

BENELLI 4 STROKE 125 cc. "SPRITE,"  
200 cc. "SPRITE,"  
250 cc. "BARRACUDA,"

*Instructions for the use and maintenance*

COSMOPOLITAN MOTORS, INCORPORATED  
JACKSONVILLE & MEADOWBROOK ROADS, HATBORO, PA. 19040 (215) OS 2-9100

# TECHNICAL CHARACTERISTICS

## 125 SPRITE

**ENGINE** - Single cylinder 4 Stroke - Over head valves - Bore 54 mm. - Stroke 54 mm. - Cylinder displacement 123,60 cc. - Compression ratio 9,8 to 1 - Distribution with standard cam - Intake open 30° BTDC - Intake close 75° ABDC - Exhaust open 75° BBDC - Exhaust close 30° ATDC - Valve clearance with hot motor 0.006" - Compression ring gap 0.008" to 0.010" - Oil ring gap 0.010" to 0.012" - Cylinder head stud nuts torqued to 22 lbs - Forced lubrication by gear pump 60 L/H - Oil capacity 2 qts - Gravity fuel supply 98 to 100 octane - Carburetor UB 22 BS - Ignition by alternator flywheel magneto with external H. T. Coil - Ignition advance 19° - Plus automatic advance of 25° - Point gap 0.016" - Marelli plug CW 260 L - Champion plug N 3.

With multiplate clutch - Constant mesh 4 Speed gear box - Engine gear box ratio - 3 to 1 - Internal gear box ratio - 1st 2.683 - 2nd 1.665 - 3rd 1.267 - 4th 1. - Countershaft sprocket 15 T. - Rear wheel sprocket 43 T. - Final ratio - 1st 23.068 - 2nd 14.315 - 3rd 10.893 - 4th 8.598 - Foot shift pedal - Primary transmission by helicoil gears - secondary transmission by chain 1/2" x 3/16".

**FRAME** - Combination of pressed steel and tubular - double action hydraulic front fork - Rear swing arm with adjustable hydraulic shock absorbers.

**TIRES** - Pirelli 2.75x18" front wheel - 3.00x18" rear wheel expanding type brakes.

**LIGHTING EQUIPMENT** - Alternating current 6 V 7 amp equipped with battery to ensure steady supply of current to lights and horn - Large 130 mm. headlight - Headlight: 6 V 25/25 S.B .

**OVERALL DIMENSIONS** - Length 76.44" - Width 27" Height 36.64" Weight 219 lbs. (DRY) - Fuel tank capacity 3.5 gallons - Reserve .05 Gallons - Maximum speed 78 MPH - Fuel consumption 90 MPG .

**200 SPRITE** (Technical data different from 125 Sprite).

**ENGINE** - Bore 57 mm. - Stroke 66.5 mm. - Cylinder displacement 197, 9 cc. - Compression ratio 8.8 to 1 - Carburetor UB 22 BS - Ignition advance 17°.

Internal gear box ratio - 1st 2.615 - 2nd 1.515 - 3rd 1.153 - 4th 1 - Countershaft sprocket 17 T. - Rear wheel sprocket 41 T. Final ratio 1st 18.451 - 2nd 10.689 - 3rd 8.135 - 4th 7.056 - Secondary transmission by chain 1/2" x 5/16".

**TIRES** - Pirelli 3.00x18" Front wheel - 3.25x18" Rear wheel.

**OVERALL DIMENSIONS** - Weight 221 lbs (DRY) - Maximum speed 88 MPH - Fuel consumption 85 MPG.

**250 BARRACUDA** (Technical data different from 125 Sprite)

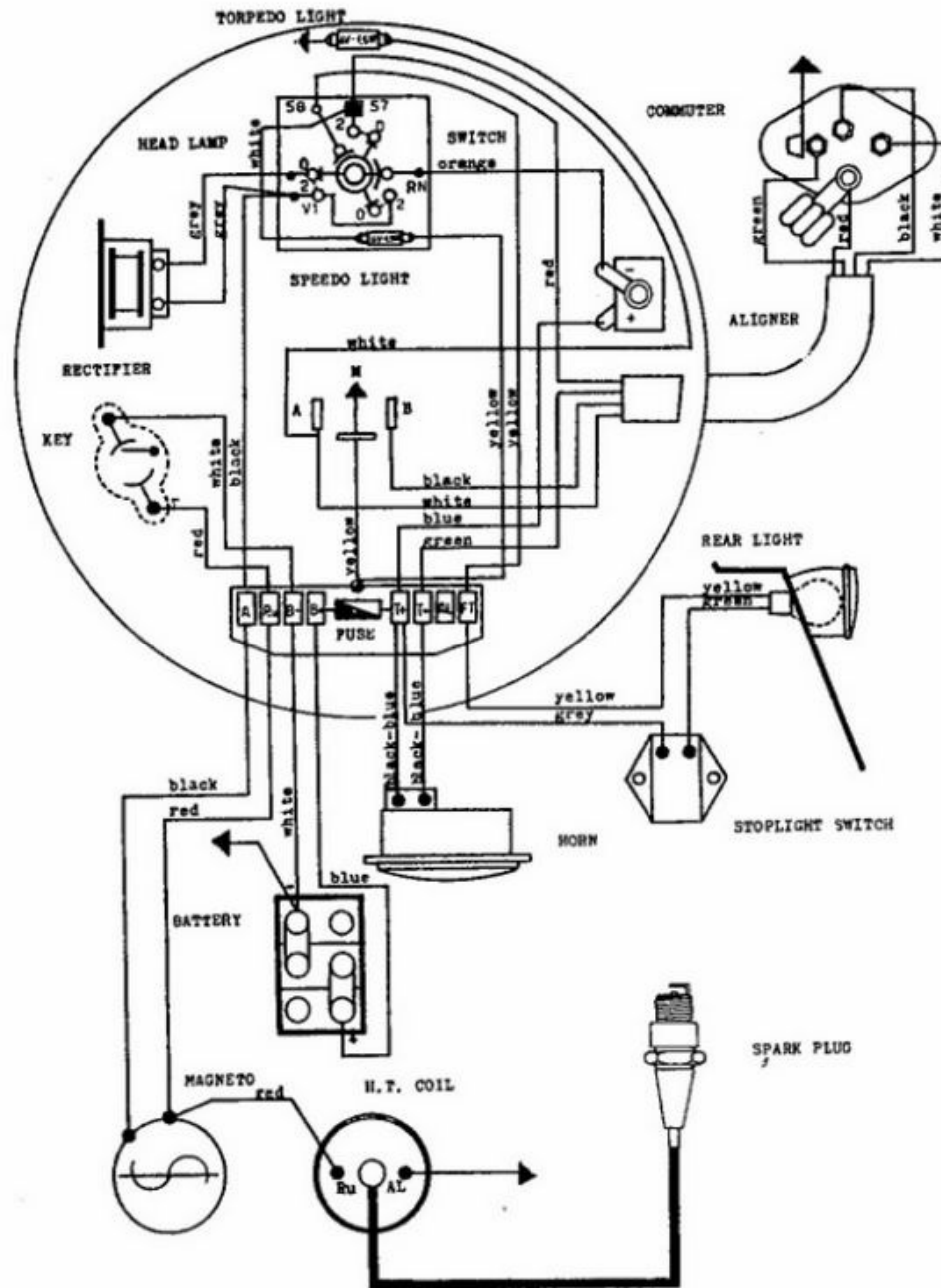
**ENGINE** - Bore 57 mm. - Stroke 74 mm. - Cylinder displacement 245.1cc - Compression ratio 8.5 to 1 - Carburetor UB 24 BS 2 - Ignition advance 15° - Internal gear box ratio - 1st 2.615 - 2nd 1.515 - 3rd 1.153 - 4th 1 - Countershaft sprocket 17 T. - Rear wheel sprocket 41 T. - Final ratio - 1st 18.451 - 2nd 10.689 - 3rd 8.135 - 4th 7.056 - Secondary transmission by chain 1/2" x 5/16".

**TIRES** Pirelli 3.00x18" Front wheel - 3.25x18" Rear wheel.

**OVERALL DIMENSIONS** - Weight 222 lbs. (DRY) - Maximum speed 95 MPH - Fuel Consumption 80 MPG.

Benelli reserves the right to modify any of the above specifications without notice.

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Wiring diagram

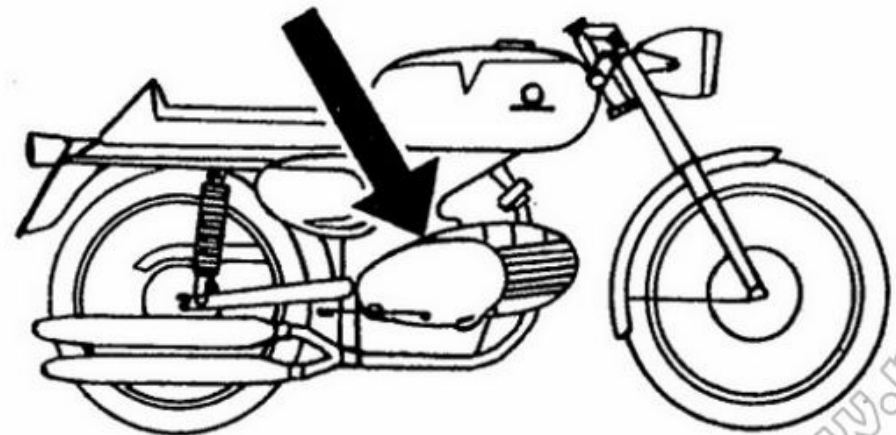
## MOTOR and SERIAL NUMBER

Each Benelli Motorcycle has a single number for both frame and motor.

This number is stamped on the right side of the motor and on the main frame member immediately above the motor, also on the right side.

It is the only number valid for legal sales purposes. This number appears on the certificate of origin and circulation booklet.

Always refer to this serial number when ordering spare parts.



# I N S T R U C T I O N S

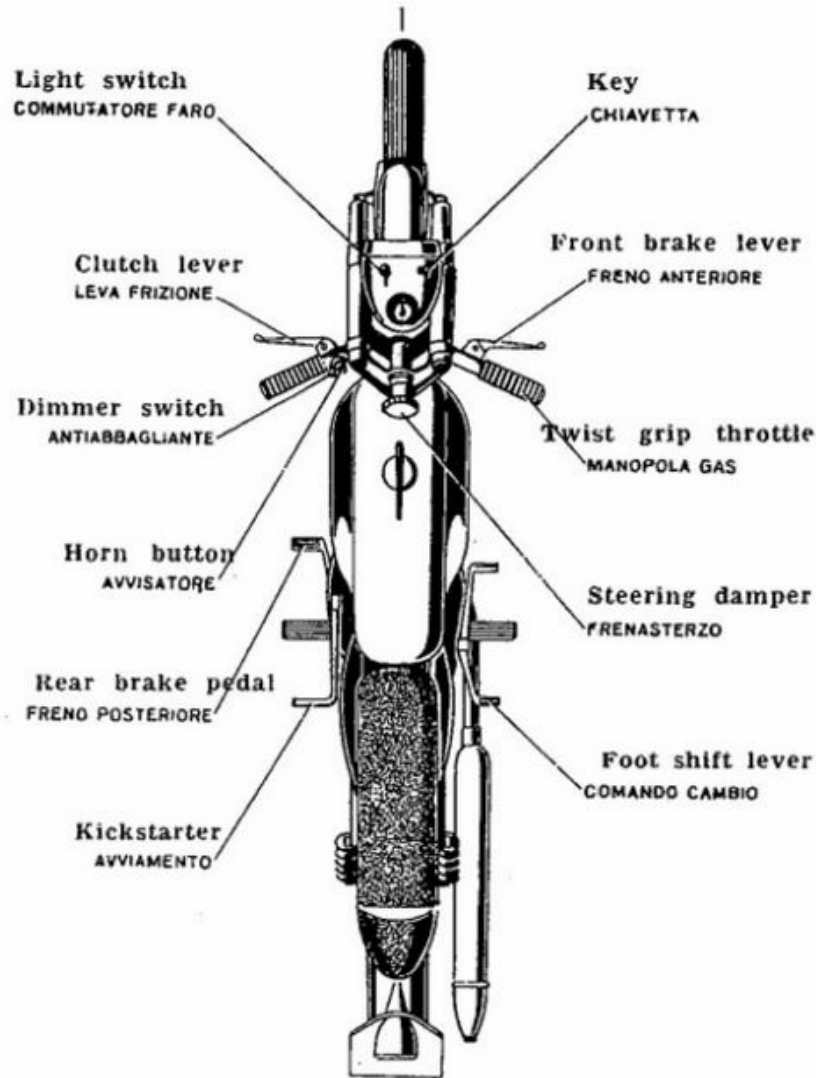


Fig. 1

## Controls

— Controls are positioned as illustrated in Fig. 1.

— The air control lever is located on the carburator. The air control is closed by pushing the lever completely down. The air control lever must be opened during running after warm-up of the engine.

### STARTING:

— Make sure there is enough fuel in the tank and open the gasoline tap.

— Make sure the gear lever is in neutral. (Between 1st gear and 2nd gear).

— If the motor is cold, shut the air control and depress the tickler on top of the carburator.

— Insert the head light starting key.

— Turn the throttle twist grip slightly and push down on the kickstarter.

— Pull the clutch lever, engage the first gear using the gear lever and accelerate slowly while releasing the clutch lever.

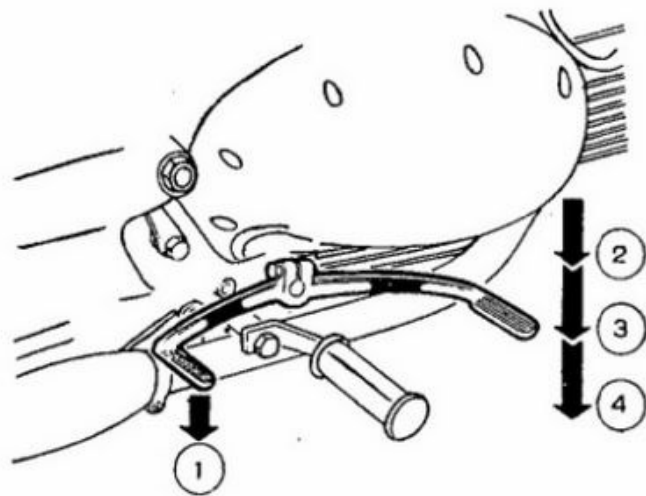


Fig. 2

### Gear Shift Positions

## GEAR SHIFT POSITIONS

### RIDING:

- To change gears, release the twist grip throttle, pull the clutch lever and engage the new gear using the gear lever. Complete, as before, by accelerating while releasing the clutch lever.
- The various speeds can be engaged as shown in Fig. 2.

### STOP:

- Close the throttle, pull the clutch lever, apply the brakes, and shift the gear lever to a neutral position. (Between 1st gear and 2nd gear).
- Stop the motor by withdrawing the ignition key.

### NIGHT RIDING:

- For country driving turn the light switch to the extreme left.
- Parking light to the extreme right.

## R U N N I N G   I N

A new motor is tight and much care must be exercised in breking-in.

The following «break-in» instructions are extremely important. The break in period lasts appr. 1200 miles. A careful break-in guarantees a long and efficient motor life.

During the break-in period observe the following:

- Do not exceed the following speeds:

	125 cc Sprite	200 cc. Sprite	250 cc. Barr.
1st Gear	15 mph	16 mph	18 mph
2nd Gear	24 mph	25 mph	28 mph
3rd Gear	38 mph	40 mph	44 mph
4th Gear	50 mph	53 mph	58 mph

- Do not maintain the above listed speeds for any excessive length of time.
- Do not speed up a grade.
- Shift to a lower gear as soon as the motor loses speed.
- Do not attempt the maximum speed especially if the motor is cold.

**IMPORTANT:** Change the motor oil after the first 300 miles.

The first oil change is important as various metallic particles (burrs) are removed together with the oil. These particles have been loosened during the foregoing first period of breaking-in and must be removed. The oil must be changed, as prescribed, every 1200 to 1800 miles.

- Tighten the head nuts, the nuts holding the intake and exhaust manifolds.
- Check the point clearance.
- Adjust the point opening (0.016") and the spark-plug gap (.0236").
- Check and tighten all bolts.

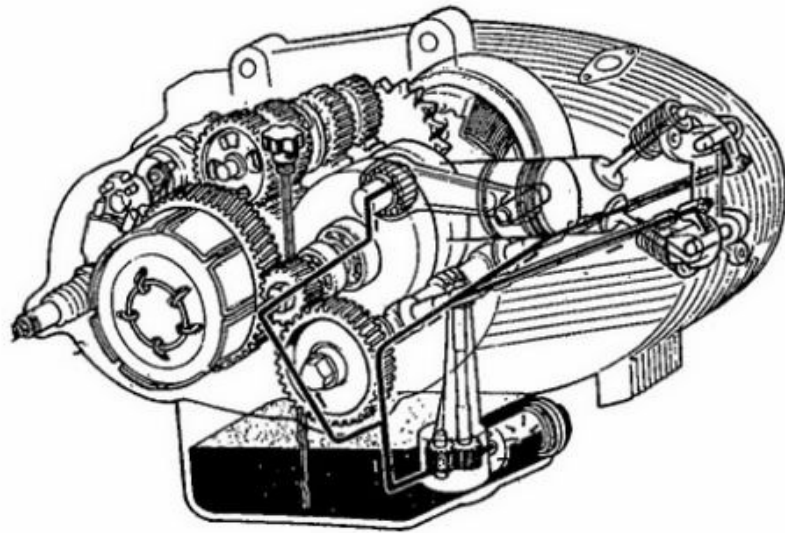


Fig. 3

### Oil Circulation

Unscrew the plug (1 1/16" hexagon) located on the lower left hand side crankcase. Remove the oil filter. Tilt the motorcycle to the left, if necessary, and drain all the oil out. Wash the filter with gasoline and replace as shown in Fig. 5. Make sure that the plugs of the outer filter are properly inserted in the oil pump socket as shown the dotted lines in Fig. 5 Insert the inner filter and spring into the plug and screw plug tightly into crankcase using the proper tool.

**Refill 2 quarts of Shell x 100 SAE 30 in winter and Shell x 100 SAE 40 in summer.**

## MAINTENANCE

Check at every opportunity

- Oil level as shown on Fig. 4.
- Tire pressure - front 24 pounds - rear 26 pounds.

Every 1200 or 1800 miles  
(depending on the use)

The oil change must be made after the motor has been warmed up, as follows:

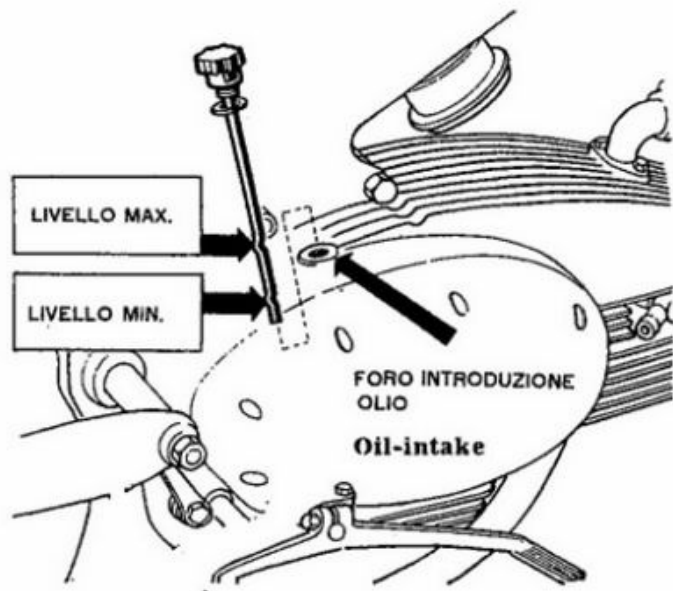


Fig. 4

chain app. 3/4 of an inch in the middle between front and rear sprockets. Make sure there is no tension on the chain when 2 person are mounted.

Every 3000 miles

- Remove the head cover and proceed as follows:
- Tighten rocker carrier nuts
- Remove spark plug
- Check clearance and looseness of tappets when the piston is at top dead center and both valves are closed. Tappets should be loose at this position.

- Check the point opening - opening should be (0.016").
- Check the spark plug gap-gap should be 0.236"; if plug is defective substitute another (Marelli 260L) (Champion N. 3).
- Lubricate all moving parts and controls with normal motor oil.
- Lubricate the oscillating rear fork pin using a grease gun (shell Retinax .a). The grease nipple is located at the head of the pin.
- Control and, if necessary, regulate the chain adjustment. Take the motorcycle off the stand, put in in neutral. When one man is mounted, he should be able to lift the

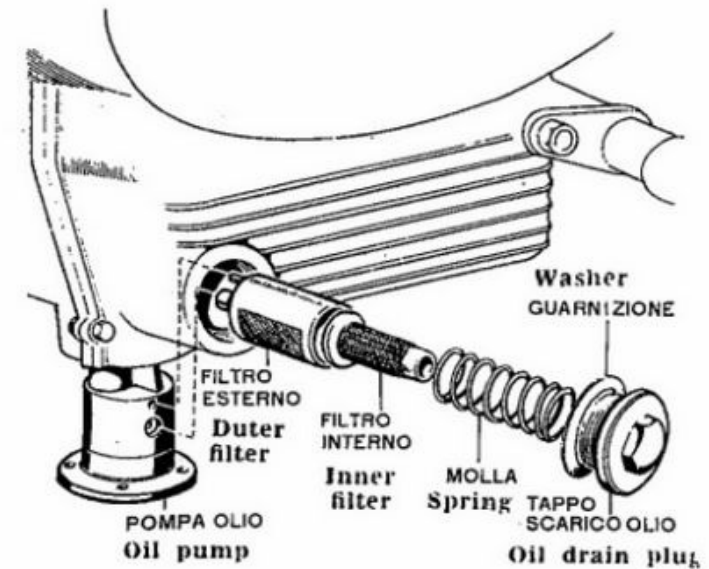
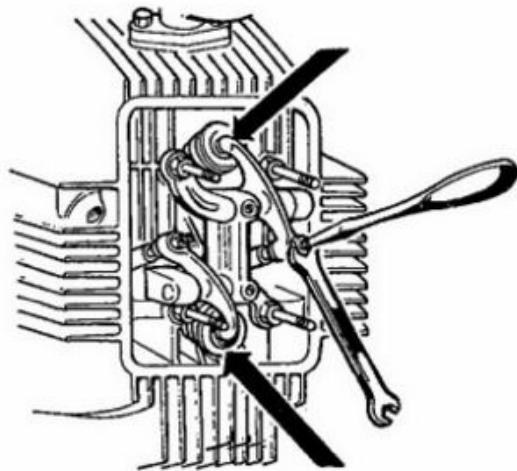


Fig. 5

Oil drain plug and filter





Rocker carrier adjustments

Fig. 6

- Verify the following gaps between the valves and the tappets when the motor is Hot:

.006" for intake valve

.006" for exhaust valve

If adjustments are necessary adjust as shown in Fig. 6 using the necessary tools.

- Verify the clutch control and adjust as shown in Fig. 7 Maintain the necessary slack at the clutch lever.
- Tighten all bolts and nuts.
- Place some special grease (Bosch) in the flywheel greaser felt.
- Check the transmission chain; wash it with gasoline and lubricate with a thick oil or grease.

Every 6000 miles

- Remove cylinder head. Decarbonize combustion chamber and top of piston.
- Replace the cylinder gasket.
- Clean and polish the valves.
- Change the spark plug.
- Dismantle and clean carburetor.
- Grease the wheel bearings with Shell Retinax A
- Check the condition of the brake drum.

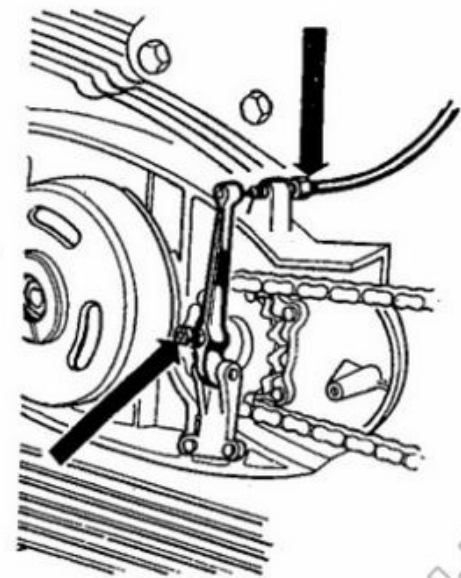


Fig. 7

Clutch Adjustment

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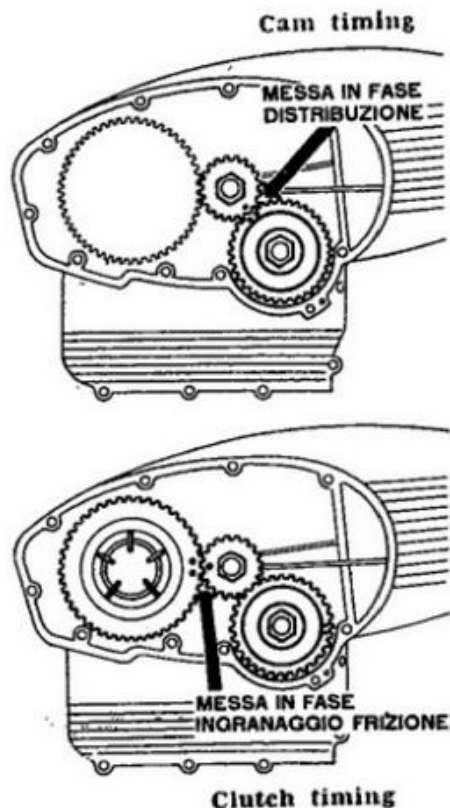


Fig. 8

## ADJUSTMENTS

### FRONT AND REAR BRAKE ADJUSTMENTS

As shown in Fig. 9 adjust as necessary, the adjustment nuts.

### TIMING

Whenever, for various reasons, the motor is dismantled the following must be done for proper time setting.

The cam and the various cam gears have timing reference marks stamped thereon, see Fig. 8).

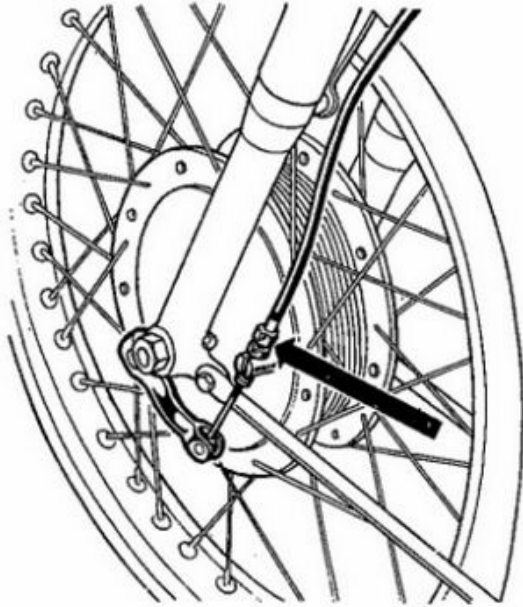
- These marks must correspond as shown when the piston is at top dead center and both valves are open and in alignment. It is important that the clutch gear is always in the proper position in reference to the cam gear (see Fig. 8). The relation between the clutch gear and the timing gear is as shown in Fig. 8.

### BATTERY MAINTENANCE

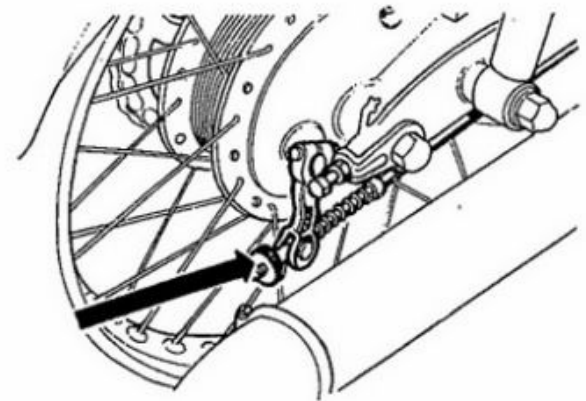
- Verify that there is sufficient acid; otherwise add enough distilled water to cover the bottom of the filler plug hole approx. 1/4" deep.
- Protect the terminals with vaseline.

## BRAKE ADJUSTMENTS

Adjust the nuts indicated in Fig. 9 so that the wheels spin freely without touching brake shoes when brakes are not applied.



Front brake adjustment



Rear brake adjustment

Fig. 9

## CLEANING

All painted surfaces can be washed with clean water by using a sponge and then drying with a shammy cloth.

All other parts including the engine should be washed with gasoline by using a brush and drying with a cloth. Be careful that water does not get into the fuel tank, the carburetor, the engine and particularly that water or gas does not get into the brake drums.

# PROBABLE CAUSES OF COMMON DISTURBANCES

## **Engine fails to start:**

Gas tap closed or tap not turned to reserve supply. Out of gas. Float and float needle out of place. Sticking float needle.

Faulty operation of twist grip or air control lever. Slide does not open. Water in carburetor, (clean carburetor and filter). Jet choked. Carburetor overflowed. Spark plug soaked. (Remove spark plug, turn off fuel, open twist grip wide, turn, over several times, replace the dried spark plug and start the engine with the fuel supply cut off. Turn on the only when the engine is running).

Ignition not turned on. High tension lead disconnected or loose. Short circuit. Spark plug oiled up, carboned up, or points bridged by foreign matter. Wrong plug. Wrong plug gap. Defective plug (insulation cracked). Poor earth connection or cable worked loose, generator not operating.

## **Engine stops suddenly or fires unevenly:**

Fuel tap not turned to «reserve» or running out of gas. Water in the carburetor. Jet needle come adrift. Float and float needle out place. Punctured float. Air leaks (carburetor loose). Spark plug loose or short circuit. Defective or incorrect spark plug. Contact breaker points oiled up, dirty or badly pitted.

## **Engine will not pull or becomes unduly hot:**

Clutch slipping, brakes binding, air filter blocked, Air leaks (loose carburetor), jet needle come adrift, float needle or tickler sticking. Wrong spark plug. Silencer closed by carbon deposit. Piston rings gummed up, worn out or broken. Mechanical fault in the transmission or wheels.

## **Engine stops:**

Gasoline used up with exception of reserve supply but tap not turned to reserve position. Out of fuel. High tension lead come adrift. Defective spark plug. Sticking contact breaker.

## **Float chamber overflows:**

Punctured float. Float needle out of position. Float needle or tickler jammed.

## **Lamps fail to light:**

## **Lamps fail to light:**

Loose or defective bulb. Faulty earth. Cables loose or adrift.