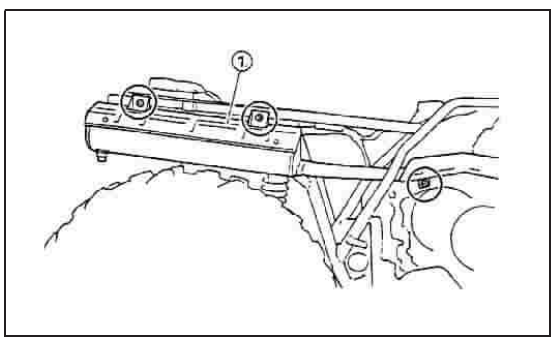
●Oil filter element

●Oil filter cover ①

NOTE:

Check the O−ring for damage, and replace if damaged.

Bolt (oil filter cover):10Nm



10.Install:

●Gasket

●Exhaust pipe ①

●Muffler ②

TROUBLESHOOTING

NOTE:

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts

(Ⅰ)STARTING FAILURE/HARD STARTING

FUEL SYSTEM

Fuel tank

·Empty
·Clogged fuel filter
·Clogged fuel strainer
·Clogged fuel breather hose
.Deteriorated or contaminated fuel

Fuel cock

·Clogged fuel hose

Carburetor

.Deteriorated or contaminated fuel
·Clogged pilot jet
·Clogged pilot air passage
.Sucked–in air
.Deformed float
.Worn needle valve
·Improperly sealed valve seat
·Improperly adjusted fuel level
·Improperly set pilot jet
·Clogged starter Jet
·Starter plunger malfunction

Air filter

·Clogged air filter element

(Ⅱ)ELECTRICAL SYSTEM

Spark plug

·Improper plug gap
·Worn electrodes
·Wire between terminals broken
·Improper heat range
·Faulty spark plug cap

Ignition coil

·Broken or shorted primary/secondary
·Faulty spark plug lead
·Broken body

CDI system

·Fault CDI unit
·Faulty pickup coil
·Faulty charging/rotor rotation direction coil
·Broken woodruff key

Switches and wiring

.Faulty main switch
·Faulty engine stop switch
.Broken or shorted wiring
.Faulty gear position switch
·Faulty start switch
·Faulty rear brake switch

Starter motor

·Faulty starter motor
·Faulty starter relay
·Faulty starter circuit cut–off relay
·Faulty starter clutch

(Ⅲ)COMPRESSION SYSTEM

Cylinder and cylinder head

·Loose spark plug

·Loose cylinder head or cylinder

·Broken cylinder head gasket

·Worn,damaged or seized cylinder

Piston and piston rings

·Improperly installed piston ring

·Worn.Fatigued or broken piston ring

·Seized piston ring

·Seized or damaged piston

Valve,camshaft and crankshaft

·Improperly sealed valve

·Improperly contacted valve and valve seat

·Improper valve timing

·Broken valve spring

·Seized camshaft

·Seized crankshaft

(Ⅳ)POOR IDLE SPEED PERFORMANCE

POOR IDLE SPEED PERFORMANCE

Carburetor

·Improperly returned starter plunger

·Loose pilot jet

·Clogged pilot jet

·Clogged pilot air jet

·Improperly adjusted idle speed (Throttle stop screw)

·Improper throttle cable play

·Flooded carburetor

Electrical system

·Faulty spark plug

·Faulty CDI unit

·Faulty pickup coil

·Faulty charging/rotor rotation direction coil

·Faulty ignition coil

Valve train

·Improperly adjusted valve clearance

Air filter

·Clogged air filter element

(Ⅴ)POOR MEDIUM AND HIGH SPEED PERFORMANCE

POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to"STARTING FAILURE/HARD STARTING"and"POOR IDLE SPEED PERFORMANCE–valve train

Carburetor

·Improper jet needle clip position

·Improperly adjusted fuel level

·Clogged or loose main jet

·Deteriorated or contaminated fuel

Air filter

·Clogged air filter element

(Ⅵ)FAULTY DRIVE TRAIN

The following conditions may indicate damaged shaft drive components:

Symptoms	Possible Causes
1.pronounced hesitation or "jerky" movementDuring acceleration, deceleration or sustained speed. (This must not be confused with engine surging or transmission characteristics.) 2.A "rolling rumble" noticeable at low speed; a high–pitched whine ; a "clunk" from a shaft drive component or area 3.A locked–up condition of the shaft drive mechanism, no power transmitted from the engine to the front and/or rear wheels.	A、Bearing damage B、Improper gear lash C、Gear tooth damage D、Broken drive shaft E、Broken gear tooth F、Seizure due to lack of lubrication G、Small foreign objects lodged between the moving parts

NOTE:

Areas A,B,and C above may be extremely difficult to diagnose.The symptoms are quite subtle and difficult to distinguish from normal machine operating noise. If there is reason to believe these components are damaged,remove the components

(Ⅶ)FAULTY GEAR SHIFTING

HARD SHIFIIING

Refer to"CLUTCH SUPPING/DRAGGING–CLUTCH DRAGGING"

SHIFT PEDAL DOES NOT MOVE

Shift shaft

·Bent shift shaft

Shift cam, shift fork

·Groove hammed with impurities

·Seized shift fork

·Bent shift fork guide bar

Transmission

·Seized transmission gear

·Jammed impurities

·Incorrectly assembled transmission

Shift guide

·Broken shift guide

(Ⅷ)JUMPS–OUT–OF GEAR

Shift shaft

·Improperly adjusted shift lever position

·Worn shift shaft lever

·Improperly returned stopper lever

Shift fork

·Worn shift fork

Shift cam

·Improper thrust play

·Worn shift cam groove

Transmission

·Worn gear dog

(Ⅸ)CLUTCH SLIPPING/DRAGGING

CLUTCH SLIPPING

Clutch

·Improperly adjusted clutch lever free play

·Loose Clutch spring
(primary and/or secondary)

·Fatigued clutch spring
(primary and/or secondary)

·Worn friction plate

·Worn clutch plate

·Worn clutch shoe(primary)

Engine oil

·Low oil level

·Improper viscosity(low)

·Deterioration

Engine oil

·Improper oil level

·Improper viscosity(high)

·Deterioration

(Ⅹ)CLUTCH DRAGGING

Clutch

·Improperly adjusted clutch release lever free play

·Improper engagement of the release lever and push rod

·Warped Clutch plate

·Swollen friction plate

·Broken clutch boss

(XI)OVERHEATING

OVERHEATING

Ignition system

·Improper spark plug gap

·lmProper spark plug heat range

·Faulty CDI Unit

Fuel sVstem

·Improper carburetor main jet (improper setting)

·Improper fuel level

·Clogged air filter element

Compression system

·Heavy carbon build–up

Engine oil

·Improper oil level

·Improper oil viscosity

·Inferior oil quality

Brake

·Brake drag

Oil cooling system

·Clogged or damaged oil cooler

(XII)FAULTY BRAKE

P00R BRAKING EFFECT

Front disc brake

·Worn brake pads

·Worn disc

·Air in brake fluid

·Leaking brake fluid

·Faulty master cylinder kit cup

·Faulty caliper kit seal

·Loose union bolt

·Broken brake hose and Pipe

·Oily or greasy disc/brake pads

·Improper brake fluid level

Rear drum brake

·Worn brake shoe lining

·Worn brake drum

·Oily or greasy brake shoe lining

·Oily or greasy brake drum

·Improperly adjusted brake free play

·Improper brake cam Lever position

·Fatigue/damaged return spring

(XIII)SHOCK ABSORBER MALFUNCTION MALFUNCTION

·Bent or damaged damper rod

·Damaged oil seal lip

·Fatigued shock absorber spring

(Ⅸ)UNSTABLE HANDLING

UNSTABLE HANDLING

Handlebar

·Improperly installed or bent

Steering

·Incorrect toe–in

·Bent steering shaft

·Improperly installed steering shaft

·Damaged bearing or bearing race

·Bent tie–rods

·Deformed steering knuckles

Tires

·Uneven tire pressures on both sides

·Incorrect tire pressure

·Uneven tire wear

Wheels

·Deformed wheel

·Loose bearing

·Bent or loose wheel axle

·Excessive wheel run–out

Frame

·Bent

·Damaged frame

Swing arm

·Worn bearing or bushing

·Bent or damaged

(Ⅹ)LIGHTING SYSTEM

HEADLIGHT DARK

·Improper bulb

·Too many electric accessories

·Hard charging(broken charging coil and/or faulty rectifier/regulator)

·Incorrect connection

·Improperly grounded

·Poor contacts(main or lights switch)

·Bulb Life expired

BULB BURNT OUT

·Improper bulb

·Faulty battery

·Faulty rectifier/regulator

·Improperly grounded

·Faulty main and/or lights switch

·Bulb life expired