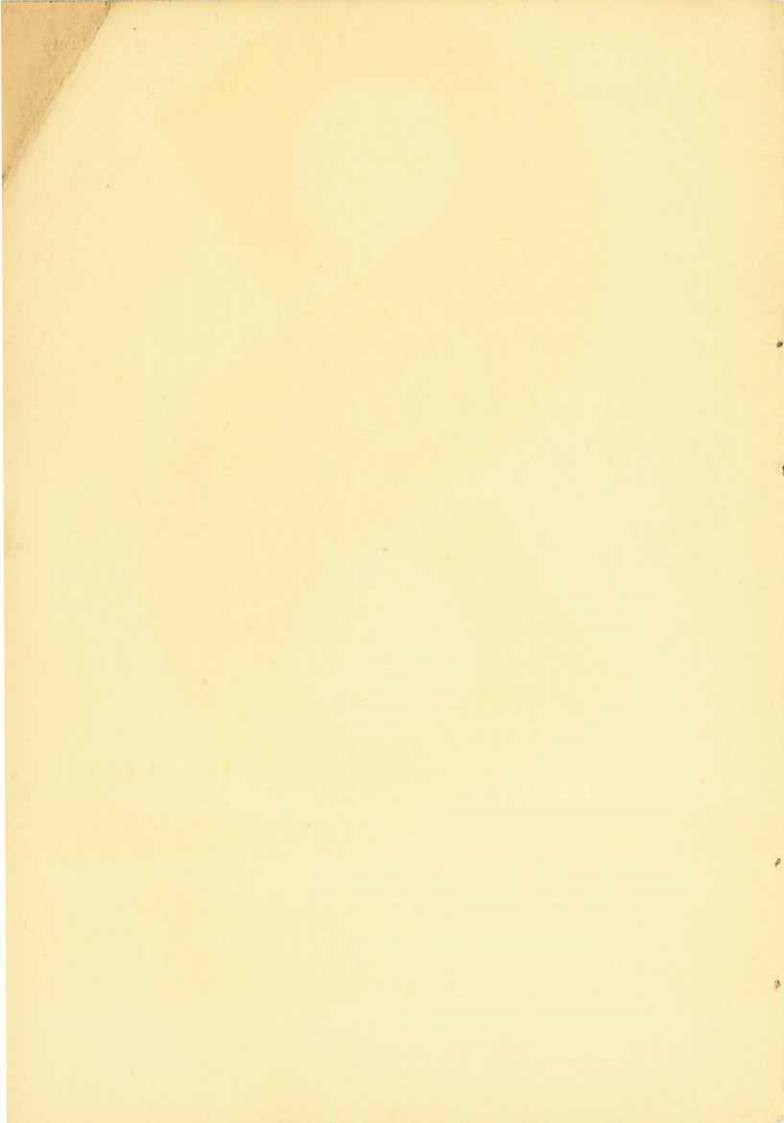


SACHS 50-THREE-SPEED

Handbook No. 316.2 E/2



Contents

	Page
Specification	2
Some Instructions for the First Ride	3
Running-in	7
Fuel and Lubricants	7
Engine	7
Gearbox	7
Rear Chain	10
Control Cables	11
Maintenance	12
Cleaning the Air Filter	12
Cleaning the Jet	12
Cleaning the Carburettor and Fuel Pipe	12
Decarbonising	13
Maintenance of Electrical System	16
Checking the Ignition System	17
Adjusting the Gear Selector	19
Adjusting the Clutch	21
Adjusting the Carburettor	21
Fuel Consumption	22
Hubs and Hub Maintenance	23
Poor Brake Action	28
Troubles and Their Remedies	30
Spare Parts and Repairs	34

Specification

Type:	Air-cooled, single-cylinder 2-stroke engine
Scavenging principle:	Loop scavenging
Bore:	1.496 in. (38 mm)
Stroke:	1.653 in. (42 mm)
Capacity:	47 c.c.
Compression ratio:	7.3:1
Ignition system:	Bosch flywheel dynamo-magneto
Dynamo output for lights:	6 Volts, 17 Watts A.C.
Sparking plug:	Bosch W 190 M 11 S
Spark advance:	0.078—0.098 in. (2—2.5 mm) before T.D.C.
Carburettor:	Bing carburettor 1/12 with oil-wetted air filter and starter device
Carburettor settings:	Main jet 58, needle jet 1517, needle position 2nd groove from top, throttle slide No. 3
Silencer:	Capable of being dismantled
Clutch:	2-plate type
Gearbox:	3-speed integral with engine
Gear selection:	Twistgrip on handlebars
Gear ratios:	1st gear 3.45:1; 2nd gear 2.09:1 3rd gear 1.40:1
Transmission to rear wheel:	Roller chain $\frac{1}{2} \times \frac{3}{16}$ " , 0.307 in. (7.8 mm) roller diameter
Drive sprocket:	12 teeth for 23" tyres
Rear wheel sprocket:	32 teeth for 23" tyres
Overall ratio:	1st gear 356:1; 2nd gear 21.6:1 3rd gear 14.45:1
Lubrication:	Engine: petroil mixture 25:1 Gearbox: $\frac{1}{3}$ pint (200 c.c.) gear oil SAE 80

Some Instructions for the First Ride

Preparations:

Every SACHS engine is run for a certain length of time in the works. The engine is thus ready for the road and the gearbox has already been filled with oil. It is only necessary to fill the tank and check the tyre pressure.

Make sure also that the air vent holes in the oil filler plug on the gearcase are clear and not still closed by the adhesive tape used for sealing purposes in transit. Failure to check this point may easily result in oil being forced out while running.

Filling the Tank: 25:1 petrol mixture

25 parts of ordinary branded petrol are thoroughly mixed in a clean can with 1 part of motor oil of viscosity SAE 50 or 40, preferably SACHS Motor Oil. Thus $\frac{1}{6}$ pint (100 c.c.) of oil are used for every $\frac{1}{2}$ gallon ($2\frac{1}{4}$ litres) of petrol. If SACHS Motor Oil is not available, use some other good branded oil. (See also page 7: Fuel and Lubricants.)

Controls:

Throttle Twistgrip. By turning it towards you the throttle slide in the carburettor is opened.

Gear Twistgrip. On pulling the clutch lever the catch locking the gear twistgrip is released and the grip together with the clutch lever can then be turned up and down for selection of the desired gear or neutral as the case may be.

The Hand Brake Lever is mounted on the right side of the handlebars and acts on the front wheel.

Clutch Lever. When this lever is pulled the clutch disconnects the engine from the gearbox and rear wheel.

Decompressor Lever. To make the engine easier to turn, a decompressor lever is provided on the left side of the handlebars and should be used as required when starting.

The Short-circuiting Button for switching off the ignition is in the headlamp.

Fuel Tap on tank.

Remote-operated Tickler or tickler on carburettor.

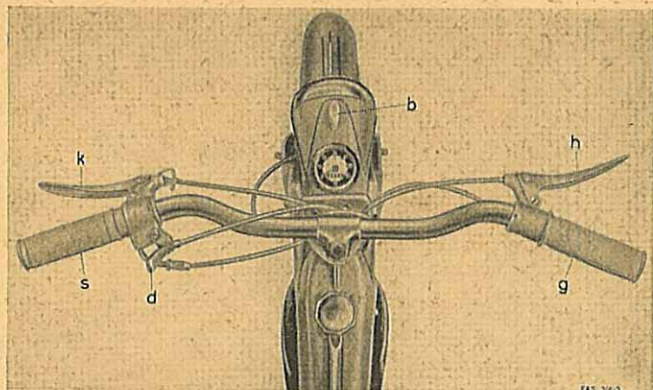


Fig. 1: Controls

b = Lighting switch d = Decompressor lever g = Throttle twistgrip
 h = Hand brake lever k = Clutch lever s = Gear twistgrip

Starting:

Two different methods can be used for starting the engine:

a) Starting while the machine is on the move:

Open the fuel tap.

If the engine is cold, slowly press the tickler on the carburettor right down for 5 or 6 seconds.

Leave the throttle closed.

Engage 1st gear.

Pull up the clutch lever and start pedalling.

Release the clutch lever slowly, simultaneously continuing to pedal until the engine starts.

Only then open the throttle slowly.

If the engine has still not started after covering about 30 ft. (10 m), manipulate the throttle twistgrip a little. If the engine stops again after having started, press the tickler down again.

Another method is to pull up the decompressor lever at the same time as the clutch and release the former shortly after the clutch. This will make the engine easier to turn over.

b) Starting while stationary:

Open the fuel tap.

If the engine is cold, slowly press the tickler on the carburettor right down for 5 or 6 seconds.

Leave the throttle closed.

Turn the gear twistgrip to neutral.

Start pedalling forward.

(While doing this, the engine can be made easier to turn by pulling up the decompressor lever quickly and then releasing it.)

Engine starts.

Pull up clutch lever.

Engage gear.

Release clutch lever slowly, simultaneously opening the throttle.

Changing Up:

1. Close the throttle completely, i. e. turn the throttle twistgrip away from you as far as the stop.
2. Declutch, i. e. pull the clutch lever to full extent.
3. Select gear. Turn the gear twistgrip together with the clutch lever towards you until the mark on the grip points to 2.
4. Let in the clutch by slowly releasing the clutch lever.

Open the throttle.

When the machine has reached a speed of about 15 m.p.h. (25 km/h) change up from 2nd to 3rd gear in the same manner. Regulate speed with throttle twistgrip.

Changing Down:

If it is found, e. g. on a gradient, that the speed is dropping considerably or if, in traffic, it is necessary to drive so slowly that the engine begins to run unsteadily, change down to second or first gear.

1. Close the throttle, i. e. turn the throttle twistgrip away from you.
2. Declutch by pulling up the clutch lever.
3. Select gear. Turn the gear twistgrip together with the clutch lever away from you to give the next lower gear.
4. Let in the clutch slowly. Release the clutch lever carefully, at the same time opening the throttle. When changing down, the clutch should be let in and the throttle opened simultaneously, so that the gearbox shafts are able to take

up the correct speed relative to each other. Correct changing down is a matter of getting the feel of the gears and this comes automatically after a few rides.

Slowing Down:

1. Close the throttle.
2. Apply the brakes.

Apply the front and rear wheel brakes uniformly. Rely mainly on the hand brake if travelling on a straight course and on a surface affording a good grip. If the road is sandy, wet or slippery, use the foot brake to give the main braking effect. Always use the brakes with due care; locked wheels can easily lead to skidding and a spill.

The throttle control and not the brakes should be used for regulating speed.

Stopping the Machine:

1. Close the throttle.
2. Declutch.
3. Apply the brakes.
4. Select neutral. With the clutch lever pulled up, turn the gear twistgrip until the mark on the grip points to 0. The clutch lever can then be released. Even when the machine is stationary the engine will continue to run steadily at idling speed.

Moving Off Again:

Declutch, engage 1st gear.

Open the throttle. Slowly release the clutch lever, at the same time opening the throttle wider so that the engine does not stall.

Downhill Riding:

On down gradients, with the throttle closed, the engine acts as a very effective brake. On fairly long slopes the throttle should be opened several times during the descent, in order to ensure that the engine gets an adequate amount of lubricant (which is mixed with the fuel). If need be, the machine can additionally be slowed down by means of the powerful SACHS brakes.

Stopping the Engine:

Close the throttle and select neutral. Switch off the ignition. If stopping for any considerable length of time, close the fuel tap.

Riding with the Engine Stopped:

Your SACHS Moped can be used at any time like an ordinary bicycle when riding with the engine stopped. To change over to ordinary pedal operation, proceed as follows:

Pull up clutch lever

Engage third gear

Pedal with the clutch lever pulled up.

Running-in:

A new engine needs to be run in for about 300 miles (500 km). Do not ride too fast during this period, and change down to second or first gear on gradients if you feel that the engine is not pulling happily on half throttle.

Fuel and Lubricants

Engine: The cylinder bore, big end and main bearings are lubricated with motor oil, which is mixed with the fuel in the ratio of 1:25 before being poured into the tank. If ready-mixed two-stroke fuel is not available at the service station, motor oil SAE 50 or 40 (SACHS Motor Oil) and petrol should be thoroughly mixed in a clean container (mixing can) and then poured into the tank.

To make tanking easier, we supply oil in tins containing $\frac{1}{6}$ pint (100 c.c.) of "SACHS Special Moped Oil" sufficient for mixing with $\frac{1}{2}$ gallon ($2\frac{1}{4}$ litres) of fuel. The advantage is that, when tanking, it is only necessary to fill up the tank with $\frac{1}{2}$ gallon of petrol and then add the contents of the tin. Preliminary mixing is unnecessary. Observe the instructions on the tin. You will earn the gratitude of your engine if you use this special oil. Apart from this any other branded oil having a viscosity equivalent to SAE 50 or 40 can be used, particularly the high-grade two-stroke oils marketed by the leading oil companies. If selfmixing oils are used, these should preferably be added to the petrol before filling the tank, particularly if the tank has been run dry.

Any well-known brand of petrol is suitable as fuel. The engine does not need premium-grade fuels of very high anti-knock rating.

Gearbox: The gearbox of the SACHS engine is filled with oil before leaving the works. When the engine is running, this oil is in constant circulation between the housing containing

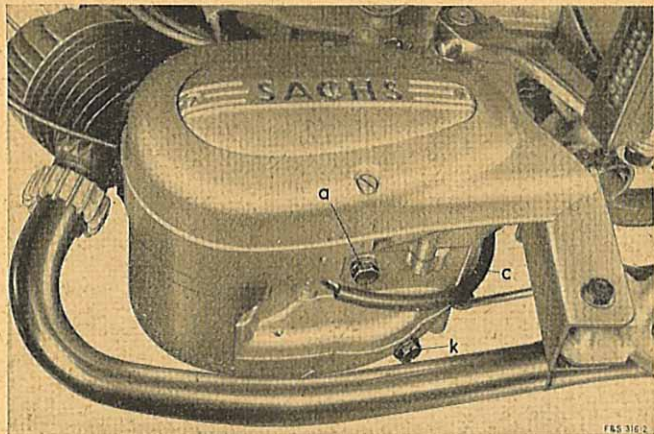


Fig. 2: Gearbox Lubrication

a = Oil drain plug

c = Lighting and short-circuiting cable

k = Oil level check plug

the gears and pedal drive, and the clutch housing. Check the oil level in the gearbox when you take possession of your new machine, and subsequently every three months. To check the oil level, let the engine run for one or two minutes, so as to distribute the oil uniformly in the clutch housing and gearbox. Then place the vehicle accurately horizontal and unscrew the oil check plug on the right on the underside of the engine. If no oil appears at this point, then it is necessary to replenish. To do this on the SACHS 50/3 with speedometer connector entails unscrewing the latter from the engine (located on the rear of the engine on the right-hand side when viewed in the forward direction). Next, unscrew the socket for the speedometer shaft from the engine block and withdraw the speedometer drive. On the SACHS 50/3 without speedometer drive an oil filler plug will be found at this point and this must be unscrewed for replenishing the oil.

Top up with gear oil until the oil begins to run out underneath at the check plug hole.

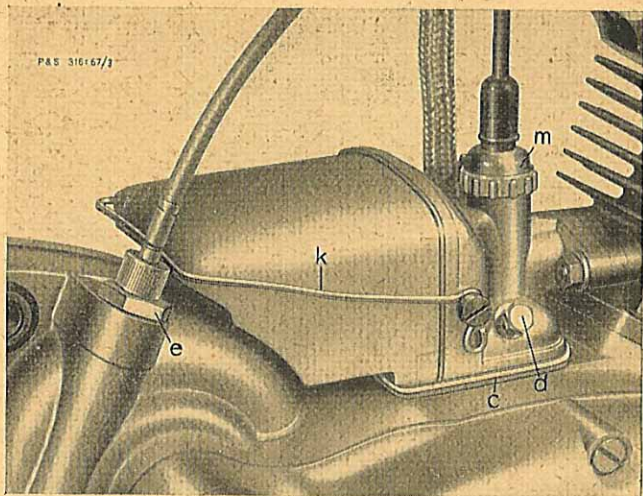


Fig. 3: Carburettor on SACHS 50/3 engine

e = speedometer drive (on unscrewing the speedometer drive, the hole serves as the oil filler hole) c = carburettor gasket d = jet
 m = cover of mixing chamber

Caution! On no account put too much oil in the gearbox, as this will inevitably cause slipping of the clutch.

So leave the oil check plug open until oil ceases to come out. The gear oil should preferably be of the type known as "SACHS Gear Oil" supplied in handy tins containing approx. $\frac{1}{3}$ pint (200 c.c.), or failing this use a gear oil of viscosity SAE 80. On no account should hypoid gear oil be used.

Although the gearbox oil may not be used up or become contaminated to any appreciable extent in use, it is nevertheless affected in course of time by atmospheric oxygen. The oil should therefore be changed once a year. Should you wish to carry out the oil change yourself, run the machine far enough to warm up the engine and gearbox thoroughly, and then remove the oil check plug and oil drain plug. The oil will then drain off completely from the gearbox. The clutch

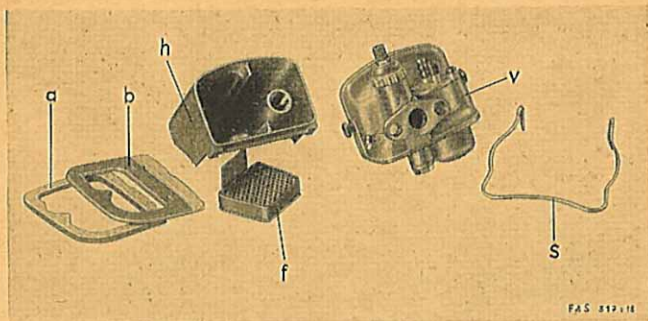


Fig. 4: Air filter in carburettor

a = cork gasket under carburettor b = intermediate plate with bonded-on special gasket
 h = filter cap f = filter element v = carburettor
 s = spring clip

housing can be emptied by raising the front wheel of the Moped until the oil check plug hole on the clutch housing takes up its lowest position. The oil drain plug is then screwed in again securely, and gear oil is poured into the gearbox through the oil filler hole until it starts to emerge at the oil check plug hole. Loosen the "S" cover on the righthand side of the engine so that the air from the gearbox can escape. Then screw in the oil filler plug and oil check plug and let the engine run for a short time. This will ensure that the gearbox walls are also thoroughly wetted with oil and that the oil is correctly distributed between the two housings, so that on re-checking the oil level a correct result will be obtained.

Rear Chain

From time to time but not later than when the chain rollers begin to appear dry and shiny, the rear chain should be lubricated with a thick motor or gear oil. It is better, however, to take off the chain, wash it in petrol or kerosine and then immerse it in warm commercial quality chain grease. The chain should be moved about in the grease periodically, so that the grease can penetrate effectively into the joints and rollers. Surplus grease must be allowed to drain from the

chain. When re-fitting the chain the spring link of the chain coupler must be so positioned that its closed end points in the direction of chain travel.

Control Cables

The control cables for the carburettor, clutch, gear actuating lever, brake and remote-operated tickler must also be lubricated from time to time. Since it is a very troublesome job to pour thin oil, e. g. motor oil diluted with petrol, from an oilcan into the gap between the cable and cable sheath, it is best to use one of the simple devices made for the purpose such as the "Magura-Ölfix". At the same time a drop of oil should be applied to the joints of the clutch and brake levers.

Maintenance

Cleaning the Air Filter

Depending on dust conditions, but usually approximately every 600 miles (1000 km), the air filter on the carburettor intake must be cleaned. If the machine is used on dusty roads, this should be done about twice as often. To clean the filter, push up the spring clip, whereupon the filter cap with the filter inside can be readily taken off. The filter element should be washed thoroughly in petrol and then dried, preferably by blowing compressed air through it. Before re-fitting, the filter element must be re-wetted with motor oil. Make sure that the carburettor gasket c (Fig. 3) fits properly, especially when replacing the filter cap h (Fig. 4).

Cleaning the Jet

For cleaning purposes, the jet screwed into the outside of the carburettor must be removed and blown out. It may also be cleaned with a paintbrush bristle. When re-fitting, do not tighten the jet excessively, otherwise the transverse holes may be closed up. The jet must on no account be cleaned with a steel wire.

Cleaning the Carburettor and Fuel Pipe

The carburettor, too, must be cleaned periodically to remove impurities which are always present in the fuel. This entails taking it off, along with the fuel pipe. The mixing chamber cover must be removed so that the throttle slide can

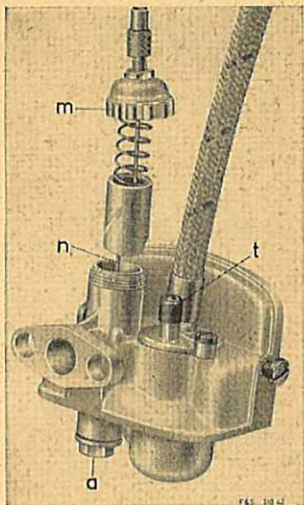


Fig. 5

- a = Mixing chamber plug
- m = Mixing chamber cover with control cable
- n = Jet needle
- t = Tickler

be lifted out. The slide, spring and cover can be left hanging on the control cable. If the screws visible on the top of the carburettor are now undone, the float chamber cover together with the fuel pipe can be detached from the carburettor. The float together with the float needle can then be removed from the float chamber in which most of the dirt collects. Sludge also settles in the mixing chamber plug on the underside of the carburettor. When re-assembling, the throttle slide must not be oiled. If the fuel pipe is taken down for cleaning or blowing, out, the fuel tap should be unscrewed from the tank at the same time so that the gauze strainers in the tap, which are then accessible, can also be cleaned. When screwing the carburettor on to the cylinder, make sure that carburettor gasket c (Fig. 3) fits properly, because "false" air entering at this point will impair the performance.

Decarbonising

Every engine burns part of its lubricating oil to form carbon which adheres to all surfaces in contact with the combustion flame or exhaust gases. In a two-stroke engine, therefore, the parts concerned are the piston, cylinder head, exhaust port, exhaust pipe and silencer. Decarbonising of these parts must be carried out periodically, and must be performed without delay if the engine loses power or shows a tendency to four-

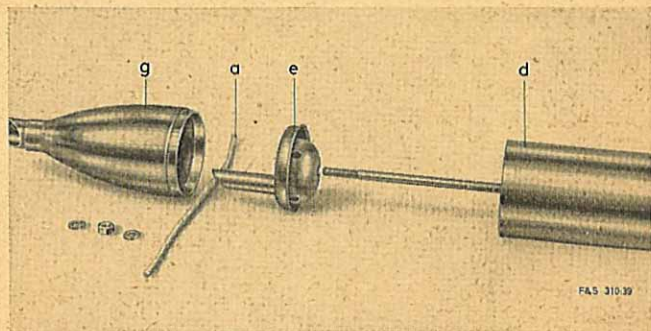
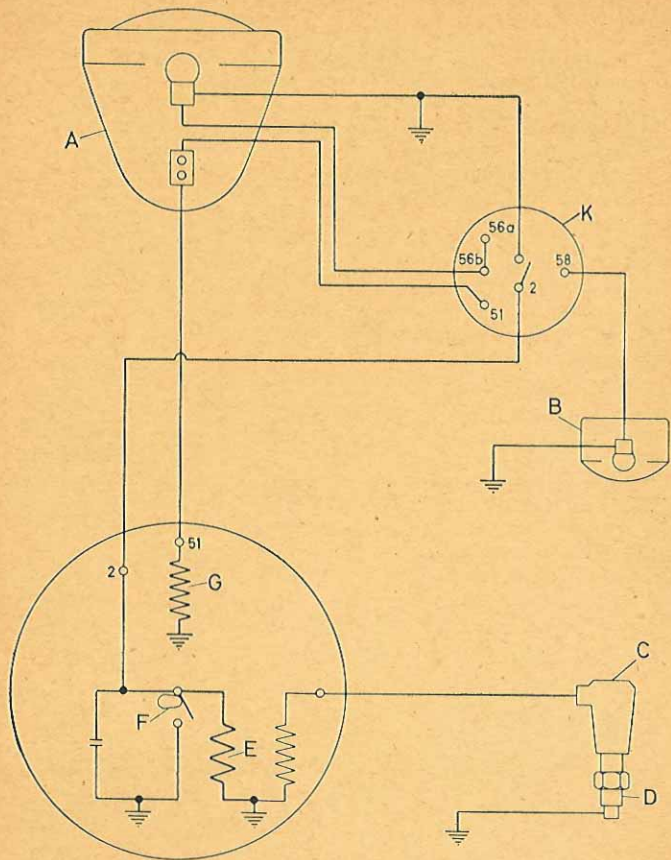


Fig. 6: Dismantling the Silencer

a = Asbestos gasket
e = Silencer element

d = Silencer shell
g = Silencer cap



F&S 310-41

Fig. 7: Wiring Diagram of Lighting and Ignition System

A = Headlamp B = Tail lamp C = H.T. connector D = Sparking plug
 E = Ignition coil G = Lighting coil F = Contact breaker
 K = Lighting and short-circuiting switch

stroke in spite of correct carburettor settings. Decarbonising is usually necessary after every 2500 miles (4000 km).

To remove the carbon from the **combustion chamber** it is necessary to unscrew the cylinder head. The carbon can then be scraped out of the cylinder head, using a tool which should not be too sharp, e.g. a screwdriver. The cylinder head can be cleaned up to give a bright metallic finish. When dealing with the piston, however, only the burnt brown flakes should be removed from the crown, preferably by wire-brushing.

To clean the **exhaust port**, take off the exhaust pipe and position the piston at B. D. C. The port can then be cleaned conveniently from the outside. Any carbon which has dropped on to the piston should be blown out.

The **exhaust pipe** can only be cleaned in a workshop equipped with special brushes. A little carbon here does no harm. On the other hand, the smaller apertures in the silencer may become heavily clogged in course of time. To dismantle the silencer, unscrew the nut on its rear end.

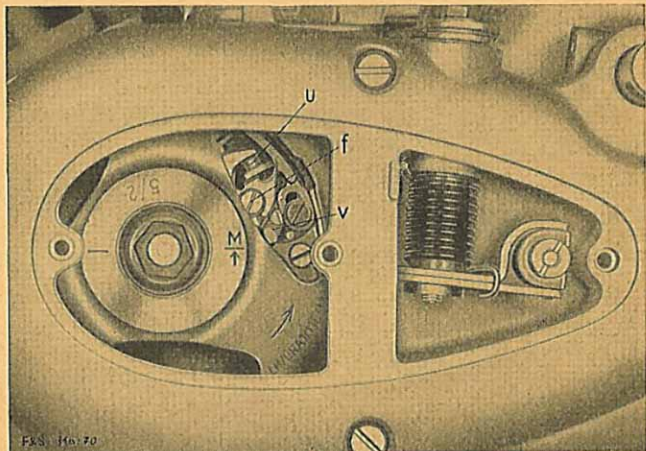


Fig. 8:

Flywheel dynamo-magneto, crankcase cover removed, anti-clockwise rotation
u = contact breaker points f = locking screw v = adjusting groove

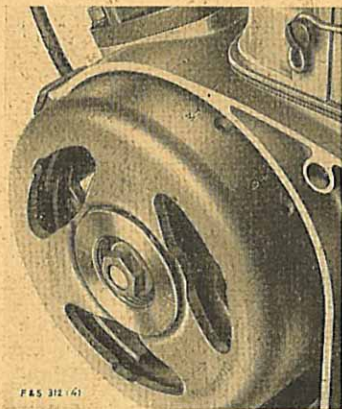


Fig. 9: Marks on the flywheel, side cover removed

O = T. D. C.

M = ignition timing

The carbon should then be burnt out of the **silencer insert** by heating it to red-heat in a forge, or by applying a welding torch. This is also a job which is best left to a workshop. On no account should the apertures in the silencer be altered in any way; any such interference may increase the exhaust noise and seriously affect engine performance.

Maintenance of Electrical System

A flywheel dynamo-magneto provides both an H. T. supply for ignition as well as a 6 volt A. C. supply for lighting purposes. The headlamp is fitted with a 6 volt 15 watt headlamp bulb and the tail lamp takes a 6 volt 2 watt bulb.

In addition to the H. T. cable, two further cables lead out of the dynamo-magneto to the headlamp, a yellow one for the lighting current connecting to the switch in the headlamp and a black short-circuiting cable leading to the ignition switch or ignition push button. Trouble may be experienced with the lighting system if bulbs or wiring become defective. Make sure that the terminal screws for the various connections in the headlamp are tightened securely.

Before refitting the left-hand crankcase cover — if it has been removed — any sealing compound adhering to it should be

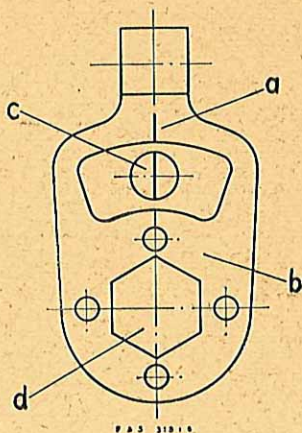


Fig. 10: Lever plate for adjustment of gear selector mechanism

- a = Notch
- b = lever plate
- c = stop pin
- d = hexagon head screw

removed, and fresh compound should then be applied to the meeting surfaces.

Checking the Ignition System

If, when trouble occurs, a fault in the ignition system or sparking plug is suspected, the strength of the spark can easily be tested. When the engine is turned by hand, e. g. using the pedal crank, the length of the spark formed in the open air between the end of the H. T. cable (remove the plug connector) and some part of the engine, e. g. the cylinder, must be at least $5/32$ in. (4 mm). If this is so, the ignition system itself is working satisfactorily. The plug can be tested for serious defects by unscrewing it, clipping on the H. T. cable and earthing the plug body, i. e. by holding it against some part of the engine such as the cylinder or cylinder head. By turning the crank again a vigorous spark should now jump across the electrodes.

Checking the Ignition Timing

The ignition timing should preferably be checked at the end of the running-in period and then approximately every 3000 miles (5000 km). To check the timing, remove the left-hand crankcase cover bearing the name "SACHS" (by taking out

three screws). The flywheel is now visible, and beneath it are the contact breaker points, which are conveniently accessible through large openings.

The ignition timing can be checked by turning the flywheel in the direction of rotation until the contact breaker points are just beginning to open. The precise instant when this occurs can be determined by eye on turning the flywheel to and fro; if in doubt, insert a thin piece of tinfoil, about 0.03 mm thick, between the points: when the points begin to separate, the tinfoil can be pulled out with ease. If at that instant the marks on either side of the hub are in line with the holes of the screws securing the crankcase cover bearing the name "SACHS", i. e., horizontal — though differences of up to 0.08 in. (2 mm) are permissible —, then the contact breaker point gap will be 0.016 ± 0.002 in. (0.4 ± 0.005 mm), the spark advance will be 0.08 — 0.10 in. (2 — 2.5 mm), and the pole separation will be 0.24 — 0.44 in. (6 — 11 mm), i. e., these values will all be correct (Fig. 8).

If the mark "M" on the flywheel, at the instant when the contact breaker points are beginning to open, is displaced more than 0.08 in. (2 mm) in relation to the centremost tapped hole for the screws securing the "SACHS" cover, then the ignition timing will have to be adjusted. This should preferably be done by a SACHS or Bosch service station.

Any work on the flywheel dynamo-magneto that involves removal of the flywheel from the crankshaft should be entrusted to a competent workshop, preferably a SACHS or Bosch service station. For removing the flywheel it is essential to use the extractor 0277 075 005 and the crankshaft protecting cap 0277 070 000.

For basic adjustment of the ignition timing, the left-hand crankcase cover must be taken off. The marks "O" and "M" on the flywheel will then be visible (Fig. 9). As this also involves re-adjustment of the gear selector mechanism, this work should be carried out only by a SACHS service station.

Sparking Plug

Apart from the contact breaker points, the sparking plug is the only part subject to wear and tear. In a new plug the spark gap is 0.016 — 0.020 in. (0.4 — 0.5 mm), but this distance gradually increases as a result of burning away. If it exceeds 0.032 in. (0.8 mm), the outer (or "earth") electrodes should be

bent towards the central electrode by an appropriate amount so as to restore the gap to its original width of 0.016 in. (0.4 mm). Bending the electrodes can be done with a suitable tool or by gentle tapping.

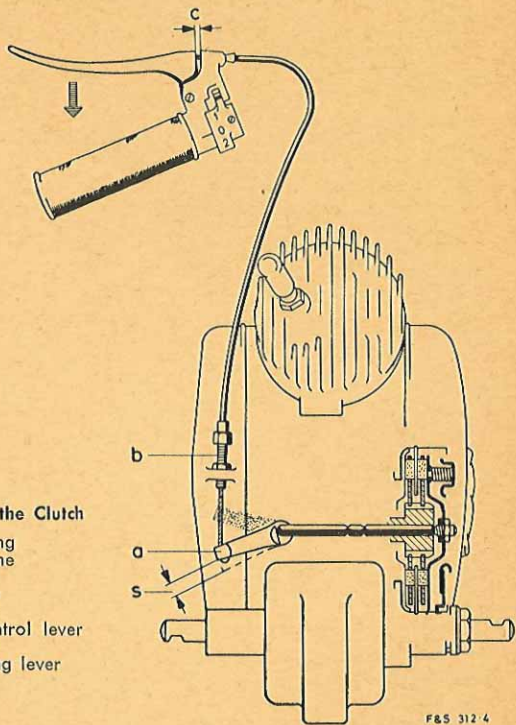


Fig. 11: Adjusting the Clutch

- a = Clutch actuating lever on engine
- b = Control cable adjuster screw
- c = Free travel at handlebar control lever
- s = Free travel at clutch actuating lever

F&S 312 4

Adjusting the Gear Selector

The gear actuating lever on the engine — the small lever on the top of the gearbox on the left-hand side — is operated via a control cable from the gear twistgrip on the handlebar.

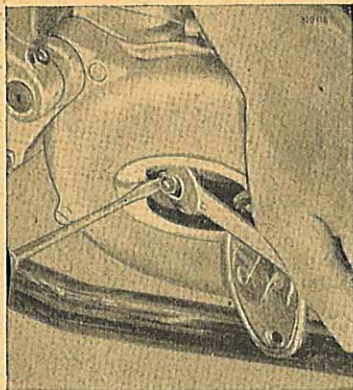


Fig. 12: Adjusting the clutch

The gearbox incorporates a spring which always tends to rotate the gear actuating lever into the position giving third gear. Thus, even if the control cable is damaged it is always possible to ride in third gear. To ensure that the projection on the clutch grip drops into the grooves of the gear locking catch on the gear twistgrip and that the marks on the gear position indicator are correct, the control cable from the twistgrip to the gearbox must be correctly adjusted. The control cable adjuster screw on the gear twistgrip is used for this purpose. The control cable is correctly adjusted if the groove punched in the gear actuating lever on the gearbox lines up with the slot in the stop pin for the gear actuating lever when the twistgrip is set to the mark "2".

A point to note most carefully is that the gear actuating lever — which is secured to the gearbox shaft by a hex-head screw — should on no account be taken off (nor should the screw even be slackened!) otherwise the setting of the selector mechanism will be altered. Any work of this kind should be entrusted only to authorized SACHS workshops.

About every 2000 miles (3000 km) the "SACHS" cover on the left-hand side of the engine should be taken off and the gear operating mechanism underneath lubricated with high temperature bearing grease.

Adjusting the Clutch

The clutch in the SACHS 50 must, on the one hand, transmit the full engine output power. On the other hand, when stopping or changing gear, it must also completely disconnect the engine from the gearbox. In addition, it has to reconcile considerable differences of speed when the machine is started from rest. It will always perform these duties reliably if it is properly adjusted and if the slight amount of normal wear which occurs is promptly taken up. The following is the procedure for correct adjustment:

1. Detach the cable from the clutch actuating lever on the top of the gearbox on the left-hand side and check whether the end of the lever can be moved approx. 0.4 in. (10 mm). If not, then proceed as indicated in point 4.
2. With the engine cold, set the adjusting screw on the clutch control cable to give a free travel of 0.04—0.1 in. (1—3 mm) at the clutch control lever on the handlebars.
3. As the friction plates wear, the free travel at the handlebar control lever decreases. The necessary amount of free travel can be restored by screwing in the cable adjuster screw.
4. When it is no longer possible to screw in the cable adjuster any farther, the "S" cover on the right-hand side of the housing should be taken off. The inner clutch adjusting screw together with the lock nut will then be accessible. After slackening the lock nut, the inner adjusting screw should be turned until the free travel, specified for the clutch actuating lever in point 1 above, has been restored.

Now refit the clutch control cable and adjust the free travel at the clutch control lever on the handlebars to 0.04—0.1 in. (1—3 mm). If this cannot be done, then the cable will have to be cut to the right length.

Tuning the Carburettor

Steady, slow idling which does not alter even when the machine is stopped for a fairly long time, e. g. at a crossing, always speaks well for both machine and rider. This idling can be achieved with the SACHS 50 if care is taken in setting the adjusting screw on the carburettor control cable. The adjustment should be made when the engine is thoroughly warmed up, since a warm engine will run too quickly if the idling adjustment is made when the engine is cold. Make sure

also that steering movements of the handlebars do not affect the idling speed. If any such movements do have this effect, the control cable from the handlebars to the carburettor is too short or not correctly routed.

The main jet with which the carburettor is equipped (see page 2) need not be changed under any operating conditions, not even during the running-in period.

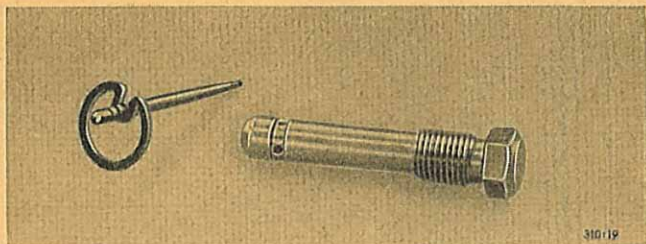


Fig. 13: Jet and Jet Needle with Clip

Fuel Consumption

The fuel consumption of the engine is not a factor which remains fixed for all time. Just like appetite in a human being, the fuel consumption of an I. C. engine depends primarily on the amount of work it is required to perform. The close relationship between fuel consumption and the speed at which the machine is ridden is shown in Fig. 14. Slight differences in the fuel consumption figures of individual engines are bound to occur despite the high-precision methods used in their manufacture and it is for this reason that the graph shows two curves. Under normal riding conditions, that is to say, on smooth and reasonably level roads with not more than a light breeze blowing and without too much stopping and re-starting, the fuel consumption should lie within the shaded area of the graph. If the rider is considerably heavier than assumed in the graph, or if the machine is operated mainly in hilly districts requiring the use of 2nd or 1st gear for long stretches, there is a likelihood that the consumption figures will be somewhat higher than indicated.

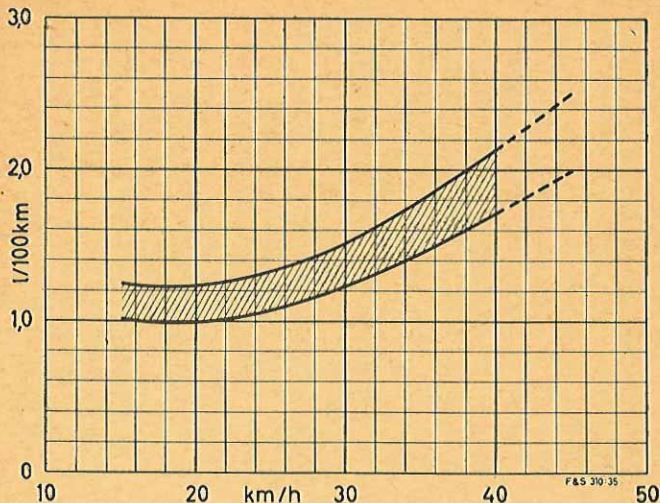


Fig. 14: Fuel Consumption Figures shown in relation to Road Speed.
Weight of Rider 165 lbs. (75 kg)

1 km/h = 0.62 m. p. h. 1 litre = 0.22 gallon (British)
1 l/100 km = 0.35 gallon/100 miles

Hubs and Hub Maintenance

SACHS Moped hubs have robustly designed brakes with a drum diameter of $3\frac{1}{2}$ inches and thus conform to official regulations.

Even on long downhill runs the brakes maintain their high efficiency and ample reserve of braking power due to careful selection of the heat-resistant material used for the linings. All models are fitted with adjustable cup-and-cone type bearings. When carrying out any adjustment always make sure that the bearings are not over-tightened. After tightening the cone locking nut, make a check to see that the wheel still spins freely. When mounted in the machine the wheel should have a slight amount of lateral play.

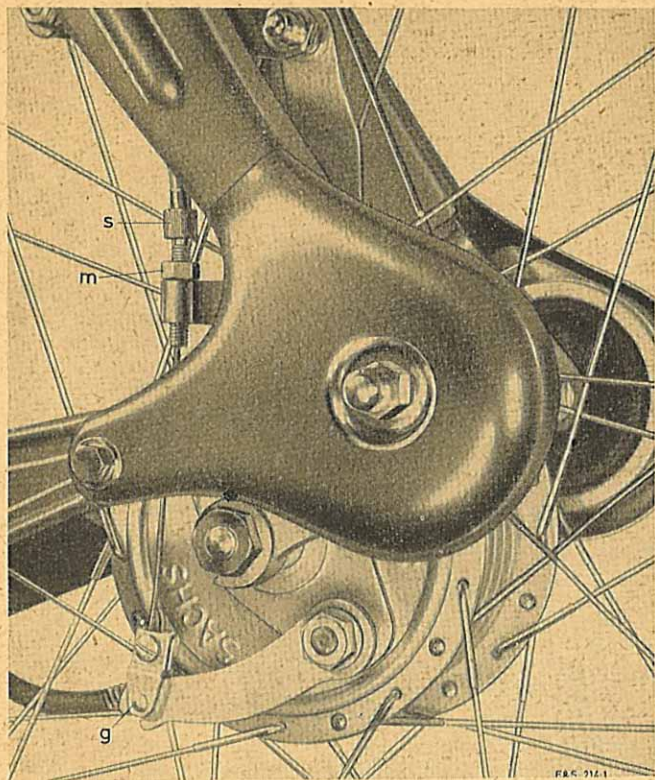


Fig. 15:

g = Fork end

m = Lock nut

s = Adjuster screw

On Mopeds with totally enclosed chaincase the brake hub unit is used in conjunction with a knock-out hub spindle. In this case take care to see that any necessary readjustment of chain tension is made equally on each side after slackening the spindle retaining nuts (by using the 22 mm. spanner). The

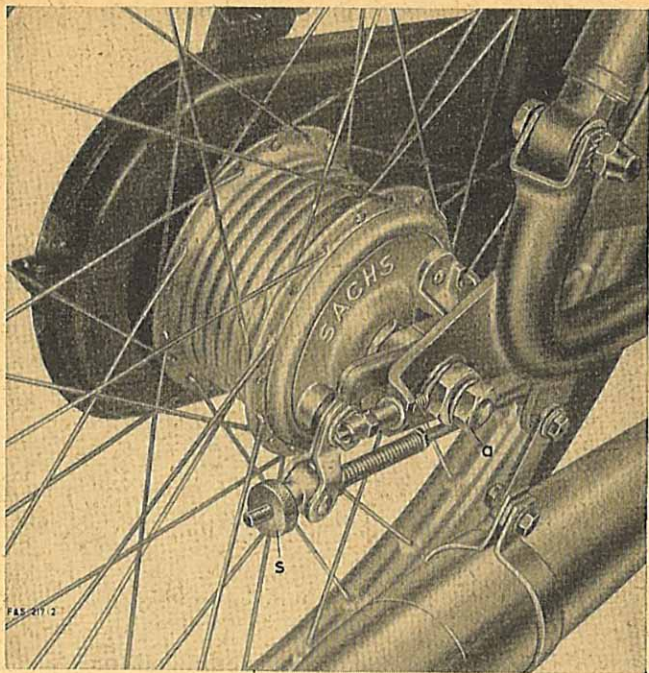


Fig. 16:

a = Spindle nut s = Adjuster nut

hub spindle remains in position while doing this. Then check that the spindle can be readily withdrawn and refitted — if necessary by adjusting the chain tensioners accordingly. To remove the wheel (see Fig. 17), first disconnect brake rod f from brake lever h, remove spindle nut a plus washer u and pull out spindle c. Brake backplate holder b can now be withdrawn to the rear. By turning the brake backplate until the brake lever is pointing upwards and the brake retainers are no longer opposite each other it is now

possible to disengage the wheel from the coupling by pulling the wheel sideways to the right where-upon it can be withdrawn clear of the rear fork by tilting the machine. When reassembling, always insert the hub spindle from the sprocket side so that the wheel with its four rubber dampers — accurately positioned by the spindle — can then be readily engaged with the companion coupling on the sprocket. When inserting the brake backplate holder, make sure that it engages the lugs on the backplate and on the frame respectively, and it is then held in position by pushing the spindle right through.

Lubrication: Any high-grade anti-friction bearing grease can be used for lubricating the bearings. Renewal of the bearing grease is recommended after about 3000—6000 miles (5000—10 000 km) have been covered. This entails dismantling the axle assembly and cleaning the cones and cups with petrol. When reassembling the bearing cups should be packed with anti-friction bearing grease, and the balls ($\frac{1}{4}$ in.) — which must be cleaned beforehand — should then be embedded in the grease. Any balls having a dull appearance should be replaced by new ones — and not by ordinary bicycle balls but by Grade II anti-friction bearing balls (Part No. 323 600). Grease of very soft consistency is unsuitable and should not be used. When pushing the hub spindle through and screwing up the adjuster cone — with the wheel laid horizontal for this purpose — it must particularly be ensured that none of the balls is pushed into the hub shell, otherwise the bearings and the hub itself will certainly be ruined very quickly.

Braking Action

The front wheel can apply a considerably greater braking effort than the rear wheel, since the total weight shifts forward when braking. Care is necessary, however, when braking on a loose or slippery surface otherwise there is danger of skidding. As a general rule both brakes should be applied together with due care, but avoid applying them too fiercely since this may cause a spill.

Intensified Brake Action

Like all automotive brakes, Moped brakes are liable to suffer from "morning sickness". By this is meant a suddenly increased intensity in the braking action which occurs after the brakes have been out of use for some time (e. g. after the

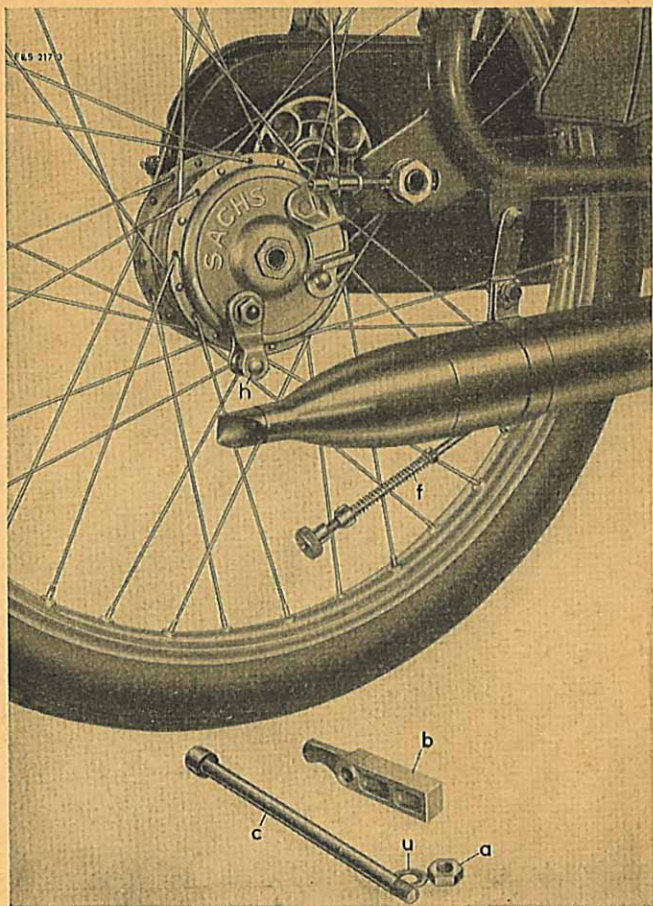


Fig. 17:

a = Spindle nut b = Brake backplate holder c = Hub spindle
 f = Brake rod h = Brake lever u = washer

machine has stood idle overnight). This effect is due to atmospheric moisture or water which leads to the formation of corrosion and rust on the brake linings and in the brake drum.

Remedy:

When starting off on a ride always make it a rule to apply the brakes — cautiously at first and then with more power — against the pull of the engine. This will wear off the film of rust after the machine has covered 30 to 50 yards and the brakes will then work perfectly again.

Poor Brake Action

Remedy:

Adjust the control cable or linkage. If the brake linings are oiled up, fit new ones; even the slightest trace of oil will cause a loss of brake power. Never on any account touch surfaces of 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 these troubles are most likely to occur after riding in the rain, hosing the machine down, or washing it with petrol, kerosine, etc. Brake noise may also occur if the brakes are continually applied only lightly, since this has the effect of polishing the braking surfaces of the linings instead of constantly renewing the surface texture.

Remedy:

Noise due to brake operation can usually be overcome by braking cautiously but vigorously against the engine while the machine is in motion. The same cure is also effective when riding in rainy weather, and after cleaning the machine. (Do not spray water on the hubs!) Any water which has found its way into the brakes will be evaporated and the brake surfaces will be cleaned by the abrasive action set up by applying the brakes.

Other Remedies:

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

Fit new linings; before doing so, rub inside of brake drum with emery cloth.

Change brake shoes as complete units if linings are bonded on.

Change any linings found to be oiled-up or greasy; before fitting new linings remove all traces of grease from brake drum and rub with emery cloth.

Tests carried out by us have shown that all other methods, such as chamfering off the linings, slotting the linings, fitting bands around the drum and reinforcing the backplates and brake shoes, fail to yield any definite improvement. Constant experimental work is, however, being conducted by us with the object of finding the complete answer to the problem of suppressing all brake noise.

Fitting New Brake Linings

When brake linings are due for renewal, always use the make supplied by us. If the linings are bonded on — i. e. not riveted — it is necessary to change the complete brake shoe unit. Any attempt to bond new linings on to the brake shoes is bound to fail and should not be tried.

Troubles and Their Remedies

Engine will not start

Cause :

Fuel tap shut
Tickler has not been used

No fuel in tank
Jet blocked

Fuel pipe blocked

H. T. cable detached or
damaged

Spark plug sooted up,
bridged or defective

Earth fault in short-circuiting
cable or push button sticking

Spark too weak

Remedy :

Open tap
Press tickler on carburettor
down for 6 seconds

Fill up
Unscrew jet and clean by
blowing out

Clean fuel pipe, tap and
strainer in tap filter

Clip plug on again or renew
cable

Remove and clean the
spark plug, or fit a new
plug

Check and repair short-cir-
cuiting cable and push
button

Bend in sparking plug elec-
trodes temporarily to 0.012
in. (0.3 mm); have ignition
system checked

Engine starts, but soon stops

Cause :

Blocked air hole in tank filler
cap

Fuel pipe blocked

Spark plug electrodes
bridged

Remedy :

Loosen or remove filler cap.
Clear the vent. If necessary,
drill extra air holes.

Clean fuel pipe, tap and
strainer in tap filter

Clean the sparking plug or
fit a new one

Engine power dwindles, or engine stops

Cause :	Remedy :
No fuel in tank	Fill up
Jet blocked	Clear the jet
Fuel pipe blocked	Clean fuel pipe, tap and strainer in tap filter
Blocked air hole in tank filler cap	Loosen or remove the filler cap. Clear the vent. If necessary, drill extra air holes
Exhaust system blocked with oil carbon	Clean the exhaust port and silencer
Air filter blocked	Clean the filter
Piston sticking due to residue formed by unsuitable oil	Use SACHS Special Motor Oil or branded oils having a viscosity of SAE 50 or 40

Irregular running

Cause :	Remedy :
H.T. cable loose or damaged	Fix cable, or renew
Sparking plug sooted up, bridged or defective	Replace sparking plug, or clean
Ignition system defective	Have ignition system checked in a specialist workshop
Carburettor gasket under carburettor body is displaced	Check that the gasket fits properly; renew it, if necessary

Engine four-strokes and pulls badly

Cause :	Remedy :
Carburettor flooding owing to dirt on float needle seating	Use tickler vigorously, or clean
Float needle and seating in float chamber cover worn	Renew float needle and float chamber cover

Float leaking
Jet loose in carburettor
Exhaust system and cylinder
ports blocked

Fit new float
Tighten jet
Decarbonise exhaust port
and silencer casing

Engine will not pull

Cause :

Jet blocked
Fuel supply inadequate owing
to dirty fuel pipe
Carburettor dirty

Clutch slipping

Carburettor gasket c (Fig. 3)
damaged

Remedy :

Clean the jet
Clean fuel pipe, tap and
strainer in tap filter
Clean float chamber, jet and
mixing chamber plug
Check setting of clutch and
clutch control cable. Renew
the inner plates if necessary
Renew gasket; make sure it
fits properly

Engine backfires with blow-back in carburettor

Cause :

Sparking plug incandescent,
owing to wrong heat value
Sparking plug electrodes or
insulator bridged
Engine receiving too little
fuel

Remedy :

Use sparking plug with spe-
cified heat value
Clean or replace sparking
plug
Check and clean fuel pipe,
air vent in tank filler cap
and carburettor

Engine cannot be started because clutch slips

Cause :

Wrong clutch setting

Remedy :

Check setting, make sure
there is adequate free
travel and that control
cable works easily

Too much, or too viscous oil
in gearbox

Check gearbox oil level. Use
SACHS Gear Oil or other
branded gear oil of SAE 80
viscosity

Excessive fuel consumption

Cause :

Leak in tank, fuel pipe or
carburettor

Fuel level in carburettor too
high

Needle and needle jet
seriously worn after long
service

Remedy :

Check and repair

Carburettor must not over-
flow when machine is
standing still. Check float,
float needle and seating

Fit new jet needle and needle
jet

Engine will not stop when ignition is switched off

Cause :

Ignition switch defective or
short-circuiting cable
broken

Remedy :

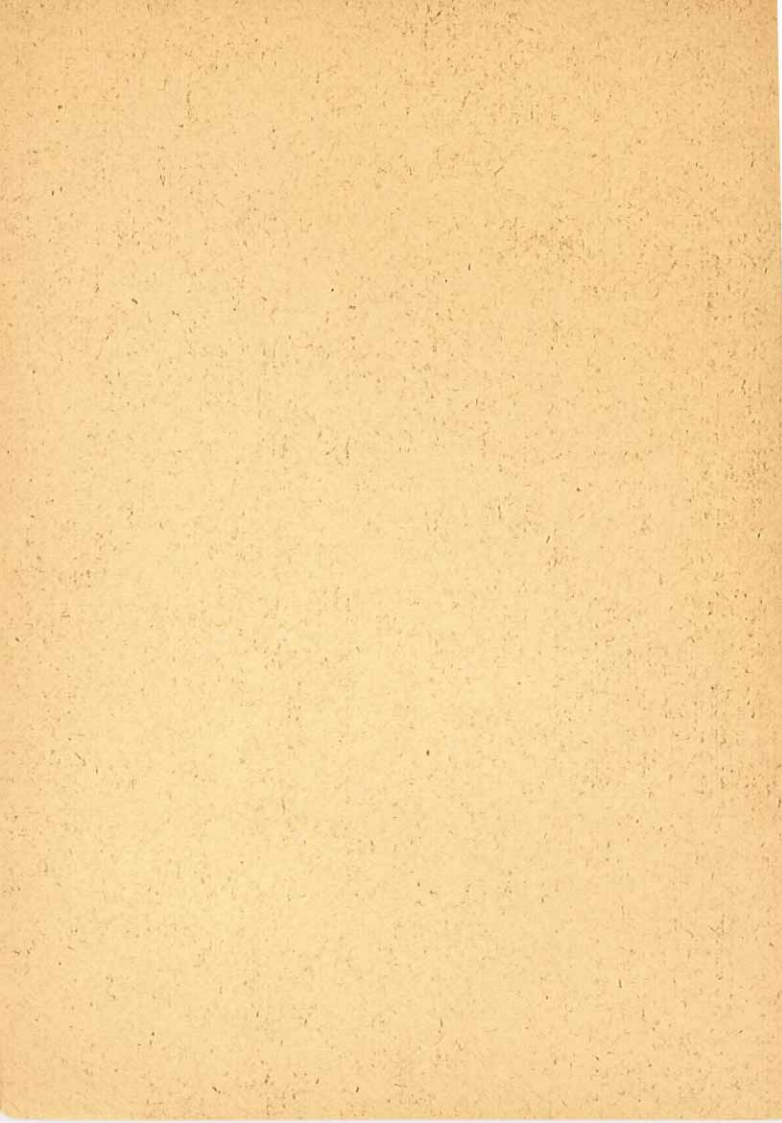
Have it put right; in the
meantime, stop the engine
by detaching cable from
sparking plug

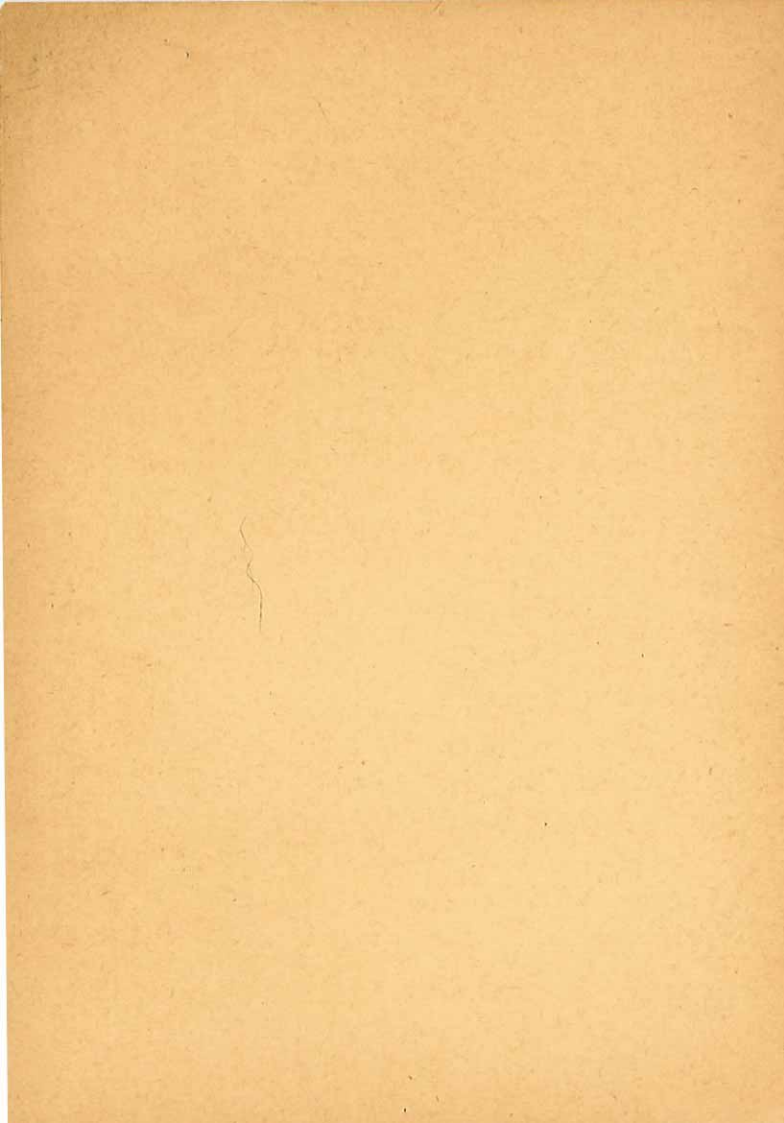
Spare Parts und Repairs

The SACHS 50 is such a light-weight and finely constructed engine that any repairs that may have to be done to it require a certain lightness of touch. You should therefore have all work on your SACHS carried out by a workshop displaying the sign



Here, you can be sure that any necessary repairs or adjustments will be effected by skilled mechanics who have been trained at the Schweinfurt works. Here, too, all genuine spares are either in stock or readily obtainable, and you will be able to obtain reconditioned parts: worn or defective cylinders, crankshafts engines can be traded in, and in return you will receive, at moderate prices, replacements which have been fully reconditioned at the Schweinfurt works. In special cases repairs to SACHS engines may be undertaken by the Schweinfurt works, but in such cases the engine should always be sent to the works through a dealer.





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