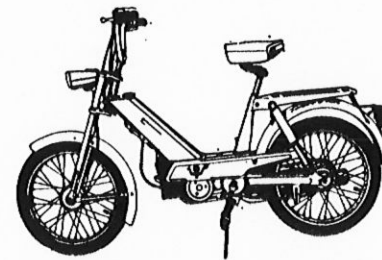


.MOPED

**babetta**

**OWNER'S MANUAL**

**OPERATING AND MAINTENANCE INSTRUCTIONS  
BABETTA**



**Lightweight Moped — Model 207/100**  
3-d edition



**Manufacturer — Považské strojárne, n. c.,  
Považská Bystrica  
CSSR**

The moped or motor bicycle is a single-track motor vehicle, easy to ride and to maintain owing to its automatic clutch and single-speed gearbox. Despite its simplicity, we advise you to peruse this handbook before riding to become well acquainted with your machine and its maintenance. You will save yourself many troubles and your moped will serve you to your full satisfaction.

We wish you many troublefree and happy miles on your moped.

Považské strojárne,  
Považská Bystrica  
ČSSR

As regards information contained in this manual, we reserve the right to effect any changes of the design resulting from the moped development without previous notice.

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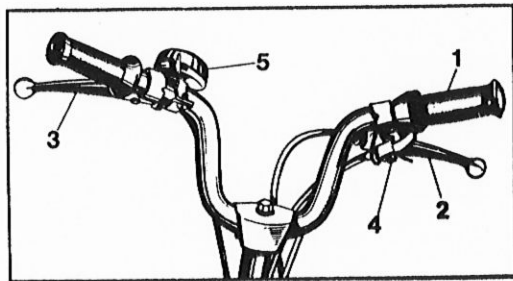




## I. TECHNICAL SPECIFICATIONS

Engine type	Air cooled two-stroke single cylinder
Displacement	49 cm <sup>3</sup> (3 cu. in)
Cylinder bore X piston stroke	39 X 41 mm (1.55 X 1.61'')
Compression ratio	1 : 7.5
Power output	1.32 kW at 4,500 r. p. m. (0.98 BHP for USA)
Clutch type	Automatic, dry, centrifugal unit
Gearbox type	Single-speed unit
Secondary transmission ratio	1 : 14.82
Pedals transmission ratio	1 : 0.693
Engine starting	Peddalling
Front suspension	Telescopic fork
Front suspension stroke	60 mm (2.36'')
Brakes	Drum-type shoe-brakes controlled by levers on handlebars
Brake dimensions	85 X 20 mm (3.55 X 0.79'')
Tyres	2 1/4 X 16''
Tyre inflation pressures —	
front	196 kPa (28 lb/in <sup>2</sup> )
rear	245 kPa (35 lb/in <sup>2</sup> )
Vehicle weight	44 kg (92.5 lbs)
Carrying capacity	85 kg (198 lbs)
Rear suspension	Swing arm without shocks-stroke 60 mm (2.36'')
Suspension unit	Without shock absorber
Cruising speed	35 km/h (20 m. p. h.)

Max. speed	38 km/h (25 m. p. h.)
Fuel capacity	3 litres, 0.5 ltrs reserve (3/4 US Gallon or 2/3 IMP Gallon)
Maximum climbing ability	10 %
Noise	73 decibels
Ignition	Contactless fully transistorised
Sparking plug	PAL, 14-5, 145-175 HEAT RANGE
Headlamp bulb	6 V, 15/15 W or (US-GV/25 W SEALED BEAM)
Tail light bulb	6 V, 5 W (US-GV-10/5 W)
Buzzer	6 V, type 03.9413.02

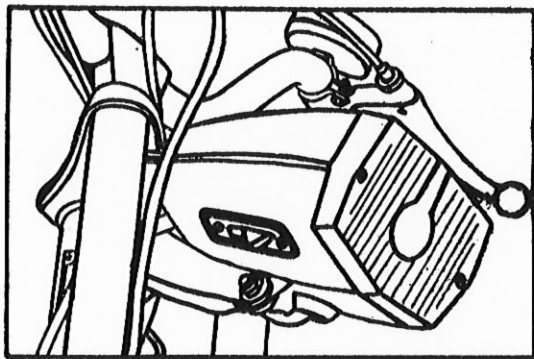


**Fig. 2 — Controls**

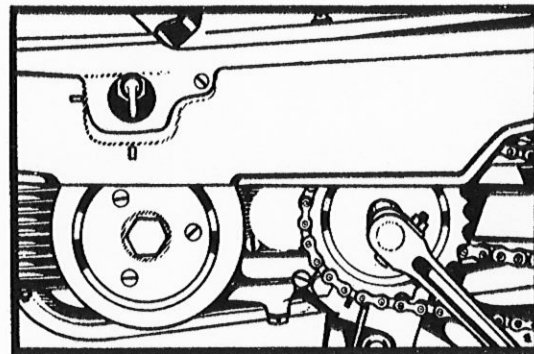
1 — Twistgrip, 2 — Front brake lever, 3 — Rear brake lever, 4 — Decompressor lever, 5 — Buzzer push button (or bell)

The following few controls of the moped are easy to operate:

- a) Throttle twistgrip (1, Fig. 2), by the rotation of which the clutch is engaged or disengaged automatically while the throttle is opened or closed and thus the vehicle accelerates or decelerates;
- b) Front brake lever (2, Fig. 2) and rear brake lever (3, Fig. 2), by the depressing of which the vehicle is braked and stopped;
- c) Decompressor lever (4, Fig. 2), by the operation of which the engine is stopped or its starting facilitated;
- d) Buzzer push button (5, Fig. 2);
- e) Light switch (Fig. 3), The buzzer and the head- and tail-light are supplied with current only while the engine is running;
- f) Fuel cock lever (Fig. 4);
- g) Intake air shut-off push button (Fig. 5);
- h) Pedals (Fig. 6);
- i) Engine drive disengaging nut (Fig. 7).



**Fig. 3 — Headlight switch**  
(in headlamp casing rear part)



**Fig. 4 — Fuel cock**  
Fuel cock (fuel supply) open, — Fuel re-  
serve on, — Fuel cock closed (fuel supply  
cut off)

### Running-in a new machine

A proper running-in of a new moped affects its output, fuel consumption, and life. A full output of the engine and the attainment of its optimum running properties can be expected only after its correct running-in. Therefore observe strictly the following instructions:

- a) Prepare the fuel mixture by mixing 80 octane petrol with brand M2T oil at a ratio of 1 : 25.
- b) Use this mixing ratio during the running-in period (i. e. for about 500 kilometres) and open the throttle by turning the twistgrip not more than by half a turn (approximate road speed of 25 km/hr.).
- c) During longer trips it is recommended to lubricate the engine by an occasional acceleration (opening of the throttle). Do not close the throttle when riding downhill but brake down the machine by applying the rear brake.
- d) After stopping, let the engine idle and not run it unnecessarily.

## III. RIDING INSTRUCTIONS

### Before setting out for a ride check

- the function of the brakes
- the tyre inflation pressures
- the fuel level
- the function of the buzzer and lights (with the engine running).

### Filling the fuel tank

Use petrol mixed with oil and observe the recommended mixing ratio. See to it that this mixing ratio is also observed when filling up at filling station. Use petrol of at least 80 octanes. Fill the mixture into the tank using a funnel with a strainer.

To start a cold engine

Open the fuel cock (Fig. 4), and depress the air intake shut-off push button (Fig. 5) as far as it will go (after depressing it, the pin jumps out but the air intake remains shut). The engine can be started in two ways.

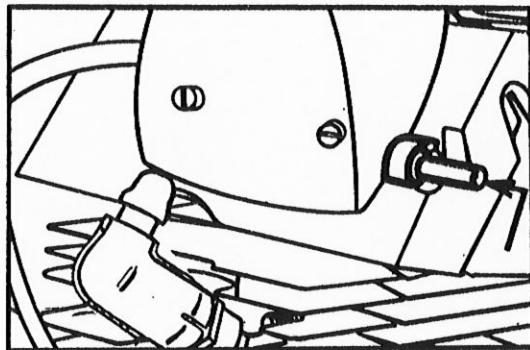


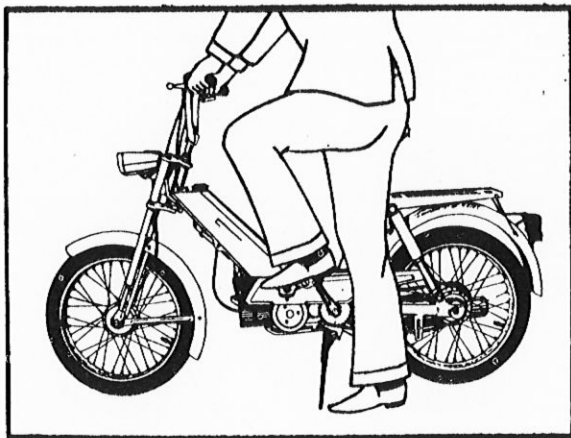
Fig. 5 — Air intake shut-off push button

## To start cold engine in summer

**a) Starting with the machine resting on the stand:** Pull up the moped on its stand, depress the air intake shut-off push button, depress the decompressor lever, rotate the twistgrip through one half of its rotation range, set the pedal forward at an angle of about 30 degrees from the vertical, depress the pedal energetically, and release the decompressor lever before the pedal reaches its bottom position (after the engine has attained a sufficient speed). If the engine does not fire, repeat this procedure. After the engine has started running let it warm up and then rotate the twistgrip as far as it will go to open the flap of the carburettor air intake shut-off. Then back-off the twistgrip so that the engine runs at idling speed and is ready for pulling off. Jerk it from the stand on to the wheels, and start off by accelerating (opening the throttle).

**b) Starting by pedalling:** With the vehicle standing on wheels depress the push button of the carburettor air intake shut-off, depress the decompressor lever, and rotate the twistgrip as described in paragraph a). Use the pedals to start moving and as soon as you have attained a certain speed, release the decompressor lever. As soon as the engine fires accelerate by opening the throttle.

If necessary, you can assist the engine by pedalling, especially when climbing a long or steep gradient.



**Fig. 6 — Starting the engine**

**To start a warmed-up engine (after a short stop)**

It is possible to use either the method as per a) or as per b), while omitting to depress the push button of the carburettor air intake shut-off.

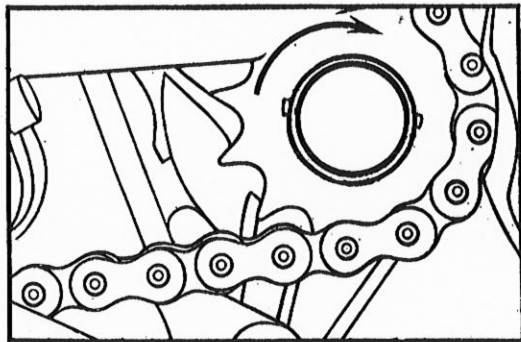
**To start cold engine in winter**

When the temperature drops below zero, it is necessary to modify the starting procedure as follows:

Start the engine as described in paragraph a) but depress the pedal before the actual start several times to make the sticking mechanisms move freely. To assist the starting, you may hold the decompressor lever depressed.

Proceed with the actual starting according to paragraph a) with the difference of rotating the twistgrip only through three quarters of its rotation range (the air flap must not open). How many times you have to depress the pedal depends on the dropping temperature.

Starting by pedalling as described in paragraph b) is not recommended on ice covered roads for safety reasons.



**Fig. 7 — Disengaging the engine**

## **Braking and stopping**

If it is necessary to apply the brakes, release the twist-grip and operate the brake levers (2, 3, Fig. 2). Proceed in the same way when stopping the machine. The clutch disengages as a result of the dropping r. p. m. and the engine idles. When riding on, the clutch operates again after opening the throttle. After having finished the trip, stop the engine by depressing the decompressor lever (4, Fig. 2) and shut off the fuel supply by turning the lever of the fuel cock (Fig. 4).

## **Riding on the moped as on a bicycle**

If you wish to use the moped as a bicycle (for example when running out of fuel), depress engine disengaging wheel toward the engine and rotate it clockwise (Fig. 7). The wheel stays engaged in this position and the engine drive remains disengaged. To re-engage the engine drive turn wheel anti-clockwise.

## IV. MAINTENANCE AND ADJUSTMENTS

### Moped maintenance

For cleaning the varnished and chromium plated vehicle parts used only water and detergents. After washing, wipe these parts with chamois leather.

Use also only water when cleaning parts of plastics or rubber. Kerosene, petrol or various solvents have a detrimental effect on such parts.

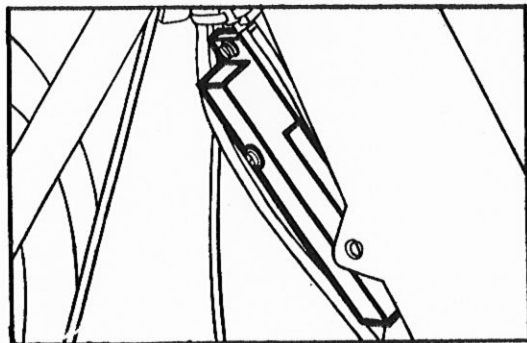


Fig. 8 — Air cleaner

Wash the air cleaner element (Fig. 8) occasionally in petrol.

Use a stick to clean the hole "A" of the exhaust silencer (Fig. 9) from carbon deposits. If the engine output drops markedly, check whether the exhaust silencer is not clogged with carbon deposits. The exhaust tail pipe can be removed after screwing off the nut "B".

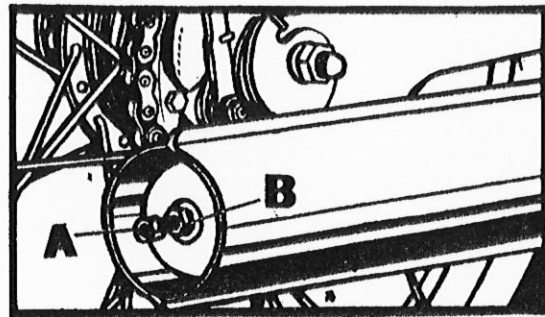


Fig. 9 — Exhaust silencer



Lubrication Chart (Fig. 10)

Pos. No.	Lubricating point	Lubricant	Note
1	<b>Engine</b>	SAE 30 (M6A) oil for two-stroke engines	Permanent lubrication. Oil/petrol mixing ratio 1 : 30
2	<b>Gearbox</b>	SAE 30-80 (PP 80) gear oil	Filling 0.2 litres
3	<b>Steering</b>	Bearing grease (AV2)	Wash and lubricate on dismantling
4	<b>Twistgrip</b>	Soap grease (A00)	Apply on sliding surfaces after washing
5	<b>Brake and decompressor levers</b>	SAE 30 oil (M6A)	
6	<b>Bowden cables</b>	Thin oil	Drip into bowden sleeves
7	<b>Wheel bearings</b>	Bearing grease (AV2)	Fill up bearings
8	<b>Brake cam pin, brake cams, brake shoe pins</b>	Soap grease (A00)	Apply grease springly on cleaned parts
9	<b>Chains</b>	Graphite oil, grease (A00)	Clean
10	<b>Pedal pins</b>	SAE 30 oil (M6A)	
11	<b>Pedal bearings</b>	SAE 30 oil (M6A)	
12	<b>Front telescopic fork</b>	SAE 30 oil (M6A)	
13	<b>Idling run wheel</b>	SAE 30 oil (M6A)	

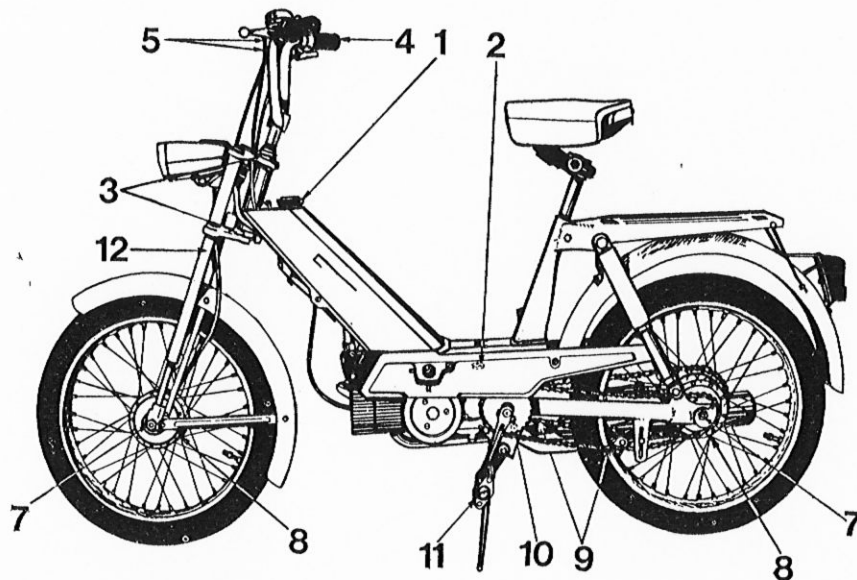


Fig. 10 — Vehicle lubricating points

The gearbox oil should be changed only after a ride while the engine and the oil are still warm. Remove the drain screw (2, Fig. 11) from the engine bottom. After draining the oil, flush the gearbox with flushing oil. Fill in fresh gear oil through the filling hole till its level reaches the inspection hole. From time to time, check the gearbox oil level and top up as necessary.

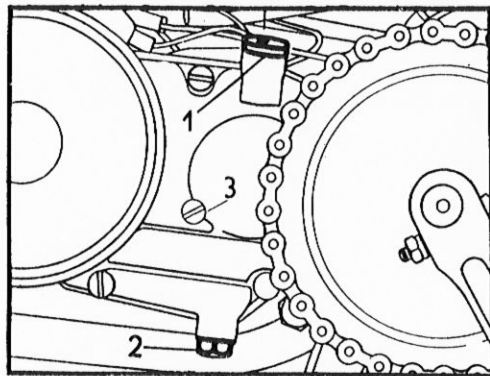


Fig. 11 — Oil filling and drain screws  
1 — Screw closing the filling hole, 2 — Screw closing the drain hole, 3 — Control hole.

## MAINTENANCE SCHEDULE

### After the first 800 km (500 miles)

- Change gearbox oil
- Adjust and clean carburettor
- Tighten cylinder head nuts
- Tighten seat nuts
- Check all screws and bolts for slackening
- Adjust and lubricate chains
- Adjust brakes

### After the first 2,000 km (1,300 miles)

- Change gearbox oil
- Clean carburettor
- Clean intake silencer element
- Tension and lubricate chains
- Adjust brakes
- Check screws and bolts for slackening
- Check nuts and wheel spokes for slackening
- Lubricate bowden cables

### After every 1,500 to 2,000 km (930—1300 miles)

- Remove carbon deposits from exhaust silencer and elbow.

### After every 3,000 km

- Check gearbox oil level
- Inspect and/or clean intake silencer element

### After every 6,000 km (4,000 miles)

- Clean and inspect sparking plug
- Change gearbox oil
- Clean carburettor
- Clean air intake silencer element
- Tension and lubricate chains
- Adjust brakes
- Check screws and bolts for slackening
- Check nuts and wheel spokes for slackening
- Lubricate all vehicle lubricating points
- Remove carbon deposits from exhaust silencer and elbow

Do all other maintenance jobs including lubrication of the vehicle as necessary.

Remove carbon deposits from the exhaust silencer and elbow.

In rainy weather lubricate the chains and the free wheel and clean the brakes at shorter intervals.

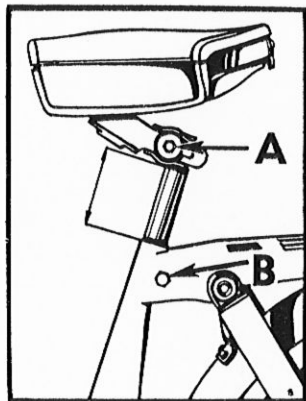
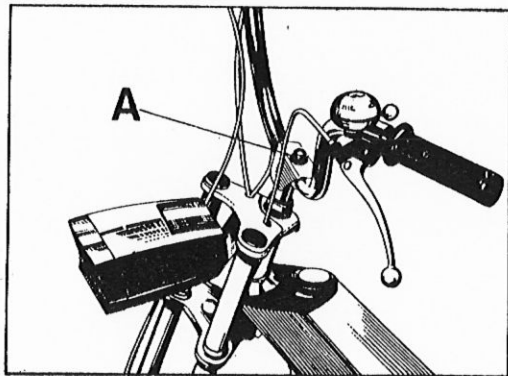


Fig. 12 — Seat adjustment

Fig. 13 — Handlebars height adjustment



### To adjust height of seat and handlebars

The height of the seat and handlebars can be adjusted to suit the rider. Adjust the inclination of the seat after loosening the nut "A" (Fig. 12). Check proper tightening of the nut "A" from time to time to prevent stripping the teeth of the bracket. The seat height is adjustable within the range of 120 mm after loosening the screw "B". To adjust the height of the handlebars loosen the cap screw "A" and both nuts "B" (Fig. 13). The handlebars can be adjusted within the range of 100 mm.

After adjusting the seat and the handlebars, do not forget to retighten properly the nuts and the cap screw.

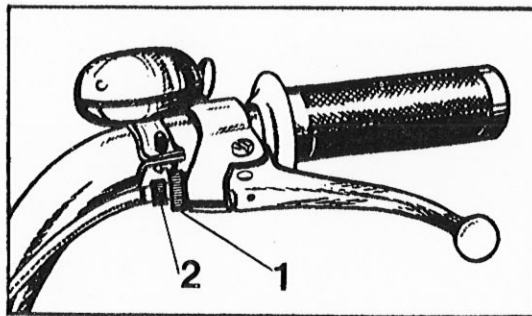


Fig. 14 — Brake adjustment

### To adjust front and rear brake

For routine adjustment of the front and rear brake, use the respective adjusting screws on the handlebars (Fig. 14). First loosen the knurled nut (1) and then screw up or down the adjusting screw (2) to adjust the free travel of the brake lever so that it keeps a distance of 20 to 30 mm from the grip when depressed. After having adjusted the correct brake lever travel retighten the nut (1).

When it is no more possible to adjust the brakes by means of the adjusting screws on handlebars, adjust the tension of the brake bowden cables on brake cams (Fig. 15 and Fig. 16), and then correct the adjustment using the adjusting screws on the handlebars.

Having adjusted the brakes, make sure that they do not drag. Let the moped rest on its stand and rotate the wheels to check their free rotation.

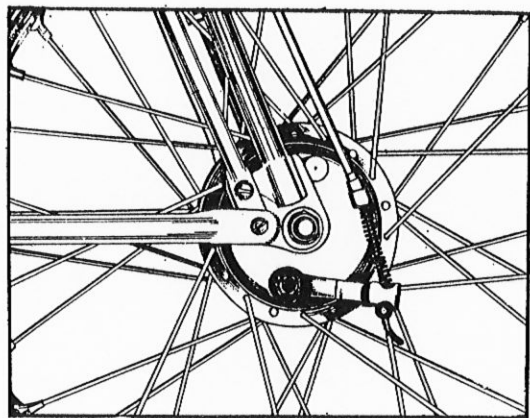


Fig. 15 — Front brake adjustment

## Tensioning of chains

Adjust the engine chain slack after loosening the rear wheel spindle nut (3, Fig. 16). By tightening the chain tensioner nuts (2) on both sides of the frame tension the chain so that it sags 15 mm under thumb pressure. After having adjusted the chain slack, it is necessary to check the track of the wheels (alignment of wheels) using a straight lath. Do not forget to retighten the wheel spindle nut.

The pedal chain can be adjusted by means of the tension pulley on the left-hand side of the machine (Fig. 17).

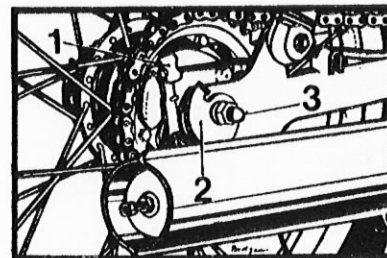
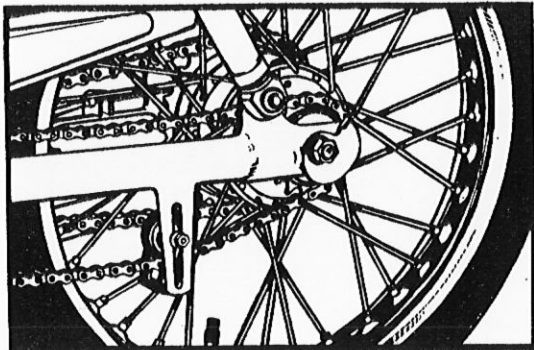
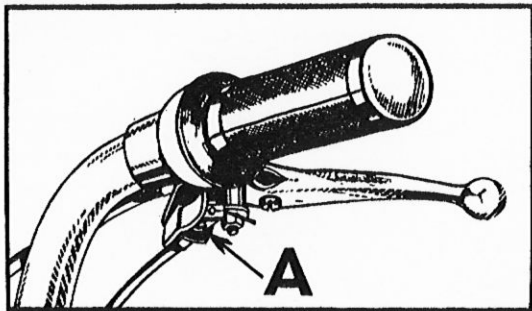


Fig. 16 — Rear brake and engine chain slack adjustment



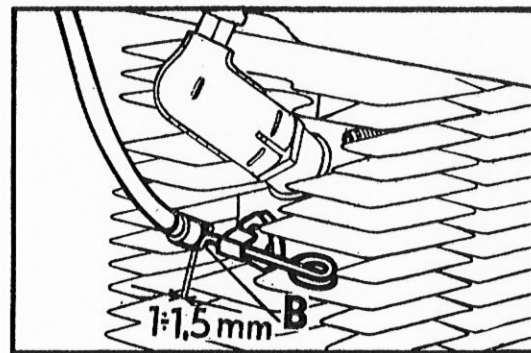
**Fig. 17 — Pedal chain tensioning**



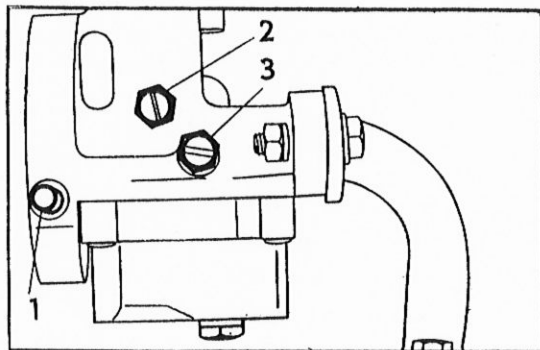
**Fig. 18 — Decompressor adjustment**

## Decompressore adjustment

The decompressor can be adjusted after loosening the adjusting screw "A" (Fig. 18) of the decompressor lever. Then tighten or slacken the bowden cable so that there is a clearance of 1 to 1.5 mm between the bowden sleeve and the stop "B" (Fig. 19), and retighten the adjusting screw. The bowden cable must have the specified free travel; an excessively tensioned cable is apt to cause burning of the decompressor valve while a slack cable prevents the decompressor from functioning.



**Fig. 19 — Checking decompressor adjustment**



**Fig. 20 — Carburettor**  
 1 — Choke push button, 2 — Throttle stop screw, 3 — Fast-idling screw

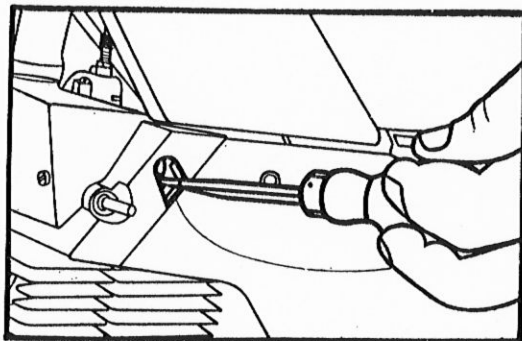
### Carburettor (Fig. 20)

In the case of a defect, it is recommended to have the carburettor repaired, adjusted, and cleaned by a specialized service station or workshop. When cleaning the jets, use only petrol and compressed air.

The Jikov 2909 DC carburettor on your moped has the following parts and adjustments:

- main jet 58 (US 63)
- idling jet 35
- carburettor metering needle set in the second notch from top
- fast-idling screw backed off from the stop by  $\frac{3}{4}$  turn.

The throttle stop screw is used to adjust idling speed. The speed increases when screwing down the screw and decreases when loosening it.



**Fig. 21 — Carburettor adjustment**

## **Ignition**

The moped is equipped with a non-contact semiconductor ignition system which does not require any maintenance except cleaning the sparking plug. It is practically failproof and a defect can only be the result of unwarranted interference on the part of the owner. Ignition adjustment is also obviated since no mechanical wear can take place. Ignition advance should be adjusted only if the stator screws have become loose or after the removal of the alternator. We recommend therefore not to interfere with the ignition adjustment. In the case of a failure go to a specialized workshop.



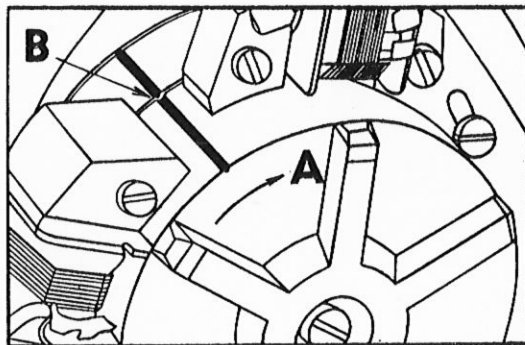


Fig. 22 — Ignition timing I

When adjusting the ignition advance, rotate the rotor in the direction of the arrow "A" (Fig. 22) till the timing marks (lines) "B" of the rotor and stator coincide. Insert dial indicator or a depth gauge into the sparking plug hole and measure the depth. Then continue rotating the rotor in the direction of the arrow "A" till the piston reaches its top dead centre position. The distance measured on the dial indicator from the alignment (coinciding) of the timing marks up to the top dead centre should be 1 to 1.5 mm. If this value is exceeded, loosen the screws "E" (Fig. 23) and rotate the stator in the direction of the arrow "C", if the value is less, rotate the stator in the direction of the arrow "D".

Repeat this procedure until obtaining the specified advance value of 1 to 1.5 mm. After having adjusted the ignition advance, properly tighten all screws and recheck the setting.

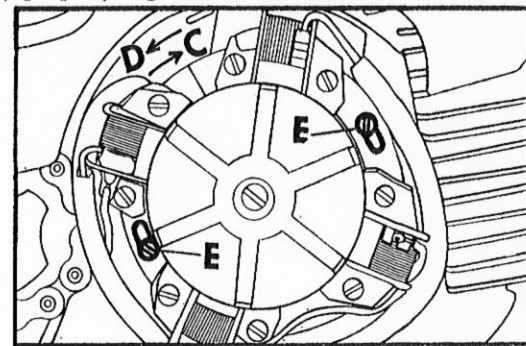


Fig. 23 — Ignition timing II

## V. REAR TELESCOPIC SUSPENSION

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The moped has a rear suspension, the telescopes of which are of simple design without shock absorbers. Their stroke is 60 mm. They do not require any maintenance.

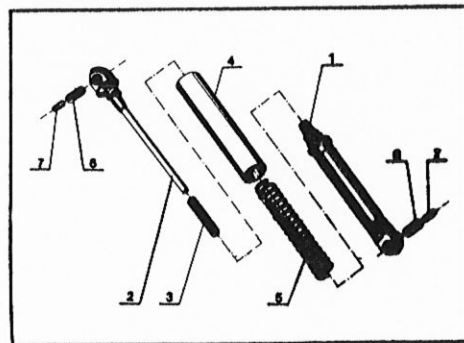


Fig. 24 — Rear telescop

## VI. TOOLS

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**The tool kit is in the bag under the seat and it contains:**

Tool kit bag, complete  
Tool kit, complete, in a PVC bag  
Combination spanner  
Spanner, 10  
Tommy bar, 5  
Tyre pump  
Tubular spanner, 17×21  
Lock, type 1304

## VII. DEFECTS AND THEIR REMOVAL

			Defect	Removal
Irregular running	Engine misfires		Overheated engine	Let engine cool down and not run at high speed (r. p. m.) Replace sparking plug.
			Overheated electrodes of sparking plug. The faulty plug (not corresponding thermal value). Excessive carbon deposits in cylinder head and exhaust port. Excessive ignition advance. Clogged exhaust silencer.	Remove cylinder head and exhaust pipe. Remove carbon deposits. Adjust. Remove and clean exhaust silencer.
	Engine stalls	Correct spark	Water or oil in carburettor. Insufficient fuel supply to carburettor.	Clean carburettor. Open fully fuel cock (or reserve), fill up fuel, inspect fuel feed line, clean vent hole in fuel tank filler cap.
			Leaky crankcase.	Check crankcase for leakage and replace gasket if necessary.
	Irregular spark		Lean mixture (white exhaust fumes). Incorrect petrol/oil mixture.	Adjust carburettor, clean jets. Mix fuel correctly and stir thoroughly.
			Incorrect sparking plug. Oiled sparking plug.	Replace sparking plug with a correct one. Remove and clean it.

Engine refuses to fire or stops	Defects of fuel feed line		Fuel tank nearly empty.	Turn fuel cock lever to "Reserve" position. Open fuel cock.
			Fuel cock closed or only partially opened. Clogged fuel filter (strainer) above fuel cock. Stopped fuel line or clogged strainer in carburettor.	Remove fuel cock and clean fuel strainer. Remove and clean fuel line and carburettor, blow through jet. Clean vent hole.
			Stopped vent hole of fuel tank filler cap. Stopped carburettor jet. Punctured float. Needle valve does not close.	Remove and clean it. Solder or replace it. Replace damaged valve.
	Faultless carburettor and fuel line	Spark on cable end	Oily sparking plug.	Replace or clean sparking plug. Replace sparking plug.
			Damaged sparking plug insulation. Short-circuited sparking plug electrodes. Too wide gap between sparking plug electrodes. Sparking plug short-circuited to vehicle frame by water and mud.	Adjust electrode gap to about 0.7 mm. Adjust gap to 0.7 mm. Clean and dry cable, cable sleeve, and sparking plug.
		No spark on cable end	Burnt (punctured) cable insulation. Damaged cable terminal. Defective Tranzimo unit or defective transistor.	Wrap insulating tape around cable and replace cable as soon as possible. Replace cable terminal. Replace Tranzimo unit or transistor alone.

Engine cannot be cranked or stopped	Faultless sparking plug. Engine lacks compression.	Broken piston ring.  Sticking piston ring. Faulty packing ring under sparking plug. Seized piston.	Remove piston ring from piston and fit a new one. Remove, clean, and refit it. Replace packing ring.  Dismantle and repair.
	Faultless carburettor. Correct compression. Correct sparking on sparking plug points.	Overheated engine.  Poor lubrication.  Damaged gasket between carburettor and cylinder.	Let engine cool down and keep it running at low speed (r. p. m.) Observe correct petrol/oil mixing ratio. Stir well when filling. Replace gasket, tighten carburettor throat thoroughly.
Loss of power. Continual.		Excessive carbon deposits in cylinder, cylinder head, and exhaust silencer.  Partially stopped up fuel line.  Incorrect ignition advance. Incorrectly adjusted carburettor.  Seized throttle.	Remove cylinder head, cylinder and exhaust pipe, if necessary, and remove carbon deposits. Remove and clean fuel line.  Adjust advance. Adjust idling speed, needle, and clean air cleaner.  Free and adjust throttle.

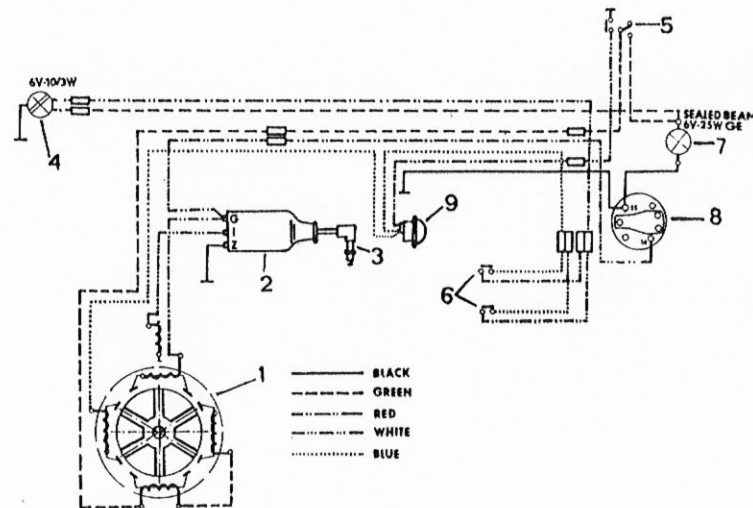
Loss of power	Continual	Clogged exhaust silencer. Worn cylinder bore and piston.  Engine sucks-in false air (crankcase halves or carburettor flange do not seal).  Damaged compression ring. Cylinder head does not seal. Brake shoes foul brake drums. Clogger air cleaner.	Clean exhaust silencer. Have cylinder rebored, new piston and piston rings fitted, and small-end bearing inspected for wear in a specialized workshop. Separate crankcase halves, clean matching surfaces, apply sealing compound, and firmly retighten crankcase halves. Replace gasket under carburettor flange. Replace it. Grind it in. Adjust brakes.
	Occasional	Restricted fuel supply (partially stopped fuel line) or clogged strainer in fuel cock or carburettor. Stuck throttle cable. Overheated engine.	Clean it.  Clean fuel line and/or strainer.  Lubricate or replace it. Let engine cool down and keep it running at low speed (r. p. m.)
Jerky clutch operation/slipping		Lost carburettor needle retaining clip. Dirty clutch jaws.	Fit new retaining clip.  Clean jaws. Inspect clutch Gufero sealing ring.

## VIII. SPARE PARTS

The vehicle Serial Number and year of manufacture are indicated on the identification plate affixed to the front part of the frame. The engine Serial Number is stamped on the crankcase.

The serial Number is used for the moped registration and indentification.

Quote this number and the year of manufacture when ordering spare parts from your dealer.



**Fig. 24 — Electrical equipment wiring diagram**

1 — Alternator, 2 — Transimo unit, 3 — Sparking plug, 4 — Bulb, 5 — Light and horn switch, 6 — Stop light switches, 7 — Sealed beam, 8 — Ignition switch, 9 — Horn.

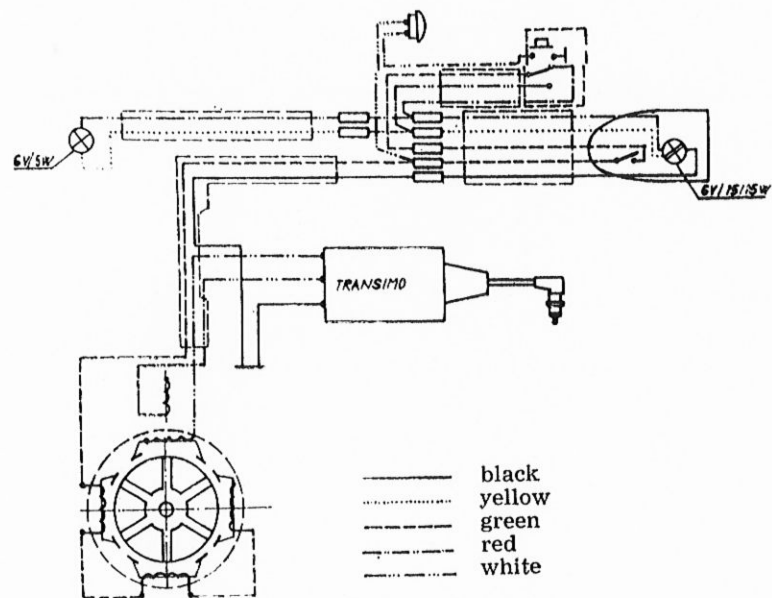
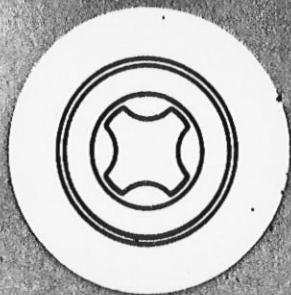


Fig. 24 — Electrical equipment wiring diagram

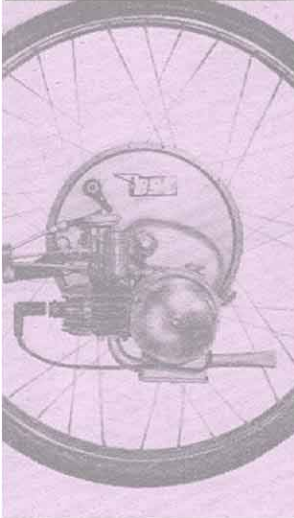


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**OWNER'S MANUAL**

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