SCOOTER

MANURHIN

DESCRIPTION AND UPKEEP

A.F.N. Limited
Falcon Works,
London Road,
Isleworth,
Middlesex.

IMPORTANT REMARKS

- Never run motor on pure gasoline
- It is absolutely necessary to add 5% oil during the breaking-in period, and 4% thereafter.
- Do not forget to have the first check-up done at 200 miles, and the second at 1,000.
- Use only original parts, as they are carefully made and rigidly inspected.

INDEX

You have just purchased a Manurhin Scooter. Whether you are a beginner, or a seasoned motorcycle or a scooter rider, it is in your own interest to read this pamphlet.

Read this first and you will find that your first ride is made simple and easy.

The motor was designed by the well known DKW firm, with long years of experience, and the automatic transmission known as a « Variator » is made under UHER license.

COMPLETE INFORMATION ON MANURHIN SCOOTER

1. GENERAL

Frame: steel tubing; cold formed and electrically welded.
Motor: mounted directly on frame.

2. DIMENSIONS AND WEIGHTS

Wheelbase: 4 ft. 5.15 in. or 1.350 meters.
General Length: 6 ft. 7.5 in. or 1.960 m. width: 2 ft. 3 in. or 0.670 m.
Clearance: 7.08 in. or 0.180 m.
Weight: frame-work 35.27 lbs. or 16 kos.
Weight: complete scooter: 176.37 lbs or 80 kg.

3. MOTOR

Type: 2-cycle, one cylinder, at 55 % angle.
Bore: 1.77 in. (45 mm.), stroke 1.85 in. (47 mm.).

Displacement: 4,52 cu. in. (74 cm^3).
Compression rate: 6 : 1
Power: French " fiscal " rating 1 h. p.; U. S. 3 h. p.
Fuel: mixture gasoline, cylinder oil (4 %)
Tank capacity: 1.70 U. S. gallons (6.5 liters), under seat.
Maximum r. p. m. - 5,000.
Carburetor: Bing 4/14/1.
Ignition: magneto, fixed spark advance.
Electric equipment: 12 volts, 30 Watts.
Motor lubrication: motor oil mixed with gasoline.
Cooling: Air - turbine blower.

4. TRANSMISSION OF POWER

" **Clutch** " : controlled by movable faces of driven pulley.
Automatic transmission: V-belt drive, from driving to driven pulley, each having movable faces; to: countershaft, with bevel gears, driving: Chain, to rear wheel sprocket.
Speed: up to 40 miles (65 km) per hour, at 5,000 rpm.
Tires: 2.75 × 16.
Speedometer: flexible shaft from front wheel, to dial on handle bars.

5. SUSPENSION

Front: telescopic fork.
Rear: swinging arms, rubber shock absorbers.

6. STEERING

Type: Fork, with handlebars, direct.

Turning radius: 10 ft (3 m.).

7. BRAKING

Type: Drums; front: 4.9 in. (125 mm.); rear: 3.11 in. (105 mm.); contact width 0.8 in. (20 mm.).

Location of brake controls:

Front brake, by hand lever at right end of handlebar (cable control); rear brake, foot pedal in floor board. both brakes: regulation by screw and lock nut.

8. FRAME

Welded steel tube.

Length 6 ft. 7.5 in. (1.960 m.).

Width 2 ft. 2.37 in. (0.670 m.).

9. LIGHTING

Standard headlight ABTP 494, centered at 30 in. (.770 mm.) from ground, or loaded weight 28 in. (0.750 mm.).

Headlight has three intensities:

1. Country
   a. Very bright
   b. Bright
2. City (dim)
   tail light (12 volts).

10. MISCELLANEOUS

Horn - 12 volts.

Series no. - right side of frame above front mudguard.

Motor no. - on crank case, below carburetor.

Manufacturers plate - under saddle.

Registration plate location - rear, of motor and rear wheel housing 13" (.330 m.) from ground.

Rear view mirror - on handlebar.

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CONTROLS

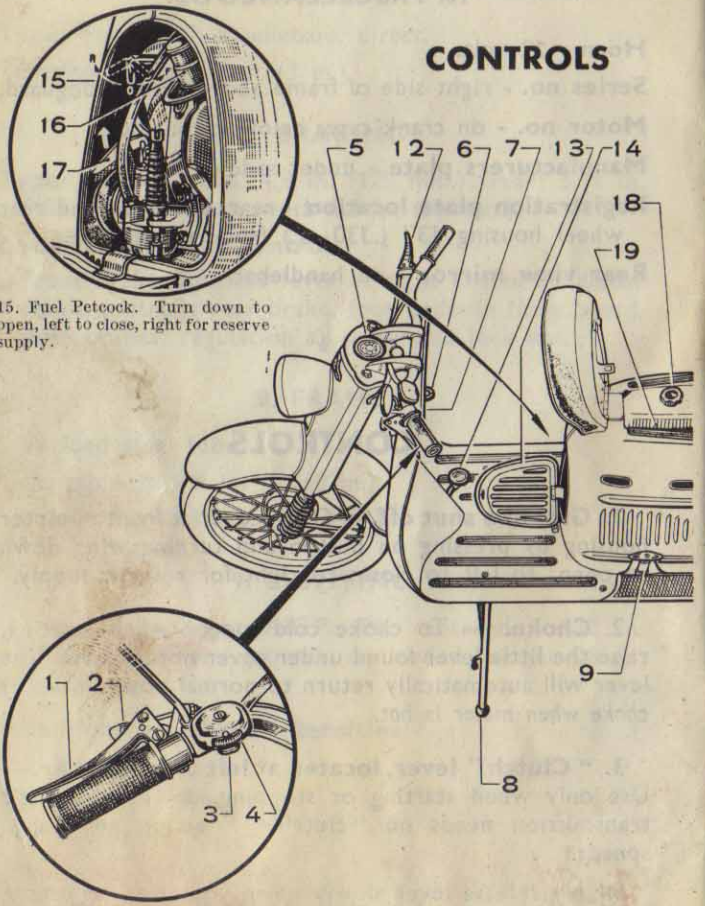
1. **Gasoline shut off.** — Open cover at front of motor housing by pressing on button and turning wing down to open; to left to close; to right for reserve supply.

2. **Choke.** — To choke cold motor when starting, raise the little lever found under cover noted above. The lever will automatically return to normal position. *Never choke when motor is hot.*

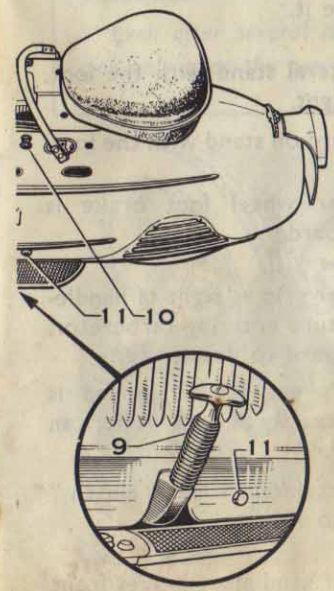
3. **" Clutch " lever, located at left of handlebar.** — Use only when starting or stopping, as the automatic transmission needs no " clutching " action to change speeds.

Simply release lever slowly when you start, and close lever when motor is idling.

CONTROLS



15. Fuel Petcock. Turn down to open, left to close, right for reserve supply.



1. *Clutch hand lever*
2. *Clutch hand lever release*
3. *Horn button*
4. *Ignition and light switch*
5. *Speedometer*
6. *Briefcase hook*
7. *Fork lock*
8. *Stand (lateral)*
9. *Starter handle*
10. *Saddle catch*
11. *Motor and rear wheel cover cap screw (2)*
12. *Front brake hand lever*
13. *Rear brake pedal*
14. *Cover (carburetor, gasoline shut-off and spark plug)*
15. *Gasoline shut-off*
16. *Spark plug*
17. *Carburetor air adjustment*
18. *Gasoline filler cap*
19. *Tool kit space*

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These drawings show various controls; methods of utilization on following pages.

4. **Switch.** — The switch is located beside "clutch" lever. Turn to right to stop motor. The same switch controls the three intensities of lights.

Press down on button for horn.

5. **Starter.** — On left side, near bottom of motor housing. To work this hand starter, when seated on the scooter, simply pull on the handle to about the height of the saddle.

Don't use starter when standing erect, as you may pull the cable out too far and injure it.

6. **Stand.** — Depress the lateral stand with the foot, and this holds the scooter upright.

To release stand, push backward on stand with the foot.

7. **Foot-Brake.** — The rear wheel foot brake is located at right side of floor board.

8. **Throttle grip.** — A rubber grip at right of handlebar controls amount of gas mixture entering carburetor. Turn to rear to accelerate, forward to decelerate.

Once the "clutch" lever is engaged, all speed is controlled by the throttle grip, exactly as on an American car with automatic transmission.

When motor is idling, don't accelerate when "clutch" lever is engaged, unless about to start.

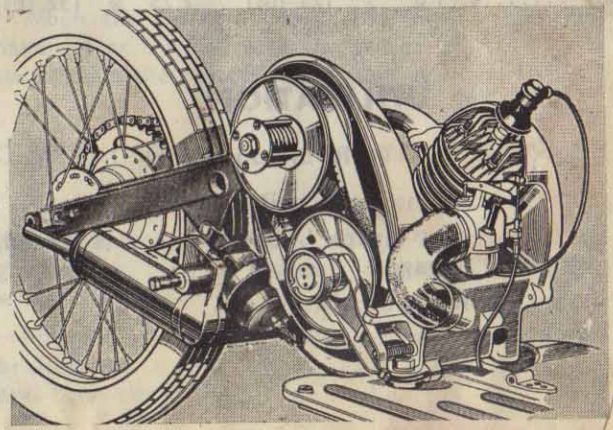
9. **Hand brake** — on right of handlebar, brakes front wheel.

ADVICE ON BREAKING-IN

Although all parts in the Manurhin scooter are precision work, and no "breaking-in" period is really necessary, it is advisable to limit speed to 30 mph for the first 100 miles, then 40 for the next 150 miles.

And don't forget the 200-mile and 1,000-mile check-ups.

Even after several hundred miles, we suggest that you only open the gas three-quarters of the way.



Motor assembly and rear suspension.

THE FIRST RIDE

After you have familiarized yourself with the various controls, be sure that the gas tank is full, tire pressure correct, and brakes and lights working.

To fill the reservoir, swing the saddle forward. Be sure to fill with a mixture of gasoline with 4 to 5 % cylinder oil. And don't leave the motor running, or smoke nearby when filling the tank. It is well to protect the opening when filling, when rain is falling.

The tire pressure is *important* (given here both in kilos per sq. centimeter, and lbs per sq. in.):

	Solo	Duo
Front.....	1.3 Kilos (18 lbs)	1.3 Kilos (18 lbs)
Rear	1.6 » (23 lbs)	2.25 » (32 lbs)

UTILIZATION

A. **TO START MOTOR. Sit on saddle.**

— **Be sure that the light switch is at "0".**

— **Be sure that "clutch" control lever is closed, and catch engaged.**

— **Open gasoline petcock.**

— **Raise choke** *(for cold motor only).*

— **Open gas about 1/4 (toward rear).**

— **Pull starter handle.**

The motor should start at the first or second pull.

B. **TO START SCOOTER.**

Be sure to raise stand completely.

Close "clutch" lever completely to release catch, then release lever *slowly*, **at the same time advancing gas** *slowly*.

The scooter should start off smoothly; afterward, as there are no gears to shift, all that is necessary is to advance or retard the gas.

The automatic speed changer will take care of all speeds and all grades, automatically.

If you should stall, on starting off, probably you have let the "clutch" lever out too fast, or you have not accelerated enough.

When the motor is very cold, pull on the starter handle 4 or 5 times with the switch off. Then turn on switch, and the motor should start at the first pull.

C. **BRAKING.**

Don't forget that the automatic transmission has an excellent braking effect, when you cut the gas. For additional braking, the hand brake (front wheel) is preferred.

For a sudden stop, apply both hand and foot brakes. On a long downgrade, use first one brake and then the other, to avoid heating the brakes.

We recommend going slowly on wet, icy or sandy roads.

D. **TO STOP.**

Do not close "clutch" hand lever when you are going fast. It is difficult to do, and it wears out moving "clutch" parts.

To stop motor, open switch.

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UPKEEP OF THE MANURHIN SCOOTER

Proper performance depends on proper care. We recommend service and repair work by our regular agents, as well as the two periodic check-ups.

For those who wish to care for their own scooters, outside the two check-ups, we give hereby some directions:

I. FUEL SUPPLY.

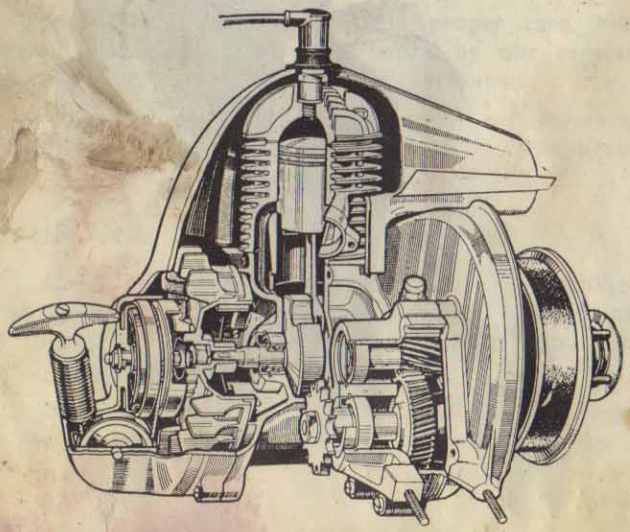
1. **Gasoline filter (at carburetor).** This thimble-shaped filter is located at the connection of the gas line to the carburetor. Remove filter, and blow impurities out.

2. **Gasoline filter (at tank).** If gas runs feebly from tube to carburetor (with petcock open): with the tube disconnected from carburetor, the petcock open and the tank filler cap removed, blow into the tube at the open end. This is only a temporary remedy. The tube, filter and tank should be cleaned if impurities exist.

Use of hand starter.

3. Carburetor air filter.

This air filter is located inside the flexible rubber intake tube. It should be cleaned from time to time, particularly under dusty or sandy conditions. Remove intake tube, remove filter, place in gasoline in a receptacle, and clean with a brush. Dry thoroughly, put several drops of oil on the surface, and assemble. Be sure the filter is properly placed in its socket. Replace intake tube, motor end first.



« Blown-up » view Manurhin 2-cycle motor.

4. To regulate carburetor.

a. The richness of the mixture is regulated by the needle valve (see p. 22).

b. Idling speed is regulated by screw nº 11, clockwise to increase speed. If this does not change the idling speed, the throttle cable is too tight; loosen the hollow nut, after loosening the set screw. Regulate idling speed when motor is hot.

II. IGNITION.

The high tension current for the spark plug is furnished by the fly wheel magneto.

Clean spark plug frequently, preferably with a steel brush, using wrench in tool kit supplied with scooter.

Check spacing of points, .016 — .02 in. (.4 — .5 mm.) (the thickness of a post card). Never touch the central electrode.

III. IGNITION.

The headlight has three intensities:

1. Country
   a. Very bright
   b. Bright
2. City

Tail-light

Current is furnished by the magneto.

THE MOTOR

SCOOTER
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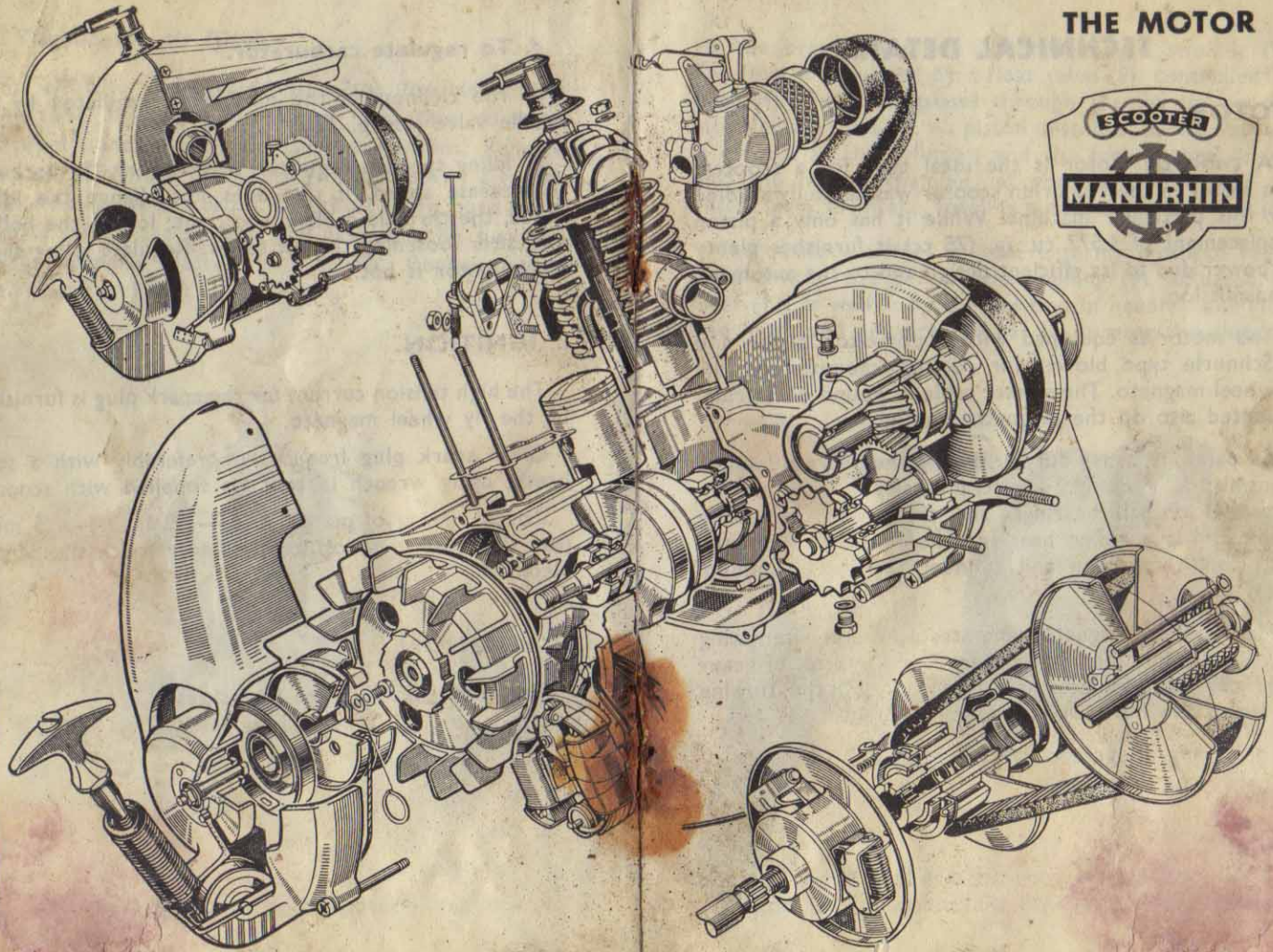


TECHNICAL DETAILS

MOTOR.

A two-cycle motor is the ideal type for a scooter: the motor in the Manurhin scooter was carefully studied for this particular machine. While it has only a piston displacement of 4.577 cu. in. (75 cc) it furnishes plenty of power due to its efficient design and to the automatic transmission.

The motor is equipped with a dome-top piston and a Schnurle type blower for cooling, mounted on the flywheel magneto. The starter cable is wound on a drum, mounted also on the magneto housing.

All parts are heavy duty, including the heavy aluminum transmission housing. The crankshaft is mounted on two sets of ball bearings, and the lower connecting rod end has a roller bearing. The cylinder is of grey cast iron, the piston and cylinder head of aluminium alloy.

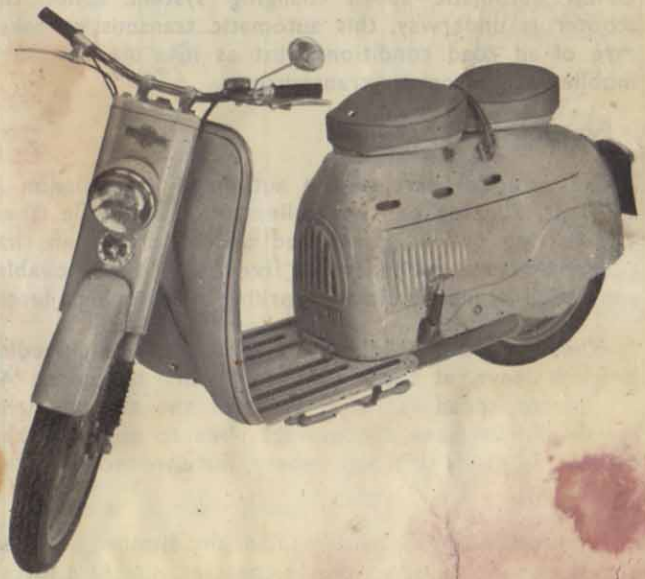
The flywheel magneto generates a 12 volt alternating current, for ignition and lighting. This magneto, of heavy solid construction, acts as a flywheel, and the turbine blades of the blower are integral with it.

For wiring design see figure; page 21.

CARBURETOR.

This is of the Bing type, model 4/14/1. When petcock is opened, fuel flows into the constant level bowl (3) via the brass connection (1) containing a strainer (2). The flow is regulated by a float value (5), controlled by float (4). Fuel then passes through the vertical jet (6) into Venturi tube (7). As piston descends, partial vacuum is created in the cylinder, and the fuel is then drawn into the mixing chamber, at the same time that air enters from air intake, forming a mixture in chamber (8).

The quantity of fuel mixture entering motor is regulated by the size of throttle opening (9), actuated by lever (13) as well as by the position of needle value (10). The more you advance the gas by turning the throttle



grip backward, the larger the throttle opening and the more fuel enters the mixing chamber (8). Screw nº 11 regulates the idling speed, turning to the right to increase idling speed (as the throttle valve rests on the tapered end of this screw).

The choke is nº 12 in the figure.

AUTOMATIC SPEED CHANGING SYSTEM.

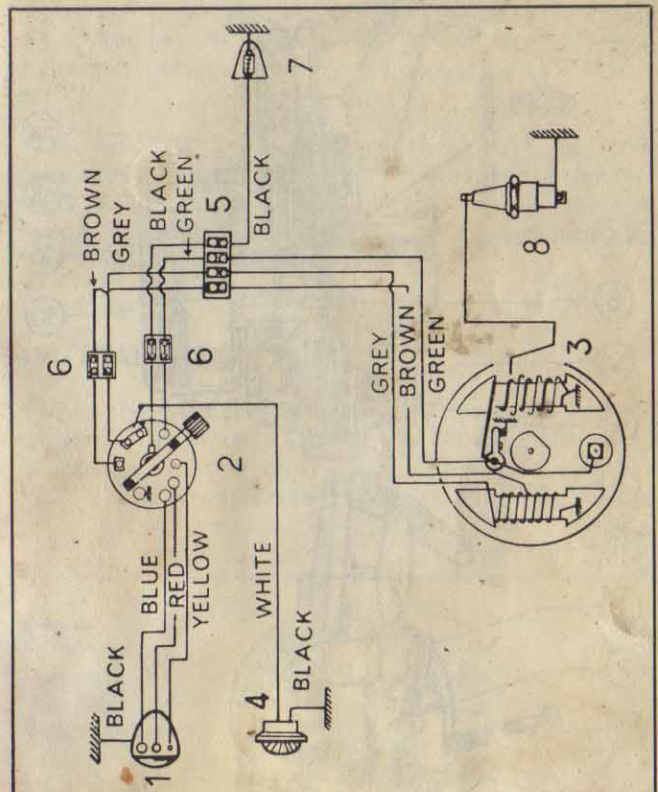
This is the only two-wheeled motor vehicle with the UHER automatic speed changing system. Once the scooter is underway, this automatic transmission takes care of all road conditions, just as in a modern automobile with automatic transmission.

Functioning is as follows:

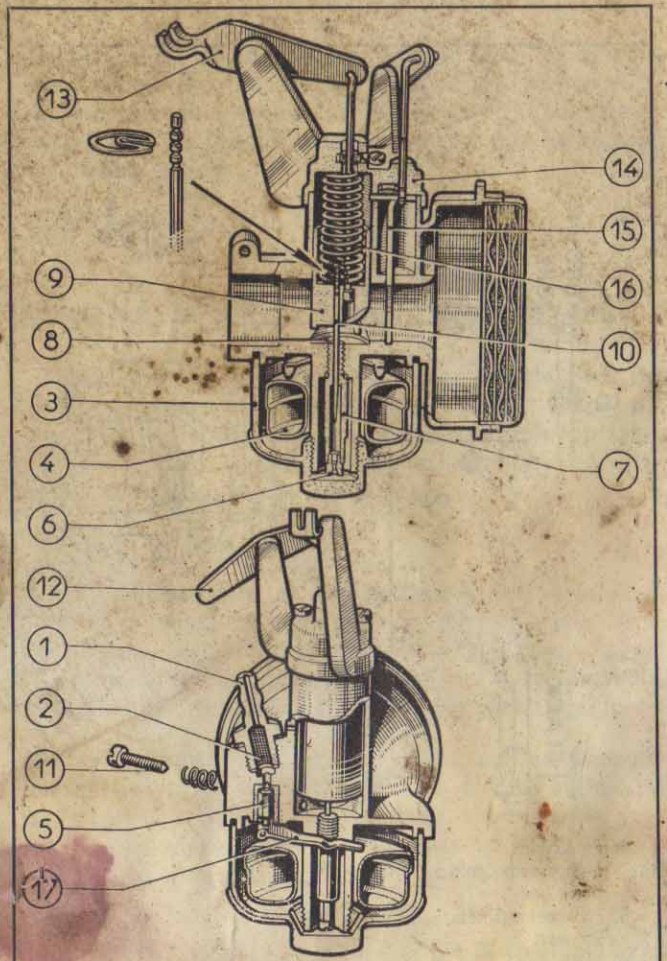
The principal part of the automatic transmission is a V-belt, running on two pulleys with separable faces. The driving pulley is mounted on the crankshaft, has two conic faces, the inner one fixed, the outer movable, controlled by inertia blocks, working by centrifugal force.

When the motor is idling, the V-belt rests on a needle-bearing sleeve, at the center of the driving pulley. As the motor speed is increased with the throttle, the inertia blocks cause the movable face to approach the other face, and the belt moves outward toward the periphery.

As the belt is unstretchable and as the distance between centers of the pulleys remains constant, the belt forces



1. *Headlight*
2. *Light and ignition switch combined*
3. *Flywheel magneto - 12 volt, 29 watt*
4. *Horn*
5. *Connection plate (4 connec.)*
6. *Connection plate (2 connec.)*
7. *Pail light and rear number plate*
8. *Spark plug*



Carburetor gross-section

the faces of the driven pulley apart against a spring. The belt approaches the center as the bearing circumference of the belt becomes smaller, and you are in a "higher gear".

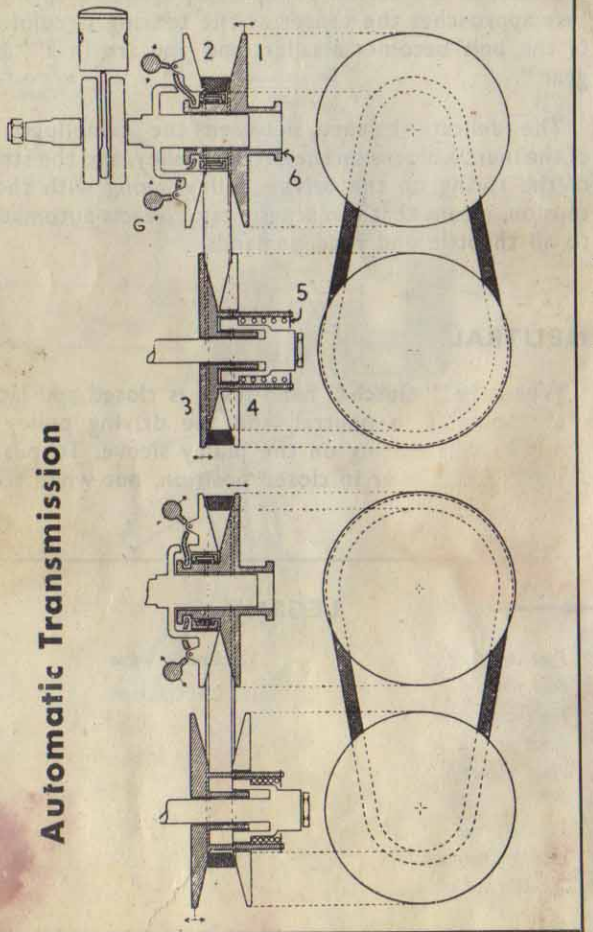
The delicate balance between the centrifugal force of the inertia blocks on the driving pulley, and the strength of the spring on the driven pulley, along with the belt tension, means that this transmission reacts automatically, to all throttle and road demands.

NEUTRAL.

When the "clutch" hand lever is closed and latched, the scooter is in neutral, and the driving pulley runs free, the belt resting on the pulley sleeve. To push the scooter, keep lever in closed position, but when scooter

LEGEND

1. *Fuel entry*
2. *Fuel filter*
3. *Float chamber*
4. *Float*
5. *Float valve*
6. *Jet*
7. *Venturi tube*
8. *Mixing chamber*
9. *Throttle valve*
10. *Needle valve*
11. *Idling screw*
12. *Choke lever*
13. *Throttle lever*
14. *Carburetor top section*
15. *Choke valve*
16. *Throttle spring*
17. *Float lever*



is on stand and motor not running, release "clutch" hand lever.

ELECTRIC INSTALLATION.

On the magneto stator are attached two 12 volt 30 Watt coils. The left coil for lights and horn (alternating current) and the one on the right which furnishes the high tension current for the ignition. The interrupter is cam-operated, and opens once for every turn of the rotor. One point is the ground, the other wired to coil and condenser.

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REGULATING, UNASSEMBLING AND ASSEMBLING

1. TRANSMISSION V-BELT

Changing this V-belt is easy

1. To remove belt (see fig. C).

Remove two cap screws holding motor and rear wheel housing, and swing forward against handlebars.

Release "clutch" hand lever.

Disconnect cable from yoke (on driving or lower pulley), remove cotter pin, remove pin, then yoke (Fig. A).

Figure A. — Unassembling "clutch" yoke.

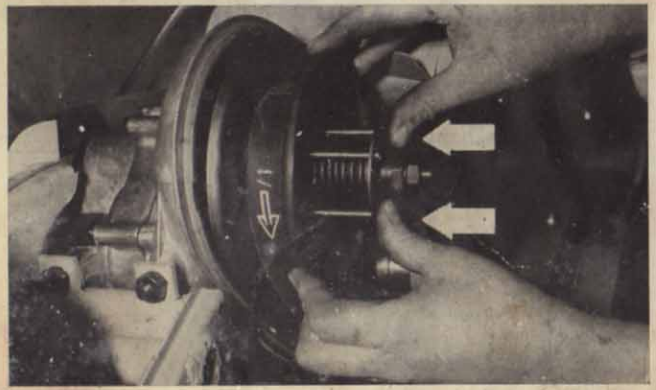

Figure B. — Pressure of thumbs to remove V-belt.

Driven pulley (upper) — place hands as in Fig. B.; push against spring disc to force pulley faces apart; the belt is now loose, and can be removed from driven pulley as in Fig. C, turning to the right. Then remove from driving pulley.

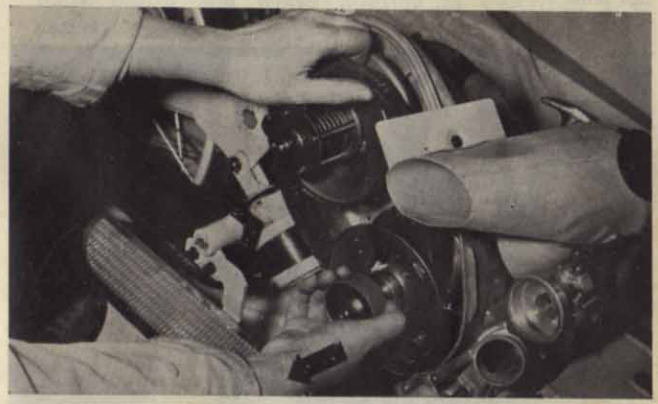

Figure C. — Removing belt by separating driven pulley faces, and turning to right.

2. To install belt (see Fig. D).

(note) — the arrow on belt should point to the *rear*) Begin with driving (lower) pulley, placing belt as in Fig. D.

Assemble yoke, and place "clutch" hand lever in locked position, to allow belt to rest on sleeve.

Place belt on driven (upper) pulley, the reverse of removing belt.

Check yoke, to be sure that pin and cotter pin are in place, then replace motor housing.

Note. — Always keep belt free from grease, oil or fuel from the tank.

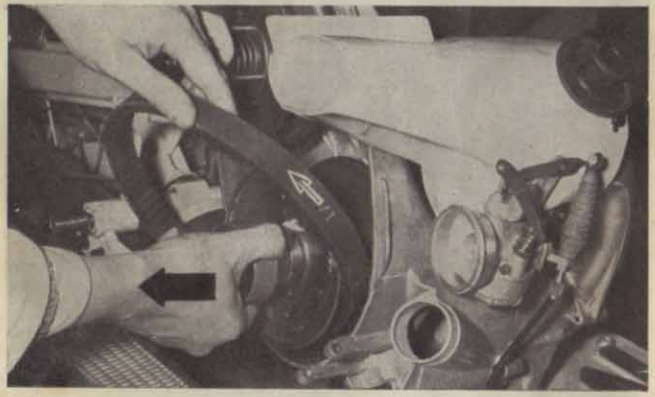

Figure D. — Installing belt on driving pulley.

II. WHEELS AND TIRES

It is very rare to have a flat tire. If this should occur, it is better to remove the wheel, then repair tire.

1. Front wheel.

Remove brake cable head, after pushing brake lever toward rear.

Remove speedometer drive.

Remove the two wheel axle nuts with wrench supplied in tool kit.

2. Rear wheel.

Raise motor and wheel housing as described previously.

Remove the hex-nut at *left* end of axle, holding the axle if necessary with a screw driver in the hole at the right end.

Withdraw axle from right side with the aid of screwdriver.

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MOTOR TROUBLES AND REMEDIES

The MANURHIN scooter is very simple and sturdy. With proper care it should give no trouble.

However, nothing is perfect and in case of trouble, following are some suggestions:

1. MOTOR DOES NOT START

A. Fuel does not arrive in carburetor.

a. Empty tank
b. Petcock closed, or plugged
c. Filter plugged (at carburetor)

d. Filter plugged (at gas tank)
e. Needle valve blocked.

B. No spark (shown when you hold spark plug cable near ground, turning motor by hand).

a. Bad spark plug cable connection
b. Spark plug cable broken, or bad insulation
c. Interrupter point does not open, or is stuck
d. Interrupter points dirty or burned out
e. Condenser damaged or wet
f. Distributor stuck.

C. Spark shows between cable and ground, but not in spark plug when removed and placed on cylinder head.

a. Space too wide between electrodes
b. Carbon on electrodes
c. Spark plug insulation broken or wet
d. Spark plug wet or oily.

D. Motor starts with difficulty — *cold.*

a. Idling speed too slow
b. Air entering motor *(see service agent).*

E. Motor starts with difficulty — *hot.*

a. Choke closed
b. Carburetor at angle

c. Float valve does not close properly, carburetor flooded
d. Float leaks.

2. MOTOR SKIPS

a. Air filter dirty, or badly placed in rubber intake tube
b. Float valve worn
c. Needle valve worn
d. Float damaged
e. Too much oil in the gasoline-oil mixture
f. Spark too advanced or retarded
g. Carbon on exhaust or intake ports
h. Muffler blocked or damaged
i. Bad carburetor adjustment
k. Spark plug too hot.

3. BACK FIRING

a. Bad fuel flow
b. Carburetor inclined
c. Bad cylinder head gasket — too much air in mixture
d. Air filter lacking
e. Bad carburetor adjustment
f. Incorrect interrupter point spacing
g. Spark plug loose or worn
h. Bad spacing of spark plug electrodes
i. Faulty condenser

k. Damaged spark plug cable
l. Interrupter points stuck, or spring broken
m. Interrupter points burned or dirty
n. Piston rings damaged, worn or gummy.

4. MOTOR WILL NOT RUN FAST

a. Interrupter points open too far
b. Interrupter point stuck
c. Fuel tube or carburetor dirty
d. Too much carbon in motor or muffler
e. V-belt loose or worn
f. Air filter dirty or plugged
g. Spark too retarded
h. Brakes do not release entirely
i. Motor cooling fins covered with dirt (overheated motor)
k. Incorrect gasoline — oil mixture.

5. MOTOR STOPS SUDDENLY

a. Empty fuel tank
b. Gasoline filter or needle valve plugged
c. Spark plug cable not attached to spark plug
d. Faulty or dirty spark plug
e. Faulty contact or bad interrupter points
f. High tension coil burned out
g. Faulty condenser.

E

IMPRIMERIE STRASBOURGEOISE 15, RUE DES JUIFS - STRASBOURG

LUBRICATION DIRECTIONS

SCOOTER

MANURHIN

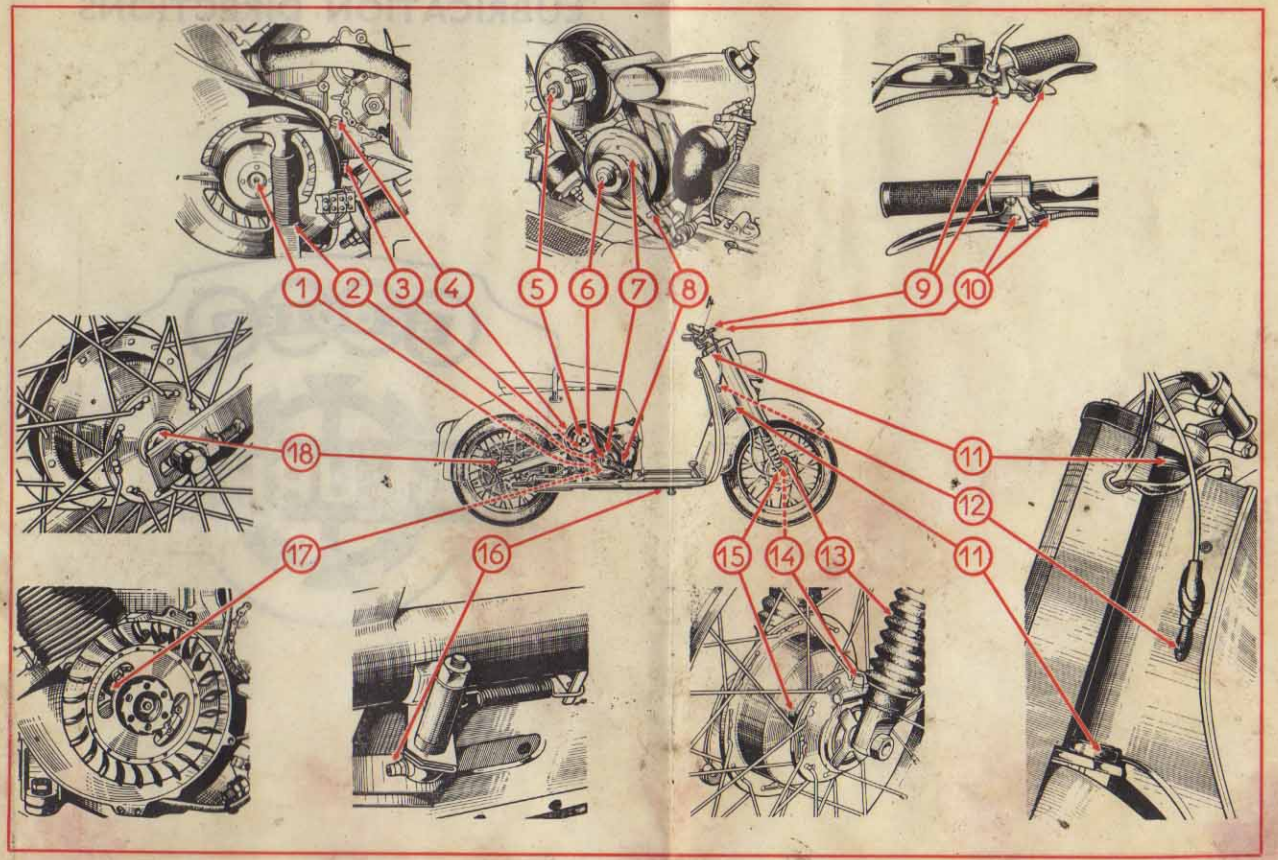
LJBRICATION DIRECTIONS

(Where " greae " is indicated, BP Energol LC 2 is recommended in France. Whee " oil " is indicated, BP Energol 2-cycle Motor oil, type HV is recommended. See your dealer for recommendations.)

No. on Plan	Lubrication Points	Lubrication *)	Mileage
1.	Starter cable drum spindle	grease	1,200
2.	Starter cable, and return pulley pin..	oil	1,200
3.	Drain reduction gear housing (when hot)		1,800
4.	Fill reduction gear housing 4.5 cu. in.	oil	1,800
5.	Secondary (driven) pulley	grease	1,200
6.	Ball bearing « clutch » release	grease	600
7.	Primary (driving) pulley needle bearing	grease	3,600
8.	« Clutch » yoke pin	oil	1,200
9.	« Clutch » hand lever joint and cable	oil	1,200
10.	Front brake hand lever joint and cable	oil	1,200
11.	Fork ball bearings	grease	7,200
12.	Guide tube for « clutch » control cable	oil	1,200
13.	Telescopic front fork — grease springs and sliding tubes	grease	3,600
14.	Speedometer drive	grease	1,200
15.	Front brake cam and hub	grease	7,200
16.	Foot pedal joint	grease	1,200
17.	Flywheel magneto — oil hole (only 2 or 3 drops oil)	oil	6,000
18.	Rear hub and brake cam	grease	7,200

*) see your dealer.

MANURHIN Scooter-Lubrication Plan



SCOOTER UPKEEP

MANURHIN

Before delivering scooter to customer, the dealer should check the following:

MOTOR

1. Idling speed
2. Oil level in reductor (reducing gear housing)
3. Clutch yoke and hand " clutch " lever
4. Hand starter.

CHASSIS

5. Hand brake
6. Foot brake
7. Chain tension
8. Tire pressure
9. Lubrication — see lubrication notice.

ELECTRICAL EQUIPMENT

10. Horn and switch
11. Head light, regulate
12. Tail light.

ROAD TEST

13. Make careful road test.

INSTRUCTION FOR THE REGULAR UPKEEP OF THE MANURHIN SCOOTER BY YOUR DEALER

Mileage	GENERAL 1. Check-up, trials	MOTOR 2. Check « clutch » yoke	3. Check oil level in reduction gear housing; level should be at level of filler cap	4. Clean carburetor fuel strainer, and air filter	5. Tighten motor and crank case nuts	6. Check condition of V-belt	CHASSIS 7. Check final drive chain to rear wheel for tension	8. Check brakes, following nº 7	9. Check tightness of rubber sleeves on front fork	10. Check all screws and nuts on chassis	11. Check tire pressure	ELECTRICAL EQUIPMENT 12. Clean spark plug, check gap (.016 in. to .02 in.)	13. Check lighting system, horn and switch	14. Check interrupter points (.012 in. to .016 in.)	15. Check timing — points should open when piston 0.10 to 0.11 in. below top dead center	16. Oil and grease scooter, following lubrication schedule elsewhere	ROAD TEST 17. Make road tests at mileages indicated	Job time minutes	Mileage	
300 miles	●	●			●			●	●	●	●		●	●	●	●	●	70	300 miles	Free
900 »	●	●	●	●		●	●	●	●		●	●	●			●	●	82	900 »	Paying
1,800 »	●	●	●	●		●	●	●	●		●	●	●	●	●	●	●	136	1,800 »	Paying
3,000 »	●	●	●	●		●	●	●	●	●	●	●	●			●	●	153	3,000 »	Paying
4,200 »	●	●	●	●		●	●	●	●		●	●	●	●	●	●	●	136	4,200 »	Paying
5,400 »	●	●	●	●		●	●	●	●		●	●	●			●	●	82	5,400 »	Paying

Sign ● means, the upper men[illegible] works must be done at [illegible]e mileage indicate in the first left column.

ATTENTION

After each check-up by your dealer, get a receipt, with mileage noted, so that Manurhin can have the information in any question of guarantee clauses.

Work done date ..... Free	**300**	MANURHIN Dealer signature
Work done date ..... paying	**900**	MANURHIN Dealer signature
Work done date ..... paying	**1,800**	MANURHIN Dealer signature
Work done date ..... paying	**3,000**	MANURHIN Dealer signature
Work done date ..... paying	**4,200**	MANURHIN Dealer signature
Work done date ..... paying	**5,400**	MANURHIN Dealer signature

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Département Scooter
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Printed in France

MANURHIN

DÉPARTEMENT SCOOTER

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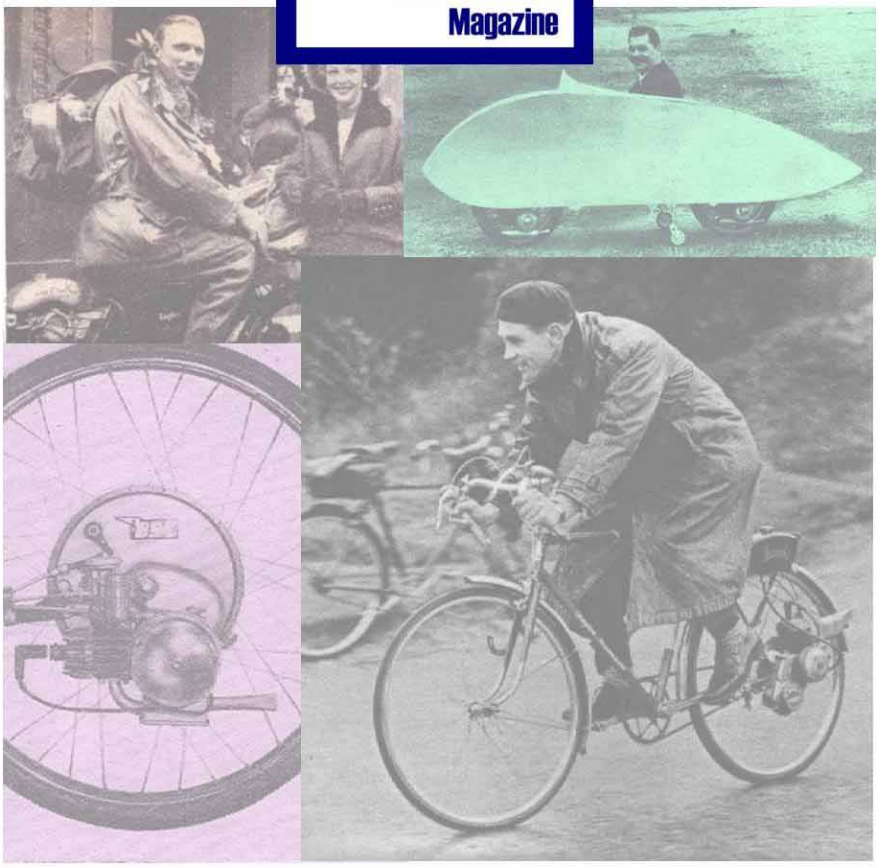

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