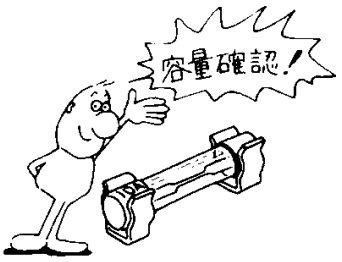
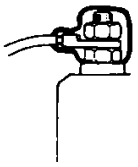
CBR250R,RR

INDEX

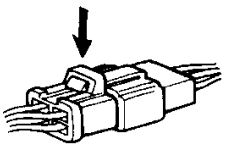
- If a fuse has blown, inspect and fix the cause and install the new fuse with the correct capacity.



- Apply covers to terminals after servicing.

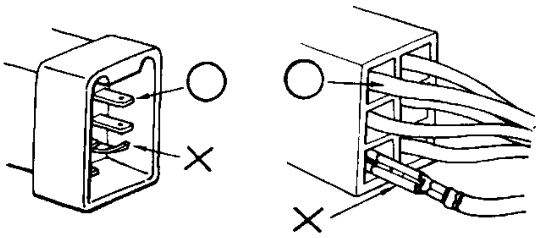


- When disconnecting locked couplers, unlock before disconnecting.



- When disconnecting couplers, hold the coupler body.
  Do not pull the wire harness.

- Before connecting couplers, make sure there is no damage or any abnormalities on the terminals.



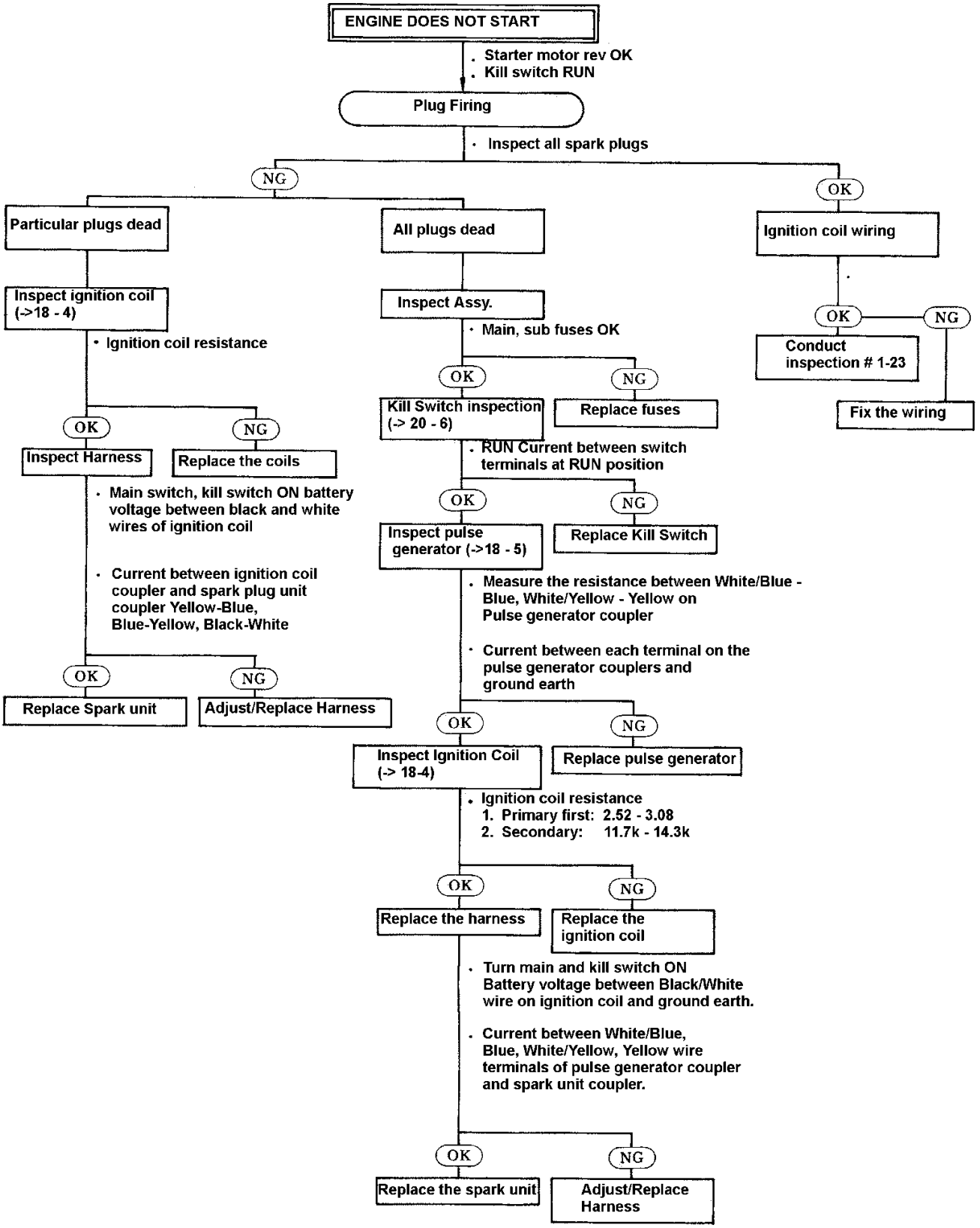
- **Measurement tools**

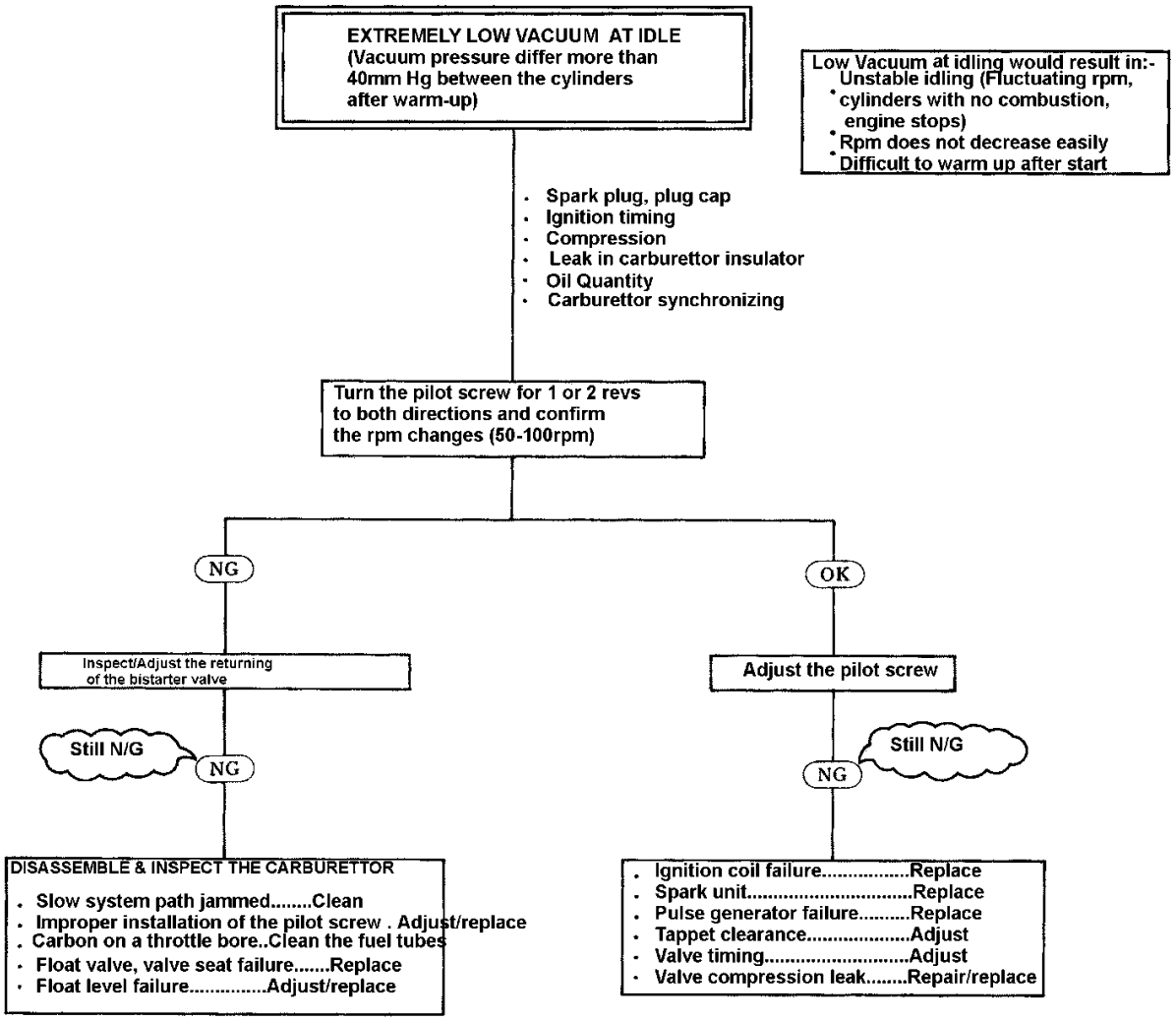
Name of the tool	Tool number	Application	Section in the manual
Digital circuit multimeter (KOWA)	07411-002000	Kowa circuit multimeter (TH-5H) Or Sanwa's 07309-0020000 ***Use the multimeter to check the charge of MF battery.**	17,18,19, 20
Oil pressure gauge	07506-3000000	Oil pressure measurement	3
Vacuum gauge	07404-0030000	Carburettor synchronizing adjust	4
Compression gauge	07305-0010000	Cylinder compression meas.	2

Valve seat cutting tools

Name of the tool	Tool number	Application	Section in the manual
Sheet surface cutter (20.5mm)	07780-0011000	45°IN) valve sheet adjustment	7
Sheet surface cutter (17mm)*	07GMH-KT70500	(45°EX) valve sheet adjustment	7
Plane cutter (17mm)*	07GMH-KT70100	(32°IN) valve sheet adjustment	7
Plane cutter (17mm)*	07GMH-KT70200	(32°EX) valve sheet adjustment	7
Inner surface cutter (20.5mm)	07780-0014300	(60°IN) valve sheet adjustment	7
Inner surface cutter (17mm)*	07GMH-KT70400	(60°EX) valve sheet adjustment	7
Cutter holder (4mm)*	07GMH-KT70300	Attach the cutter	7

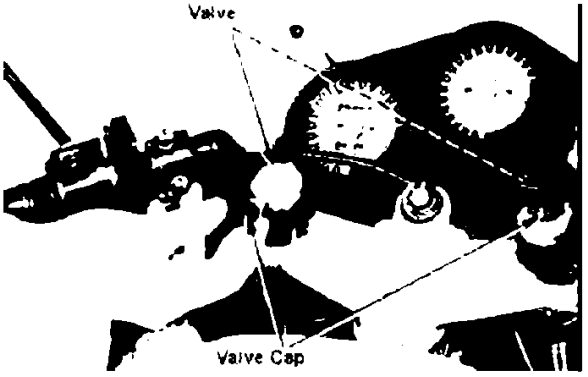
*Newly-organized tools


ENGINE DOES NOT START
. Starter motor rev OK
. Kill switch RUN
Plug Firing
· Inspect all spark plugs
NG
OK
Particular plugs dead
All plugs dead
Ignition coil wiring
Inspect ignition coil (->18 - 4)
· Ignition coil resistance
Inspect Assy.
· Main, sub fuses OK
OK
NG
Conduct inspection # 1-23
Fix the wiring
OK
NG
Kill Switch inspection (-> 20 - 6)
Replace fuses
Inspect Harness
Replace the coils
. RUN Current between switch terminals at RUN position
· Main switch, kill switch ON battery voltage between black and white wires of ignition coil
OK
NG
Inspect pulse generator (->18 - 5)
Replace Kill Switch
. Measure the resistance between White/Blue - Blue, White/Yellow - Yellow on Pulse generator coupler
· Current between ignition coil coupler and spark plug unit coupler Yellow-Blue, Blue-Yellow, Black-White
· Current between each terminal on the pulse generator couplers and ground earth
OK
NG
Replace Spark unit
Adjust/Replace Harness
OK
NG
Inspect Ignition Coil (-> 18-4)
Replace pulse generator
. Ignition coil resistance
1. Primary first: 2.52 - 3.08
2. Secondary: 11.7k - 14.3k
OK
NG
Replace the harness
Replace the ignition coil
. Turn main and kill switch ON Battery voltage between Black/White wire on ignition coil and ground earth.
. Current between White/Blue, Blue, White/Yellow, Yellow wire terminals of pulse generator coupler and spark unit coupler.
OK
NG
Replace the spark unit
Adjust/Replace Harness


EXTREMELY LOW VACUUM AT IDLE
(Vacuum pressure differ more than 40mm Hg between the cylinders after warm-up)
Low Vacuum at idling would result in:-
Unstable idling (Fluctuating rpm,
cylinders with no combustion, engine stops)
Rpm does not decrease easily
Difficult to warm up after start
Spark plug, plug cap
Ignition timing
Compression
Leak in carburettor insulator
Oil Quantity
Carburettor synchronizing
Turn the pilot screw for 1 or 2 revs to both directions and confirm the rpm changes (50-100rpm)
NG
OK
Inspect/Adjust the returning of the bistarter valve
Adjust the pilot screw
Still N/G
NG
Still N/G
NG
DISASSEMBLE & INSPECT THE CARBURETTOR
Slow system path jammed.....Clean
Improper installation of the pilot screw . Adjust/replace
Carbon on a throttle bore..Clean the fuel tubes
Float valve, valve seat failure.....Replace
Float level failure.....Adjust/replace
Ignition coil failure.....Replace
Spark unit.....Replace
Pulse generator failure.....Replace
Tappet clearance.....Adjust
Valve timing.....Adjust
Valve compression leak.....Repair/replace

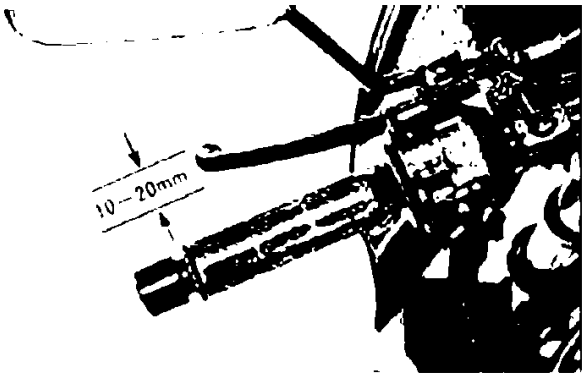
Front fork air pressure.

Support the frame and lift the front wheel.
Remove the valve cap.
Measure the air pressure with an air pressure gauge.



Max Air pressure : 0.4 kpa

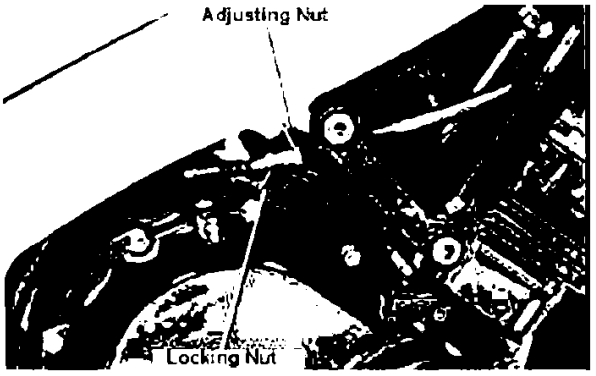
In order to adjust the air pressure, increase the pressure by manual pump and gradually drain the air and adjust to the same pressure on both sides.



- When adjusting the air pressure, increase the pressure gradually.

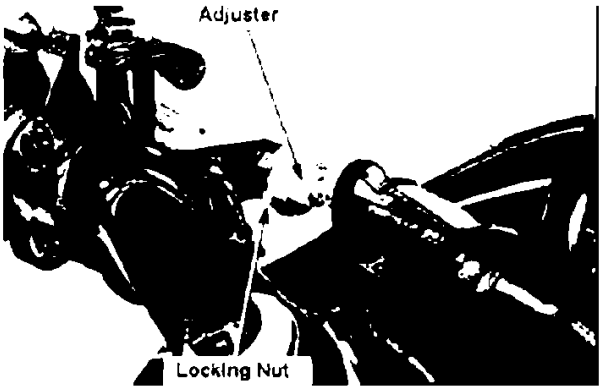
Transmission

Clutch.
Inspect the free movement of clutch lever.
10 ~ 20 mm.



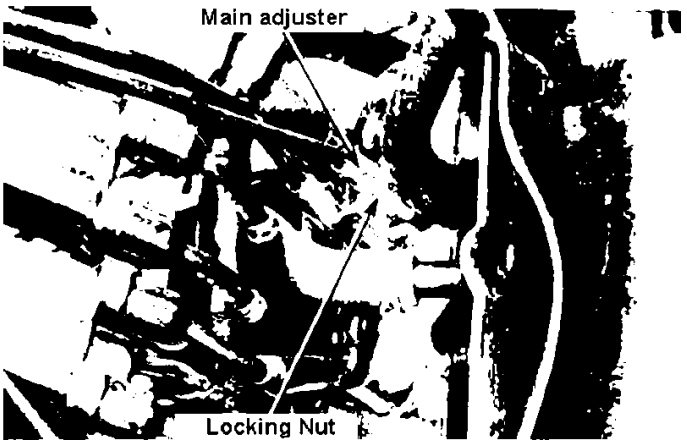
Major adjustment can be done by loosening the locking nut and rotating the adjusting nut.

Precise adjustment can be done by loosening the locking nut on the handle side and rotating the adjuster.

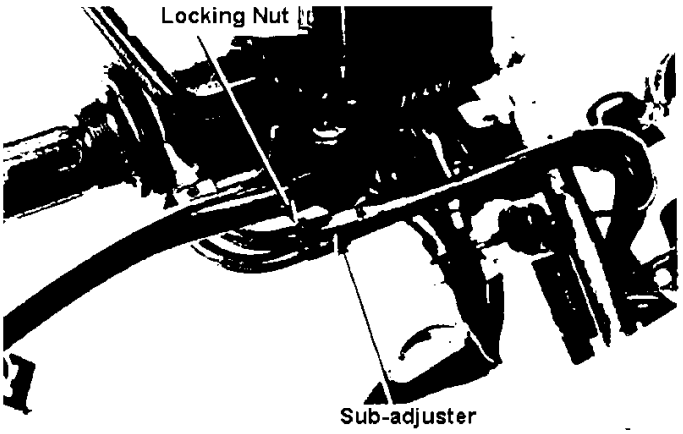


Do not expose the threaded part of the adjuster for more than 8mm.

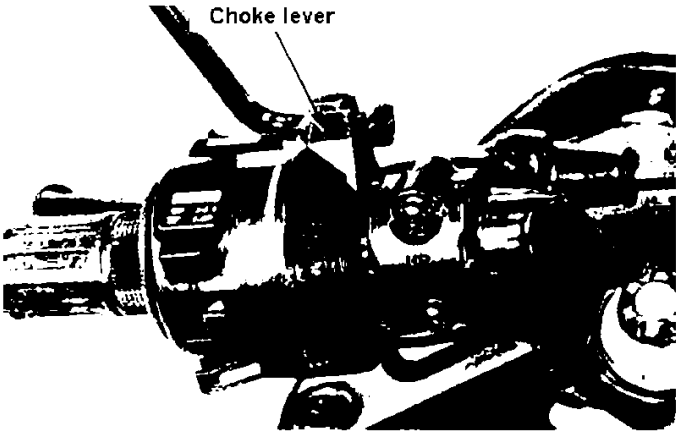
The adjustment of the free movement should be done at the carburettor section.
Remove the fuel tank (4-3).
Loosen the locking nut of the throttle cable on pulling side and adjust the free movement by rotating the main adjuster.



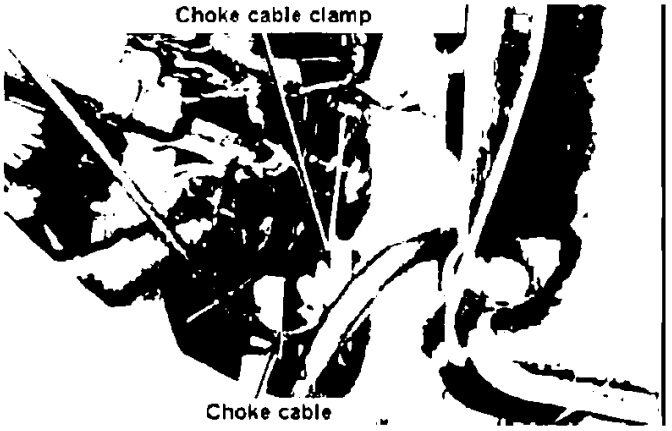
Precise adjustment should be done at the throttle holder section.
Loosen the locking nut and adjust by rotating the sub-adjuster.
If still unable to have standard or smooth movement, replace the throttle cables.



Inspect the smooth movement of the choke lever from fully closed to fully opened.
Inspect the cable for wear, damage and twist.

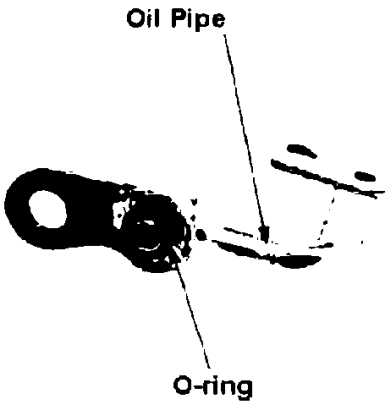


Check the movement of the carburettor bistarter valve by moving the choke lever.
Loosen the choke cable clamp and shift the cable clamping position for adjustment.



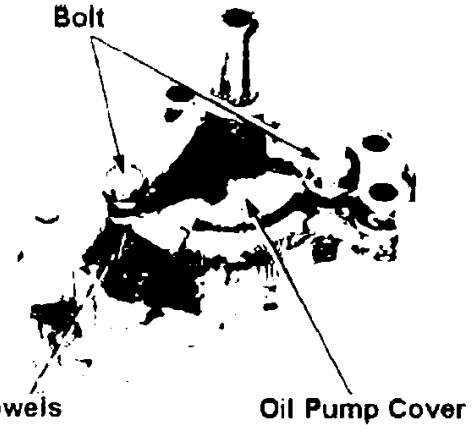
Oil Valve Inspection

Inspect the pipe for jam/leak.
Inspect the O-ring for wear/damage.



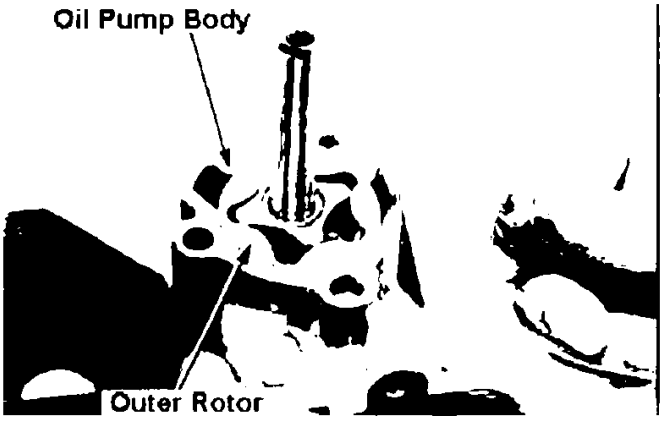
Disassembly/Inspection of Oil Pump

Remove the two bolts and remove the oil pump cover.
Remove the dowels.



Measure the clearance between the oil pump body and the Outer rotor.

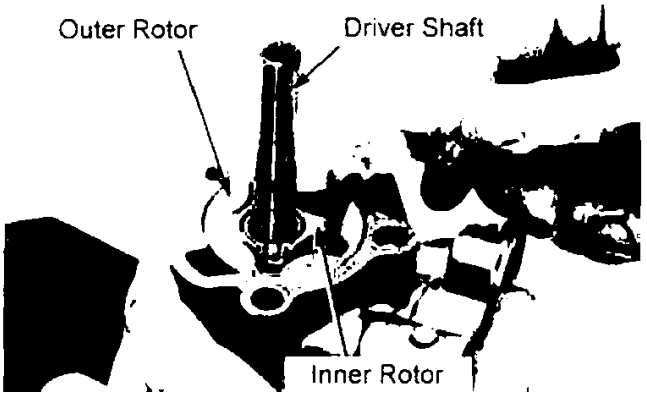
0.35mm or more → replace.



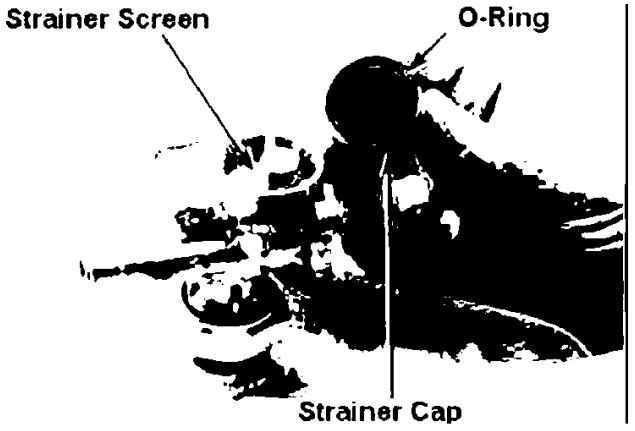
Measure the clearance between the inner rotor and outer rotor (tip clearance).

0.20mm or more → replace

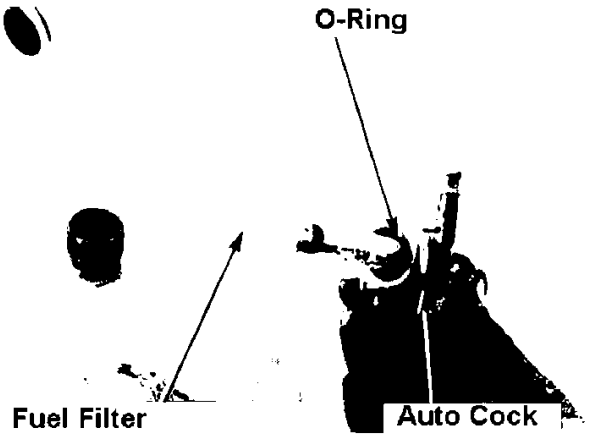
Remove the oil pump drive shaft.



Remove the fuel strainer cap, O-ring, strainer screen.
Clean the strainer screen.
Inspect the O-ring for wear.



Loosen the locking nut and remove the fuel auto cock from fuel tank.
Remove the fuel filter and the O-ring.
Clean the fuel filter.
Inspect the O-ring for wear.



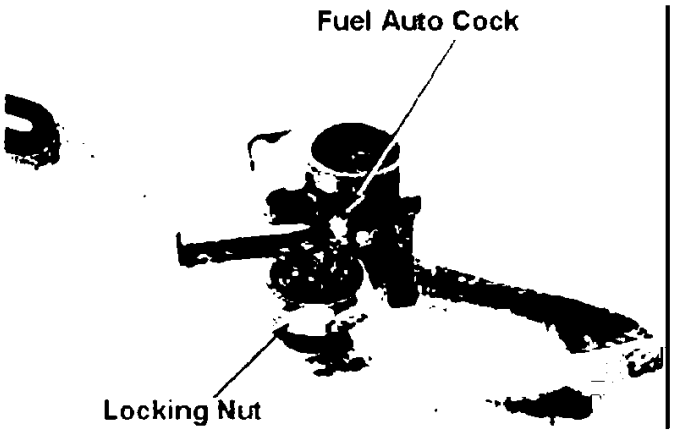
Assembly

Attach the fuel filter and the O-ring to the fuel auto cock.

Attach the fuel auto cock to the tank.

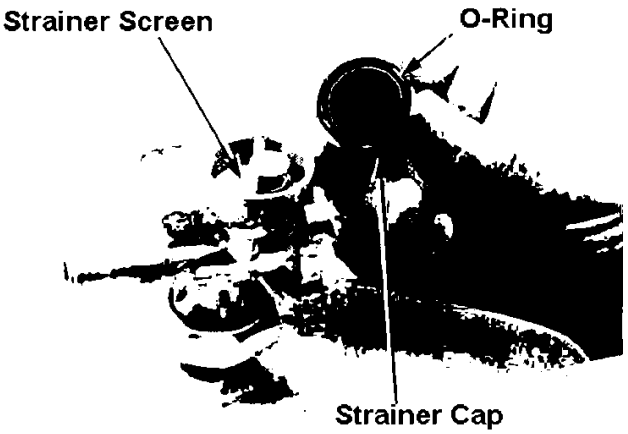
Tightening torque: 2.0~2.5kg m

Do not overtighten the locking nut.



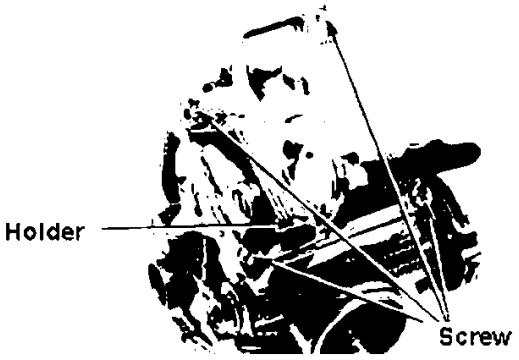
Attach the strainer screen.
Attach the O-ring to the strainer cap and attach the cap to the fuel auto cock.

Do not overtighten the fuel strainer cap.

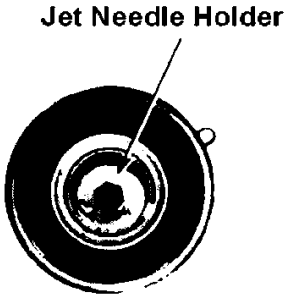


Tighten with four screws.

Tighten and attach the throttle stop screw holder to a carburettor body with 2 screws.



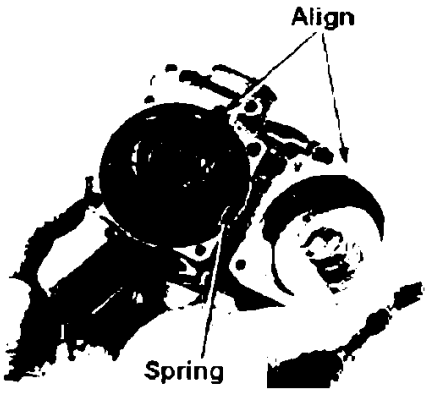
Attach the washer, jet needle and a spring to the vacuum piston. Push the jet needle holder in and rotate 45° to the right.



Push the bottom of the vacuum piston towards vacuum chamber side and make it nearly full open position.

Firmly fit the rib of the diaphragm to the slit on the body.

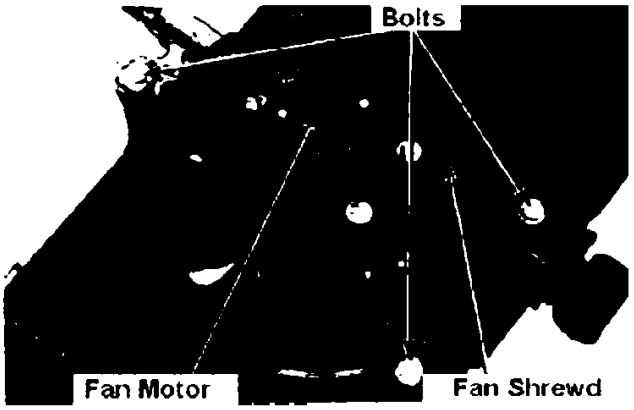
Attach the spring and align the hole on the diaphragm and the slit on the cover to attach the cover.



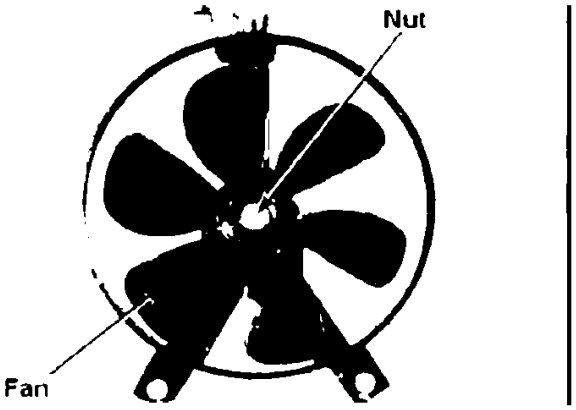
The cover should not catch the diaphram.

Tighten the 4 screws.

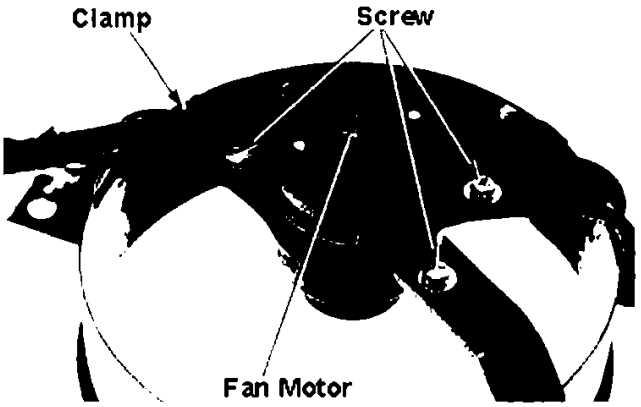
Remove the three bolts behind the radiator and detach the fan shroud and the fan motor at the ASSY.



Remove nuts and remove the fan.



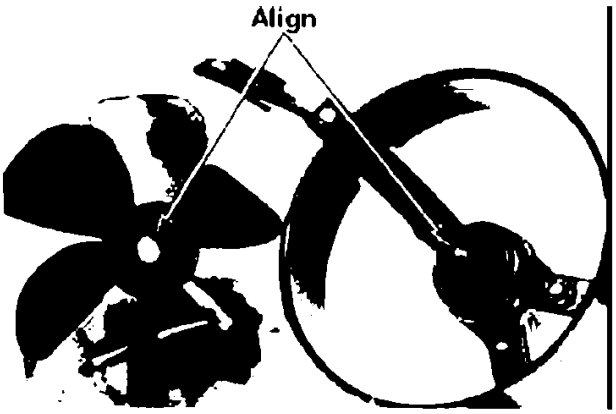
Detach the wire from the clamp.
Remove three screws and detach the motor from fan shroud.



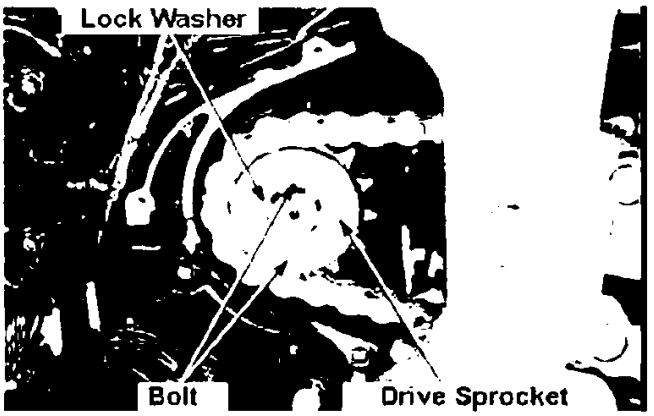
Assembly

Inspect all parts for damage.
Reverse the disassembly procedure for the assembly.

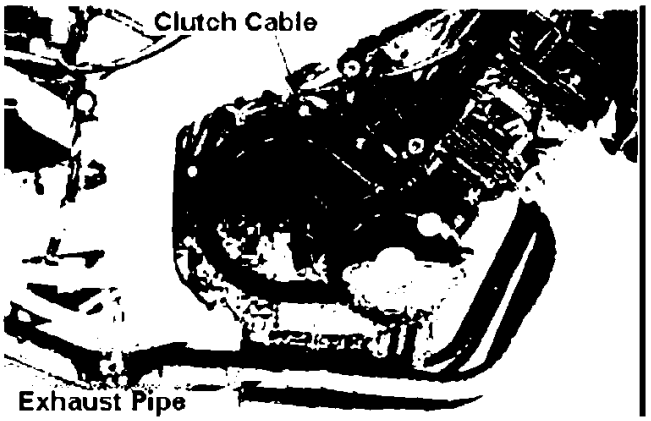
Align the fan motor axis and the slit on the fan when assembling the fan.



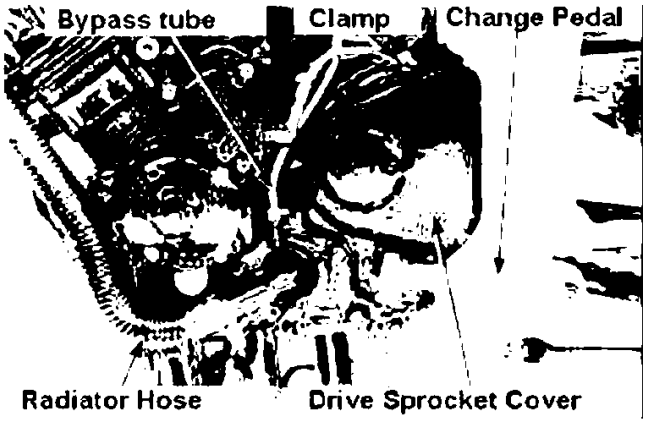
Disconnect the pulse generator coupler and the AC generator coupler.



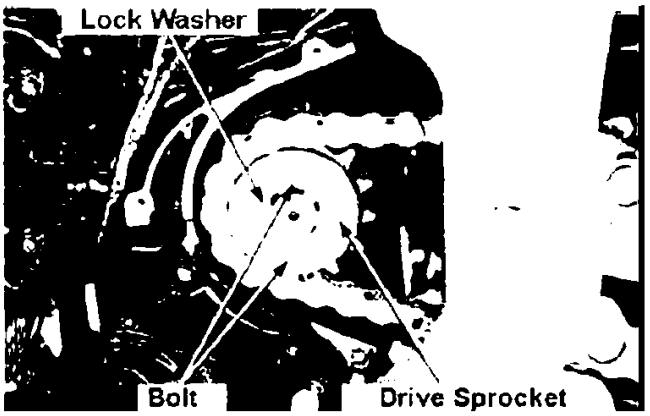
Disconnect the clutch cable.
Disconnect the exhaust pipe.



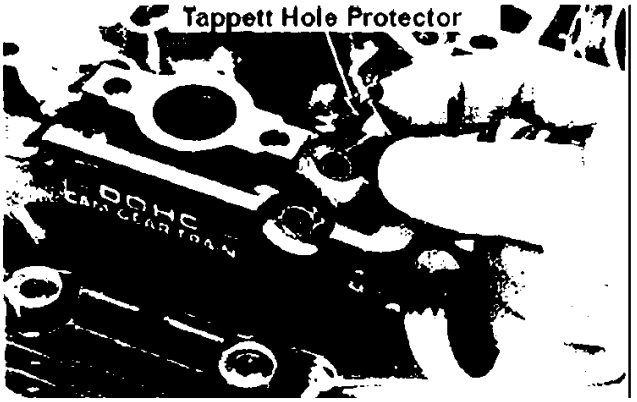
Disconnect the radiator hose and bypass tube.
Remove the drive sprocket cover and remove the pulse generator wire and oil pressure switch wire from the clamp.



Loosen the rear axle nut and loosen the tension of the drive chain.
Stretch the catch of the lock washer and remove the two bolts. Remove the lock washer and the drive sprocket.



Attach the tappet hole protectors to the cylinder heads.
Exclusive tool: Tappet hole protector
07GME-KT70100

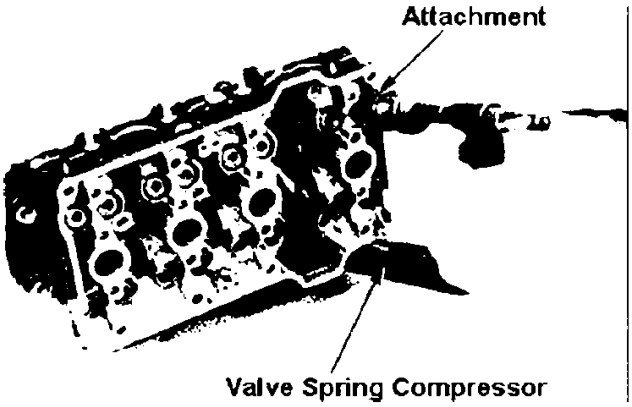


Remove the following items by using a valve spring compressor and the attachment.

⇒ cotter ⇒ valve
⇒ retainer ⇒ valve stem seal
⇒ spring ⇒ spring seat

Common tool: Valve spring compressor
07757-0010000

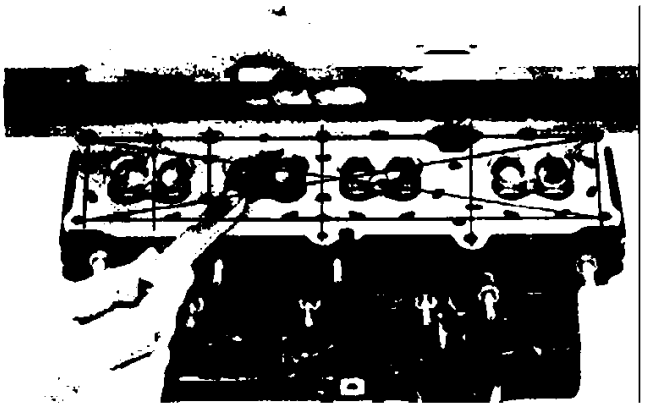
Exclusive tool: Valve spring compressor attachment
07GME-KT70200



- Do not apply excess load on the valve springs.
- Mark the attachment position on each part.

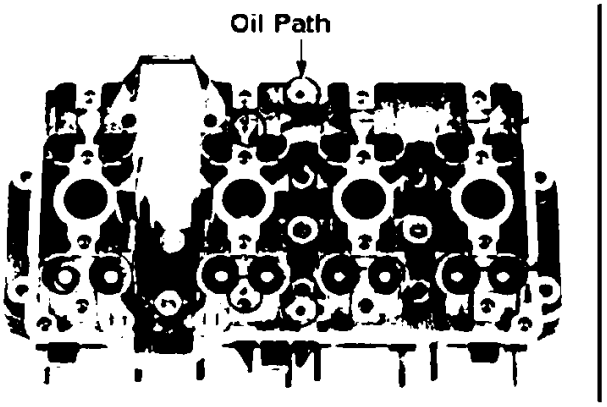
Cylinder head inspection

Remove carbon in combustion chambers.
Remove the gasket pieces from the head gasket surface.



Do not damage the gasket surface

Inspect the spark plug hole and valve hole for cracks.
Measure the distortion of the cylinder head by using a straight edge and a thickness gauge.
Equal to or more than 0.05mm→replace.

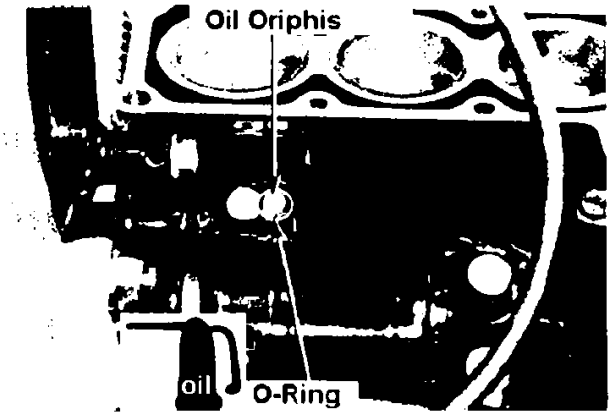


Inspect the oil path on the cylinder head for clogging.

Cylinder head attachment

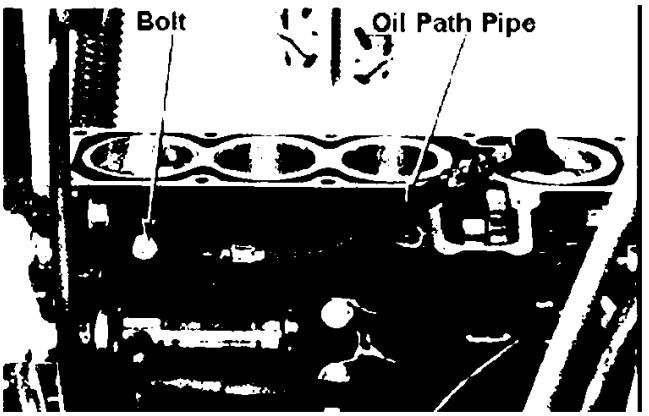
Inspect the oil oriphis on the cylinder block for clogging.

Apply engine oil to the O-Ring and attach it.

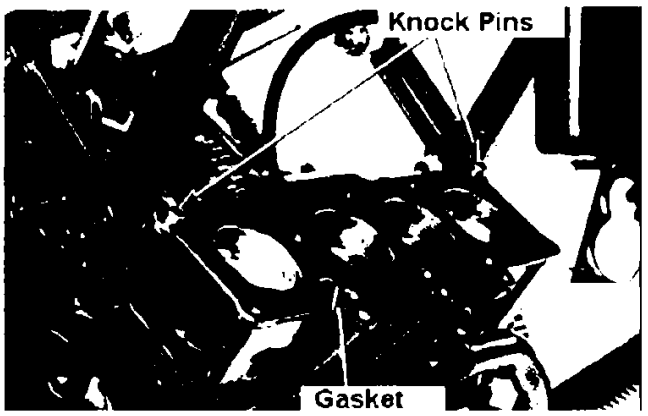


Connect the oil path pipe to the cylinder block.

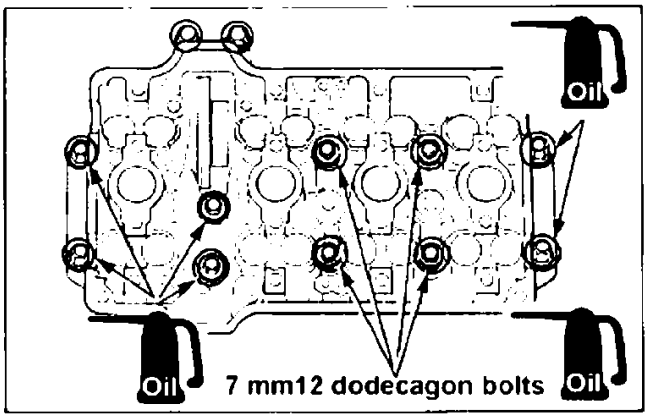
Apply sealer to the thread of the attachment bolt and tighten.



Attach knock pins and a new gasket.



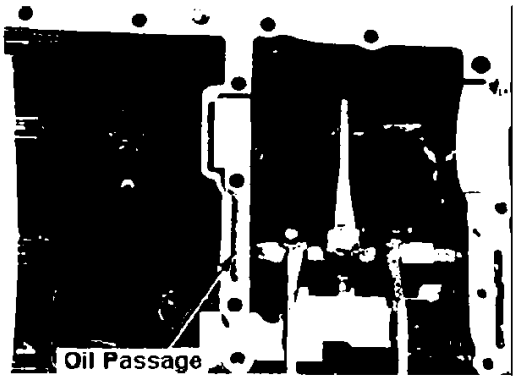
Attach cylinder head.
Apply engine oil to the cylinder head attachment bolts and washers.
Attach them to the cylinder heads and tighten.
Torque: 1.7 ~ 2.1kg m (7mm bolt)



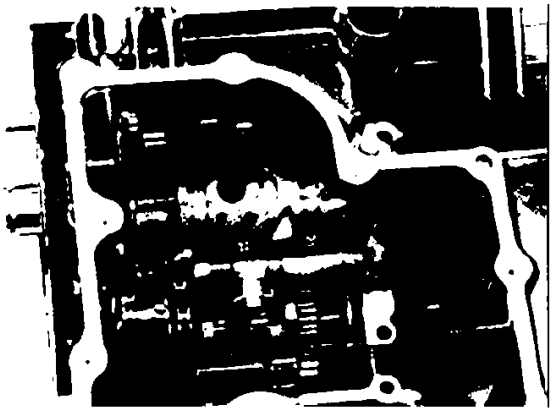
- Tighten from inner corners to opposite outer corners. Do not tighten at once.
- Use of an exclusive tool is recommended.

  Socket wrench - 07GMA – KT70100

Do not apply the sealer near the oil passage.



Set the transmission gear to neutral.
Align the shift fork to the gear slit and attach the two crankcases.



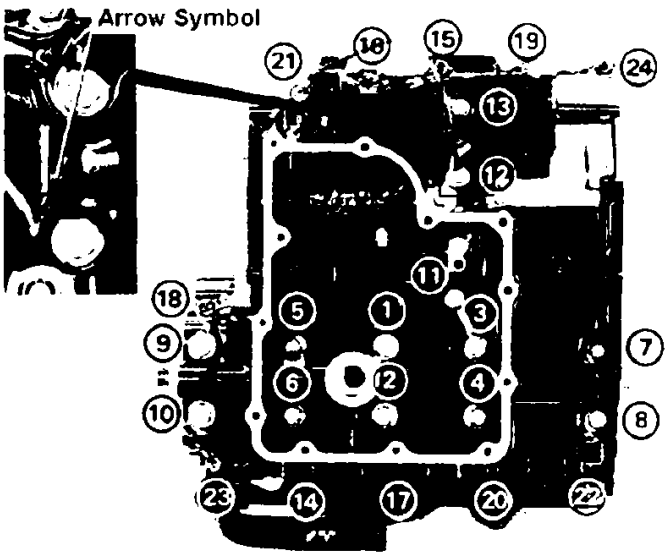
Ensure there is no slit along the contact surfaces.

Tighten the lower crankcase bolts in the following order.
Do not tighten in one step.

Torque: 8mm bolt → 2.1 ~ 2.5kg m
1-2-3-4-5-6-7-8-9-10 – with washers
21 – without washers

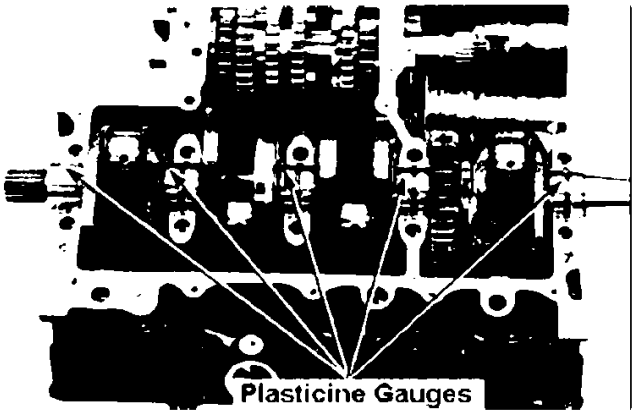
6mm bolt → 1.0 ~ 1.4kg m
11-12-13-14-15-16-17-18-19-20-22-23-24

- Place the sealing washers to the 6mm bolts specified as 12-13.
- Apply engine oil to the thread and flange on 8mm bolts before tightening.



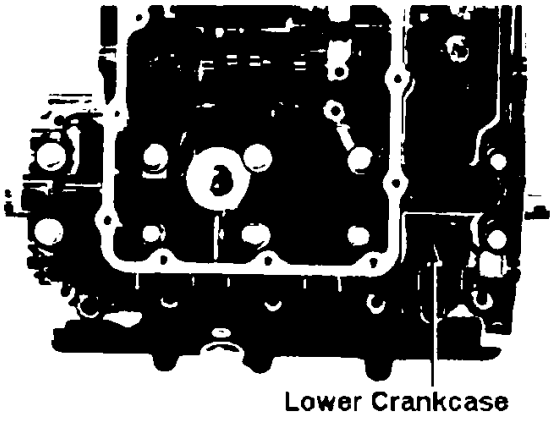
Main Bearing
Inspect for scratch or separation.

Wipe the oil off on the bearing and journal surface.
Place the plastic gauges avoiding the oil holes.



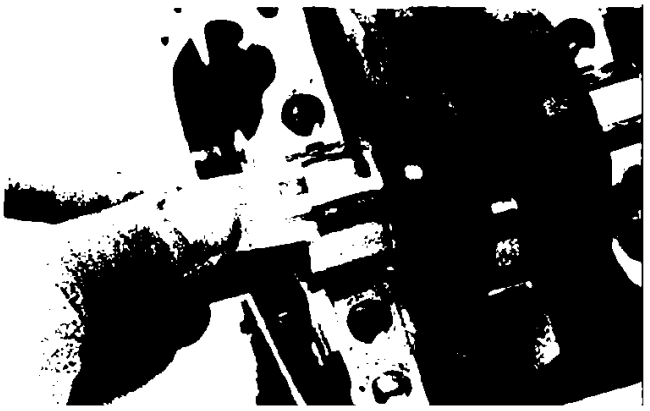
Attach the lower crankcase and fix with 8mm attachment bolts (x10).
Tightening torque: 2.1 ~ 2.5kg m

Ensure the crankshaft will not turn while measuring.



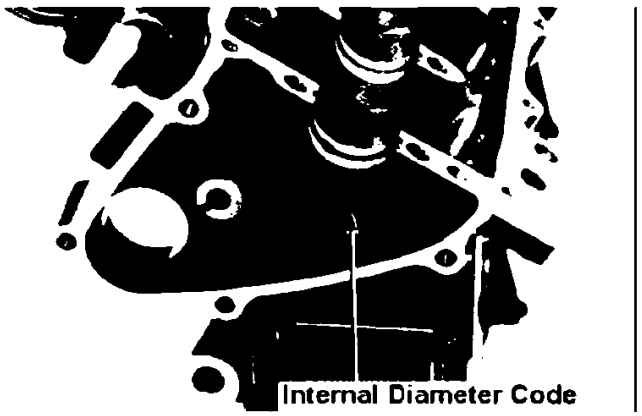
Remove the lower crankcase and measure the width of the plasticine gauges.

Oil clearance $\geqq$ 0.06mm $\rightarrow$ replace



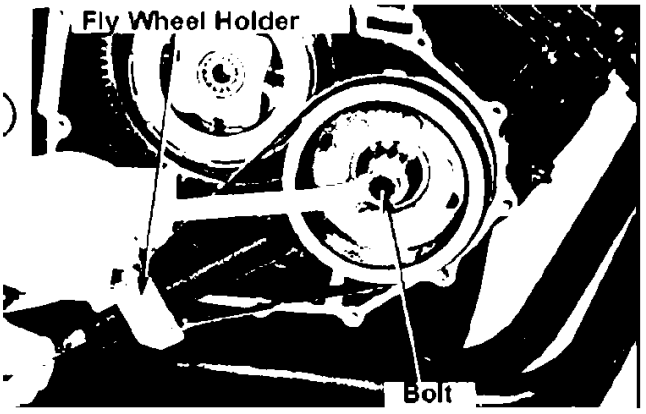
Record the crankcase internal diameter code.

The A, B or C mark on the rear part of the upper crankcase.



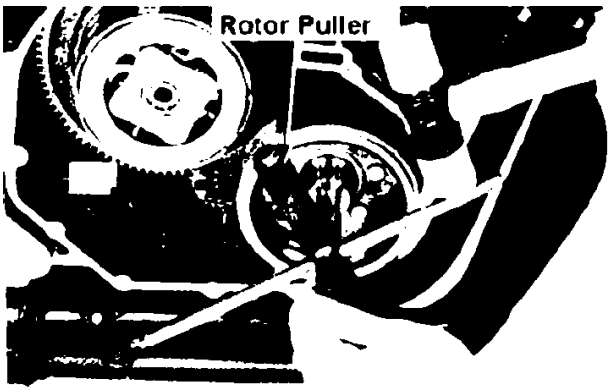
Fix the flywheel with a flywheel holder and remove the bolt.

Common Tool:
Flywheel holder 07725-0040000



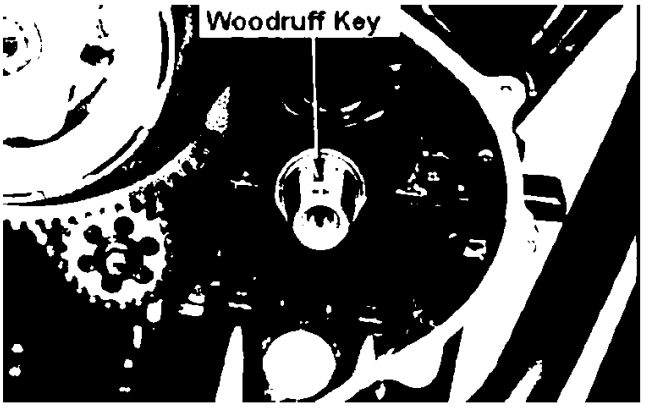
Use a rotor puller to detach the flywheel.

Common Tool:
Rotor puller 07733-0020001



Remove the wood ruff key from the crankshaft.

Do not lose the woodruff key

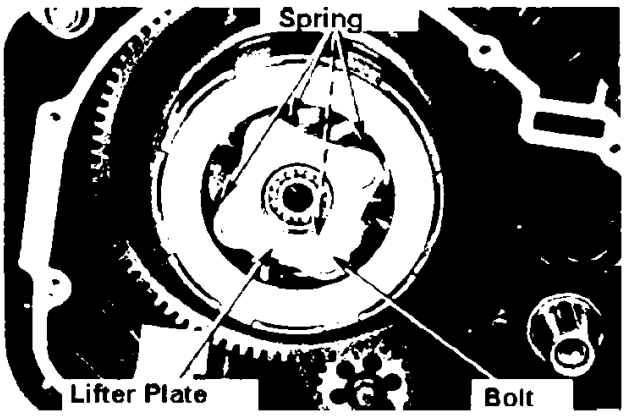


Clutch

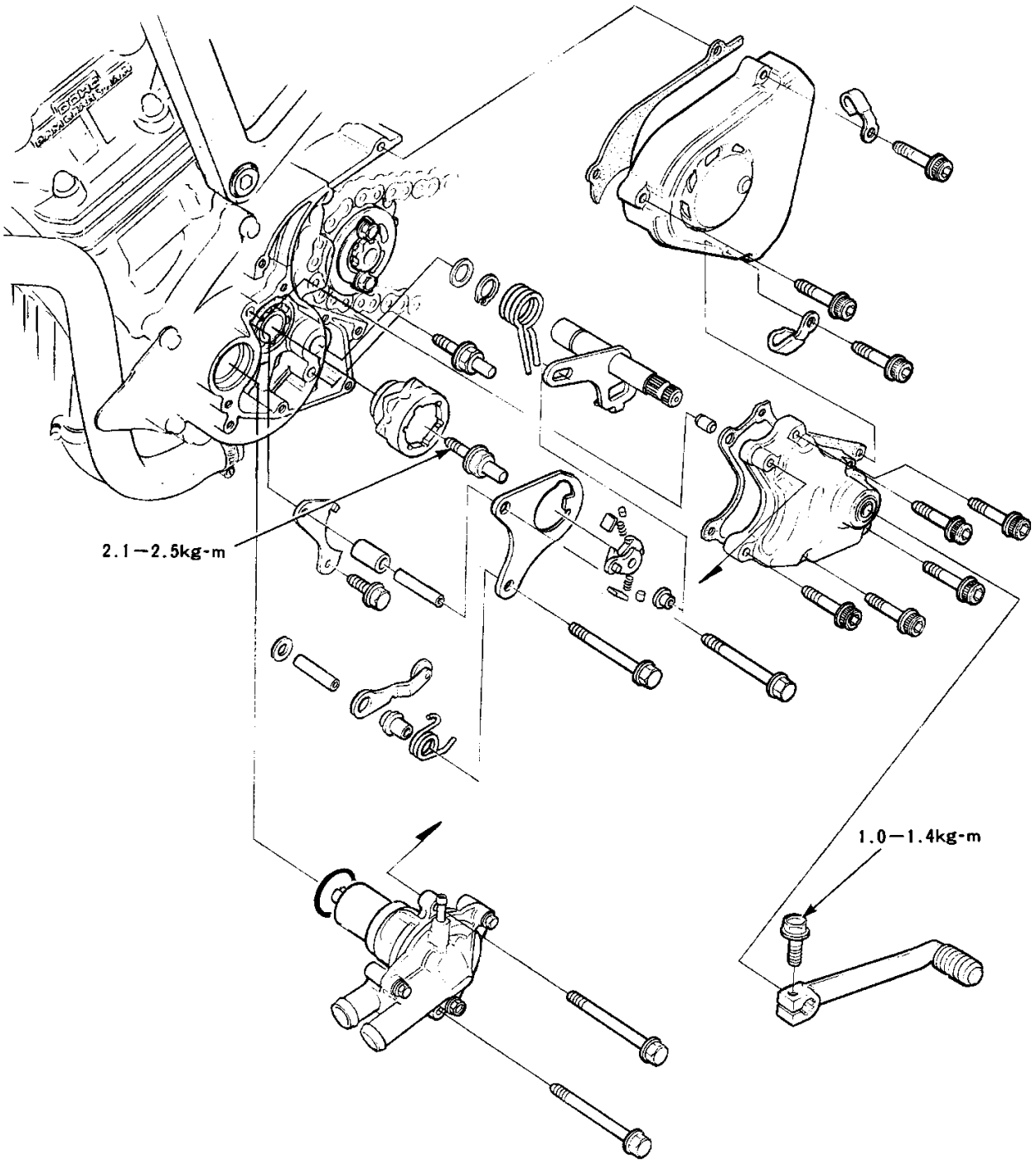
Detachment

Detach the right crankcase cover (10-3). Remove bolts and detach the clutch lifter plate and clutch springs.

Loosen the clutch lifter attachment bolts by each opposite corner.



- Disassembly



Troubleshooting

Difficult to select a gear

- Inadequate clutch setting (too much free movement)
- Shift fork bent
- Shift fork shaft bent
- Gear shift spindle damaged
- Shift drum guide slit damaged
- Guide pin damaged

The gear disengages

- Gear dog worn out
- Shift fork shaft bent
- Shift drum stopper damaged
- Shift fork bent
- Shift drum guide slit worn out

- **Service Information**

- **General caution**
- Avoid applying excess force to the wheel. Do not step on it.
- As a tubeless tyre is equipped, handle the tyre and the rim carefully.
- When detaching the tyre from the rim, use exclusive "Tyre lever" and "Rim protector".
- Refer to "Honda Motorcycle tubeless tyre service manual (No. 6041551)" for the tubeless tyre handling.

- **Service**

		Standard	Limitation
Deformation of the front axle		-	0.2mm
Front wheel Deformation	Radial direction	-	2.0mm
	Side direction	-	2.0mm
Front cushion spring natural length		419.9mm	411.5mm
Front fork pipe deformation		-	0.2mm
Front fork Oil	Standard	290 ± 2.5cc	-
	Fully compressed	114mm	-
Front fork air pressure		0-0.4kg / cm²	-

- **Torque**

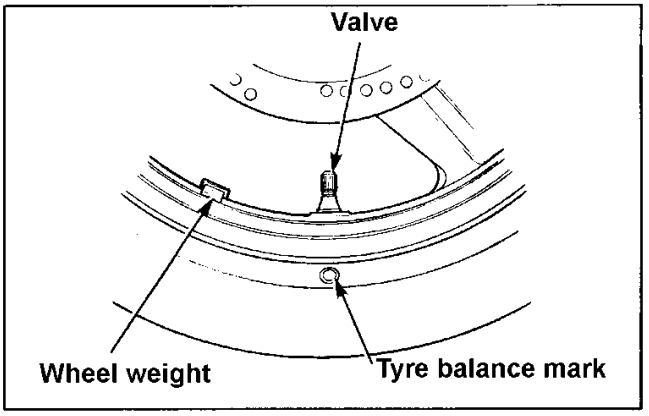
Handle attachment Bolt	2.5-3.0kg-m	Front fork socket bolt	1.5-2.0kg-m
Brake disk bolt	3.7-4.3kg-m	Bottom bridge bolt	3.0-4.0kg-m
Front axle nut	5.5-6.5kg-m	Top bridge bolt	0.9-1.3kg-m
Axle holder nut	1.8-2.5kg-m	Fork bolt	1.5-3.0kg-m
Caliper bracket bolt	2.4-3.0kg-m	Steering adjustment	2.0-2.4kg-m
Master cylinder Holder nut	1.0-1.4kg-m	Steering stem nut	9.0-12.0kg-m
Fairing	0.7-1.1kg-m	Fairing stay	3.0-4.0kg-m
Fairing inside cover	0.6-1.0kg-m	Front fender 6mm bolt	0.8-1.2kg-m
Ignition switch	2.5-3.0kg-m	6mm biss	0.7-1.1kg-m

- **Tools**
- **Exclusive Tools**

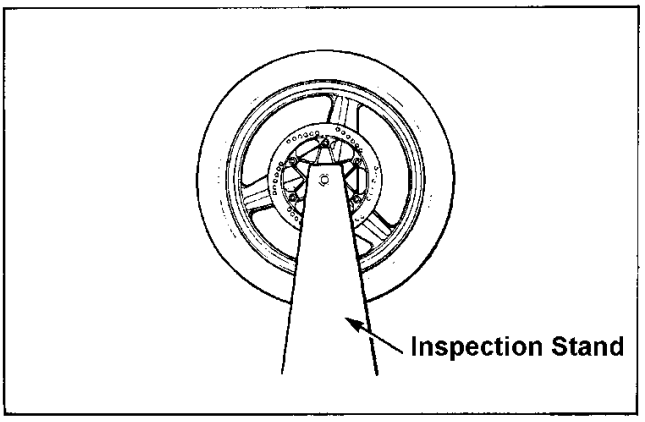
Steering stem socket	07916-3710100	1. Driver shaft Assy	07946-KM90300
Fork seal driver	07947-KA20200	2. Assembly base	07946-KM90600
Attachment	07946-MB00000	3. Driver attachment A	07946-KM90100
Steering stem driver	07946-KM90000	4. Driver attachment B	07946-KM90200
Ball race remover set	(1-6 inclusive)	5. Bearing remover A	07946-KM90400
		6. Bearing remover B	07946-KM90500

Wheel Balance

Note:
- Check the balance whenever removing a tyre from the wheel, as the wheel balance does affect the stability, steering and total safety of the vehicle.
- Check the tyre balance mark is aligned with the valve.



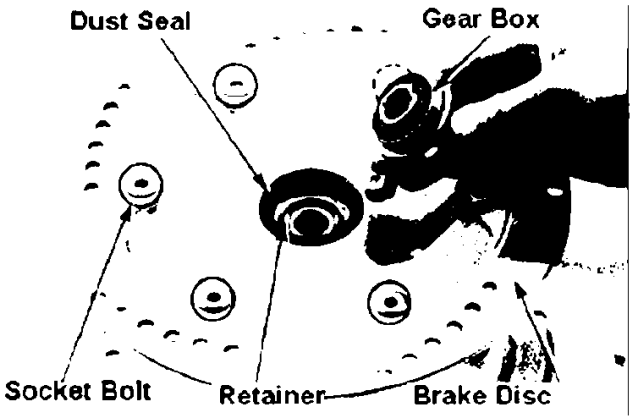
Remove the collar and the speed indicator gear box.
Attach the wheel, tyre and brake disc to an inspection stand.
Spin the wheel and mark the lowest (heaviest) part of the wheel with chalk once it has stopped.
Repeat this for two or three times and find the heaviest part. If the wheel is in balance, there is no specific heaviest part. Temporarily attach a wheel weight to the highest (lightest) part.
If the weight is adequate, the wheel will not stop at any particular position.
After confirming the balance, fix the weight.



Caution:
Weight should not exceed 60g for each wheel.

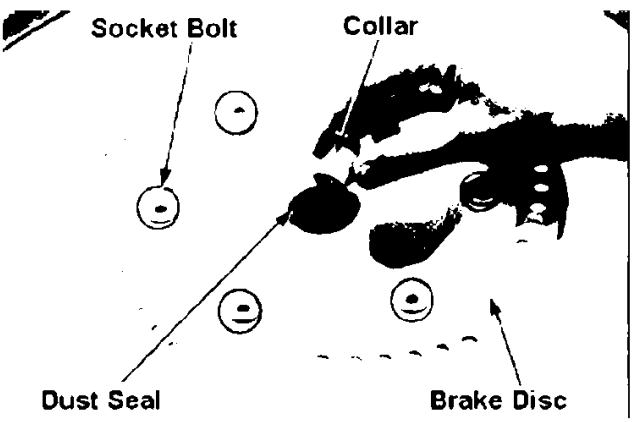
Disassembly

Remove the speed indicator gear box, dust seal and gear box retainer.
Remove socket bolts and detach the left brake disc.



Remove the wheel collar and the dust seal from right side.

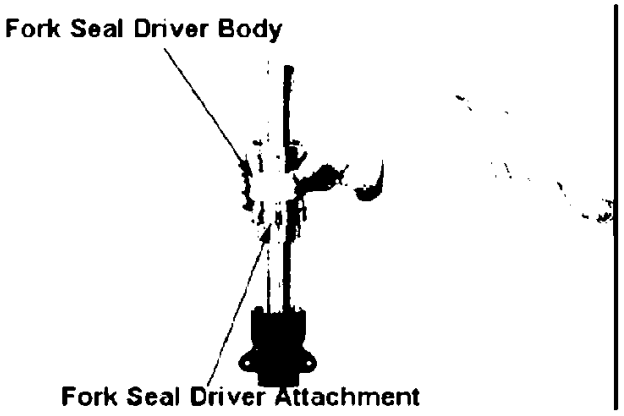
Remove socket bolts and detach the right brake disc.



Bearing detachment

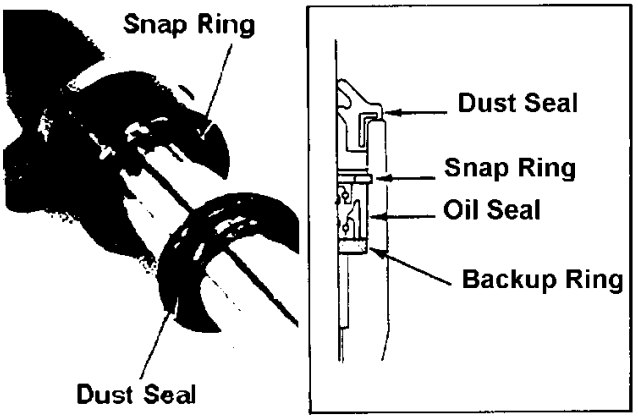
Apply ATF to the lip of the oil seal.

- When installing the oil seal, apply vinyl tape to the top end of the fork pipe in order to avoid damaging the oil seal lip.
- Manufacturer's name on the seal should face up.



Install the guide bush and the oil seal to the bottom case at the same time by using a fork seal driver.

Exc. tool	Fork seal driver attachment 07947-KA20200
Common tool	Fork seal driver body 07747-0010100

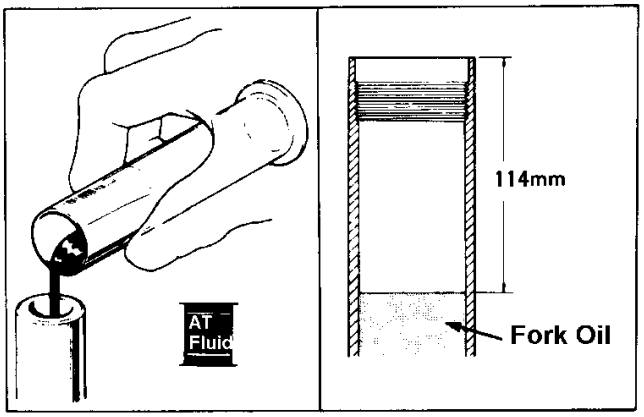


Attach the snap ring.
Attach the dust seal.

Firmly set the snap ring to the slit of the bottom case.

Fully compress the fork pipe and fill with ATF to the standard level.

Standard level: **114mm**
Capacity: **290 ± 2.5cc**



Attach the cushion spring to the fork pipe.

- Wipe all ATF off from the spring before attaching.
- The narrow pitch is the bottom.

Caution

- Follow the safety instructions as the damper unit of the shock absorber is filled with highly pressurized nitrogen gas.
  - Do not heat or disassemble the damper unit or it may explode or spill the oil.
  - Drain the gas from the damper unit when disposing of the shock absorber.

- Do not step on the wheel or apply excess force on the wheel.
- Exercise caution not to damage the wheel.
- Exercise caution not to damage the tyre or rim as a tubeless tyre is equipped.
- When detaching the tyre from the rim, use “tyre lever” and “rim protector”.
- Refer to “Honda Motorcycle Tubeless Tyre Service Manual” (No. 6041551) when detaching / attaching the tubeless tyre.
- Use only specified products for the rear suspension linkage and the rear cushion attachment bolts / nuts. Use caution to the direction of the bolts.
- Refer to 13-12 for balancing the rear wheel.

- **Service Standard**

Item		Standard	Limitation
Rear axle bend		-	0.2mm
Rear wheel rim deformation	Radial	-	2.0mm
	side	-	2.0mm
Brake drum inner diameter		140mm	141mm
Brake lining thickness		4.0mm	2.0mm
Rear cushion damper compression		12.3-16.0kg	9.8kg
Rear cushion spring attachment length		173.8mm	-
Rear cushion spring natural length		189.9mm	186.0mm

- **Torque**

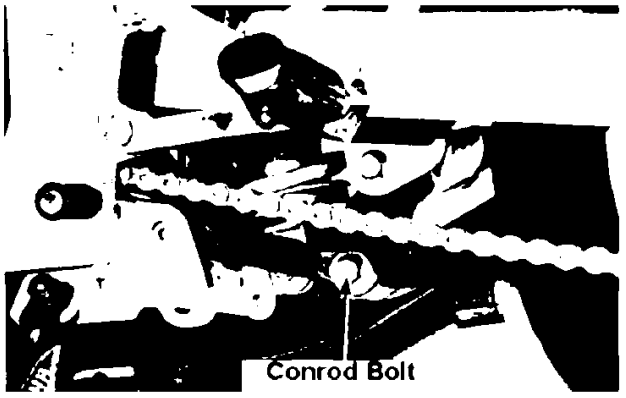
Driven sprocket nut	2.8-4kg-m	Conrod bolt (cushion arm side)	5.0-6.0kg-m
Rear axle nut	8.0-10kg-m	frame side	5.0-6.0kg-m
Rear cushion lower joint lock nut (apply screw locking liquid)	3.8-6.0kg-m	Rear fork pivot adjust bolt	1.0-2.0kg-m
Rear cushion upper bolt	5.0-6.0kg-m	Rear fork pivot lock nut	6.0-7.0kg-m
Rear cushion lower bolt	5.0-6.0kg-m	Rear fork pivot nut	6.0-7.0kg-m
Cushion arm bolt	5.0-6.0kg-m		

Rear cushion

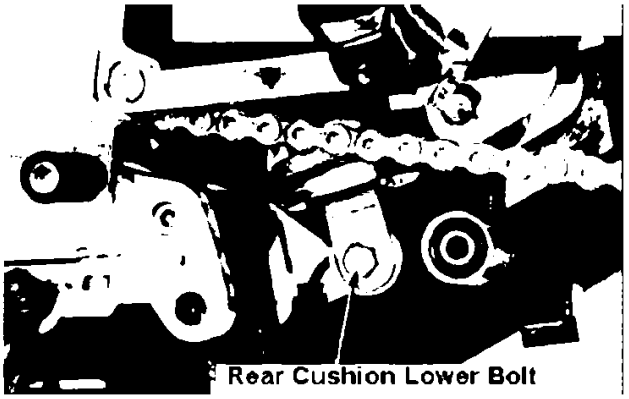
Detachment

Support the frame with the stand to lift the wheel.

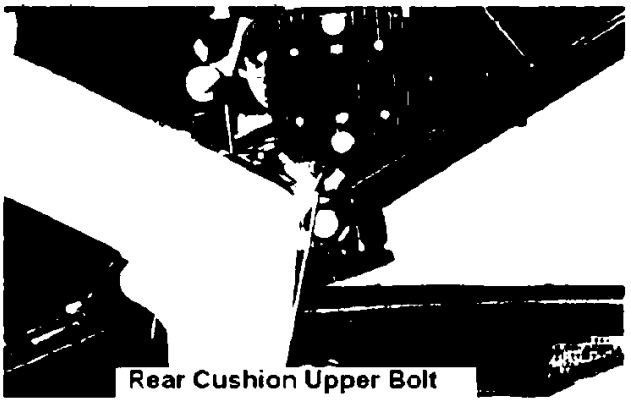
Detach the left side cover.
Remove the conrod bolt (cushion arm side).



Remove the rear cushion lower bolt.



Remove the rear cushion upper bolt to detach the rear cushion.



Disassembly

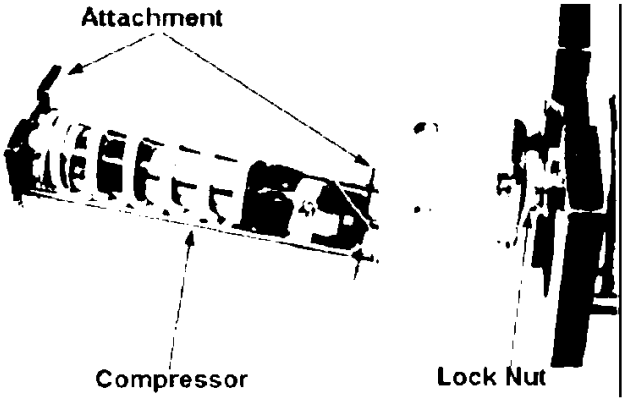
Attach the rear cushion compressor

Common tool

Rear cushion compressor
07959-3290001

Exc. tool

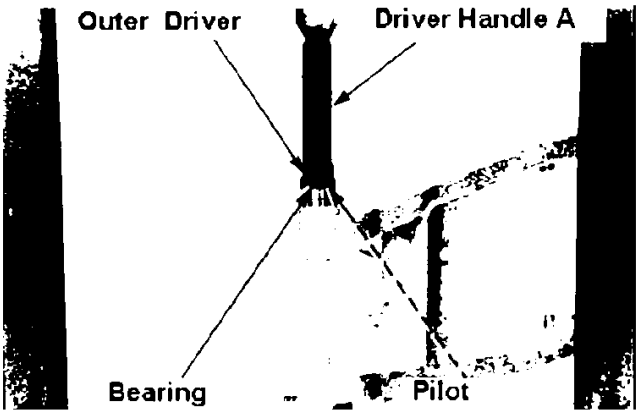
Rear cushion compressor attachment
07959-MB10000



Compress the spring to the position so that a lock nut can be removed.
Loosen the lock nut and disconnect the lower joint.
Remove the compressor and remove the seat stopper, dust seal, spring guide, lower spring seat, spring, upper spring seat and the adjuster.

By using hydraulic press, insert the right pivot bearing (ball bearing).

Common tool	
Outer driver (32 x 35mm)	07746-0010100
Pilot (15mm)	07746-0040300
Driver handle A	07749-0010000

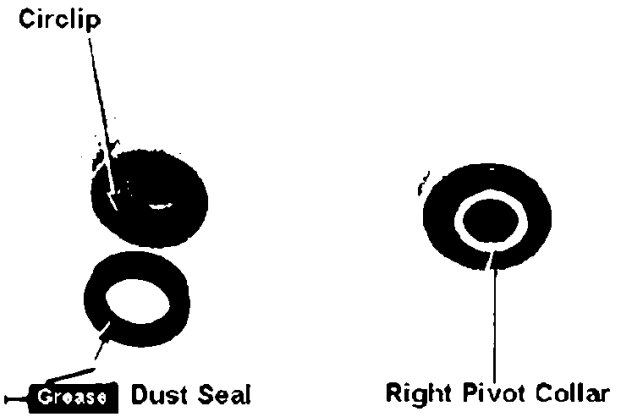


Assembly

Attach the circlip to the slit.

Apply grease to the lip of the right pivot dust seal and attach the seal.

Attach the right pivot collar.



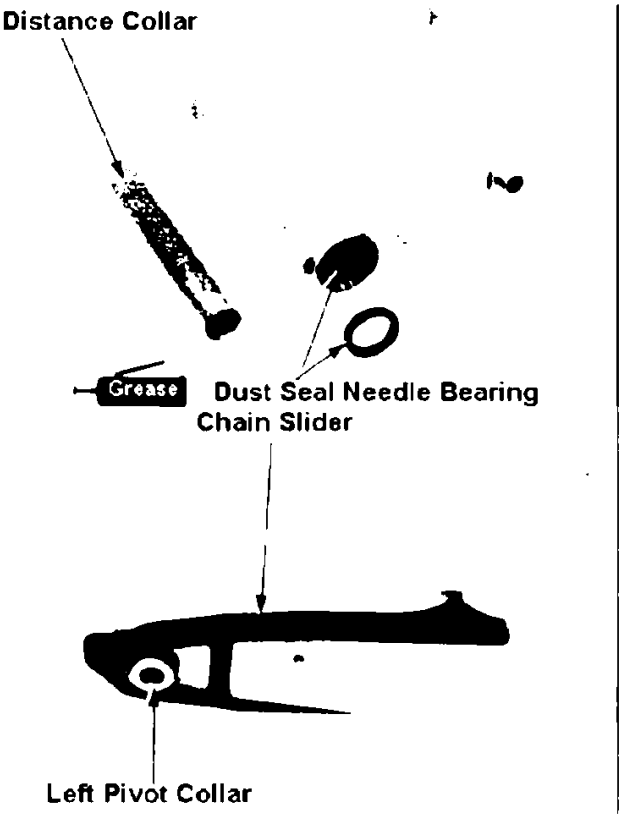
Apply enough grease to the left pivot bearing.

Attach the distance collar.

Apply grease to the lip of the left pivot dust seal and attach the dust seal.

Attach the left pivot collar.

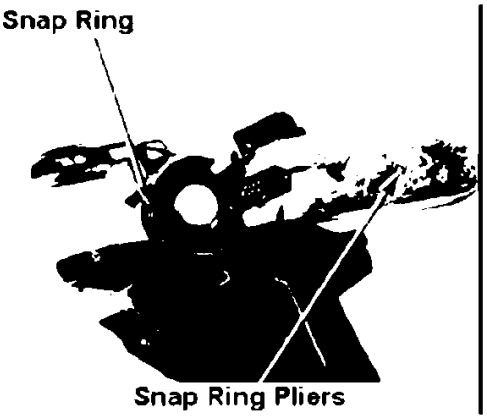
Attach the chain slider.



Disassembly

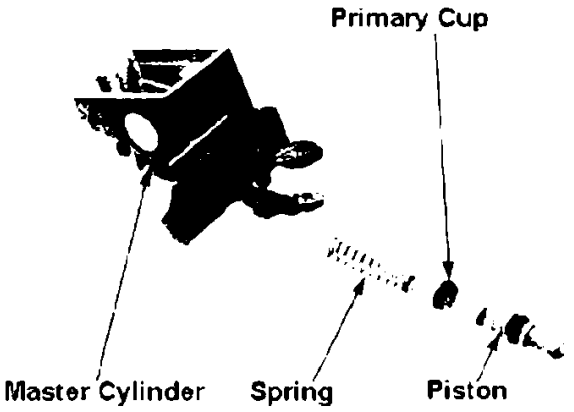
Remove the dust boot and then the snap ring.

Exc. tool	Snap ring pliers 07914-3230001



Remove piston, primary cup and the spring from the master cylinder and clean the master cylinder and reservoir with brake fluid.

- Clean each part with brake fluid and check air path by applying compressed air.
- Store all the detached parts to keep away from dust/debris.

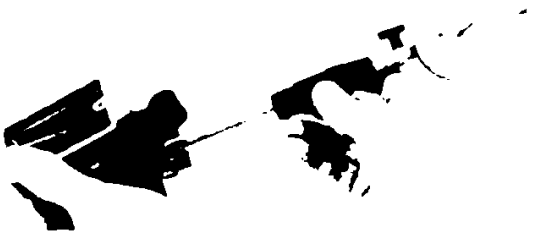


Inspection

Inspect the contact surface of the master cylinder (with master piston) for scratches and damage.

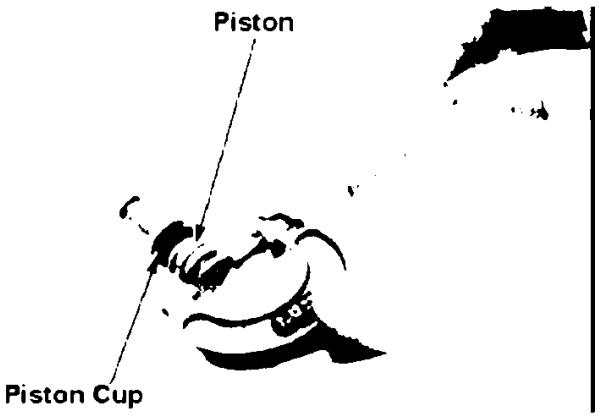
Measure the inner diameter of the master cylinder.

≧ 14.055mm → Replace



Inspect the surface of the master piston for damage and scratch.
Inspect the piston cup for wear/damage.
Measure the outer diameter of the master piston.

≦ 13.945mm → Replace



Troubleshooting

No current (with main switch ON)

- Battery discharge
  - Leak
  - Regulator / rectifier fault
  - AC generator fault
- Battery cables disconnected
- Fuses blown (inspect main fuses)
- Main switch fault
- Couplers disconnected / short circuit.

Re-charge system failure

- Connector or couplers disconnected / cut / short circuit between:
  - AC generator and regulator / rectifier (Y)
  - Regulator / rectifier and starter magnetic switches (R/W)
  - Starter magnetic switches and battery
- Regulator / rectifier fault
- AC generator fault

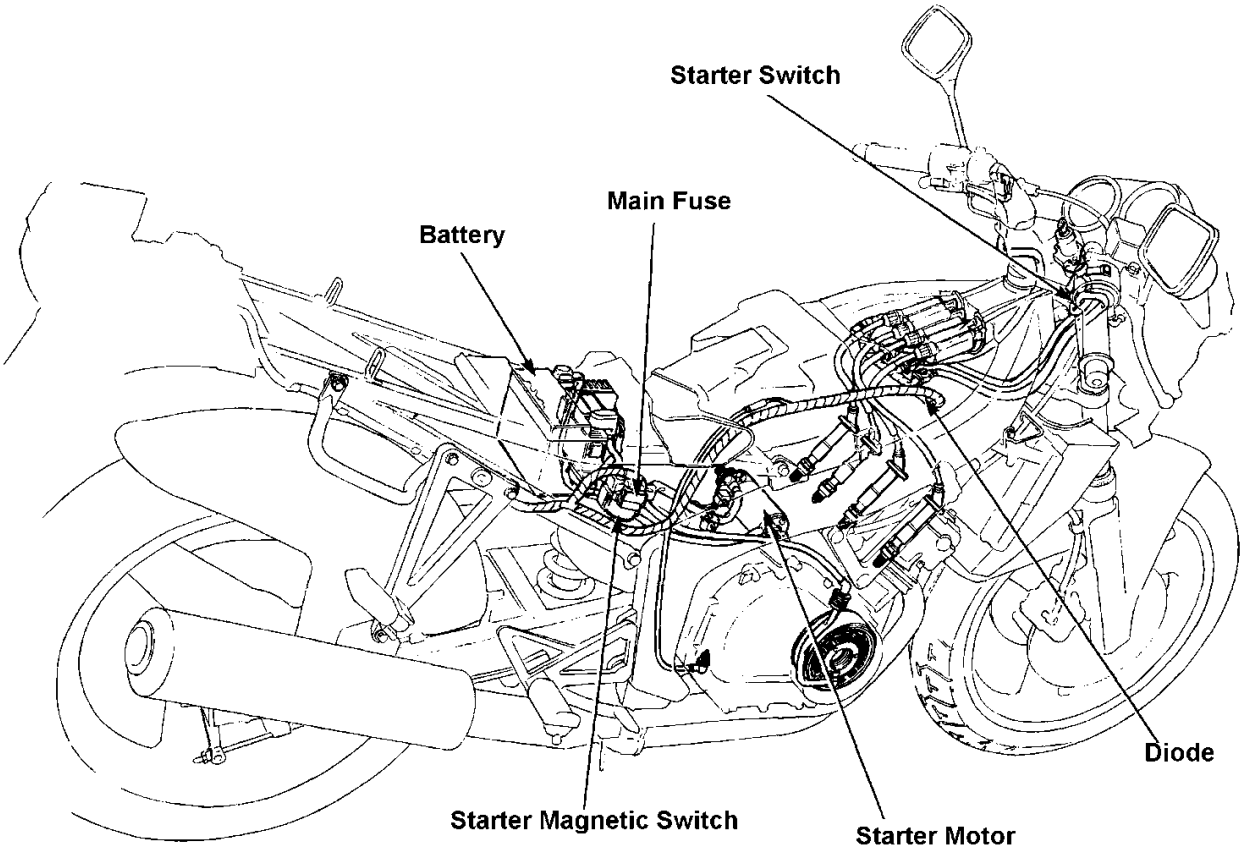
Low voltage

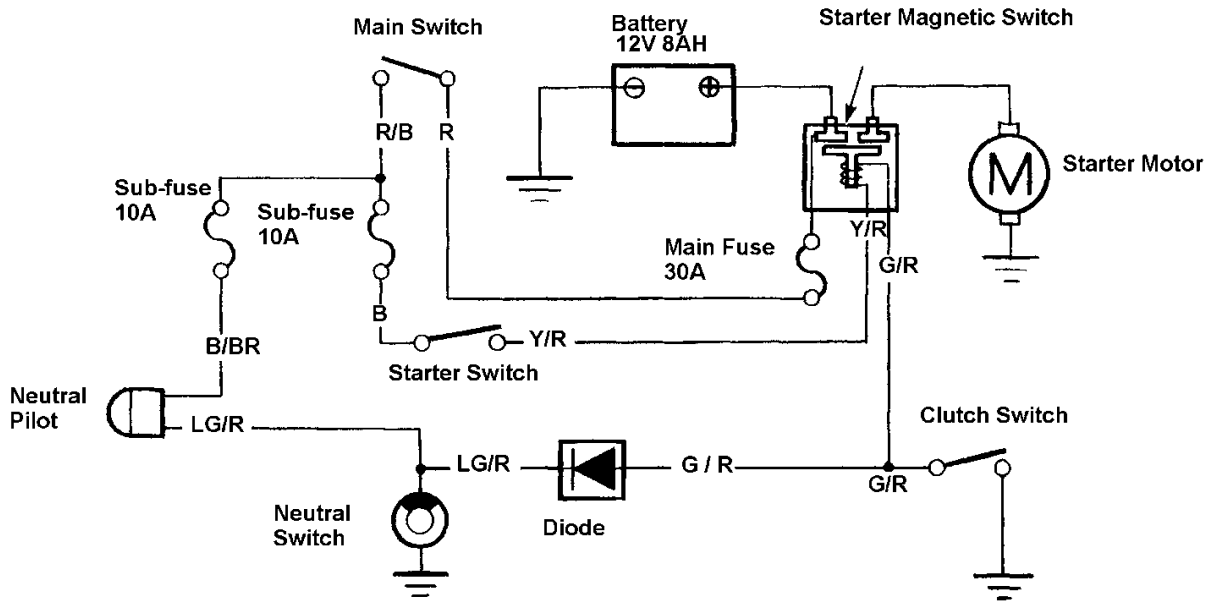
- Insufficient charging or discharging
- Regulator / rectifier fault
- AC generator fault

Intermittent current

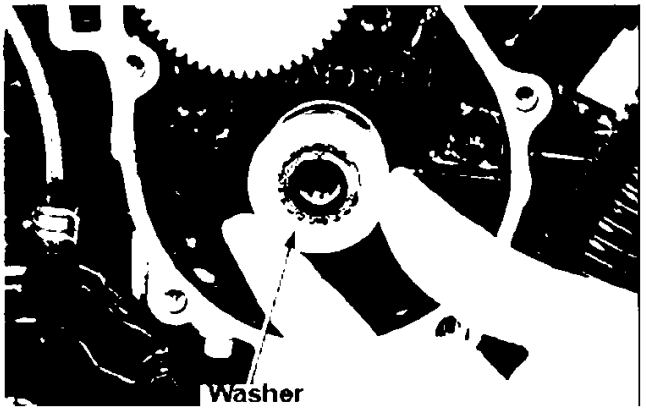
- Battery cables connection fault
- Charging system connection fault
- Ignition system connection fault / short circuit

- **Wiring**

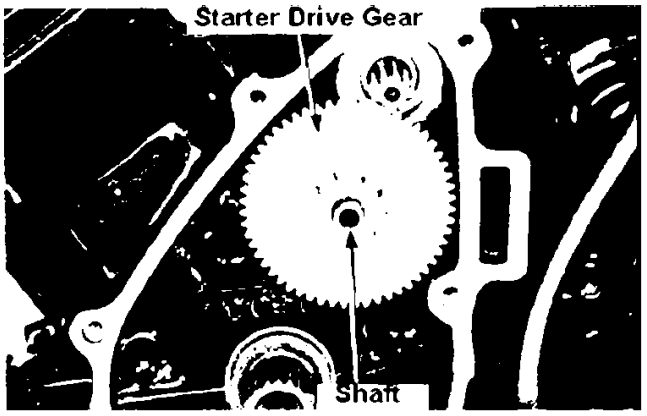

Starter Switch
Main Fuse
Battery
Diode
Starter Magnetic Switch
Starter Motor


Main Switch
Battery
12V 8AH
Starter Magnetic Switch
R/B
R
Sub-fuse
10A
Sub-fuse
10A
Starter Motor
Y/R
Main Fuse
30A
G/R
B
B/BR
Y/R
Starter Switch
Neutral
Pilot
LG/R
Clutch Switch
LG/R
G / R
G/R
Neutral
Switch
Diode

Remove washer.



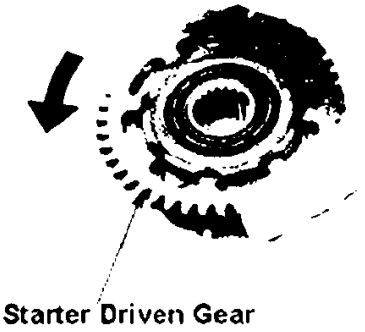
Remove starter drive gear and the shaft.



Disassembly / inspection

The starter driven gear should rotate only to the direction shown in the figure (counter-clockwise).

Detach the starter driven gear from one-way clutch.



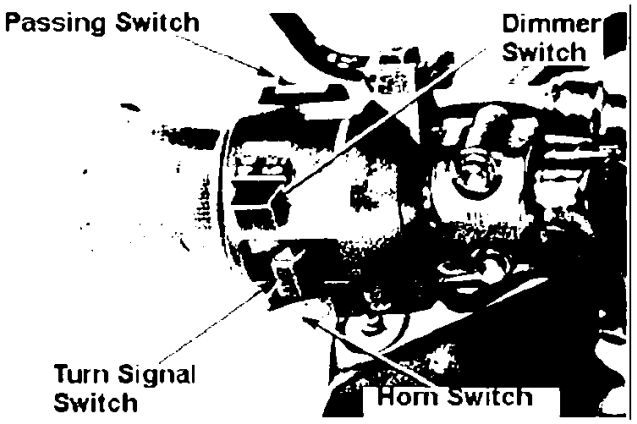
Inspect the starter driven gear for wear/damage.

<Passing Switch>

	BAT3	HI
	White/Green	Blue
FREE		
PUSH	O	O

<Horn Switch>

	BAT3	HO
	White/Green	Light Green
FREE		
PUSH	O	O



	HL	LO	HI
	Blue/White	White	Blue
Lo	O	O	
(N)	O	O	O
Hi	O		O

	W	R	L	TL#1	PR	PL
	Grey	sky-blue	Amber	Brown	Sky Blue / White	Amber / White
R	O	O		O		O
N				O	O	O
L	O		O	O	O	

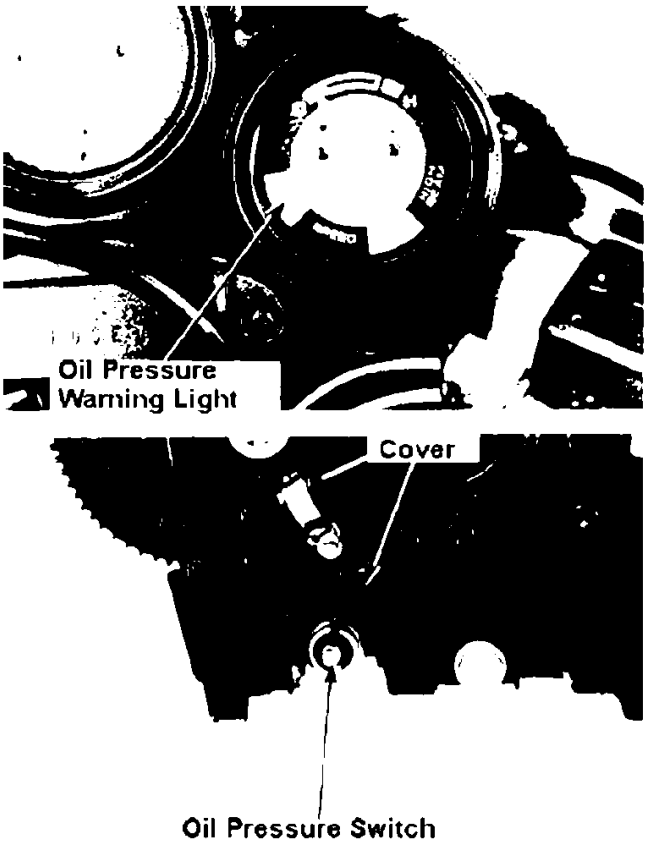
Oil Pressure Switch

Turn the main switch ON and check the illumination of the oil pressure warning light on the indicator panel.

If it does not illuminate, disconnect oil pressure switch wires and earth the wire.

Turn the main switch ON and check the illumination.
If it does not illuminate, inspect the warning light for it's bulb, it's wire harness connection and the sub fuse.

Start the engine and check the warning light is OFF. If it is ON, measure oil pressure (3-4).
If the oil pressure is normal, replace with new oil pressure switch (3-4).

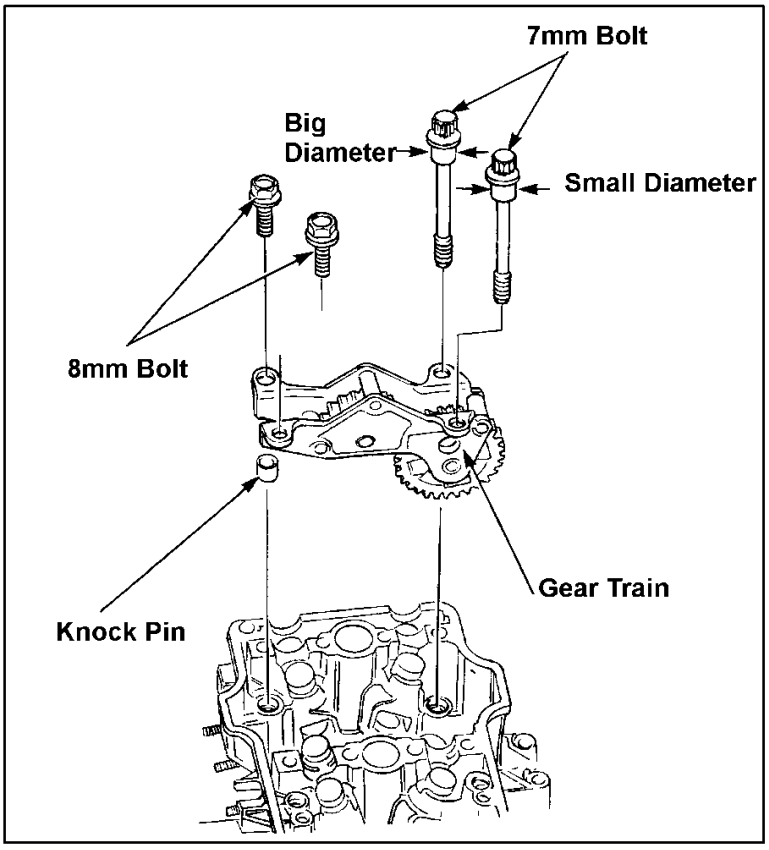


Items to be serviced			Schedule				Notes
			Before driving	1 month	Kilometres 6 month	Kilometres 12 month	
Wheels		Crack and damage on tyres	●		●	●	
		Depth of tread and wear	●		●	●	Tread front 0.8mm - rear 0.8mm
		Metal piece and other objects	●		●	●	
		Wheel nut and wheel bolt looseness			●	●	Axle nut, axle holder, front axle holder, torque 1.8~2.5kg-m front axle torque 5.5~6.5kg-m rear axle nut torque 8.0~10.0kg-m
		Rim, side ring and wheel disk damage				●	Wheel rim deflection at rim edge Front wheel rim 2.0mm 2.0mm Rear wheel rim..... .2.0mm 2.0mm
		Front wheel bearing looseness				●	
		Rear wheel bearing looseness				●	
Shock absorber Suspension arm spring - chassis		Damage				●	Cushion spring
		Looseness on the jointed arm damage					
Shock absorber		Oil leak and damage				●	
		Attachment / looseness				●	
Transaxle	clutch	Lever free play			●	●	Clutch lever free play 10-20mm
		Operation			●	●	
	transmission	Oil leak and oil level			●	●	Oil level bar gauge (dipstick) between min-max.
		Control system looseness				●	
	Chain and Sprocket	Chain tension			●	●	When using sidestand, at the centre of front / rear sprocket: max deflection 15~25mm
		Sprocket attachment and wear				●	
Electrical system	Ignition	Spark plug			●	●	Plug gap: 0.8 – 0.9mm
	Battery	Terminal connection					
	Wiring	Joint looseness / damage					
Powerplant	Main component	Starting and sound			●	●	
		Low speed and acceleration			●	●	Idling rpm 1.500 ± 100rpm
		Exhaust gas			●	●	
		Air cleaner element replacement					20,000km every
		Valve clearance				●	Inlet (cool): 0.13 – 0.19mm Exhaust (cool): 0.20 – 0.26mm

Cam gear train attachment

Attach the knock pin to a cylinder head.

There are two different types of 7mm bolts.



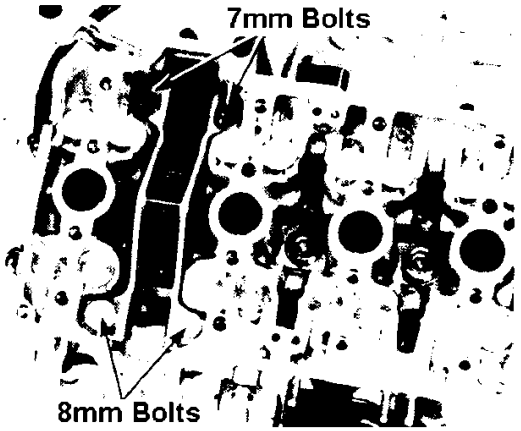
Attach the cam gear train and tighten the bolts.

Torque: 8mm bolts: 1.8 ~ 2.2kg-m
7mm bolts: 2.2 ~ 2.5kg-m

Attach the camshaft (7-19)

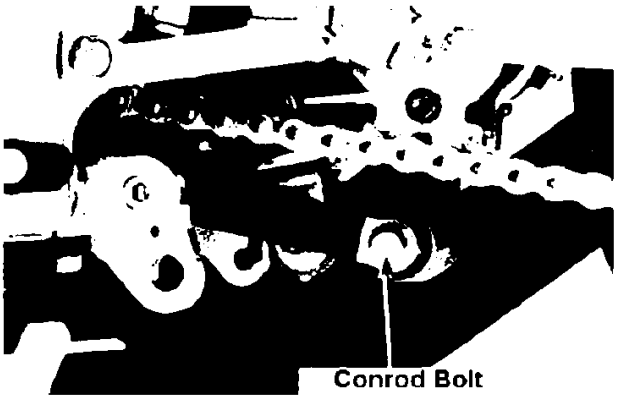
Attach the cylinder head cover (7-21)

Attach the lower cowling (21-23)



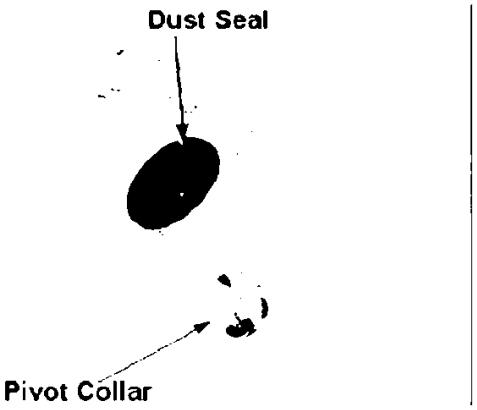
Tighten the conrod bolt (cushion arm side).

Torque: 5.0 ~ 6.0kg-m

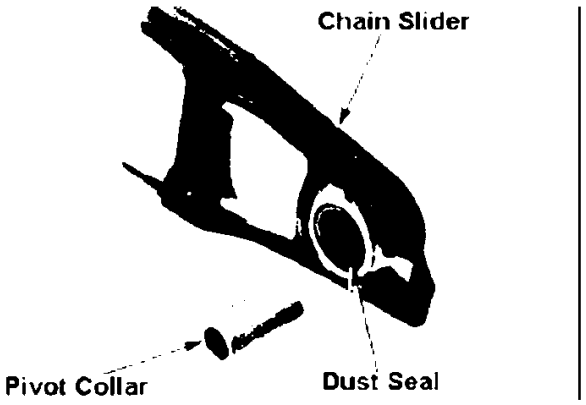


Rear fork bearing replacement

Detach the rear wheel (21-24)
Detach the rear fender B (16-2)
Detach the cushion arm (21-26)
Remove the rear fork (14-18)
Remove the right pivot collar and dust seal.



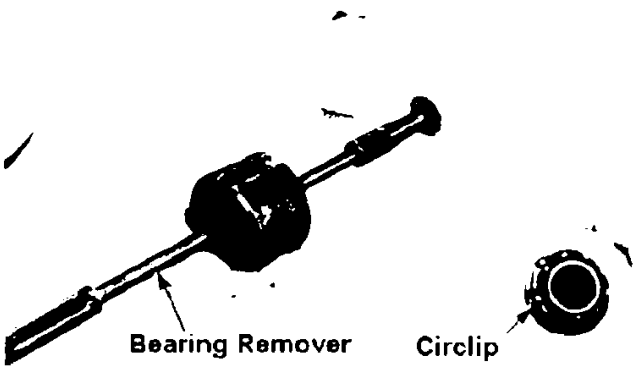
Remove the chain slider.
Remove the left pivot collar and the dust seal.



Remove the circlip.
By using a bearing remover, remove the right pivot bearing (ball-bearing).

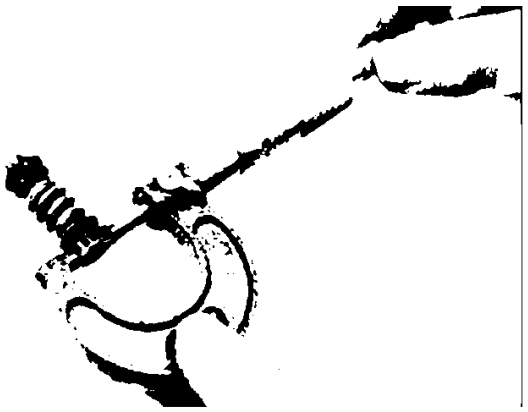
Exc. tools

Bearing remover (15mm)
07936-KC10000
Remover ASSY (15mm)
07936-KC10500
Remover shaft (15mm)
07936-KC10100
Remover head (15mm)
07936-KC10200
Remover sliding weight
07741-0010201



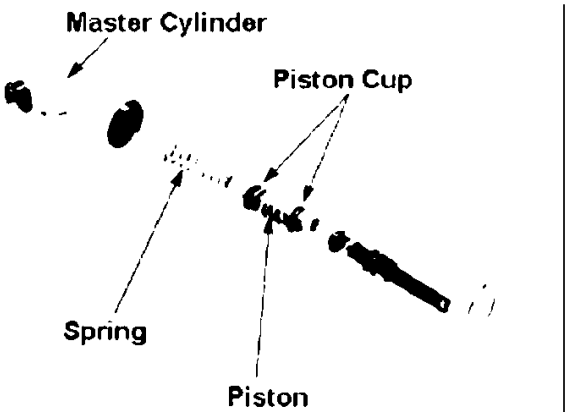
Inspect the surface of the master piston for damage and scratch.
Inspect the piston cup for wear and damage.
Measure the outside diameter of the master piston.

≦ 12.645mm → Replace



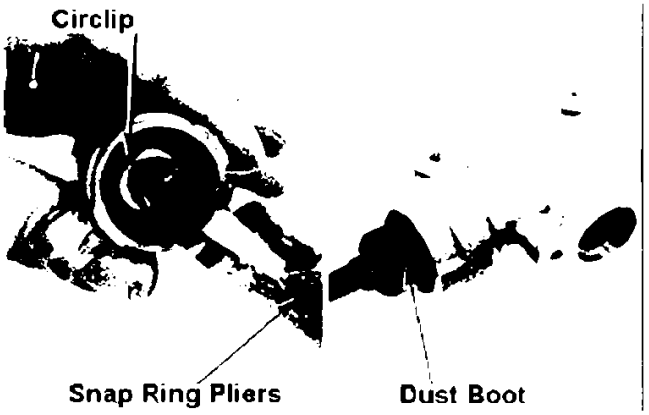
Assembly

- Make sure each part is clean before the assembly.
- Do not re-use old brake fluid.
- Replace the master cylinder piston, spring, cup and the circlip altogether.



Apply brake fluid to the piston cup and attach it to the piston.
Apply brake fluid to the inner surface of the master cylinder.
Install the spring, primary cup and the piston to the master cylinder and hold with the circlip.

- Do not turn the lip over when installing the cup.
- The smaller coil diameter of the spring comes to the piston side.
- Firmly set the circlip into the groove.



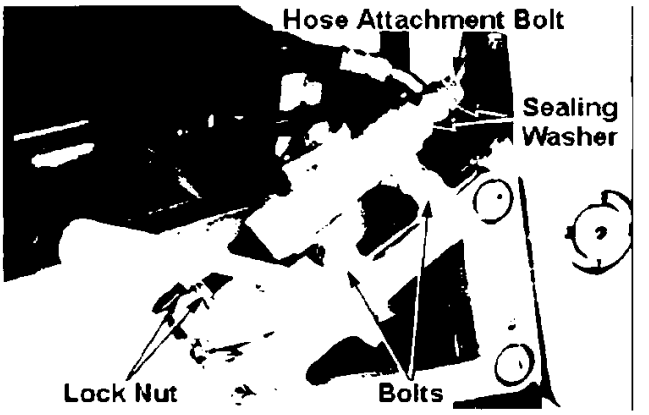
Exc. tool

Snap ring pliers 07914-3230001

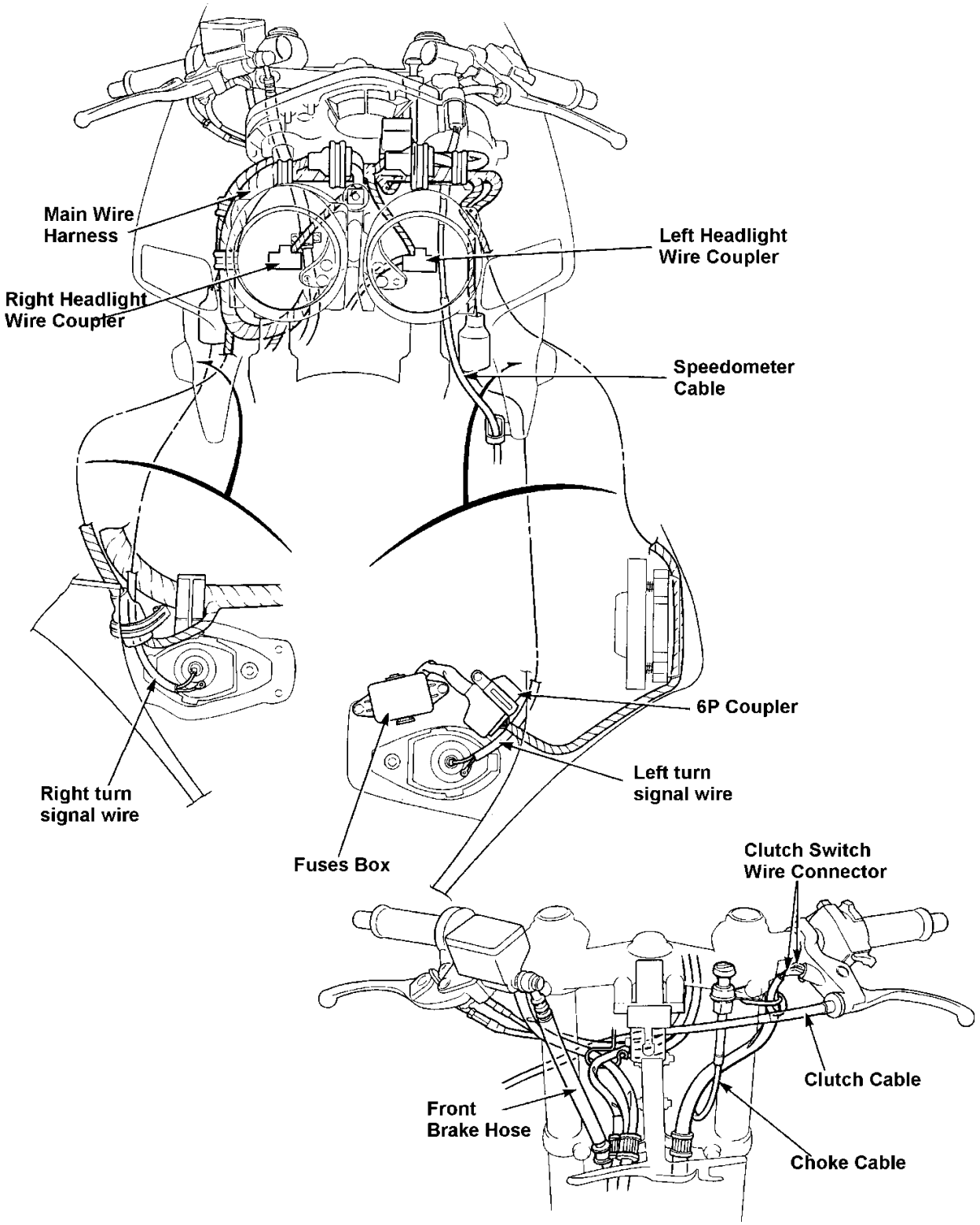
Attach the dust boot.

Install the push rod and the joint section.
Attach the master cylinder with two bolts.
Torque: 1.0 ~ 1.4kg-m

Attach the brake hose by using new sealing washers (two) and the brake hose attachment bolt.
Torque: 2.5 ~ 3.5kg-m



- **Wirings**


Main Wire Harness
Left Headlight Wire Coupler
Right Headlight Wire Coupler
Speedometer Cable
6P Coupler
Left turn signal wire
Right turn signal wire
Fuses Box
Clutch Switch Wire Connector
Clutch Cable
Front Brake Hose
Choke Cable

Battery Alternator

Item		Standard
Battery	Capacity	12V 6AH
	Charging current	0.6A (10H)
	Discharging voltage	13.0 – 13.2V (20°c)
Charging commencement rpm (Headlamp – ON low beam selected)		1,900 RPM
Regulate / Rectifier	Type	= non-contact point
	Regulated voltage	14.0-15.0V
AC alternator coil resistance		0.3-0.4 Ω (20°c)
AC alternator performance		18.5A/5.000rpm

Ignition System

Item			Standard	
Spark plug			NGK	ND
			CR9EH-9	U27FER-9
			CR10EH-9	U31FER-9
Spark plug clearance			0.8-0.9mm	
Timing	" F " marking		23°c BTDC / 1.500rpm	
Ignition coil Resistance (20°c)	Primary coil		2.52 – 3.08 Ω	
	Secondary coil	With high tension lead	11.7k – 14.3k Ω	
		Without high tension lead	11.7k – 14.3k Ω	
Pulse generator coil resistance (20°c)			315 – 385 Ω	

Self Starter System

Item	Standard	Standard	Limitation
Starter Motor	Brush spring tension	630-850g	-
	Brush length	11.00-11.05mm	4.5mm

Lamp, Instruments and Switches

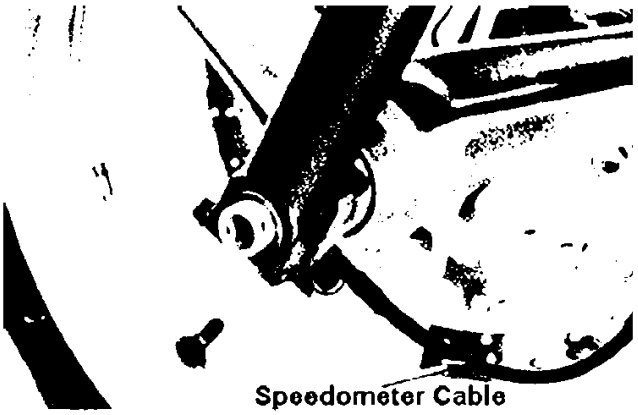
Item	Standard
Headlamp bulb	12V60/35W x 2
Front turn signal bulb	12V 18W
Rear turn signal bulb	12V / 5W
Stop / Tail lamp bulb	12V18 / 5W x 2
Pilot lamps (excluding the speed warning)	12V 1.7W x 4
Speed warning lamp	12V 3.4W
Tachometer, water temp gauge illuminator bulb	12V 1.7W x 2
Speedometer illuminator bulb	12V 1.7W x 2
Main fuse	30A
Headlamp sub fuse	15A
Other fuses	10A x 3

Reverse the procedure for the attachment.

Front Wheel Attachment / Detachment

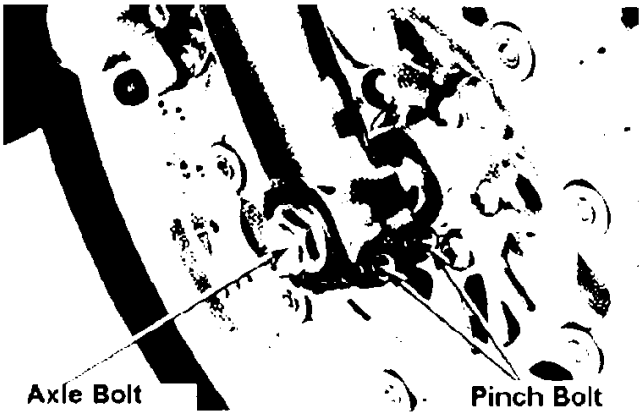
Detachment

Remove the screw and disconnect the speedometer cable.



Remove the axle bolt.
Loosen four bottom case pinch bolts.

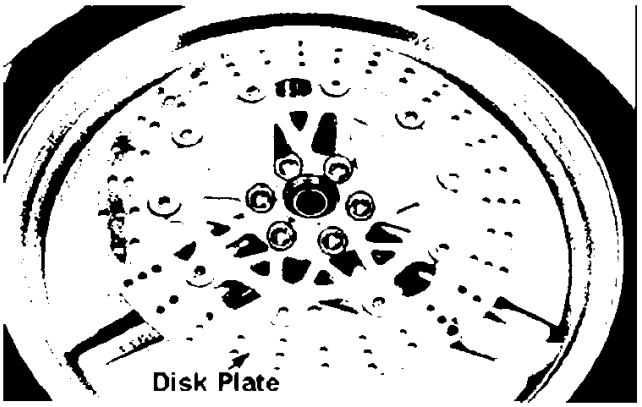
Pull the axle shaft towards the left and detach.



Disc Plate detachment

Remove socket bolts and detach the disk plate.

Do not disassemble after detaching the disc plate.

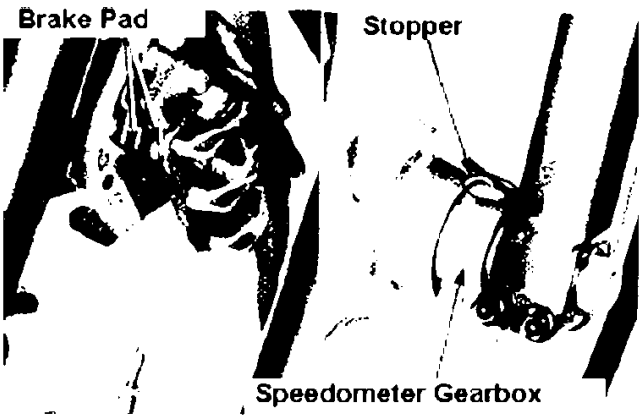


Attachment

Widen the brake pads separation with the screwdriver.

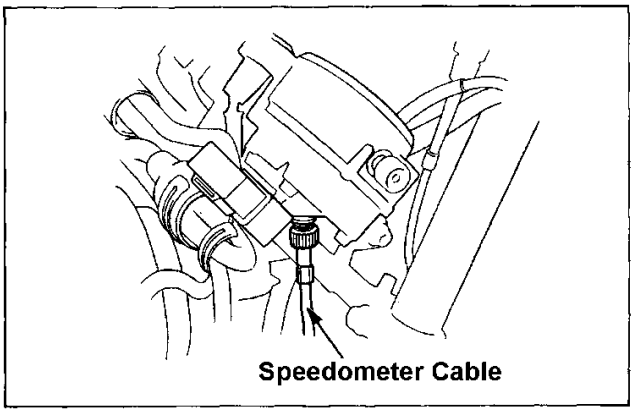
Align the speedometer gear box stopper with the back of the left fork bottom case stopper.

Install the axle shaft from left hand side.

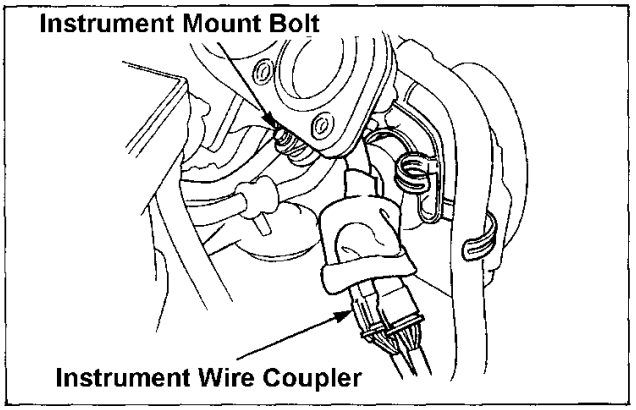


Instruments attachment / detachment

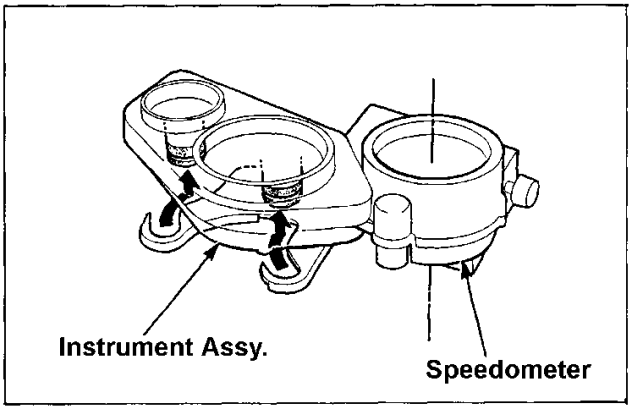
Disconnect the speedometer cable.



Disconnect the right air guide (22-31).
Disconnect instrument wire couplers.
Remove instrument mount bolt.

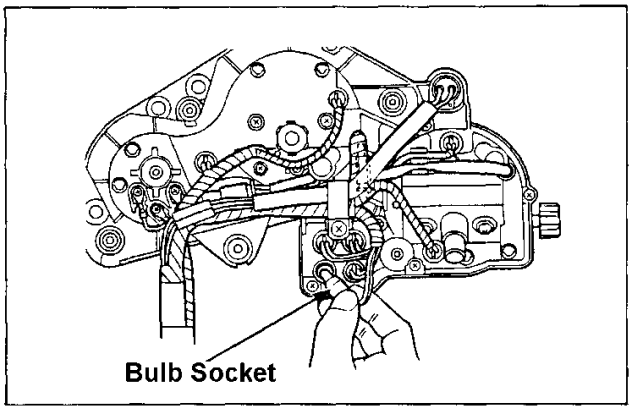


Instrument ASSY can be detached by rotating it clockwise around the speedometer and lifting it up.



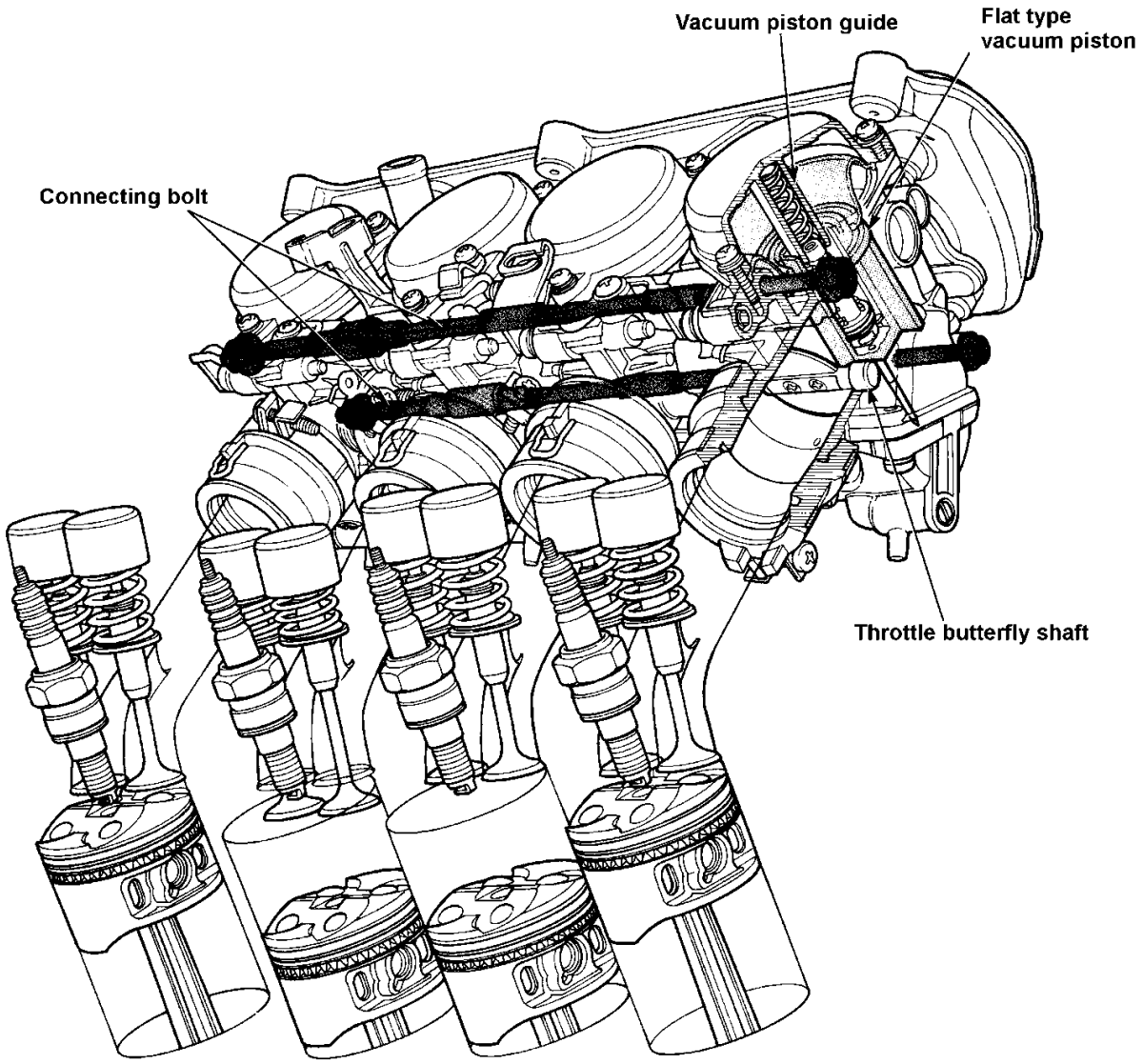
Instrument bulb change

Detach the bulb socket and replace the bulb.

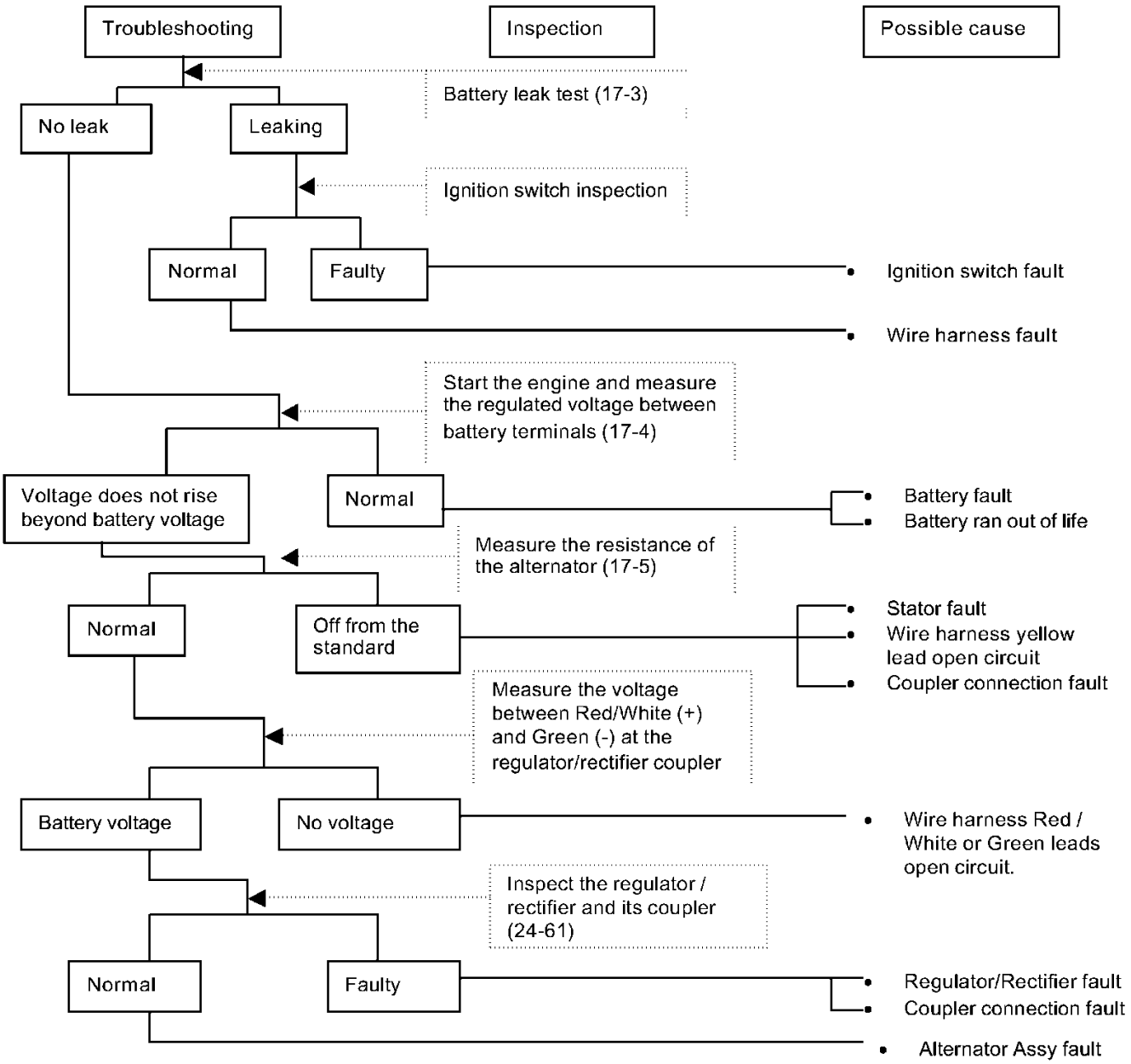


Two connecting bolts and connecting collars are used to link the carburettors. By linking all #1 to #4 carburettor bodies with the connecting bolt, all carburettors are precisely synchronised.

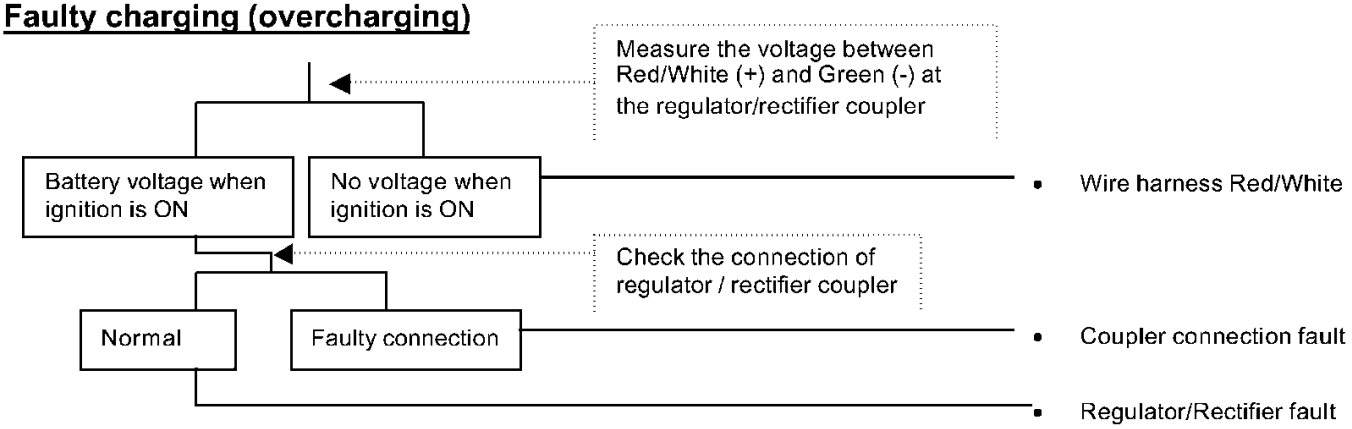
Installation of the vacuum piston guide to the vacuum chamber cover enables to reduce the size of the piston guide on the carburettor body. Also with the application of the connecting bolts, the number of parts was reduced and the carburettor itself is more simple and compact.



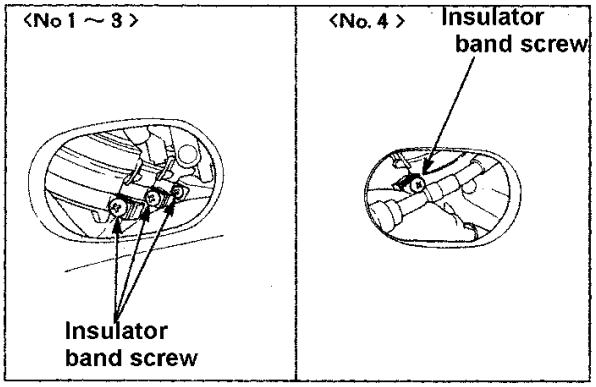
Troubleshooting
Faulty charging (flat battery)



Faulty charging (overcharging)



Carburettor Removal

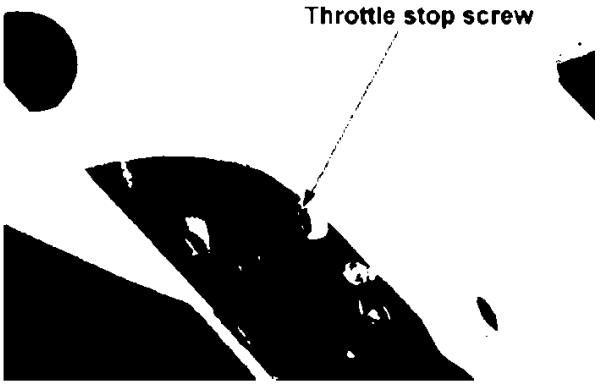


Remove the fuel tank (24-21).
Remove the air filter case (24-22).
Unscrew the drain plug to drain fuel in the carburettor.
Loosen four screws on the carburetor insulator band on the cylinder end.

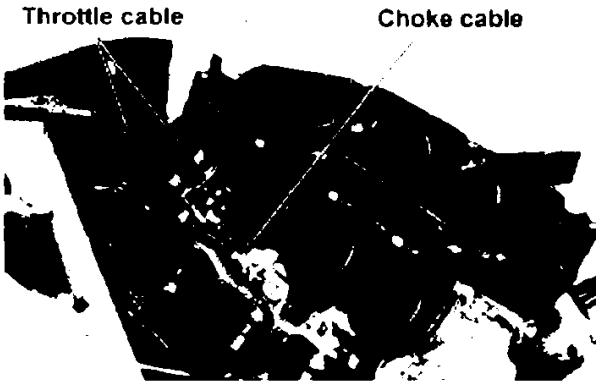
Caution

- Highly inflammable. Keep away from fire.
- Wipe off spilt fuel straight away.

Set the carburetor insulator to the carburetor to remove/install it.



Remove the throttle stop screw from the clamp.

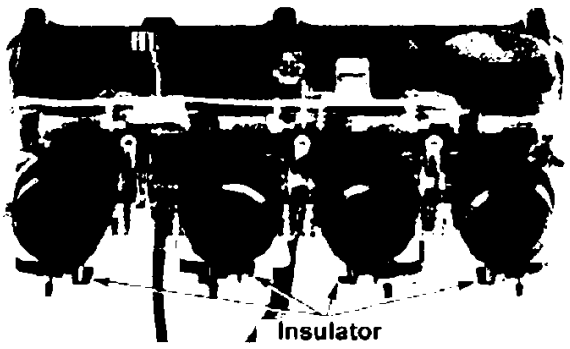


Disconnect the throttle cable and a choke cable.
Remove the carburetor.

Seal the intake manifold with adhesive tape after removing the carburettor.

Disassembly

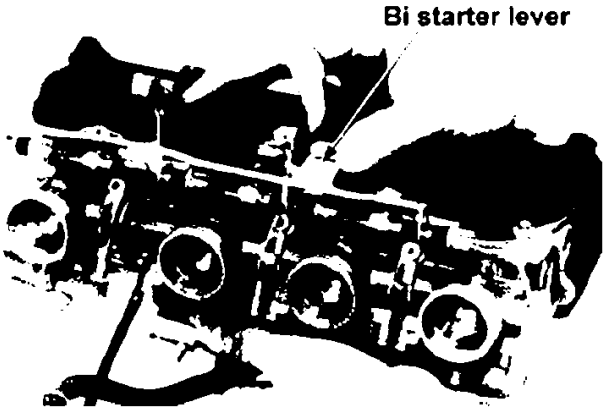
The carburettor need not be disassembled for the vacuum chamber / float chamber disassembly / assembly.



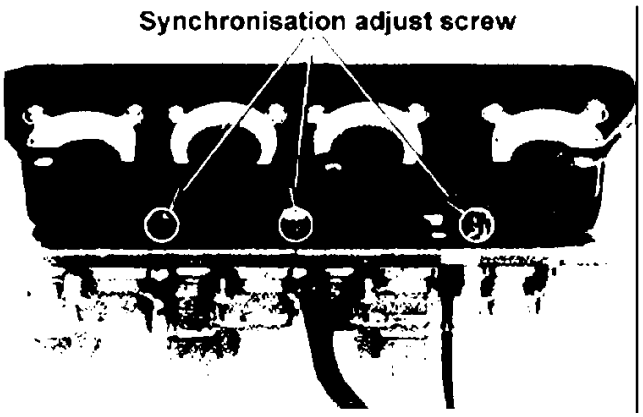
Remove the insulator from the carburettor.

Move the bi-starter lever to check the valve operation.
Check the throttle operation with the following procedure.

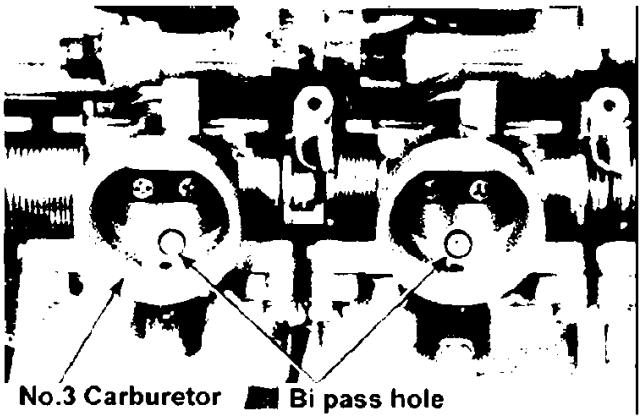
- Rotate the throttle drum to open the throttle a small amount. Check the smooth returning of the throttle.
- Open/close the throttle for its smooth operation.



Wind synchronization adjust screws to align bypass holes of all carburettors with the throttle valve position.

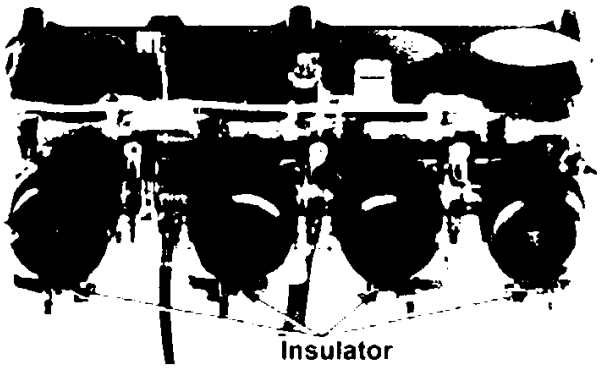


Use #3 carburettor as a reference.



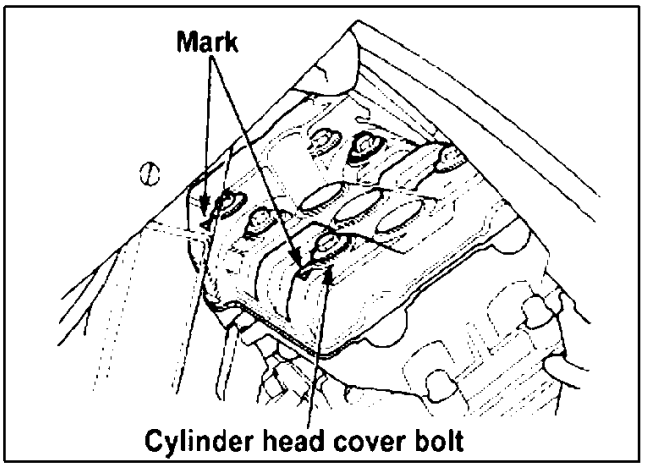
Install insulators to the carburettors.

Set the insulator strap screws correctly as shown in the photograph.



Unscrew bolts to remove the cylinder head cover.
Follow the removal procedure in reverse order.

- Note there are "UP" marks on each washer.
- Tighten the top fan shroud mount bolt together with the earth lead.
- Screw the bolts at "▼" marks (two) on the head cover first, then the rest.
- When dismounting cylinder head / cylinder block, install the oil orifice so as to have smaller hole at the bottom.



Torque:
Cylinder head mount bolt: 0.8 ~ 1.2kg-m

Cylinder, Piston and Crankshaft Bearing inspection and selection

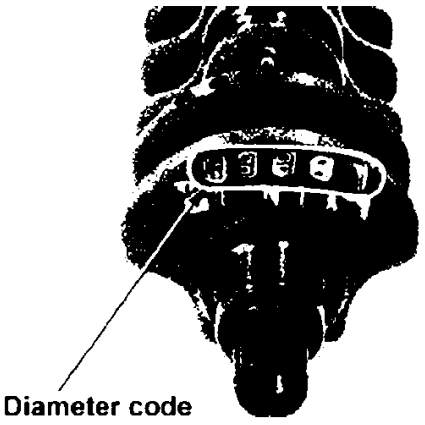
- Crank pin bearing

Avoid the oil hole and place a plasticine gauge.
Install connecting rods and bearing caps to each crankpin.
Apply oil to threads and seats and screw nuts (9-6).
Torque: 1.6 ~ 2.0kg-m

Do not rotate the crankshaft or the connecting rod while measuring.

Remove the bearing cap and select the plasticine size.

Oil clearance service limit:
0.05mm or above → replace.



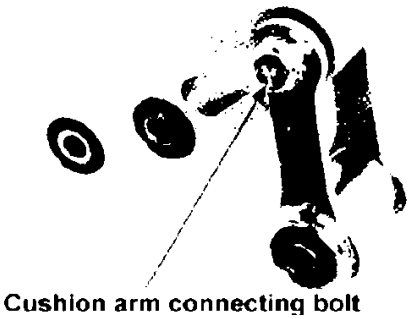
Replace the bearing if the oil clearance is above the service limit (9-7).
Find out the colour code of the bearing from the code numbers on the crankpin and the connecting rod.

			Connecting rod bore code		
Bearing metal thickness	A (Blue) B (Black) C (Brown) D (Green) E (Yellow)	Thick ▲ ▼ Thin	30.000 – 30.006	30.006 – 30.012	30.012 – 30.018
			1	2	3
Crankpin diameter code	27.500 – 27.494	A	E (Yellow)	D (Green)	C (Brown)
	27.494 – 27.488	B	D (Green)	C (Brown)	B (Black)
	27.488 – 27.482	C	C (Brown)	B (Black)	A (Blue)

Assembly

Screw the cushion arm connecting rod bolt and assemble the arm and the connecting rod.

Torque: 4.5 – 5.5kg-m



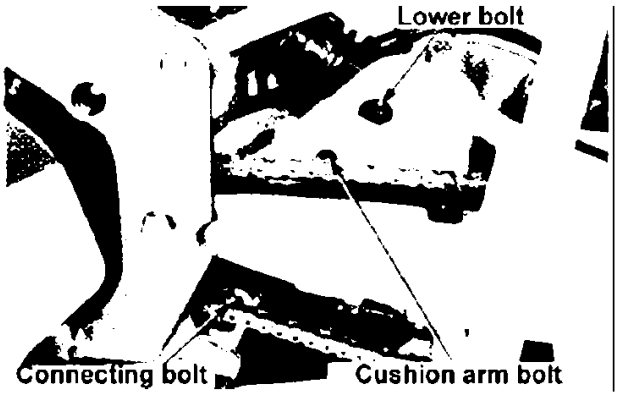
Suspension Linkage Installation

Set the linkage to its mounting position.

Set the cushion arm mark (KA8↑ UP) upwards when installing.

Install the new rear cushion lower bolt and the cushion arm bolt (24-52).

Torque: 4.5 – 5.5kg-m



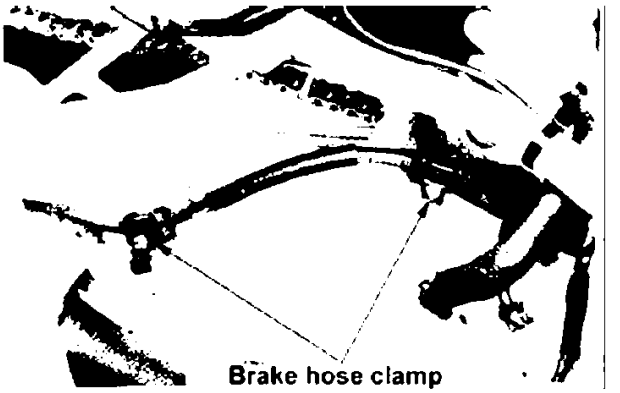
Install the connecting rod bolt and the nut (frame side).

Torque: 4.5 – 5.5kg-m

Install the left step holder (24-45).

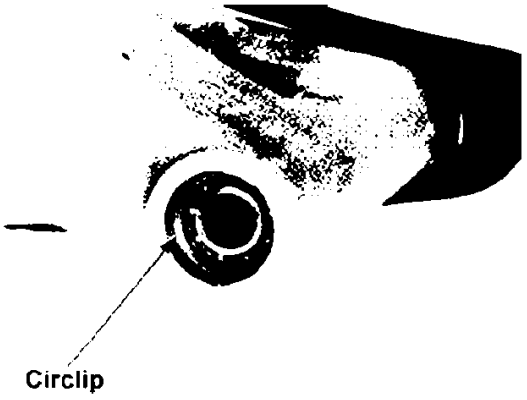
Rear fork removal

Support the frame to lift the rear wheel.
Remove the rear wheel (21-24).
Remove the lower fairings (24-58).
Remove the drive sprocket (24-42).
Remove the rear cushion (24-50).
Remove the suspension linkage (24-52).
Remove the rear hose clamp from the rear fork.
Unscrew the rear fork pivot bolt/nut to remove the rear fork (14-18).

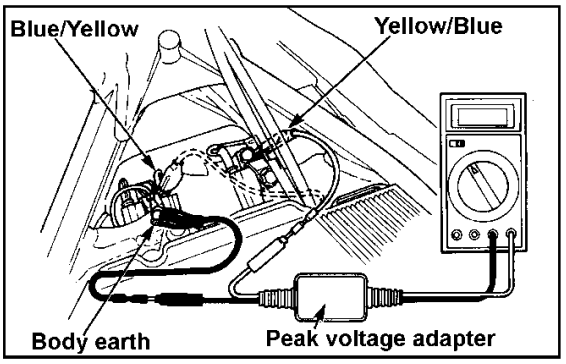


Pivot bearing replacement

Remove the right pivot collar and the dust seal (14-19).
Remove the left pivot collar and the dust seal (14-19).
Remove the distance collar from the rear fork pivot (14-19).
Remove the circlip.



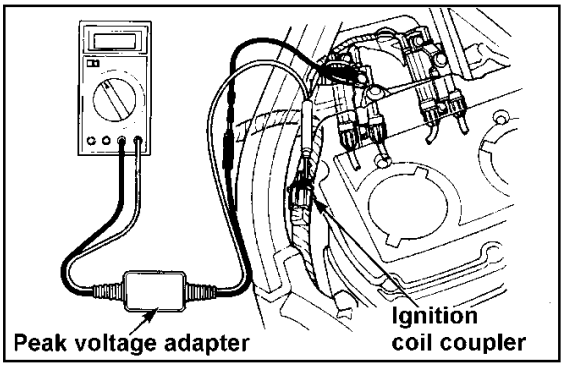
Remove the fuel tank (24-21).
Leave the leads connected to the ignition coil and connect the peak voltage adapter between the primary voltage terminal and the body earth.



Connection:
#1 and #4 ignition coils
Yellow/Blue (+) – body earth (-)
#2 and #3 ignition coils
Blue/Yellow (+) – body earth (-)
Turn the ignition switch ON and the kill switch RUN.
Monitor the initial voltage at this moment. It should be close to the battery voltage.
If there is no voltage, the ignition power circuit is faulty.
Refer to the troubleshooting to inspect the circuit before measuring the peak voltage.
Turn the ignition switch ON and the kill switch RUN.
Crank the engine with the starter motor and measure each peak voltage.
Peak Voltage: 128 volts or above

CAUTION: Do not touch the probe while measuring.

The measured peak voltages can be different between each ignition coil, as long as the values are at or above the standard.



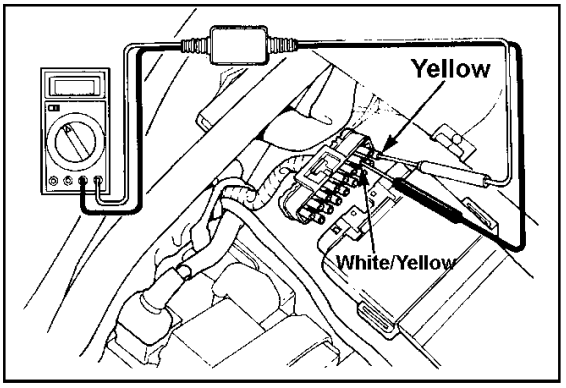
If the measured peak voltages are out of the range, connect the adapter to the ignition coil 3P-coupler terminal.
Re-measure the peak voltage and compare the result with the original value.

CAUTION: Do not touch the probe while measuring.

The measured peak voltages can be different between each ignition coil, as long as the values are at or above the standard.

Pulse Generator peak voltage

- Check the wiring connection.
- Measure the peak voltage with cylinder compression and plugs/caps properly installed. If the plug caps were removed, the peak voltage may be over read.



Remove the seat.
Disconnect a coupler on the spark unit.
Connect the peak voltage adapter probe to the following terminals on the harness end:
Connection: White / Yellow (-) – Yellow (+)
Turn the ignition on, the kill switch RUN.
Crank the engine and measure the peak voltage.
Peak Voltage: 0.91 volts or more

Part	Qty	Screw Dia (mm)	Torque (kg-m)	Notes
Pillion step holder flange bolt	4	8	2.4 – 3.0	
Pillion step lock lever bolt	2	6	1.0 – 1.4	
Rear fender mount bolt	4	6	1.0 – 1.4	
Rear turn signal screw	2	5	0.35 – 0.50	
Reflector nut	1	6	0.7 – 1.1	
Front fender mount bolt	4	6	0.7 – 1.1	
Side cover socket bolt	4	6	0.7 – 1.1	
Side cover joint screw	1	5	0.35 – 0.50	
Side cover hook socket bolt	2	6	1.0 – 1.4	
Seat cowl screw	2	5	0.3 – 0.4	
Seat screw	2	5	0.35 – 0.50	
Pillion seat catch	1	6	1.0 – 1.4	
Drive chain case bolt	1	6	0.8 – 1.2	
Throttle cable adjust nut (carburetor end)	1	6	0.8 – 1.2	
Throttle housing screw	2	5	0.35 – 0.50	
Clutch cable nut (engine side)	1	8	0.8 – 1.2	
Choke cable screw (carburetor side)	1	4	0.15 – 0.30	
Ignition coil bracket bolt	4	6	1.0 – 1.4	
Ignition coil screw	2	6	0.7 – 1.1	
Ignition switch socket bolt	2	8	2.4 – 3.0	
Tail lamp cap nut	2	6	0.8 – 1.2	

Front Wheel and Suspension

Item		Standard	Service limit
Front axle runout		-	0.2mm
Front wheel rim runout	Radial	-	2.0mm
	axial	-	2.0mm
Front cushion spring relaxed length		252.1	247mm
Front fork pipe runout		-	0.2mm
Front fork oil capacity	Standard	383 ± 2.5cc	-
	Fully compressed	83mm	-
Front fork air pressure		0 – 0.4kg/cm²	-

Rear Wheel and Suspension

Item		Standard	Service limit
Rear axle runout		-	0.2mm
Rear wheel rim runout	Radial	-	2.0mm
	Axial	-	2.0mm
Rear cushion damper compression (10mm compressed)		15.4kg	12.3kg
Rear cushion spring installation length		135mm	-
Rear cushion spring relaxed length		143.8mm	140.9mm

Brake System (Disc Brake)

Item		Standard	Service limit
Brake disc runout	Front	-	0.4
	Rear	-	0.3
Front master cylinder bore		12.700 – 12.743	12.755
Rear master cylinder bore		14.000 – 14.043	14.06
Front master piston diameter		12.657 – 12.684	12.65
Rear master piston diameter		13.957 – 13.984	13.95
Front caliper cylinder bore		25.400 – 25.450	25.46
Rear caliper cylinder bore		38.180 – 38.230	38.24
Front caliper piston diameter		25.335 – 25.386	25.33
Rear caliper piston diameter		38.098 – 38.148	38.09