



MOPED
MODEL 210

OPERATING AND MAINTENANCE INSTRUCTIONS



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MOPED MODEL 210



Manufacturer: ZVL Považské strojárne
Považská Bystrica
Exporter: Motokov — Prague — CSSR

The moped is a single-track motor vehicle of simple design, easy to handle and control. No special skill is required for its maintenance.

To get well acquainted with it, we recommend you to peruse this Owner's Handbook prior to its use. In this way you will avoid many an inconvenience and trouble, and the moped will serve you to your full satisfaction.

We wish you many happy and carefree miles on your new moped.

**ZVL. Považské strojárne
Považská Bystrica**

CSSR

The design of the moped, its specifications, description and illustrations contained herein are liable to changes resulting from further development and improvements.

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IDENTIFICATION NUMBER IS LOCATED

- a. on steering head
- b. on left-hand top side of engine .

IGNITION TIMING

1 to 1.5 mm before piston T.D.C.

FUEL MIXTURE

1:25 during running-in period
1:33 after running-in

Avail yourself of the advantages offered to you by the automatic two-speed gearbox of your moped.

Description of the automatic function of the gearbox.

After the engine has started, the moped starts moving in response to the opening of the throttle (accelerating) without any use of the other control elements on the handlebars. By a further acceleration (increasing of the speed of the moped), the second gear is engaged automatically and smoothly.

When riding uphill, the change-down to the 1st-speed gear takes place automatically.

In addition to this control by road speed, the moped provides for a momentous control (depending on the turning of the twistgrip). Thus you can use the properties of your machine in the following ways:

1. Starting at full throttle — sports style riding.

The change-up from the 1st to the 2nd gear takes place at a lower R.P.M. and a higher road speed.

2. Starting with only partly opened throttle — more economical. The change-up from the 1st to the 2nd gear takes place at a lower engine speed and an increased road speed.
3. In city traffic, riding behind a slower vehicle in 2nd gear while decelerating by throttling down is more economical and less noisy as when changing down to 1st gear.

4. When riding in 2nd gear at a certain steady (free-running) speed, it is possible to change down immediately to the 1st gear and to accelerate efficaciously by shut down the throttle.

5. Braking with the engine to a stop in the more economical and less noisy 2nd gear after the disengagement of the starting clutch which does not permit the engine to stall.

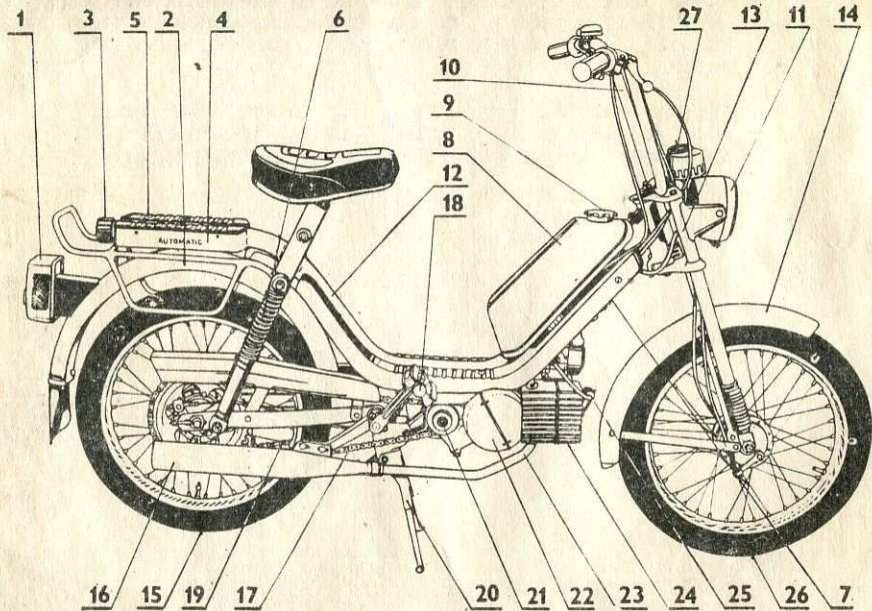


Fig. 1 Moped — Main Component Part

1. Tail lamp, 2. Rear wing, 3. Tyre inflator, 4. Luggage carrier, 5. Tool kit, 6. Rear telescopic suspension unit, 7. Intake air cleaner, 8. Fuel tank, 9. Fuel tank filler cap, 10. Handlebars, 11. Headlamp, 12. Frame, 13. Front fork, 14. Front wing, 15. Rear wheel, 16. Exhaust silencer, 17. Pedal drive transmission chain, 18. Pedal cranks and pedals, 19. Engine drive transmission chain, 20. Parking stand, 21. Engine drive disengaging dog, 22. Alternator (under cover), 23. Exhaust pipe, 24. Engine, 25. Spark plug with cable shoe, 26. Front wheel, 27. Speedometer

I. TECHNICAL DATA

Engine type	air-cooled single cylinder
Engine capacity	49 c. c. [3 cu.in]
Cylinder bore/piston stroke	39/41 (1.55/1.61")
Engine output	1.75 kW at 5 000 r. p. m. \pm 8 %
Clutches	automatic, centrifugal, dry
Gearbox	automatic two-speed unit
Transmission of driving moment to rear wheel	in 1st gear — overall ratio 1:24.4231 in 2nd gear — overall ratio 1:13.7305
Primary transmission	indentes belt
Secondary transmission	stud link chain
Pedal drive transmission ratio	1:0,692
Starting by pedalling	overall ratio 1:0,0504
Front suspension	telescopic front fork without shock absorbers — 60 mm stroke
Rear suspension	suspension units without shock absorbers — 60 mm stroke
Brakes	internal-expanding shoe brakes controlled by levers on handlebars
Brake dimensions	85 X 20 mm (3.55 X 0.79")
Tyres, front and rear	2 1/4 X 16"
Tyre inflation pressures	
— front	2 atm. [196 kPa]
— rear	2.5 atm. [245 kPa]

Moped weight	51 kg
Basic load	135 kg
Speed — sustained	35 km/h (20 m.p.h.)
maximum	40 km/h (25 m.p.h.)
Fuel tank filling capacity	4.2 litres
Maximum climbable gradient	25 %
Noise	70 decibels
Ignition	6 V, non-contact, semiconductor system
Spark plug	PAL N 7R
Headlamp	6 V/15 W
Tail lamp	6 V/5 W
Fuel consumption	1.8 litres/100 km at 27 km/h
Load capacity, maximum	90 kg including 5 kg luggage on carrier

Note: When exceeding the load capacity, it is necessary to decrease the maximum speed proportionally.

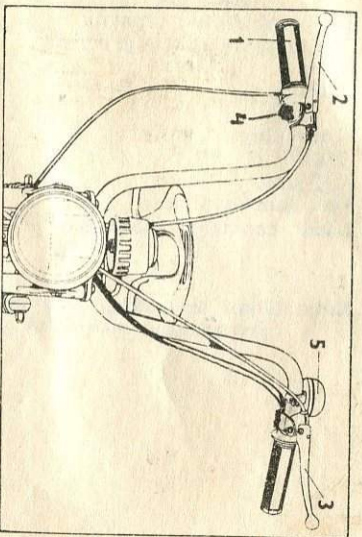


Fig. 2 — Controls

1 — Throttle twistgrip, 2 — Front brake lever, 3 — Rear brake lever, 4 — Ignition switch off, 5 — Bell

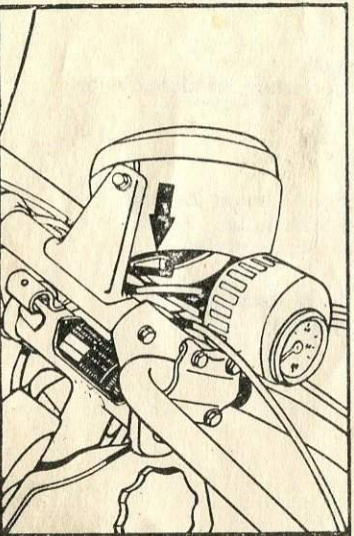


Fig. 3 — Headlamp and tail—lamp switch

(in the bottom part of headlamp)

II. CONTROLS

The moped is very simple to handle and its controls consist of:

- a) Throttle twistgrip (1, Fig. 2) by the turning of which the starting clutch is automatically engaged and disengaged (by accelerating or throttling down), and by which also the moped speed is controlled (increased or decreased);
- b) the front brake lever (Pos. 2, Fig. 2) and the rear brake lever (Pos. 3, Fig. 2) which are used for deceleration and stopping of the moped;
- c) Ignition switch off (4, Fig. 2) by means of which the engine is stopped;
- d) the bell (5, Fig. 2);
- e) the headlamp and tail-lamp switch which switches on the lights only while the engine is running;
- f) the fuel cock control lever (Fig. 4);
- g) the air intake shut-off pushrod (Fig. 5);
- h) the pedals (Fig. 6);
- i) engine drive disengaging mechanism (Fig. 7).

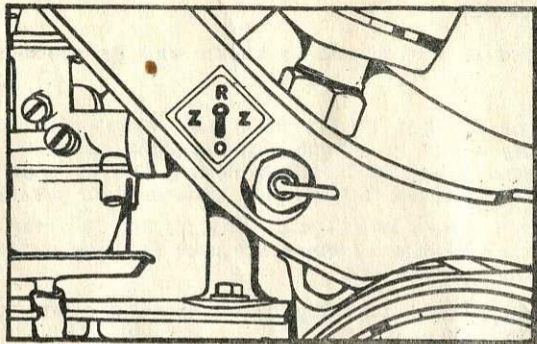


Fig. 4 — Fuel cock

- O — open
- Z — shut
- R — fuel reserve

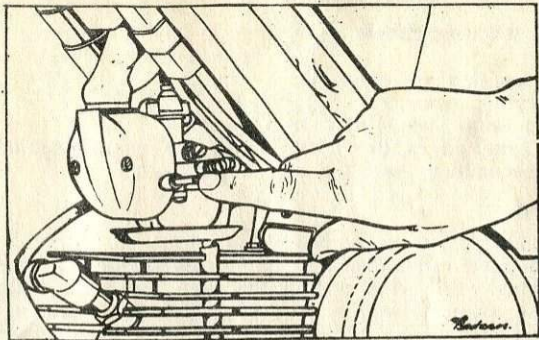


Fig. 5 — Air intake shut—off pushrod

III. RIDING INSTRUCTIONS

Before starting check

- the function of brakes
- the tyre pressures
- the amount (level) of fuel in the tank
- the function of the lights (with the engine running)
- the secondary chain for correct tensioning

Fuelling

The fuel used in the moped is petrol mixed with oil in the recommended ratio. Use at least 90-octane petrol and observe the mixing ratio when filling the fuel tank at a filling station. Use a funnel with a strainer when filling the fuel tank. Fuel mixing ratio — 1:25 during the running-in period, 1:33 after the running-in period..

Starting From Cold

Open the fuel cock (Fig. 4), push down the air intake shut-off pin (Fig. 5) as far as it will go (the pin returns immediately into its original position but the air intake remains throttled — the engine is supplied with a richer mixture. Now two methods can be used for starting the engine.

Starting of a Cold Engine in the Warm Season

a) With the moped resting on its parking stand: depress the air intake shut-off pushrod on the carburettor, rotate the twistgrip half-way, move one pedal crank by about 30 deg. from its perpendicular position in the forward direction, and push down the pedal quickly with the foot. If the engine does not fire at once, repeat the described procedure. Then let the engine warm up for a brief period and then open fully the throttle, i. e. turn the twistgrip into the full-throttle position. This will release the first stage of the air intake flap.

After the engine is heated up fully, turn the twistgrip again to the full-throttle position to release the second stage of the air intake flap. Now the engine runs at idling speed and the moped is ready for riding. Jerk it off the parking stand, get on it, and accelerate to move away.

b) Starting by pedalling: Jerk the moped off its stand, depress the air intake shut-off pin on the carburettor. Then accelerate by turning the twistgrip slightly as in point a). Now get the moped moving by pedalling and, after having attained a sufficient speed and accelerate the engine speed by opening the throttle.

Starting of a warmed-up engine (after a brief stop).
You can use either of the two described starting methods
but you may omit the depressing of the air intake shut-off
pushrod.

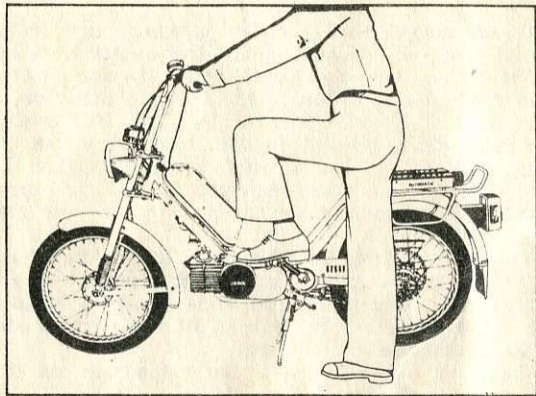


Fig. 6 — Engine starting

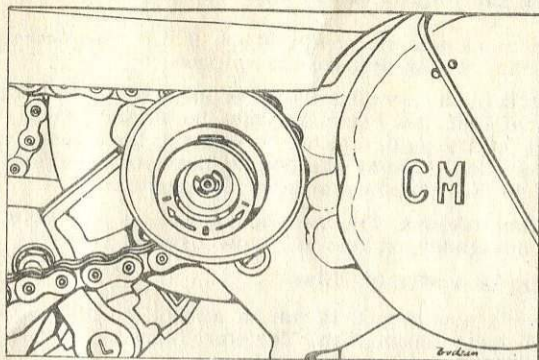


Fig. 7 — Engine drive disengaging mechanism

Starting the Engine in the Cold Season

When the temperature drops below 0 °C, it is necessary to change the starting procedure as follows:

Proceed with the actual starting as in point a) with the only difference that the twistgrip must be turned through three quarters of its total rotation to prevent the opening of the air intake flap. Prolong the engine warming-up period in proportion to the dropping ambient temperature.

For safety reasons, the starting method as per point b) is not recommended on ice and snow covered roads.

Running in a new machine

The way a new moped is run in affects its life, performance, and fuel consumption. Therefore observe the following instructions during the running-in period:

a) Mix the fuel — 90-octane petrol with M 2T oil (or another oil with similar specifications) in 1:25 ratio.

b) Use this fuel during the running-in period (for about 500 kilometres) and ride at a speed from about 25 to 30 km/hr. with the throttle opened no more than by 1/2 to 3/4 of the turn of the twistgrip.

c) When riding down a long descent, do not throttle down but decelerate by applying the brakes, and never exceed the speed of 30 km/hr.

b) Remember that the engine is cooled less efficiently when riding in the warm season with the wind in your back.

e) Do not let the engine idle too long and do not race it unnecessarily after stopping the moped.

Braking and stopping

If you have to slow down, release the twistgrip and apply the brakes by pulling the brake levers (2, 3 — Fig. 2). Proceed in the same way to stop the moped. The drop of engine speed results in the disengagement of the starting clutch, and the engine runs at idling speed. To continue the ride, just accelerate (turn the twistgrip). The starting clutch engages and the moped starts moving. At the end of the trip stop the engine by depressing ignition switch off (4, Fig. 2) and shut off the fuel supply by turning the lever of the fuel cock (Fig. 4).

Disengagement of engine drive

To disengage the drive, then engine must be stopped and the moped at standstill.

If you intend to use the moped as a bicycle (for instance after using up the fuel) pull the driving dog (in the direction from the engine) and rotate it through 90 degrees clockwise or anti-clockwise, and then release it (Fig. 7). The driving dog will remain engaged in this position and the driving moment is not transmitted from the engine to the rear wheel. To re-engage the engine, pull again the driving dog, rotate it through 90 degrees, and release it.

After moving slightly the moped on its wheels or after turning the rear wheel, the driving dog retracts automatically in mesh with the engine.

Do not disengage the engine drive when riding downhill. Use the engine disengaging device when pushing or otherwise handling the moped, when testing the engine with the moped stationary, and when pedalling to complete a trip with a defective engine or without fuel.

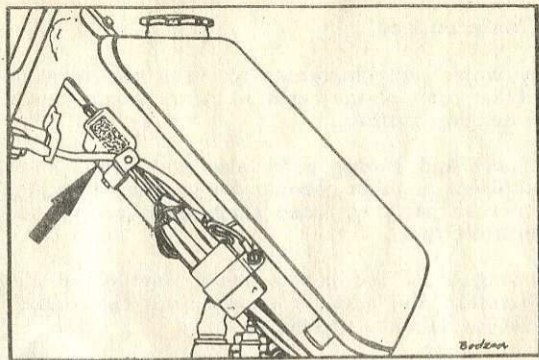


Fig. 8 — Air cleaner

IV. MAINTENANCE AND ADJUSTMENTS

Moped Maintenance

Use only water and detergents to clean the varnished and chromeplated parts of the machine. After washing, wipe them dry with chamois leather.

Clean plastic and rubber parts also with water. Never use petrol, kerosene or other solvents for washing varnished, plastic and rubber parts as these substances are apt to attack and deteriorate them.

When hosing down the moped, avoid playing the hose over the carburettor, the ignition system, and the filling screw of the gearbox with the venting hole.

As a safety precaution, take a short ride and apply the **brakes** several times to dry them after washing.

Wash the filter element of the air cleaner (Fig. 8) occasionally in petrol and blow it through with compressed air.

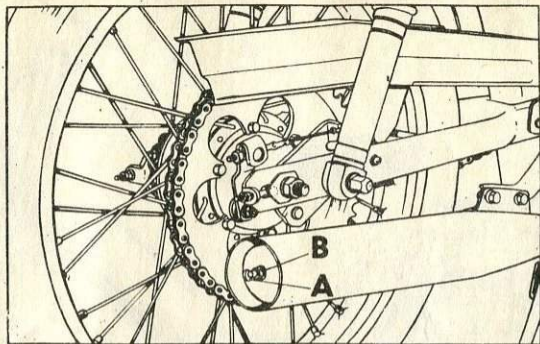


Fig. 9 — Exhaust silencer

Remove carbon deposits from the hole „A“ of the silencer (Fig. 9) occasionally with a wooden stick. At a noticeable loss of engine power check whether the exhaust silencer is not clogged with carbon deposits. The exhaust tail-end pipe can be removed after screwing off the nut „B“.

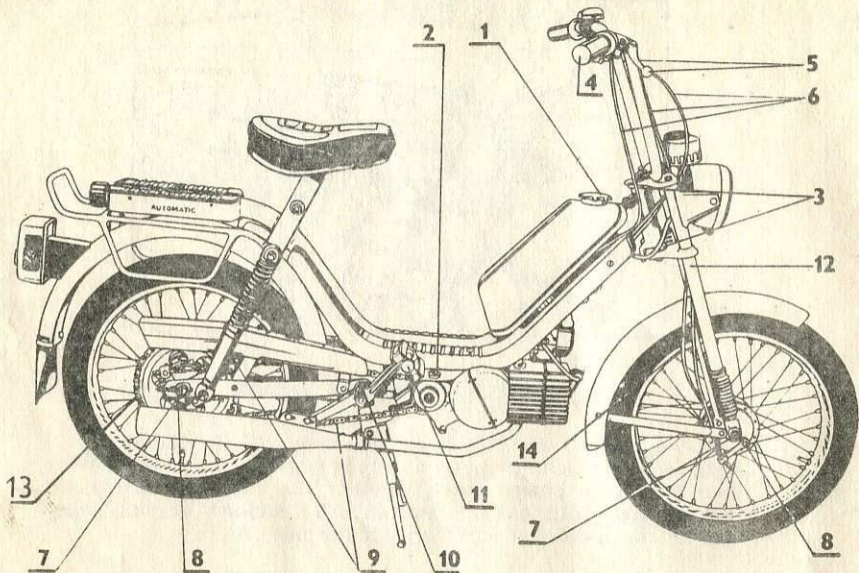


Fig. 10 — Lubrication chart

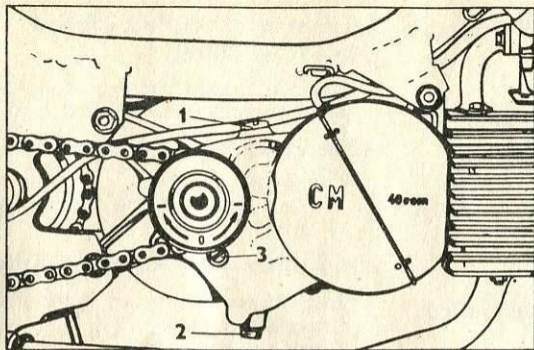
LUBRICATION

Pos. No.	Lubrication point	Lubricant	Notes
1	Engine	oil for two-stroke engines, SAE 30 (M2T)	Permanent lubrication by admixing oil to petrol in 1:33 ratio, or 1:25 ratio during running in period
*2	Gearbox	engine oil, brand M 6 A	80 c.c. (0.08 litres)
3	Steering	bearing grease (AV2)	Wash and lubricate on disassembly
4	Twistgrip	lubricating grease (AOO)	Smear sliding parts with it after washing them
5	Brake levers	oil SAE 30 (M6A)	
6	Bowden cables	thin oil (graphite)	Drip a few drops into bowden tubings
7	Wheel bearings	bearing grease (AV2)	Top up grease in the bearings
8	Brake toggle pins, brake toggles, brake-shoe pivots	lubricating grease (AOO)	After cleaning, coat them sparingly with grease

9 Chains and sprocket on the shaft	graphite oil, grease (AOO)	Clean
10 Pedal shaft	oil SAE 30 (M6A)	
11 Pedal bearings	oil SAE 30 (M6A)	
12 Telescopic front fork legs	oil SAE 30 (M6A)	
13 Freewheel	oil SAE 30 (M6A)	
14 Speedometer drive cable	thin graphite oil	Drip a few drops into the bowden tubing

*** To ensure a reliable function of the freewheel at extremely low temperatures, we recommend to use the thinner M 3A oil (or another oil with similar specifications).**

The gearbox oil should be changed only after a ride while the engine and the oil are still warm. Remove the drain screw (Pos. 2, Fig. 11) on the bottom of the crankcase (engine). After draining the oil, it is recommended to flush the gearbox with flushing oil. The level of the filled-in fresh oil must reach to the inspection hole „3“. Check the oil level in the gearbox occasionally and top it up if necessary.



**Fig. 11 — Oil filling and drain screw
plugs**

1 — Screw plug of filler neck, 2 — Screw
plug of oil drain hole, 3 — Inspection hole

MAINTENANCE SCHEDULE

After the first 800 km (500 miles)

- Change the gearbox oil.
- Clean and adjust the carburettor.
- Tighten cylinder head nuts.
- Check all bolts and screws for loosening.
- Adjust and lubricate the chains and the sprocket.
- Adjust the brakes

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

- Change the gearbox oil.
- Clean the carburettor.
- Clean the filter element of intake silencer.
- Adjust and lubricate the chains and the sprocket.
- Adjust the brakes.
- Check all bolts and screws.
- Check wheel nuts and spoke nipples for loosening.
- Lubricate bowden cables.

After every 1 500 to 2 000 km (930—1,300 miles)

- Remove carbon deposits from the exhaust silencer and exhaust pipe [elbow].

After every 3 000 km (2,000 miles)

- Check the oil level.
- Inspect and clean the filter element of intake silencer.

After every 6 000 km (4,000 miles)

- Inspect and clean the spark plug.
- Change the gearbox oil.
- Clean the carburetor.
- Clean the filter element of intake silencer.
- Adjust and lubricate the chains and the sprocket.
- Adjust the brakes.
- Check all bolts and screws.
- Check wheel nuts and spoke nipples for loosening.
- Lubricate all lubricating points.
- Remove carbon deposits form exhaust silencer and exhaust pipe [elbow].

Attend to other maintenance jobs including lubrication as necessary. Lubricate the chains and the freehweel, and clean the brakes more frequently during rainy wet ather.

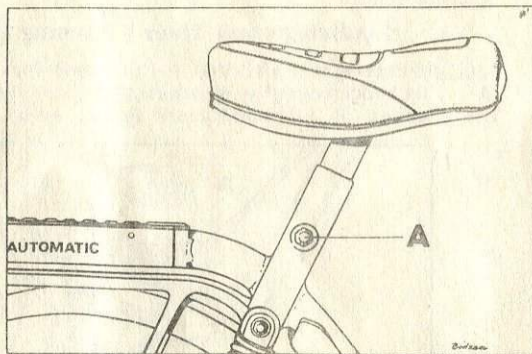


Fig. 12 — Saddle height adjusting

Saddle Height Adjusting (Fig. 12)

The height of the saddle can be adjusted as required within the range of 25 mm after loosening the nut and partly screwing out the screw „A“.

Do not forget to retighten the nut and the screw after adjusting the saddle.

Handlebars and Their Fastening (Fig. 13)

The handlebars are attached to the front fork with capscrews „A“. Check occasionally whether they have not worked loose. The position of the handlebars is not adjustable.

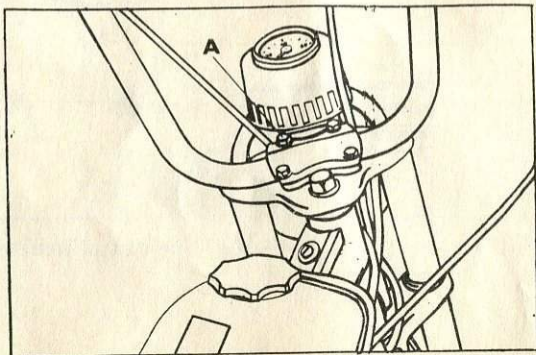


Fig. 13 — Fastening of handlebars

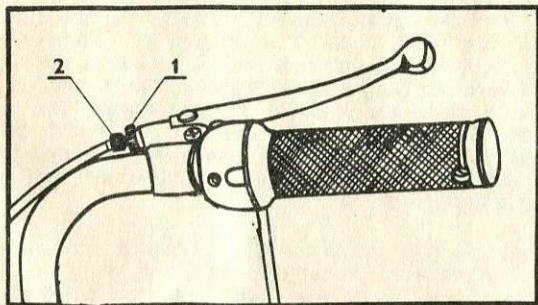


Fig. 14 — Front brake adjusting

Adjusting of Brakes

A screw is provided on the handlebars (Fig. 14) for current adjusting of the front brake. First loosen the knurled nut (1) and then screw out or in the screw (2) to adjust the travel of the brake lever so that when pressed (pulled) toward the grip there is a clearance of 20 to 30 mm between the lever and the grip. Then retighten the nut (1). When the brake lever can be adjusted no more by means of the said screw (1) on the handlebars, adjust the required clearance by means of the brake toggle (Fig. 15).

For adjusting the rear brake use the adjusting nut (1), Fig. 16. If this is of no avail, re-set the brake toggle on the splined shaft. The rear brake can then again be adjusted by means of the adjusting nut.

After adjusting the brakes check whether they are not too tight. With the moped resting on its parking stand spin the wheels which must rotate freely, without any drag.

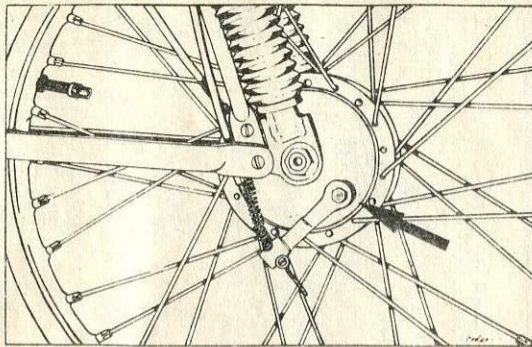


Fig. 15 — Front brake adjusting

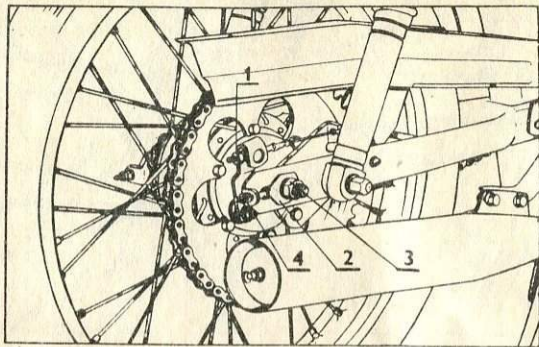


Fig. 16 — Adjusting of rear brake and engine drive transmission chain

Tensioning of Chains

To take up the slack of the chain from the engine, first loosen the nut of the rear wheel spindle (Pos. No 3, Fig. 16). Now tension the chain by tightening the nuts (4) of the chain tensioners (2) on either side of the frame. The sag of the chain when compressed midway with the fingers must be about 15 mm. After tensioning, check the alignment of the track of both wheels with the aid of a perfectly straight lath, and then retighten firmly the spindle nut. The slack of the chain from the pedals can be adjusted by means of the tensioning roller (a) on the left-hand side of the moped (Fig. 17).

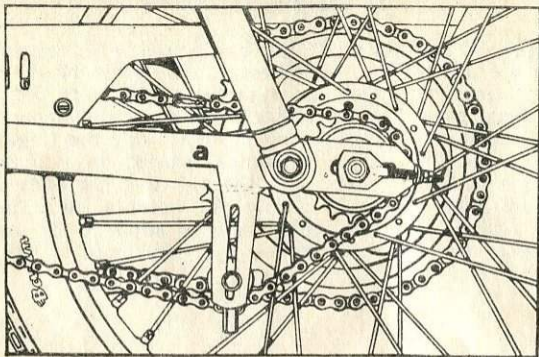


Fig. 17 — Adjusting of pedal drive transmission chain

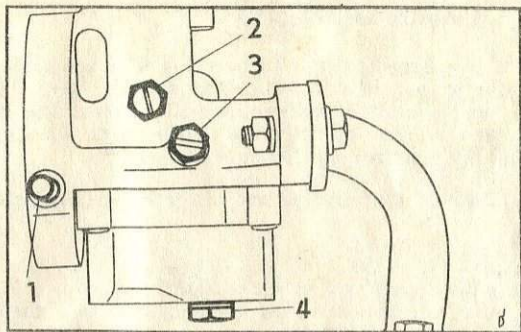


Fig. 18 — Carburettor

1 — Air intake shut-off pushrod, 2 — Sleeve valve stop screw, 3 — Idling mixture control screw

Carburettor (Fig.18)

In the case of a defect of the carburettor, we recommend you to bring the moped to an authorized service station or repair shop where skilled mechanics will remove the defect, and clean and adjust correctly the carburettor. For cleaning the jets use only petrol and compressed air.

The JIKOV 2912 DC carburettor has the following adjustments:

- main jet 63
- idling jet 35
- throttle valve needle set in second slot from top
- idling mixture control screw backed off from the basic adjusting position by 1 1/2 turns

The stop screw of the throttle (sleeve) valve is used for adjusting the idling speed. To increase the idling speed, screw the screw in, and to decrease the idling speed, screw the screw out as necessary.

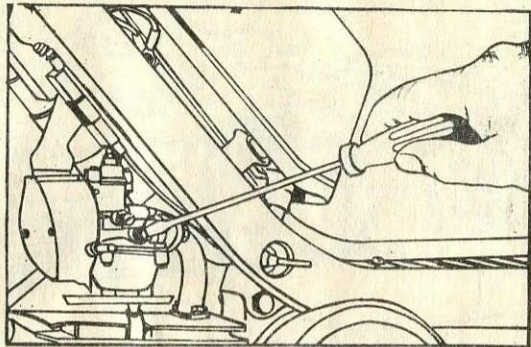
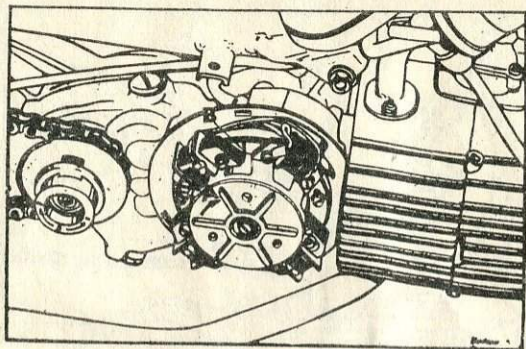


Fig. 19 — Carburettor adjusting



**Fig. 20 — Ignition advance
adjustment I**

Ignition

The moped has a no-contact, semiconductor ignition system which does not require any servicing or maintenance excepting an occasional cleaning of the spark plug. A defect of the system can be caused only by an unwarranted interference on the part of the user. Because no mechanical wear can take place, there is no necessity of adjusting the ignition advance except when screws of the stator have worked loose or after the removal and reinstallation of the alternator. Therefore do not interfere with the ignition system yourself but have any defects repaired by a specialized repair shop.

To adjust the ignition advance, turn the rotor in the direction of the arrow „A“ (Fig. 20) till the timing lines „B“ coincide with those of the stator. Then insert a dial indicator or depth slide gauge into the hole for the spark plug and measure the depth to the piston in its bottom (down stroke) position. Continue rotating the rotor in the direction of the arrow „A“ till the piston reaches its top position. The deflection (distance) read off on the indicator from the point of coincidence of the lines up to the top dead centre (T.D.C.) of the piston should be 1 to 1.5 mm. If the distance is greater, loosen the screws „E“ (Fig. 21) and turn the stator in the direction of the arrow „C“. If, on the contrary,

the distance is smaller, turn the stator in the direction of the arrow „D“. Repeat this procedure until the recommended value of 1 to 1.5 mm of the ignition advance is attained. Then retighten the screws and again recheck the adjustment.

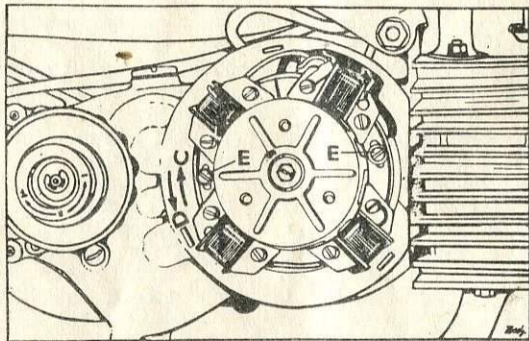


Fig. 21 — Ignition advance adjustment II

V. REAR TELESCOPIC SUSPENSION UNITS

They are of simple design, without shock absorbers, and their stroke is 60 mm. They require no maintenance.

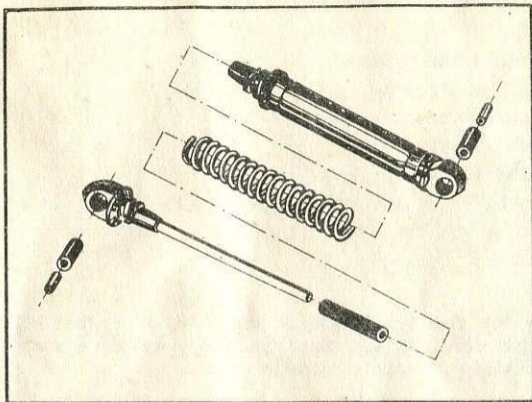


Fig. 22 — Rear telescopic suspension unit

VI. TOOL KIT

The tool kit is accommodated in the rear part of the moped frame. It comprises:

- a universal spanner
- a 3 mm screwdriver
- a size 10 spanner
- a dia. 5 mm tommy bar
- a barrel spanner, size 13/17
- a spark plug box spanner, size 21
- a tyre inflator
- a lock (padlock)

Note: Insert the tyre inflator into the rear part of frame with the folding plate pointing upwards and handle pointing towards plastic cap.

VII. CAUSES OF DEFECTS AND THEIR REMOVAL

The engine will not start

1. Closed fuel cock.
2. No fuel in the fuel tank.
3. Faulty fuel supply — choked fuel line, choked wire-gauze filter or jet of the carburettor.
Water in float chamber.
4. Faulty ignition system:
Excessive carbon on the spark plug, damaged (cracked) plug insulator, wrong (excessive) gap between plug electrodes, faulty thyristor unit, faulty ignition coil or faulty stator frame.
5. Flooded engine
Rectification: Shut the fuel cock. Open fully the throttle and step on the pedals with the moped propped on its stand, or start moving by pedalling till the engine fires. Open the fuel cock only after the engine has started running. It may be also necessary to remove the spark plug and clean it. Then crank the engine several times to force excessive fuel out of the engine through the spark plug hole, reinstall the plug and repeat the starting attempt.

6. Starting clutch slips or is defective.

The defect can be ascertained after removing the cover of the ignition system. In the case of a defective clutch, the crankshaft with the rotor does not rotate.

A. The engine starts but runs erratically

1. Overheated engine.
2. Faulty spark plug.
3. Partly obstructed fuel supply or main jet choked with dirt.
4. Leaky crankcase.
5. Damaged cable shoe.
6. Faulty ignition.

B. The engine loses power

1. Choked air cleaner.
2. Choked exhaust silencer.
3. Damaged sealing ring of the crankcase.
4. Damaged piston, cylinder or piston rings.
5. Damaged cylinder head gasket.
6. Wrong ignition timing.

C. The engine does not lose power but the acceleration is poor or the moped cannot attain its maximum speed.

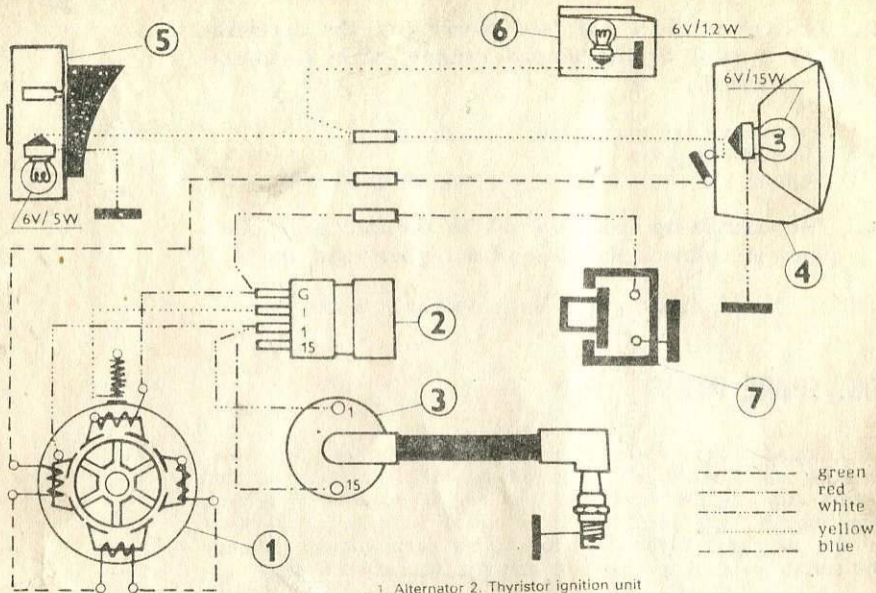
1. Brake shoes are fouling the brake drums.
2. Underinflated tyres.
3. Slipping starting clutch or slipping 2n-speed clutch.

D. The change-up from the 1st to the 2nd gear takes place at a lower R.P.M. and a higher road speed.

Defect: Loss of engine power, see paragraphs A and B.

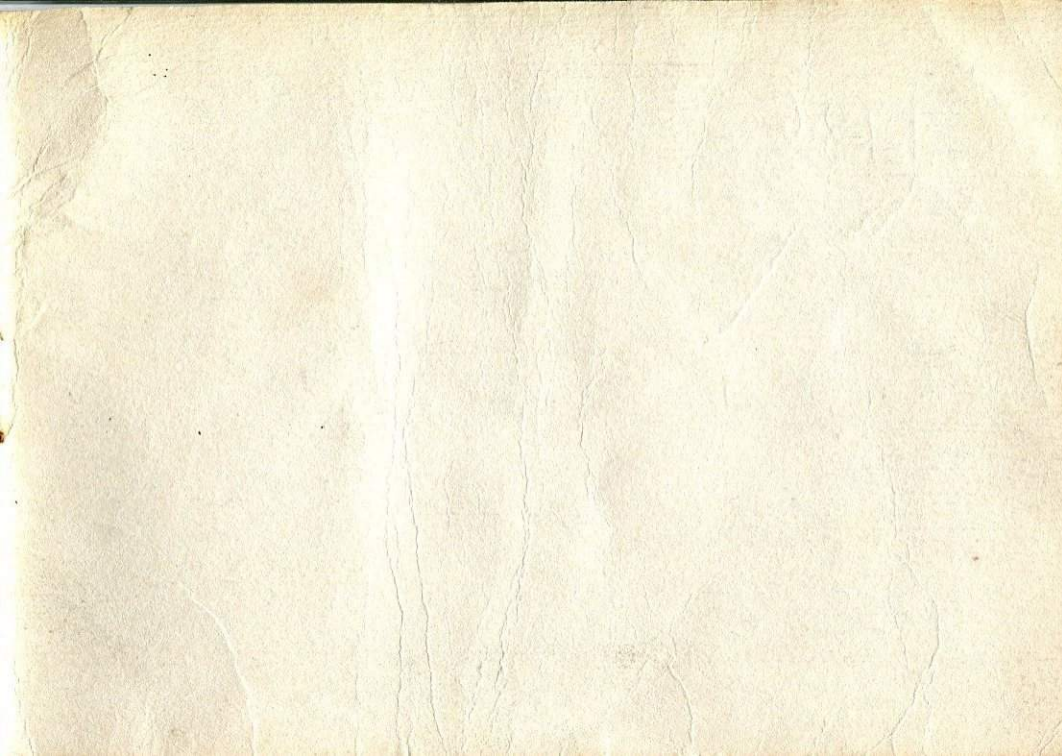
VIII. SPARE PARTS

The moped serial number and year of manufacture are stamped on the factory plate affixed on the front part of the frame. The engine number is embossed on the crankcase. The moped serial number is intended for the registration of the machine. When ordering spare parts please indicate the serial number and year of manufacture of your moped.



1. Alternator 2. Thyristor ignition unit
 3. Induction ignition coil 4. Head lamp
 5. Tail lamp 6. Speedometer 7. Lightswitch

— green
 - - - red
 . . . white
 - . . yellow
 - - - blue



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