



SACHS 50/3 KLH

with Three-Speed Gearbox, Kick-Starter and Fan

MANUAL No. 319.2 E



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Specification

Engine:

Type:	SACHS 50/3 KLH
Operating principle:	Two-stroke engine with loop scavenging
Bore:	38 mm
Stroke:	42 mm
Piston displacement:	47 cc
Direction to rotation:	Anti-clockwise (as viewed on flywheel)
Cooling:	Air-cooled by centrifugal blower
Output:	3.2 H. P.

Ignition:

Ignition system:	Bosch flywheel magnete LM/URB 1/116/17 L 4 (6/1)
Firing point:	3—3.2 mm (0.12—0.13 in.) before top dead centre (advanced ignition)
Contact breaker point gap:	0.4±0.05 mm 0.016±0.002 in.)
Pole separation:	8—12 mm (0.32—0.47 in.)
Sparking plug:	Bosch W 225 T 1

Carburettor:

Type:	Bing carburettor with piston type throttle slide, intake silencer, starting device and wet air cleaner
Carburettor No. (Bing):	1/13/4
Orifice diameter:	13 mm (0.51 in.)
Carburettor setting:	Jet 76 Needle jet 1517 Needle setting: 3rd notch from above

Gearbox:

Clutch:	Two-plate clutch
Gearbox:	Three-speed gearbox in engine block

Gear-changing:
Power transmission from engine to gearbox:
Gear ratios:

Twist-grip on handlebars

Spur gears, ratio 3.88:1

1st gear 3.45:1

2nd gear 1.83:1

3rd gear 1.22:1

Power transmission to rear wheel:

Roller chain $\frac{1}{2}$ " x $\frac{3}{16}$ ", 7.8 mm roller dia.

Driving sprocket:

11 (12) teeth for 23" tyre

Sprocket on rear wheel:

32 (34) teeth for 23" tyre

Total reduction:

1st gear 38.9:1 (37.9:1)

2nd gear 20.6:1 (20.1:1)

3rd gear 13.7:1 (13.3:1)

Lubrication:

Engine: petrol mixture 25:1

Gearbox: 200 cc of

SAE 80 gear oil

Getting the Engine Ready for the Road

Every SACHS engine is tested at the Factory and is run for a time on the test bench. Your engine is therefore in good running condition. Before **starting it for the first time** you should nevertheless check the following points:

- The **air vent screw** on the main gearcase is closed with a rubber ring during transport. This ring must be removed, otherwise gear oil is liable to be forced out at the gear-shift rod when the engine is in use.
- Check the **oil in the gearbox** (page 9).
- The **air cleaner** of the intake silencer must be wetted with motor oil of viscosity SAE 40 or 50. The cap of the air cleaner will have to be removed for the purpose (Fig. 5).

Fill up the petrol tank with a 25:1 petrol mixture consisting of petrol and SACHS Special Motor Oil. Alternatively, a branded motor oil (viscosity SAE 40 or 50) supplied by one of the leading petroleum companies may be used instead of SACHS Special Motor Oil.

Example of mix proportions for petrol: to 5 litres of petrol add 200 cc of oil. (To 1 gallon [imp.] $\frac{1}{3}$ pint oil.)

Before setting out on a ride it is advisable always to check the following:

- Petrol level in tank
- Tyre pressure
- Proper functioning of brakes
- Lighting
- Tool kit (see that you have it with you on your ride)

These simple precautions will save you time and annoyance.

Starting the Engine

Starting from cold

- (a) Open the petrol tap.
- (b) Gently depress the tickler on the carburettor for five or six seconds (do not jab it down).
- (c) Shift the gear lever to neutral, i. e., to "O".
- (d) Do not open the throttle.
- (e) Depress the starter (rearward kick-starter or forward pedal) until the engine springs into life. (While doing this you may, in the case of a pedal type starter, pull the decompression lever briefly).
- (f) When the engine has started, open the throttle a little to prevent the engine (which is still cold) from petering out. On no account should the engine be "raced".

Warmed-up engine

When starting the warmed-up engine, **do not actuate the tickler**. Apart from this, the procedure is the same as when starting from cold.

If the tickler has inadvertently been depressed and the engine consequently refuses to fire, then proceed as follows: close the petrol tap, turn the throttle twist-grip to the "fully open" position, and start the engine (by pedalling or pushing the machine until the engine fires).

Moving Off

(a) With the engine running:

This is a matter of experience, but you will find it quite easy if you observe the following rules:

Declutch (i. e., disengage the clutch by pulling the clutch lever). Engage first gear (turn the gear twist-grip in the forward direction).

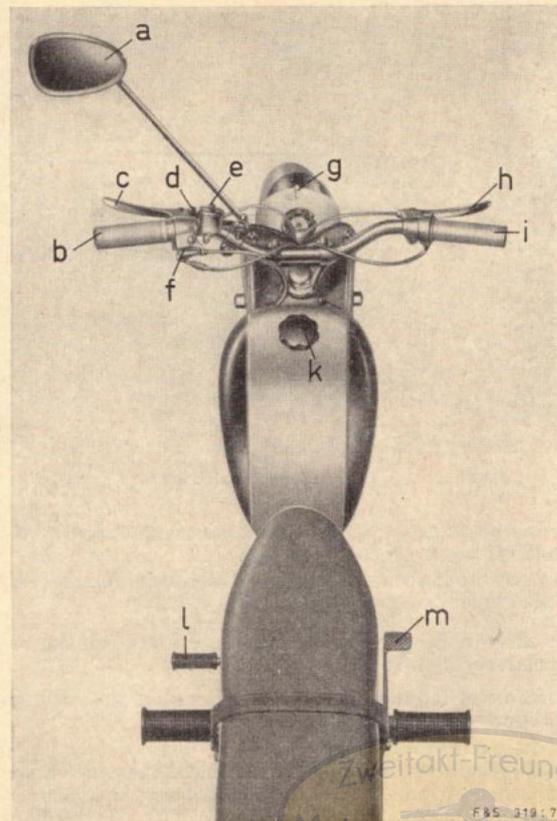


Fig. 1 The controls

- a = driving mirror
- b = gear twist-grip
- c = clutch lever
- d = dip switch

- e = horn button
- f = decompressor lever
- g = lighting switch
- h = hand brake lever

- i = throttle twist-grip
- k = tank cap
- l = kick-starter
- m = foot brake lever

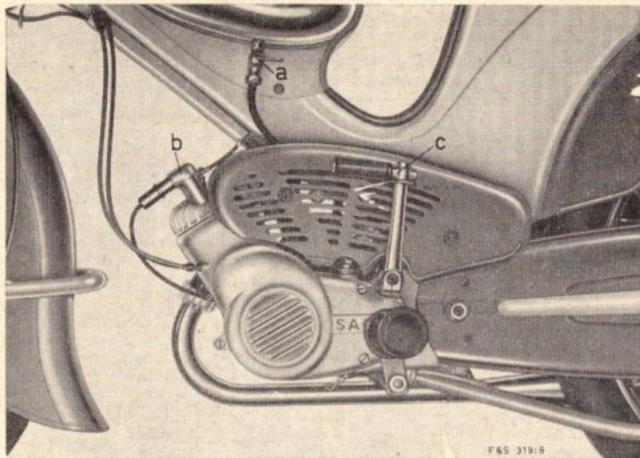


Fig. 2 a = petrol tap b = sparking plug connector c = kick-starter

Open the throttle a little and at the same time slowly release the clutch lever.

As soon as the machine starts to move off, completely release the clutch lever and open the throttle wider.

Never drive with a slipping clutch and never run the engine at excessively high revs.

(b) **Before starting the engine** (this is possible only with pedal-equipped autocycles):

Open the petrol tap.

When starting the engine from cold, depress the tickler on the carburettor gently for five or six seconds.

Do **not** open the throttle.

Engage first gear.

Disengage and pedal off.

Slowly release the clutch lever, continuing to pedal the machine until the engine springs into life (briefly pull the decompressor).

As soon as the engine starts up slowly open the throttle. If the engine does not fire within about 10 yards, turn the throttle twist-grip to and fro a little. If the engine stops after having started, actuate the tickler again.

Gear changing

The object of changing gear is to adapt the engine speed to the driving speed of the vehicle.

Always change up to the next higher gear before the engine reaches its maximum speed, and change down to the next lower gear before the engine starts jerking.

The gear-changing procedure is as follows:

Close the throttle;

at the same time declutch;

engage the next higher or the next lower gear;

slowly engage the clutch and at the same time open the throttle.

Reducing speed:

Close the throttle.

Apply the brakes.

Apply the hand and foot brake gradually. When travelling in a straight line and on a good skid-resisting road surface it is better to use the hand brake. On sandy, wet or slippery roads the foot brake should mainly be used. Always brake with caution; blocked wheels cause skidding and falls. Speed control should, of course, primarily be effected by means of the throttle twist-grip and not by means of the brakes.

Driving downhill:

On gradients the engine running with closed throttle will act as a brake. On fairly long downhill runs it is necessary to open the throttle a few times in order to ensure that the engine gets sufficient lubricating oil, which is mixed with the petrol. If necessary, the powerful SACHS brakes will provide additional braking action.

To stop:

Close the throttle.

Apply the brakes.

Disengage.

Change to neutral: while declutched, turn the gear twistgrip until the mark on the handle points to "0". The clutch lever can now be released. The engine will now continue to idle even when the vehicle is standing still. As a general rule, change to neutral even when you have to stop for only a short time (e. g., at traffic lights).

Stopping the engine:

Close the throttle, change to neutral, and switch off the ignition. If the machine is to be left standing for any considerable length of time, close the petrol tap.

Riding Hints

Running-in

Thanks to the good design and robust construction of your SACHS 50 engine you need not observe any complicated rules and restrictions about running-in. The one important thing is that you should not make too heavy demands upon your engine during the first 500 km (300 miles) and that you should, when travelling on uphill gradients, change down to the next lower gear as soon as you notice that the engine is no longer "pulling" happily.

Your engine will give better performance and longer service if you obey the following rules:

1. Do not "rev" up the engine unnecessarily when in neutral or when driving in any gear.
2. Excessively slow driving in any gear causes the engine to labour. When ascending a gradient, change down to a lower gear in good time so as to keep the engine running in its most favourable speed range.
3. Use only high-grade branded petrol and motor oil (see below).
4. Observe the rules for the maintenance of the engine (see page 11).

Drive quietly

Even the extremely effective intake and exhaust silencer with which the SACHS engine is fitted cannot prevent the noise of your machine sounding louder in built-up areas than it does on the open road. Please make due allowance for local conditions by driving considerately.

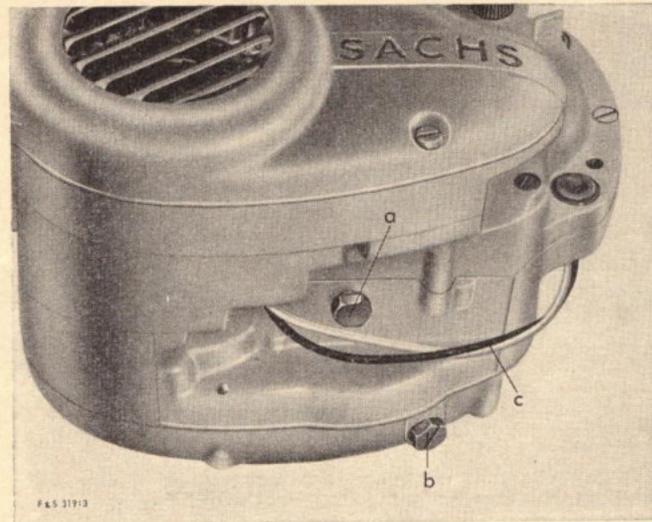


Fig. 3 Gearbox lubrication

a = oil drain plug b = oil checking plug
c = lighting and short-circuiting cable

Lubrication

The engine (cylinder barrel, connecting rod and big-end bearing) is lubricated with motor oil of viscosity SAE 40 or 50 (SACHS Special Motor Oil) which is added to the petrol in the ratio of 1:25.

If SACHS Special Motor Oil is not available, then any branded motor oil of viscosity SAE 40 or 50 can be used (the high-grade branded two-stroke oils supplied by the leading petroleum companies come within this class).

The use of **additives** to the oil is **not recommended**.

The gearbox has already been filled with 200 cc of SACHS Gear Oil before leaving the Factory.

Checking the oil level should be done when first taking deli-

very of the machine, at three-monthly intervals, and after every oil change.

To check the oil level, let the engine run for a minute or two. Place the machine in such a position that the engine is exactly horizontal. Unscrew the oil checking plug **b** (Fig. 3). If no oil comes out of the hole, pour in SACHS Gear Oil or branded gear oil (viscosity SAE 80) until oil does emerge from the plug hole.

The oil filler opening becomes accessible on unscrewing the speedometer drive **a** (Fig. 4) and taking out the driving unit. (Alternatively, if no speedometer is fitted, the oil filler opening is closed by a screw plug).

Oil change is necessary every 10,000 km (6000 miles) or once a year.

To change the oil in the gearbox, **warm** up the engine. Place the machine in the same position as when checking the oil level. Unscrew the oil drain plug **a** and the oil checking plug **b** (Fig. 3). Let the used oil drain away. To make sure that all this oil is removed, tilt the machine backwards and forwards and from side to side. Replace and screw in the oil drain plug **a** and oil checking plug **b** (Fig. 3). Pour in 200 cc of SACHS Gear Oil or Some other branded gear oil through the oil filler opening **a** (Fig. 4).

Caution! On no account put too much oil in the gearbox, or else clutch slip will inevitably occur. So if an unknown quantity of gear oil is put in, it is essential to check the oil level in the manner indicated above.

Rear wheel chain

At intervals — and in any case when the rollers of which the chain is composed begin to glisten because they have become dry — the rear wheel chain must be lubricated with a high-viscosity motor oil or gear oil. It is better, however, to remove the chain, wash it in petrol or paraffin, and immerse it in warmed commercial quality chain grease. Move the chain around in the grease bath in order to let the grease penetrate properly into the joints and rollers. On removing the chain from the bath allow superfluous grease to trip off. When refitting the chain, the closed end of the spring clip of the connecting link should point in the direction of travel of the chain.

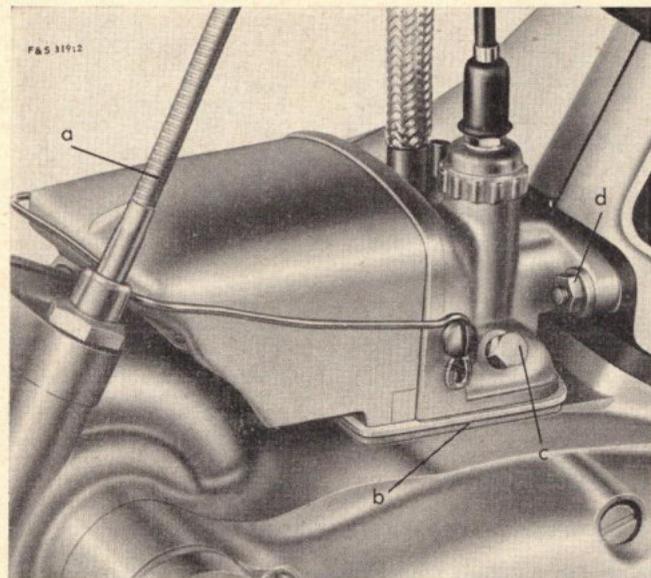


Fig. 4

a = speedometer drive (it is screwed into the oil filler opening)
b = carburettor gasket c = jet d = fixing nut

Control cables

The control cables to the carburettor, the clutch, the gear actuating lever, the brake and the decompressor must also be lubricated from time to time. As it is a very awkward operation to squirt thin oil (e. g., motor oil diluted with petrol) from an oil can into the gap between the cable and its sheath, it is best to use a simple device such as the "Magura-Olfix". At the same time the joints of the clutch lever and brake lever should also be given a drop of oil. If the clutch or gear-changing mechanism operates stiffly and if oiling fails to remedy this, then you should have the control cables checked by an expert and, if necessary, replaced by new ones.

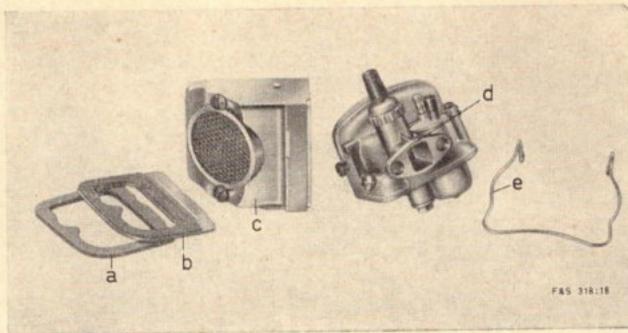


Fig. 5

a = cork gasket b = special composite gasket (sheet metal with bonded special material) c = cover with filter element
 d = carburettor e = fixing clip

Maintenance

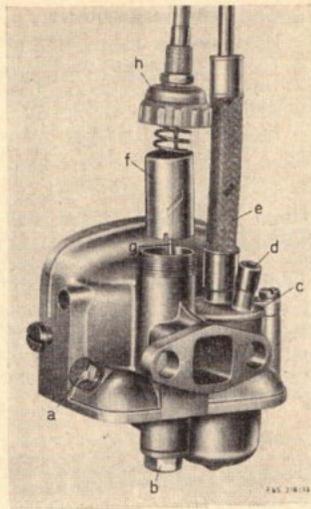
Air cleaner

It will from time to time be necessary to remove the dust and dirt which have collected in the air cleaner attached to the carburettor. The higher the dust content of the air, the sooner will the air cleaner become clogged and thus cease to function properly. Generally speaking, the filter element will have to be cleaned every 1000 km (600 miles) when driving on asphalt roads, every 500 km (300 miles) when driving partly on dusty roads, and every 200 km (125 miles) when driving entirely on dusty roads.

Failure to clean the filter at the proper time will cause premature wear of the vital running parts of the engine. For cleaning, push up the fixing clip; the cover of the air cleaner can then easily be removed. The filter element should be thoroughly washed in petrol and then preferably be blown out with compressed air. Before replacing the filter element, wet it thoroughly with motor oil. Make sure that the carburettor gaskets **a** and **b** (Fig. 5) give a good tight fit, especially when refitting the cover **c** (Fig. 5).

Fig. 6

a = jet
 b = screw plug
 c = float chamber cover
 d = tickler
 e = petrol pipe
 f = throttle slide
 g = jet needle
 h = mixing chamber cover



Cleaning the jet

The jet should be cleaned at the same time as the air cleaner. While the petrol tap is kept closed, unscrew the jet **a** (Fig. 6) and clean it by blowing air through it (or using the bristles of a brush; steel wire must not be used for the purpose, however). When refitting the jet, do not tighten it too much.

Cleaning the carburettor

The fuel used by an engine always contains some dirt, which is deposited in the float chamber and in the screw plug **b** (Fig. 6) of the carburettor. For this reason it is necessary to clean the carburettor approximately every 5000 km (3000 miles).

To detach the carburettor:

- Close the petrol tap.
- Remove the cover of the mixing chamber **h** (Fig. 6).
- Detach the fuel pipe **e** (Fig. 6).
- Detach the air cleaner cover **c** (Fig. 5).
- Undo the fixing nuts **d** (Fig. 4).

To clean the carburettor:

Unscrew the float chamber cover **c** (Fig. 6).

Take out the float.

Unscrew the screw plug **b** (Fig. 6).

Remove the jet **a** (Fig. 6).

Rinse the carburettor body and components in petrol.

Make sure that the carburettor gaskets **a** and **b** (Fig. 5) give a good tight fit

When reassembling the carburettor, do not oil the throttle slide f (Fig. 6).

Cleaning the petrol tap, petrol pipe and tank

If water is found to be present in the float chamber when cleaning the carburettor, thorough cleaning of the petrol tank, petrol tap and petrol pipe will be necessary. To do this, empty the tank, detach it and screw out the petrol tap. Rinse the tank and tap with clean petrol.

Decarbonising

The lubricating oil mixed with the petrol is burnt along with the latter and causes carbon to be deposited in the following places:

in the cylinder head,

on the piston crown,

in the exhaust duct,

in the transfer ports (after a fairly long period of operation),

in the exhaust pipe,

and in the silencer.

The carbon must be removed from:

(a) the combustion chamber (cylinder head and piston crown), if, when accelerating or driving uphill, the engine starts "pinking" (i. e., it develops a sharp metallic knocking) and moreover continues to run when the ignition has been switched off;

(b) the exhaust duct, the transfer ports, the exhaust pipe and the silencer, if the engine no longer pulls properly and

moreover tends to four-stroke despite correct carburettor tuning.

Removing the carbon from the combustion chamber:

1. Remove the cylinder head and clean out the combustion chamber with a sharp tool (scraper or screwdriver).

The combustion chamber in the cylinder head can be cleaned to a bright metallic finish.

2. Place the piston in its highest position (T. D. C.) and remove **only** the brown scale with a wire brush.

Do not scrape off the solid carbon crust, as it protects the piston from excessive heat and thus prevents it from jamming.

Removing the carbon from the ducts:

1. Exhaust duct:

Remove the cylinder head.

Unscrew the exhaust pipe.

Place the piston in its lowest position (B. D. C.)

Scrape out the exhaust duct from outside with the aid of a screwdriver or scraper. Any carbon that drops on to the piston should be blown out through the exhaust duct.

Take care to prevent particles of carbon getting into the crankcase through the transfer ports.

2. Transfer ports:

To clean the transfer ports it will be necessary to remove the cylinder. (This job should be tackled only by an expert).

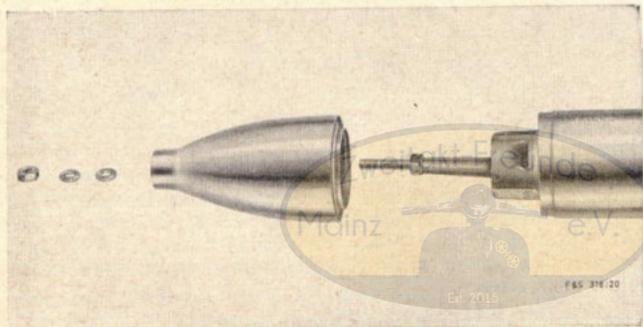


Fig. 7 Dismantling the silencer

Removing the carbon from the exhaust pipe and silencer:

It is best to have the exhaust pipe and silencer cleaned professionally at a workshop.

Detach the **exhaust** pipe and clean it with an exhaust pipe brush. A slight coating of carbon in the pipe is quite harmless.

The **silencer insert d** (Fig. 8) should be made red-hot in a forge or with a welding blowpipe, whereupon the burnt carbon can be removed by tapping the insert.

Do not do anything to alter the openings in the silencer insert, as this is liable to have an adverse effect on engine performance, exhaust noise and petrol consumption.

The body and end shell of the silencer should be cleaned with a wire brush or a scraper.

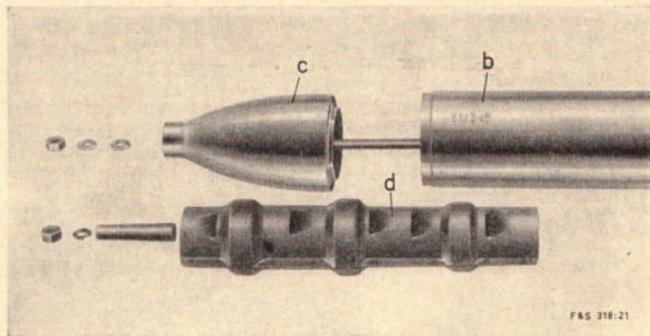


Fig. 8
d = silencer insert b = silencer body c = silencer end shell

Sparkign Plug

When fitting a new sparkign plug, always make sure that it has the correct thermal value, as indicated on page 1. The spark gap should be 0.4—0.5 mm (0.016—0.020 in.). If the gap is larger, the correct width should be restored by bending the "earth" electrode.

Checking the functioning. Screw the sparkign plug out of its socket and, while the plug is attached to the ignition cable,

bring the threaded portion into contact with the "earth", e. g., the cylinder head. Now if the starting device is actuated, a powerful spark should appear between the electrodes of the sparkign plug. A plug which is oiled up, or in which dirt or beads of metal are lodged between the electrodes, will fail to produce a spark and must be cleaned (chip of wood and wire brush).

Maintenance of the Electrical Equipment

As a rough guide the electrical equipment should be given attention every 5000 km (3000 miles). To gain access to the parts concerned, remove the left-hand cover of the engine housing after undoing the three screws. Then detach the fan with the sealing plate and the inserted sheetmetal ring.

Visual inspection of the contact breaker points. Dirty or oily contacts **a** (Fig. 9) should be cleaned with pure petrol (containing no oil) applied with a paint brush. The petrol should then be removed by blowing with compressed air. Corroded contacts should be cleaned with the Bosch contact cleaning device EFAW 52 and then brushed with pure petrol. Slight irregularities or small pitted areas due to burning are generally harmless. Cleaned contacts must not be touched with dirty fingers. Badly worn contacts should be replaced by new ones.

Checking the contact breaker point gap. The correct specified value is 0.4 ± 0.05 mm (0.016 ± 0.002 in.). The gap is measured when the contacts are fully open, i. e., in the range beyond top dead centre (T.D.C.), as viewed in the direction of rotation. In this range rotate the flywheel until the contacts are properly visible through one of the openings in the flywheel and are **fully** open. A 0.4 mm (0.016 in.) thick gauge (Bosch feeler gauge EF 1216 A) should slide easily between the contacts. If the gap between the contacts is too large or too small, it should be adjusted as follows.

Adjustment of the contact breaker point gap. Slacken the screw **b** (Fig. 9) that secures the "anvil" contact (i. e., the fixed contact on the base plate). By shifting this contact with the

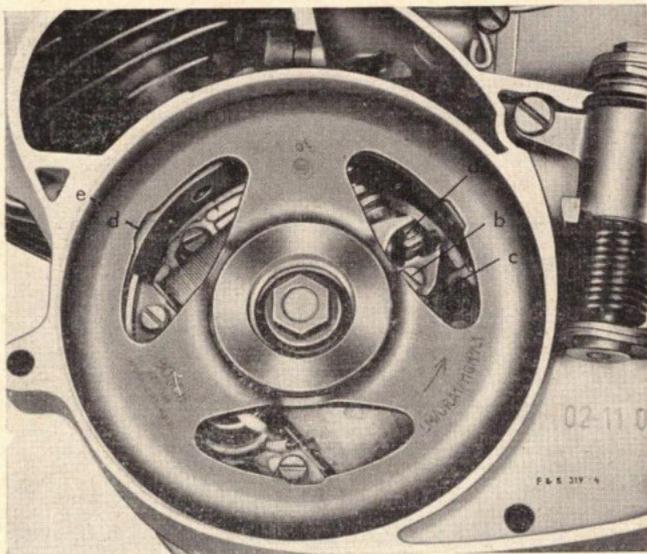


Fig. 9

a = contacts b = fixing screw c = adjusting slot
d = mark on flywheel e = mark on housing

aid of the adjusting slot **c** (Fig. 9) accurate adjustment of the contact breaker point gap can be obtained. The screw **b** should then be firmly retightened and the gap once again checked.

Checking the ignition timing (this job should be tackled only by an expert). The ignition timing is correct when the mark **d** on the flywheel (Fig. 9) coincides with the mark **e** on the engine housing (Fig. 9) at the very instant when the contact breaker points **are beginning to open**. (This can generally be judged quite satisfactorily by eye; if not, then use a 0.03 mm (0.0012 in.) strip of clean sheet metal, free from grease, which is inserted between the points and can be withdrawn at the instant when they begin to separate; do not use a sheet of paper for the purpose, nor a battery or other extraneous

source of electricity). Deviations of up to 3 mm (0.12 in.) between the mark "M" and the mark on the housing at the instant when the points are about to separate are permissible.

Adjustment of the ignition timing (for the expert only). To adjust the ignition timing, remove the left-hand cover of the engine housing (which also contains the gear-shift mechanism). Two marks ("O" and "M") respectively will now be visible on the edge of the flywheel (Fig. 10). These marks have the following significance: when "O" coincides with the mark **a** (Fig. 10) scribed on the engine housing, the piston position will correspond to T.D.C.; when "M" coincides with the mark **a**, the piston position will correspond to the firing point. First ascertain whether, with reference to the direction of rotation of the flywheel, the mark "M" is before or beyond the mark on the housing at the instant when the contact breaker points begin to open. These two conditions correspond to premature ignition and retarded ignition respectively. At this instant make a pencil mark on the flywheel corresponding to the position of the mark **a** on the engine housing. Now slacken the three screws on the base plate. In the event of premature ignition, the base plate should be rotated a short distance in the direction of rotation of the engine; in the event of retarded ignition, it should be rotated in the opposite direction.

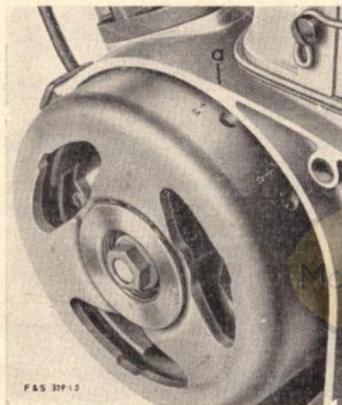


Fig. 10

Marks on flywheel
(fan housing removed)

O = top dead centre (T. D. C.)

M = firing point

a = mark on housing

Now check the ignition timing once again (the mark "M" on the flywheel should practically coincide with the mark on the engine housing at the instant when the points begin to open). If the timing is not yet right, the pencil mark on the flywheel will show whether the base plate has been rotated too much, or too little, or in the wrong direction.

When the correct adjustment has been obtained, retighten the screws on the base plate.

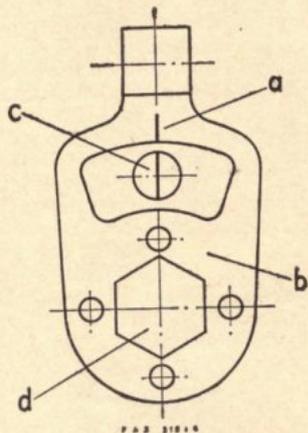


Fig. 11

Gear actuating lever mounted on engine

- a = groove mark
- b = gear actuating lever
- c = stop pin
- d = hexagon head bolt

Adjusting the gear-change mechanism

The gear actuating lever on the engine — this is the lever **b** (Fig. 11) mounted at the top of the gearbox, on the left-hand side — is operated by means of a control cable from the gear twist-grip on the handlebars. The gear-change mechanism incorporates a spring which always tends to rotate the gear actuating lever so as to engage third gear. So even if the control cable is defective, it will always be possible to drive in third gear.

In order to ensure that the marks indicating the gear positions on the twist-grip do indeed correspond to the appropriate positions of the selector key in the gearbox, the control cable from the gear twist-grip to the gearbox will have to

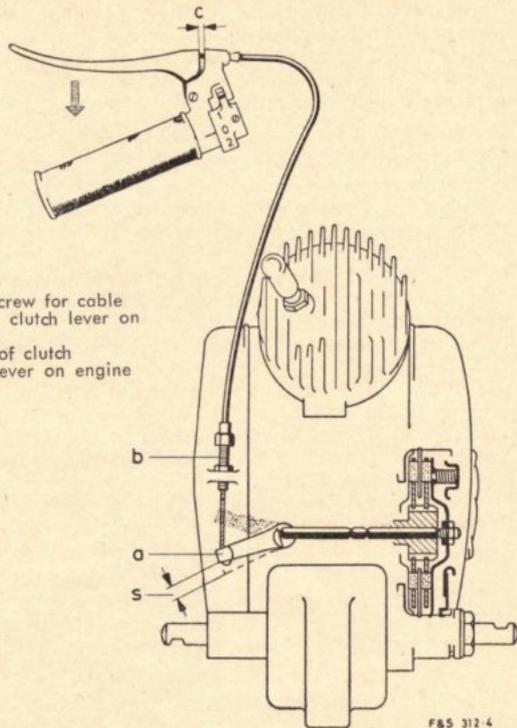


Fig. 12

- a = clutch lever
- b = adjusting screw for cable
- c = backlash at clutch lever on handlebars
- s = free travel of clutch actuating lever on engine

be correctly adjusted. Otherwise difficulties in gear-changing are liable to occur or the gears may jump out of mesh. Adjustment is effected by means of the control cable adjusting screws on the gear twist-grip and on the fan housing. The cable will be correctly adjusted when, on setting the twist-grip at the mark 2, the mark **a** on the gear actuating lever (Fig. 11) coincides with the slot in the stop pin **c** (which is located in the opening in the gear actuating lever). If it is not possible to achieve this adjustment, then the control cable will have to be cut to the correct length and soldered.

On no account should the hexagon head bolt **d** on the gear actuating lever be unscrewed, as this would upset the adjustment of the gear positions within the gearbox. Internal adjustments of this kind can be undertaken only by the workshops of authorised SACHS dealers.

Clutch adjustment

The clutch of the SACHS 50 engine has to transmit the whole of the power developed by the engine; yet when stopping or changing gear, it must completely disconnect the engine from the gearbox. In addition, it must compensate considerable differences in rotation speeds when moving off from the stationary position. The clutch will always reliably perform this task if it is correctly adjusted and if the slight amount of normal wear that occurs is allowed for in due time. The following adjustment ensures proper functioning of the clutch (Fig. 12):

1. Detach the control cable from the clutch actuating lever — on top of the engine, on the left-hand side — and check whether the end of this lever can be moved a distance of about 10 mm (0.4 in.). If not, then follow the instructions given in point 4 (below).
2. While the engine is cold, adjust the screw **b** on the clutch control cable until a backlash, or play, of 1—3 mm (0.04 bis 0.12 in.) at the clutch lever on the handlebars (Fig. 12).

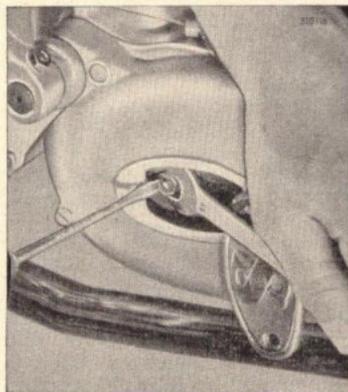


Fig. 13
Clutch adjustment

3. Wear of the internal clutch plates reduces the backlash at the handlebar lever. The required amount of backlash can be restored by screwing in the control cable adjusting screw **b**.
4. If the cable adjusting screw has been screwed right home, or if the clutch actuating lever on the engine does not display 10 mm (0.4 in) free travel, then the "S" cover on the right-hand side of the engine housing should be opened. The internal clutch adjusting screw with its lock nut is now accessible. Slacken the lock nut and unscrew the adjusting screw until the requisite amount of free travel for the clutch actuating lever, as mentioned in point 1 (above), has been restored (Fig. 13). Then refit the clutch control cable and adjust the backlash **c** (Fig. 12) at the handlebar lever to a value of 1—3 mm (0.04 bis 0.12 in.).

Tuning the carburettor (Fig. 4)

The standard setting of the carburettor has been so carefully adjusted at the Factory that no alterations need be made to it.

It is, however, advisable to re-adjust the idling speed of the engine after the running-in period if this speed is too high. The adjustment should be effected while the engine is warm. For this purpose the adjusting screw on the mixing chamber cover **h** (Fig. 6) should be slackened and so adjusted that the engine "ticks over" at the slowest possible speed, but without faltering.

Hubs and Hub Maintenance

SACHS hubs, with their generously dimensioned brakes with 115 mm (4½ in.) brake drum diameter, comply with the official requirements.

Thanks to the carefully selected heat-resistant brake linings with which they are equipped, they ensure effective and adequate braking action even on long downhill runs.

Adjusting the bearings

The hubs have adjustable cup and cone type bearings. Should it become necessary to adjust the bearings, make sure that

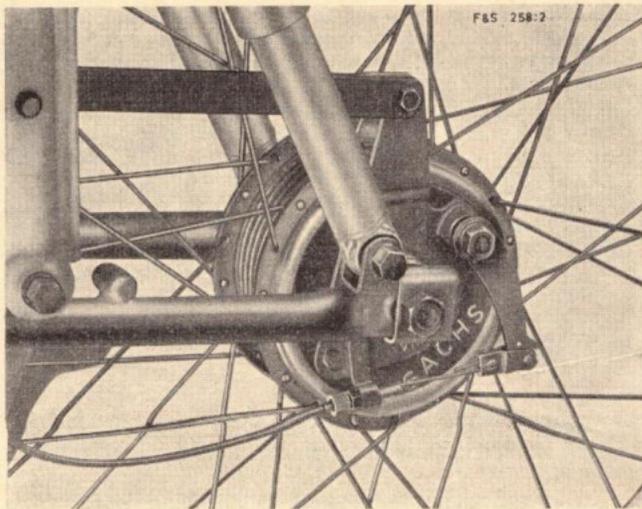


Fig. 14

they are not over-tightened. The lock nut of the cone should be tightened while the cone is held fast. After locking, check once again that the wheel runs freely. When mounted in the vehicle, the wheel should display a slight amount of side play.

Chain tension

The rear-wheel hub is a spindle type hub, so that, when the wheel is removed, the coupling unit along with the sprocket wheel and the chain remain in position. To adjust the chain tension, first slacken — on the sprocket side of the hub — the spindle nut (use 17 mm spanner) and then the larger spindle sleeve nut (use 24 mm spanner), but do not remove these nuts. After adjusting the chain-tensioning device and aligning the wheel, re-tighten the nuts in the reverse order to which they were slackened.

Removing and refitting the rear wheel

To remove the wheel (see Fig. 15), detach the brake linkage **a**

from the brake lever **b** — in the case of a cable-operated brake it is, in addition, necessary to detach the cable from the support on the brake-plate —, remove the spindle nut (17 mm spanner) and washer and withdraw the spindle. The brake-plate holder, i. e., the light-metal component between the frame and the brake-plate, can now be slid out in the forward direction. Turn the brake-plate until the brake lever points upwards and the two U-section components on the frame and on the hub are no longer opposite each other. The wheel can now be withdrawn from the coupling unit and, by tilting the vehicle, be taken out of the rear fork.

Refitting the wheel involves carrying out the above operations in the reverse sequence. Make sure that the brake-plate holder engages both the claw on the brake-plate and the claw on the frame and that the spindle passes through the hole of the brake-plate holder. The spindle can be inserted only from the brake drum side.

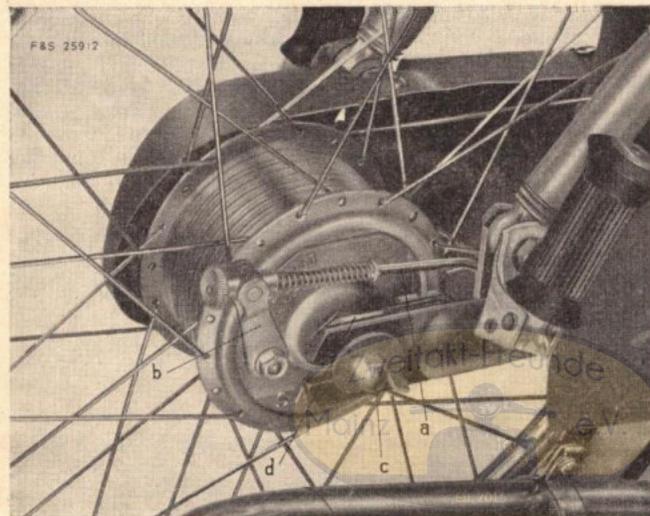


Fig. 15

Lubrication

Any high-grade anti-friction bearing grease can be used for lubricating the bearings. It is advisable to renew the bearing grease about every 5000—10,000 km (3000—6000 miles). This involves dismantling the axle assembly, or the cone sleeve in the case of the spindle type hub, and cleaning the cones and bearing shells (cups) with petrol. When reassembling, the bearing shells should be packed with anti-friction bearing grease, and the balls (special motor-cycle bearing balls of 9/32" dia., 12 balls per bearing shell) should be embedded in the grease, after having first likewise been cleaned. Any balls presenting a dull appearance should be replaced by new ones. (Part number for ordering new balls: 0323062000). Do not use grease with too soft a consistency. When inserting the spindle, or the cone sleeve, and screwing in the adjustable cone — the wheel must be laid horizontal for this purpose — make sure that none of the balls is pushed along into the hub sleeve, as this would certainly ruin the bearings and the hub very quickly. Adjustment of the bearings should be carried out in accordance with the instructions given in the section "Adjusting the bearings".

Make sure that all the parts that have been cleaned with petrol are perfectly dry before putting in the fresh grease. On no account must the grease be allowed to come into contact with remaining traces of petrol, as this will cause the grease to decompose and become unsuitable.

Braking action

The front wheel brake can exercise an appreciably stronger braking action than the rear wheel brake. This is because the total weight tends to shift forward when braking. On slippery road surfaces and in curves you should, however, always brake with caution in order to avoid skidding. As a general rule, apply both brakes with proper care. If you brake too fiercely you are liable to have a fall.

Excessive braking action

Like the brakes on all motor vehicles, your brakes are liable to suffer from "morning sickness". By this is meant a sudden excessive braking action which occurs even if the brake is only lightly applied. This is due to slight rusting of the brake linings and the brake drum caused by atmospheric moisture

or water that has got into the brakes. It may occur when the brakes have not been in use for some length of time (for instance, after the machine has been left standing outside overnight).

Remedy: When going for a ride, make it a rule to apply the brakes — cautiously at first and then more vigorously — against the pull of the engine. This will wear off the film of rust by the time the machine has travelled 30 to 50 yards and the brakes will then work perfectly again.

Poor braking action

Remedy: Adjust the control cable or the linkage rods operating the brake! Check hand or foot lever, control cable, linkage and brake actuating lever to verify that they are in good working order! Oil the joints, bearings and control cable! Replace kinked or jammed cables by new ones! If brake linings are oiled up, fit new linings, because even the slightest trace of oil will impair the braking action. Never touch the surfaces of brake linings or drums with oily fingers!

Brake whistle and squeal

No cure has yet been discovered that will definitely prevent brake whistle and squeal. We find that it is most likely to occur after riding in the rain, hosing the machine down, or washing it with petrol, paraffin, etc. Brake noise may also occur if the brakes are always only lightly applied. This has the effect of polishing the contact surfaces of the brake linings instead of constantly renewing the surface texture.

Remedy: Noise originating in the brakes can usually be eliminated merely by braking cautiously, but vigorously, against the pull of the engine. The same cure may be applied after riding in the rain or after cleaning the machine. (Do not spray water on the hubs!). Any water that may have got into the brakes will be evaporated and the braking surfaces will be cleaned by the arbasive action set up by applying the brakes.

Other remedial measures:

Remove "high spots" on brake linings and drums by rubbing with emery cloth.

Fit new brake linings. Oily or greasy linings should in any case be renewed. Before assembling, remove all traces of grease from brake drum and rub off with emery cloth.

All other remedies which are sometimes recommended, such as chamfering the linings, slotting the linings, fitting bands around the brake drum, strengthening the brake-plates and brake shoes, have failed to yield any definite improvement in the tests that we have carried out. We are continually engaged in experimental work with a view to finding the complete answer to the problem of brake noise.

Fitting new brake linings

When brake linings are due for renewal, always use the makes supplied by us. The brake shoes with bonded linings have to be replaced by new ones, as it is not practicable to bond new linings on to the old shoes.

Tracing and Remediating Engine Troubles

Engine will not start

Cause :

Fuel tap closed

Tickler has not been used

No fuel in tank

Jet blocked

Fuel pipe blocked

Ignition cable disconnected or faulty

Sparking plug sooted up, bridged or damaged

Earth fault in short-circuiting cable, or push-button is sticking

Ignition spark too weak

Remedy :

Open the tap

Press tickler on carburettor down for 6 seconds

Fill up

Unscrew jet and clean it by blowing

Clean the fuel pipe, tap and strainer in tap filter

Re-connect cable to sparking plug or fit new cable

Remove sparking plug and clean it or fit a new plug

Check and repair short-circuiting cable and push-button

As a temporary expedient, reduce gap of sparking plug electrodes to 0.3 mm (0.012 in.) by bending the electrodes; have sparking plug checked

Engine starts, but soon stops

Cause :

Vent hole in tank filler cap blocked

Fuel pipe blocked

Sparking plug electrodes bridged

Remedy :

Loosen or remove filler cap. Clear the vent. If necessary, drill an extra vent hole.

Clean the fuel pipe, tap and strainer in tap filter

Clean the plug or fit a new one

Engine power dwindles or engine stops

Cause :	Remedy :
No fuel in tank	Fill up
Jet blocked	Clean the jet
Fuel pipe blocked	Clean the fuel pipe, tap and strainer in tap filter
Vent hole in tank filler cap blocked	Loosen or remove filler cap. Clear the vent. If necessary, drill an extra vent hole.
Exhaust system clogged with carbon	Clean the exhaust port in the cylinder and clean the silencer
Air cleaner blocked	Clean it
Piston gummed up with oil residue (due to using the wrong kind of oil)	Use SACHS Special Motor Oil or branded motor oil of viscosity SAE 40 or 50

Irregular running

Cause :	Remedy :
Ignition cable loose or damaged	Fix cable or fit a new one
Sparking plug sooted up, damaged or bridged	Clean the sparking plug or fit a new one
Ignition system faulty	Have ignition system checked by an authorised workshop
Carburettor gasket (under body of carburettor) displaced	Make sure that the gasket gives a good tight fit; replace by a new gasket, if necessary

Engine four-strokes and pulls badly

Remedy :	Remedy :
Carburettor flooded because float needle seating is dirty	"Tickle" carburettor vigorously, or else clean the seating
Float needle and seating in float chamber cover are worn	Fit new float needle and float chamber cover

Float leaking
Jet in carburettor is loose
Exhaust system and ports in cylinder clogged with carbon

Fit new float
Tighten the jet
Remove carbon from silencer and exhaust port in cylinder

Engine pulls badly

Cause :	Remedy :
Jet dirty	Clean the jet
Engine not getting enough fuel because fuel pipe is dirty	Clean the fuel pipe, tap and strainer in tap filter
Carburettor dirty	Clean the float chamber, jet and screw cap of float chamber
Clutch slipping	Adjust clutch and check clutch control cable. If necessary, fit new internal clutch plates or a new cable
Carburettor gasket (Fig. 4) is damaged	Fit new gasket; make sure it provides a good tight seal

Engine backfires with blowback into carburettor

Cause :	Remedy :
Sparking plug incandescent because of wrong thermal value	Fit sparking plug with correct specified thermal value
Sparking plug bridged at electrodes or at insulator	Clean the plug or fit a new one
Engine not getting enough fuel	Check and clean fuel pipe, air vent in tank filler cap, and carburettor
Engine gets "false" air (infiltrated air)	Tighten cylinder and carburettor fixing screws, fit new gaskets, if necessary
Water in carburettor	Clean the carburettor

Engine will not start because clutch slips

Cause:	Remedy:
Clutch not properly adjusted	Check the adjustment, making sure that clutch control cable has sufficient backlash and functions smoothly
Too much oil in gearbox, or oil is too viscous	Check oil level in gearbox. Use SACHS Gear Oil or some other branded gear oil of viscosity SAE 80

Excessive fuel consumption

Cause:	Remedy:
Tank, fuel pipe or carburettor leaking	Check and repair
Fuel level in carburettor too high	Carburettor must not overflow while machine is stationary. Check float, float needle and seating
Needle and needle jet badly worn after long service	Fit new needle and jet

Engine vibrates excessively, especially at certain speeds

Cause:	Remedy:
Bolts fixing engine to frame are loose	Retighten all bolts and nuts on frame, particularly those securing the engine

Engine will not stop when ignition is switched off

Cause:	Remedy:
Have them repaired; meanwhile detach sparking plug cable in order to stop engine	Ignition switch faulty or short-circuiting cable broken
Use sparking plug with correct specified thermal value; decarbonise the engine	Sparking plug incandescent

Repair Service

If your SACHS engine develops any disorders that can be put right only by having repairs carried out or by having new parts fitted, take it to a garage displaying the sign "SACHS SERVICE".



You may rest assured that repairs effected there will be done quickly and efficiently by skilled fitters who have been trained at our Factory. There, too, all genuine spares are either in stock or readily obtainable, and you will also be able to get reconditioned parts: worn or damaged cylinders and crankshafts can be traded in, and in return you can obtain, at moderate prices, replacements which have been fully reconditioned at the Schweinfurt Factory. An engine exchange service may also be in operation.

