

OWNERS' MANUAL



TOURIST

175 cc.

model 103 A-2

<https://www.motorcycle-manual.com/>



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The HEINKEL Motor Scooter was named the "TOURIST" because, in its design, great care was taken to combine utmost riding comfort and manoeuvrability with excellent driving characteristics. By using high quality material and best craftsmanship we have done all in our power to give you a vehicle which we are sure will be a pleasure to you. But we need your co-operation in order to make this pleasure last for a long time.

We ask you, therefore, in your own interest, to study this Instruction Manual carefully and to apply it accordingly. When perusing it you will find many useful hints and following these will save you a great deal of trouble.

Please give your special attention to the running-in instructions, the recommendations concerning oil-changing, battery maintenance and the lubrication diagram. Recommended Service Inspections — according to our Service Manual — should be carried out regularly. Should you, at any time, require additional technical information, please contact your local HEINKEL Dealer, who will be glad to assist you.

It is our aim to make sure that your HEINKEL Scooter gives you entire satisfaction

ERNST HEINKEL AKTIENGESELLSCHAFT

January 1965

Service Department

<https://www.motorcycle-manual.com/>

THE HEINKEL SERVICE ORGANISATION

with numerous branches in many countries will always gladly assist you with advice and the dealer who sold you this Scooter will readily give you the personal service which goes with it.

Wherever you see the "HEINKEL SERVICE" Sign, your Tourist Scooter will get careful attention.

At these Service Stations, trained and skilled mechanics with Special tools take care of your TOURIST and ample spares are always available.

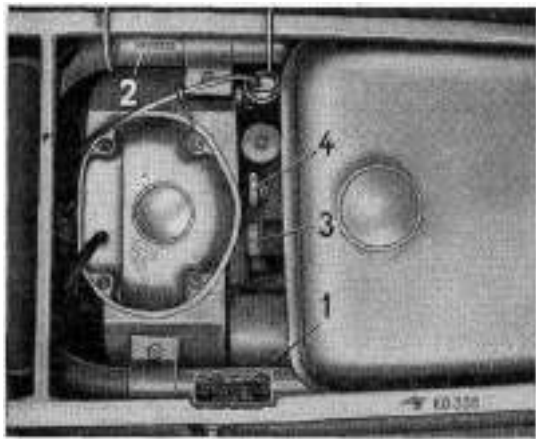


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Please do not forget that your TOURIST needs regular service inspections. A comprehensive Service Schedule extending to 70.000 miles has been designed for your guidance, and the service checks involved have been listed and explained in our (brown) Service Booklet.

The life and trouble-free Service given by your HEINKEL TOURIST depends to a large extent upon the Running-in and Service Instructions being closely followed. Comply carefully with these instructions and your TOURIST will never let you down.

Location of chassis and engine numbers



open the seat:

1. manufacturers' plate,
2. chassis number,
3. engine number,
4. oil dip stick.

chassis number



engine number

Number of steering lock key (i. e. number indicated on key head)

NOTE! The key for steering lock and luggage compartment can only be replaced if you quote the key number. Therefore enter your key number in this booklet.

An Outstanding Record . . .

At Sports Meetings and Endurance Trials held in Europe and against fierce motorcycle competition HEINKEL TOURIST Scooters always gain an impressive share of awards.

Thus from 1958 through 1961 HEINKEL TOURIST riders received the following awards in 151 INTERNATIONAL and NATIONAL meetings:

414 GOLD MEDALS

124 SILVER MEDALS

68 BRONZE MEDALS

83 GOLD TEAM AWARDS

19 SILVER TEAM AWARDS

7 BRONZE TEAM AWARDS

TECHNICAL DATA

Engine

Mode of Operation	4-stroke o. h. v.
Model	407 A-1
Output	9.5 h. p. at 5750 r. p. m.
Number of cylinders	1
Arrangement of cylinder	vertical
Bore	60 mm (2.36") diam.
Stroke	61.5 mm (2.42")
Swept capacity	174 cc
Compression ratio	1:7.4
Valve arrangement	overhead valves
Valve clearance when engine cold	inlet 0.15 mm (0.0059"), exhaust 0.20 mm (0.0079")
Lubrication system	oil-bath splashing lubrication
Cooling System	blower cooling

Ignition

Type of ignition	Battery-magneto with automatic timing
Dynamo	Dynastart unit "BOSCH" (AZ/DAQ 90/12 1700+0,2 R)

Retarded ignition	0.6 to 0.8 mm (0.0236" to 0.0315") before t. d. c. (using timing tool 404/W 10) 10° before t.d.c.
Thermal coefficient of spark plug	225
Spark gap	0.5 to 0.6 mm (0.02" to 0.024")
Contact breaker gap	0.40 to 0.45 mm (0.0157" to 0.0177")
Spark plug thread	M 14x1.25
Carburettor	
Needle carburettor with accelerator pump	BING-Type 1/20/55
Carburettor passage	20 mm (0.787")
Main jet	85
Idling jet	30
Needle jet	2.66
Position of needle	3
Jet needle with cone	20x1.65 0
Float chamber insert	No.3
Air screw	1 ¹ / ₂ turns open (set to best idling)
Air filter	special paperfilter
Clutch	oil-bath immersed, multiple-disc clutch
Clutch Operation	by hand on left handlebar

Gearbox

Gear Operation

Gear reduction

4-speed type

by twist-grip control on left handlebar

1st gear 3.51 :1

2nd gear 2.07 :1

3rd gear 1.38:1

4th gear 1 :1

Reduction: Engine-Gearbox

1.88:1

Solo**Sidecar**

Reduction: Gearbox-Rear wheel

2.73:1

3.10:1

Total reduction: 1st gear

18.05:1

20.50:1

2nd gear

10.60:1

12.02:1

3rd gear

7.10:1

8.06:1

4th gear

5.13:1

5.83:1

Power transmission:

Engine-Gearbox

endless $\frac{3}{8}$ "x $\frac{3}{8}$ " pitch chain

(56 links, endless)

Gearbox-Rear wheel

 $\frac{1}{2}$ "x $\frac{5}{16}$ " Single roller chain

(70 links, endless) solo and sidecar

Hill-climbing capacity in 1st gear

approx. 32% (at total weight of 250 kg)

Chassis

Frame	torsion-free tubular steel
Engine Suspension	elastic three-point rubber Suspension
Front wheel Suspension	swing fork with two hydraulic telescopic shock absorbers
Rear wheel Suspension	swinging arm with fully enclosed chain running in oil-bath; spring leg with hydraulic telescopic shock absorber
Handlebars	shell handlebar unit with incorporated speedometer
Brakes	mechanical internally expanding drum brakes; drum diameter 140 mm (5.51") width 25 mm (0.984")
Brake controls	front wheel: by hand lever rear wheel: by foot-operated pedal
Stand	centre stand
Wheels	interchangeable
Rims	2.45-10 split flat-base rims
Tyres	4.00x10"

Dimensions

Overall length	2020 mm (79.53") without luggage carrier
Overall handlebar width	710 mm (27.95") without mirror
Overall height	1000 mm (39.37") without mirror
Saddle height	750 mm (29.53")
Ground clearance	145 mm (5.70")
Wheel base	1380 mm (54.33")

Weights

Unladen weight, ready for travelling ¹⁾	solo 148 kg (approx. 329 lbs.)
admissible total weight ²⁾	solo 350 kg (approx. 778 lbs.)
admissible total weight ²⁾ with side-car	450 kg (approx. 1000 lbs.) (with 3 up)
admissible weight of loaded side-car	146 kg (approx. 325 lbs.)
admissible weight of trailer (trailer without brakes!!)	115 kg (approx. 225 lbs.)

For loading plan, see page 18.

¹⁾ Unladen weight = weight of vehicle alone, ready to be driven, with lubricant, fuel and tools.

²⁾ Admissible total weight = unladen weight plus riders and luggage. With side-car fitted, includes the extra weight of the side-car alone.

Fuel and Lubricants

Fuel	branded fuel, at least 82 octane (ROZ)
Lubricant	branded oil, SA 40 in summer SAE 30 in winter or Multigrade oil all the year round
Fuel tank	12 litres (2.65 Imp. gals.) of which approx. 1.7 litres (0.38 Imp. gals.) form a reserve (latter sufficient for approx. 31 miles driving)
Oil capacity of engine	approx. 1.5 litres (2.65 Imp. pints)
Oil capacity of swinging arm	150-200 cc.
Fuel consumption	(consumption chart to be looked up on page 17)
Fuel consumption to DIN 70030 Standards	3.0 litres/100 km at approx. 70 km/h (94 m.p. Imp.gal. at approx. 43 mph)
Oil consumption	approx. 0.5 litres per 1000 km (1 Imp.pint. per 700 miles)
Maximum speed	92 km/h (57 mph)

Standard Equipment

Electrical equipment	12 Volt
flat batteries	2; each 6V10/11 Ah.
built-in headlamp	140 mm \varnothing with Bilux bulb 35/35 Watts
parking light	4 Watts
tail light with licence plate light	5 Watts
braking light	18 Watts
blinking light	18 Watts
blinking tell-tale light	2 Watts
charging tell-tale light	2 Watts
speedometer light	2 Watts
combined light-, ignition- and starting-switch	combined unit incorporated in front shield
wide-scale speedometer	in handlebar unit
overtaking signal light	switch on handlebar
steering lock	on frame
Luggage hook	on front shield

Extra equipment

- Spare wheel
- rear luggage carrier
- rear view mirror

In the interest of technical progress, we reserve the right to make modifications.

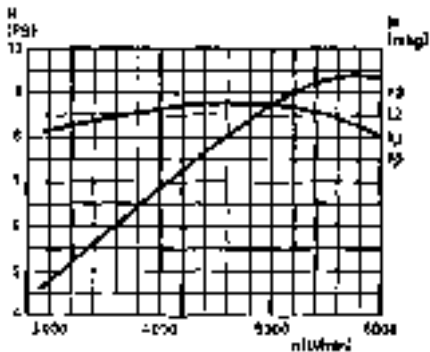
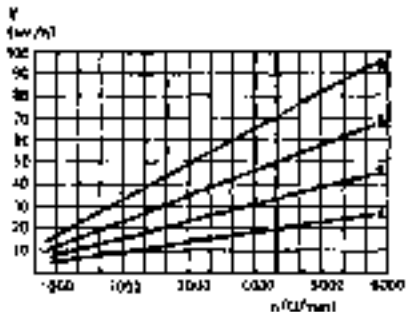
DIAGRAMS

Performance and torque

(1 PS = 1 DIN hp)

(1 mkg = 7.233 ft lb)

(1 U/min = 1 r.p.m.)

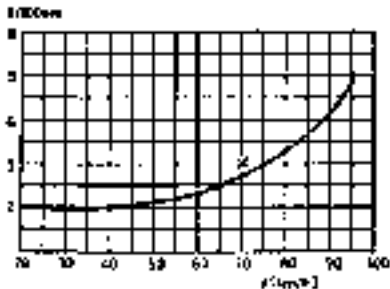
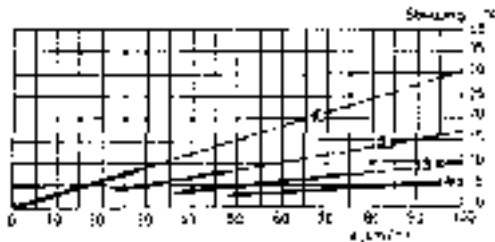


Number of engine revolutions when driving in the individual gears

(1 U/min = 1 r.p.m.)

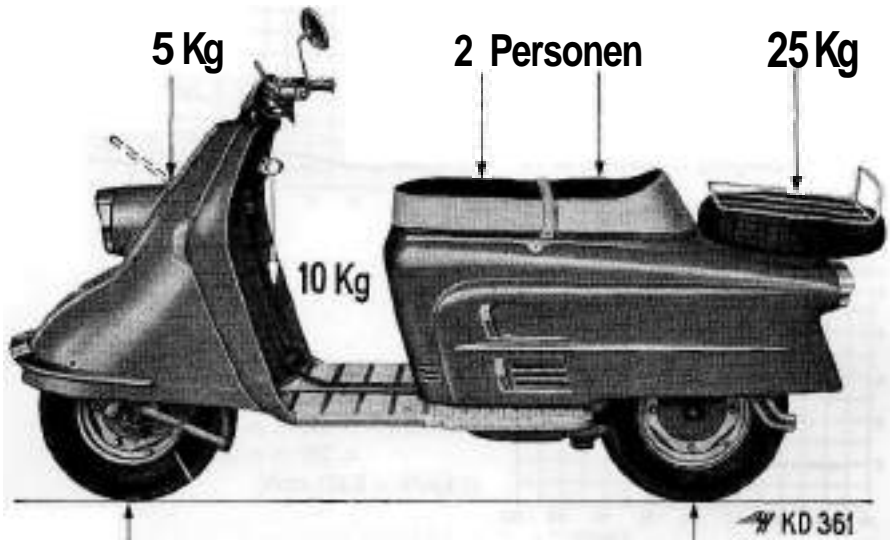
(1 km/h = 0.621 mph)

Climbing power in the
 individuell gears (with
 a total weight of 250 kg)
 (1 km/h = 0.621 mph)
 (Steigung = gradient in %)



Fuel consumption
 x Standard consumption
 (1 l/100 km = 282 m. p. Imp. gals.
 = 235 m. p. US. gals.)
 (1 km/h = 0.621 mph)

LOADING SCHEDULE



125 Kg

Maximum axle loading

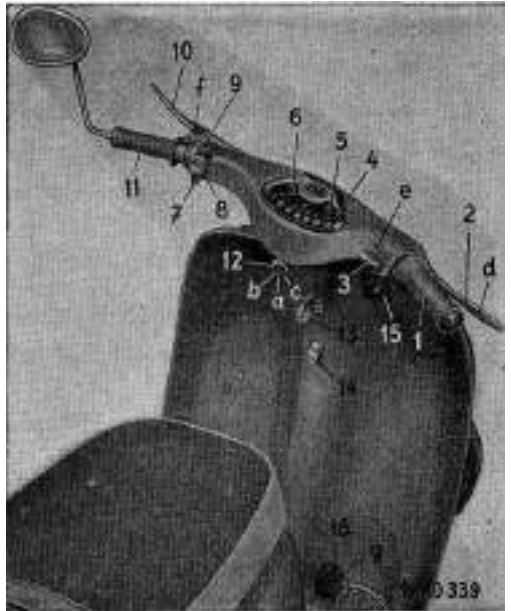
240 Kg

18

(approx. 275 lbs.) <https://www.motorcyclemanual.com/> (approx. 528 lbs.)
(approx. 778 lbs.)

1 Controls

1. Twist-grip throttle control
2. Front brake lever
3. Blinking light switch
4. Wide-scale speedometer
5. Charging tell-tale light
6. Tell-tale light (e. g. for headlight or oil temperature and the like)
7. Dipper switch
8. Overtaking light signal switch
9. Horn
10. Clutch lever
11. Twist-grip gear change control
12. Ignition lock
13. Luggage hook
14. Handlebar lock
15. Fusebox
16. Foot brake pedal



CONTROLS

1. **Twist-grip** throttle control on right side of handlebar (to control speed)
2. **Hand-brake** lever on right side of handlebar; pull it to operate front wheel brake
2. d) braking action should commence at $\frac{1}{4}$ of hand brake lever path.
3. **Blinking light** switch on right side of handlebar
(to indicate change of direction)
3. e) lever up = left-hand blinker flashing
lever in middle position = off-position
lever down = right-hand blinker flashing
4. **Wide-scale speedometer** with built-in kilometer (or mileage) counter
5. **Charging tell-tale light**
Red light (incorporated in the speedometer) indicates that ignition has been switched on.
At fairly high engine speed, the red light goes out, thus indicating that the dynamo is charging the batteries. If red light fails to go out, either dynamo or governor switch is defective. Have them checked at a BOSCH or a HEINKEL Service Station.

6. **Blinking tell-tale light**, indicates that blinkers are flashing
7. **Dipper switch** (blue) on left side of handlebar
Turn downwards for dipped beam
Turn upwards for main beam
8. **Overtaking light switch** (red) on left side of handlebar. Same is operated by alternately pushing and releasing red button. Operative only when ignition on.
9. **Horn** (green) on left side of handlebar.
Push button. Operative only when ignition on.
10. **Clutch lever** on left side of handlebar. If compressed, transmission of power from engine to gearbox is interrupted.
10. f) **Clutch play** at clutch lever should be 2-3 mm. (0.08" to 0.12")
11. **Gear change** twist-grip control on left side of handlebar.
Gear number marked on twist grip.

12. Ignition lock on front shield

Ignition key	removed	pushed in until resistance is felt	pushed in beyond resistance
12.a) engaged in middle position	all electric power consumers switched off	ignition on, control light on	starter operates engine (start only with gears in 0-position., i. e. in neutral)
12.b) turn key to the right	parking light, rear light and speedometer light are on.	ignition switched on; control light, parking light, rear light and speedometer light are on	starter operates engine (gears in neutral!) parking light, rear light and speedometer light on
12.c) turn key to the left	main- or dipper-beam on, rear light and speedometer light on.	ignition switched on, control light, main or dipper beam, rear light and speedometer light on	Do only operate starter with key in position 12a) or 12b)

Release ignition key after the engine has started. Operate starter only for 5-10 seconds max., then wait for 30 seconds before operating starter again.

13. **Luggage hook.** Max load 10 kg (22 lbs.).

14. **Safety steering lock.** Turn handlebar to the left or right. Turn key with lock cylinder to the left and push in. Turn key to the right and remove.

15. **Fusebox.** 4 fuses of 8 Amp. each.

16. **Foot brake** on right-hand front side of foot board. Depress pedal to operate rear wheel brake.

16.g) **Foot brake:** should start operating after pedal has covered $\frac{1}{5}$ of its path.

RUNNING-IN AND DRIVING INSTRUCTIONS

The running-in period is of vital importance to the future Service life and the reliability of your scooter. Even parts, which have been machined with utmost care, need a certain time for bedding down, and this can only be achieved by a very careful running-in of your scooter. It is, therefore, in your own interest that we advise you not to drive at the maximum speed recommended for running-in time except for very brief periods (a few seconds), after which you should throttle down again. The more often you repeat this procedure, the sooner all parts will bed down and the sooner your scooter will have completed its running-in stage. Therefore, the length of time required for the running-in period, not only depends on the mileage driven but, to a great extent, also on the way your scooter is run in. During this period, try to avoid main highways because on these you are quite often induced to speeding. It would be best to drive on secondary roads, because on these driving usually calls for more frequent gear changing and corresponding closing and opening of the throttle. Do not permit the engine to labour in high gears, but change down to a lower gear in good time in order to avoid too sudden a drop of engine speed. The engine should always turn freely.

1st gear	up to 12 m. p. h.
2nd gear	from 12 to 20 m. p. h.
3rd gear	from 20 to 30 m. p.h.
4th gear	from 30 to 45 m. p. h.

Even after covering the initial 1250 miles, do not immediately drive at top speed; instead let the engine get used to it by progressively increasing your speed and by driving at full throttle for brief intervals only. On long descents leave ignition on and change down to lower gear.

STARTING PREPARATIONS

Fill-up with branded petrol

of at least 82 octane rating (ROZ). Fuel tank capacity approx. 12 litres (2.65 Imp. gals.), 1.7 litres (0.38 Imp. gals.) are reserve.

Check engine oil

Use only branded oil; SAE 40 in summer, SAE 30 in winter or multigrade all over the year.

Oil should come up to top mark of dipstick. Check oil level frequently and never allow level to fall below bottom mark of dipstick. Push dipstick home fully to measure oil level. A complete oil filling is approx. 1.5 litres (2.65 Imp. pints).

Check oil in swinging arm

Use only branded oil; SAE 40 in summer and winter.

Tilt scooter to the left side, until the foot board touches ground. Unscrew swinging arm cover. Oil level is correct when (scooter standing almost upright) the oil reaches the lower edge of the opening. Total oil filling: approx. 150 to 200 cc.

CHECK TYRE PRESSURE

	Front wheel	Rear wheel	Sidecar
driver solo	1.0 atü (15 psi)	1.8 atü (26 psi)	
with pillion passenger	1.0 atü (15 psi)	2.0 atü (29 psi)	
driver solo with occupied sidecar	1.0 atü (15 psi)	2.5 atü (36 psi)	1.5 atü (22 psi)
driver with pillion passenger, occupied sidecar and luggage	1.2 atü (18 psi)	2.5 atü (36 psi)	1.5 atü (22 psi)

Tyre Profile:

Minimum profile depth required 1 mm (0.04")
(measured in the middle of tyre cover)

Efficiency of Brakes:

Hand brake action should start once brake lever has covered $\frac{1}{4}$ of its path. Rear brake action should start once foot brake pedal has covered $\frac{1}{5}$ of its path.

Steering:

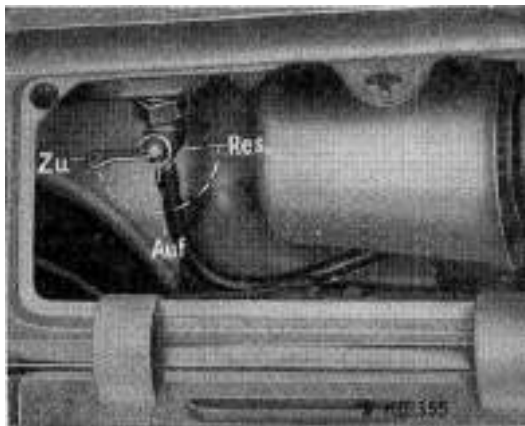
Should have no play and should move with ease.

Screws and Bolts:

Should be well-tightened on wheels, engine and control levers.

Lights and Signal:

Main beam, dipper beam, parking light, tail light, braking light, blinking lights and horn should work.



STARTING THE ENGINE

Open the inspection lid on the right-hand side of the rear cowling giving access to the fuel tap.

Open the fuel tap.

Before starting the engine make sure that the gear control (left-hand handlebar twist-grip) is set to neutral.



- lever pointing to left: **closed (= Zu)**
- lever in vertical position: **open (= Auf)**
tank will discharge down to the
reserve of approx. 1.7 litres
- lever pointing to right: **reserve (= Res.)**

When the engine is cold Open and dose the throttle twist-grip a few times briefly. Then push in the ignition key (red light comes on) beyond resistance to operate Starter, at the same time slightly opening the throttle until engine Starts. After starting, release ignition key. Control engine revolutions by throttle twist-grip on handlebar.

When the engine is warm
Push in key beyond resistance, at the same time slightly opening throttle on handlebar until engine Starts. After starting release ignition key. Control engine revs by throttle twist grip.



Starting the engine

1. Ignition key
(drücken = push)
2. Twist-grip throttle control
3. Twist-grip gear control
set to O (neutral)



DRIVING AND OI

Starting the scooter

Place one foot in front of stand to avoid movement of same. Then grip the handlebars and roll scooter easily off its stand. Seat yourself comfortably on the scooter.

When the engine has been started (neutral gear), at low number of engine revolutions pull clutch lever and shift to first gear. Open throttle gradually and slowly release clutch lever (to let in the clutch). Control driving speed by twist grip throttle control.

Shifting into higher gears

The four speed gearbox is operated easily and smoothly by twist-grip on handlebar. Engage gears gently and do not force them into position. At a speed of approx. 12 mph, close throttle, disengage clutch, shift to 2nd gear, open throttle again and at the same time let in the clutch gently. Proceed likewise at a speed of 24 mph in order to change up into 3rd gear, and at 31 mph for 4th gear.

Shifting into lower gears

Disengage clutch in same manner as when changing into a higher gear, but open throttle briefly (according to speed) and then shift down into lower gear and let in clutch gently.

Before changing down to a lower gear it is absolutely necessary to open the throttle briefly (with the clutch disengaged) in order to synchronize the speeds of the individual gear pinions involved, thus avoiding a sudden drop in speed.

Do not drive with slightly depressed clutch, instead of shifting to a lower gear, because this would cause premature wear of clutch plates.

Applying the brakes

Be careful when braking. The efficient driver controls speed, as far as possible, with the throttle without having to use the brakes very often. Avoid braking too abruptly. Jamming on the brakes may cause skidding. Therefore, always try to brake smoothly!

Avoid locking of wheels because locked wheels have less braking power. Try always to use both brakes at the same time. Do not brake while negotiating curves, but when approaching them. Always shift down to lower gear on steep slopes and, if necessary, use front and rear wheel brake alternately, so as to avoid overheating of brakes.

In low gear, the four-stroke engine of your HEINKEL Tourist will take over a large part of the braking.

Stopping and parking

To slow down scooter, close the throttle, brake gently down, at the same time disengage the clutch and shift gears into neutral position. Never stop with gears engaged, because otherwise the engine will stall. Remove ignition key; close fuel tap if stopping for quite some time.

Putting scooter on stand

Hold the handlebars and, using your foot, press stand to the ground and pull the scooter slightly backwards until the stand catch is reached.

Parking the scooter thus becomes mere child's play as you do not have to lift the scooter from the ground.

Note! For parking the scooter, both legs of central stand should touch the ground simultaneously so as to distribute the weight of the scooter evenly and thus avoid damage to stand.

SUGGESTIONS AS TO DRIVING

Driving properly is a decisive factor also for the life span and operating costs of your scooter. Adapt your driving speed to circumstances prevailing in town and country traffic. Driving at a steady speedy pace will result in the very same speed average as driving at a frequently varying pace. Driving unnecessarily fast is unwise. When driving in mountain regions (descents, gradients) be sure to gear down in time so that the number of engine revolutions will not fall too much. The engine should turn but not labour. When driving downhill avail yourself of the braking power of the 4-stroke engine; change down to the same gear you would use when going uphill. This makes for added safety and at the same time keeps your brakes efficient. When going downhill never switch off the ignition.

DESCRIPTION OF THE ENGINE

Crankshaft

The crankshaft is suspended by two ball bearings. The chain wheel for driving the clutch (and thus the gears) is located on the left-hand side of the crankshaft. Starter-ignition-generating unit, ignition regulator and fan wheel are mounted on the right-hand side of the crankshaft. The big end of the connecting rod is roller bearing suspended, the small end is fitted with a bronze bush.

The light metal alloy piston is equipped with 2 compression rings and 1 oil scraper ring.

Valve Operation

The armoured o. h. valves are mounted in the light metal alloy cylinder head, V-shape. The valves are operated from the camshaft by drag arms, push rods and rocker arms.

Lubrication

Engine, clutch and gears are combined in one block and have a joint oil chamber. They are lubricated by a simple oil splashing System.

Change oil according to lubrication plan!

Clutch

The multiple-disc clutch, oil-bath immersed, is mounted on the clutch spindle. The engine output is transmitted from engine to clutch by a pitch chain. The clutch is operated from the clutch lever on the handlebar by an adjustable Bowden cable, fitted to the clutch worm.

Gear Box

The gears are fitted inside the crankcase and the gear wheels are permanently engaged. The individual gears are operated by the gear change twist-grip control (left side of handlebar). Gear change operating is transmitted from the twist-grip through adjustable Bowden cables to the gear lever, which latter transmits it on to the control segment and the gear change control cylinder. This cylinder is provided with grooves into which the guide pins of both gear shift forks engage. The forks, guiding the gear pinions, cause the claws to mesh with the corresponding pairs of sprocket wheels, thereby achieving the required gear reduction.

Swinging Arm

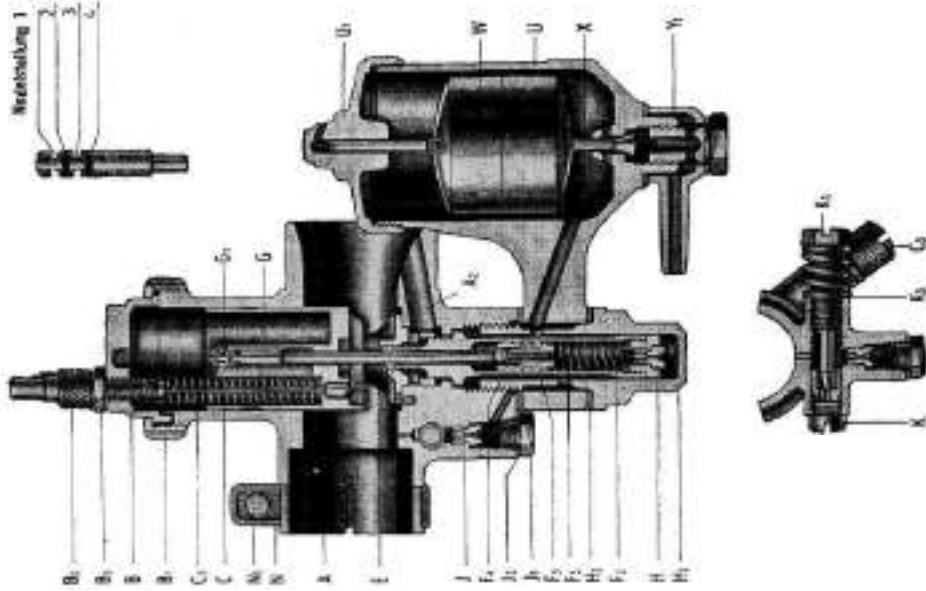
The rear wheel shaft is driven by a pitch chain - from the small chain wheel of the drive shaft to the big chain wheel of the rear wheel shaft. The chain, being fully enclosed in the swinging arm, is oilbath-immersed.

Check oil level in swinging arm as per lubrication schedule and, if necessary, change oil.

BING-Carburettor Type 1/20/46

35

Needle Position



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Description and Component List of the Bing-Carburettor Type 1/20/55

A	Carburettor housing	F ₃	Pump piston	K ₁	Air regulating screw
A ₂	Evaporator air bore	F ₄	Valve plate	K ₃	Spring
B	Cover plate	F ₅	Spring	N	Clamp ring
B ₁	Cover thread	G	Pump jet needle	N ₁	Clamp screw
B ₂	Adjusting screw	G ₁	Clamp bracket	U	Float chamber
B ₃	Nut	H	Main jet	U ₁	Float chamber cover
C	Gas piston	H ₂	Cover screw	W	Float
C ₂	Gas piston return spring	I	Idling jet	X	Float needle
C ₃	Adjuster screw	I ₁	Idling jet return screw	Y ₁	Banjo connection (petrol pipe connector)
E	Mixing chamber insert	I ₂	Gasket		
F ₂	Pump needle jet	K	Idling jet		

Carburettor

Bing 1/20/55

The carburettor transforms the liquid fuel into a fuel-air mixture. The fuel is conveyed to the float chamber of the carburettor through the banjo connection and hollow screw. The float, with float needle, keeps fuel in float chamber at a constant level; from the float chamber the fuel flows to screw (H_2), main jet and idling jet. When the intake valve is open, the downward move of the piston creates a vacuum in both cylinder and carburettor. Air is sucked in by the filter opening, passes over a system of fuel-leading jets in the carburettor and is thus fed with fuel.

During idling run the fuel (with gas piston closed) will be tapped at the idling jet and the required air at the bore of the air adjusting screw (adjust idling speed only when engine is warm). Pre-set number of revolutions for idling engine by adjusting screw for the gas piston. Obtain best mixture by correspondingly setting the air regulating screw. When tightening this screw, the mixture will get richer (through reduced air intake); when loosening the screw, it will get thinner (through increased air intake). Correctly set, the idling engine will run smoothly and steadily. The fuel supply at full or almost full engine Performance is determined by the main jet. When the engine is not operating under full load, the fuel supply is regulated by the reciprocal interplay between needle jet and jet needle.

The HEINKEL Tourist carburettor is equipped with an accelerator pump. It injects a small quantity of fuel into the mixing chamber whenever the slide is opened. Thus the fuel pump makes for smooth transition — regulating richness of the fuel-air mixture when the throttle is opened rapidly.

If, with a cold engine, the throttle is opened several times the fuel injections will provide for easy starting.

The accelerator pump is combined with the pump needle jet; the lower enlarged cylinder part takes up pump piston with valve plate, pump spring and - at the bottom - the main jet. The whole set is protected by the cover screw H₂.

Do not modify factory-standard carburettor setting and be sure to use only factory-recommended jet sizes.

Starter-ignition-generating unit

It is advisable to pay Special attention to the ignition and lighting System, as the reliability of the engine largely depends on it. From time to time have this equipment checked by a specialist. Removal and reassembly of this unit should be carried out only at a HEINKEL- or BOSCH-service Workshop so as to avoid damage to crankshaft and dynamo.

SCOOTER CLEANING, CARE AND MAINTENANCE

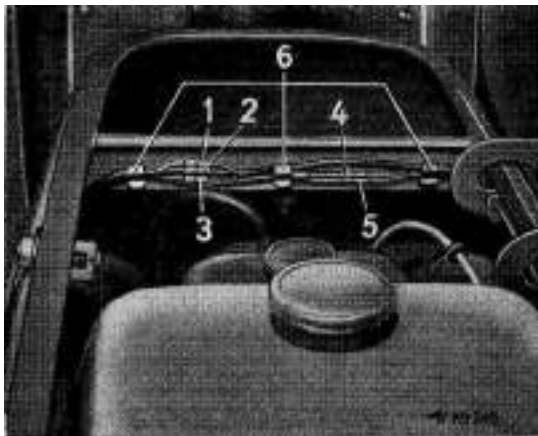
The reliability of Operation and the service life of the scooter depend to a great extent on cleaning, care and maintenance. Very often trouble and annoyance can be traced back to lack of proper care.

Cleaning

Prior to washing of scooter remove paper air filter. Block the filter housing on the carburettor with a piece of rag, to prevent water getting into the carburettor. The enameled coachwork (cowling) parts are best washed with a sponge under running water, afterwards rubbed dry with a chamois leather and treated with car polish.

Electric cables on rear cowling

1. earth cable
2. cable for licence plate light
3. cable for brake light
4. cable for right-hand blinking light
5. cable for left-hand blinking light
6. cable clips



After washing, grease brake joints, centre stand and all moving parts. Use a proprietary chromium polish for the chromium-plated parts.

To clean engine, remove rear body cowling as follows:

1. open the seat.
2. disconnect plugs for brake light, tail light and blinking light cables.
3. Applying hex. socket wrench SW 10, unscrew tail retaining bolt with plate. If scooter is equipped with spare wheel, cover and rear luggage carrier: open lid on plastic cover (push-button), lengthen box spanner SW 19 by putting on box spanner SW 21 and undo retaining bolt.
4. Using box spanner SW 10, undo two hex. bolts for the pipe clamps.
5. Lift off rear cowling.

Clean swinging arm and engine with kerosene (petrol). Take care not to let kerosene get near the batteries.

Never use a high-pressure jet nor play a jet directly on starter-ignition-generator unit, regulator, hubs and lever joints, as those parts might be damaged or Start rusting.

Engine Maintenance

Lubrication is of particular importance with a four-stroke engine and the instructions for oil-changing must therefore be strictly adhered to. Use only the recommended branded oils, i. e. multigrade for the whole year round or SAE 40 in summer and SAE 30 in winter. During the running-in period, change oil as follows:

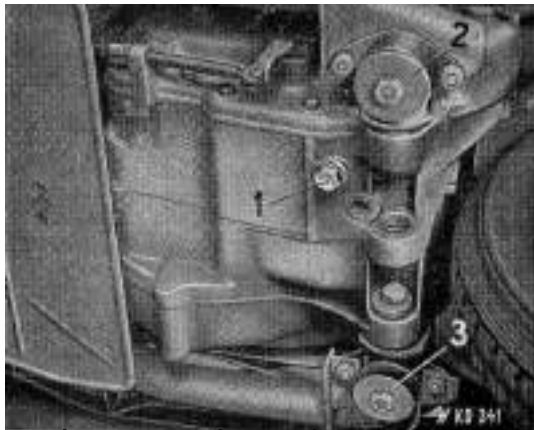
- 1st oil-change at 310 miles
- 2nd oil-change at 625 miles
- 3rd oil-change at 1250 miles
- subsequently every 1250 miles

Change oil only while the engine is warm, so that the oil runs out freely. Put the machine on the stand.



Draining engine oil

1. oil drain screw
2. engine support (left-hand side)
(fitted from bottom)
3. engine support (right-hand side)
(fitted from top)



Screw out the oil drain plug at the bottom of the crankcase (figure No. 7) and drain engine oil. Clean the thread of both plug and bore (in order to avoid seizing); then screw the drain plug loosely in again.

For flushing fill up with 1.0 litres (1.75 Imp. pints) of oil (oil filler cover - figure No. 8) and have engine turn over briefly in idling run. Again drain engine oil. Screw in plug by hand and tighten with a box spanner SW 16. Fill up with approx. 1.5 litres (2.65 Imp. pints) of high-grade oil, as outlined, and close the oil filler cover.

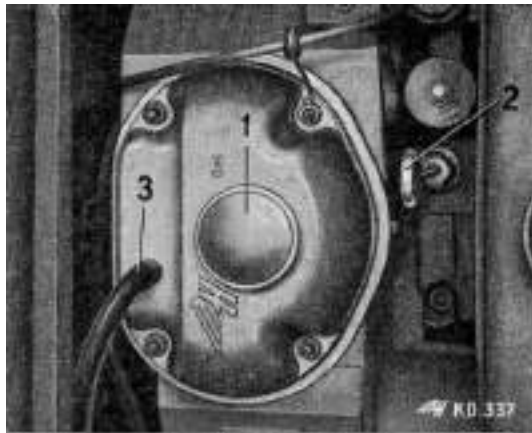
Important: The HD-oils are lubricants with selected chemical additives which protect the engine specially against corrosion and prevent formation of residues. The arbitrary use of further additives will scarcely improve the characteristics of these oils; in view of the common engine-gearbox-clutch lubrication chamber, we do therefore not recommend to use any additives.

Checking the engine oil level

Pull out and wipe dipstick, then re-insert it completely, pull out and check. The oil level must never fall below the bottom mark of the dipstick. The maximum level is to the top mark of the dipstick. Check oil level every time you fill up with petrol.

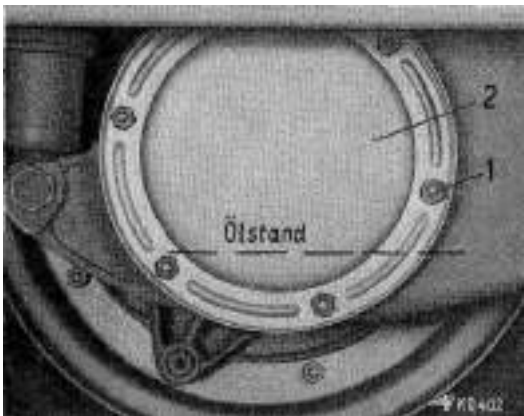
For technical reasons the engine is bound to consume some oil. When refilling for oil changes always use again the same oil brand that had been filled up before.

Oil already containing chemical additives (added already by the oil companies) and oil lacking same are not to be mixed, as otherwise engine damage might develop. During the running-in period the oil consumption of the engine is somewhat higher — normal oil consumption will only start once several 1000 miles have been covered.



Filling-up with engine oil

1. oil filler cover
2. oil dip stick
3. air bleeder tube



Changing of oil in swinging arm and checking of oil level

Tilt scooter to left side, until foot-board touches ground, unscrew swing-arm cover. Drain oil by suction.

Check the links of the chain. To fill up, use branded oil SAE 40. Total oil filling approx. 150 to 200 c. c. When oil level is correct, oil reaches lower edge of opening when scooter stands almost upright. Refit cover of swinging arm and screw on again.

- 1. Check and change oil in swinging arm
- 1. Fixing nuts
- 2. Cover for swinging arm (Ölstand = oil level)

Carburettor cleaning

Occasional cleaning of the carburettor will become necessary. The greatest care should be taken in dismantling.

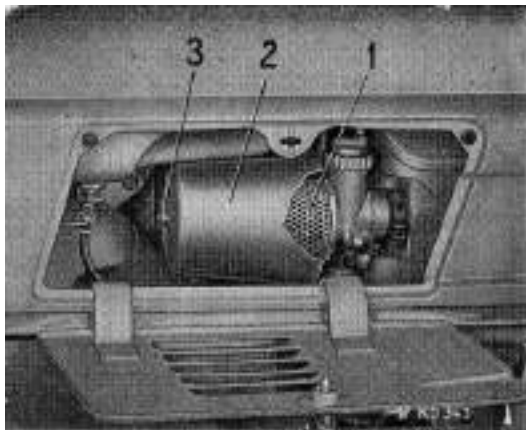
Do not dismantle the accelerator pump and pump needle jet set.

Wash and flush all the individual parts in petrol, blow through the Jets and then re-assemble. Do not modify factory-standard carburettor setting. Readjust needle position and air regulating screw in accordance with factory instructions. If you should have any difficulty with the carburettor setting, do not hesitate to call on your HEINKEL-Service Station.



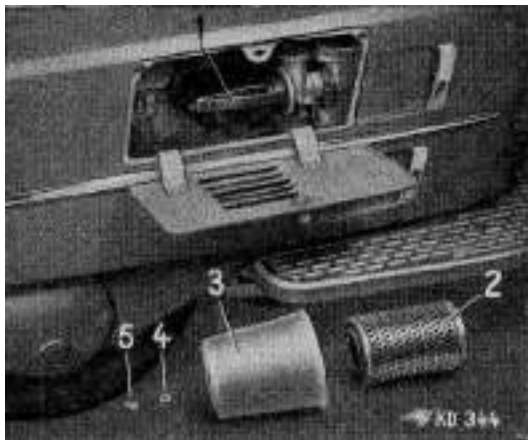
Special Paper Air Filter

1. Filter insert
2. Bell-shaped filter housing
3. Nut



Special Paper Air Filter

The paper air filter needs no servicing. The Special impregnated filter material keeps all dust particles out of the engine. The Service life of a paper filter insert depends, therefore, on the quantity of dust accumulated. The filter insert should normally be replaced every 8000 km (roughly 5000 miles).



If filter shows an unusually high amount of dust it should of course be replaced earlier. In town traffic and on tarred roads the filter insert will last about 5000 miles; on very dusty country roads a drop in performance and an increase in fuel consumption may well be noticed after a considerably shorter distance already.

Caution! Do not allow filter insert to come into contact with liquids (water, petrol, oil etc.)

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Special Paper Air Filter, removed and disassembled

- | | | |
|-------------------|------------------------|---------|
| 1. Filter support | 3. Bell-shaped housing | 4. Disc |
| 2. Filter insert | | 5. Nut |

Adjusting the Valves

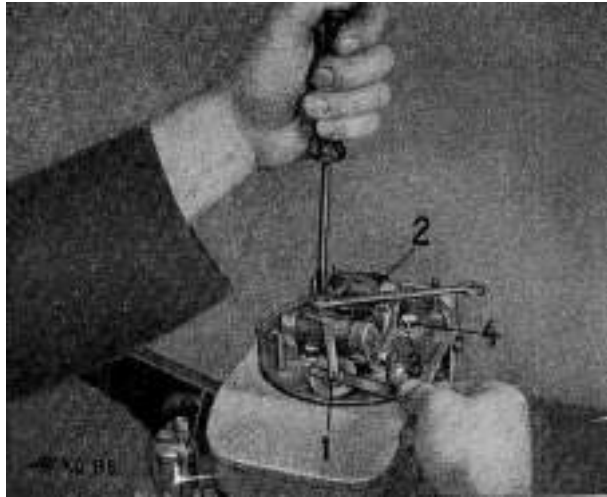
Adjust valves only when engine cold. Remove air bleed tube and cylinder head cover. Place piston at t. d. c. with both valves closed.

Adjust valves, gap to be 0.15 mm (0.0059") for inlet and 0.20 mm (0.0079)for exhaust valve. After setting valves, tighten locking nuts on adjusting screws.



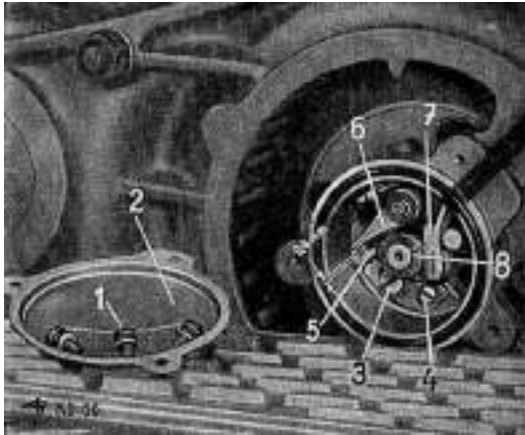
Setting the valves

1. inlet valve
2. exhaust valve



Electrical equipment

Before starting work on the electrical equipment, always disconnect earthing cable from battery (to avoid danger of shortcircuiting).



Re-adjusting the contact breaker

1. cylinder head bolts
2. cover
3. bolt for contact Support
4. screw for re-adjust-

- ment of contact breaker gap
5. contact Support
6. contact breaker lever
7. lubricating felt
8. cam

Starter-ignition-generating-unit

Have this unit periodically checked by a BOSCH or HEINKEL-Service-Station.

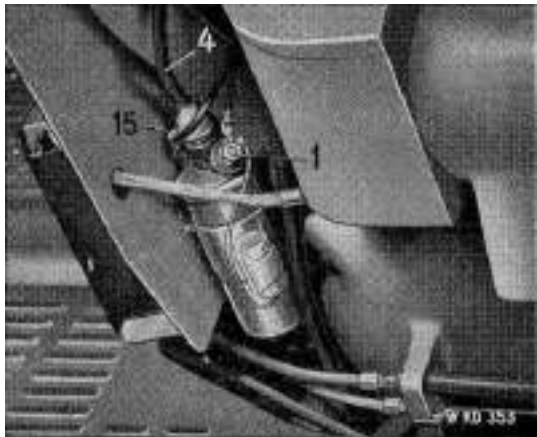
This Service check should include the following operations:

1. Readjust contact breaker; gap to be 0.4 to 0.45 mm (0.016" to 0.018") with contact breaker open.
2. Check ignition. Ignition timing to be 0.6 to 0.8 mm (0.0236" to 0.0315") before top dead centre (measured with timing tool 404/W10).
3. Grease lubricating felt near contact breaker with Special grease such as BOSCH Ft 1 v 4. (Do not use oil).
4. Remove all carbon abrasion particles from armature and magneto system; check brushes.
5. Re-tighten all fixing screws and lead connections.



Lead connections on governor switch

30 h magneto lead	DF magneto cable
B+30 battery lead	D+61
50 Starter lead	magneto cable



Lead connections on ignition coil

1. Leads for condenser and contact breaker
4. ignition lead
15. ignition switch lead

<https://www.motorcycle-manual.com/>

Ignition coil and governor switch

Ignition coil and governor switch need no servicing. Periodically, however, check the lead connections on same and, if necessary, tighten them again.



Spark plug

Check spark plug gap every 4000-8000 km (2.400 to 4.800 miles). It should be 0.5 to 0.6 mm (0.020" to 0.024"). The spark plug is accessible from the luggage boot; push the little metal flap aside, remove ignition cable and unscrew spark plug. When again screwing in the spark plug (washer), do so by hand, using the spanner only for final tightening, so as not to damage the thread. Be careful to place washer correctly on plug; do not secure the plug too tightly. For screwing in, place plug vertically on thread!

1b Checking the battery

1. Cover
2. Cover screws
3. Acid tester
4. Acid level (3 mm = $\frac{1}{8}$ ins. above top edge of plates)

Batteries

2 flat batteries of 6 V 11 Ah each.

Check acid level every two weeks (in summer every week). Top up with distilled water, if necessary. Acid level should always be kept at 3 mm (0.12") above top edge of plates. Use only accumulator acid (sp. gr. 1.28) - Figure 25. See battery cover for battery maintenance and charging instructions. Keep lead connections on batteries well cleaned and greased, using only acid-free grease.

Should the scooter be laid up for some time (6 weeks or more) take out batteries and give them Special maintenance. Have them discharged and recharged every 4 weeks.

Note: Do not allow fuel or washing petrol to come into contact with battery housing!

Headlamp

The headlamp is fitted with one Bilux bulb 12 volts, 35/35 watts, for the main beam and with one bulb 12 volts 4 watts, for the parking light.

To replace bulbs, undo bottom screw and remove cover ring. Remove bulb. Caution: Do not handle bulbs with wet or oily fingers, because resulting moisture or oil fumes will tarnish the headlamp reflector. Use clean rag or tissue paper.

Adjusting the headlamp

At regular intervals, the setting of the headlamp should be checked and, if necessary, re-adjusted. This will ensure proper lighting of the road, increase your driving safety and avoid endangering yourself and other road users.

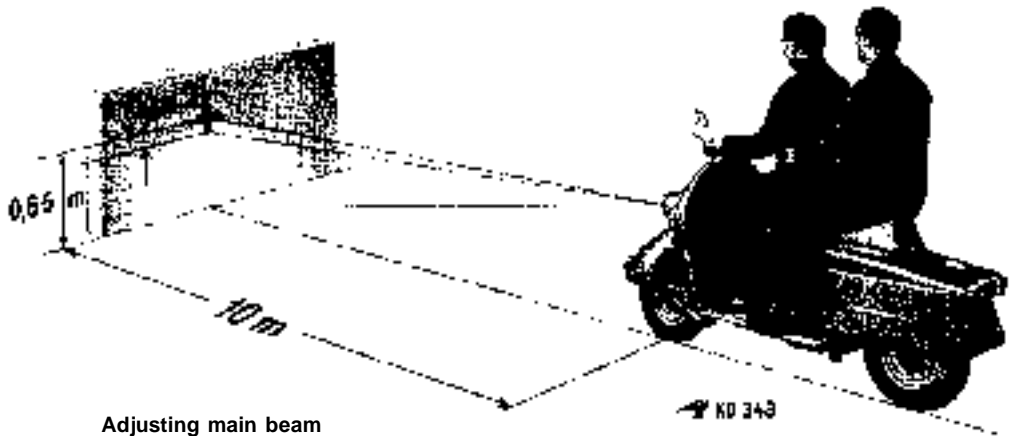
Preparations for the test

Check tyre pressure (front tyre 1.0 atü — 15 psi —, rear tyre 2.0 atü — 30 psi —). Set up scooter on its wheels on level ground and put on a load of either two persons or of 70 kg (155 lbs) on each seat. Determine centre point of headlamp face (about 0.65 m = 25" above ground) and mark on wall corresponding light beam centre with a cross. Distance between wall and scooter (front wheel centre) should be 10m(33 feet).

Adjusting dimmed beam

Switch on dimmed beam and point headlamp to wall. The top limit of the area lighted should run in horizontal line across the whole length of the wall at 10 cm (4") below the cross on wall. If correction is necessary, adjust the two setting screws placed at bottom of cover ring. Setting screws, viewed in driving direction: right hand screw for vertical, left hand screw for horizontal adjustment of headlamp.

17 Adjusting the headlamp



Adjusting main beam

Switch over to main beam and check if headlamp is correctly set so that cross on the wall is in centre of lighted area. For correction proceed as explained for dimmed beam. Cross check with adjustment of dimmed beam.

Sidecar Operation

When using the scooter with a sidecar fitted, the headlamp must be re-adjusted. Proceed according to the foregoing instructions, with the sidecar remaining unladen.

Brake light and tail blinking lights

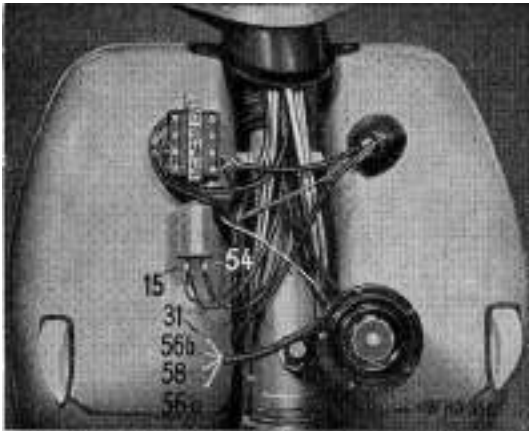
To replace bulbs of tail-, brake- and tail blinking-lights, undo the 4 bolts and remove cover of rear lamp assy.

Front blinking lights

Undo two bolts, remove housing, replace bulb.

Bulbs

	Watts	Volts		Quantity
main beam & dipped beam	35/35	12	Bilux bulb	1
parking light	4	12	bulb socket 9 diam.	1
tail light	5	12	bulb	1
brake light	18	12	bulb	2
tail blinking light	18	12	bulb	2
front blinking light	18	12	tell-tale lamp bulb,	
control light for blinking light	2	12	socket 9 diam.	1
control light for battery charging	2	12	tell-tale lamp bulb,	
speedometer light	2	12	socket 9 diam.	1
			tell-tale lamp bulb,	
			socket 7 diam.	1



13 Lead connections for headlamp and blinking light switch

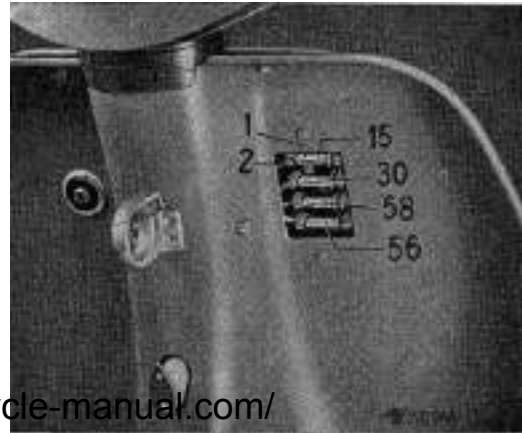
- 15 lead to fuse-box and tell-tale light
- 54 lead to blinking light switch
- 31 earthing lead (brown)
- 56b lead for dipped beam (yellow)
- 58 lead for rearlight (grey)
- 56 headlamp (white)

55



Fuse box

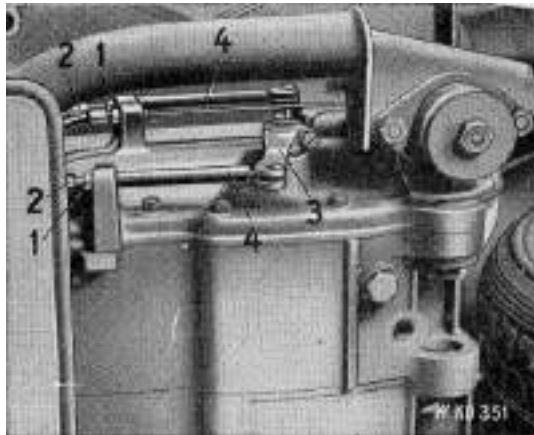
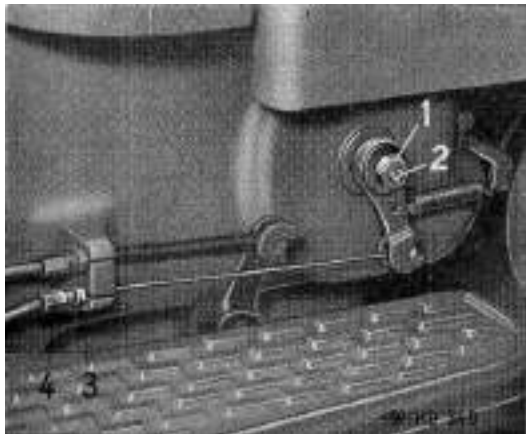
- 1 Fuses 8 Amp.
- 2 lead clamp screws
- 15 clamp for lead to charging tell-tale light, blinking light switch and blinking light tell-tale lamp
- 30 clamp for lead to brake light switch, handlebar switch 30 and horn
- 58 clamp for lead to tail light, speedometer light and parking light
- 56 clamp for lead to handlebar switch 56, for main beam and dipped beam



20

Adjusting the clutch

1. lock nut
2. adjuster screw
3. lock nut
4. clutch cable adjuster screw



21

Adjusting the gears

1. lock nut
2. adjuster screws for Bowden cable
3. shift lever
4. rubber tube

Fuse box

The fuse-box is located at the right-hand top side of the leg shield. Undo screw, remove lid and the fuses are accessible.

Adjusting the clutch

The engine Output is transmitted to the gearbox by means of a multiple-disc clutch and then on to the rear wheel. Clutch lever on handlebar should have 2-3 mm (0.08" to 0.12") play. If there is too much play, the clutch does not disengage readily; too little play causes clutch to slip and results in rapid wear. The adjuster screw for the clutch Bowden cable is located on cover of clutch housing.

If the cable adjustment by means of adjuster screw 20/4 has reached its limits, turn the adjuster screw completely in, loosen hex. nut 20/1 on clutch lever, turn clutch worm screw 20/2 to the left and tighten hex. nut again. The final adjustment should now be done with the adjuster screw 20/4.

Adjusting the gear change

The gears are changed by twist-grip control on left handlebar. From handlebar to gear shift lever, gear shifting action is transmitted by means of two Bowden cables. Engaging of the gears in the twist-grip can be suited to the individual touch of the driver by adjusting the setting screw on the twist-grip (located between gear marking 3 and 4).

To obtain easy shifting and engaging of the individual gears, the two Bowden cables should not be set too loose. The metal sleeves of the Bowden cables should turn freely, but without play at the adjuster screws.

Adjusting the gears (detailed procedure)

Note: "Upward" shifting (1-0-2-3-4) is transmitted by the **upper** Bowden cable, "downward" shifting (4-3-2-0-1) is transmitted by the **lower** Bowden cable.

1. Set twist-grip to "1"-position; gear lever on crank case must point towards clutch worm and 1st gear must be engaged.
2. Turn twist-grip slowly to "0"-position (neutral), at the same time moving rear wheel forward and backwards. Neutral gear must be engaged. If gear wheels are still in 1st gear, turn upper adjusting screw out until neutral is obtained (i. e. until rear wheel turns free).
3. Turn twist-grip slowly to "2"-position, at the same time moving rear wheel forward and backwards. 2nd gear must be engaged. If gear wheels are still in neutral gear, turn upper adjusting screw out until 2nd gear engages.
4. For adjustment of 3rd and 4th gear, proceed correspondingly.
5. For "downward" adjustment, turn twist-grip slowly from "4" to "3"-position (again moving rear wheel forward and backwards). If necessary turn lower adjusting screw out until 3rd gear engages.
6. For adjustment of 2nd, neutral and 1st gear, proceed correspondingly.
7. Should (after adjustment) shifting be too stiff, screw in a little both adjusting screws equally.
8. Cross-check the individual gears; lock the adjusting screws.



Adjusting front wheel brake

1. Adjuster nut for Bowden cable of front wheel brake
2. Bolt
3. Brake lever nut
4. Brake lever
5. Rim nuts (SW 10)

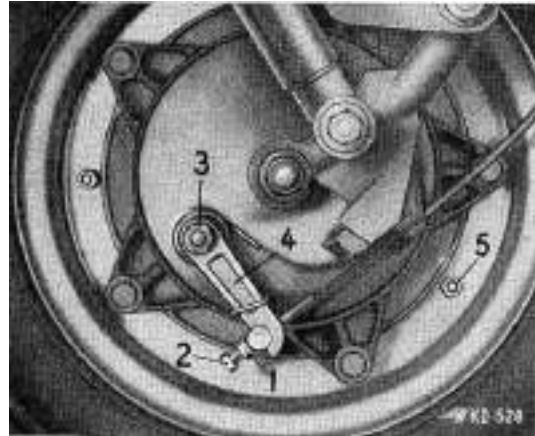
Adjusting front wheel brake

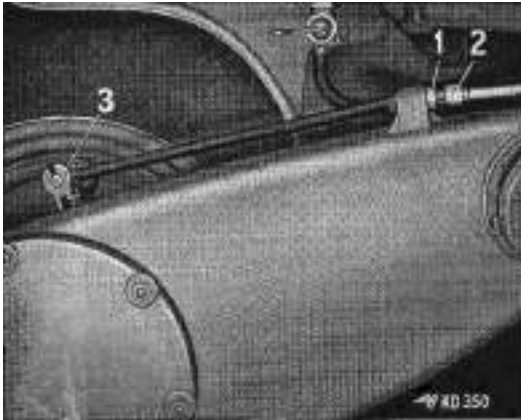
If handbrake lever produces no brake response after having covered one fourth of its overall path, readjust front wheel brake (figure 22). Brake disc and brake lever with adjuster nut are located on right side of front wheel.

To readjust, retain bolt with spanner SW10 (this bolt should not move while brake is being adjusted) and set adjuster nut. After adjustment

the wheel should turn smoothly and without any uneven noise from brake shoes.

If adjustment of nut has reached its limits, turn same completely out. Then open brake lever nut and turn lever forward (in driving direction) by one notch. Tighten nut again and set brake.





Adjusting rear brake

1. Lock nut
2. Adjusting screw for rear brake Bowden cable
3. Brake lever

Adjusting rear wheel brake

The adjuster screw for the rear brake is located on swinging arm (Figure 30). For readjustment, loosen lock nut and adjust screw. Tighten lock nut again. After adjustment the rear wheel should turn smoothly and without any uneven noise from brake shoes.

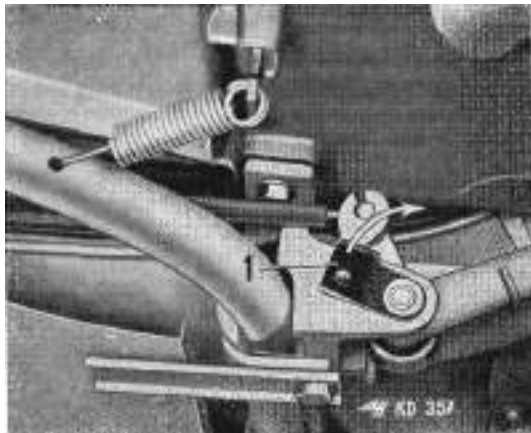
Brake action should commence after foot brake pedal has covered one fifth of its

overall path. If adjustment of screw has reached its limits, turn screw completely out. Undo brake lever nut, turn brake lever back by one notch (against driving direction). Tighten nut again and set brake. When dismantling the brakes the following should be strictly observed: Do not interchange brake shoes and brake cams. Brake shoes should be replaced only in pairs. After fitting new brake shoes do several test brakings, to make sure that the brakes work efficiently. For more complicated operations such as brake repairs etc. please call on your HEINKEL-Service Station.

Removing foot brake pedal

Disconnect return spring, turn spring plate as indicated by arrow on figure No. 24, remove pedal pivot

- 1** Removing the foot brake pedal
1. Spring plate with pivot bolt



bolt. Disconnect foot brake Bowden cable both on brake lever and brake pedal. Remove pedal.

For reassembly of pedal, reverse above procedure.

Changing front wheel

Disconnect Bowden cable for front wheel brake and screw out speedometer spiral; loosen both axle nuts until the washers come off the recesses on front fork. Tilt scooter to right side until the footboard rests on the ground. Use socket wrench (SW 14) to undo 5 wheel nuts on the rim. Remove front wheel.

When refitting front wheel, make sure that both guide pins for the speedometer drive are properly engaged in the notches of the counter ring.

Note: When refitting the front wheel, take care that the cam on the right hand swing arm is placed correctly in the recess of the brake plate; otherwise the wheel will lock at the first sharp braking.



Removing rear wheel

1. Wheel nuts (SW 14)
2. Rim screws (weldea-in)

Changing rear wheel

Tilt the scooter to the right and rest it on the footplate. Unscrew the 5 wheel nuts with a box spanner (SW 14) and lift the wheel off the hub. For reassembly, reverse above procedure.

Changing tyres

The service life span of the tyres mainly depends on proper care. Having always the recommended air pressure goes a long way towards increasing the life span of the tyres. If the profile depth (measured in the middle of the running surface) amounts to only 1.0 mm (0.04") the limits of driving safety have been reached and the tyre should be replaced or retreaded. To achieve an even tyre wear, it is advisable to turn the tyre on its rim every 4.000 km (2.500 miles).



Removing tyres

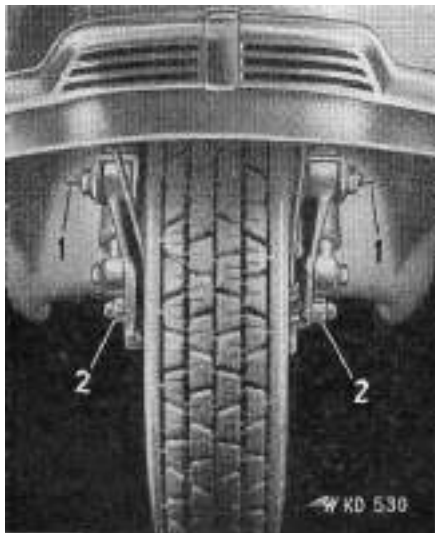
Tyre changing is very easy, as the wheel is composed of two split rims, held together by bolts and nuts. When removing tyre and tube never use sharp tools (screwdriver etc.)

Note: Never undo rim nuts, when tyres are still inflated as otherwise tyres likely to blow off.

Unscrew valve cap and by means of the reversed cap, screw out valve insert, deflate tyre, unscrew nut from the valve and push valve back into rim. Place wheel flat on the ground and, by treading on it, loosen tyre bead all around the rim. Take off 5 nuts with spanner (SW 10) and pull both rims off tyre.

Fitting tyres

Tube and tyre beads should be rubbed with talc so as to prevent their sticking to rims. Inflate tube a little and put it into tyre without folds, the valve pointing upwards. Place tyre with inserted tube flat on the ground and insert the split rim half which provides the valve bore. Center valve and screw on valve nut. Put on remaining split rim half and screw on with 5 nuts. Before tightening, check whether the two split rim halves are a perfect fit in their inner diameter, so as to prevent difficulties when putting wheel back on hub. Inflate tyre and by letting the wheel bounce on the ground several times, make sure that both beads fit correctly on rim. After further inflating (see page 25, checking tyre pressure) the guide line on the tyre bead should be evenly spaced all around the rim.



Swing fork

Every 2.000 km (1.200 miles) the two lever joints should be greased at the greasing nipples. Use a high pressure lubricant. (Figure 32/1).

After approx. 8.000 km (approx. 4.800 miles) upper and lower steering races should be filled, if necessary, with new grease. For this purpose take off front wheel cowling, remove swing fork, clean and grease races and balls. Reassemble without play. The above operations can best be carried out by HEINKEL agents who are equipped to ensure that the reassembly is carried out properly.



Grease swing fork

1. Greasing nipple for swing fork
2. Cap nut for front wheel

Bowden cables

The Bowden cables have been properly lubricated with special grease before leaving the factory. It is, nevertheless, advisable to lubricate them at regular intervals so as to keep them in perfect working order.

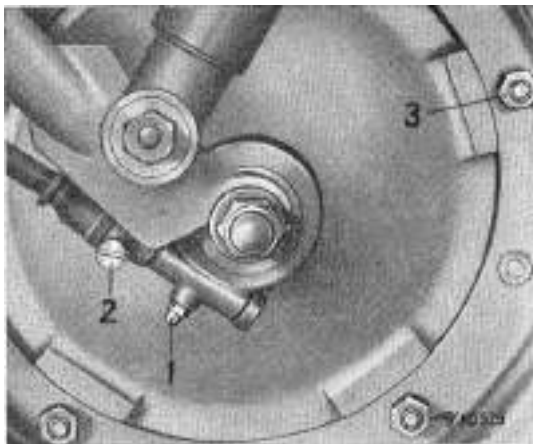
Speedometer drive

The speedometer drive should be lubricated at its greasing nipple every 4.000 km (approx. 2.400 miles). For lubricating, use ball-bearing grease. Prior to greasing, unscrew clamp screw for speedometer spiral and disconnect spiral and drive; refit same after lubricating.



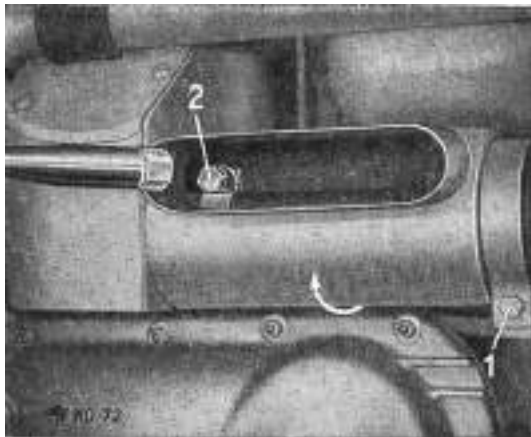
Grease speedometer drive

1. Greasing nipple
2. Clamp screw for speedometer
3. Wheel nuts (SW 14)



Exhaust assy

Unscrew the clamp screw of the silencer, turn the air duct by approx. 90°, so that the exhaust retaining screw is accessible. Remove the exhaust.



Exhaust

1. Fixing screw
2. Clamp screw for exhaust silencer

Winter Driving and Operation

If you drive your scooter during the winter, take care to drive according to road conditions and apply brakes very cautiously.

If the average temperature drops below + 5° C. (40° F) the engine must be filled up with winter oil SAE 30 (provided no multigrade oil is used all year).

At temperatures below freezing point the Bowden cables should be

lubricated with a lightweight oil, to avoid freezing of the cables.

The batteries have been kept small for reasons of weight; therefore they need special care in winter, when the engine needs more starting current from the batteries than in summer.

SUMMER DRIVING AND OPERATION UNDER TROPICAL CONDITIONS

When driving in very hot weather or in tropical countries, both the inspection lid on right side of rear cowling - which gives access to carburettor and fuel tap - and the seat should be opened after every stop to provide Ventilation and cooling. Acid level in the batteries should be checked every week, and, if necessary, batteries should be topped up with distilled water.

STORING OF SCOOTER

If your scooter is not to be used for a fairly long period (wintering, or for any other reason) the following operations should be carried out:

1. Drive engine until warm, (approx. 10-20 km = 6-12 miles), drain engine oil, fill up with 1.0 litre (1.75 Imp. pints) of anti-corrosion oil; have engine turn briefly.
2. Close fuel tap, disconnect fuel pipe, drain float chamber.

3. Unscrew spark plug. Through the spark plug bore spray in approx. 20-30 cc. of anti-corrosion oil. Operate Starter briefly, so that the engine turns over a few times; then place piston at top dead centre with the valves closed and screw spark plug in.
4. Remove batteries and store them in a dry and frost-protected place. It is recommended to have them recharged every 4 weeks. Before every third recharge have them discharged to a cell voltage of 1.8 by connecting a consumer of 15 W (brake light bulb, e. g.) for about 10 hours. Merely draining the battery plates does not prevent decomposition.
5. Clean scooter thoroughly and coat chromium-plated parts with acid-free grease.
6. Store scooter in a dry room on a stand so that the tyres (inflated) are off the ground.

Taking the scooter out of storage

Run the engine until it is warm; drain the anti-corrosion oil and fill up with 1.5 litres (2.65 Imp. pints) of branded oil, check and make sure that all connections, screws and nuts are tight.

Breakdowns

I. Engine will not start though operated according to the instructions on page 26

- | | |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Fuel tank empty | refill tank |
| 2. Fuel tap closed or not set for reserve | open fuel tap or set for reserve |
| 3. Fuel system blocked | clear system by blowing through it with compressed air |
| 4. Jets blocked | clear jets by blowing through (do not dismantle accelerator pump) |
| 5. Warm engine "overflowed" due to over-application of throttle | close fuel tap, open throttle fully, depress starter button. Within a short time the mixture will be ignitable and engine will start. Open fuel tap again |
| 6. Ignition switched on, red control lamp does not come on: | |
| a) battery flat | charge battery |
| b) control lamp burned out | replace control lamp |

- | | |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 7. Break in lead
D+61-15
(between governor switch and
ignition starter). | eliminate break |
| 8. Spark plug fouled, defective or
gap too wide | clean or replace plug, correct gap to 0.5 to
0.6 mm (0.02" to 0.024") |
| 9. Contact breaker points dirty or
worn, contact breaker rocker
arm sticking | clean contact breaker points, reset or re-
place, clean contact breaker rocker arm
pivot |
| 10. Ignition coil defective | replace ignition coil |
| 11. Condenser defective (blue, arc-
like contact spark) | replace condenser |

II. Starter does not turn or scarcely turns engine

- | | |
|----------------------------------------------|------------------------------------------------------------------------------|
| 1. Battery low or flat | re-charge battery |
| 2. Battery leads corroded | clean, tighten and grease battery leads |
| 3. Short-circuit in wiring System | have wiring checked at a Service Station |
| 4. Magneto coil in regulator
disconnected | Have magneto coil and wiring checked by
BOSCH or HEINKEL service Station. |

III. Engine cuts out and stops suddenly

- | | |
|-----------------------------------------|--------------------------------------------------------|
| 1. fuel tank empty | fill up with fuel |
| 2. fuel in tank down to reserve level | put fuel tap at reserve position |
| 3. fuel pipe clogged | clean fuel pipe by blowing through |
| 4. jets clogged | blow through jets (do not dismantle accelerator pump!) |
| 5. spark plug defective | replace spark plug |
| 6. ignition cable disconnected | reconnect ignition cable |
| 7. contact breaker rocking arm sticking | clean its fulcrum pin and rocking arm movable again |

IV. Engine runs irregularly

- | | |
|-----------------------------------------|---------------------------------------|
| 1. plug loose | tighten with box spanner (washer) |
| 2. ignition cable defective | insulate or renew ignition cable |
| 3. plug defective | renew plug |
| 4. contact breaker points dirty or worn | clean, reset or renew contact breaker |
| 5. condenser defective | renew condenser |

V. Engine pulling badly and getting hot

- | | |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 1. Wrong sparking plug | fit correct plug (225) |
| 2. Wrong ignition timing | check and adjust (retarded ignition
0.6 to 0.8 mm (0.0236" to 0.0315") before t.
d. c. measured by timing tool 404/W 10) |
| 3. Engine needs oil | check oil level in engine and fill up, if
necessary |
| 4. Carburettor air-fuel mixture too
lean (carburettor loosened) | tighten carburettor clamp bolt and test for
original setting |
| 5. Brakes bind and get hot | re-adjust brakes |

VI. Lights not working

- | | |
|-----------------------------------------|------------------------|
| 1. Loose or defective bulbs | tighten or renew bulbs |
| 2. Loose cable connections and
leads | tighten |
| 3. Bad earthing connection | tighten earthing cable |

Service, maintenance and lubrication schedule

	every	km.	miles
1. Change engine oil		2000	1400
2. Test run with the following functional checks			
a) clutch (check for play and correct engaging)			
b) switching (check left-hand handlebar twist grip for easy engaging of gears and easy operating)		2000	1400
c) brakes (efficiency)			
3. Check electrical equipment, all current utilisers, including red control light; check headlight setting		2000	1400
4. Check and adjust valve play, if necessary		2000	1400
5. Battery: check acidity, and, if necessary, add distilled water		2000	1400
6. Corrections which might prove necessary after trial run:			
3a) clutch			
3b) switching (gear change twist grip control)		2000	1400
3c) brakes			
7. Tighten wheel and axle nuts		2000	1400
8. Check tyre pressure		2000	1400
9. Trial run		2000	1400
10. Check steering, play, if necessary, re-adjust		4000	2800
11. Visual check of wheels and tyres			
12. Carburettor, pipes and tap to be cleaned and checked for leaks		4000	2800

	every	km	miles
13. Clean spark plug, adjust electrodes, check ignition timing		4000	2800
14. Check contact breaker gap; if necessary, readjust, check ignition timing		4000	2800
15. Grease lubricating felt on contact breaker cam		4000	2800
16. Retighten engine fixation bolts		4000	2800
17. Lubricate centre stand		4000	2800
18. Lubricate all levers on controls		4000	2800
19. Spray with CARAMBA brake lever and stop light switch		4000	2800
20. Fill rubber boots at the Bowden cable wire ends with grease		4000	2800
21. Clean battery connections and grease with battery grease		4000	2800
22. Thoroughly grease speedometer drive		4000	2800
23. Clean and check for leaks the carburettor, pipes and fuel tap		8000	5000
24. Change paper filter insert		8000	5000
25. Check engine compression		8000	5000
26. Dismantle cooling baffles and, if necessary, grease		8000	5000
27. Visual check of steering races; if necessary, grease		8000	5000
28. Remove front wheel hub with brake nut, change grease		8000	5000
29. Grease front fork		8000	5000
30. Grease Bowden cables		8000	5000
31. Render mobile brake nut for rear wheel and grease		8000	5000
32. Change oil in swinging arm		8000	5000

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Translation of page 32

Kipphebel	=	rocker arm	Einlaßventil	=	inlet valve
Auslaßventil	=	exhaust valve	Zylinderkopf	=	cylinder head
Auslaßkrümmer	=	exhaust elbow piece	Kolben	=	piston
Zündkerze	=	spark plug	Einlaßkrümmer	=	intake elbow piece
Kurbelwelle	=	crankshaft	Zylinder	=	cylinder
Nockenwelle	=	camshaft	Magnet	=	magneto System
Kupplung	=	clutch	Unterbrechernocken	=	contact breaker cam
Kupplungswelle	=	lay shaft	Lüfterrad	=	fan wheel
Vorgelegewelle	=	clutch spindle	Anker	=	armature
Schaltrad	=	Gear pinion	Abtriebswelle	=	driven shaft
1. und 3. Gang		(first and third gear)	Schaltrad	=	Gear pinion
Kipphebel	=	rocker arm	2. und 4. Gang		(2nd and 4th gear)

Wiring Diagram for 175 c.c. »HEINKEL-TOURIST« Scooter Type 103 A-2

