SERVICE MANUAL

TRAC MOPED

HAWK
OLYMPIC
CLIPPER

HOW TO USE THIS MANUAL

Follow the recommendations in this manual to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the U.S. Environmental Protection Agency. Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

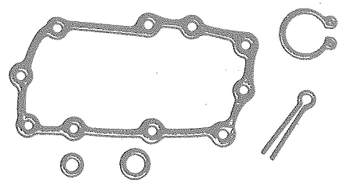
Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedures.

If you don't know what the source of the trouble is, refer to section 11 Troubleshooting.

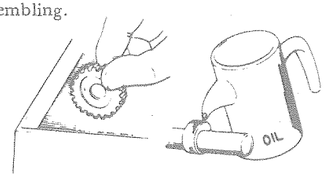
CONTENTS

SERVICE PRECAUTIONS

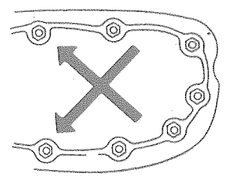
- Always replace when ressembling.



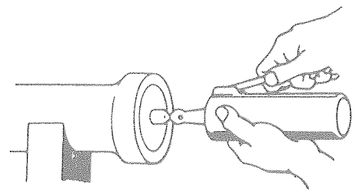
- Wash clean engine parts with solvent, Lubricate their sliding surfaces with 2-cycle oil when disassembling.



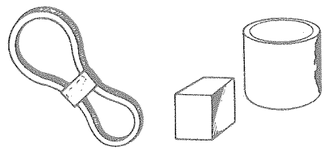
- Tighten fasteners to specs, beginning with the center or larger dia. bolts in a X pattern where the sequence is not specified.



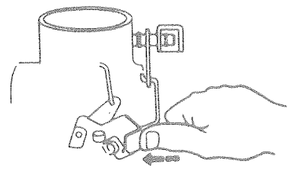
- Grease by coating or filling where specified.



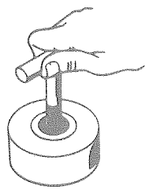
- Use Trac or Trac-recommended parts and lubricants.



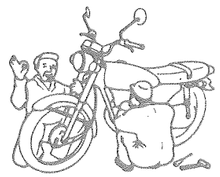
- After reassembling, check every part for proper installation, movement or operation.



- Use special tool where specified.



- Always check the mutual the safety of a partner.



1

MAINTENANCE

SPECIFICATIONS

	Item \ Model		Olympic	Clipper	Hawk
Engine	Type		Air-cooled, one cylinder, 2 stroke		
	Bore and stroke		40x39.5		
	Piston displacement		49.6cc		
	Compression ratio		6.5:1		
	Carburetion		VM-13-153	VM 12-63	
	Ignition		Pointless		
	Oil capacity		1.2 *l*		
	Bhp/R.P.M.		3/6,000		
	Torque/R.P.M.		0.36/6,000		
	Starting System		Pedal start		
	Clutch System		Centrifugal Automatic		
Mission	Primary drive		74:17 = 4,353		
	Gear ratio 1		24:23 =1,043		
	Final drive		42:12 =3,500		
Chassis	Type		Tubular		
	Wheel base		1,150	1,100	
	Seat height		750	780	790
	Suspension	Fr.	Telescophic	Coil spring	
		Rr.	Swing arm (oil)		
	Brake	Fr.	Drum brake		
		Rr.	Drum brake		
	Tire	Fr.	2.25x17"	2.25x16"	
		Rr.	2.25x17"	2.25x16"	
	Ground clearance		135	136	
	Fuel capacity		5.5*l*	3.9*l*	6.3*l*
	Rake/Trail		64°/70	64°/65	
	Overall leg x Wdt x Hgt		1,790x685x1,020	1,700x730x985	1,740x730x985
Elec.	Power source		6V		
	Charge control		Regulator rectifire		
	Battery capacity		6V 4AH		

TORQUE VALUES

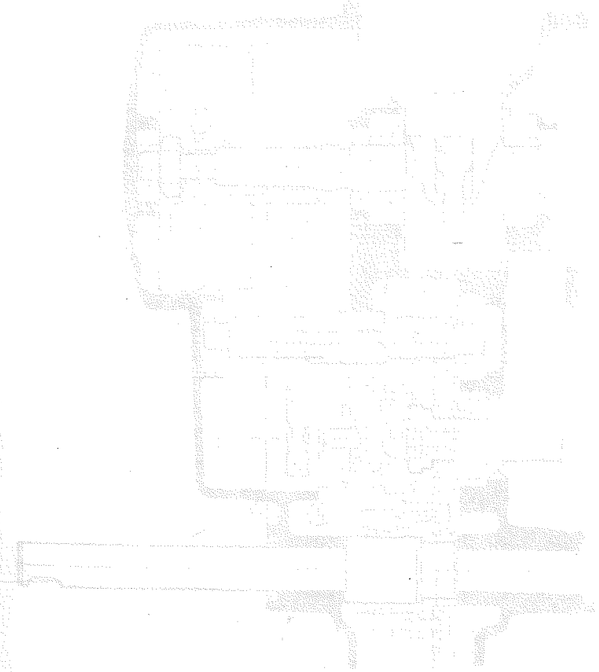
	Item	Thread Dia x Pitch	Q'ty	Torque (kg—m)
Engine	Cylinder head nut	M 6 x P1.0	4	1.30 ~ 1.80
	Spark plug	M14 x P1.25	1	2.00 ~ 2.50
	Generator fixing nut	M10 x P1.0	1	5.50 ~ 6.00
	Drive sprocket lock nut	M10 x P1.0	1	5.50 ~ 6.00
	Crank case pan screw	M10 x P1.0	9	0.80 ~ 1.20
	Inlet pipe	M 5 x P0.75	4	0.40 ~ 0.60
	ACG. stator locking bolt	M 6 x P1.0	3	0.80 ~ 1.20
	Muffler locking nut	M 6 x P1.0	2	0.80 ~ 1.20
	Crank Case cover	M 6 x P1.0	4	0.80 ~ 1.20
Chassis	Handle bar upper holder	M 6 x P1.0	4	0.80 ~ 1.20
	Handle bar under holder	M10 x P1.25	2	2.00 ~ 3.00
	Steering stem nut	M22 x P1.0	1	6.00 ~ 9.00
	Front fork fixing bolt	M 8 x P1.25	2	1.80 ~ 2.50
	Rear cushion (upper)	M 8 x P1.25	2	2.00 ~ 2.50
	Rear cushion (lower)	M 8 x P1.25	2	2.00 ~ 2.50
	Rear fork pivot bolt	M10 x P1.25	1	3.00 ~ 4.00
	Engine hanger bolt	M 8 x P1.25	3	1.80 ~ 2.50
	Front wheel axle nut	M10 x P1.25	1	3.00 ~ 4.00
	Rear wheel axle nut	M12 x P1.25	1	3.50 ~ 5.00

STANDARD TORQUE VALUES

Item	Torque N·m (kg-m, ft-lb)	Item	Torque N·m (kg-m, ft-lb)
5 mm bolt and nut	4— 6 (0.4—0.6, 3—4)	5 mm screw	3— 5 (0.3—0.5, 3—4)
6 mm bolt and nut	8—12 (0.8—1.2, 6—9)	6 mm screw	7—11 (0.7—1.1, 5—8)
8 mm bolt and nut	18—25 (1.8—2.5, 13—18)	6 mm flange bolt and nut	10—14 (1.0—1.4, 7—10)
10 mm bolt and nut	30—40 (3.0—4.0, 22—29)	8 mm flange bolt and nut	20—30 (2.0—3.0, 14—22)
12 mm bolt and nut	50—60 (5.0—6.0, 36—43)	10 mm flange bolt and nut	30—40 (3.0—4.0, 22—29)

2

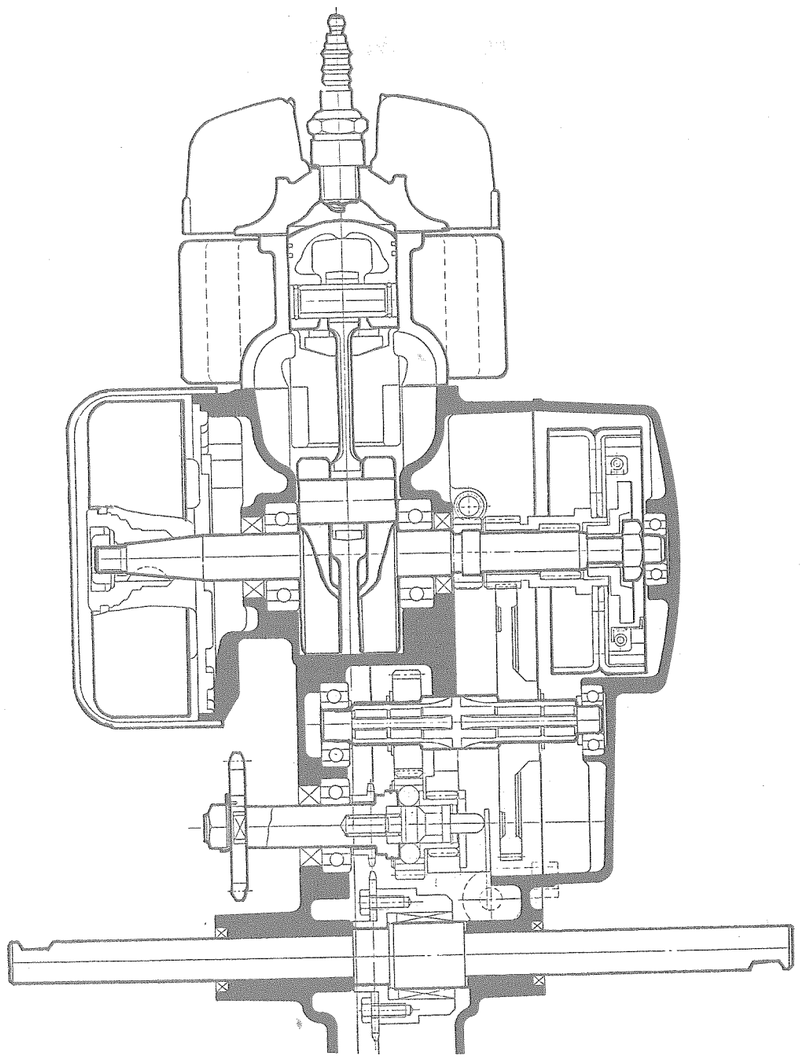
TRANSMISSION



LOW SPEED

The engine power is transfered to clutch weight comp. (1) installed at the right end of crank shaft.
When the engine is accelerated to 3,000RPm, clutch weights are outstretched then stick fast to inside wall of clutch drum(2) by the centrifugal force.
Then the power is transfered to the idle shaft through pinion gear and primary gear(3)

ENGINE SECTION

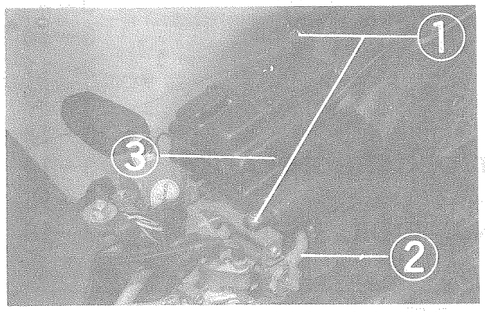


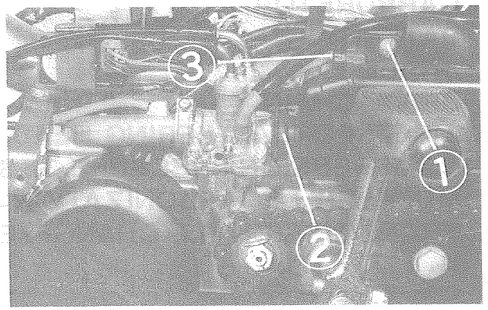
INSPECTION/ADJUSTMENT/CLEANING

AIR CLEANER

DISASSEMBLY

- Remove the left side cover and unscrew the 6mm bolt.
- Loosen the air cleaner band then remove the air cleaner.
- Unscrew the 5mm screw then disassemble the air cleaner body.
- Pull out the element.

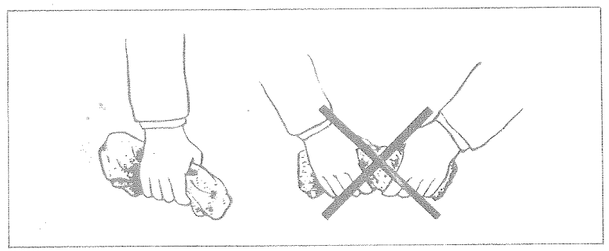




(1) 6mm bolt (2) Air cleaner band (3) 5mm screw

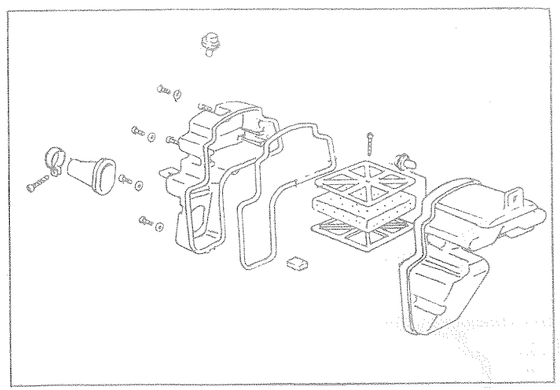
CLEANING

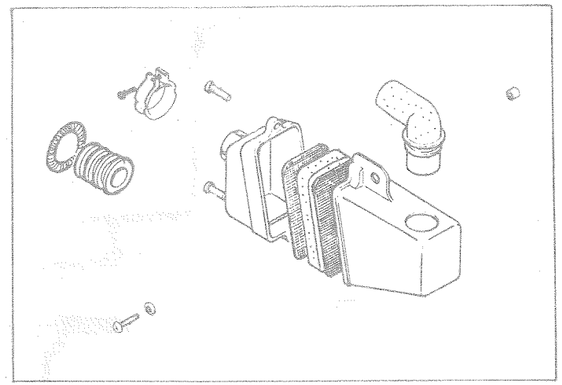
- Wash the element in non-flammable or high flash point solvent, and let it dry.
- Clean the inside of case and wire mesh.
- After dried, soak the element in gear oil (SAE#80-90) and squeeze the excess.



ASSEMBLY

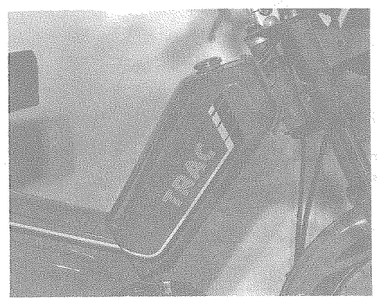
- Assemble the wire mesh and element.
- Tighten the band and check.
- Make sure to coincide the direction of air entrance opening with the running direction then install the side cover.

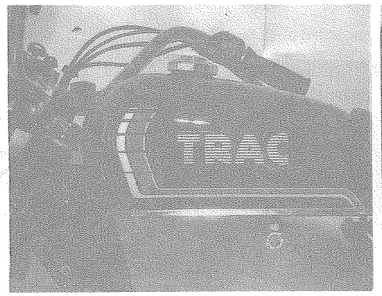


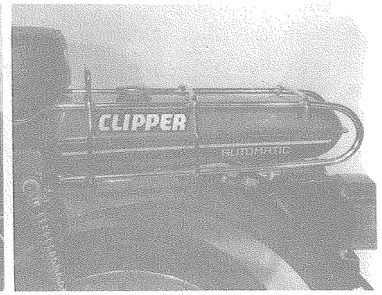


FUEL SYSTEM

Fuel cock is connected with 2 pieces of lines from the fuel tank.
One line is for "ON" position of fuel cock, and another is for "RES" position.

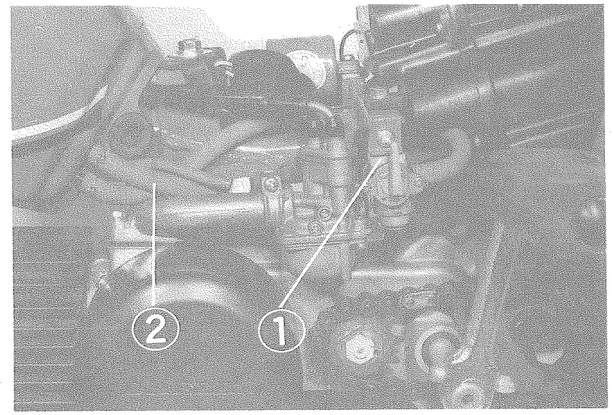






DISASSEMBLY

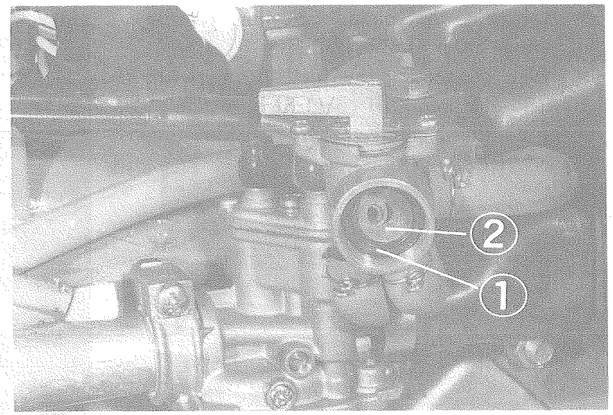
- Remove the remaining fuel of the tank.
- Disconnect the fuel line from fuel cock to carburetor.
- Remove the fuel tank.
- Remove the fuel cock.
- Remove the filter cap then pull out the o-ring and filter.
- Remove the cock lever by unscrewing the screw.



(1) Fuel cock (2) Fuel line

INSPECTION

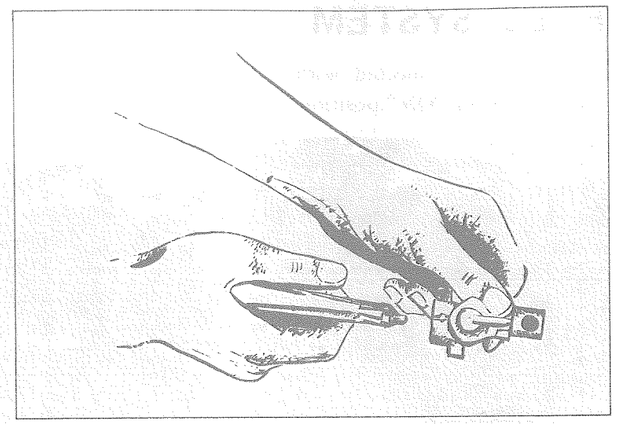
- Check the cracks on fuel lines.
- Check the damage of filter and o-ring.
- Check the damage of the gasket.



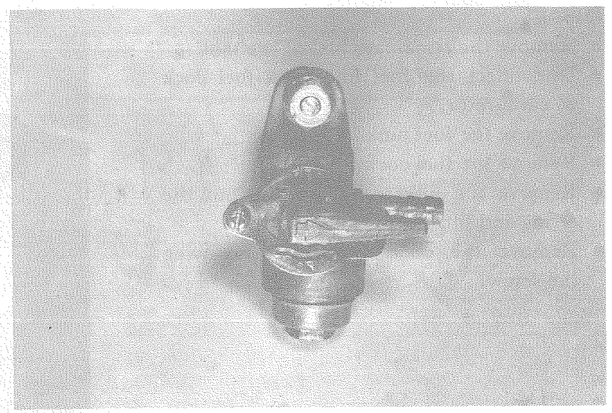
(1) O ring (2) Filter

CLEANING

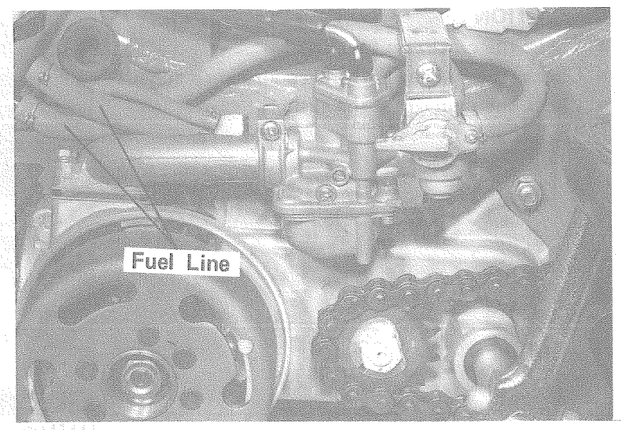
- Wash the tank inside with the clean gasoline.
- Clean the fuel passage of fuel cock by compressed air.
- Wash the filter with gasoline then apply the compressed air.
- Wash the inside of filter cap with gasoline.



* Replace any parts which show signs of deterioration, damage or leaks. After assembling, fill the fuel tank and check the fuel leakage.

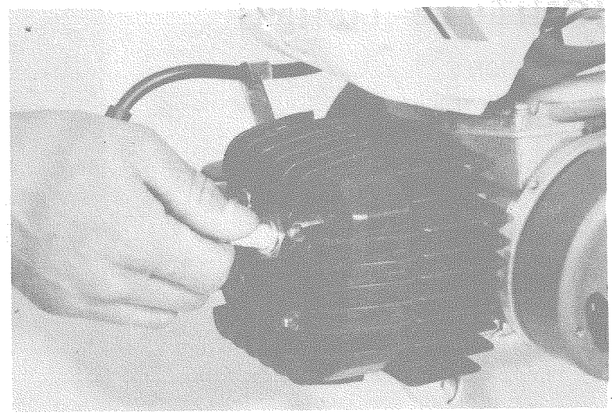


- Assemble the parts according to the reverse order of disassembly.
- When connecting the fuel lines between fuel tank and fuel cock, be sure not to be confused between "ON" position line and "RES" position line.

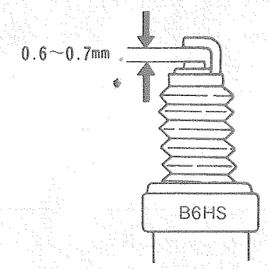


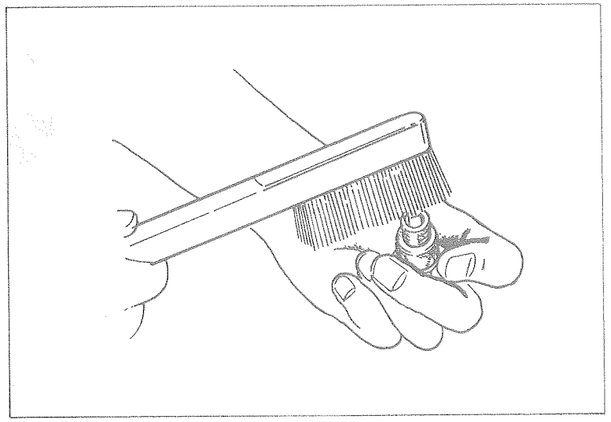
SPARK PLUG

- Disconnect the plug cap then remove the spark plug with plug wrench. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped.
- Mesure the spark plug gap with a wire-type feeler gauge.
- Adjust the gap by bending the side electrode carefully.

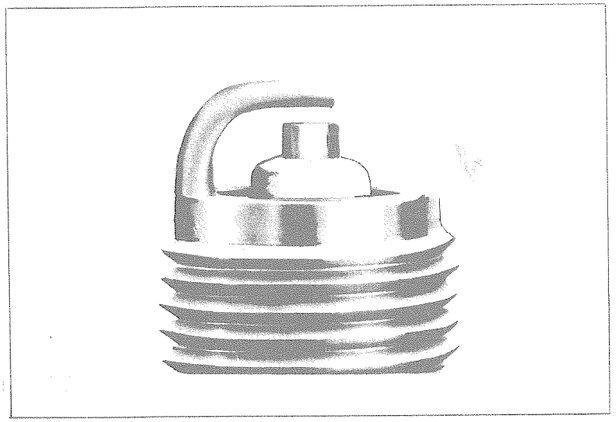


Spark plug gap: 0.6-0.7 mm





- Clean the spark plug with wire brush or sand blast.
- Make sure the sealing washer is in good condition.
- Install the spark plug, tighen it by hand, then with a spark plug wrench.
- Connect the spark plug cap.

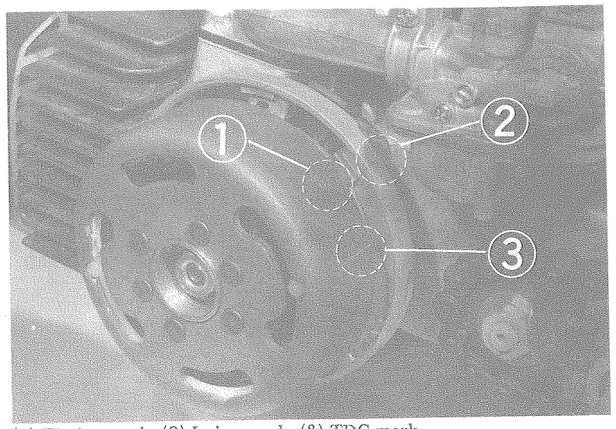


IGNITION TIMING

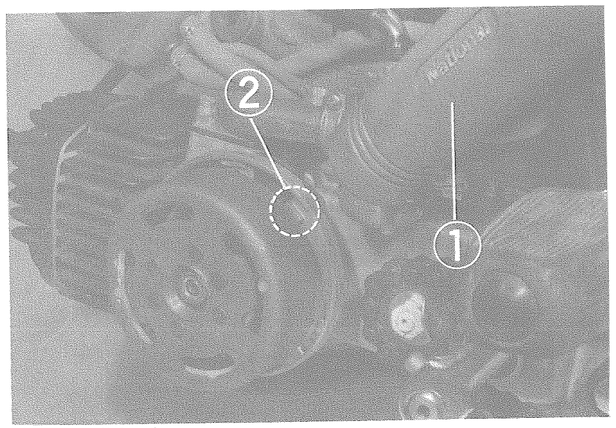
INSPECTION

- Check the ignition timing with the timing light.
- Timing is correct if the index mark aligns with the TDC mark.

* When adjusting the timing, run the engine.
After adjusting, check the ignition timing again with the timing lights.



(1) Timing mark (2) Index mark (3) TDC mark

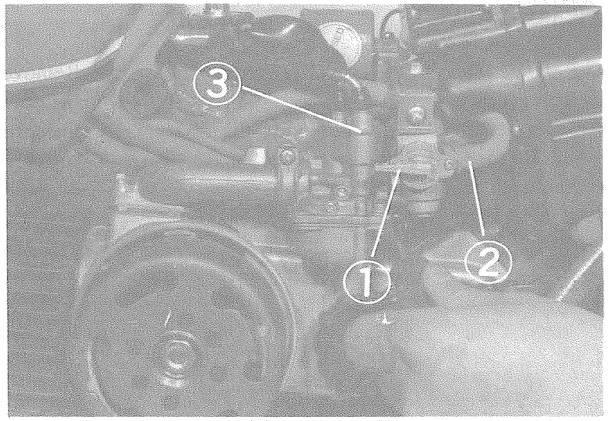


1) Timing light 2) Marks

CARBURETOR

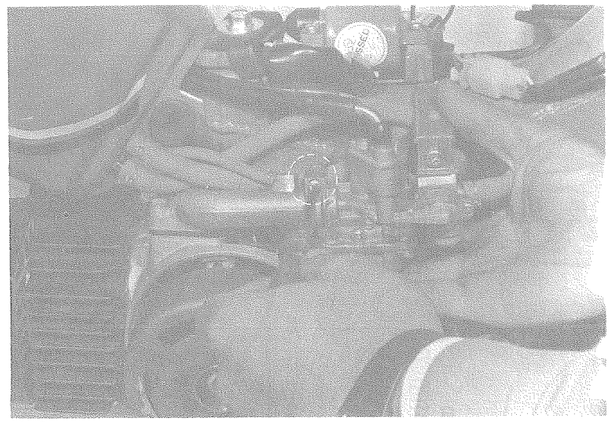
REMOVAL

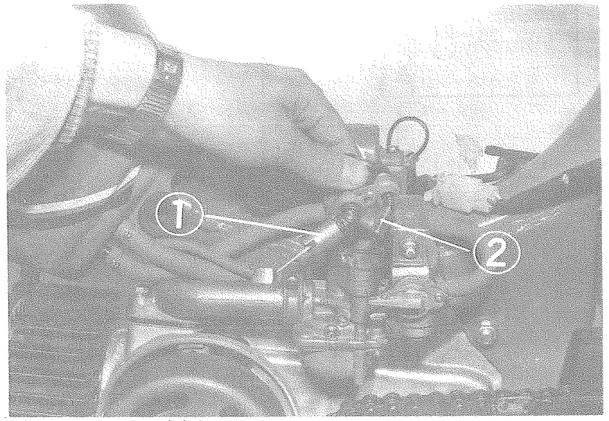
- Remove the left side cover, then disconnect the air cleaner.
- Close the fuel cock then disconnect the fuel line.
- Unscrew the 5mm bolt on carburetor top plate then remove the throttle valve and start valve at once.



(1) Fuel cock (2) Fuel line (3) Top plate

- If needed, disconnect the throttle valve with the throttle cable, then remove the throttle valve and jet needle.
- Remove the start valve.
- Remove the carburetor body by loosening the lock screw.

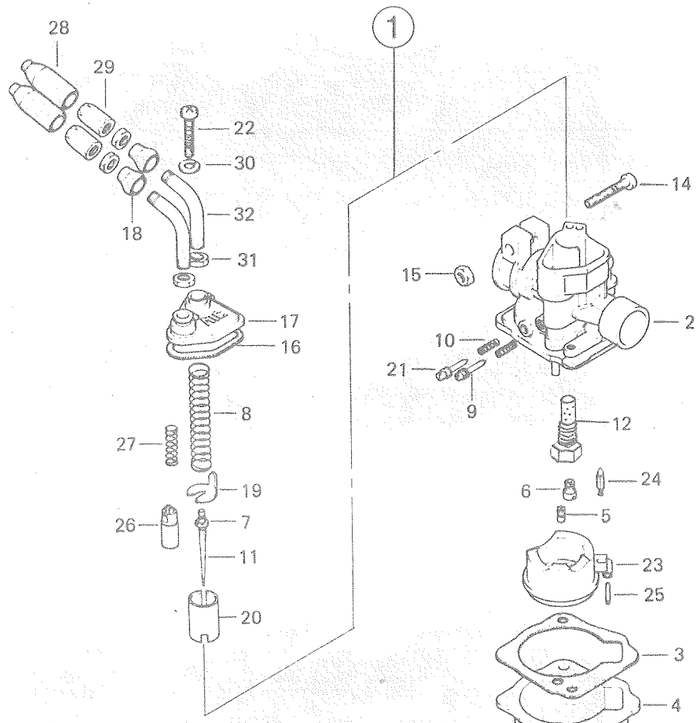

(1) Lock screw



(1) Throttle valve (2) Start valve

DISASSEMBLY

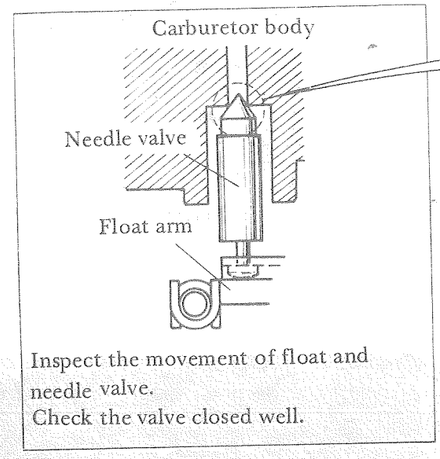
- Remove the float chamber from the mixing body.
- Separate the float by removing the float pin. Be sure not to miss the pin.
- Remove the main jet.
- Remove the pilot jet.
- Unscrew the pilot air screw and remove the spring.
- Unscrew the throttle stop screw.



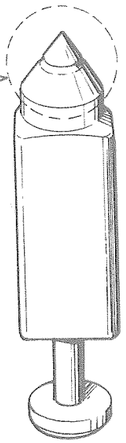
–1 Carburetor ass'y,
–2 Mixing body ass'y
–3 Gasket
–4 Float chamber body ass'y
–5 Pilot jet
–6 Main jet
–7 7E–ring
–8 Spring
–9 Throttle stop screw
–10 Spring
–11 Jet needle
–12 Needle jet
–13 Screw
–14 Screw
–15 Nut
–16 Gasket
–17 Top plate
–18 Cap (B)
–19 Valve spring
–20 Throttle valve
–21 Pilot air screw
–22 Screw
–23 Float
–24 Needle valve
–25 Pin
–26 Starter valve
–27 Spring
–28 Cap (A)
–29 Adjust nut
–30 Washer
–31 Lock nut
–32 Guide pipe

INSPECTION/CLEANING

1. Needle valve inspection

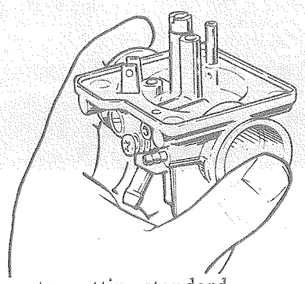


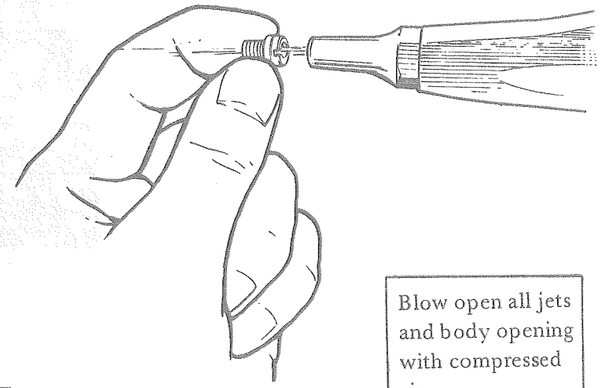
Inspect the movement of float and needle valve.
Check the valve closed well.



Check the wear of contacting area.

2. Cleaning the jets



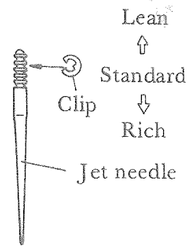


Blow open all jets and body opening with compressed air.

3. Carburetor setting standard

	Olympic	Cupper Hawk
Main jet	#65	#70
Jet needie	3x6–4	3T6–4
Clip stage	3	
Throttle valve	2.0	4.0
Rotation of air screw	1 · 1/4	
Pilot jet	#40	#40
Needle jet	E 8	D-8
Start jet	#35	#35
Idling speed	1,700rpm.	1,700rpm.

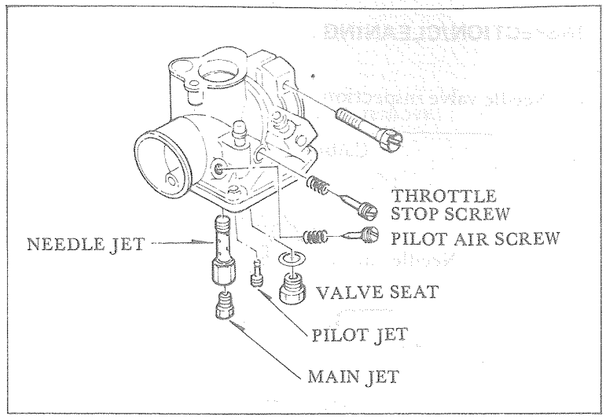
To adjust, change the clip stage.



ASSEMBLY

- Assemble according to reverse order of disassembly.

Assemble the start valve and throttle valve at once.
Take care not to damage the packing materials.



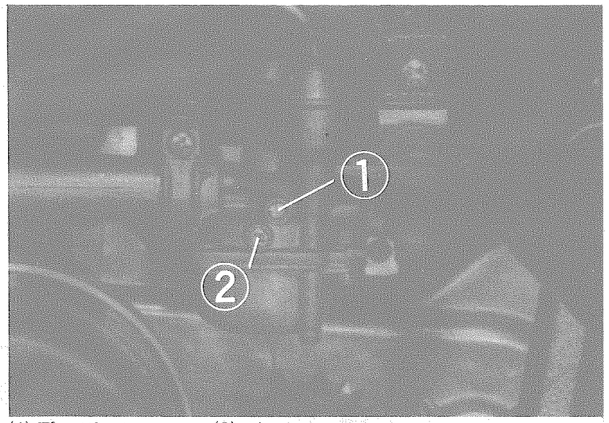
ADJUSTMENT

- Warm up the engine first.
- Turn the throttle stop screw to obtain the specified idle speed.

Idle speed : 1300 rpm

When the engine misses or runs erratic, proceed as follows.

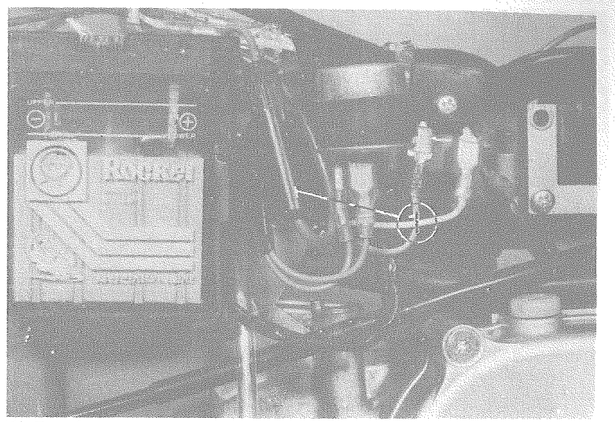
1. Screw in the air screw until slightly seats, then turn it out to the specfication.
   Air screw opening 1 ¼ turns
2. Reset idle speed with the throttle stop screw.
3. Turn the air screw to find the highest idle speed.
4. Reset idle speed with the throttle stop screw.
5. Make sure that the engine does not miss or run erratic. If necessary, repeat the above steps.



(1) Throttle stop screw (2) Air screw

BATTERY

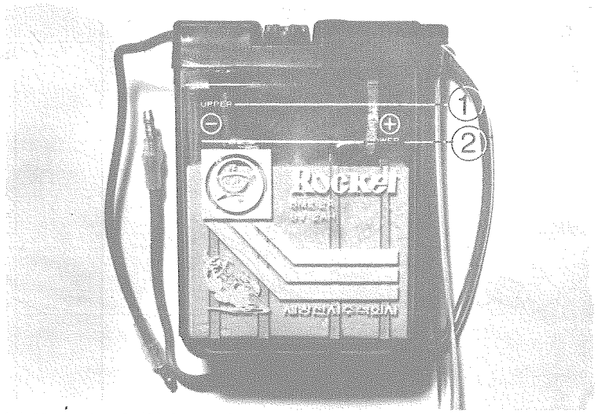
Battery is 6V-4AH and used only for horn, stop light and turn signal lights. When stop light is used so frequently, check the battery. If needed, charge the battery.


(1) Fuse box

INSPECTION

When following conditions occurs, change the battery with new one.

1. Color of electrode tured to white.
2. Much erroded materials on the bottom of inside battery case.
3. Failure of voltage rise after long time of recharging.
4. Failure of gas formation in the electrolyte.

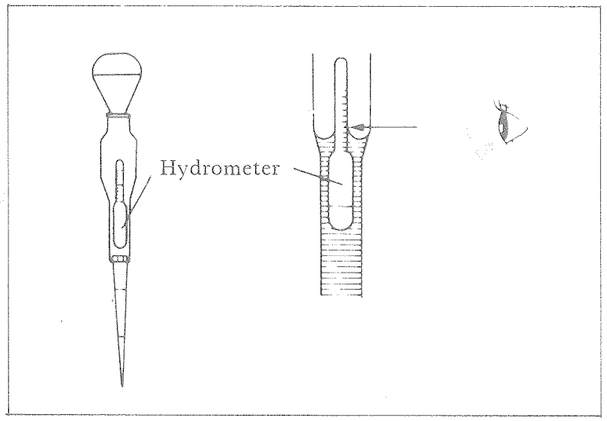


(1) Upper level (2) Lower lever

BATTERY LIFE

Usually battery can be used for 2 years but note followings to prevent possible shortened service life.

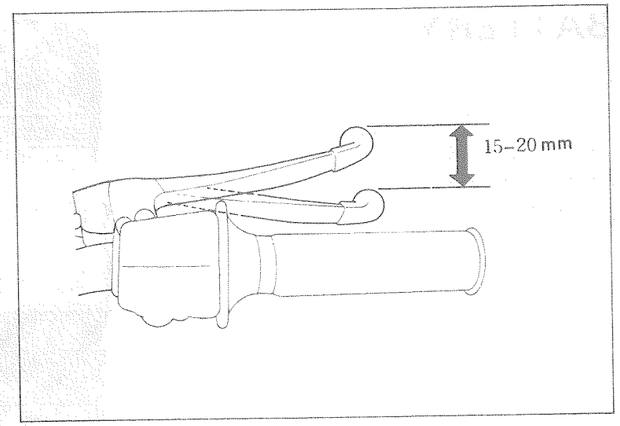
1. Supplement battery electrolyte, if necessary.
2. Avoid over charging.
3. Avoid to store below 0°C.
4. Use only distilled water as supplement of electrolyte.
   When the bike not to be used for a long time, remove the battery from the bike then store in cool places. Recharge the battery, before reuse.



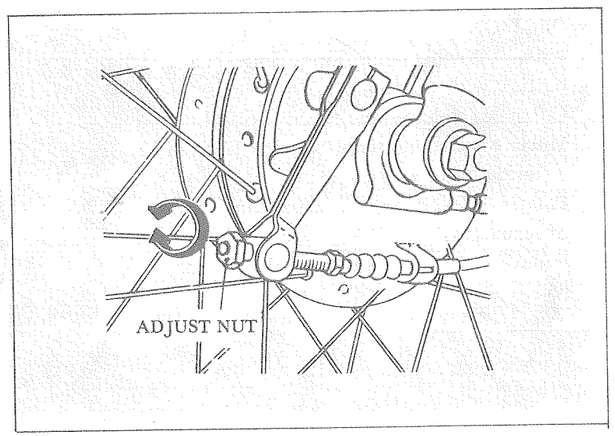
BRAKE

- Adjust brake free play by turning adjust nut.

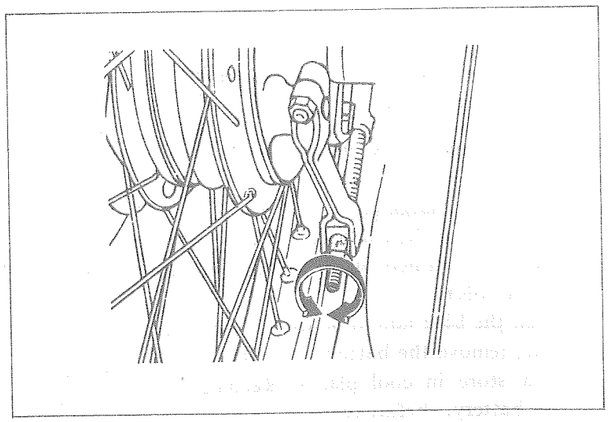
Free play 15-20mm.



- Check stop light to be turned on when holding brake levers.



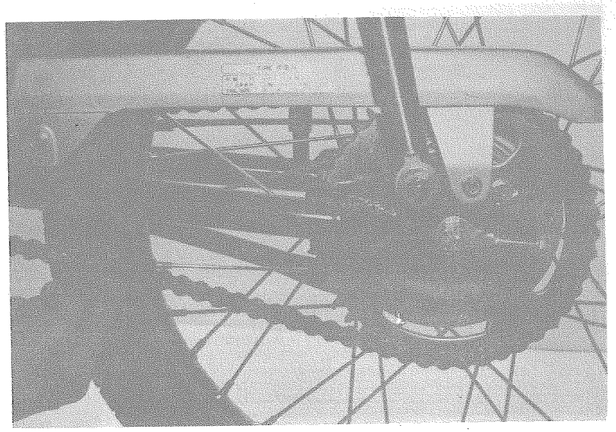
- Make sure that stopper nut it well fixed.



DRIVE CHAIN

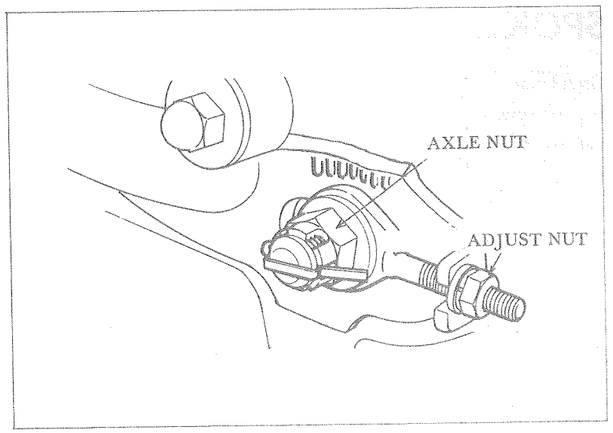
INSPECTION

- Turn the engine off, place the motorcycle on the main stand. Check slack in the lower drive chain run midway between the sprockets. Drive chain slack should be adjusted to allow 10-20mm vertical movement by hand. Rotate the rear wheel and check drive chain slack as the wheel rotates.



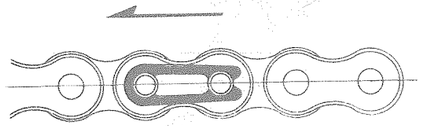
ADJUSTMENT

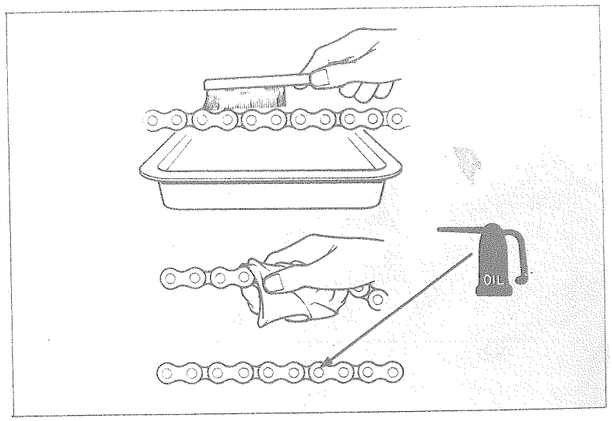
- Remove the cotter pin and loosen the axle nut.
- Turn the adjust nuts on both the right and left chain adjuster an equal amount to increase or decrease chain slack.
- Align the chain adjuster index marks with corresponding scale graduations on both side of the swing arm.
- Check chain slack again.



CLEANING

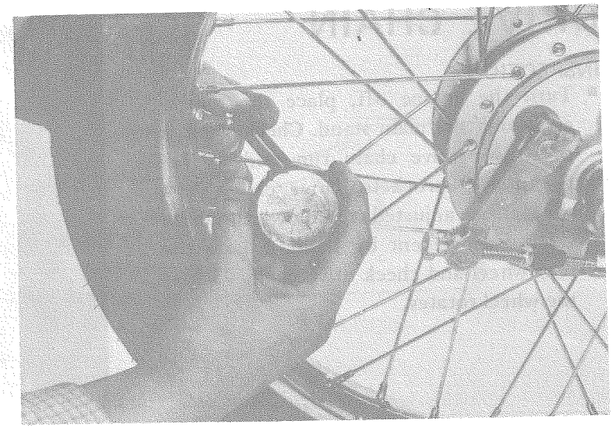
- Romove the link and clip then pull out the chain.
- Wash in clean solvent and let it dry.
- Check the excesive wear or damage, replace if necessary.
- Lublicate with engine oil or chain lublicant.
- Install the chain.





TIRE

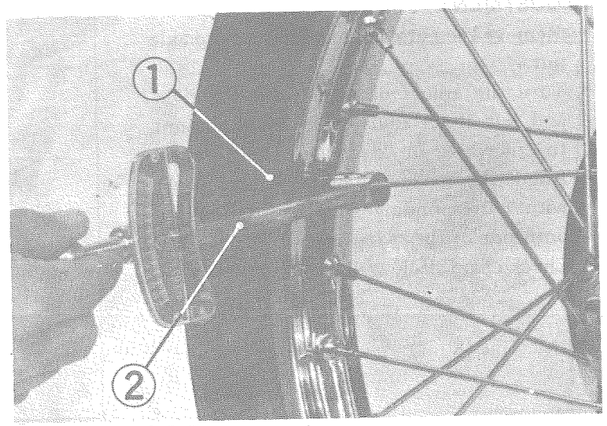
Check tire pressure when the tires are cold.



Cold tire pressure	
Driver only	Front 1.75 kg/cm² Rear 2.0kg/cm²

SPOKE

Check looseness of all spokes.
If loosened, tighten and check with torque wrench.



1) Nipple wrench 2) Torque wrench

Torque 3.5-4.5kg.cm
(25.3-32.5 in-lb)

STEERING HEAD

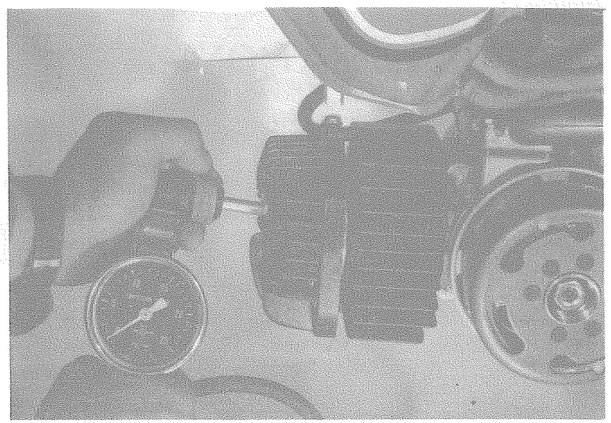
- Raise the front wheel off the ground by placing a block or safety stand under the engine. Check steering handle turning freely.
- Adjust with pin spanner by loosening or tightening the steering head adjust nut, if needed.

COMPRESSION PRESSURE TEST

- Remove the spark plug and set the compression gauge.
- Turn the throttle grip thoroughly then apply the kick starter.

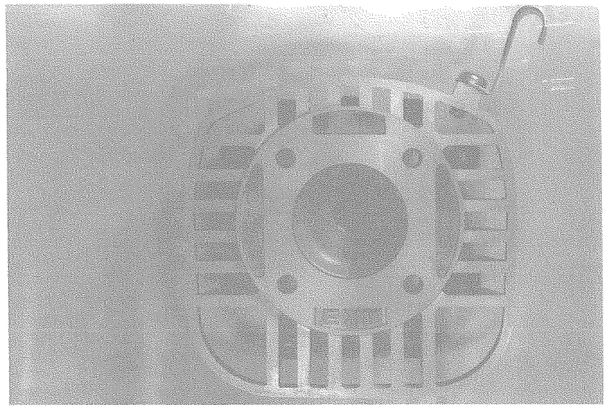
Normal pressure 8kg m³

- In case of higher pressure, it means excessive carbon deposit on combustion chamber.
- In case of lower pressere, check the cylinder, piston and piston rings.



DECARBONIZATION

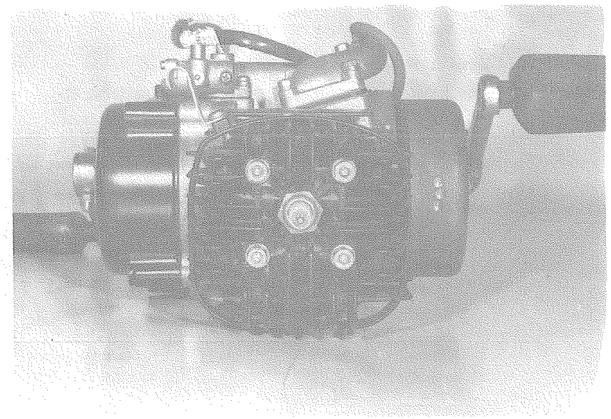
- Remove the spark plug.
- Remove the cylinder head, then remove the carbon deposits from the combustion chamber.
- Clean the head gasket surface of any gasket material.



Excessive carbon deposits drops engine power, remove carbon deposits at every 4,000 km driving.

Normal torque to tighten
cylinder head nut.

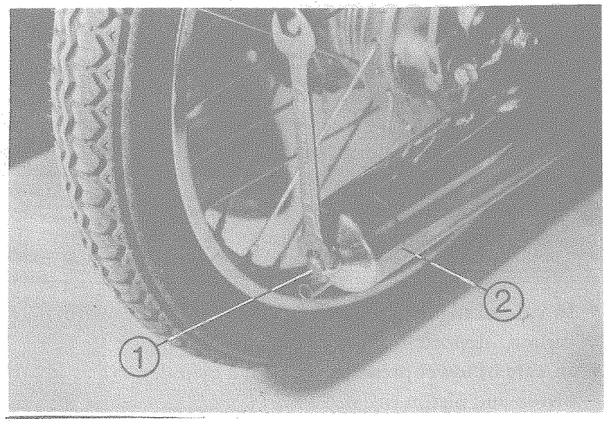
1.30 – 1.80 kg-m



MUFFLER DECARBONIZATION

DISASSEMBLY

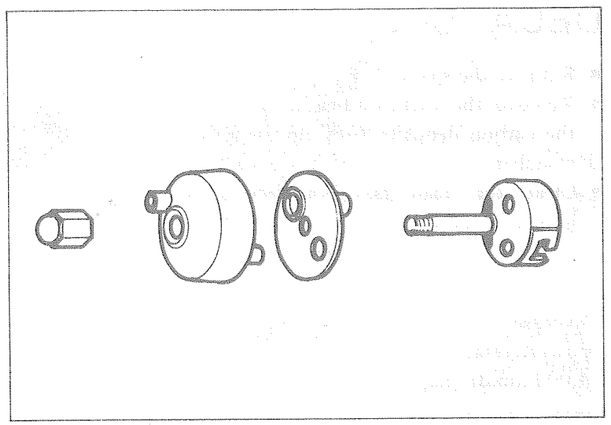
- Unscrew the cap nut then remove the muffler cap.
- Pull out the seperator by plier.

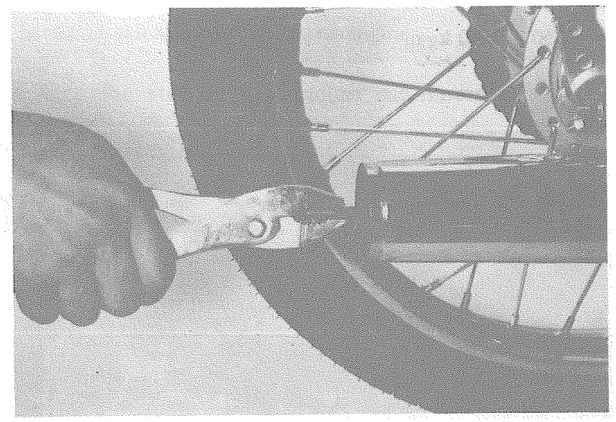


(1) Cap nut (2) Muffler cap

CLEANING

- Remove the carbon deposit with wire brush.



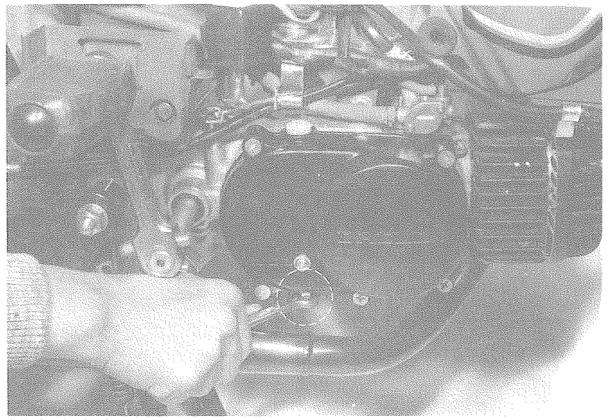


TRANSMISSION OIL CHANGE

DRAIN

- Remove the right side cover and remove the oil filler cap and drain bolt. Drain the oil.

Before draining the oil, warm the engine to normal operating temperature.

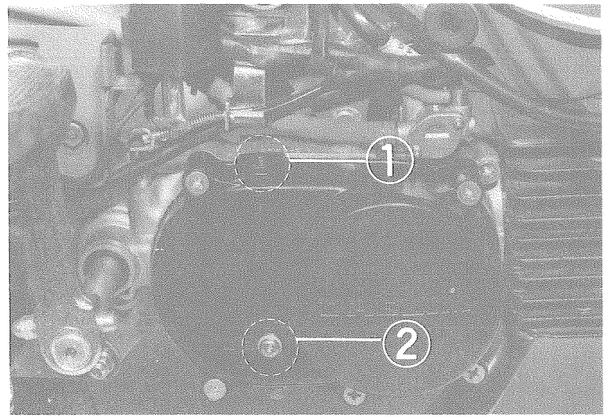

Oil drain bolt

REFILL

- Tighten the drain bolt and remove the level check screw.
- Refill the engine until the oil flows out from the level check hole.tighten the level check screw.

Oil capacity: 150cc
Recommanded oil: SAE 20w/40

- Start the engine and check for leaks. Stop the engine and recheck the oil level.



(1) Filler hole (2) Oil lever check screw

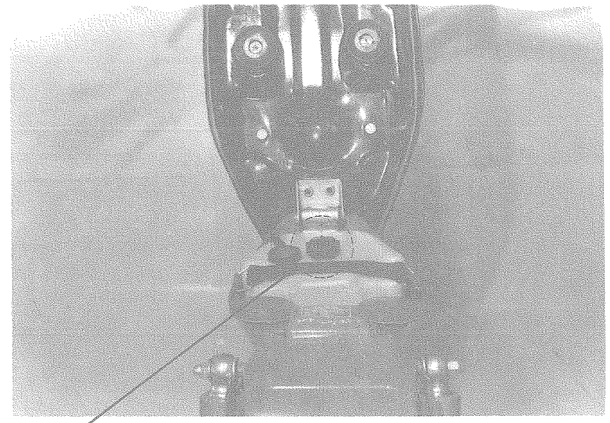
ENGINE OIL SUPPLY

- Pull down the seat and remove the filler cap.
- Add oil.

Oil tank capacity: 1ℓ

- Use same brand engine oil when adding.

Note:
When filling, do not let foreign material enter the tank.


Filler cap

ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

GENERAL INFORMATION

Following maintenance and inspection can be accomplished with the engine installed.

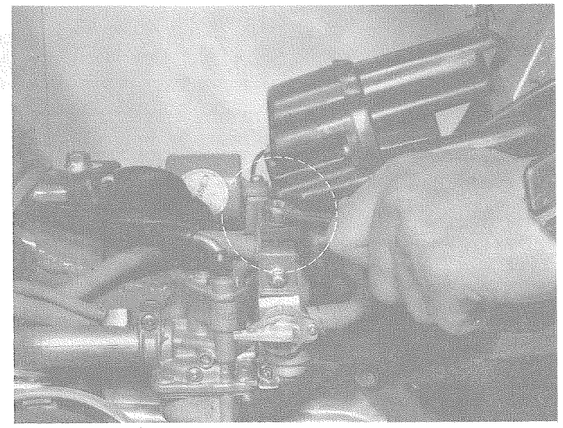
- Cylinder head, cylinder and piston group.
- Reed valve and oil pump.
- Clutch and drive gear.
- AC generator

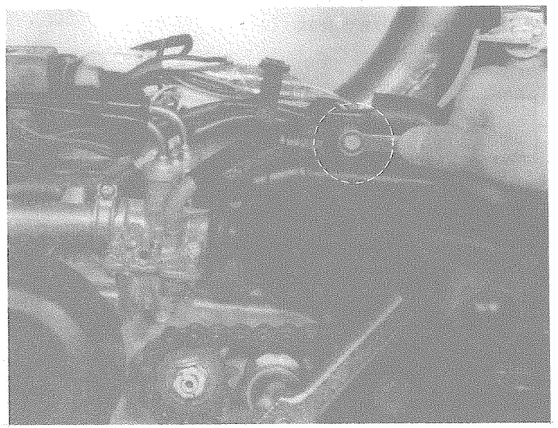
Transmission oil capacity: 150cc

ENGINE REMOVAL

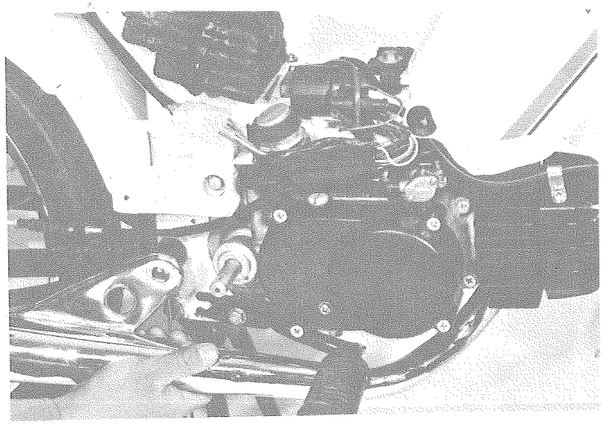
Let the engine be cool before starting removal, if the engine get hot.

- Remove the right and left side covers.
- Close the fuel cock then remove the air cleaner and carburetor.

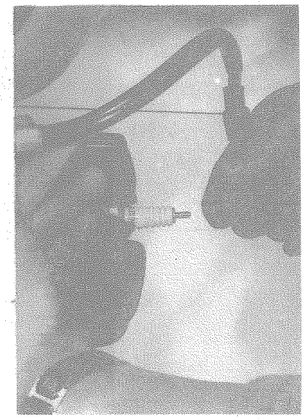




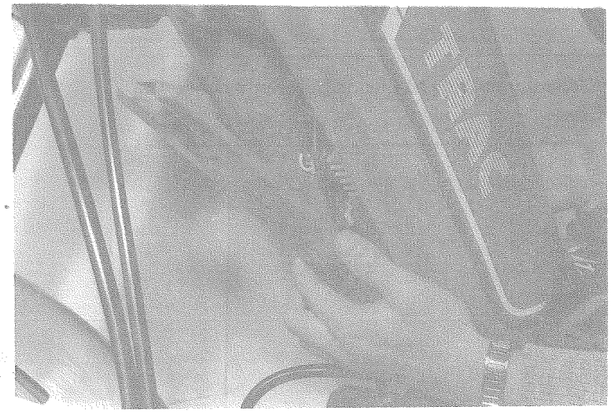
- Remove the muffler.
- Remove the chain cover and drive chain.



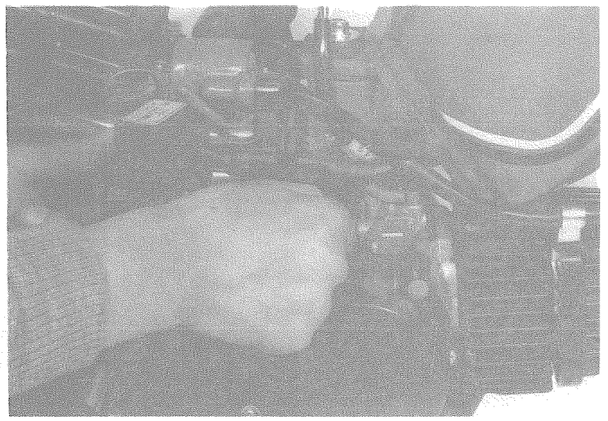
- Remove the high-tension cord.
- Disconnect the wires from A.C. generator.



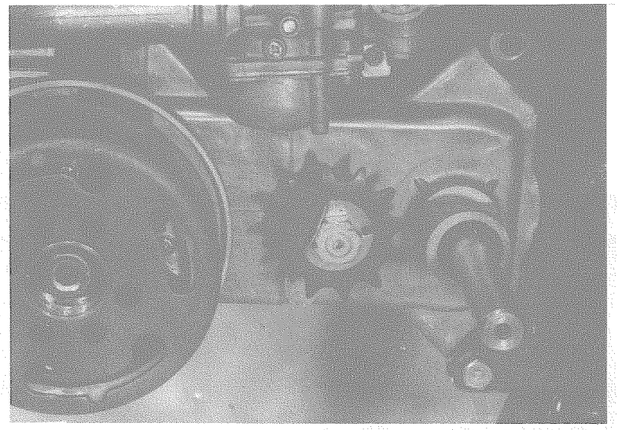
- Remove the front under cover.



- Disconnect the oil line from oil tank to oil pump.

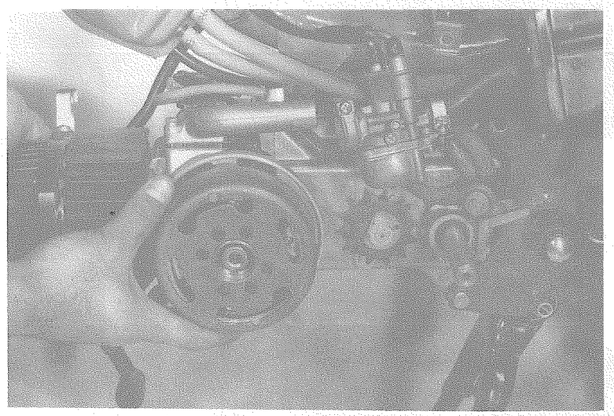


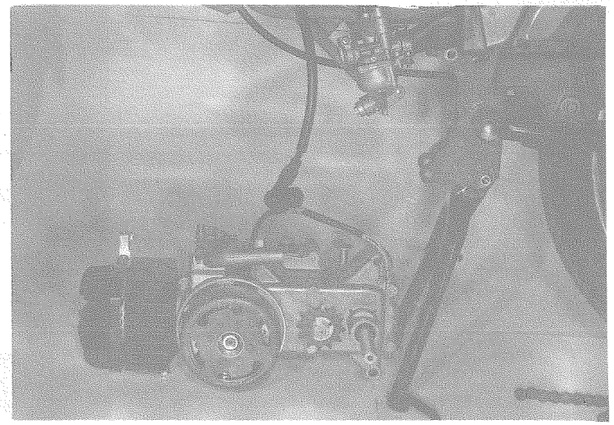
■ Remove the step bars.



■ Remove the engine comp.

Clean the outside of engine before disassembling.





CYLINDER HEAD/CYLINDER/PISTON

5

SERVICE INFORMATION

GENERAL INFORMATION

- All cylinder head maintenance and inspection can be accomplished with the engine installed.
- During and before assembling, apply clean engine oil to all sliding surfaces of parts like piston and cylinder.

CYLINDER TO PISTON CLEARANCE

When it is necessary to replace the cylinder or piston, be sure to follow the chart below.

CYLINDER PISTON MARKING CHART

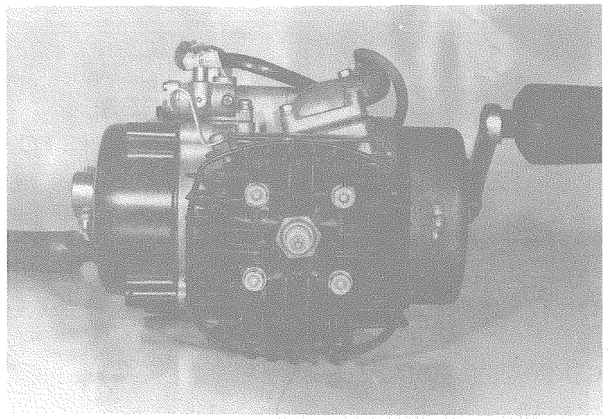
Piston O.D.	Marking	Cylinder I.D.
39.970-39.965	A	φ 40.010 φ 40.015
39.975-39.970	B	φ 40.015 φ 40.020
39.980-39.975	C	φ 40.020 φ 40.025
39.985-39.980	D	φ 40.025 φ 40.030

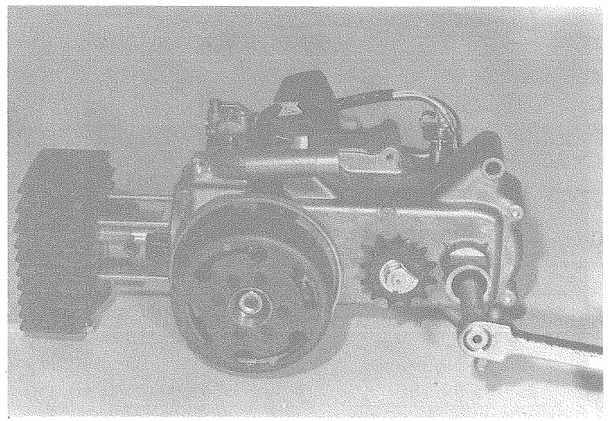
CYLINDER HEAD CYLINDER

- Remove the spark plug high tension cord clip then remove the spark plug.
- Remove the cylinder head.
- Remove the cylinder head gasket.
- Remove the muffler.
- Remove the cylinder.
- Remove the cylinder gasekt.

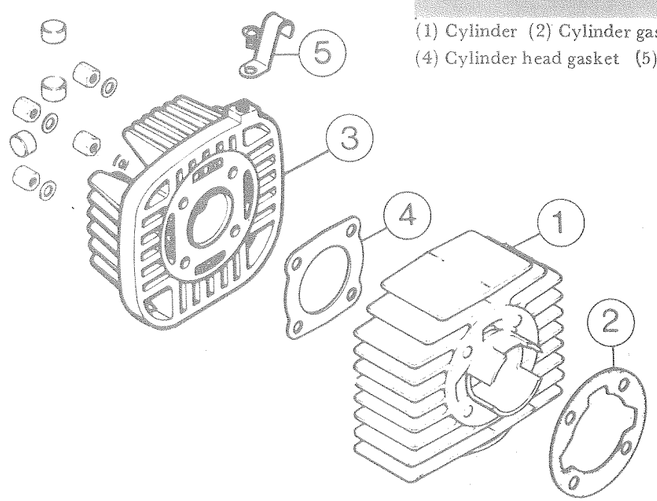
Note: Use only plastic hammer if needed.

After removing cylinder, close up the crank case opening with shop towel. Do not apply the kick starter.





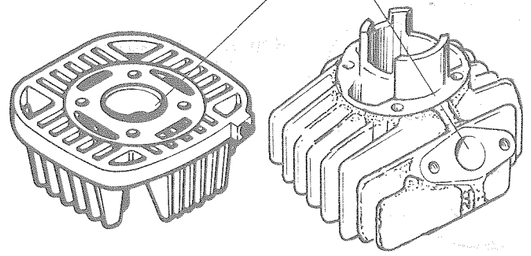
(1) Cylinder (2) Cylinder gasket (3) Cylinder head
(4) Cylinder head gasket (5) High tension cord clip



INSPECTION

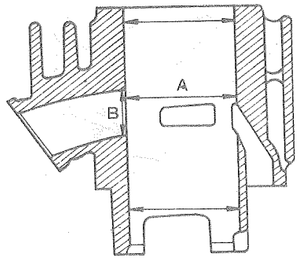
1. Remove the carbon deposits.

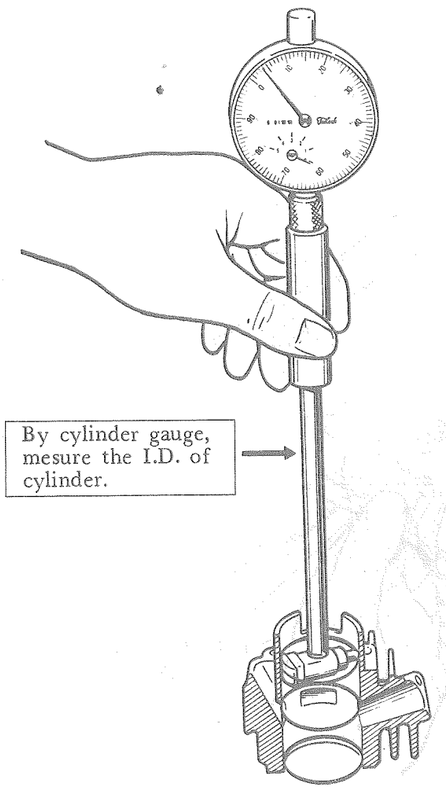
Remove the carbon deposits on combustion chamber and exhaust port.



2. Check I.D. of cylinder.

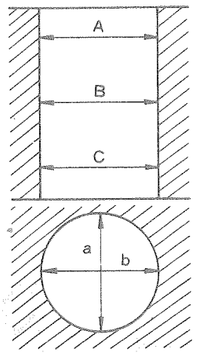
Visually check the inside of cylinder. Most worned portion are usually 'A' and 'B' area where ports are located.





By cylinder gauge, mesure the I.D. of cylinder.

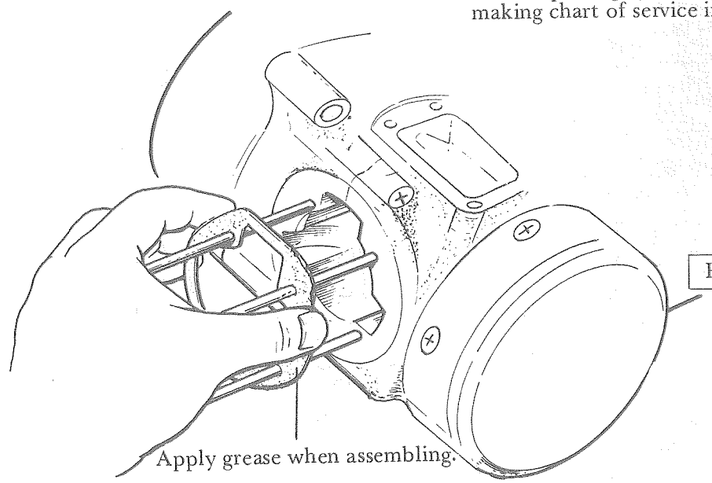
Measure the diameter at the position of 'A', 'B' and 'C' in two direction of 'a' and 'b'.
If there are difference of over 0.05mm among 6 measured values, replace the cylinder.



Marking	Cylinder I.D.	
A	ϕ 40, 010	ϕ 40, 015
B	ϕ 40, 015	ϕ 40, 020
C	ϕ 40, 020	ϕ 40, 025
D	ϕ 40, 025	ϕ 40, 030

CYLINDER ASSEMBLY

When replacing cylinder or piston, refer to cylinder piston making chart of service information.

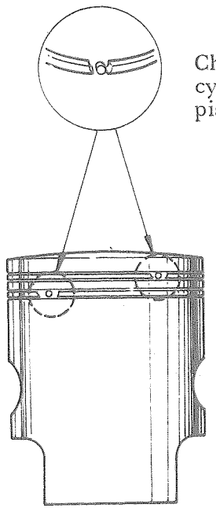


Replace when disassembled.

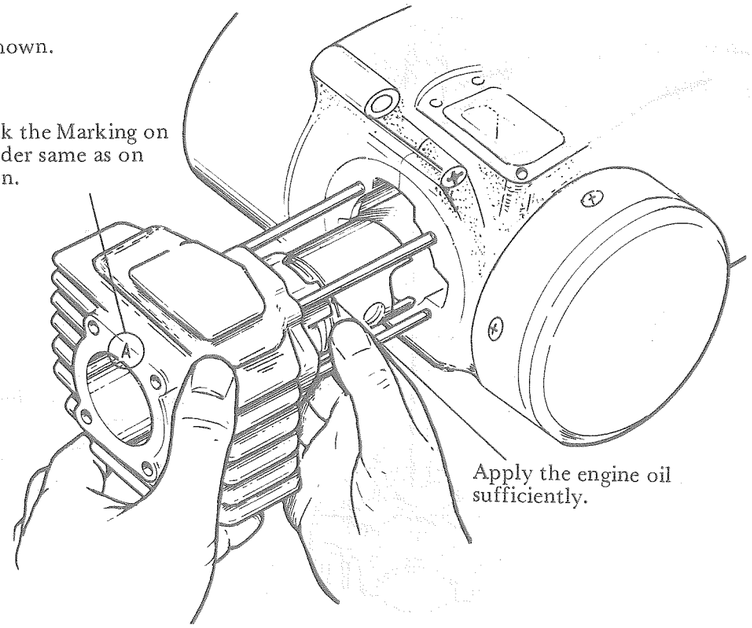
Apply grease when assembling.

NOTE:
When replacing cylinder or piston make sure to select same maked ones.

Install the piston ring as shown.



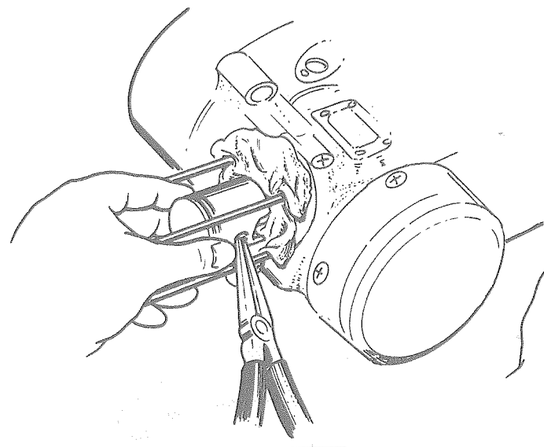
Check the Marking on cylinder same as on piston.



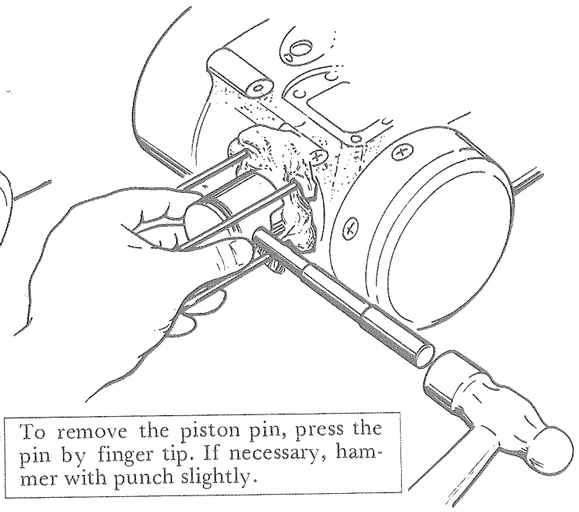
Apply the engine oil sufficiently.

PISTON PISTON RING AND PISTON PIN

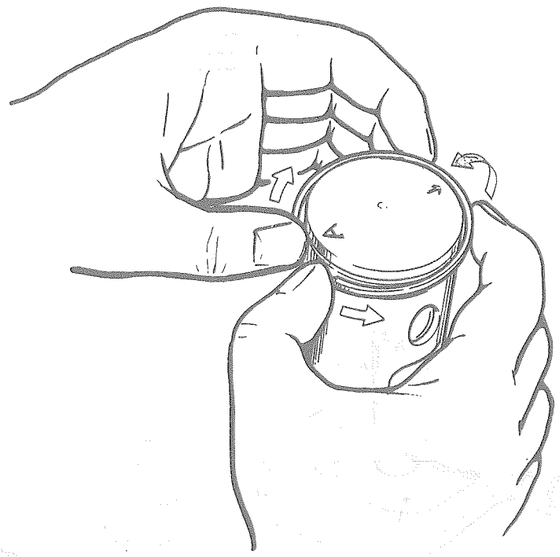
DISASSEMBLY



Place a shop towel over the crank case opening, then remove the piston pin clips.



To remove the piston pin, press the pin by finger tip. If necessary, hammer with punch slightly.



Always remove the piston ring as shown. Do not force excessively.

Wash piston with solvent.

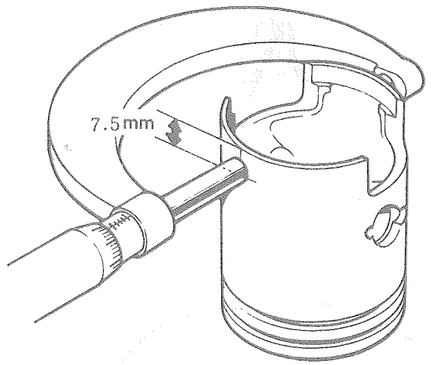
PISTON INSPECTION

Visually check the defects of piston.

Marking on piston

Piston O.D.	Mark
39, 970～39, 965	A
39, 975～39, 970	B
39, 980～39, 975	C
39, 985～39, 980	D

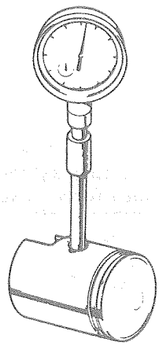
Measure the O.D. of piston at a point 7.5mm from the bottom.

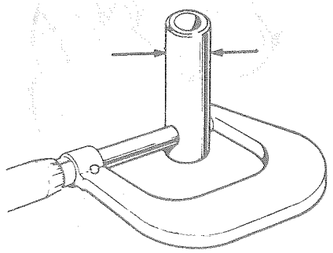


Standard O.D.	39, 965－39, 985 Ⓐ－Ⓓ
Service Limit	39, 900mm

Measure the I.D. of piston pin hole.

Standard I.D.	10mm⊕0.015
Service Limit	10, 030mm





Measure the O.D. of piston pin.

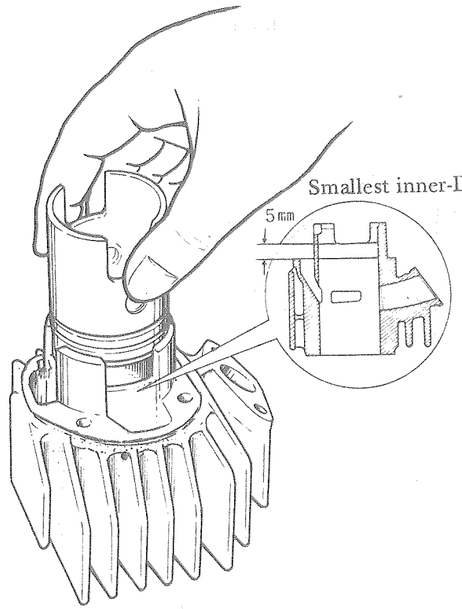
Standard O.D.	10⊕10.004
Service Limit	9, 970mm

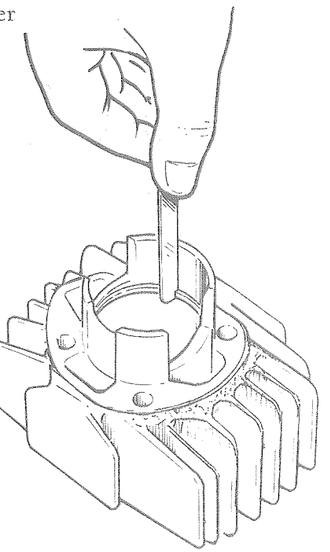
PISTON RING INSPECTION

Measure the ring-end-gap by inserting rings with piston into cylinder.

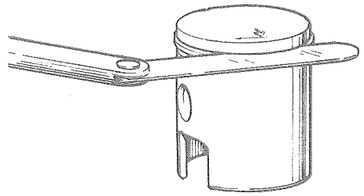
Note: Measure the ring-end-gap at the smallest inner-diameter of the cylinder.

Piston ring-end-gap.	
Top ring	0.15～0.35mm
Second ring	0.15～0.35mm



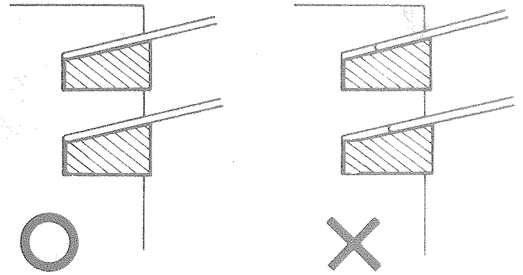


Measure the clearance between piston ring and piston.



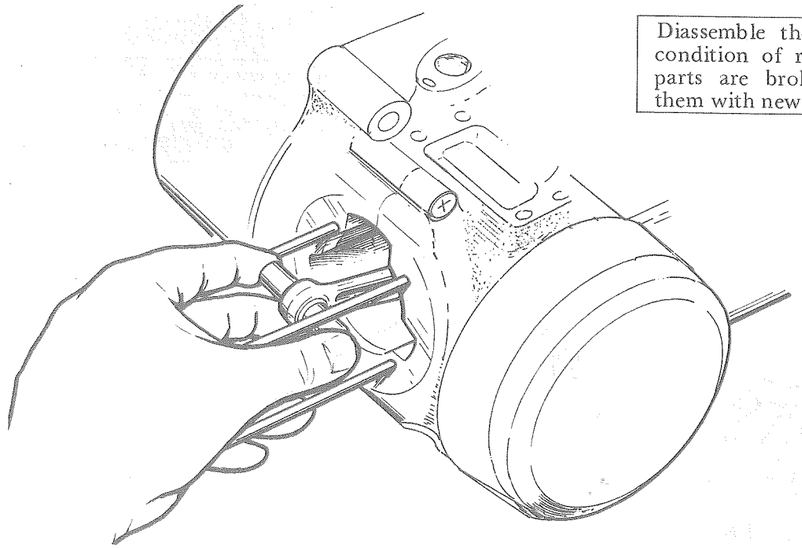
Clearance
0.03～0.05mm

Be sure to insert the thickness gage into the groove to the end.

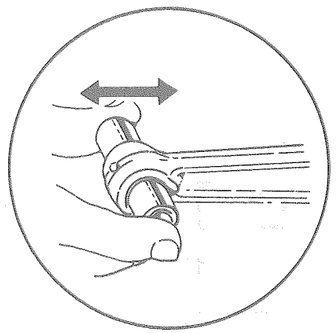


SMALL-END-BEARING INSPECTION

Excess looseness of small end bearing will cause engine noise.



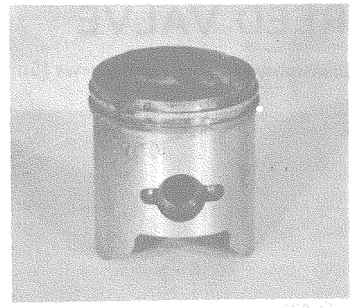
Diassemble the bearing and check the condition of retainer and roller. If the parts are broken or defaced, replace them with new ones.

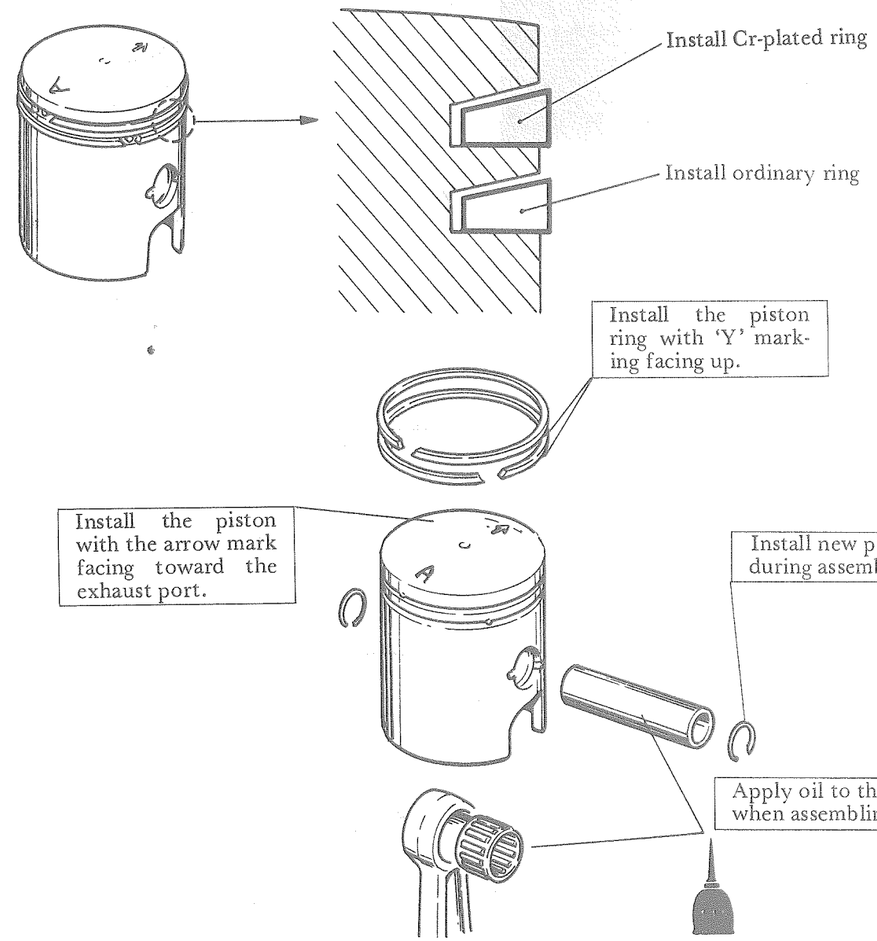


Check the looseness of the bearing by inserting the piston pin into the con-rod small end hole as shown.

PISTON RING AND PIN ASSEMBLY

Note:
- Place a shop towel over the crank case opening.
- Make sure that the proper rings are installed when replacing.

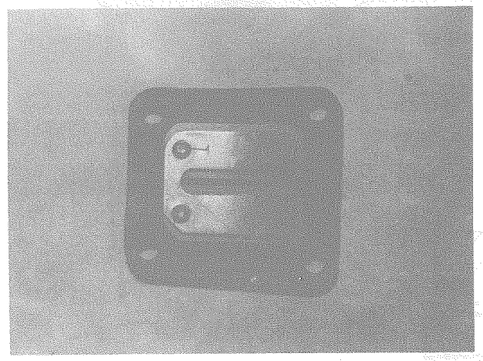


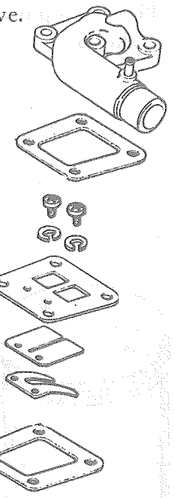


Note: After assembling, check the condition of pin clip.

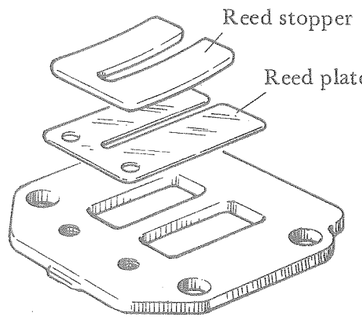
REED VALVE

Disassebly: Loosen the screws (5mm) of the crank case and remove the reed valve.





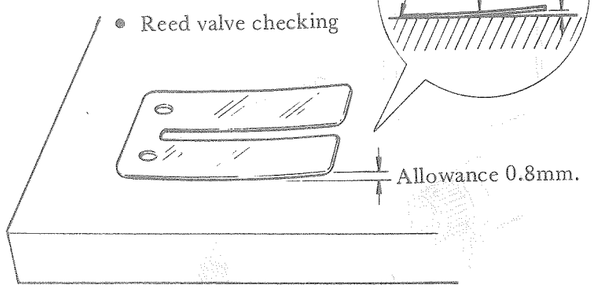
- Remove the reed stopper from the reed valve body.



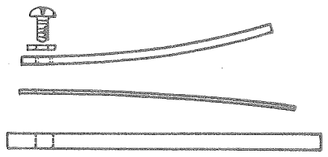
Allowance of reed stopper
4.8mm

If reed plate is cracked, replace it.

- Reed valve checking



Assembly



When assembling the stopper screw, apply an adhesive agent.

Note: Should not bend the reed stopper too much.
The deformity of reed stopper will cause a damage of the valve.

CLUTCH/DRIVE SHAFT/OIL PUMP/A.C.GENERATOR

SERVICE INFORMATION

Maintenance and inspection can be accomplished with engine installed.

TROUBLE SHOOTING

Troubles	Causes
Drive can be possible only at high RPM. (over 3,500 rpm)	Worn or burned low weight shoe.
Engine won't start by kick starter.	Worn out of one way bearing in clutch drum.
Gear chattering during running.	Worn out of drive and pinion gears.

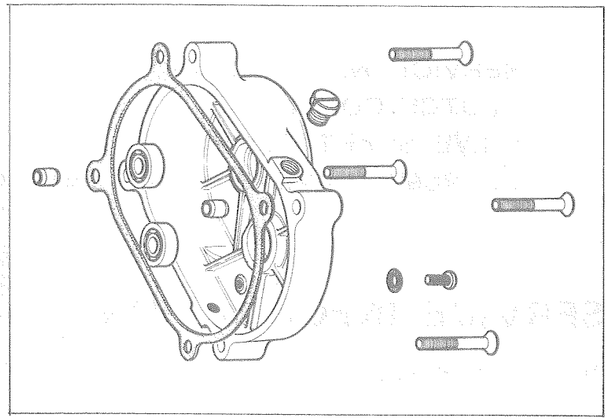
DISASSEMBLING PROCEDURE

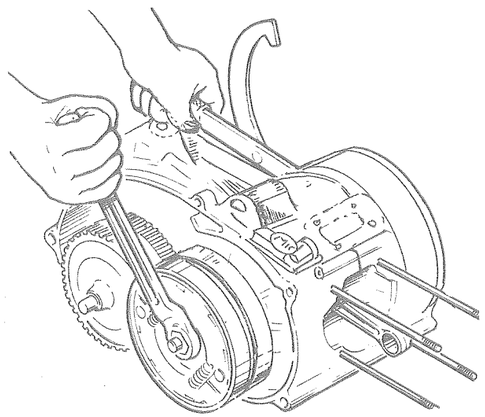
Clutch Comp. → Drive shaft Comp. → Oil pump drive gear

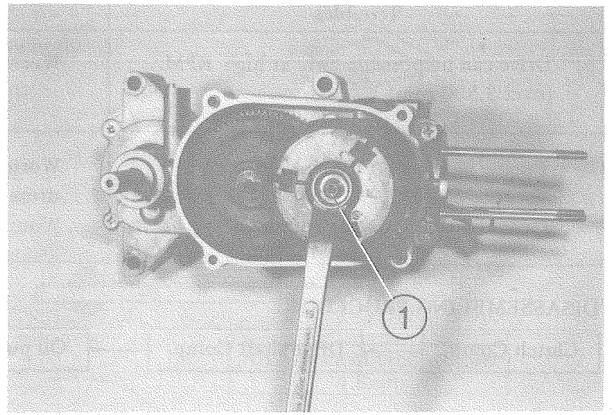
CLUTCH COMPLETE

DISASSEMBLY

- Remove the clutch side cover.
  * Use plastic hammer when needed.
- Hold magneto with magneto-rotor holder and loosen lock nut by 19mm-socket wrench.

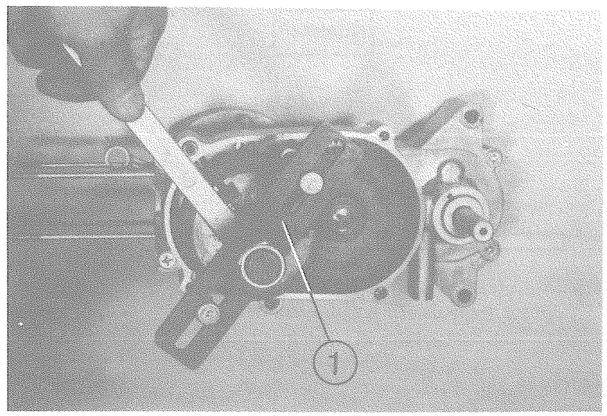






Lock nut

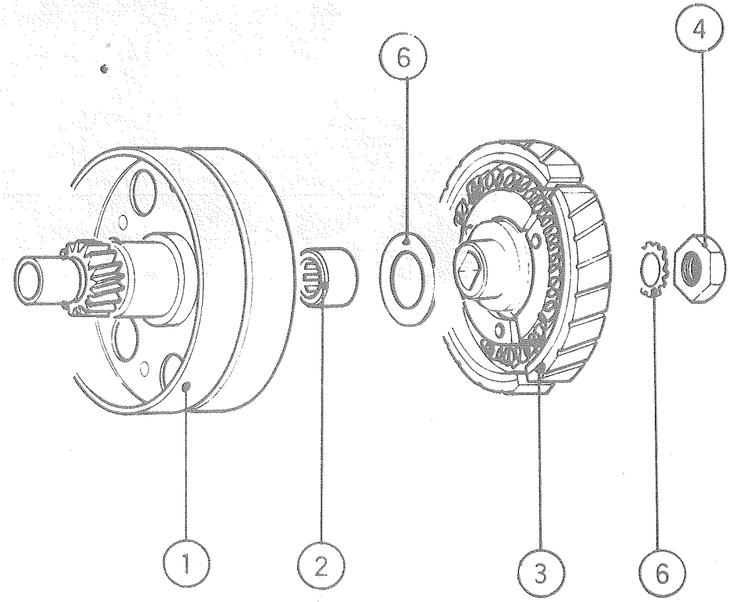
- Remove the clutch comp. with a special tool as shown.



Special tool

- Pull out a clip from the clutch comp. and remove the high speed clutch weight ass'y.

Note:
Don't disassemble the clutch spring.



1) Clutch drum comp.
2) One-way needle bearing
3) Low speed clutch weight comp.
4) Lock nut
5) Lock washer
6) Thrust washer B

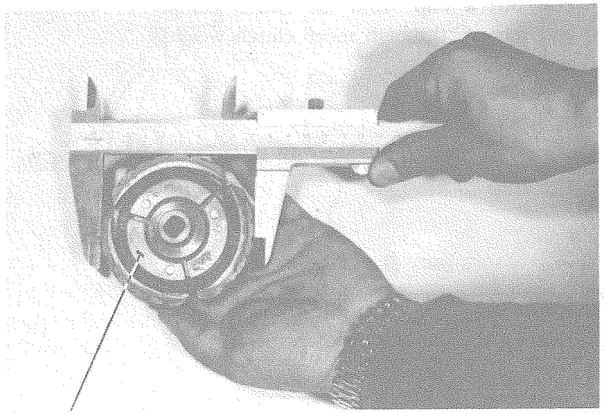
Measure O.D. of low clutch weight with a vernier caliper.

	O.D.(standard)	Service limit
Clytch weight	85.35	−1mm

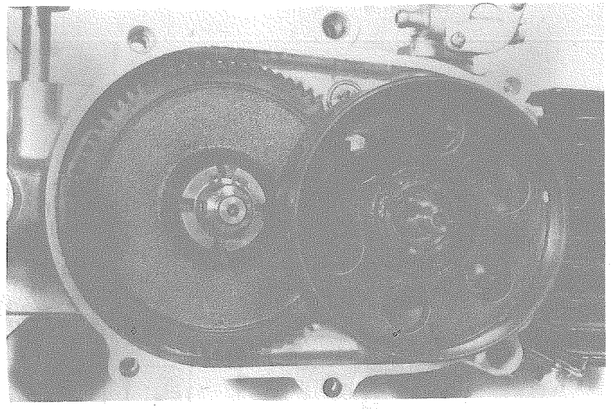
* Replace the weight complete when the clutch weight is worn out too much.

> Don't disassemble the weight spring. It is not possible to assemble it without a special tool.

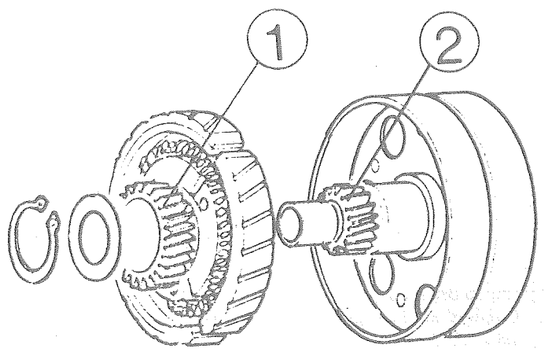
- Check the inside of the clutch drum and replace the drum if it is worn out or defaced too much.
- Check the one-way bearing. The role of the bearing is to make crank shaft revolve clockwise only.
- Check the bushing of clutch drum.
- Check the condition of pinion gears.
  - In case of defects on pinion gear, replace the clutch drum comp.



Clutch weight comp



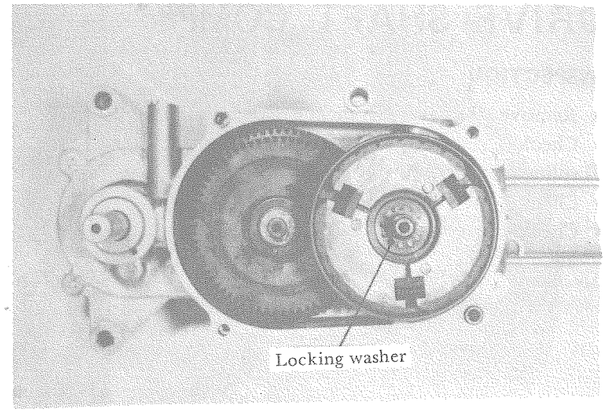
Crank shaft revolves cockwise only



1) pinion gear

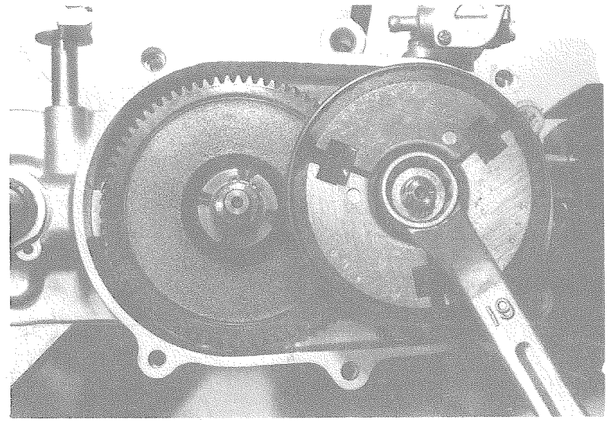
CLUTCH ASSEMBLY

- Install the clutch drum comp.
- Install the low-speed clutch weight comp.



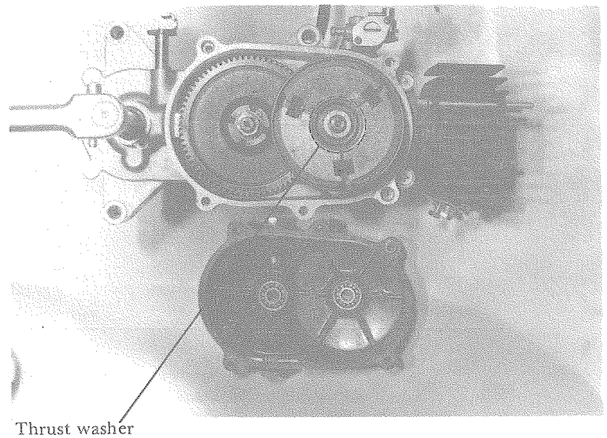
Locking washer

Install the locking washer and tighten the lock nut while holding magneto with magneto rotor holder.



Torque	5.50-6.60 kg-cm

- Apply grease on thrust washer then install the clutch side cover.
- After assembling, supply with the transmission oil.



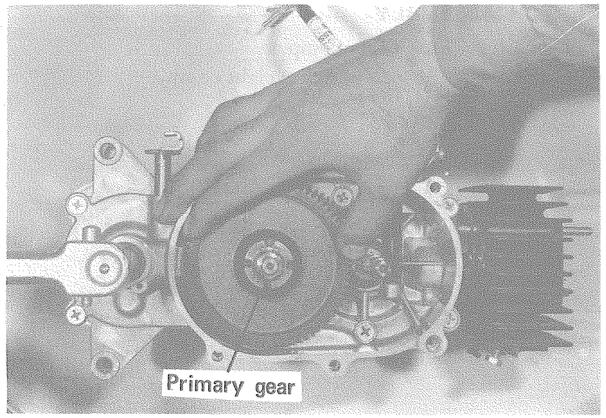
Thrust washer

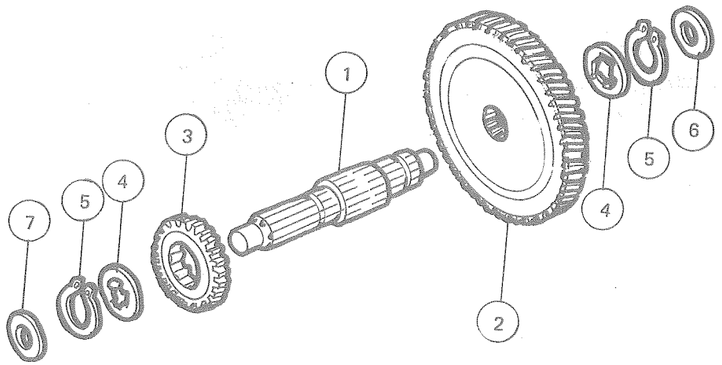
Oil q'ty	150cc

DRIVE SHAFT COMP

INSPECTION

- Remove the gear from the drive shaft.
- Check the condition of the drive shaft spline.
- Check the defacing condition gear.
- Check the condition of drive shaft bearing.





1) Shaft, Drive
2) Gear, Primary (74T)
3) Gear, Drive Shaft (24T)
4) Washer, Spline (77MM)
5) Cir Clip (Ex. 17)
6) Washer, Drive Shaft
7) Washer C, Thrust

OIL PUMP DRIVE GEAR

DISASSEMBLY

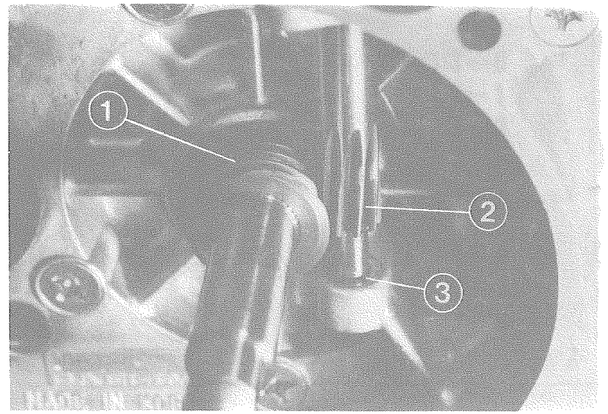
- Remove the oil pump.
- Remove the oil pump pinion gear. (Be careful not to lose a thrust washer located at the end of the pinion gear.)
- Remove the worm gear.

INSPECTION

- Inspect the pinion gear and worm gear.

ASSEMBLY

- Assemble in the reverse order of disassembly.



1) Worm gear 2) Pinion gear 3) Washer

A.C. GENERATOR

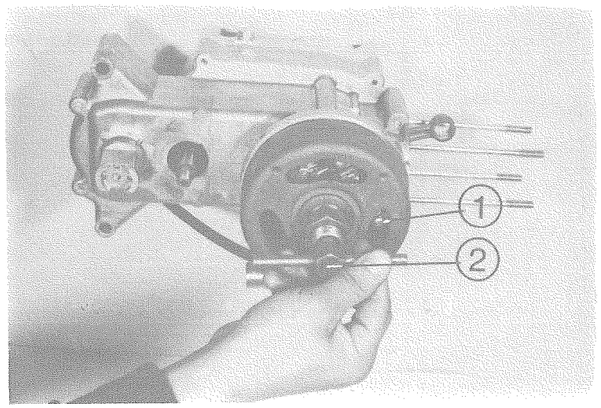
DISASSEMBLY

- Loosen the lock nut while holding fly wheel by holder.
- Remove the fly wheel by using a special tool.
- Loosen 3 plate bolts and remove the coil comp.

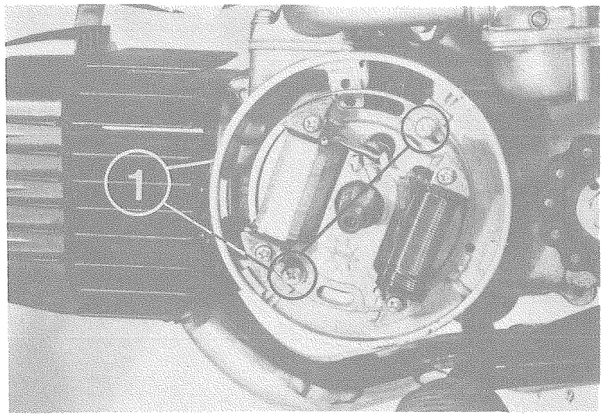
Note:
Don't use a hammer when removing fly wheel.
Use special tools only.

ASSEMBLING

- Assemble in the reverse order of disassembly.



1) Fly wheel 2) puller



1) Plate locking screw

CRANK/KICK START/IDLE SHAFT

SERVICE INFORMATION

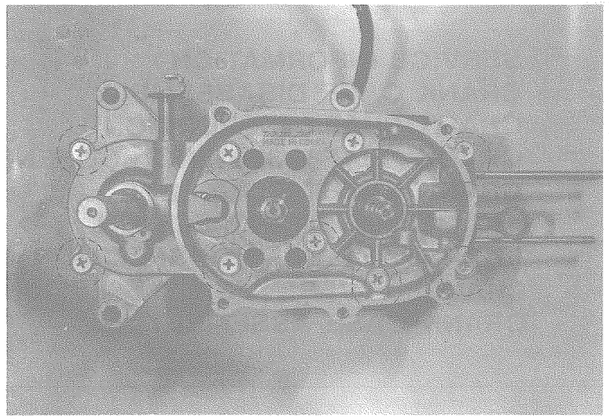
Maintenance can be done after removing engine from the frame.

CRANK CASE DISASSEMBLY

DISASSEMBLY

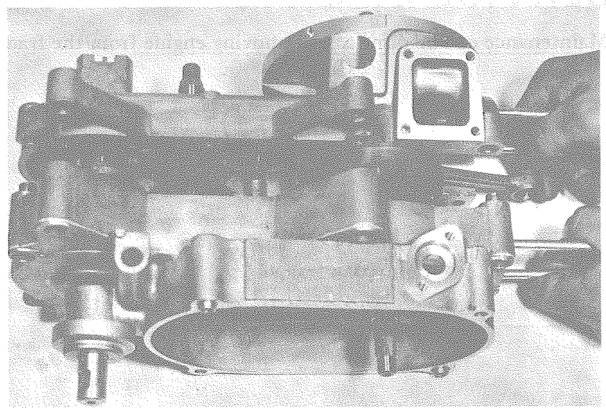
- Loosen 9 pan screws and separate crankcase by using a plastic hammer.

Note:
Be careful not to damage the crankcase by using a screw driver. The case can be easily separated with a hammer.

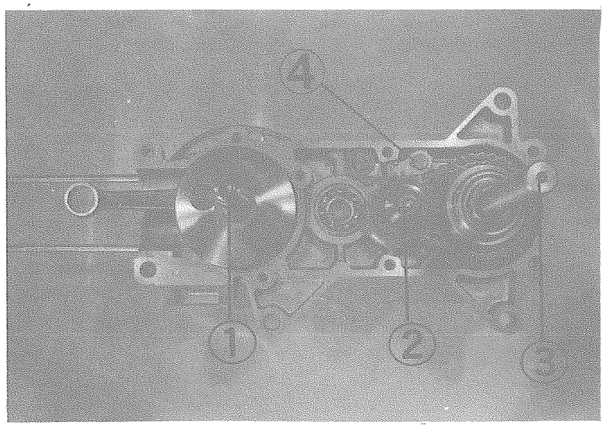


Pan screw

- Remove the crank shaft from the crank case.



- Remove the tensioner comp.
- Remove the drive shaft comp.
- Remove the pedal shaft comp.
- Remove the idle shaft comp.

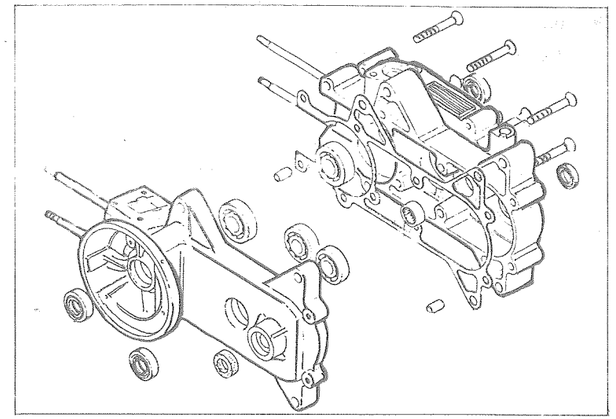


(1) Crank shaft (2) Idle shaft (3) Pedal shaft (4) Tensioner

CRANK SHAFT INSPECTION

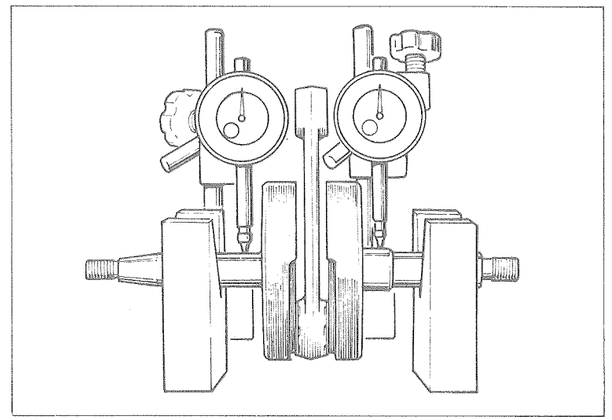
- Set the crank shaft on a stand or in V blocks and read runout at point A and B using a dial gauge.

Service limits A : 0.10mm (0.004in)
B : 0.10mm (0.004in)

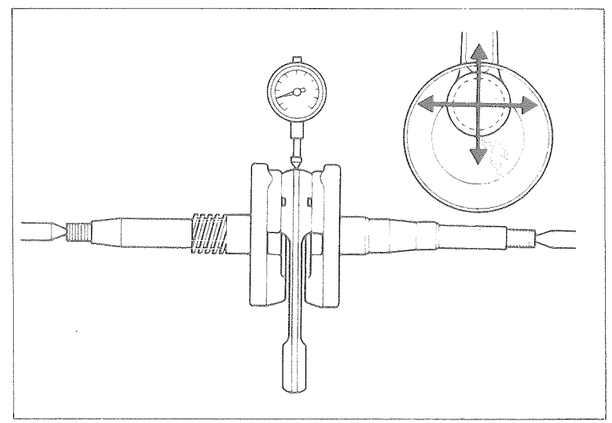


- Measure the connecting rod big end radial clearance at two point in X and Y direction.

Service limit : 0.05mm (0.002in)

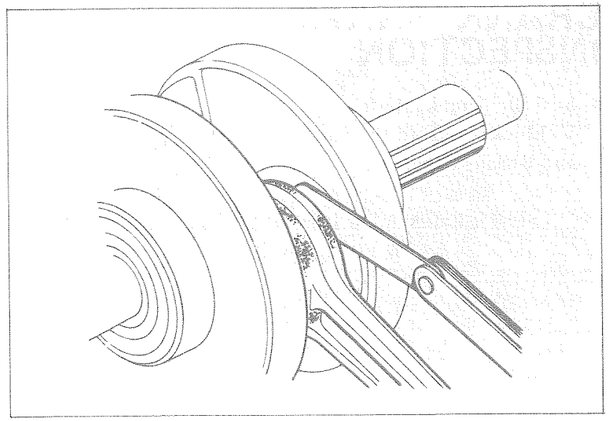


- Pull out oil seals and bearing from crank case.



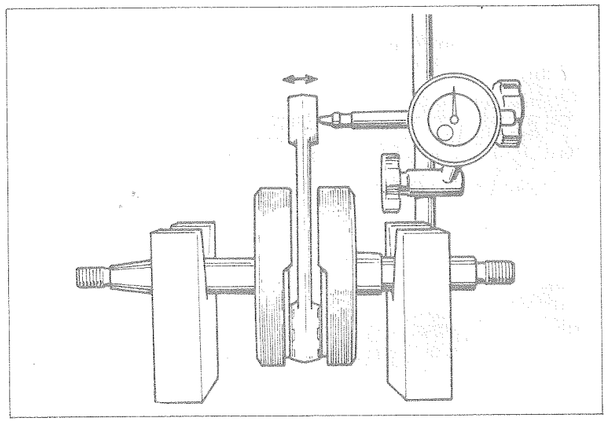
- Measure the connecting rod big and side clearance with a feeler gauge.

  Service limit : 0.8mm (0.032in)



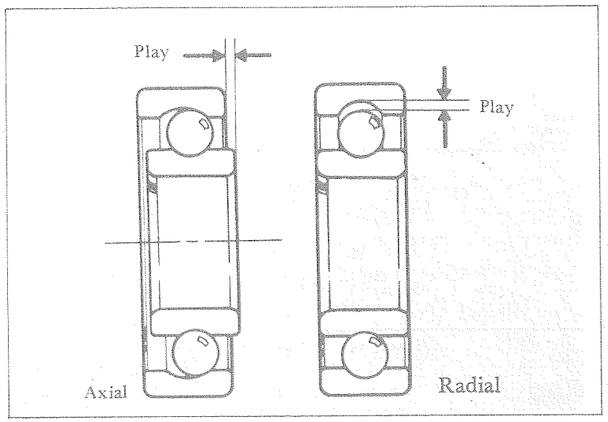
- Measure the bending clearance of the connecting rod.

  Service limit : 0.05-0.4mm

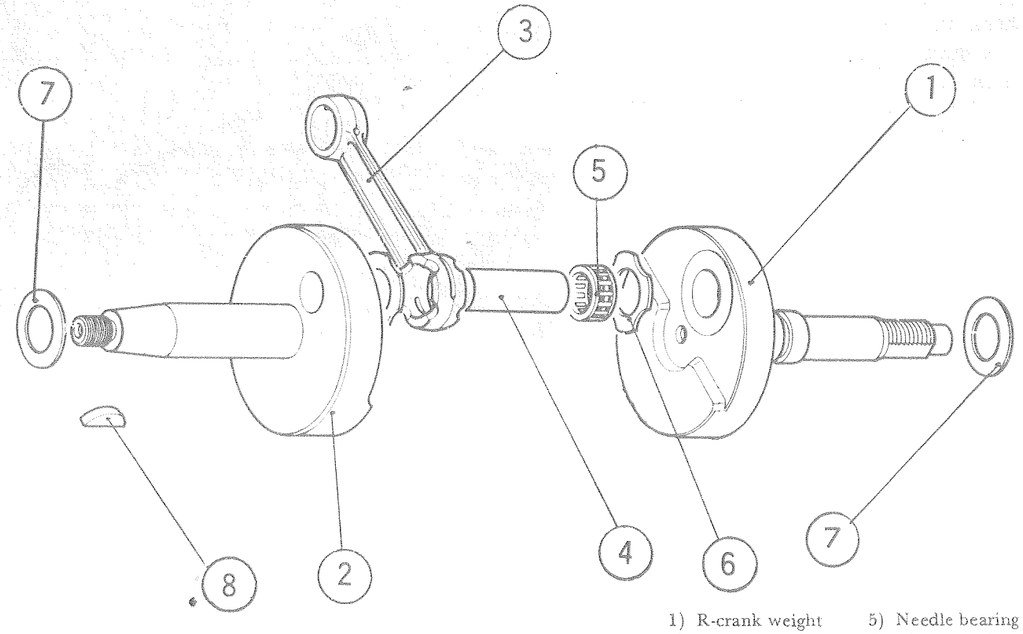


CRANK SHAFT BEARING LOOSENESS

- Spin the crank shaft bearing by hand and check for play.
- The bearing must be replaced if it is noisy or has excessive play.



CRANK SHAFT COMP



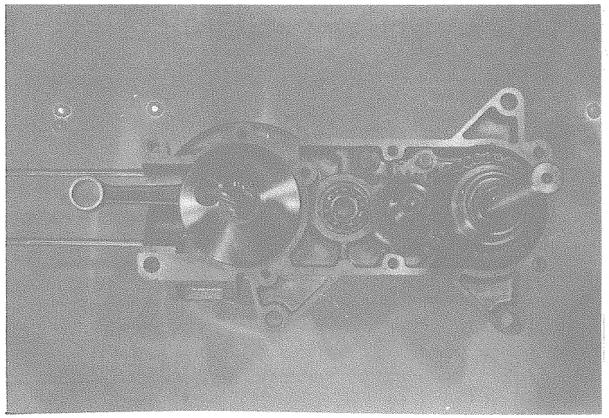
1) R-crank weight
2) L-crank weight
3) Connecting rod
4) Crank pin
5) Needle bearing
6) Thrust washer
7) Crank shaft washer
8) Wood-ruff key

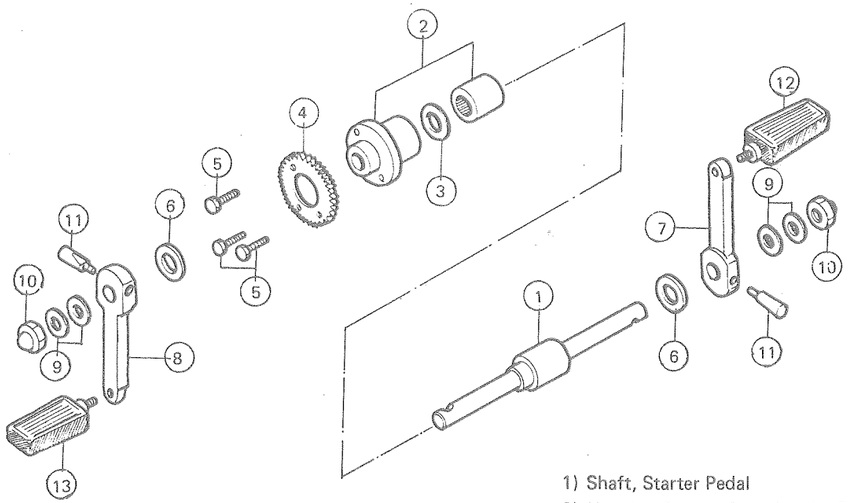
OIL SEAL INSPECTION

Visually inspect the oil seals. If there is worn out or defect, replace it with new one.

PEDAL SHAFT INSPECTION

- Check the condition of deformation of pedal shaft and sprocket.
- Check the condition of Needle Bearing.





* Apply grease to the needle bearing and washers when assembling.

1) Shaft, Starter Pedal
2) Housing Comp., Start Needle Bearing
3) Washer, Trust (20MM)
4) Sprocket, Start (30T)
5) Bolt, HEX. (5 x 12)
6) Washer, Thrust (16MM)
7) ARM, Crank Axle RH.
8) ARM, Crank Axle LH.
9) Washer, Plain (6MM)
10) Nut, Cap (6MM)
11) Pin, Crank Arm
12) Pedal Ass'y., Crank RH.
13) Pedal Ass'y., Crank LH.

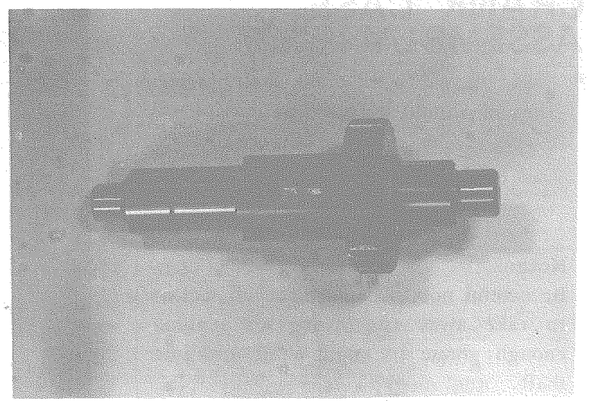
CHANGE LEVER INSPECTION

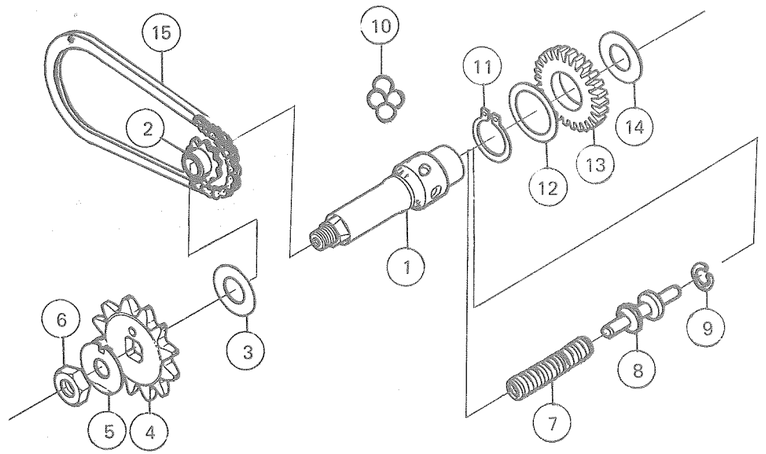
- Check the condition of O-RING.
- Check the DEFECT condition of push plate.

* If push plate is bent. replace it.
* When assembling the change lever apply grease to O-Ring.

IDLE SHAFT COMP. INSPECTION

- Remove the ball receiver from the idle shaft.
- Remove the gear from the idle shaft.
- Check the condition of the shaft spline.
- Check the defacing condition of gears.
- Check the condition of idle shaft bearing and oil seal.
- Check the condition of ball receiver and steel ball.

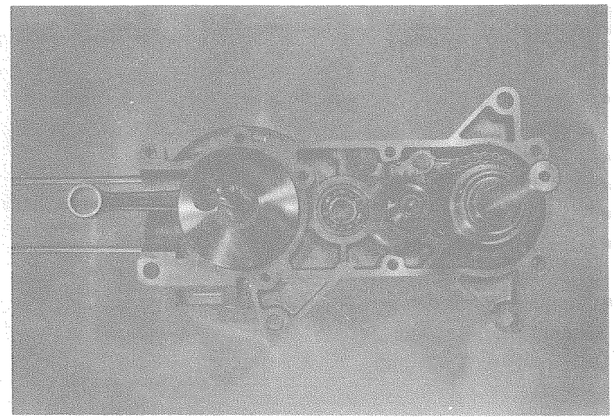




1) Shaft, Idle
2) Sprocket, Idle Shaft (14T)
3) Washer B, Thrust
4) Sprocket, Drive (12T)
5) Washer, Lock
6) Nut, A.C. Generator Fixing
7) Spring, Ball Receiver
8) Receiver, Ball
9) Cir Clip (In. 14)
10) Ball, Steel # 10 (5/16)
11) Cir Clip (Ex. 25)
12) Washer Thrust (25)
13) Gear, Idle Shaft (24T)
14) Washer A, Thrust
15) Chain, Starter (38L)

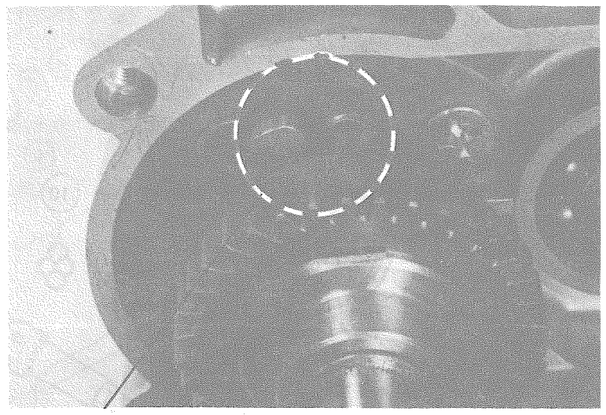
CRANK CASE ASSEMBLY

- Apply the oil to the crank shaft bearings. The oil should be same as mission oil.



Note:
Be careful not to damage the oil seal or to take away the spring by applyng enough grease to crank shaft and idle shaft.

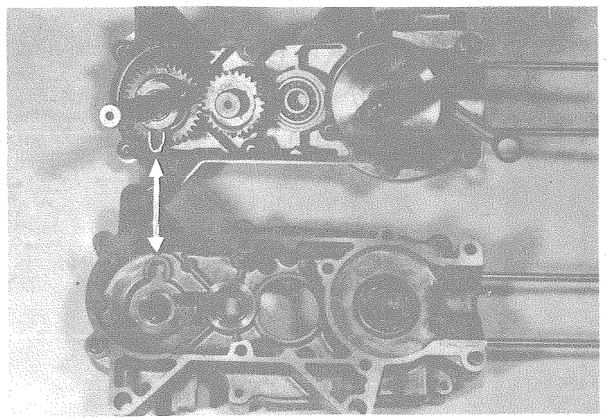
- Set idle shaft into crankcase.
- Install the crank shaft.
- Install the pedal shaft and chain.
- Install the tensioner Ass'y.
- Install the drive shaft.
- Install the cotter pin.
- Set the gasket with grease.
- Install the change lever comp.



Kick Stopper

Note:
Apply grease to washers not to slip away.

- Install the R-crank case.
- Tighten the pan screws in a X pattern.



Installation of Friction Spring

STEERING / FRONT WHEEL / BRAKE / SUSPENSION

SERVICE INFORMATION

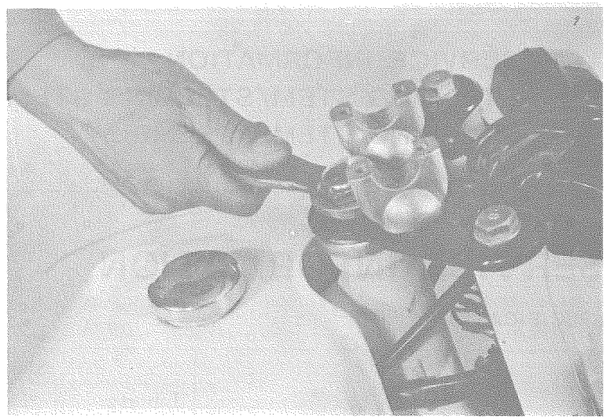
SPECIFICATION

Item		Standard			Service limit
		Liberty	Escot	Image	
Axle shaft runout		—	—	—	0.2mm (0.08 in)
Rim Runout	Radial	—	—	—	2.0mm (0.08 in)
	Axial	—	—	—	2.0mm (0.08 in)
Cushion spring free length		43.61mm	—	—	under 41mm
Tube runout		—	—	—	0.2mm (0.08 in)
Fork Tube O.D.		27mm	—	—	26.90mm (1059in)
Shoe lining thickness		3.9-4.0mm	—	—	2.0mm
Fr. Brake drum I.D.		109.8-110mm	—	—	over 110mm

8

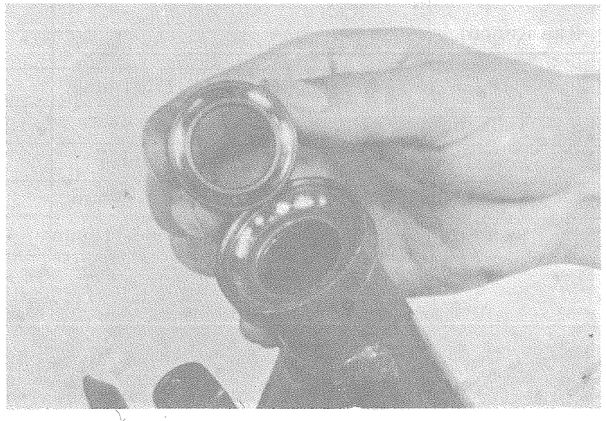
STEERING STEM

- Remove the handle bar.
- Remove the head light and speedometer.
- Remove the front wheel.
- Remove the front forks.
- Loosen the steering stem by stem nut wrench.



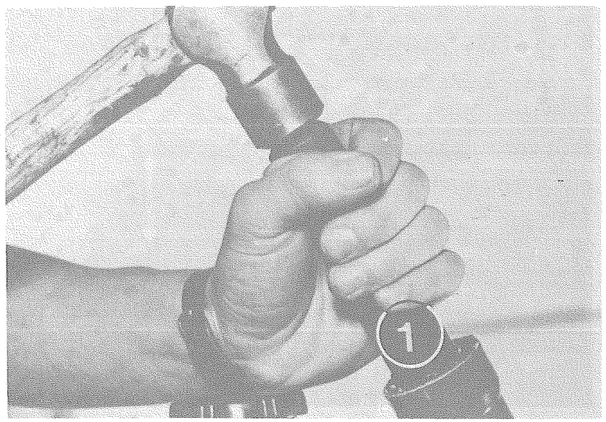
STEERING STEM DISASSEMBLY

- Loosen the top thread nut by pin spanner.
- Remove the top cone race and upper steel balls.
- Remove steering stem and under steel balls and bottom cone race.



Note:
Be sure not to lose steel balls.

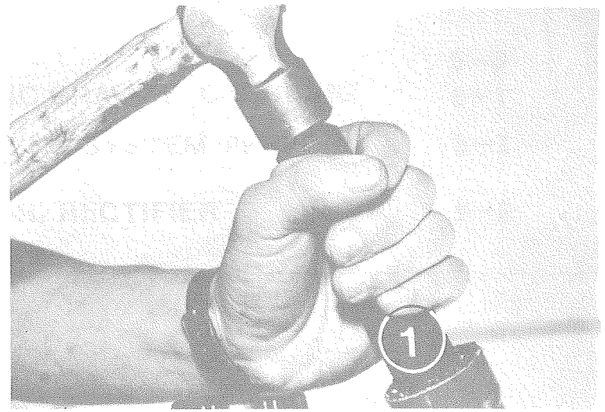
- Inspect the condition of steel balls and corn races. If there are worn out or defaced parts, replace them with new ones.
- Pull out the ball race with ball race remover.
- Check the condition of ball races.



(1) Ball race Remover

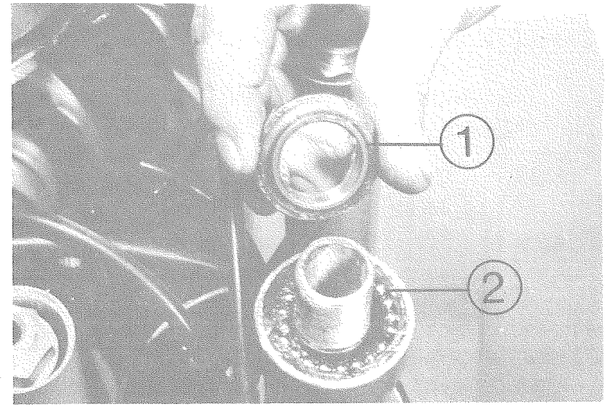
STEERING STEM ASSEMBLY

- Press the ball race into the steering head pipe with ball race remover.
- Apply grease to steel balls, ball races and cone races.
- Install the steering stem on steering head pipe.

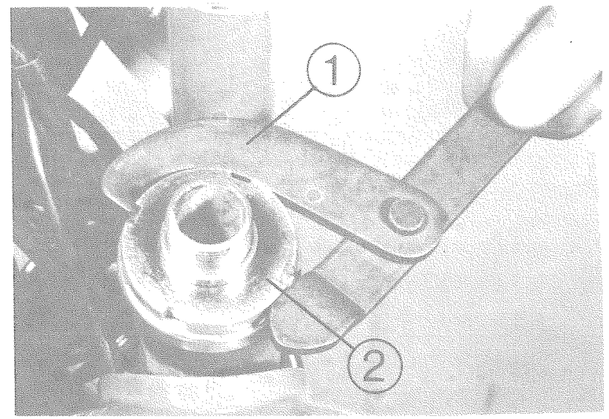


Ball race remover

- Tighten the steering top thread to the upper cone race.



(1) Ball race (2) Steel ball



(1) Pin Spanner (2) Top thread nut

BATTERY/CHANGING

SERVICE INFORMATION

GENERAL INFORMATION

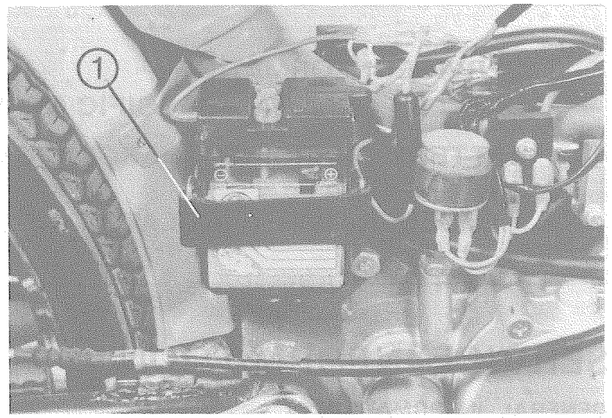
Check the electrolyte and if needed refill with distilled water.
Slow charging is preferred. Avoid quick charge.
Had better take a battery from the bike when carrying battery charging.
Be careful of flamable gas, H_2O_2 , which comes out during charging.

SPECIFICATION

Battery	Capacity	6V — 4 AH	
	Density	1,260-1,280/20°C	
	Charging current	0.4A max	
A.C. Generator	Capacity	4,000 rpm.	8,000 rpm
		1.0 A	3.0 A
Regulator rectifier			

BATTERY REMOVAL

- Remove the right side cover.
- Disconnect the ground cable.
- Disconnect the negative terminal of the battery.



1) Battery band

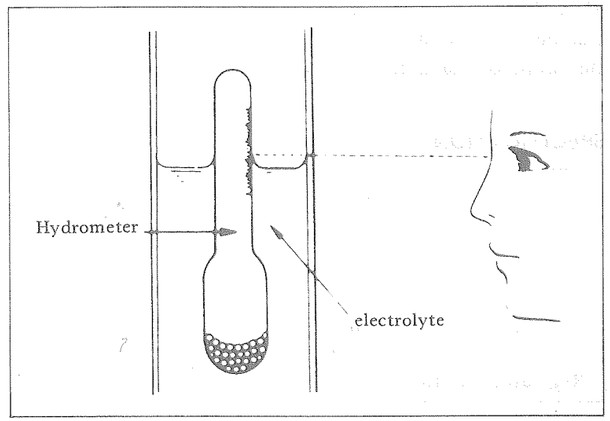
SPECIFIC GRAVITY CHECKING

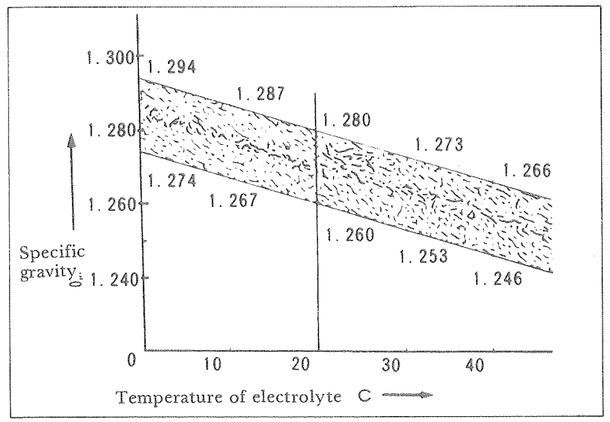
- Measure the specific gravity of electrolyte at 20°C (68°F)

Specific gravity (20°C, 68°F)	
1.260-1.280	Fully charged
1.230 or below	Undercharged

Note:
- Need charging when the specific gravity shows below 1.230.
- The specific gravity varies with the temperature as shown.
- Replace the battery if sulfation has formed, or if the space below the cell plates is filled with sediment.

The battery contains sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote; flush with water and got prompt medical attention.

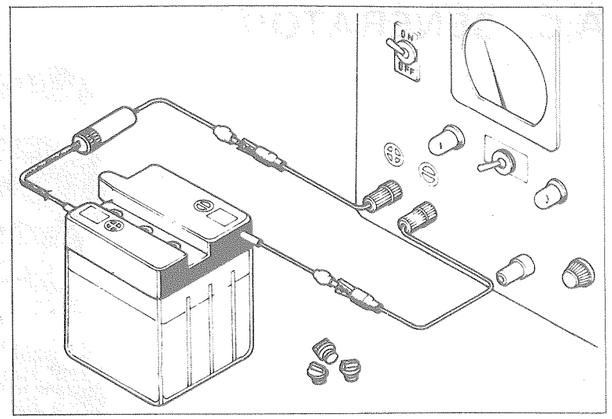


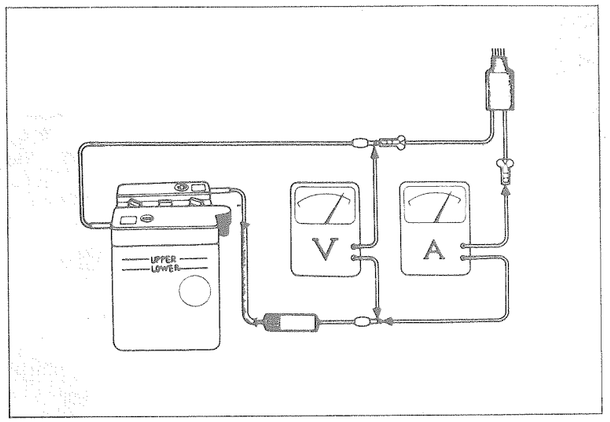


BATTERY CHARGING

- Remove the cell caps from the battery.
- Connect the changer positive (+) cable to the battery positive (+) terminal.
- Connect the charger negative (—) cable to the battery negative (—) terminal.
  Charging current: 0.4 amperes max.
- Charge the battery at 0.4A until specific gravity is 1.260-1.280.

- Keep flames and sparks away from a charging battery to prevent igniting the hydrogen gas produced by the battery.
- Turn power on/off at the charger, not at the battery terminals to prevent sparks near the battery cells.
- Discontinue charging if the electrolyte temperature exceeds 45°C (117°F).





CHARGING SYSTEM PERFORMANCE TEST

- Warm up the engine.
- Connect an ammeter and voltmeter as shown.
- Start the engine and take meter reading.

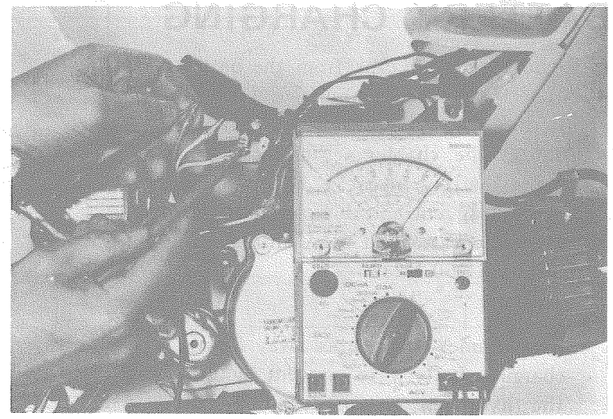
Note:
Take the reading when the battery is fully charged.

TECHNICAL DATA

Lighting switch	Start charging	4,000 rpm	8,000 rpm
OFF	over 6.3V 1.000 rpm	over 7.0 V 1.0A	9.0V below 3.0A
ON (H)	over 6.3V 1.000 rpm	over 20V 0.7A	8.5V over 1.5A

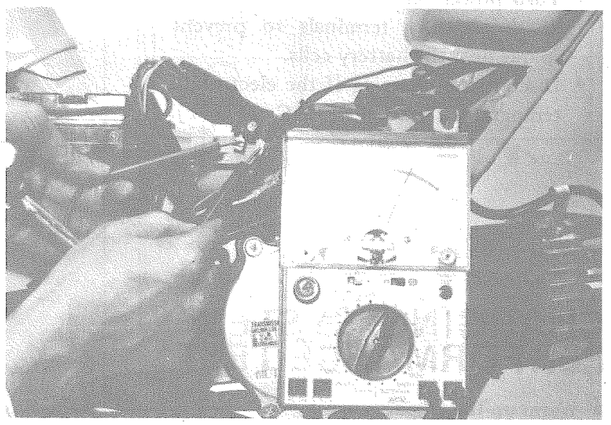
A.C. GENERATOR

- Remove the right side cover.
- Disconnect the coupler of A.C. generator.
- Measure the resistances between white and green terminal, and between yellow and green terminal.
  White/Green : 0.3-0.6Ω
  Yellow/Green : 0.2-0.6Ω



REGULATOR/ RECTIFIER

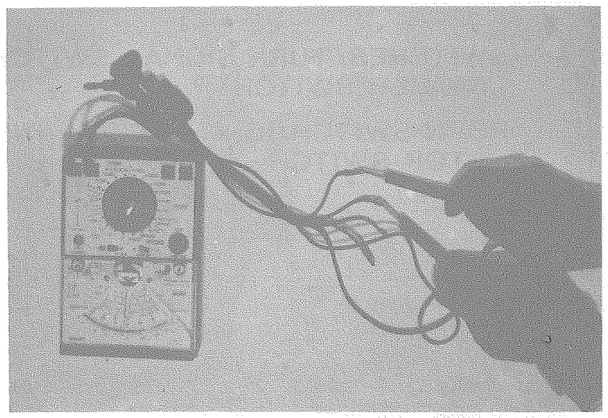
- Remove the right side cover.
- Disconnet the rectifier coupler.
- Measure the continuity between terminals.
  It is normal if continuous only in normal direction.
  Replace if continuity exists in reverse direction.



SWITCH

SWITCHES

- Remove the head light and disconnect the 4-P coupler (white color)
- Continuity should exist between color wires indicated by interconnected circles on each chart.

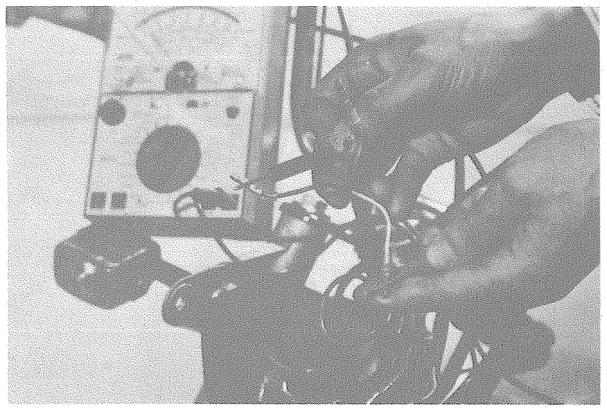


IGNITION SWICH

Color code	Black/White	Black/Ref	Green	Red	Black
	St.	I.G.	E.	Batt.	HO
OFF		○—○			
START	○—○			○—○	
ON				○—○	

TURN SIGNAL SWITCH

Color code	Light Blue	Grey	Orange
	R	RW	L
R	○—○		
N			
L		○—○	

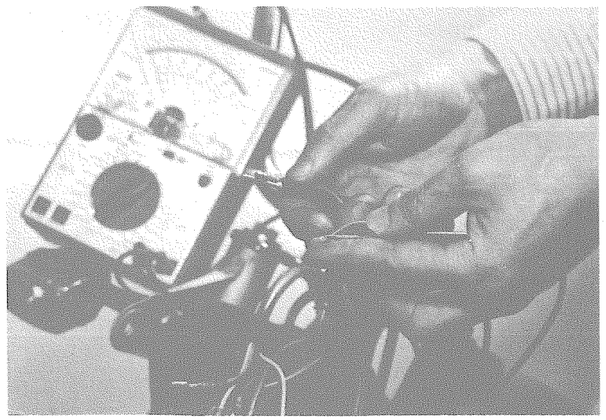


LIGHT/DIMMER SWITCH

Color code

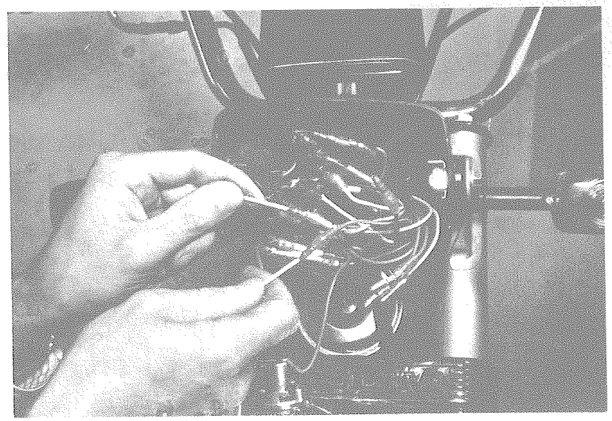
B	Black	Br	Brown
Y	Yellow	O	Orange
L	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	Gr	Grey
W	White	P	Pink

	C	SI	CI	HL
Off		○—○		
On	○—○		○—○	
Color code	W	W/Y	Y	L



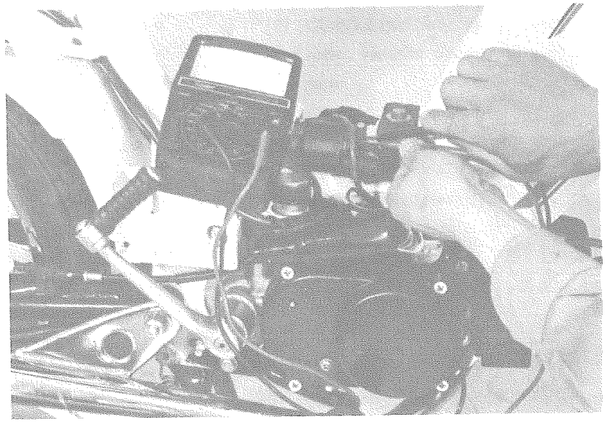
HORN SWITCH

Color code	R/Lg	G
Free		
Push	○—○	



IGNITION COIL INSPECTION

- Measure the resistances of the primary and secondary coils.
  Resistances
  Primary coil 0.2-0.3Ω
  Secondary coil 3.4-4.2Ω



STOP SWITCH

- The switch is normal if ther is continuity when the brake lever is applied.

TROUBLE SHOTTING

ENGINE DOES NOT START OR IS HARD TO START

		Probable Cause
1. Check if fuel is getting to carburetor by loosening drain screw	Not getting to carburetor	(1) No fuel in fuel tank (2) Clogged fuel tube up to carburetor, vacuum tube up to inlet pipe (3) Clogged float valve (4) Clogged fuel tank cap breather hole (5) Clogged fuel strainer
Getting to carburetor ↓		
2. Try spark test	Weak or no spark	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Faulty pulse generator (5) Broken or shorted high tension wire (6) Broken or shorted ignition coil (7) Faulty ignition switch
Spark jumps ↓		
3. Test cylinder compression	Low compression	(1) Stuck piston rings (2) Faulty or deteriorated reed valve (3) Worn cylinder and piston rings (4) Flaw in cylinder or cylinder head (5) Compression leak past crankcase (6) Blown cylinder head gasket
Normal compression ↓		
4. Start by following normal starting procedure	Engine Fires but soon stops	(1) Faulty control box (2) Air leaking past intake pipe (3) Improper ignition timing (4) Carbon blocking exhaust system
Engine does not fire ↓		
5. Remove spark plug	Wet plug	(1) Carburetor flooded (2) Faulty control box (3) Throttle valve open excessively
Dry		

ENGINE LACKS POWER

	Probable Cause	
1. Lightly accelerate engine Engine speed increases	Engine speed does not increase sufficiently	(1) Clogged air cleaner (2) Restricted fuel flow (3) Clogged fuel tank cap breather hole (4) Clogged muffler
2. Check ignition timing Correct	Incorrect	(1) Faulty CDI unit (2) Faulty pulse generator
3. Test cylinder compression Normal	Too low	(1) Worn cylinder or piston rings (2) Blown cylinder head gasket (3) Flaws in cylinder or cylinder head (4) Faulty or deteriorated reed valve
	Too High	(1) Carbon build-up in combustion chamber
4. Check carburetor for clogging Not clogged	Clogged	(1) Carburetor not serviced frequently enough
5. Remove spark plug Not fouled or discolored	Fould or discolored	(1) Plug not serviced frequently enough (2) Use of plug with improper heat range
6. Check if engine overheats Not overheated	Overheated	(1) Worn cylinder or piston (2) Fuel air mixture too lean (3) Use of improper grade of fuel (4) Excessive carbon build-up in combustion chamber (5) Ignition timing too advanced
7. Try rapid acceleration or run at high speed Engine does not knock	Engine knocks	(1) Excessive carbon build-up in combustion chamber (2) Use of improper grade of fuel (3) Clutch slipping (4) Fuel air mixture too lean

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

	Probable Cause	
1. Check ignition timing Correct	Incorrect	(1) Faulty CDI unit (2) Faulty pulse generator
2. Check Carburetor air screw for proper adjustment Correct	Incorrect	(1) Fuel air mixture too rich (Perform idle drop) (2) Fuel air mixture too lean (Perform idle drop)
3. Check if air is leaking past intake pipe Not leaking	Leaking	(1) Loose carburetor (2) Deteriorated inlet pipe gasket (3) Deteriorated insulator O-ring
4. Try spark test Good spark	Weak or Intermittent Spark	(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) Faulty pulse generator (4) Faulty ignition coil (5) Broken or shorted high tension wire (6) Faulty ignition switch

POOR PERFORMANCE AT HIGH SPEED

1. Check ignition timing Correct	Incorrect	(1) Faulty CDI unit (2) Faulty pulse generator
2. Disconnect fuel tube at fuel valve Fuel flows freely	Fuel flow restricted	(1) No fuel in fuel tank (2) Clogged fuel tube or fuel filter (3) Clogged fuel tank cap breather hole
3. Remove carburetor and check for a clogged jet Not clogged	Clogged	(1) Clean

POOR HANDLING

Loss of control----------Check tire pressure

Probable Cause

1. If steering is heavy → (1) Steering head adjuster too tight
   (2) Damaged steering cones or steel balls
2. If either wheel is wobbling → (1) Excessive wheel bearing play
   (2) Bent rim
   (3) Loose axle nut
3. If the motorcycle pulls to one side → (1) Misaligned front and rear wheels
   (2) Bent front fork

Poor front/rear
suspension performance----------Check tire pressure

Probable Cause

1. If suspension is too soft → (1) Weak shock spring
   (2) Excessive load
   (3) Leaky damper
2. If suspension is too hard → (1) Bent fork or shock rod
3. If suspension is noisy → (1) Slider binding
   (2) Damaged shock stopper rubber

Poor brake performance----------Check brake adjustment

Probable Cause

1. If wear indicator arrow aligns with index mark on brake panel → (1) Worn brake shoes
   (2) Worn brake cam
   (3) Worn cam contacting face of shoe
   (4) Worn brake drum
2. If either brake is squealing → (1) Worn brake shoes
   (2) Foreign matter on brake lining
   (3) Rough shoe contact face of brake drum
3. If brake performance is poor → (1) Faulty or elongated brake cable
   (2) Brake shoes partially contacting brake drum
   (3) Mud or water in brake drum
   (4) Brake linings fouled with grease or oil