AEON MOTOR CO.,LTD

NEW SPORTY-125/180

SERVICE MANUAL

CONTENTS

1. INFORMATION

1.1 Safety

GASOLINE

Gasoline is extremely flammable and is explosive under certain condition. Do not smoke or allow sparks or flames in your work area.

CARBON MONOXIDE

Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

BATTERY ELECTROLYTE

The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. If you come into contact with the electrolyte, flush the area thoroughly with water. If you get the electrolyte in your eyes, flush with water and contact a doctor immediately.

HOT PARTS

Engine and exhaust pipe become very hot and remain hot for one hour after the engine is run. Wear insulated gloves before handling these parts.

USED ENGINE /GEAR OIL

Used engine oil and gear oil may cause skin disease after repeated contact with the skin for long periods. Keep out of reach of children.

1.2 NOTES

All information, illustrations, directions and specifications included in this publication are base on the latest product information available at the time of approval for printing.

1.3 SPECIFICATION

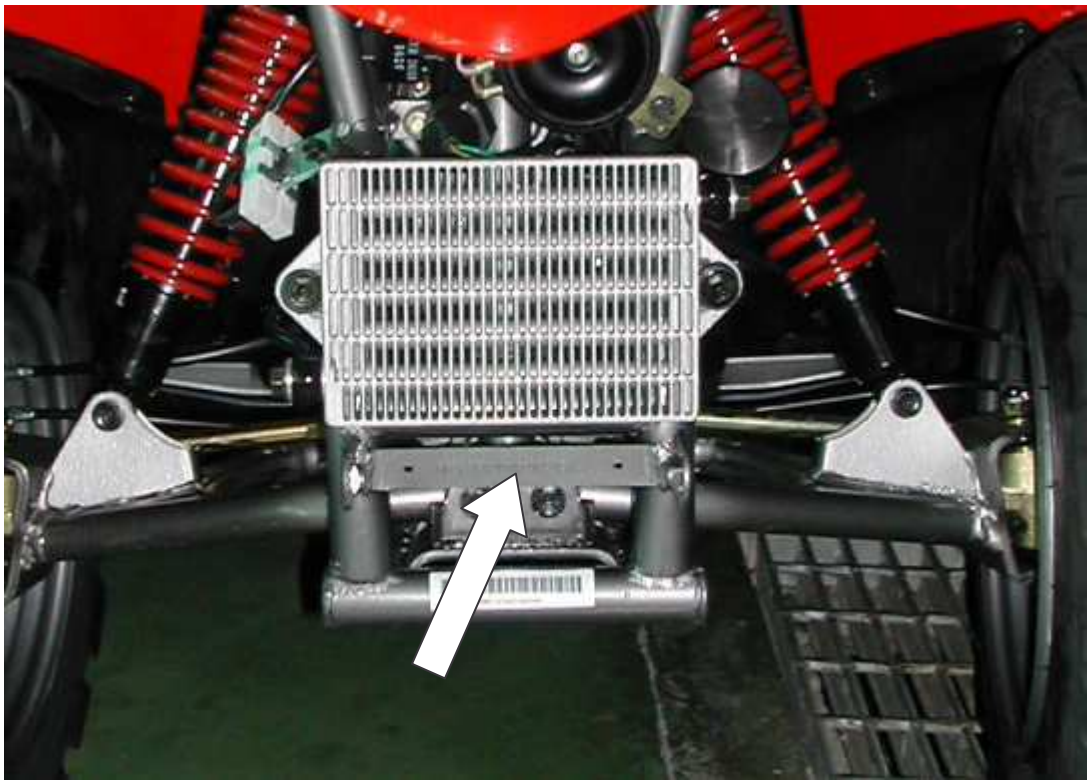
ENGINE		**125 / 180**
	Type	**Air-Cooled 4-syroke with Oil Cooler**
	Displacement	**125 cc/169 cc**
	Bore and Stroke	**52.4×57.8mm/61×57.8mm**
	Compression	**9.1:1**
	Maximum Torque	**6.21 Nm@4017 rpm/10.24 Nm@4403 rpm**
	Carburetor	**MIKUNI 125/180**
	Ignition	**Capacitor Discharge**
	Starting	**Electrical & Kick-Start**
	Lubrication	**Forced pressure and wet sump**
	Air Cleaner	**AE-9**
	Transmission	**Automatic(C.V.T. V-belt)**
CHASSIS		
	Overall Length	**71.7 inches (1820mm)**
	Overall Width	**38.4 inches (975mm)**
	Overall Height	**41.7 inches (1060mm)**
	Seat Height	**30.7 inches (675mm)**
	Wheel Base	**41.9 inches (1065mm)**
	Ground Clearance	**6.5 inches (165mm)**
	Dry Weight	**166kg (365lb)**
	Fuel Tank Capacity	**8.0 liter**
SUSPENSION		
	Front	**Swing Axle**
	Rear	**Swing Arm**
BRAKES		
	Front	**Drum**
	Rear	**Disc**
TIRES		
	Front	**21” × 7” - 10”**
	Rear	**21” × 10” - 8”**

Specifications subject to change without notice.

1.4 SERIAL NUMBER

The frame serial number is stamped on the front frame.

And stick a bar code paper to cover it.



The engine number is stamped under the crankcase.

1.5 TORQUE VALUES

STANDARD

5mm bolt and nut	5 N.m (3.5 lbs.ft)
6mm bolt and nut	10 N.m (7.2 lbs.ft)
8mm bolt and nut	22 N.m (16 lbs.ft)
10mm bolt and nut	35 N.m (25 lbs.ft)
12mm bolt and nut	55 N.m (40 lbs.ft)

ENGINE

Cylinder head nut	28 N.m (20.7 lbs.ft)
Spark plug	12 N.m (8.9 lbs.ft)
Cylinder head bolt	20 N.m (14.8 lbs.ft)
Alternator bolt	8 N.m (5.9 lbs.ft)

FRAME

Handlebar upper holder bolt	24 N.m (17.7 lbs.ft)
Throttle housing cover screw	4 N.m (2.9 lbs.ft)
Steering shaft nut	50 N.m (36.9 lbs.ft)
Steering shaft holder bolt	33 N.m (24 lbs.ft)
Wheel rim bolt	18 N.m (13.3 lbs.ft)
Tie rod lock nut	35 N.m (25.8 lbs.ft)
King pin nut	40 N.m (29 lbs.ft)
Handlebar lower holder nut	40 N.m (29.5 lbs.ft)
Front wheel bolt	24 N.m (17.7 lbs.ft)
Front axle nut	60 N.m (44 lbs.ft)
Front brake arm nut	4 N.m (3.0 lbs.ft)
Rear brake arm nut	7 N.m (5.2 lbs.ft)
Rear axle nut	60 N.m (44.3 lbs.ft)
Rear wheel bolt	24 N.m (17.7 lbs.ft)
Exhaust muffler mounting bolt	30 N.m (22.1 lbs.ft)
Engine hanger bolt	30 N.m (22 lbs.ft)
Rear axle holder bolt	90 N.m (65 lbs.ft)
Swingarm pivot nut	90 N.m (65 lbs.ft)
Rear shock absorber mounting nut	45 N.m (33 lbs.ft)

2. Maintenance

2.1 MAINTENANCE DATA

SPECIFICATION

SPARK PLUG

Spark plug cap	0.6-0.7mm
Recommended spark plugs	NGK C7HSA or CR7HSA
Throttle lever free play:	5-10mm
Idle speed	1800rpm
Brake lever free play:	10~20mm
Drive chain slack	15-25mm
Front/rear tire size	21×7-10 / 22×10-8
Front/rear tire pressure	3±0.3psi (0.15 kgf/cm^2)
Toe-in	5±10mm

TORQUE VALUES

SPARK PLUG	12-19 N.m
TIE-ROD LOCK NUT	35-43 N.m

ENGINE OIL

Viscosity:	SAE 15W-40

GEAR LUBRICATION OIL

Viscosity:	SAE 85W-140

2.2 MAINTENANCE SCHEDULE

The maintenance intervals in the follow table is based upon average riding, condition. Riding in usually dusty areas, require more frequent servicing.

Service Item	Initial Service (First 30 hours)	Every 100 hours	Every 200 hours	Every 300 hours
ENGINE OIL	**R**	**R**		
GEAR OIL	**R**		**R**	
FUEL FILTER				**R**
AIR VLEAN FILTER				**R**
ENGINE OIL FILTER				**C**
CARBURETOR				**I**
SPARK PLUG			**C**	
VALVE GAP				**A**
IGNITION TIMING				**A**
CHAIN			**A**	
BATTERY			**I**	
DRIVE BATTERY				**I**
CLUTCH				**I**
THROTTLE OPERATE			**I**	
TIRE PRESSURE	**Check before riding each time**			
BRAKE SYSTEM	**Check before riding each time**			
NUTS/BOLTS				**T**

A: Adjust C: Clean I: Inspection R: Replace T: Tighten

2.3 FUEL TUBE

Inspect the fuel lines for deterioration, damage or leakage and replace if necessary.

2.4 THROTTLE OPERATION

Inspect for smooth lever operation, full opening and automatic full closing in steering positions.

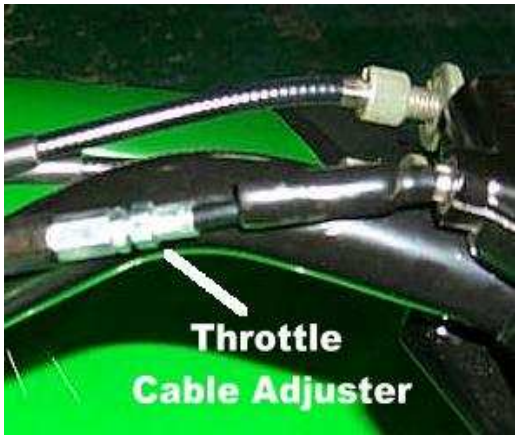
Inspect for deterioration, damage, cuts and nicks, or kink in the throttle cable, replace it if necessary.

Check the throttle lever, free play should be not more than 5-10 mm at the tip of the throttle lever.

Disconnect the throttle cable at the upper end. Lubricate the cable with commercially lubricant to prevent premature wear.

2.5 THROTTLE CABLE ADJUSTMENT

Slide the rubber cap of the adjuster off the throttle housing, loosen the lock nut and adjust the free play of the throttle lever by turning the adjuster on the throttle housing. Inspect the free play of the throttle lever.



2.6 AIR CLEANER MAINTENANCE

(1) Loosen the screw and remove the air cleaner from carburetor.

(2) Disassemble the air cleaner cover and body.

(3) Remove the air cleaner element and screen..

(4) Install the new one.

(5) Assemble the air cleaner body and cover and re-attach to the carburetor with screw.

2.7 SPARK PLUG

The spark plug is located at the front of the engine.

(1) Disconnect the spark plug cap and remove the spark plug

(2) Visually inspect the spark plug electrode for wear or cranks in insulator. Replace if needed.

(3) The center electrode should have square edges and the side electrode should have a constant thickness.

(4) Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped.

(5) Measure the gap with a wire-type feeler gauge and adjust if necessary by carefully bending the side electrode.

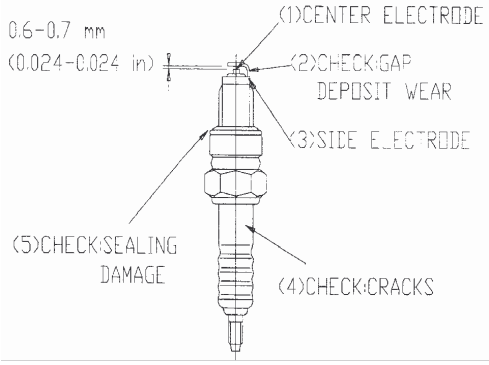
SPARK PLUG GAP: 0.6~0.7 mm

RECOMMENDED REPLACEMENT PLUG:

NGK CR7HSA

(6) Check the sealing washer and replace with a new one if damaged.

(7) With the sealing washer attached thread the spark plug in by hand to prevent cross threading. Tighten the spark plug. TORQUE: 12-19 N-m



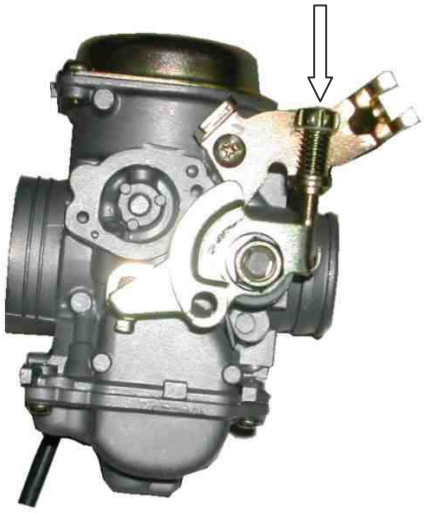
2.8 IDLE SPEED SETTING

(1) Inspect and adjust the idle speed after all other engine maintenance items have been performed and are within specifications. The engine must be warm for accurate idle speed inspection and adjustment.

(2) Warm up the engine for about ten minutes and connect a tachometer.

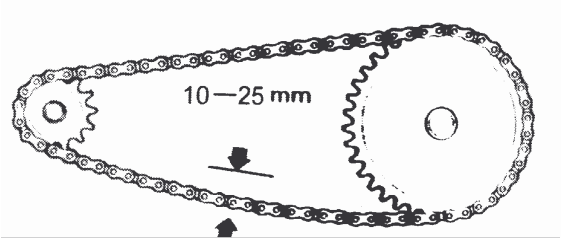
(3) Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1700 ± 100 rpm



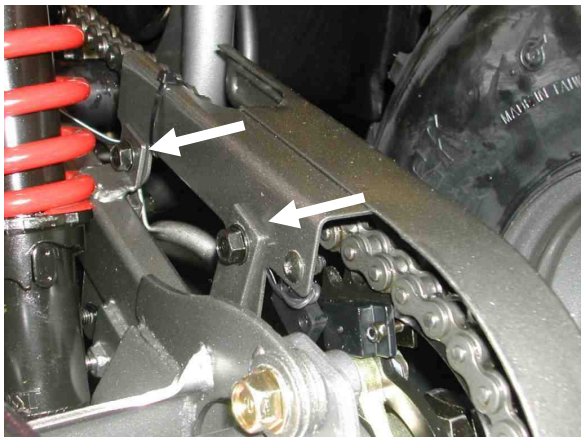
2.9 DRIVE CHAIN ADJUSTMENT

Stop ATV and shift transmission into neutral. Inspect the chain slack midway between the sprockets. The standard is 10-25 mm (5/8-1 inch).



If needed remove the chain protective cover and adjust the chain slack.

Loosen the axle holder lock nut then adjust the drive chain slack by turning the adjusting nut. Tighten the axle holder lock nut.



Torque = 90N.m (65 Ft. lbs)

When the drive chain becomes very dirty, it should be removed, cleaned and lubricated with the specified lubricant.

Clean the drive chain with kerosene and wipe it dry.

Inspect the drive chain for possible wear or damage.

Replace the chain, if it is worn excessively or damaged.

Inspect the sprocket teeth, if it has excessive wear or damage, replace if needed.

Use a commercial chain lubricant to lubricate the drive chain, replace and adjust the slack as described above.

2.10 BRAKE SYSTEM ADJUSTMENT

Inspect the front brake lever and cable for excessive play or other damage.
Replace or repair if necessary.
Measure the free play of the brake lever at the end of the lever. The standard is 10~20 mm.
Adjust the free play of the front brake lever by turning the adjuster on the brake lever assembly.

Inspect the rear brake lever and cable for excessive play or other damage.
Replace or repair if necessary.
Measure the free play of the brake lever at the end of the lever. The standard is 10-20 mm.

Adjust the free play of the rear brake lever by turning the adjuster on the rear axle.

BRAKE SHOE WEAR

Front Brake

Release the front wheel and inspect the brake lining thickness. Service Limit: 2.0mm (0.08 inch), if either lining is worn beyond the service limit, replace both brakes shoes.

2.11 WHEELS AND TIRES

Inspect the tire surface for cuts, nails or other sharp objects.

Check the tire pressure at cold tire conditions. The standard tire pressure is 3psi. ($0.15 kgf/cm^2$)

2.12 STEERING SYSTEM

Check the free play of the steering shaft with the front wheels, turned straight ahead. When there is excessive play, inspect the tie-rod, kingpin bushing and ball joint.

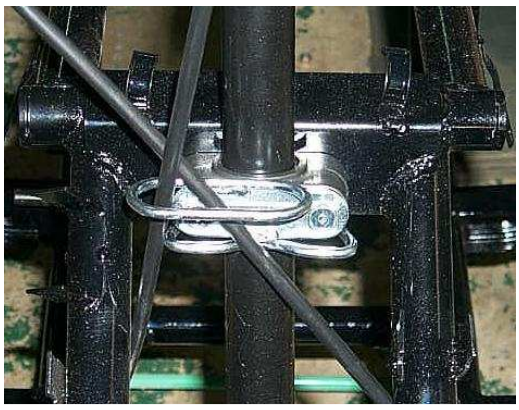
Steering shaft holder bushing

Remove the front fender.

Remove the steering shaft holder and check the steering shaft bushing for wears or damage.

If the bushing is worn or damaged, change a new one.

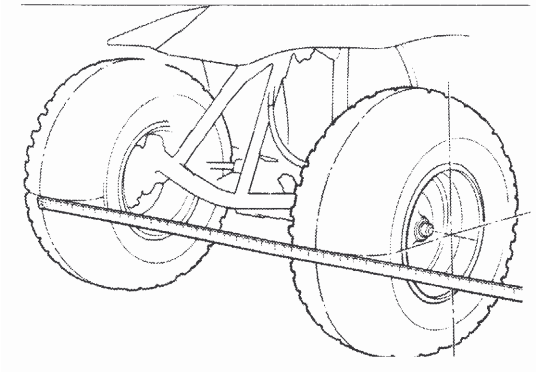
Grease the steering shaft bushing and install the parts in the reverse order of removal.



Torque: steering shaft holder bolt: 33N.m (24 Ft. lbs)

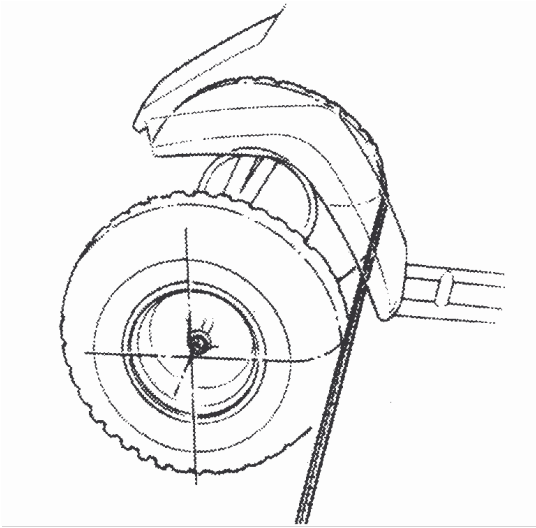
2.13 TOE-IN

Park the vehicle on level ground with the front wheels facing straight ahead.
Mark the centers of the tires to indicate the axle center height.



Measure the distance between the marks.

Carefully move the vehicle back, let the wheels turn 180° so the marks on the tires are aligned with the axle center height.



Measure the distance between the marks.
Calculate the difference in the front and rear measurements.

Toe-in: 5±10 mm

If the toe-in is out of standard, adjust it by changing the length of the tie-rods equally by turning the tie-rod while holding the ball joint.
Tighten the lock nuts.
Torque: 35-43 N.m

2.14 GEAR OIL MAINTENANCE

Gear oil needs to be changed every 200 hours. There is a gear oil drain hole bolt at the rear of the engine.

(STEP1)
Unscrew this drain hole bolt and let the dirty oil flow out, catching the oil in a proper container for later disposal.

(STEP2)
Reinstall the drain hole bolt an tightness.

(STEP3)
Fill with new gear oil through the oil fill hole located on the engine case beside the gear box.

3.1 ENGINE REMOVAL AND INSTALLATION

ENGINE SHOULD ONLY BE REMOVED IN THE CONDITIONS OF NECESSARY REPAIRS OR ADJUSTMENT TO THE TRANSMISSION AND COMBUSTION SYSTEM ONLY!

3.2 ENGINE REMOVAL

Remove the front, rear rack, and handle bar.
Remove the footrest.
Remove the spark plug cap from the spark plug.
Remove the exhaust muffler.
Disconnect the carburetor cable by unscrew two screws on top of the carburetor.

Disconnect the wire connectors. There are three connectors for carburetor auto-choke, starter motor and generator respectively.

Remove the engine hanger bolts over the engine.

Remove the engine and air cleaner together.

3.2 ENGINE REPLACEMENT

Engine installation is essentially the reverse order of removal.

The torque of engine hanger bolt is 30 Nm

Route the wires and cable properly in reverse order of removal.

4. LUBRICATION

4.1 Service Information
4.2 Trouble Shooting
4.3 Engine Oil Level
4.4 Engine Oil & Filter Change
4.5 Oil Pump Removal /Installation

4.1 SERVICE INFORMATION

GENERAL

This section describes inspection and replacement of the engine oil, oil filter screen and assembly of the oil pump.
Fill the oil pump with clean oil when reassembling the pump.

SPECIFICATIONS

Engine Oil Capacity	0.8-1.0 Liters /
Engine Oil Recommendations	Viscosity: (*SAE 15W-40)*
	API Service classification: SF-SG

OIL PUMP	**STANDARD**	**SERVIC**	**LIMIT**

Cover-to-rotor clearance	---------	0.12
Rotor tip clearance	--------	0.12
End clearance	0.01-0.10	0.2

TORQUE VALUE

Oil Drain Bolt 20~30 N.m (14.8~22.1 lbs.ft)

4.2 THROTTLE SHOOTING

Oil level too low / high oil consumption

Normal oil consumption.
External oil leaks.
Oil not changed often enough.
Worn piston rings.
Faulty heat gasket.

Oil contamination

Worn piston rings.
Faulty heat gasket.
Oil or filter not changed often enough.

4.3 ENGINE OIL LEVEL

Place the engine on the level plane.
Check the oil level with the oil level gauge, but do not screw it in when making this check.

4.3 ENGINE OIL LEVEL

Add the recommended oil up to the upper level if the oil level is below or near lower level line on the gauge.

LOWER LEVEL UPPER LEVEL

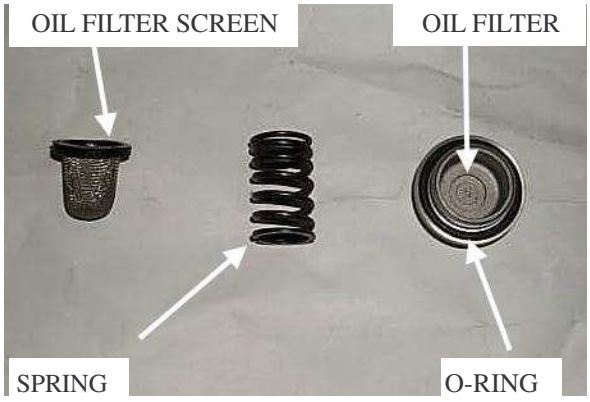
4.4 ENGINE OIL & FILTER CHANGE

Remove the oil filter cap and the oil drain bolt.

NOTE: drain the oil while the engine is warm to ensure complete draining.

Remove the oil filter cap, spring and oil filter screen.

Check the O-ring for damage or fatigue.



Install a new oil filter screen and spring then install the cap.

Install the oil drain bolt with sealing washer.

TORQUE: 20~30 N.m (14.8~22.1 lbs.ft)

Fill the crankcase with recommended oil.

ENGINE OIL CAPACITY: 1.2 liter at draining.

OIL DRAIN

Install the oil filter cap.

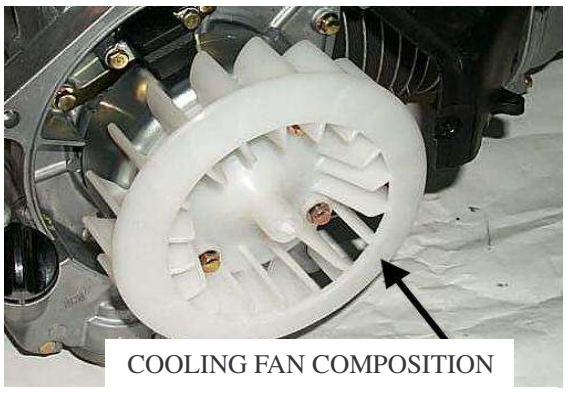
Install the oil level gauge.
Start the engine and let it idling for 2 or 3 minutes.

Stop the engine and check that the oil level at the upper line on the gauge. Make sure there are no oil leaks.

4.5 <u>OIL PUMP REMOVAL</u>

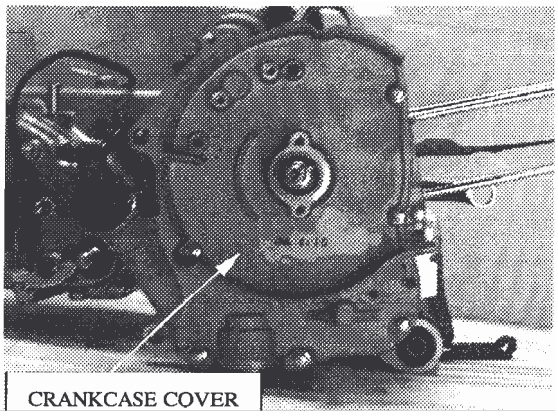
Remove the fan cover ass'y.

Remove the cooling fan composition.

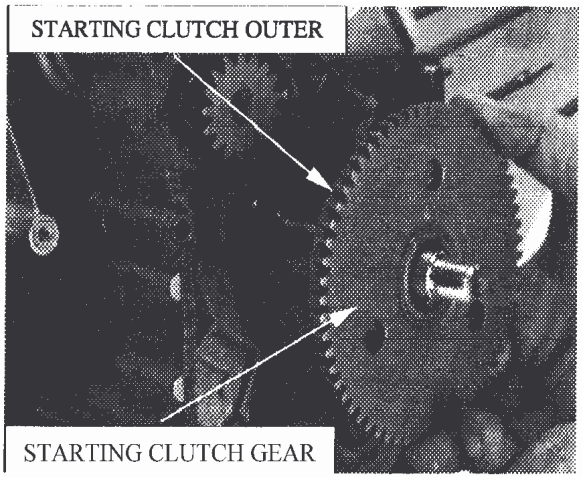


Remove the A.C.G generator ass'y.

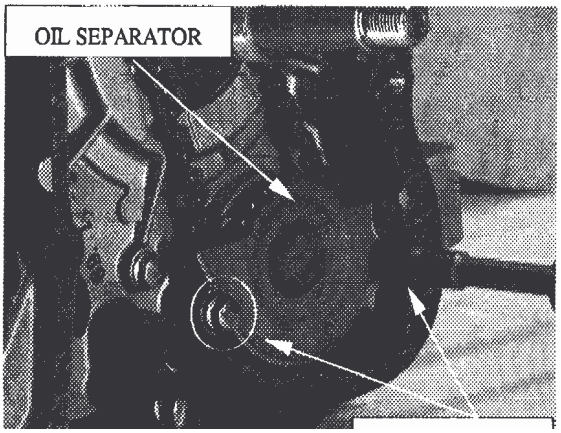
Remove the left crankcase cover.



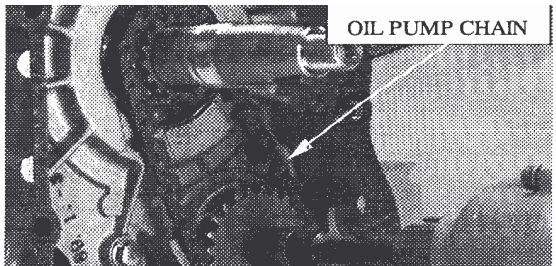
Remove the starting clutch outer and gear ass'y.



Remove the flange bolts and oil separator.

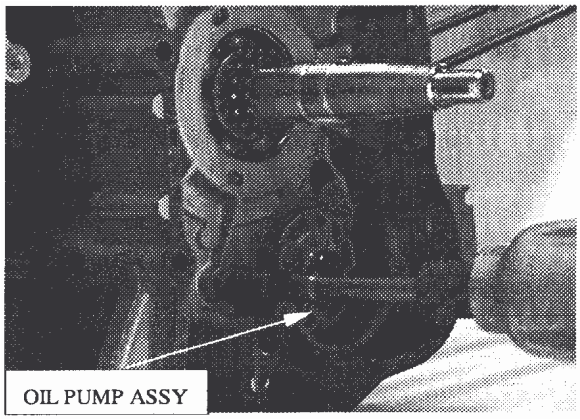


Remove the oil pump chain and oil pump driven

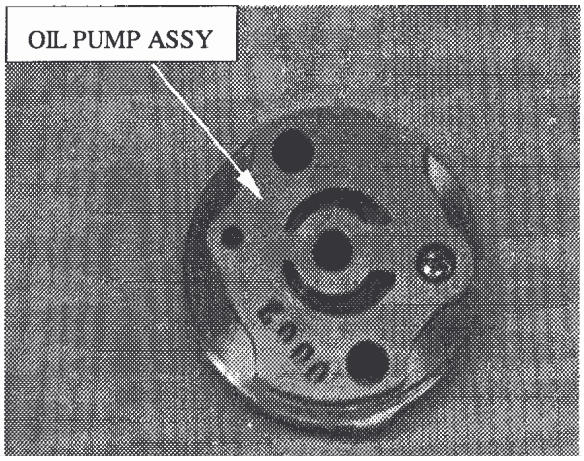


sprocket.

Remove the oil pump ass'y.

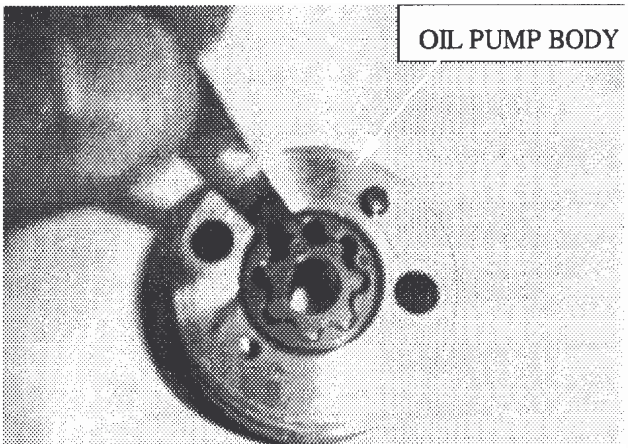


Disassemble the oil pump.

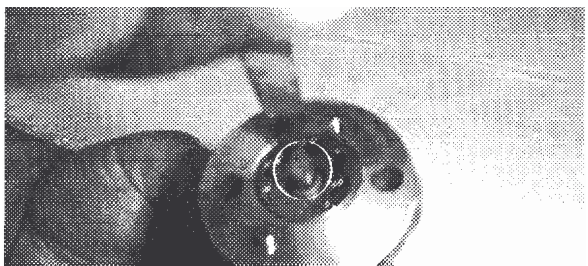


INSPECTION

Measure the oil pump rotor-to-body clearance.
SERVICE LIMIT: 0.12 mm

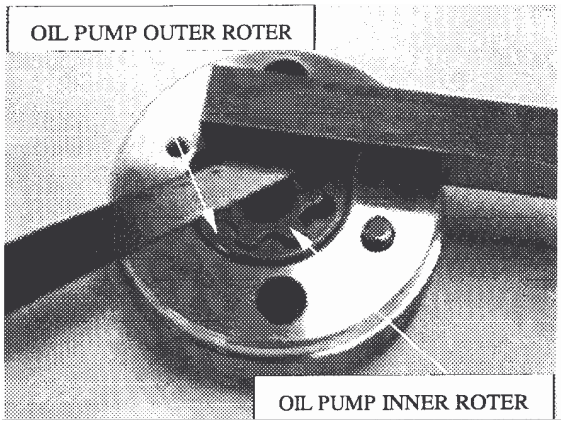


Install the oil pump shaft and measure the pump



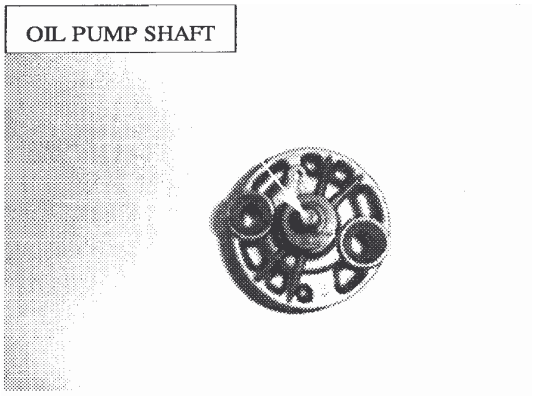
rotor tip clearance.
SERVICE LIMMIT: 0.12 mm.

Remove the oil pump shaft and measure the pump and clearance.
SERVICE LIMMIT: 0.2 mm.

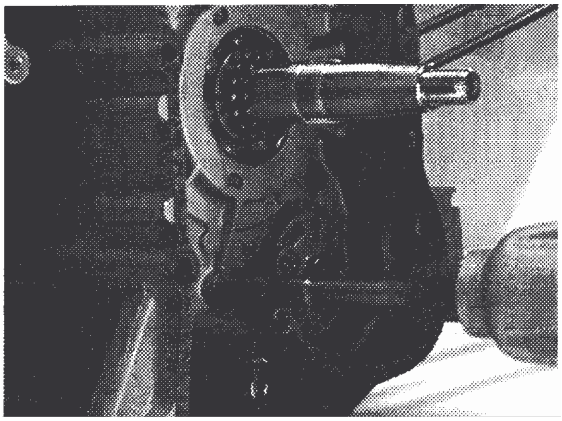


4.5 OIL PUMP ASS'Y / INSTALLATION

Install the outer rotor, inner rotor and oil pump shaft onto the body.
NOTE: Pour a drop of clean engine oil inside the oil pump.



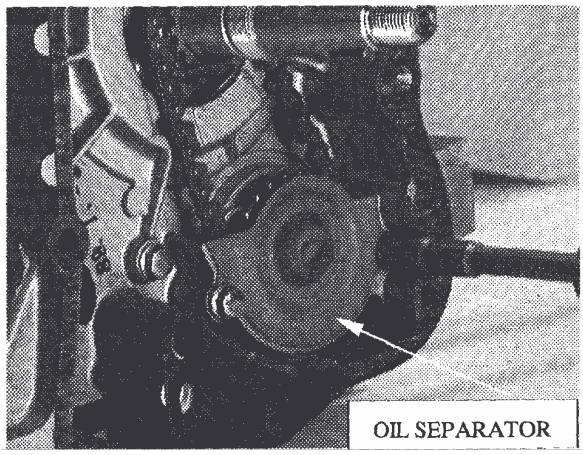
Install the oil pump ass'y



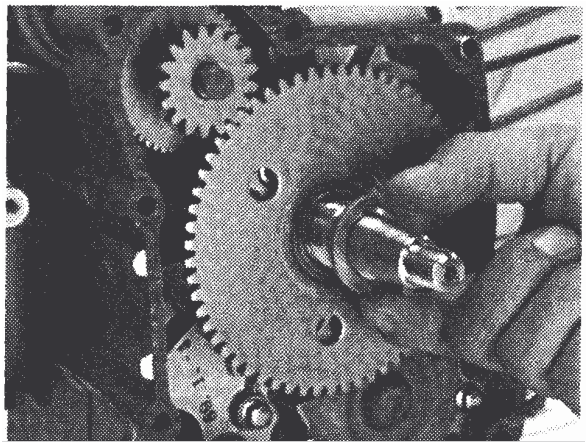
Install the oil pump driven sprocket and oil pump

chain.

Install the oil separator.

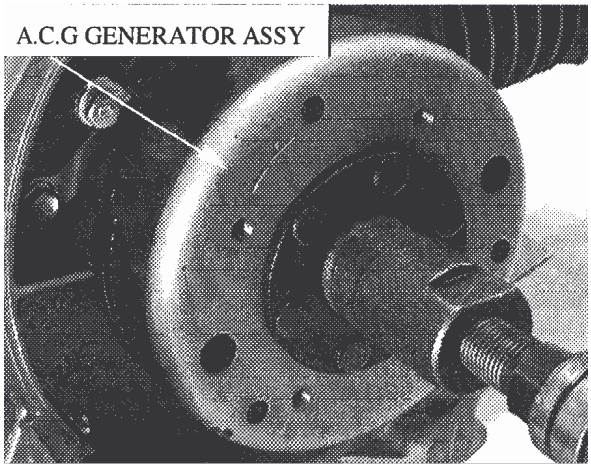


Install the starting clutch outer and gear ass'y.

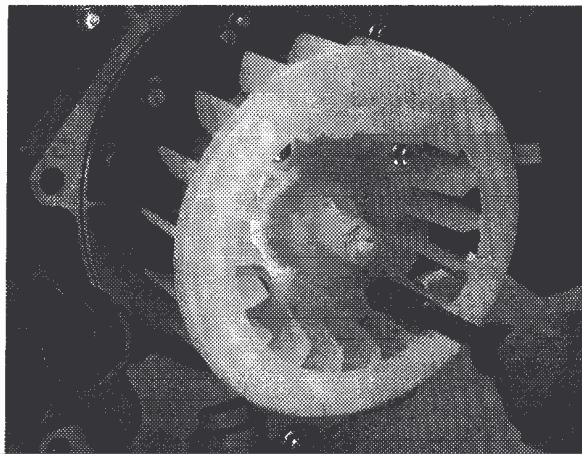


Install the new gasket, dowel pins and right crankcase cover.

Install the A.C.G generator ass'y



Install cooling fan composition



Install fan cover

5. CYLINDER HEAD / VALVES

5.1 SERVICE INFORMATION
5.2 TROUBLESHOOTING
5.3 CAMSHAFT ASS'Y REMOVAL
5.4 CYLINDER HEAD REMOVAL
5.5 CYLINDER HEAD INSTALLATION

5.1 SERVICE INFORMATION

GENERAL

This section describes the maintenance of cylinder head, valves, camshaft and the other parts. The engine must be removed from the frame to service cylinder head.
Camshaft lubrication oil is fed to the cylinder head through an oil orifice in the engine case. Before installing the cylinder head be sure the orifice is not clogged and the gasket, O-ring and dowel pins are in place.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Cylinder compression		12±0.5 kg/cm^2	---------
Cam lobe height	IN EX	25.965/27.195 25.810/27.20	25.57/26.7 25.40/26.80
Rocker arm I.D.		10.000-10.018	10.10
Rocker arm shaft O.D.		9.972-9.987	9.91
Valve spring free length	IN EX	32.3 35.0	31.2 34.1
Valve stem O.D.	IN EX	4.975-4.990 4.955-4.970	4.90 4.90
Valve guide I.D.	IN/EX	5.000-5.012	5.30
Stem-to-guide clearance	IN EX	0.010-0.037 0.030-0.057	0. 08 0.10
Valve seat width	IN EX	1. 0 1.0	1. 8 1.8

TORQUE VALUES

Cylinder head bolts	8~12 N.m (5.9~8.9 lbs.ft)
Camshaft holder flange nuts	20~24 N.m (14.8~17.8 lbs.ft)
Tappet adjusting nut	9~12 N.m (6.6~8.9 lbs.ft)

5.2 TROUBLE SHOOTING

Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test, or by tracing engine noise to the top end with a sounding rod or stethoscope.

Low compression valve

Incorrect valve adjustment.
Worn or damaged valve seats.
Burned or bent valve.
Incorrect valve timing.
Weak valve spring.

Cylinder head

Leaking or damaged head gasket.
Warped or cracked cylinder head.
Faulty cylinder or piston

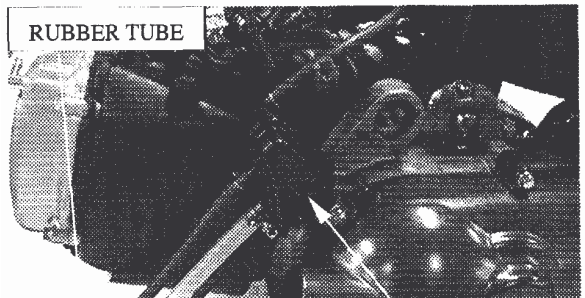
Excessive noise

Incorrect valve adjustment
Sticking valve or broken valve spring.
Worn or damaged rocker arm or camshaft.
Worn or damaged cam chain.
Worn or damaged cam chain tensioner.
Worn cam sprocket teeth.

Excessive smoke

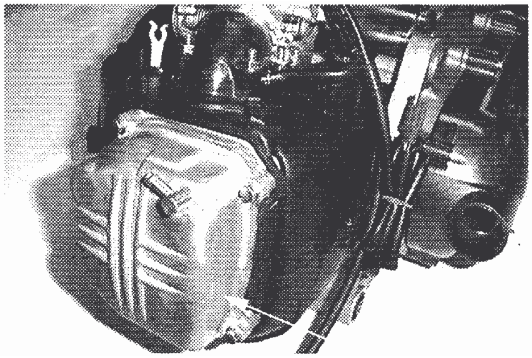
Damaged valve stem seal.
Faulty cylinder or piston rings.

5.3 CAM SHAFT ASS'Y REMOVAL

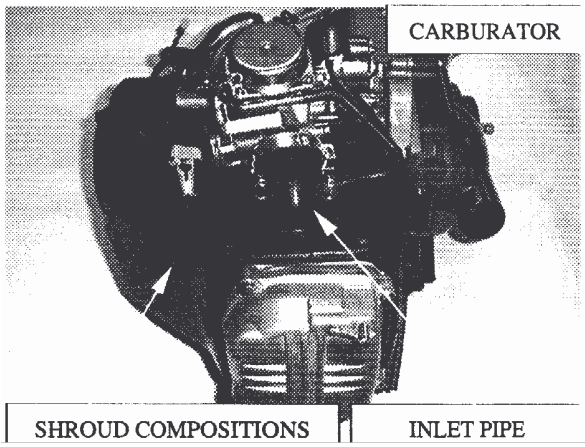


Remove the rubber tube of gas waste recovery.

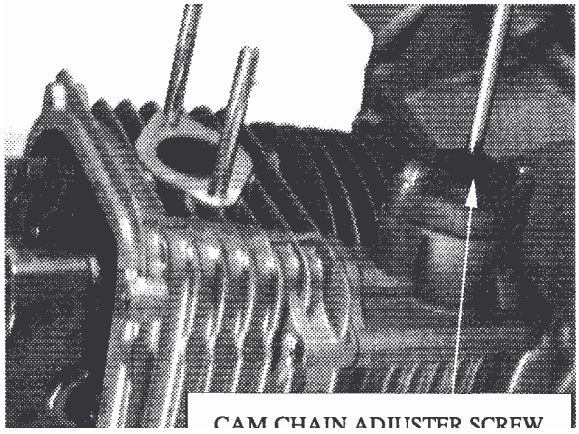
Remove the cylinder head cover.



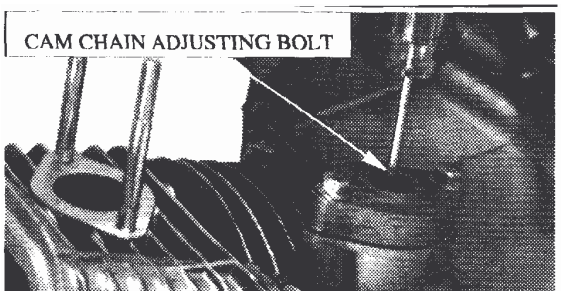
Remove the air cleaner and carburetor.
Remove the inlet pipe ass'y.
Remove the shroud compositions.



Relax the cam chain adjuster screw.

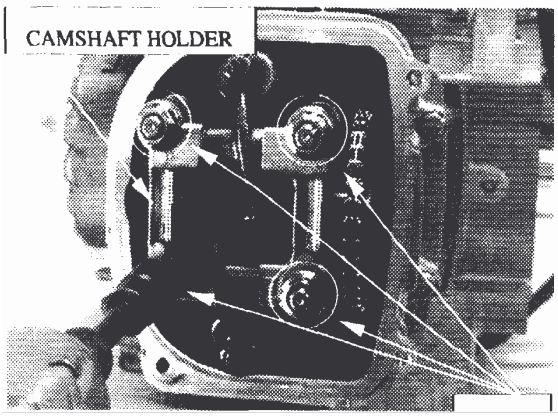


Remove the screw and O-ring and tighten the cai

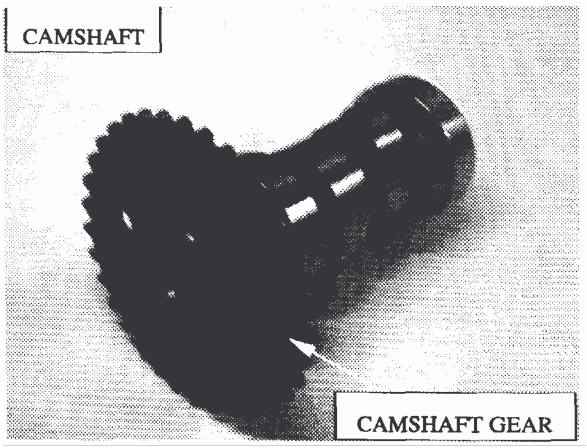


chain-adjusting bolt with clockwise direction.

Remove the nuts and washers
Remove the camshaft holder and dowel pins.

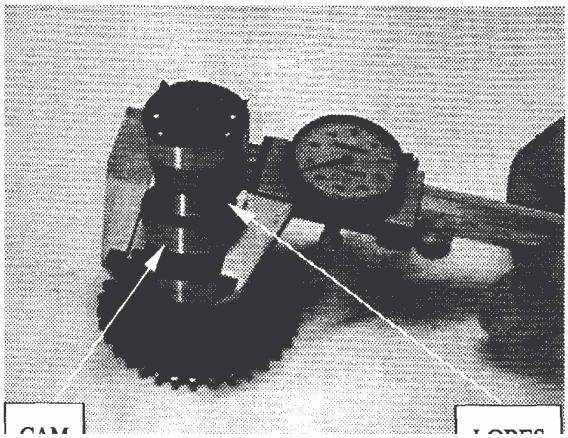


Relax the camshaft gear from cam chain and rem
camshaft.

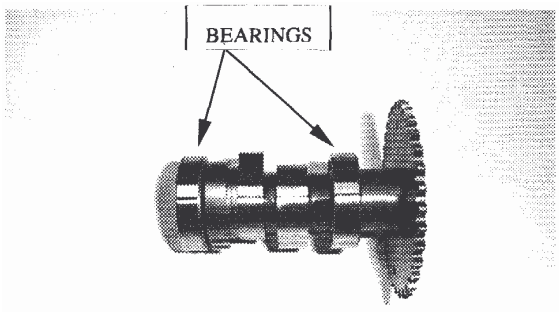


INSPECTION

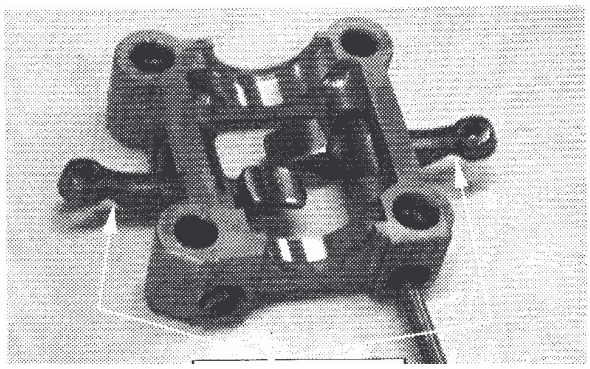
Inspect the cam lobes surface and height of cam
wear or damage.
SERVICE LIMIT: IN□25.57/26.18 mm
EX□25.41/26.02 mm



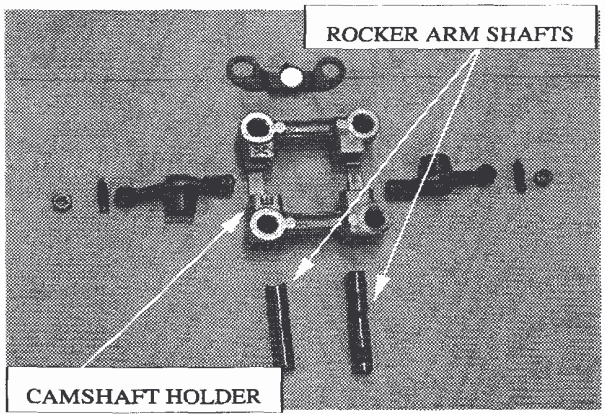
Inspect the camshaft and bearings for wear or da
replace them if necessary.



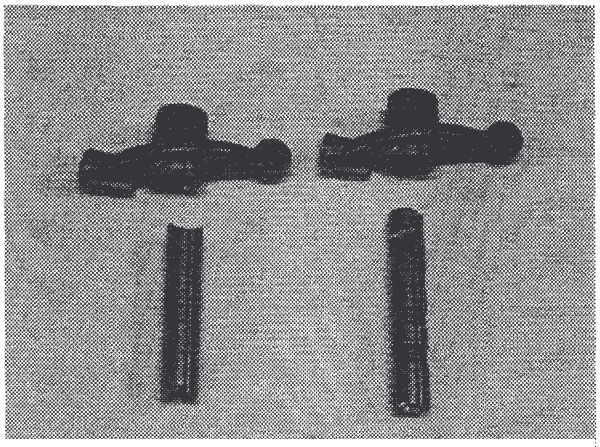
Screw a 5 mm bolt into the rocker arm shaft threaded end.
Pull on the bolt to remove the shafts and rocker a



Inspect the camshaft holder, rocker arms and ro
shafts for wear or damage.

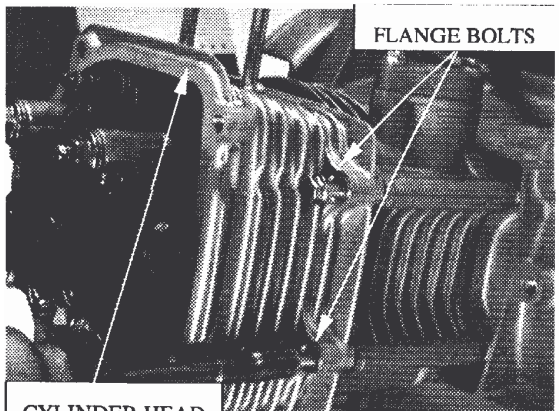


Measure the I.D. of each rocker arm.
SERVICE LIMIT: 10.10 mm
Measure the O.D. of each rocker arm shaft.
SERVICE LIMIT: 9.91 mm

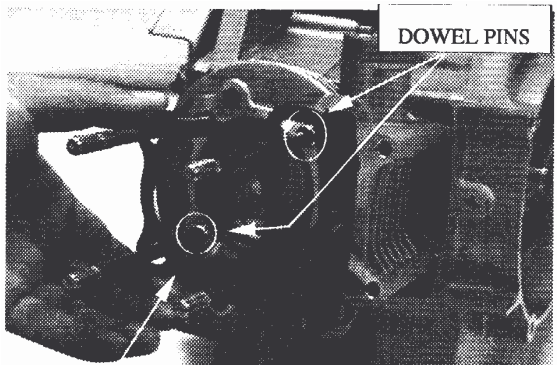


5.4 CYLINDER HEAD REMOVAL

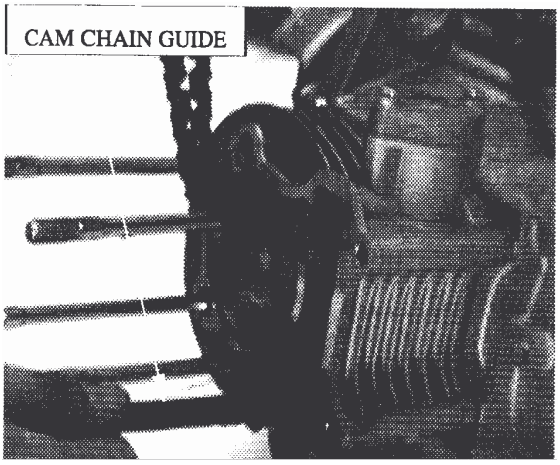
Remove the flange bolts and cylinder head.



Remove the cylinder head gasket and dowel pins

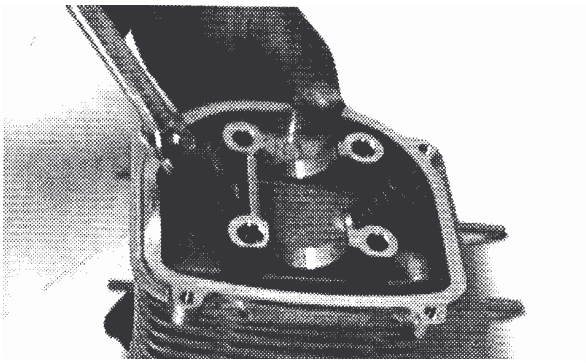


Remove the cam chain guide.



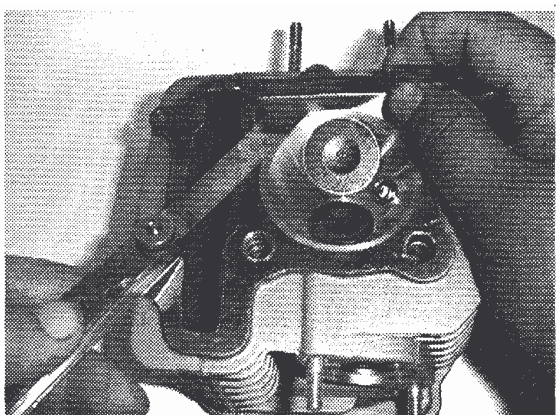
CYLINDER HEAD DISASSEMBLY

Remove the valve cotters, spring retainers and va
with a valve spring compressor.

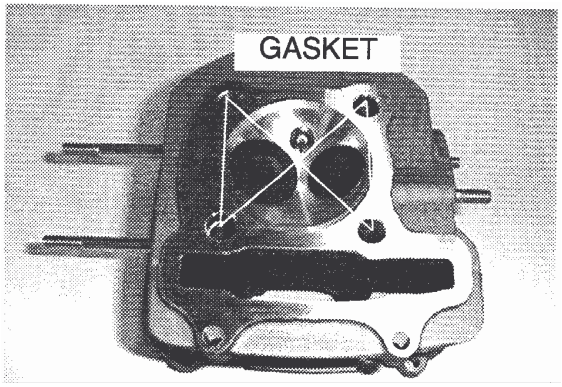


INSPECTION

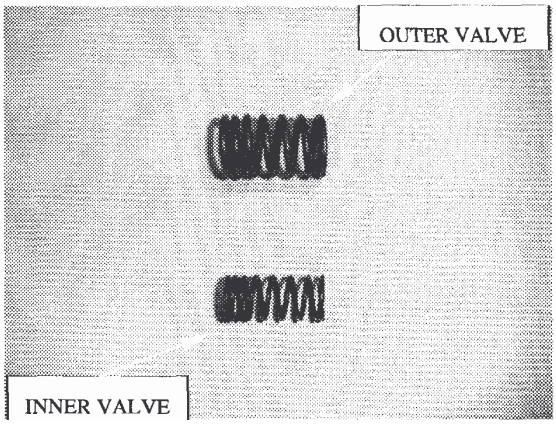
Clean off all carbon deposits from the com- busti
check the spark plug hole and valve area for crac



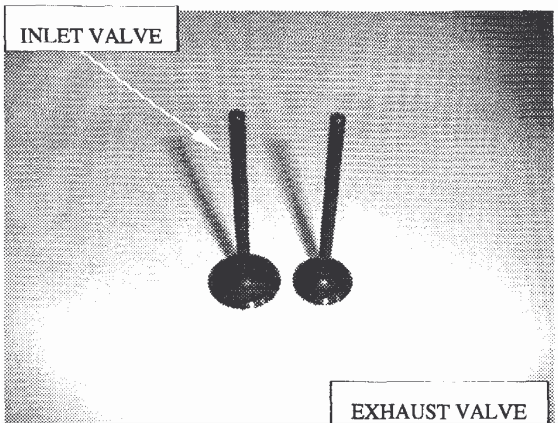
Measure the cylinder head diagonally for warp with a straight edge and feeler gauge.



Measure the free length of the inner and outer valve springs.
SERVICE LIMITS: Inner 31.2 mm
Outer 34.1 mm



Inspect each valve for turning, burning, scratches or abnormal stems wear.
Check the valve movement in the guide.

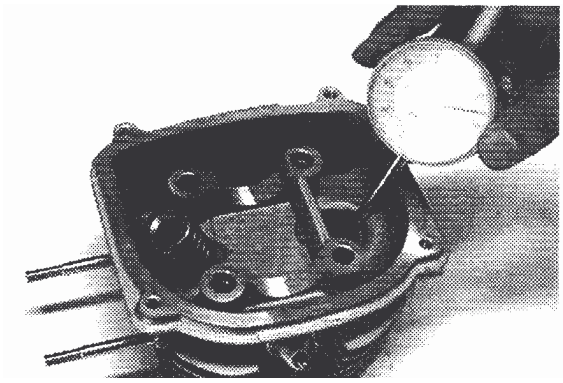


Measure and record each valve stem O.D.
SERVICE LIMITS: 4.90 mm

Measure and record the valve guide I.D.
SERVICE LIMITS: IN / EX 5.30 mm

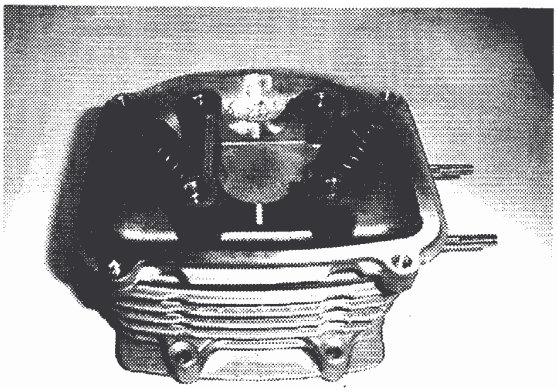
Calculate the stem-to-guide clearance.
SERVICE LIMITS: IN 0.08 mm
EX 0.10 mm

NOTE: If the stem-to-guide clearance exceeds the limits, determine if a new guide with standard dim would bring the clearance within tolerance.
If so, replace guides as necessary and ream to fit. If guide is replaced, the valve seat must be refaced.



CYLINDER HEAD ASS'Y

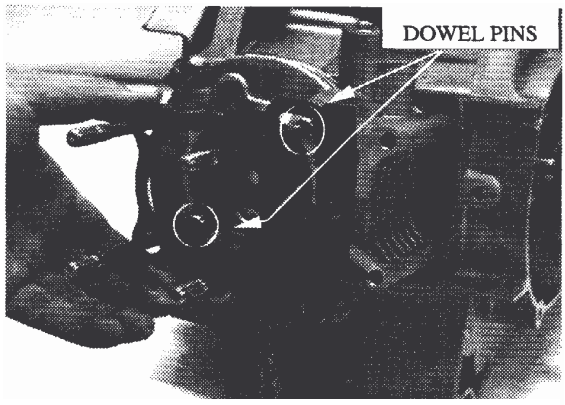
Lubricate each valve stem with oil.
Insert the valves into the guides.
Install the valve springs, retainers and the cotters.



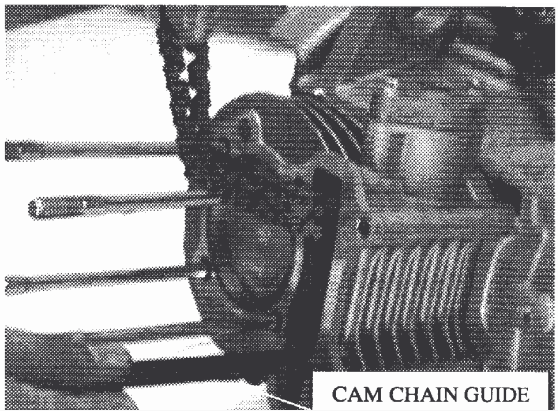
NOTE: To prevent loss of tension, don't compress springs more than necessary.

INSTALLATION

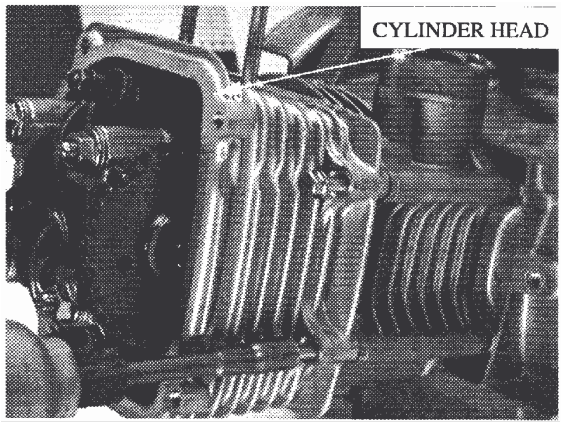
Install the new gasket and dowel pins.



Install the cam chain guide.

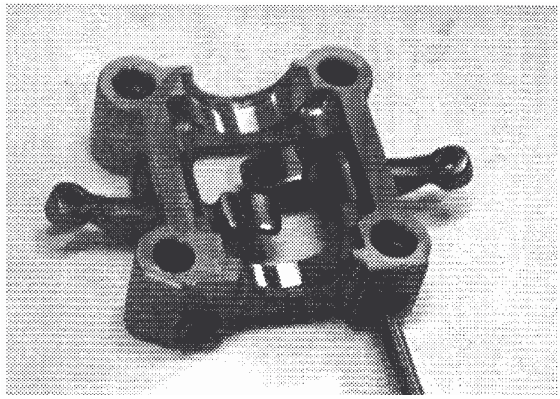


Install the cylinder head.

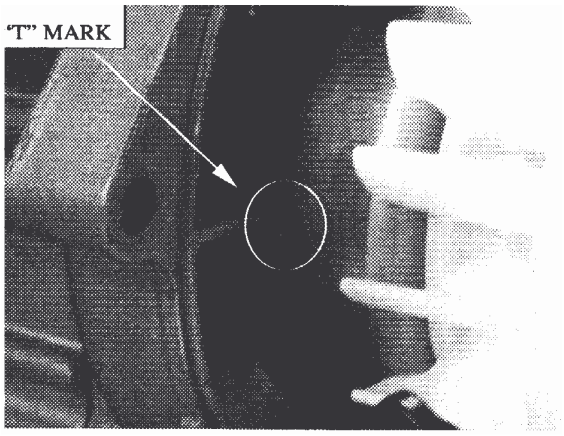


CAMSHAFT ASS'Y INSTALLATION

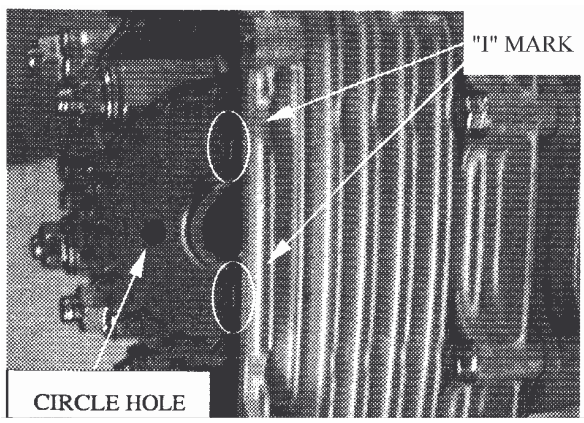
Install the rocker arms and rocker arm shafts into camshaft holder.



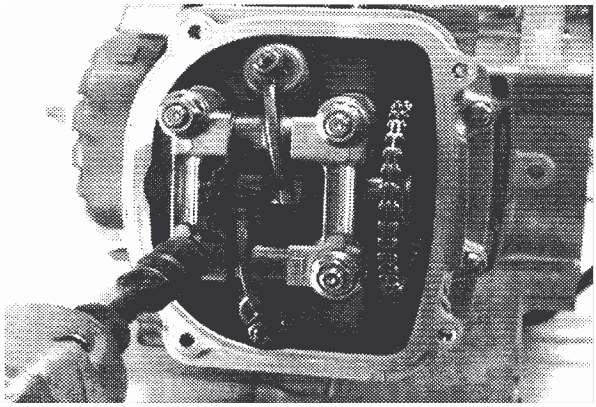
Align the "T" mark on the flywheel with the index mark on the alternator cover by turning the flywheel counter-clockwise.



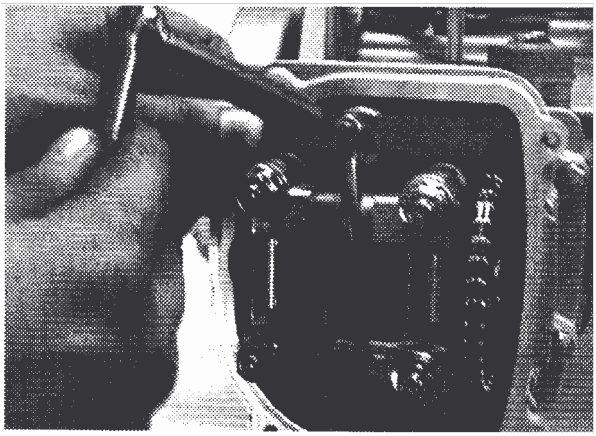
Position the camshaft gear with cam chain so that the "I" mark aligns with the cylinder head surface and the circle hole towards the front.



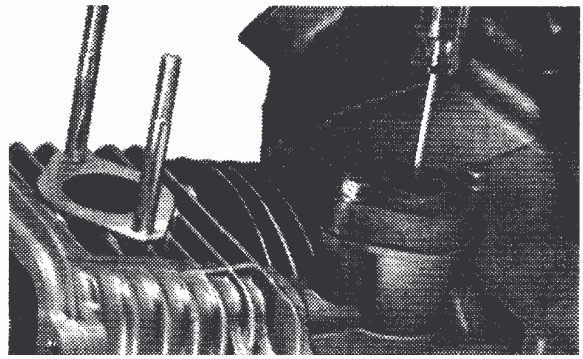
Install the dowel pins and camshaft holder.
Tighten the washers and nuts.
Torque: 20 N.m (14.8 lbs.ft)



Adjust the clearance between the rocker arm and valve stem
by applying a feeler gauge.
STANDARD VALVE: 0.08 mm



Relax the cam chain-adjusting bolt with counterclockwise direction and install the o-ring and s



Install the cylinder head cover.

6. CYLINDER AND PISTON

6.1 SERVICE INFORMATION

GENERAL

Camshaft lubrication oil is fed to the cylinder head through an oil orifice in the cylinder head and engine case. Before installing the cylinder head be sure the orifice is not clogged and the gasket, O-ring and dowel pins are in place.

SPECIFICATION

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		52,400-52,410/ 61,730-61,740	52.50/ 61.830
	Taper		----------	0.10
	Out of round		----------	0.10
	Warp across top		----------	0.10
Piston	Piston O.D.		52,370-52,390 61,700-61,720	52,3/ 61,63
Piston pin	Piston pin bore		15.002-15.008	15.04
Piston rings	Piston pin O.D.		14.994-15.000	14.960
	Piston-to-pin clearance		0.002-0.014	0.02
	Piston ring	TOP	0.015-0.050	0.12
		SECOND	0.015-0.050	0.12
	Groove Clearance	TOP/SEC	0.10-0.25	0.5
	Piston ring end gap	OIL	0.2-0.7	----------
Cylinder-to-piston clearance			0.0005-0.1025	0.1
Connecting rod small end I.D.			15.010-15.028	15.06

TORQUE VALUES

Cylinder head bolts 8~12 N.m (5.9~8.9 lbs.ft)
Camshaft holder flange nuts 20~24 N.m (14.8~17.7 lbs.ft)
Tappet adjusting nut 9~12 N.m (6.6~8.9 lbs.ft)

6.2 TROUBLESHOOTING

Low or unstable compression

Worn cylinder or piston rings.

Overheating

Excessive carbon build-up on piston or combustion chamber wall.

Knocking or abnormal noise

Worn piston and cylinder.

Excessive carbon build-up.

Excessive smoke

Worn cylinder, piston, or piston rings.

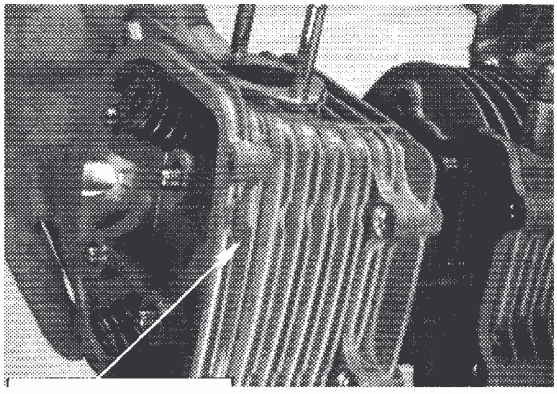
Improper installation of piston rings

Scored or scratched piston or cylinder wall.

Damaged valve stem seal.

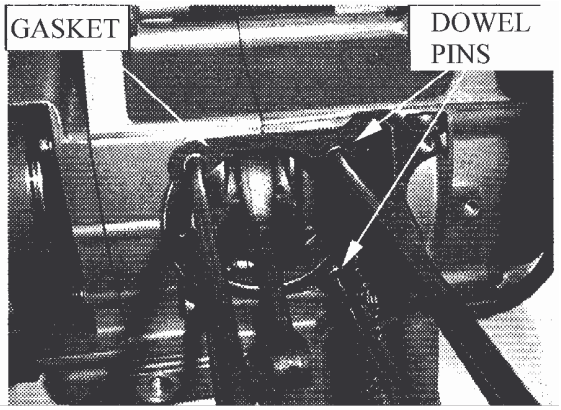
6.3 CYLINDER REMOVAL

Remove the cylinder head.

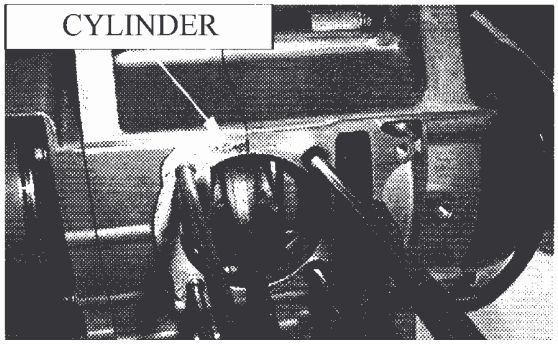


Remove the cylinder.

Remove the cylinder gasket and dowel pins.

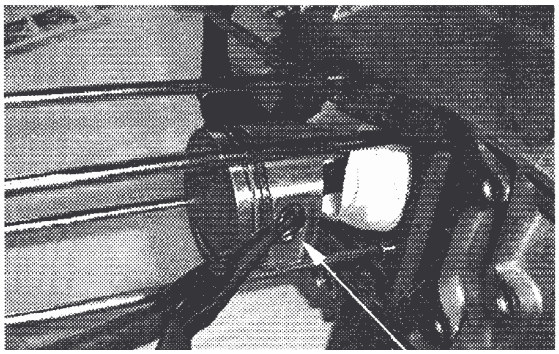


Clean off any gasket materials from the cylinder surface.



NOTE: Be carefully not to damage the gasket su

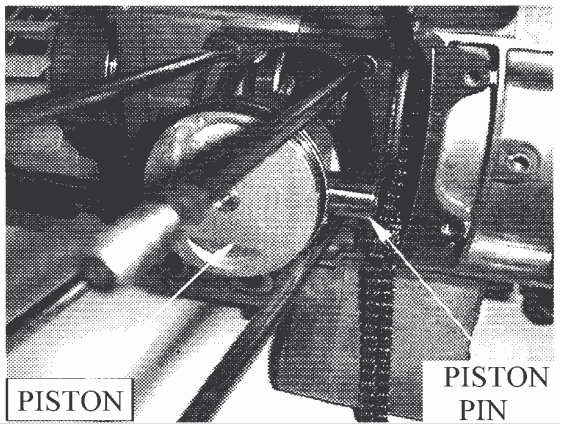
6.4 PISTON REMOVAL



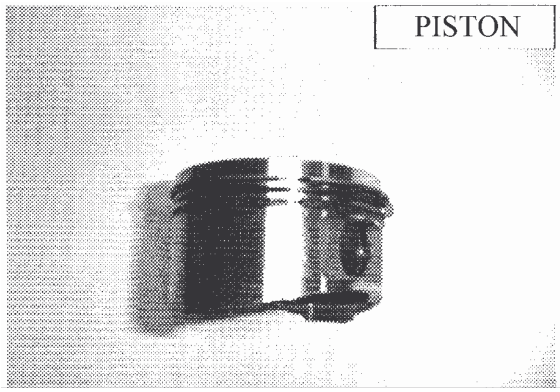
Stuff a shop towel into the crankcase.
Remove the piston pin clip with needle nose plie

NOTE: Do not allow the clip fall into the crankc

Remove the piston pin from the piston.
Remove the piston.

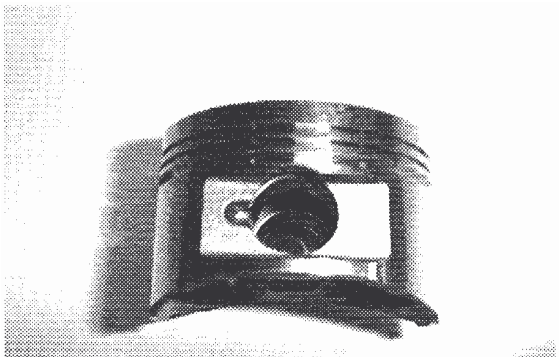


Spread each piston ring and remove it by lifting up at a point opposite the gap.



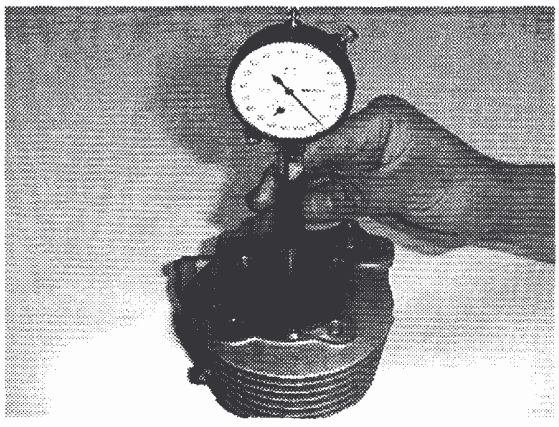
INSPECTION

Inspect the cylinder walls for scratches or wear.



Measure and record the cylinder I.D. at three lev
an X and Y axis. Take the maximum reading to t
wear.

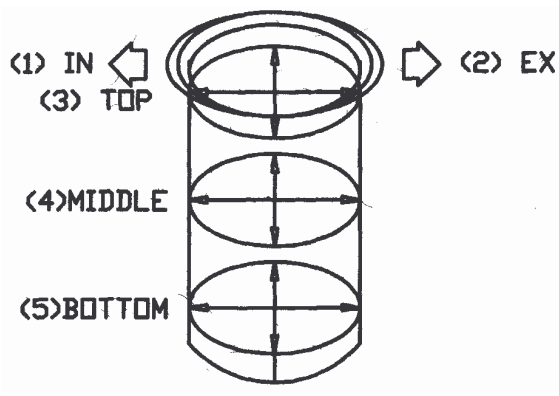
SERVICE LIMITS: 0.10 mm



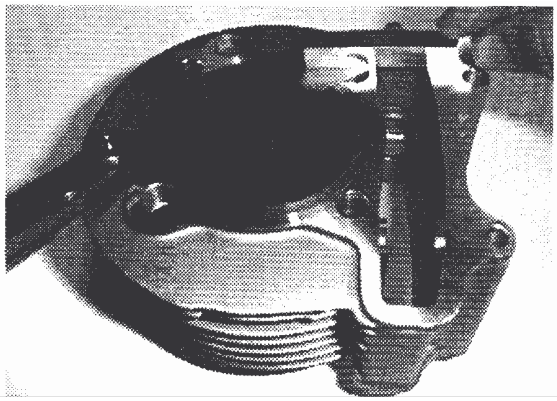
Calculate cylinder taper at three levels in an X and Y-axis.

Take the maximum reading to determine the out-

SERVICE LIMITS: 0.10 mm

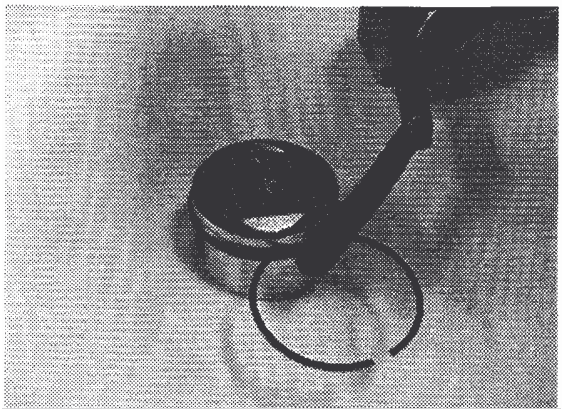


Inspect the top of the cylinder for warp.
SERVICE LIMITS: 0.10 mm

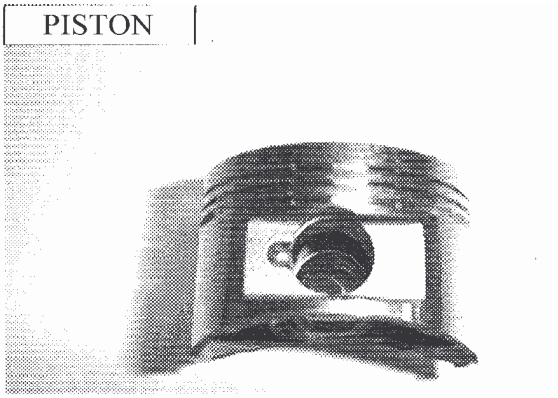


PISTON / PISTON RING INSPECTION

Measure the piston ring-to-groove clearance.
SERVICE LIMITS: TOP 0.12 mm
SECOND 0.12 mm

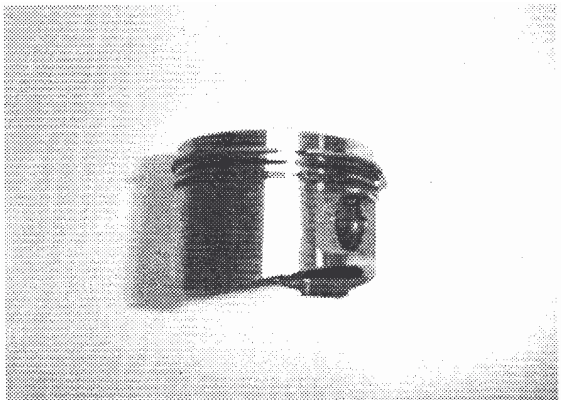


Inspect the piston for wear or damage.



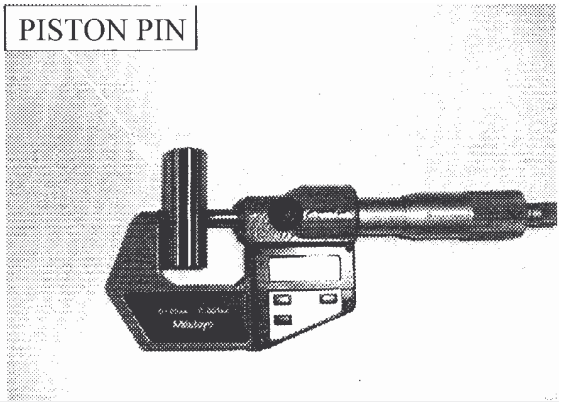
Insert each piston ring into the cylinder and meas
end gap.

NOTE: Push the rings into the cylinder with the
piston to be sure they are squarely set in the cyli
SERVICE LIMITS: TOP 0.5 mm

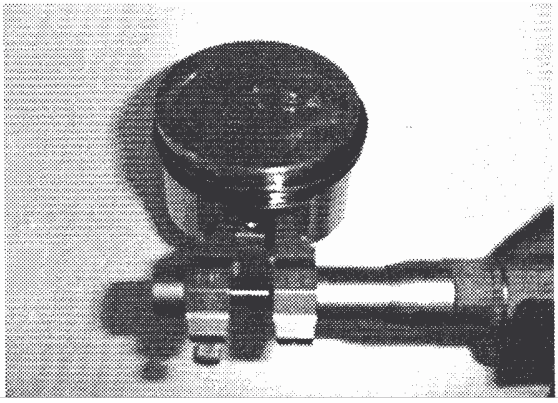


SECOND 0.5 mm

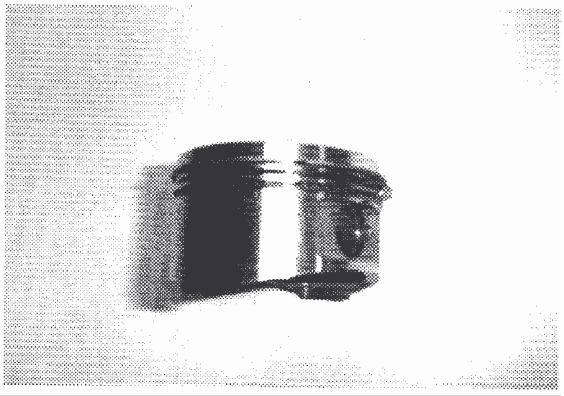
Measure the piston pin O.D.
SERVICE LIMIT: 14.960 mm



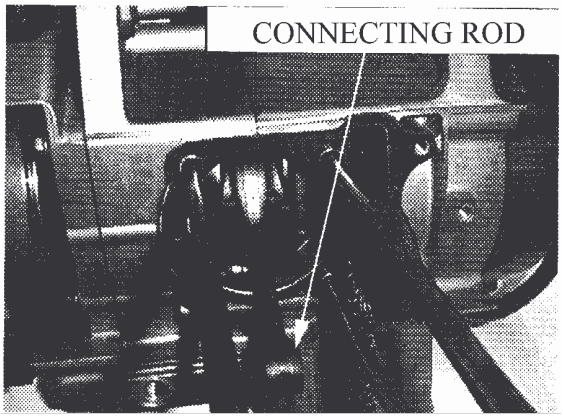
Measure the piston pin O.D.
SERVICE LIMIT: 15.04 mm



Calculate the piston-to-piston pin clearance.
SERVICE LIMITS: 0.02 mm

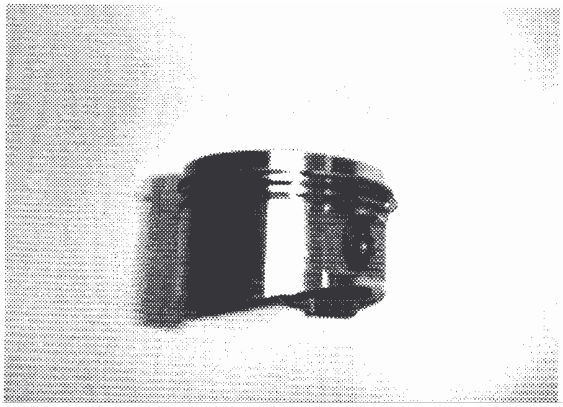


Measure the connecting rod small end I.D.
SERVICE LIMITS: 15.06 mm



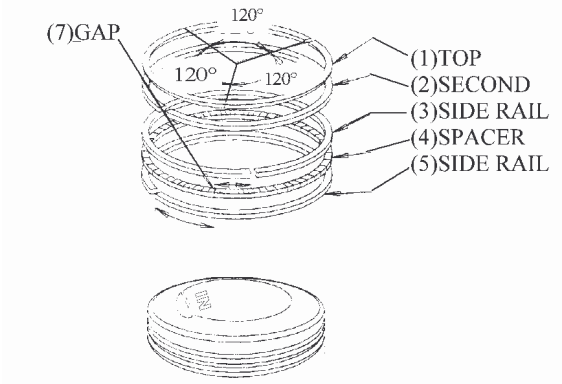
6.5 PISTON &
PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly and ins
piston ring with the marks facing up.



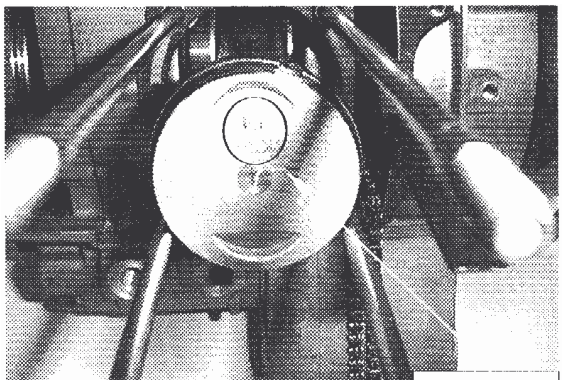
NOTE: Don't interchange the top and second
rings. Avoid piston and piston ring damage
installation.

Space the piston ring end gaps 120 degrees apart



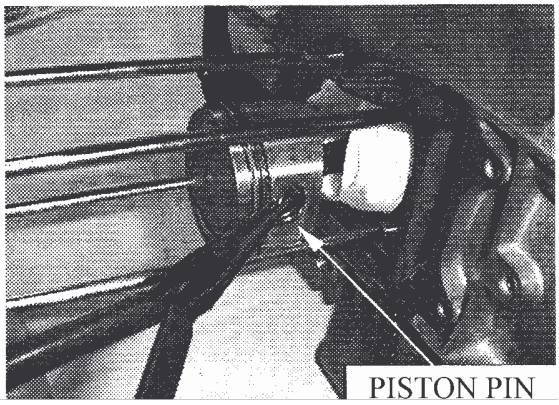
PISTON INSTALLATION

Install the piston with it's "IN" mark on the intak



Install the piston pin with new pin clips.
Do not align the piston pin clip end gap with the
cutout.

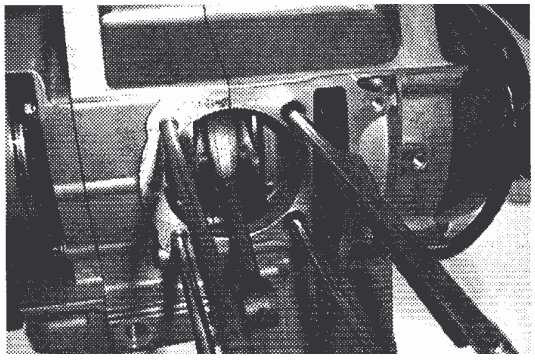
NOTE: do not allow the clip to fall into the crank



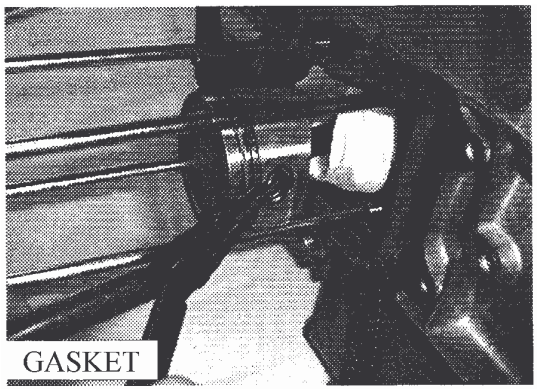
6.6 CYLINDER INSTALLATION

Clean any gasket material from the crankcase su

NOTE: Be carefully not to damage the gasket su

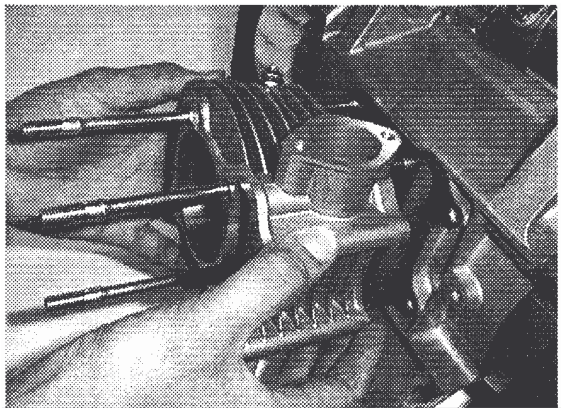


Install the dowel pins a new gasket.

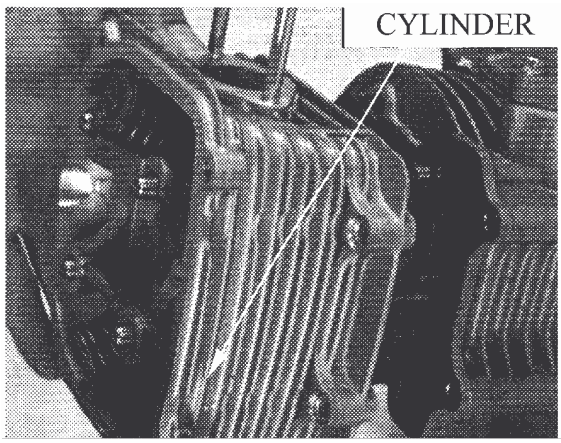


Coat the cylinder bore and piston rings with engi
install the cylinder.

NOTE: Avoid piston rings damage cylinder bore
installation. Do not allow the cam chain fall into
crankcase.



Install the cylinder head.



7. TRANSMISSION & KICK STARTER

7.1 SERVUCE INFORMATION

7.2 TROUBLE SHOOTING

7.3 C.V.T DISASSEMBLY

7.4 KICK STARTER DISASSEMBLY

7.5 KICK STARTER ASSEMBLY

7.6 C.V.T ASSEMBLY

7.1 SERVICE INFORMATION

If the drain tube ass'y fills with water, the tube should be drained.

SPECIFICATIONS

ITEM	STANDARD (mm)	SERVICE LIMIT (mm)
Driven the width	19.8-20.2	19.0
Weight roller O.D.	15.0-15.02/17.0-17.02	14.6/16.6
Movable drive face I.D.	27.98-28.0	28.03
Drive face collar I.D.	24.06-24.09	24.098
Drive face boss O.D.	23.96-23.98	23.92
Clutch outer I.D.	124.8-125.2	125.5

Clutch weight lining thickness	----------	1.5
Driven face spring length	168.4-169.4	164.0

TORQUE VALUES

Clutch outer nut 55 N.m (40.6 lbs.ft)

Drive face nut 55 N.m (40.6 lbs.ft)

7.2 TROUBLE SHOOTING

Engine starts but can't travel

Worn driven belt.

Worn clutch lining.

Damaged driven face spring.

Low engine power

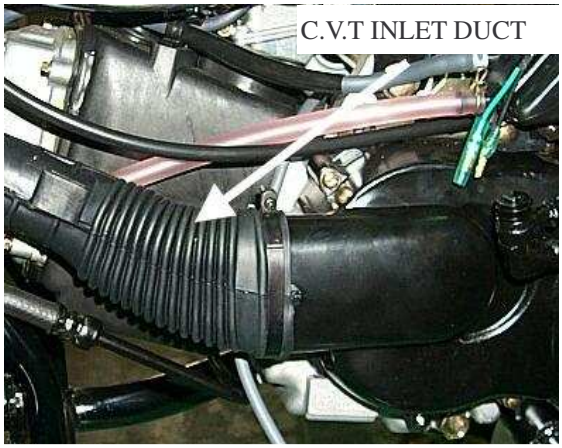
Worn driven belt.

Worn weight roller.

Dirty driven face.

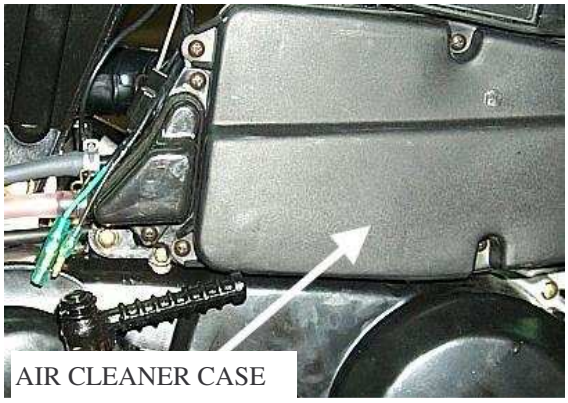
7.3 C.V.T DISASSEMBLY LH CRANKCASE REMOVAL

Relax the band screw and remove the C.V.T inlet



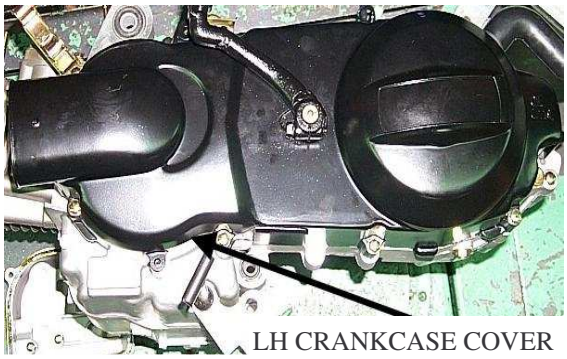
C.V.T INLET DUCT

Remove the air cleaner case.



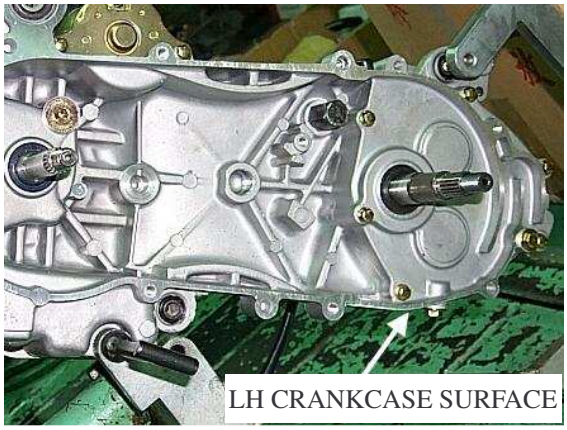
AIR CLEANER CASE

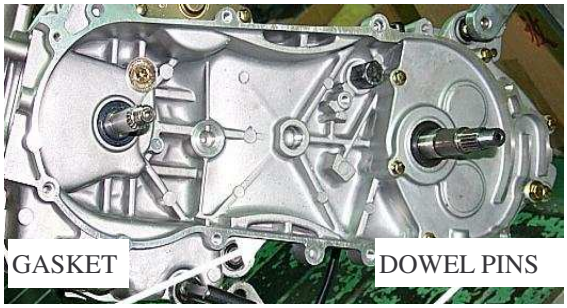
Remove the bolts and LH crankcase cover.



Remove the gasket and dowel pins.

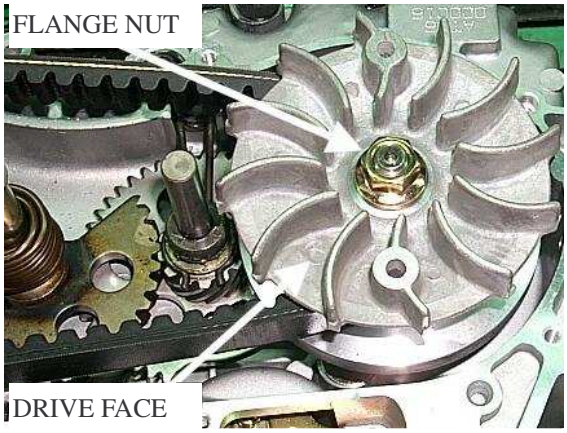
Clean off any gasket material from L crankcase s





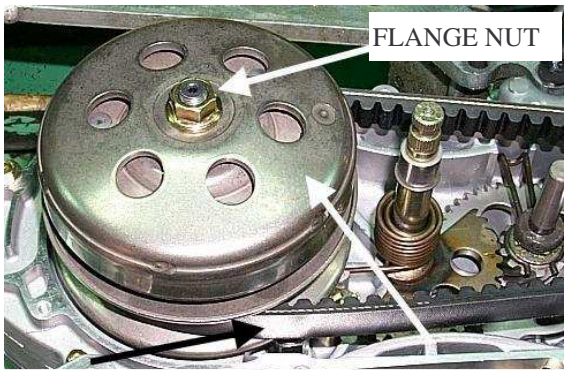
C.V.T REMOVAL

Relax the flange nut, and remove the drive face.



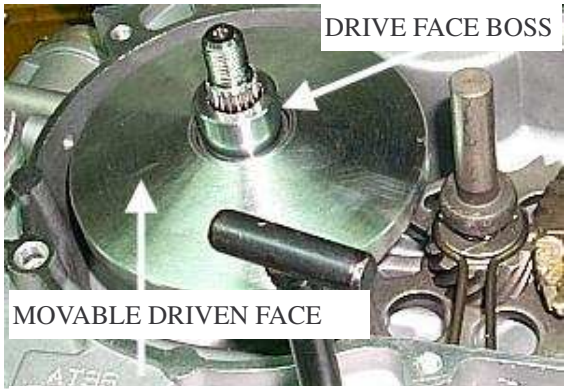
Relax the flange nut.

Remove the drive pulley ass'y and driven belt.

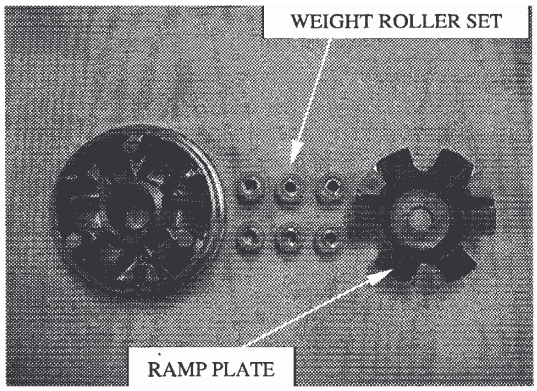


FLANGE BELT DRIVE PULLEY

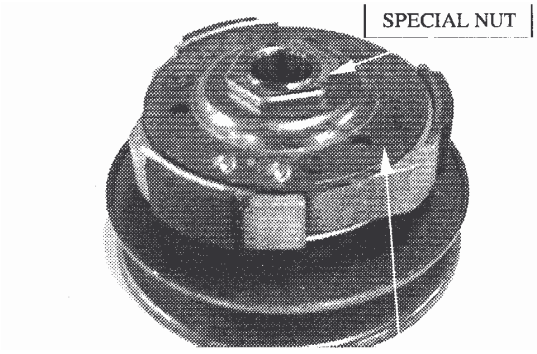
Remove the drive face boss and movable driven face ass'y.



Remove the ramp plate and weight roller set.

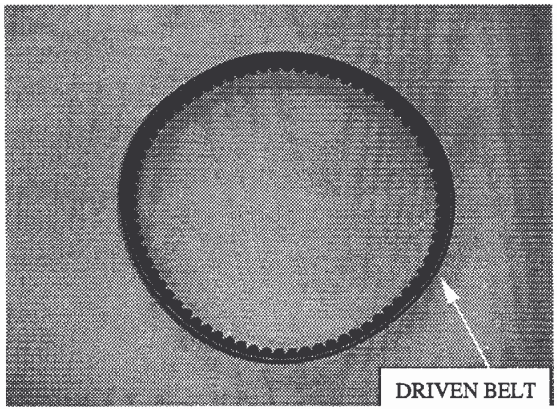


Relax the special nut and remove the driven plate composition and driven face spring.

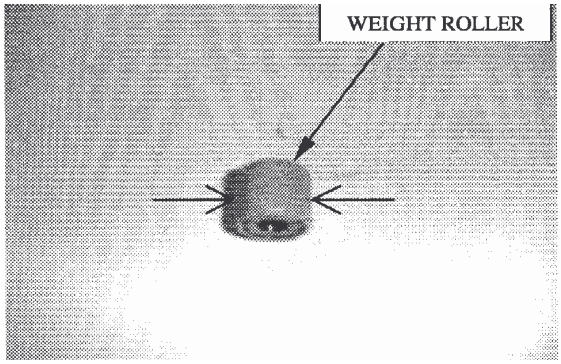


INSPECTION

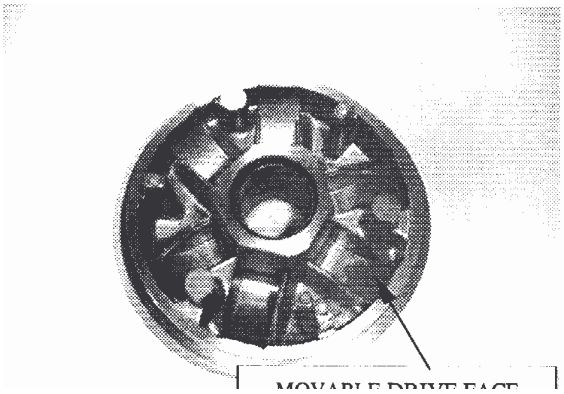
Inspect the driven belt for wear, tears or damage.
Measure the width of driven belt.
SERVICE LIMIT:19.0 mm



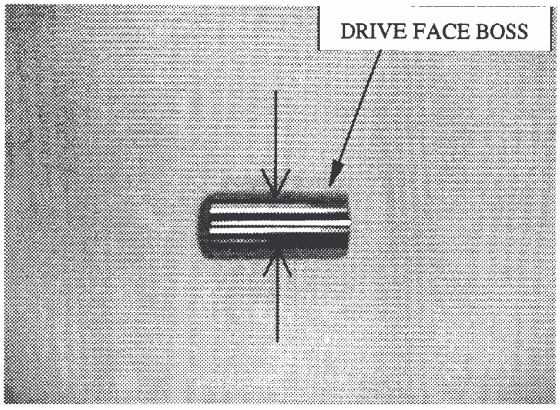
Inspect the weight roller for wear or damage and replace them if necessary.
Measure the O.D. of weight rollers.
SERVICE LIMIT:14.6/16.6 mm



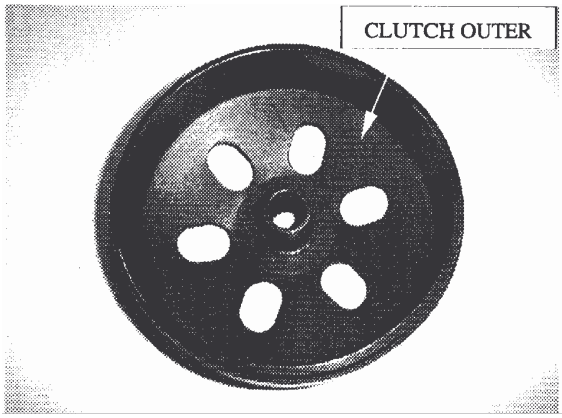
Measure the I.D. of movable driven face.
SERVICE LIMIT:28.03mm
Inspect the drive face collar for wear or damage.
Measure the I.D. of drive face collar.
SERVICE LIMIT:24.098 mm



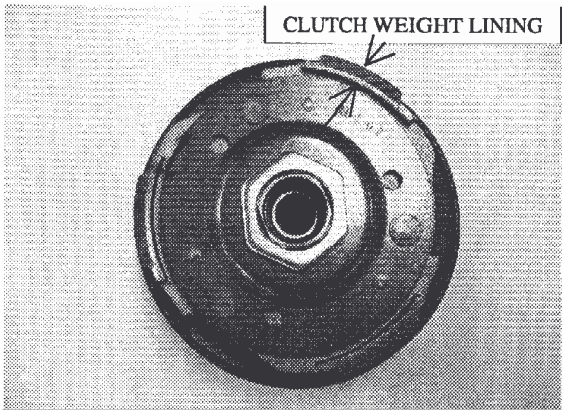
Inspect the drive face boss for wear or damage.
Measure the O.D. of drive face boss.
SERVICE LIMIT:23.92 mm



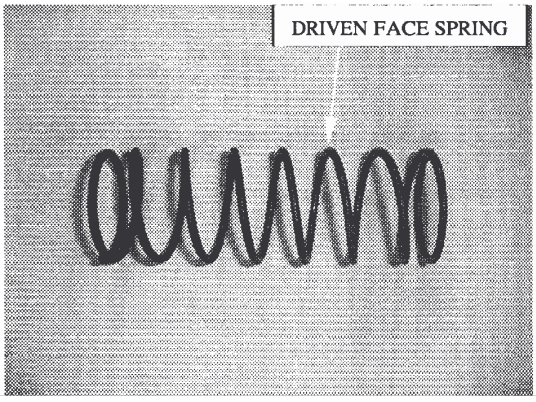
Inspect the clutch outer for wear or damage.
Measure the I.D. of clutch outer.
SERVICE LIMIT:125.5 mm



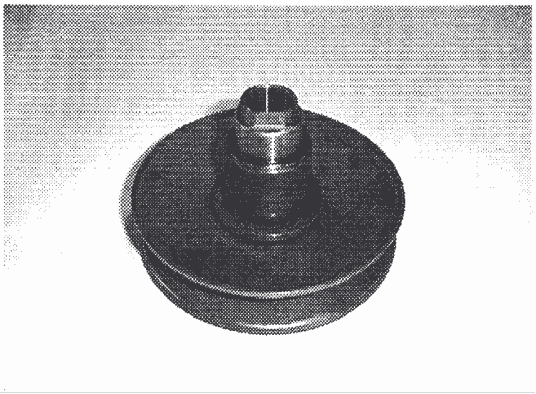
Inspect the clutch weight set for wear or damage.
Measure the thickness of clutch weight lining.
SERVICE LIMIT:1.5mm



Measure the length of driven face spring.
SERVICE LIMIT:164.0 mm

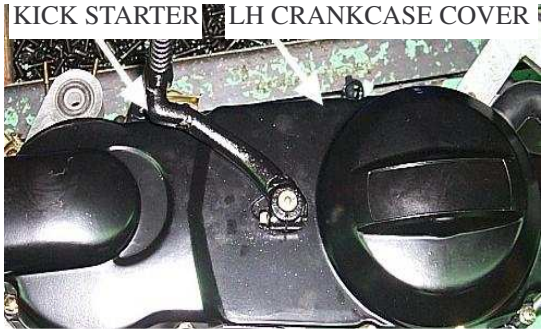


Inspect the driven face ass'y and replace them if necessary.

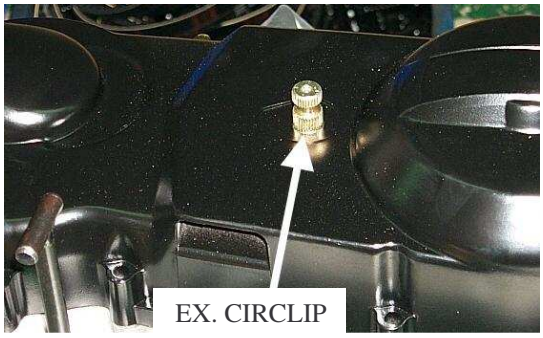


7.4 KICK STARTER DISASSEMBLY

Remove the LH crankcase cover.
Remove the kick starter.



Remove the ex. Circle-clip and washer from kick starter spindle composition.

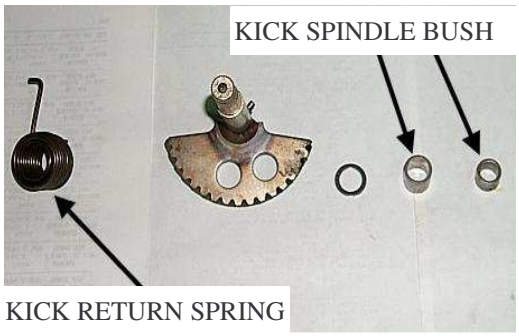


Remove the kick-starter spindle ass'y.
Remove the kick-starter idle gear ass'y
Remove the kick spindle bush.

INSPECTION

Inspect the kick-starter spindle composition for wear or damage.

Inspect the kick-starter return spring for fatigue or damage.
Inspect the kick-starter spindle bush for wear of damage.

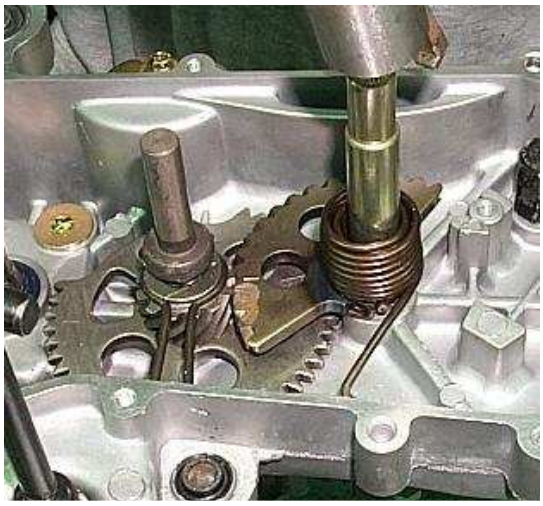


Inspect the kick driven gear and spring for wear or damage.

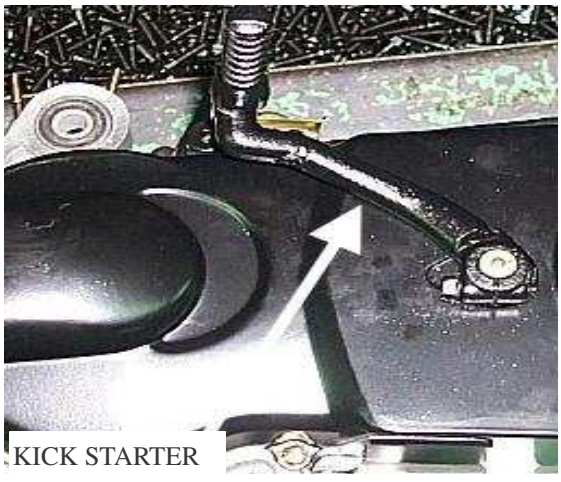
KICK DRIVEN SPRING

7.5 KICK-STARTER ASSEMBLY

Install the kick driven gear and spring.
Install the kick spindle bush, return spring and spindle ass'y.



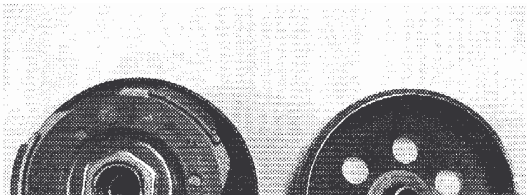
Install the kick-starter.



KICK STARTER

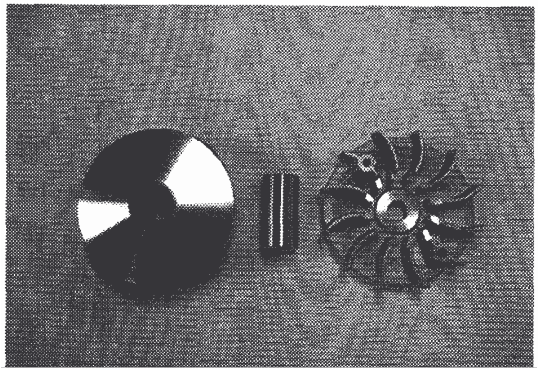
7.6 C.V.T ASSEMBLY

Assemble the driven face ass'y, spring and

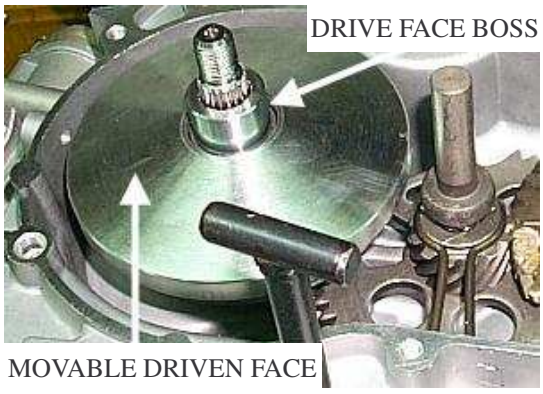


driven plate.

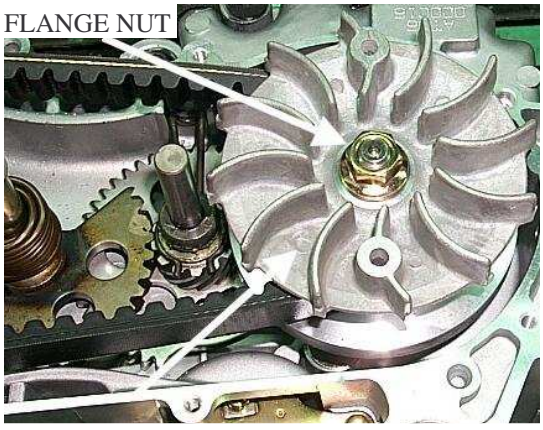
Assemble the movable drive face, weight roller set and drive face.



Install the movable drive face ass'y and boss.

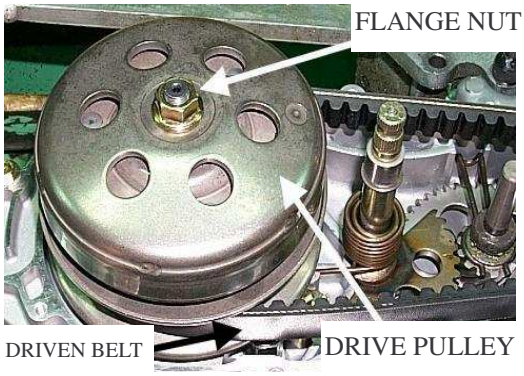


Install the drive face and kick starter ratchet.

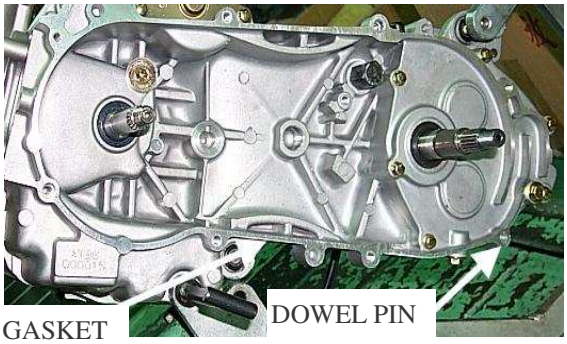


DRIVE FACE

Install the driven belt and driven pulley ass'y.



Install the dowel pins and gasket.

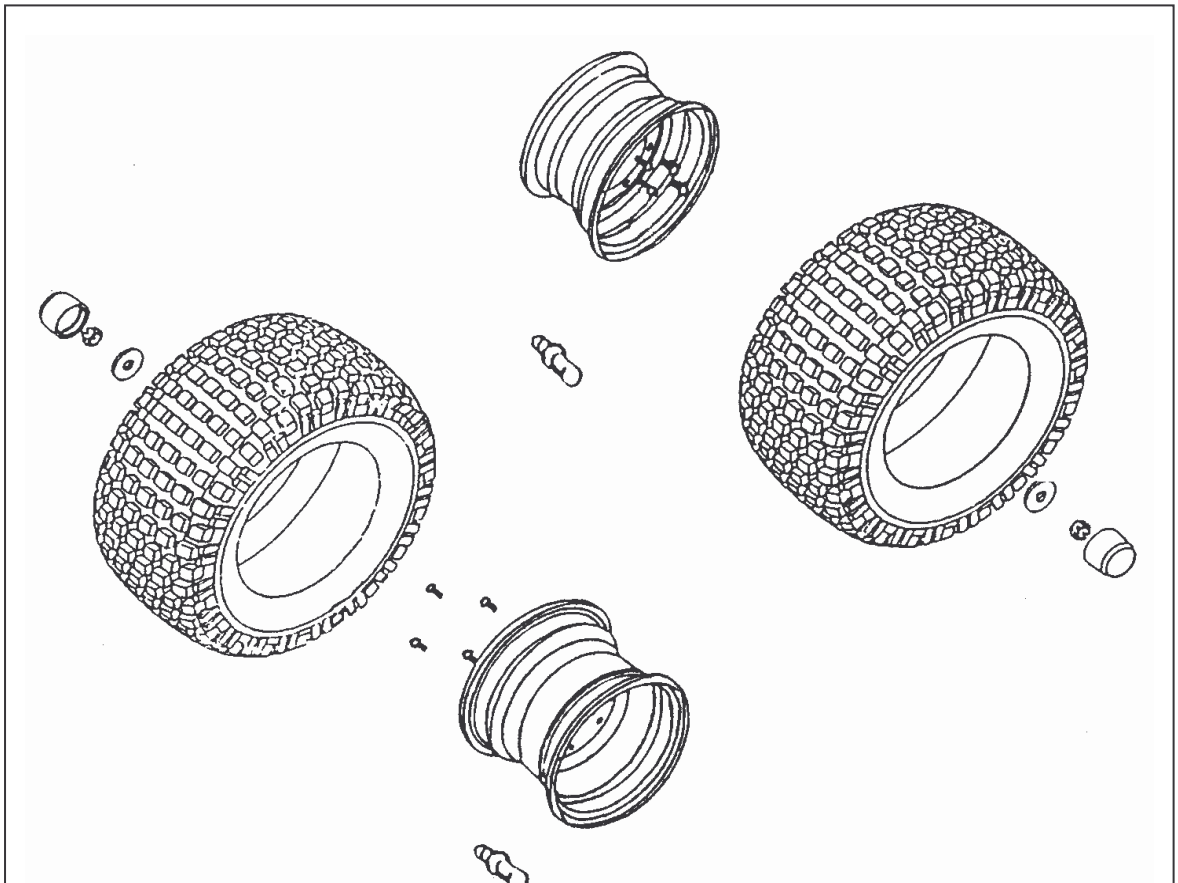


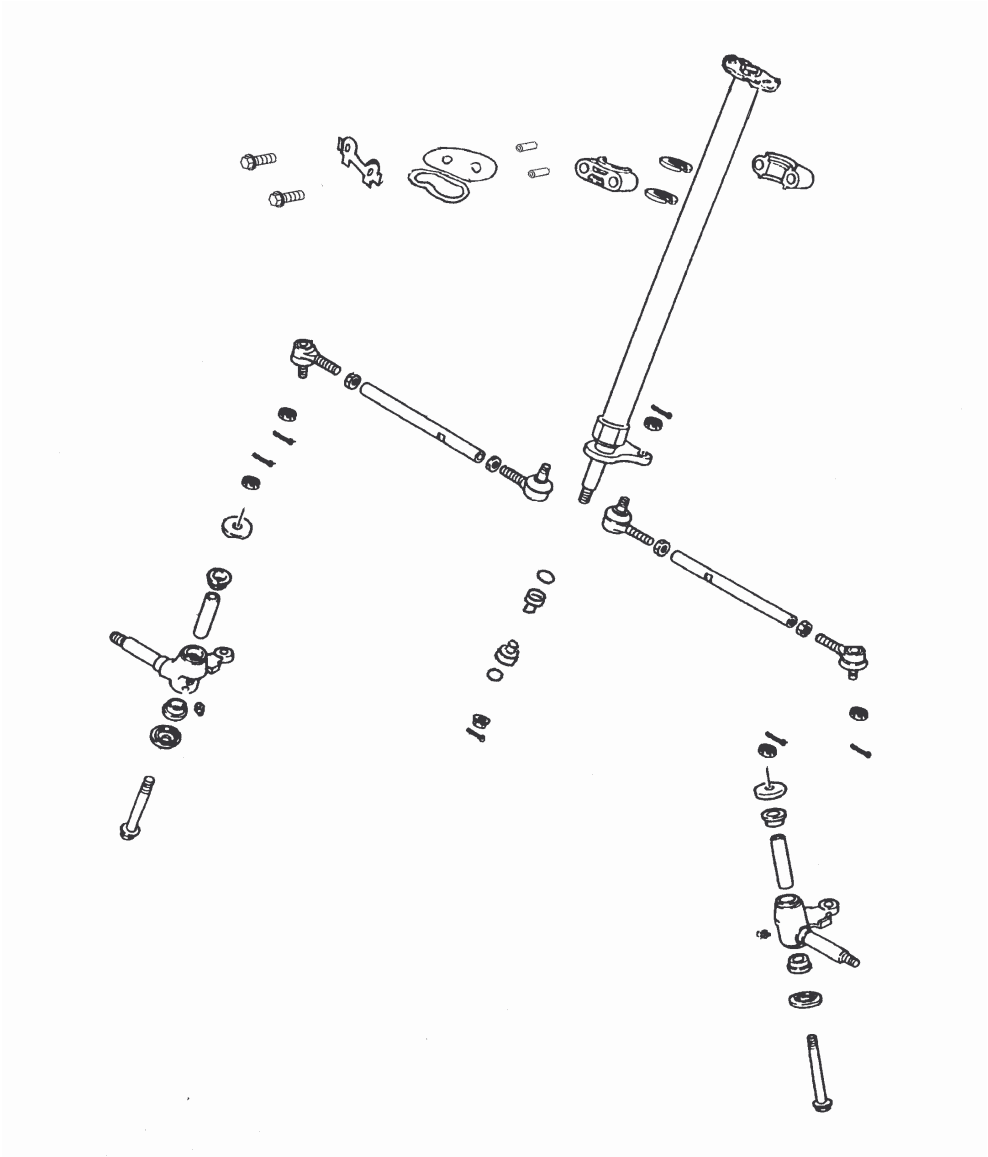
Install the LH crankcase cover.

Install the air cleaner case and C.V.T ducts.

8. FRONT WHEEL, SUPENSION AND STEERING

8.1 PARTS DRAWING





8.2 TROUBLESHOOTING

HARD STEERING	Faulty tire Steering shaft holder too tight Insufficient tire pressure Faulty steering shaft bushing Damaged steering shaft bushing
FRONT WHEEL WOBBLING	Faulty tire Worn front brake drum bearing Bent rim Axle nut not tightened properly
BRAKE DRAG	Incorrect brake adjustment Sticking brake cable
STEERS TO ONE SIDE	Bent tie rods Wheel installed incorrectly Unequal tire pressure Bent frame Worn swing arm pivot bushing Incorrect wheel alignment
POOR BRAKE PERFORMANCE	Brake shoes worn Worn brake drum Brake lining oily, greasy or dirty Improper brake adjustment
FRONT SUSPENSION	Loose front suspension fastener Binding suspension link
HARD SUSPENSION	Faulty front swing arm bushing

	Improperly installed front swing arms Bent front shock absorber swing rod
SOFT SUSPENSION	Wear front shock absorber springs Worn or damage front swing arm bushing

8.3 HANDLEBAR SYSTEM

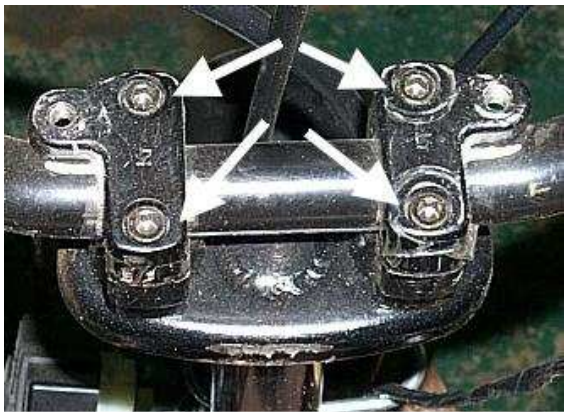
Removal

Remove the handlebar cover by unscrew two fix screws.

Remove the throttle lever housing on the right handlebar. Remove brake lever bracket assembly.

Remove the handlebar switch on the left handle bar. Remove rear brake lever bracket ass'y.

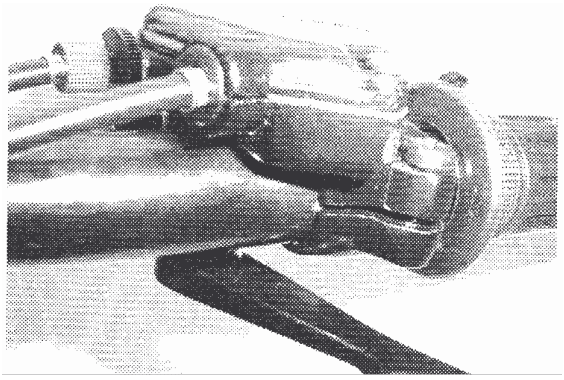
Remove the bolts attaching the handlebar upper holder. Remove the handlebar.



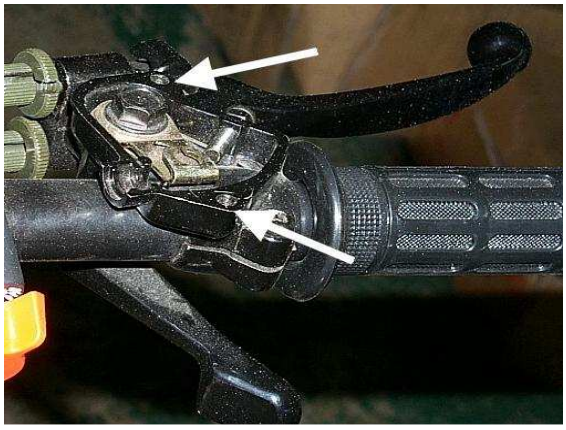
Installation

Install the switch housing. Tighten two screws securely.

Install the throttle lever housing, and brake lever bracket ass'y.



8.4 THROTTLE HOUSING



Disassembly

Unscrew the screws on the throttle housing cover.

Remove throttle housing cover and gasket.

Disconnect throttle cable from the throttle arm and remove from the throttle housing.

Assembly is in the reverse order of disassembly.

8.5 FRONT WHEEL

Remove

Raise the front wheels off the ground by placing a jack or other support under the frame.

Remove the front wheel nuts, washer and wheels.

Installation

Install and tighten the four-wheel nuts torque: 60 N.m (44 lbs.ft) Remember put a cotter pin in the castle nut.

8.6 FRONT BRAKES

Front brake inspection

Remove the front wheel

Remove the brake drum.

Measure the brake lining thickness. The minimum limit: 1.5 mm

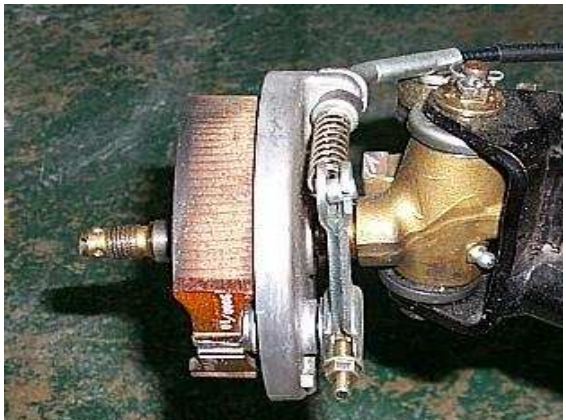
If they are thinner than the minimum limit, replace the brake lining.

Measure the brake drum inner diameter. The maximum limit: 111 mm.

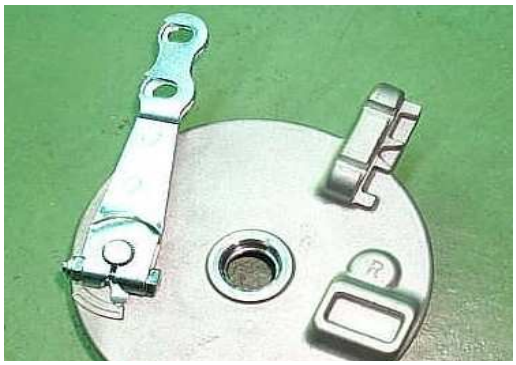
Turn the inner race of each bearing with fingers. The bearings should turn smoothly and quietly. If the race does not turn smoothly or quietly, remove and discard the bearings.

Brake panel removal

Disconnect the brake cable from the brake arm. Remove the brake panel from the knuckle.

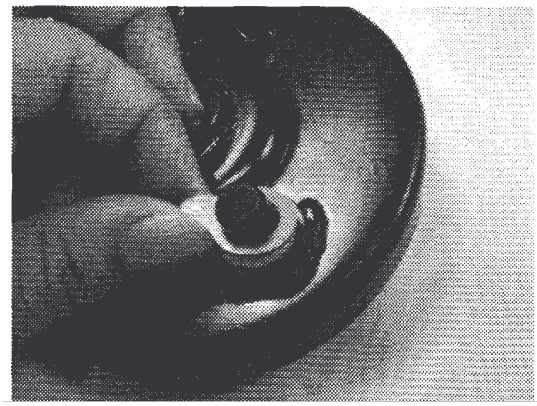


Remove brake arm and cam.
Remove return spring.
Remove indicator plate and felt seal.

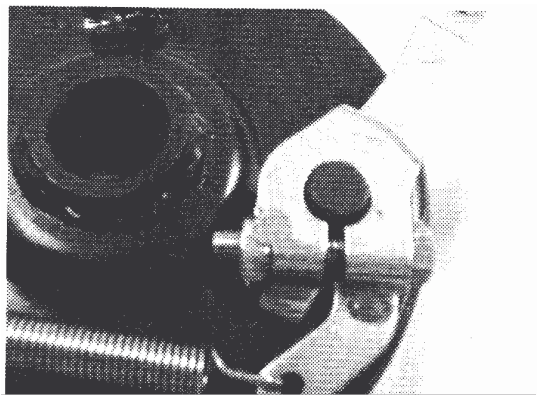


Install Brake panel

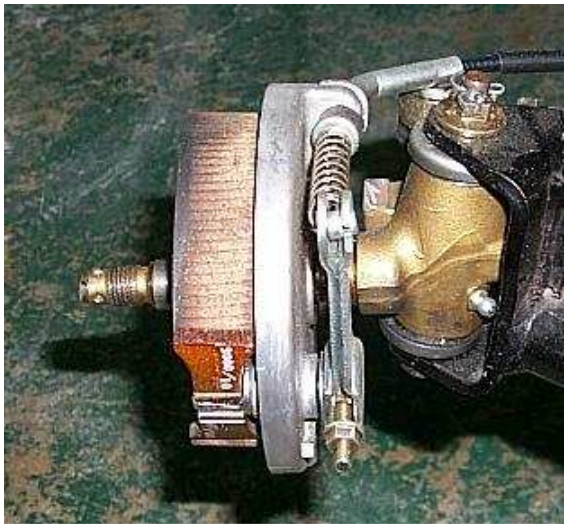
Apply grease to the brake cam and anchor pin and install the cam in the brake panel.
Soak the felt seal in the engine oil and install the seal on the brake cam.



Install the brake arm on the cam by aligning the punch mark and the groove on the cam.
Tighten the brake arm bolt and nut.
Torque : 4-7 N.m
Install the return spring.



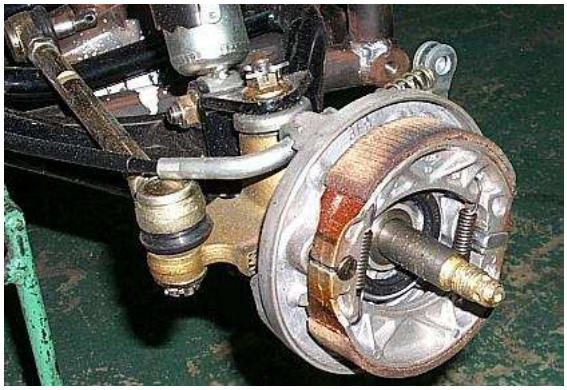
Install the brake panel on the knuckle.
Connect the brake cable to the brake arm.



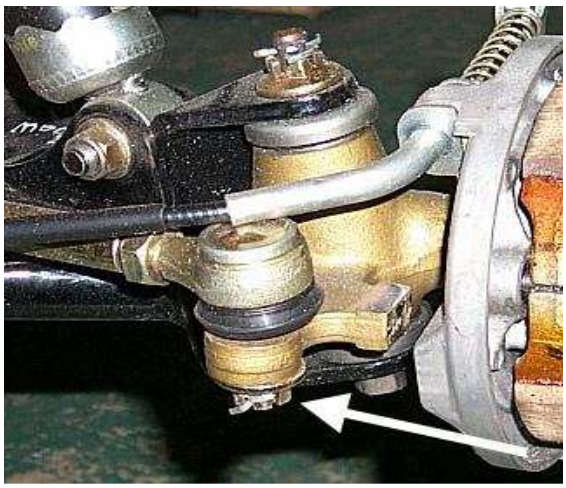
Install the brake arm cover
Tighten the screws securely
Position the brake shoes in their original locations and install the brake shoe spring.
Install the brake drum and front wheel.
Install the castle nut and cotter pin.

8.7 STEERING SYSTEM

Remove the kingpin and Tie-rod
Remove the front wheels and brakes plates.
Remove the four self-lock nuts from the tie-rod ball joints and take off the two tie-rods.

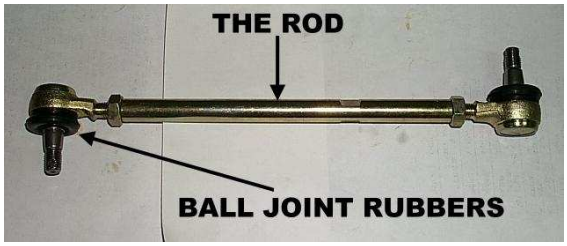


Remove the cotter pin on the kingpin.
Unscrew the bolt and remove the kingpin.



Tie-rod inspection

Inspect the tie rod for damage or bending.
Inspect the ball joint rubbers for damage, wear or deterioration. Turn the ball joints with fingers.



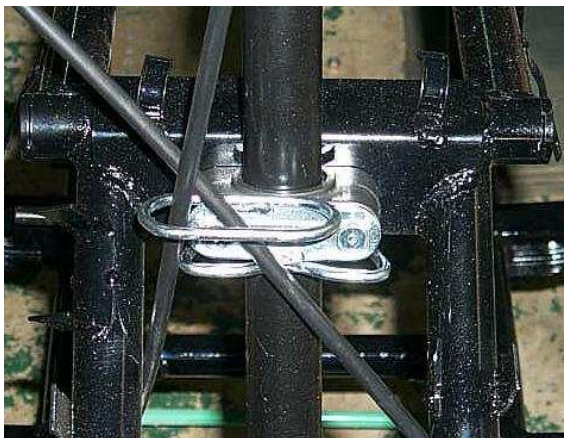
The ball joints should turn smoothly and quietly.

Kingpin inspection

Inspect the kingpin for damage or cracks.

Steering shaft removal

Remove the handle bar cover and handle bar. (see page 58)
Remove the front fender. (see page 72)
Remove handlebar lower holder.
Unscrew steering shaft holder bolt, remove steering shaft holder.
Take off the cotter pin below steering shaft.
Unscrew the steering shaft fix out below shaft.
Pull steering shaft carefully.



Steering shaft holder inspection

Remove the steering shaft.
Remove the bushing from the shaft.
Inspect the bushing for damage or wear, replace if necessary.

Measure the bushing inner diameter.
Maximum limit: Ø39.5 mm

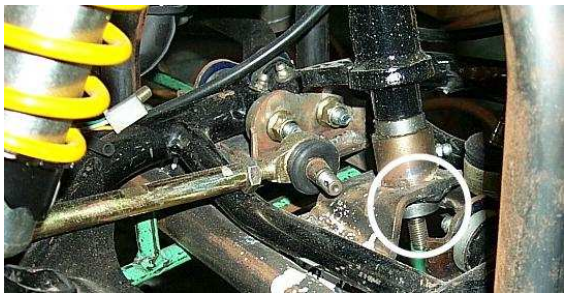
Steering shaft inspection

Inspect the steering shaft for damage or cracks.

Installation of steering shaft

Apply grease to the holder. Install the holder and oil seal tighten with the nuts.
Torque : 33 N.m(24 lbs-ft)

8.7 STEERING SYSTEM



Installation of steering shaft

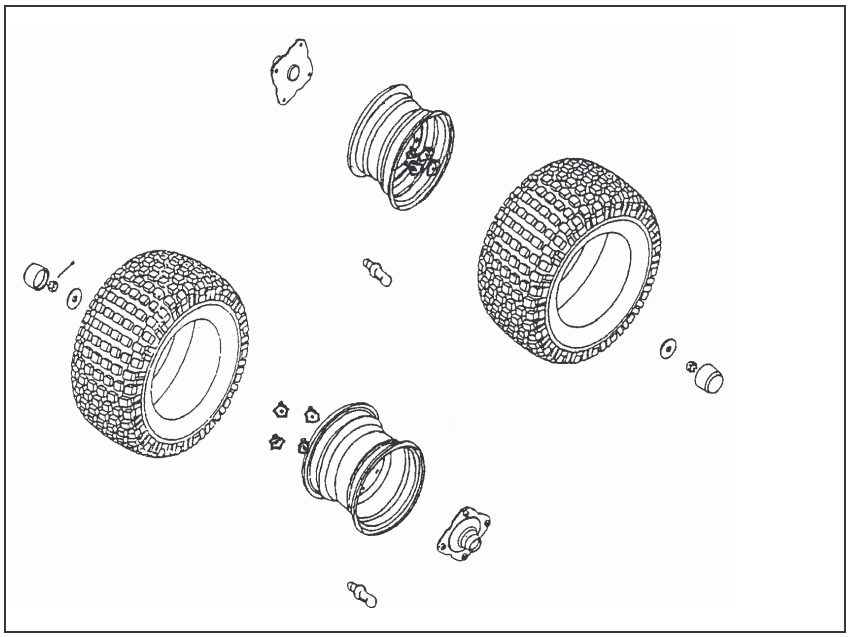
Install the steering shaft nut and tighten it.
This nut is under this steering shaft.
Torque : 50 N.m (37 lbs.ft)

Installation of Tie-rod

Install the tie-rod on the wheel side.
Installation is in the reverse order of removal.

9. REAR WHEEL SYSTEM

9.1 Parts Drawings



9.2 Troubleshooting

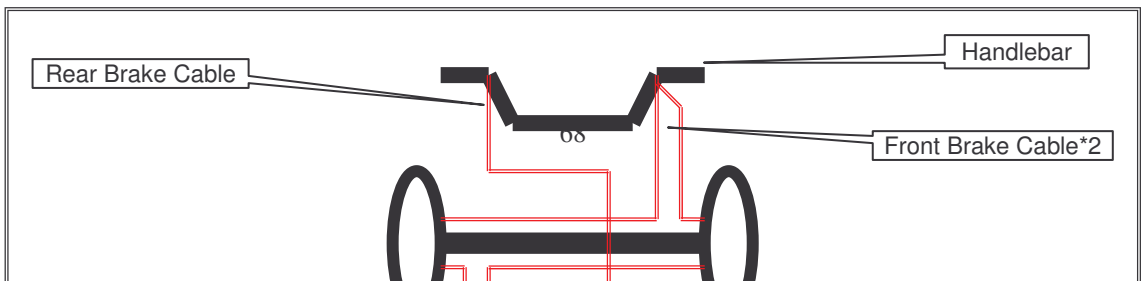
Bad Brake Performance	Brake shoes are worn Bad brake adjustment Brake lining are oily, greasy or dirty Brake drums are worn Brake arm setting is improperly engage
Vibration or wobble	Axle is not tightened well Bent rim Axle bearings are worn Faulty tires Rear axle bearing holder is faulty
Brake Drag	Incorrect brake adjustment Sticking brake cam Sticking brake cable
Hard Suspension	Bent damper rod Faulty swing arm pivot bushing
Soft Suspension	Wear shock absorber damper Wear shock absorber spring

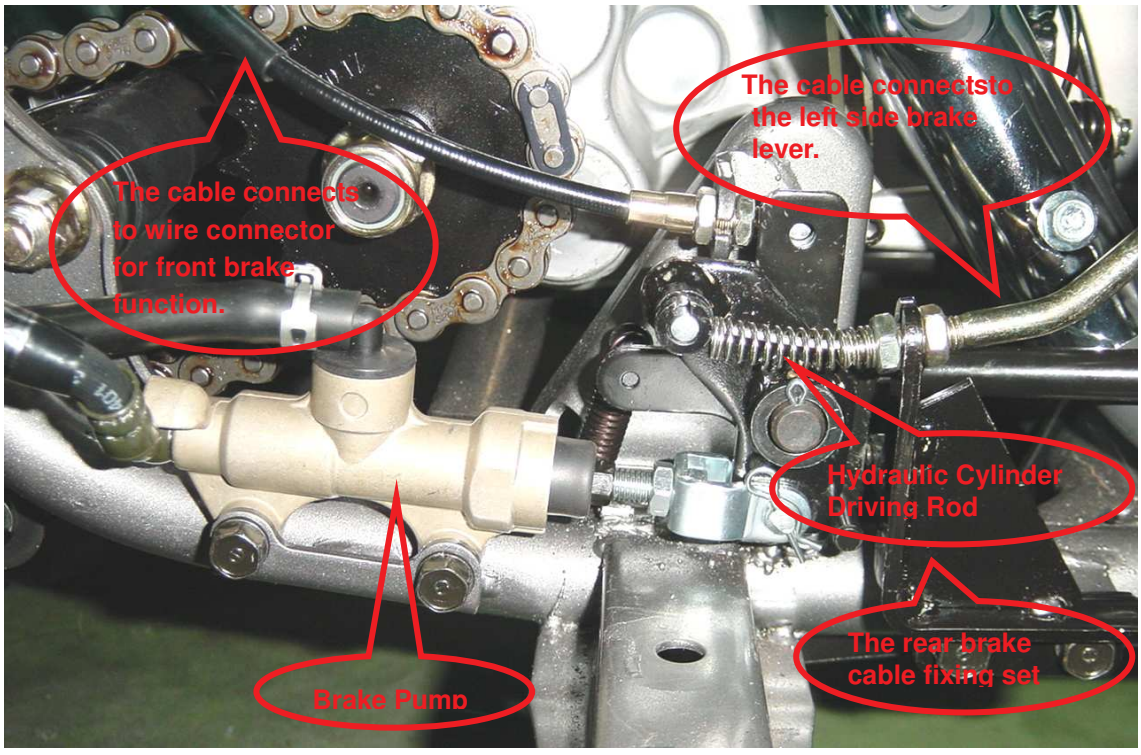
9.3 REMOVE REAR WHEEL & REAR BRAKE

Loosen the cotter pin, and wheel nuts, raise the rear wheel off the ground by placing a support under the frame.

Release the wheel and wheel hub.

Brake Parts & Location

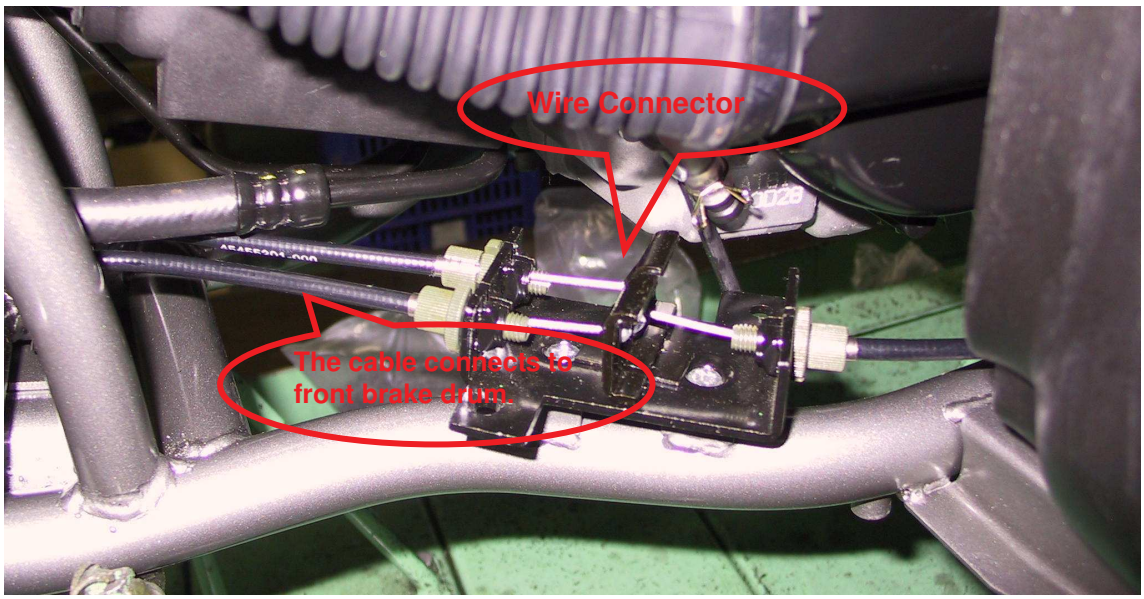


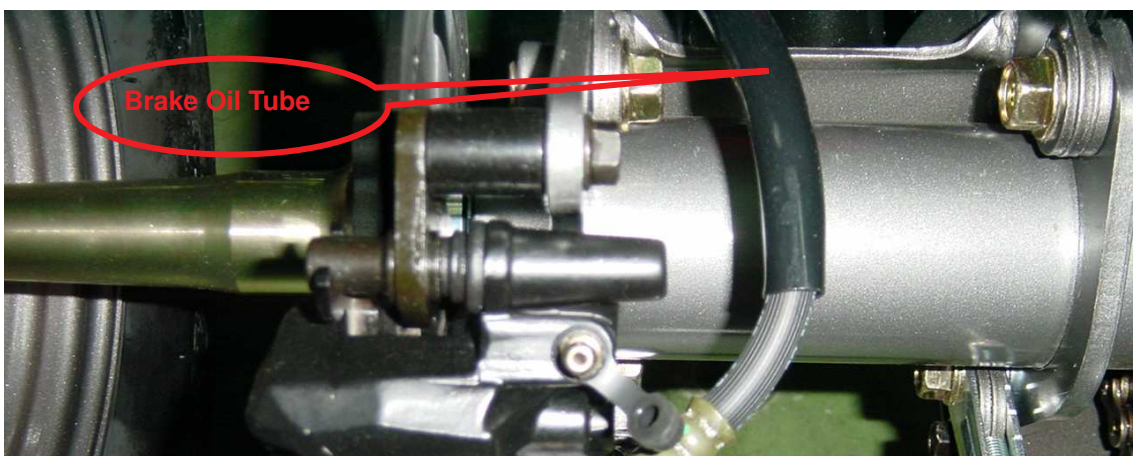

The cable connectsto the left side brake lever.
The cable connects to wire connector for front brake function.
Hydraulic Cylinder Driving Rod
The rear brake cable fixing set
Brake Pump


Brake Oil Tank

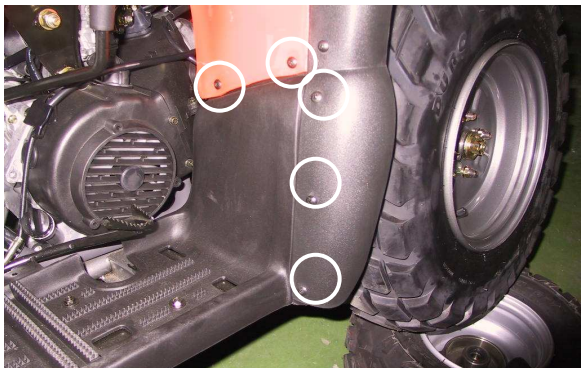

Left Side
Brake Lever

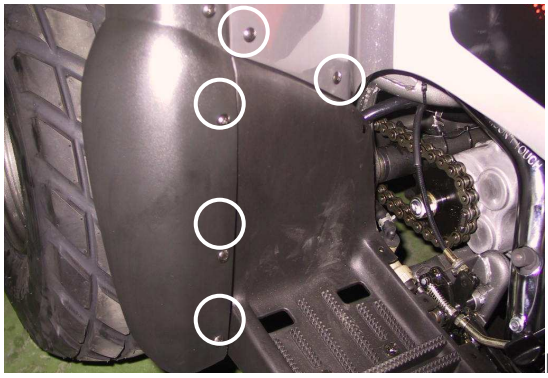

Right Side
Brake Lever
2003 • 7 21


Wire Connector
The cable connects to
front brake drum.

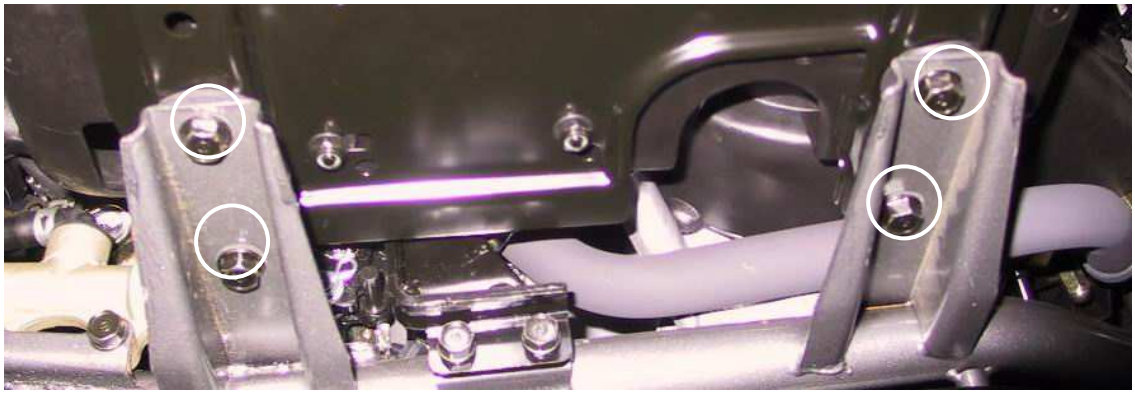

Brake Oil Tube

The Brake Adjustment



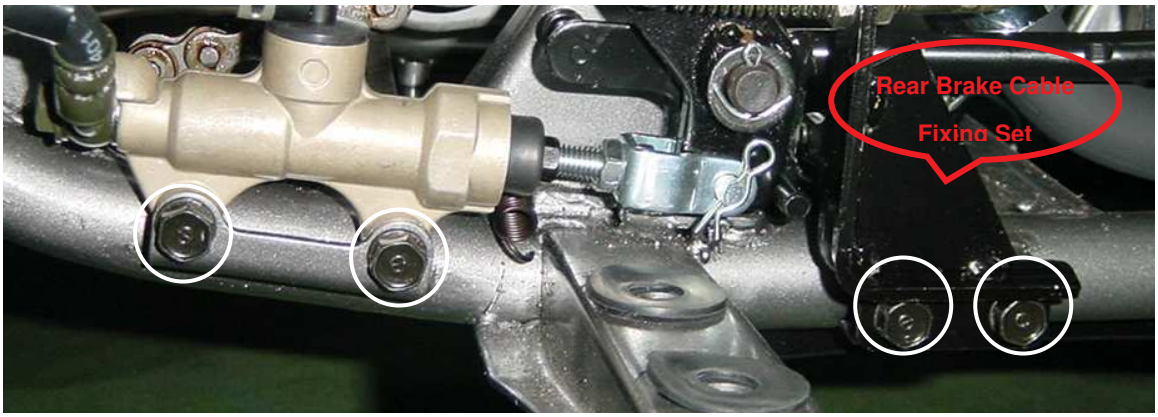


Pan Phillips Bolts (93100-05016-K), Plain Washer(94101-0514010-K), Nylon Lock Nut(90350-05000-K) × 10 sets

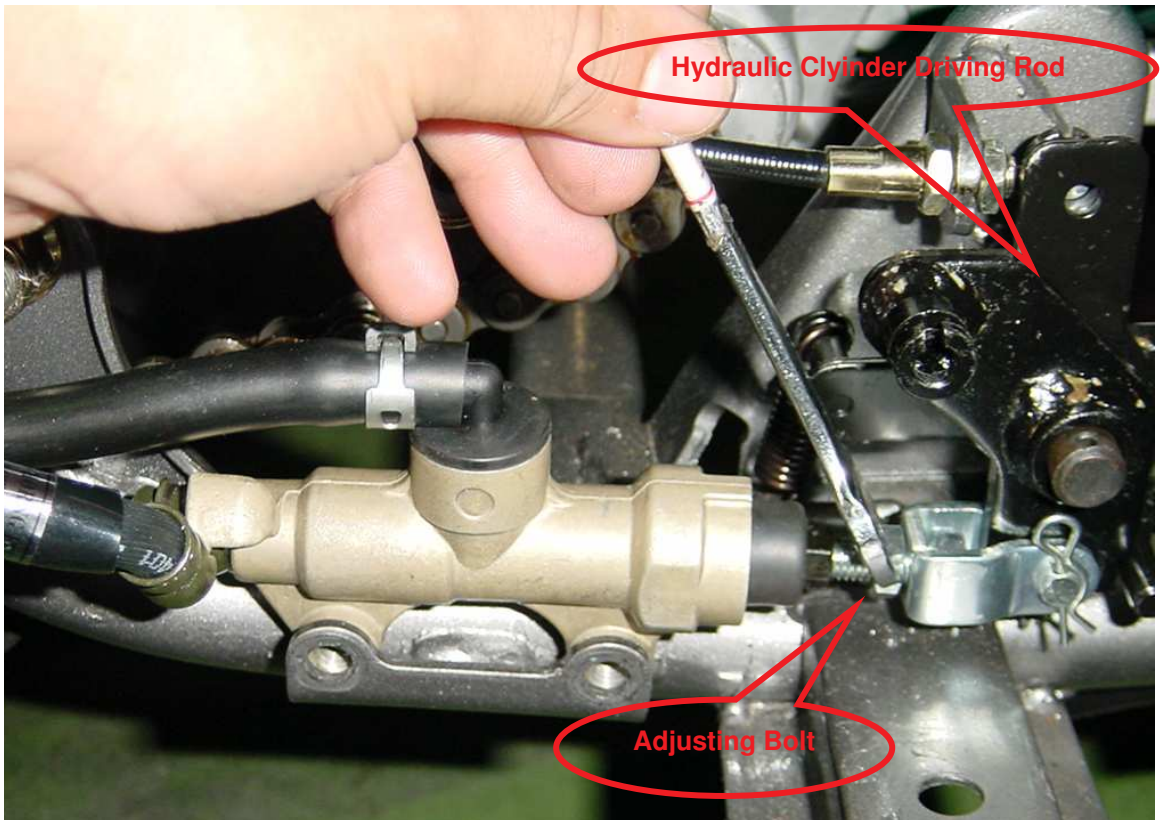


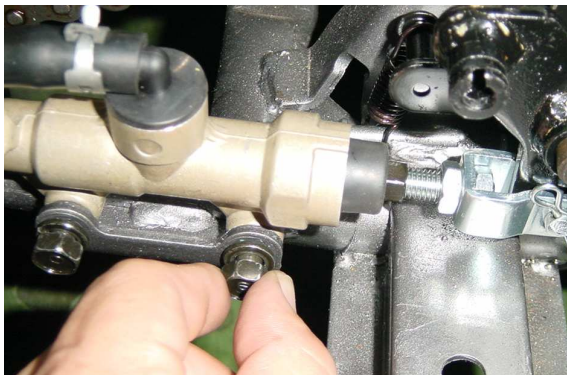
Hex Flange Bolt (96000-08012-K) × 4

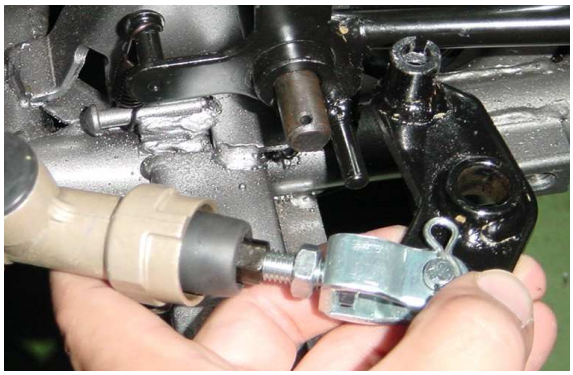
STEP.1) Take off the right side footwell for adjustment.



STEP.2) Take off the rear brake fixing set and the bolt of brake pump.







STEP.3) The setup of the adjusting nut of the brake pump:

1)The brake pedal should be in the highest location under the function of the returning spring.

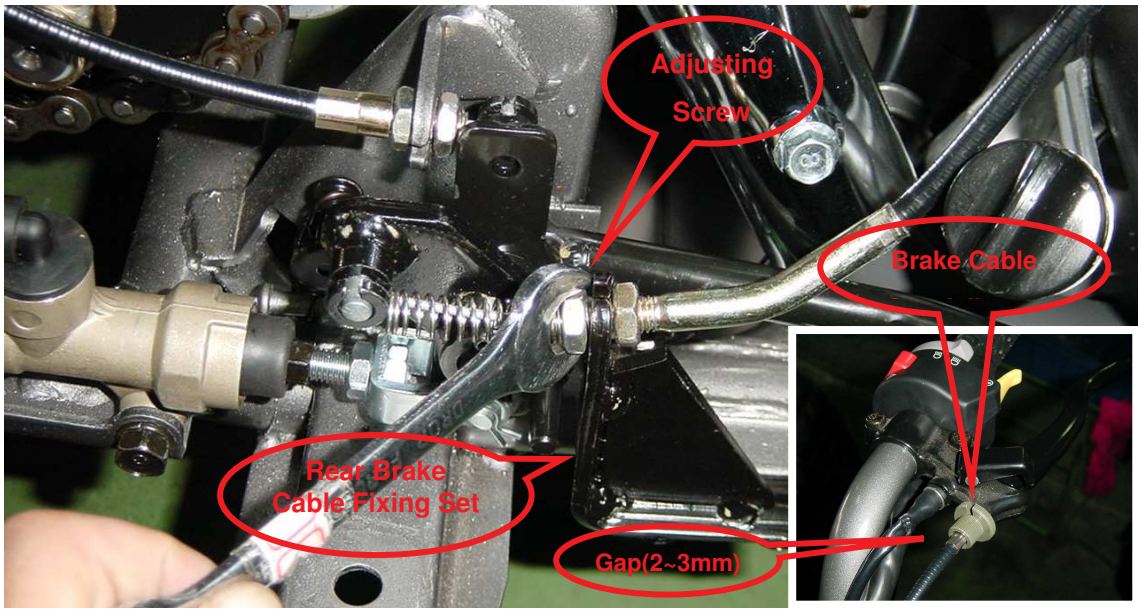
2)The adjusting nut changes the distance between the brake pump and the hydraulic cylinder driving rod. Make the nut touch the surface of the rod and revolve 1 circle (360°), then confirm the nut location and spin the rod till the nut is locked.

3)Notice: If adjust the nut over 1 circle, it might result in the brake pump malfunction and jam the brake.

STEP.4) Drain the air in the brake oil tube in order to prevent the brake pump malfunction in power delivering.

1).Open the brake oil tank, lose the drain screw of the brake caliper without braking motion. It functions normal if the brake oil could drain automatically, please try this for couple times for confirmation. If it doesn't work, please be back to S*TEP 3. and decrease the distance until the oil could run out normally.*

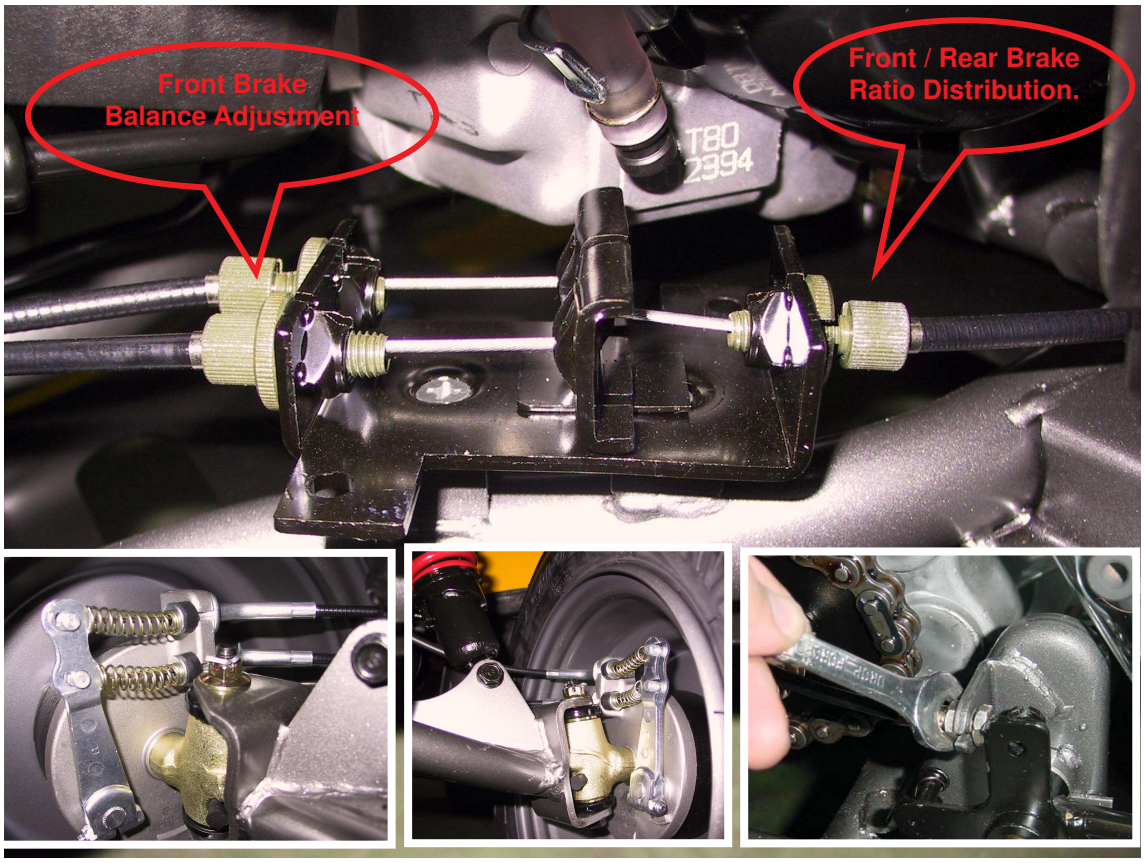
2). Press on the brake pedal or the brake lever for several times then hold press, release the drain screw and lock it on immediately until no air bubble in the brake oil. Be careful for the splashing oil when operating.



STEP.5) Install the rear brake cable fixing set & adjust the brake cable.

1).Spin the gap adjuster on the left lever till the shortest position.

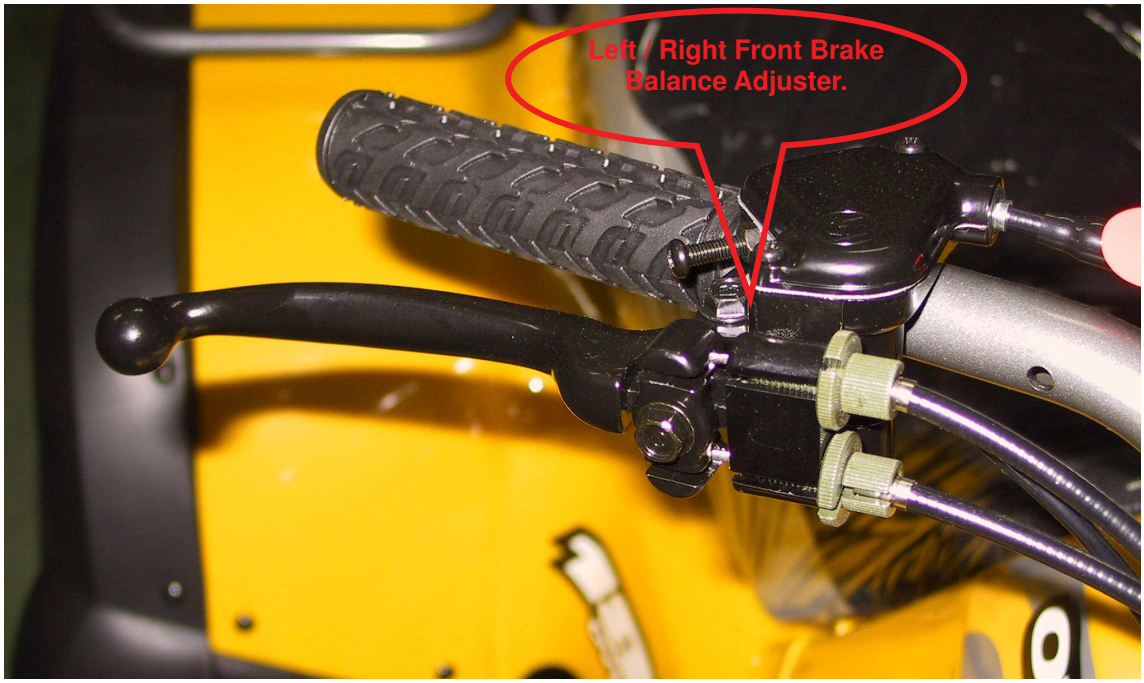
2).Adjust the adjusting screw and keep the gap being 2-3 mm.



STEP.6) Wire Connector Adjustment:

1).The distribution of front / rear brake force on left lever.

2).The balance adjustment of left / right front brake.



STEP.7) The brake balance adjuster on right lever.

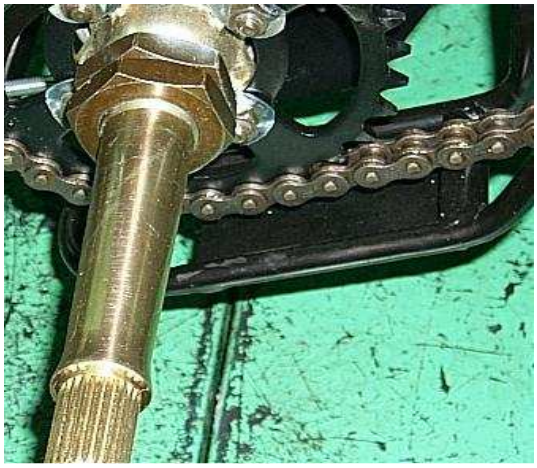
9.4 <u>DRIVE MECHNISM</u>

Removal and inspection.
Remove the rear wheel and the rear brake.
Remove the skid plate under swing arm.
Remove the drive chain cover.

Disassemble the chain retaining clips and master link. Remove the chain.

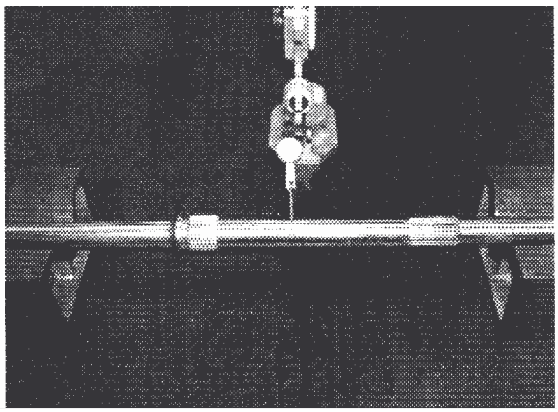
Disassemble the driven sprocket, axle and sprocket collar.

Check the driven sprocket for damage or wear. Replace if necessary.



Let the rear axle lie in V-blocks and check the runout.

The runout limit is 0.5 mm.



Check the turning of inner race of bearing with fingers. The bearings should turn smoothly and quietly. Replace if necessary.

Also check that the bearing outer race fits tightly in the axle holder. Replace if necessary.

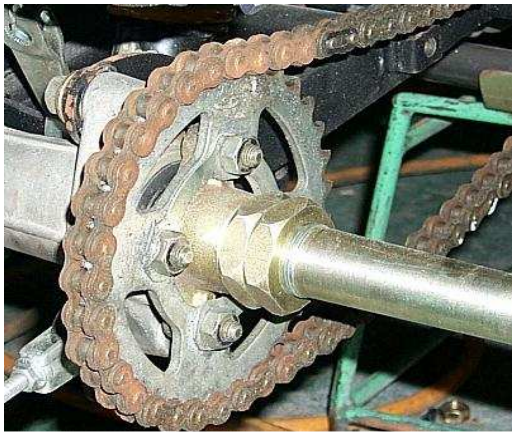
NOTE: Replace the bearings in pairs.

Installation

Add grease to the dust seal lips and install dust seals. Assemble the rear axle and the driven sprocket.

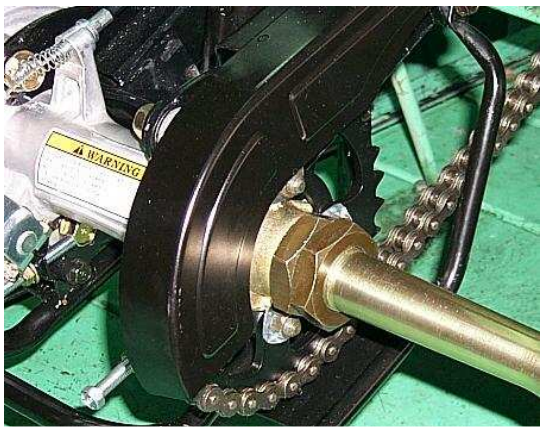
Assemble the drive chains on the driven sprocket. Assemble the master link and retaining clip.

NOTE: The retaining clip direction.



Install the drive chain cover.
Assemble the chain under cover.

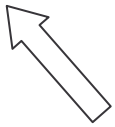
Install the skid plate.
Install the drive chain cover.



10. FENDER AND EXHAUST PIPE

10.1 REAR FENDER REMOVAL

Pull the “Seat Release Bar” to take off the seat. This seat release bar is under the right side of the rear fender.

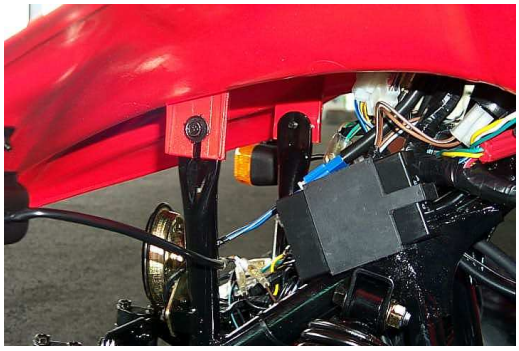


Procedure for rear fender removal:
Remove the rear rack and seat.
Unscrew the four bolts, which connect the front fender and rear fender.
Unscrew the four screws, which connect the rear fender and frame.

Unscrew the six screws, which connect with footrest plate. Pull the rear fender backward so the rear fender can be removed.

10.2 FRONT FENDER REMOVAL

After remove the rear fender, remove the two front fender mounting bolts from front frame.
Remove the fuel tank cap.



Remove the mounting bolts and nuts from the front fender and footrest plate.

10.3 EXHAUST PIPE REMOVAL

You must wait at least 15 minutes after turn off the engine. You need to remove the seat, rear fender and footrest plate, before you take off the exhaust pipe. Unscrew the two exhaust pipe bolts that fixed with engine.

NOTE: *Do not service the exhaust pipe while they are hot.*

Remove the exhaust pipe bolts mounting on the frame below the rear fender.
Remove the exhaust pipe carefully.

10.4 EXHAUST PIPE INSTALLATION

Installation is the reverse order of removal.

Torque: Exhaust muffler bolts 30 N.m (22 lbs.ft)

NOTE: After installation, check entire system to make sure that there are no exhaust leaks.

11. ELECTRICAL SYSTEM

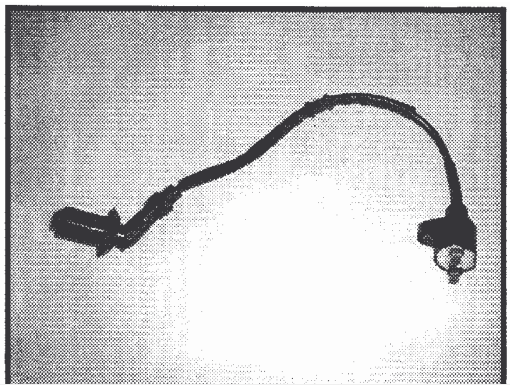
11.1 Troubleshooting

ENGINE STARTS BUT STOPS	IMPROPER IGNITION TIMING FAULTY SPARK PLUG
NO SPARK AT PLUG	ENGINE STOP SWITCH AT LEFT OR RIGHT POSITION GEARSHIFT BAR IS NOT AT NEUTRAL POSITION FAULTY IGNITION COIL FAULTY GENERATOR FAULTY CDI UNIT POORLY CONNECTED: Between CDI and ignition coil Between alternator and CDI unit Between CDI and engine stop switch Between ignition coil and spark plug Between generator and CDI unit
ENGINE STARTS BUT RUNS POORLY	IGNITION PRIMARY CIRCUIT Faulty generator Faulty CDI unit Faulty alternator Loosen contacted terminals Faulty ignition coil IGNITION SECONDARY CIRCUIT Faulty plug Loosen contacted spark plug wire IMPROPER IGNITION TIMING Faulty generator

	Faulty CDI unit
CHARGING SYSTEM FAILURE	LOOSE, BROKEN OR SHORTED WIRE. FAULTY ALTERNATOR FAULTY IGNITION SWITCH

INTERMITTENT ENGINE POWER	LOOSE BATTERY CONNECTION LOOSE CHARGING SYSTEM CONNECTION
STARTER MOTOR WILL NOT TURN	DEAD BATTERY FAULTY IGNITION SWITCH LOOSE OR DISCONNECTED WIRE
STARTER MOTOR AND ENGINE TURN, BUT ENGINE DOES NOT START	FAULTY IGNITION SYSTEM FAULTY ENGINE STOP SWITCH ENGINE PROBLEMS
HEAD LIGHT DO NOT WORK	THE SWITCH DO NOT PUSH TO THE "ON" POSITION THE LIGHT BULB IS BURN OUT, NEED BE REPLACED

11.2 IGNITION COIL



Remove the spark plug cap from the spark plug.
Disconnect the ignition coil primary wire.

Measure the primary coil resistance.

STANDARD: 0.1-0.30Ω

Measure the secondary coil resistance with the spark plug cap in place.

STANDARD: 7.4-11 KΩ

11.3 <u>IGNITION TIMING</u>

The ignition advance is 13□±1□/4000rpm
The capacitive discharge ignition(CDI) system is factory pre-set and does not require adjustment.

11.4 ALTERNATOR EXCITER COIL

Remove the seat/ rear fender and front fender. (see page 72) disconnect the exciter coil wire. Measure the resistance between the yellow or white or green wire and ground.

STANDARD : 467-700Ω

Electrolyte is poisonous. Drink large quantities of water or milk and call a physician if swallowed.

11.5 BATTERY CAUTION

The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging or using the battery in an open area. The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield. ***Electrolyte is poisonous. Drink large quantities of water or milk and call a physician if swallowed.***

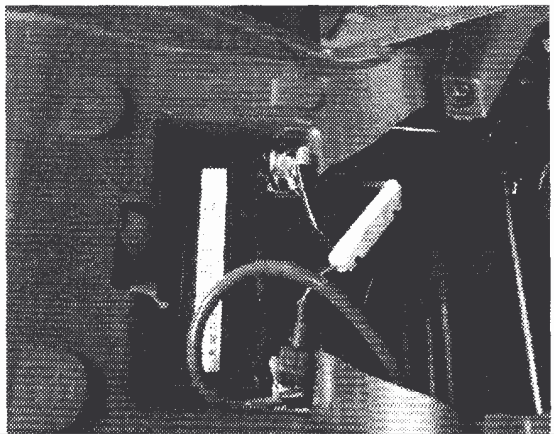
11.6 BATTERY VOLTAGE INSPECTION

Battery is under the seat; you can see this battery after removing the seat.
Measure the battery voltage using a voltmeter.

VOLTAGE: Fully charged : 13.1 V
Undercharged : Below 12.0 V

BATTERY REMOVAL

Remove the seat, then you can see the battery. Disconnect the negative cable and then the position cable and remove the battery.

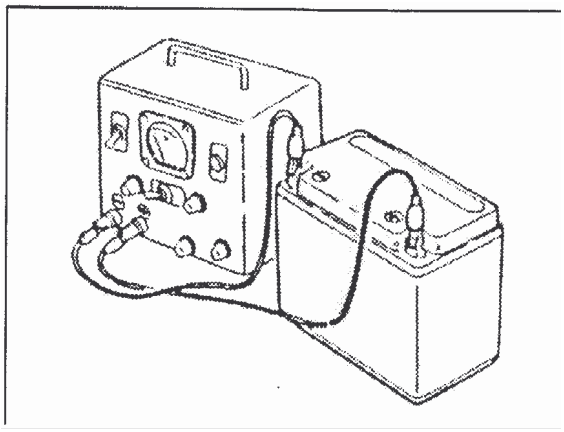


BATTERY INSTALLATION

Install the battery in the reverse order of removal. After installing the battery, terminals with clean grease.

11.7 CHARGING

Connect the charge positive cable to the battery positive terminal. Connect the charge negative cable to the battery negative terminal. Using 0. 9A charging current about 5 hours. (Normal charging) Or using 4A charging current about 1 hour. (Quick charging) Keep flames and spark away from a battery being charged. Quick charging should be limited to an emergency; normal charging is preferred.



11.8 ELECTRIC STARTER

Information

A weak battery may be unable run the starter motor quickly enough.

If the battery voltage is enough while the engine is not cranking, the starter motor may be damaged.

Troubleshooting

Starter motor turns slowly

Weak battery.
Poorly connected starter motor cable.
Faulty starter motor.
Poorly connected battery ground cable.

Starter motor will not turn

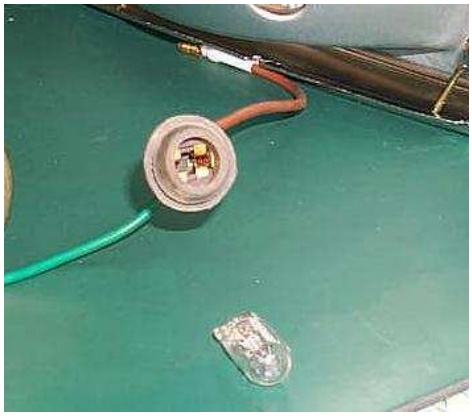
Engine stop switch at left or right position.
Gearshift bar is not at neutral position.
Check for a blown fuse near battery.
Make sure that the battery is fully charged and in good condition.

11.9 LIGHT BULBS REPLACEMENT

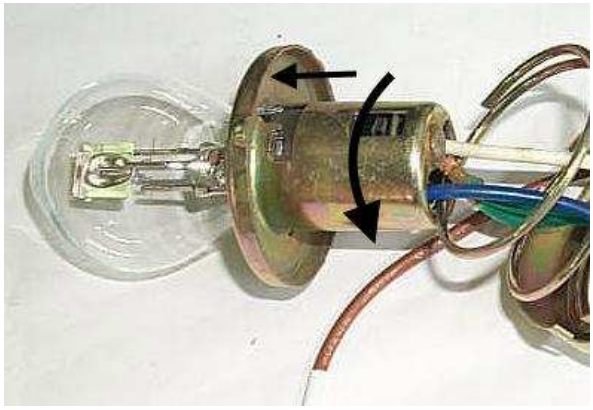
Remove five bolts on both sides of the head light cover.

Remove the headlight bulb and position light.

Remove the position light bulb.
Change the new one and install to the headlight seat.



Press and turn left to remove the bulb.



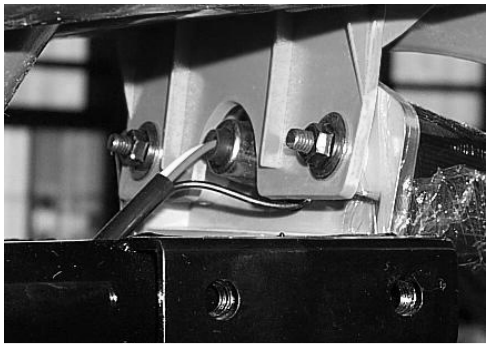
Change a new bulb and reinstall.

Install the bulb seat to headlight seat.

Tighten five bolts.
Torque: 5 N.m (3.5 lbt.ft)

TAIL LIGHT

Remove taillight lens by removing the two nuts.
Replace taillight lens and secure with two nuts.



11.10 WIRING DIAGRAMS

12.TROUBLE SHOOTING

12.1 Engine does not start

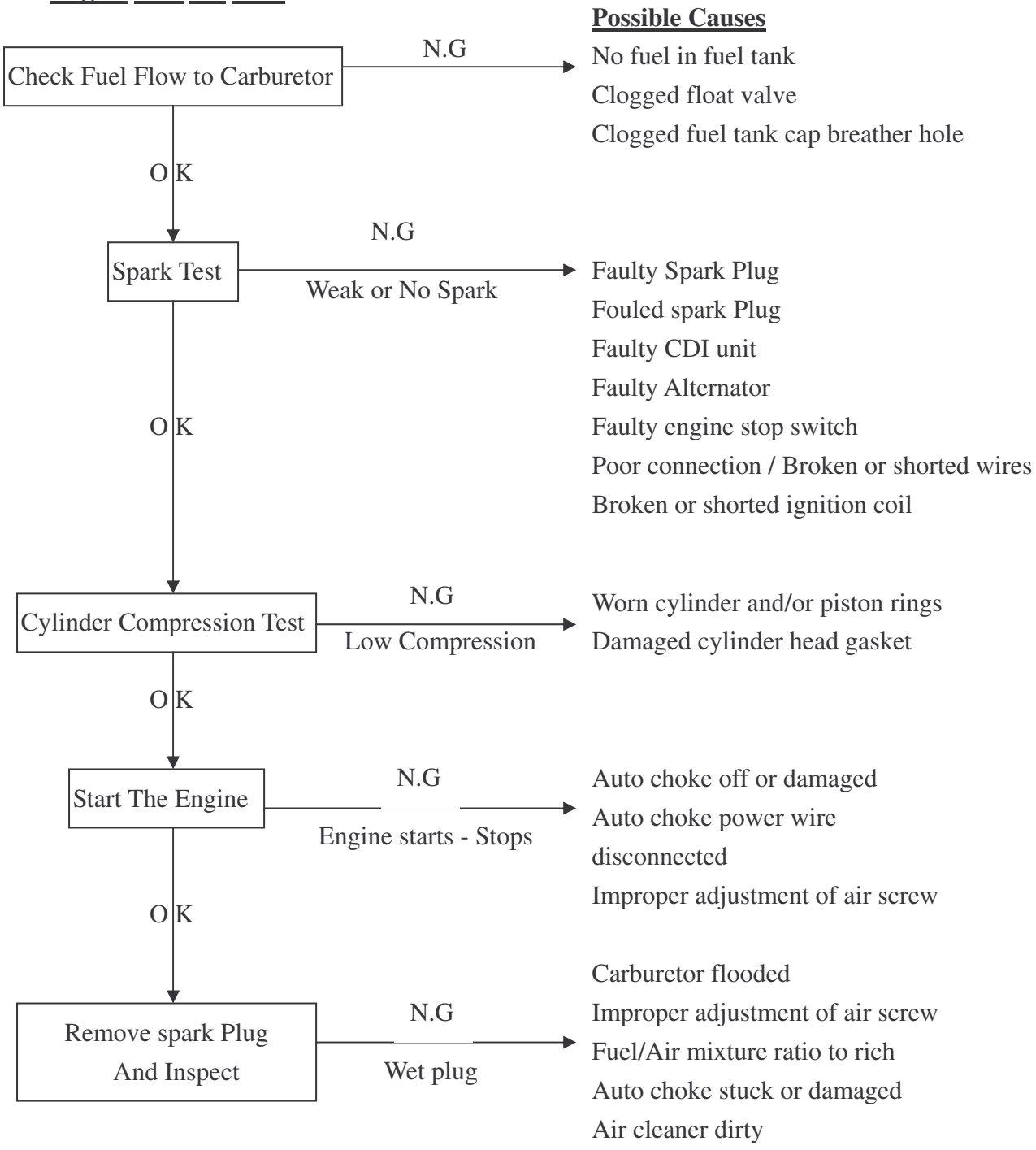
12.2 Poor Performance at low and idle speed

12.3 Poor Performance at high speed

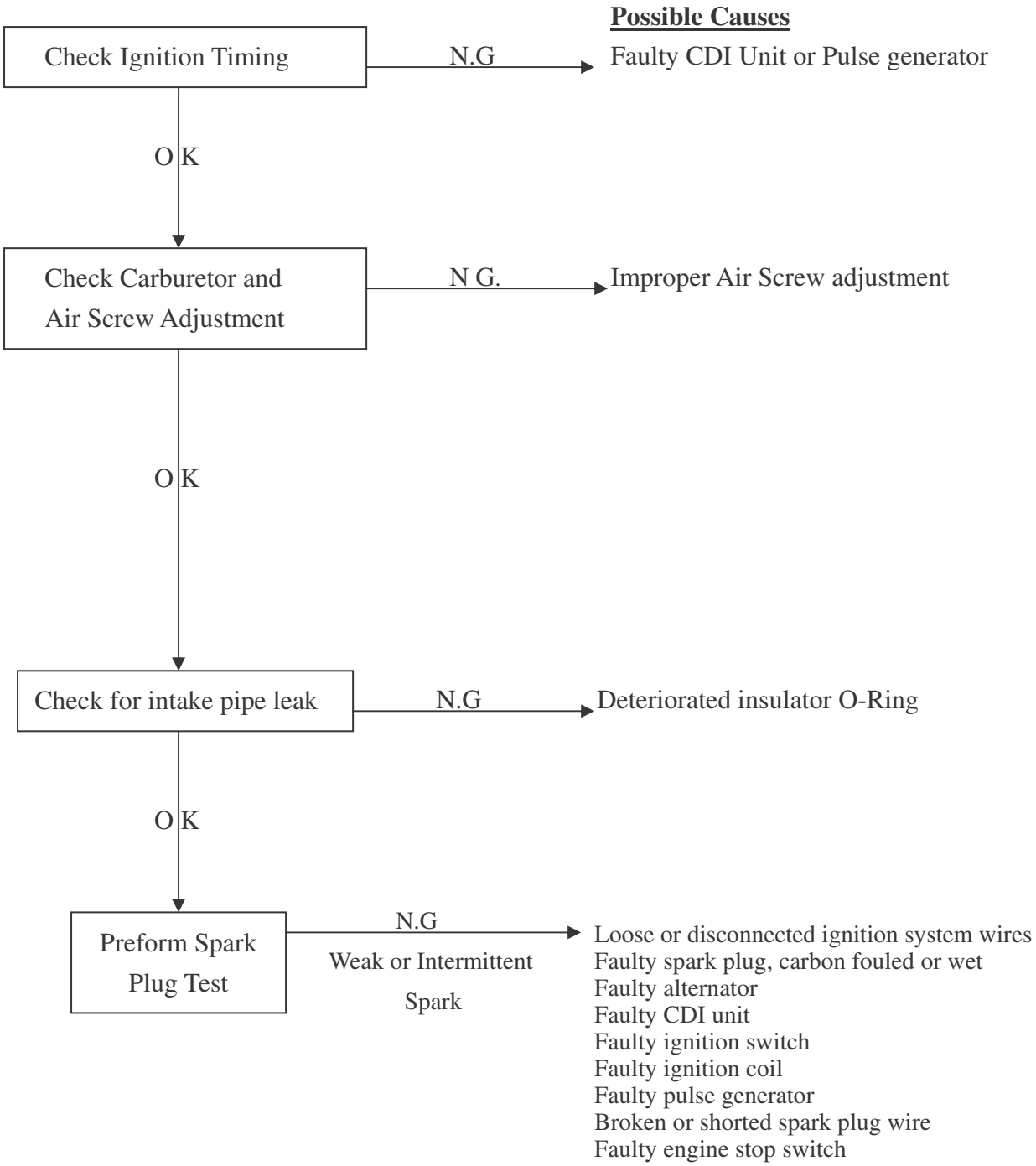
12.4 Loss of power

12.5 Poor handling

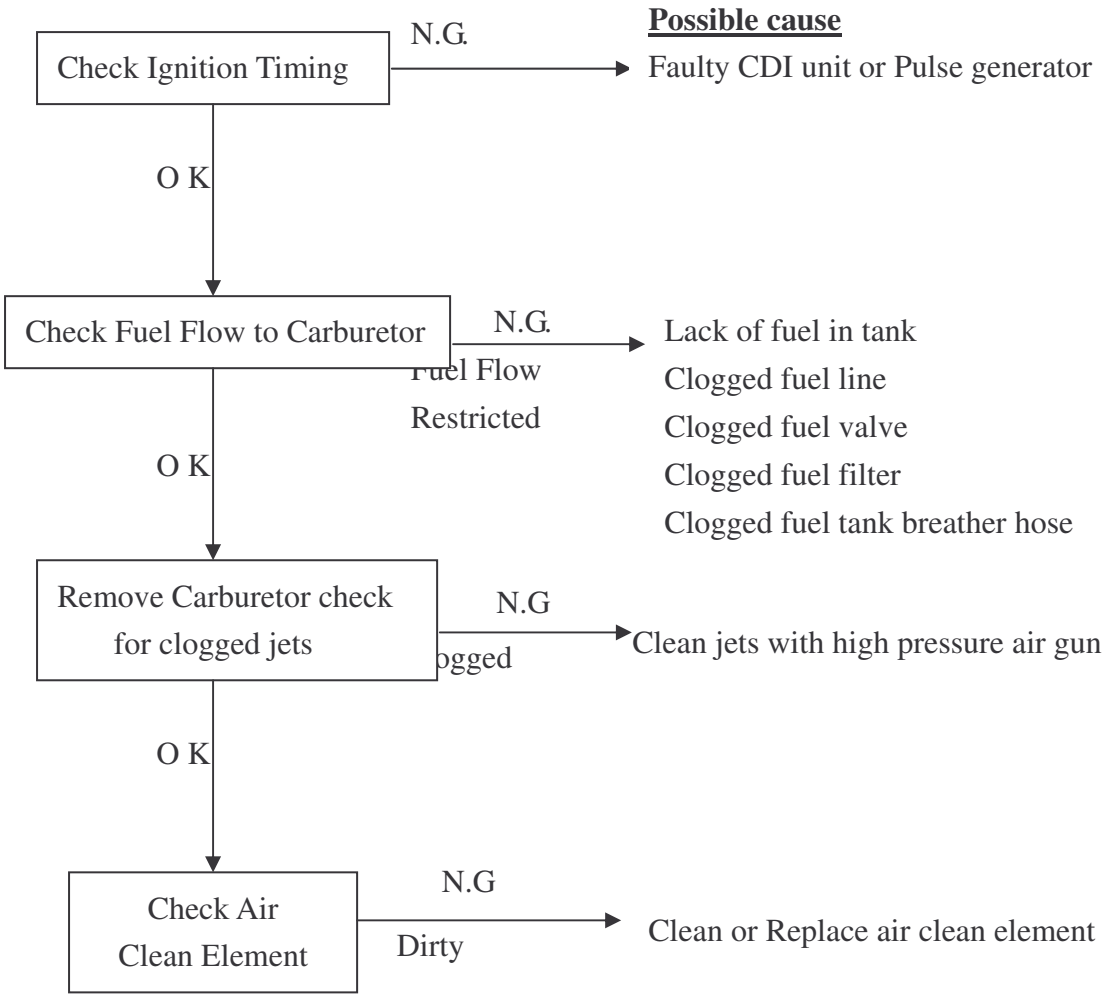
12.1Engine does not start



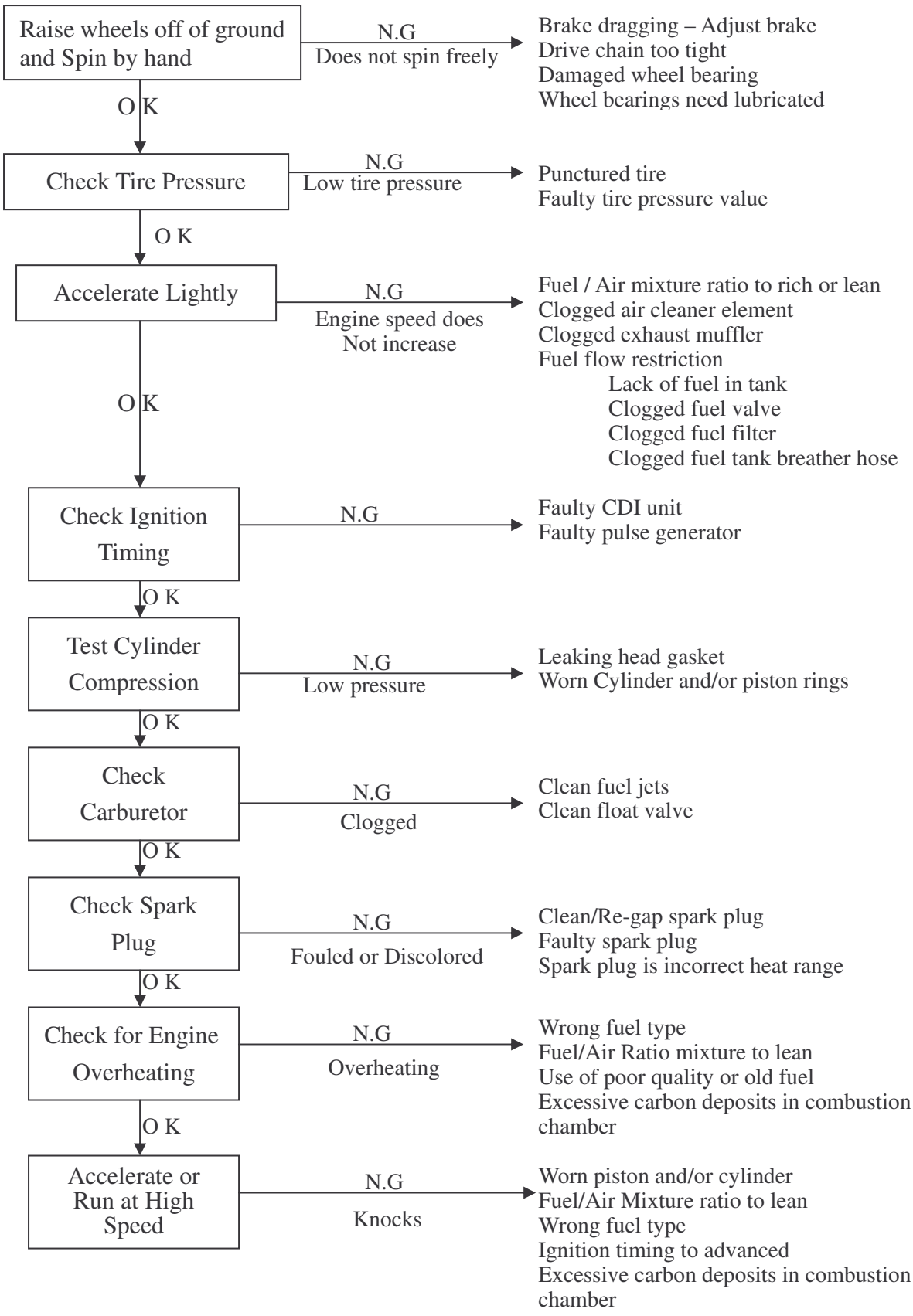
12.2 Poor Performance at Low / Idle Speed



12.3 Poor performance at high speed



12.4 Loose of power



12.5 Poor Handing