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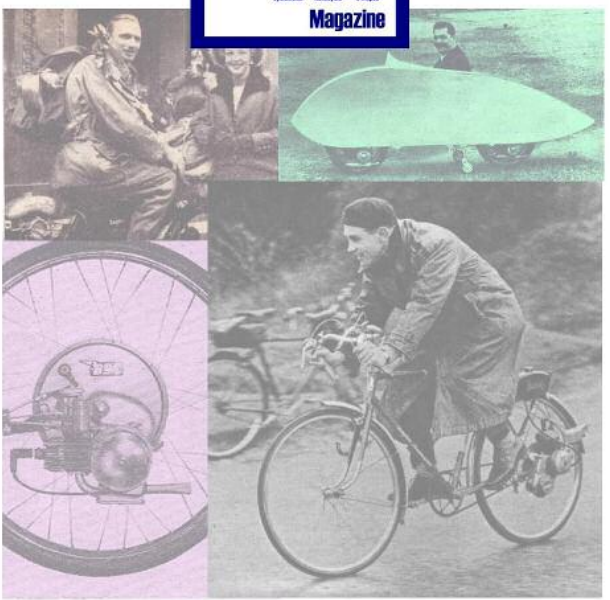
The Iceni CAM Magazine



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SACHS 50
HANDBOOK

Contents

Specification

Type:	Air-cooled, single-cylinder 2-stroke engine
Scavenging principle:	Loop scavenging, Schnürle system
Bore:	1.496 in. (38 mm)
Stroke:	1.653 in. (42 mm)
Capacity:	47 c.c.
Compression ratio:	6:1
Ignition system:	Flywheel magneto-dynamo Bosch LM/UR/1/115/17 L 15
Dynamo output for lights:	6 V 17 watts A.C.
Sparking plug:	Bosch W 190 M 11 S
Timing advanced:	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: (standard)	Main jet 56, needle jet 1517 needle position 2nd groove from top throttle slide no. 3
Setting for export model and model with ventilator:	Main jet 62, needle jet 1517 needle position 3rd groove from top throttle slide no. 3
Silencer:	Demountable
Clutch:	2-plate type
Gearbox:	2-speed integral with engine
Gear selection:	Twistgrip on handlebar
Gearbox ratios:	1st gear 2.78; 2nd gear 1.62
Transmission to rear wheel:	Roller chain $\frac{1}{2}$x$\frac{3}{16}$", 0.307 in. (7.8 mm) roller diameter
Drive sprocket:	12 teeth for 23" tyres
Rear wheel sprocket:	28 teeth for 23" tyres
Lubrication:	Engine: petroil lubrication 1:25 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. A bench test is followed up by a road test. 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 past the gear actuating lever while running.

Filling the Tank: Two-stroke mixture 1:25

25 parts of ordinary branded petrol are thoroughly mixed in a special container with 1 part of motor oil of viscosity SAE 50 or 40, preferably SACHS Motor Oil. Thus 1/6 pint (100 c.c.) of oil are used for every ½ gallon (2¼ litres) of petrol.

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 loking the gear twistgrip is released and the grip together with the clutch lever can then be swung up and down for selection of the desired gear or neutral as the case may be.

Hand Brake Lever mounted on the right handlebar and acting on the front wheel.

Clutch Lever. On pulling this lever the clutch disconnects the flow of power from the engine to the gearbox and rear wheel.

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

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

Fuel Tap on tank.

Remote-operated Tickler or tickler on carburettor.

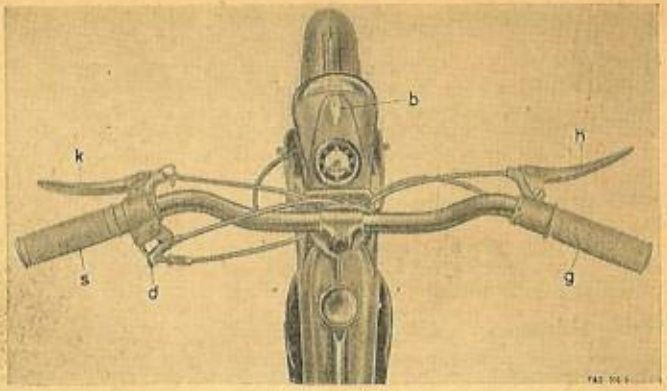

Fig. 1: **Controls**

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 applied in order to start 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 twistgrip 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 twistgrip slowly.
If the engine has still not started after covering about 30 ft. (10 m), blip 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 twistgrip closed.
Shift 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 twistgrip.

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 in 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 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.
   Pull on 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.
   Clearly, it is the throttle control and not the brakes which 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:

If the road affords a clear view and is not too steep, it is possible by selecting neutral to coast downhill almost noiselessly. The powerful SACHS brakes can always be relied upon to bring the machine to a standstill promptly, even from high speeds. It is best to leave the engine running while in neutral, so that there is no difficulty in re-engaging gear at the end of the gradient. Then, when selecting gear, open the throttle so that the engine speed can match that of the gearbox.

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 gear
Pedal with the clutch lever pulled up.

Running-in:
A new engine needs to 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 special container (mixing can) and then poured into the tank.
To make tanking easier, we have brought out an oil ampoule containing 1/6 pint (100 c.c.) of "SACHS Special Moped Oil" sufficient for mixing with ½ gallon (2¼ litres) of fuel. The advantage is that, when tanking, it is only necessary to fill up the tank with ½ gallon of petrol and then add the contents of the ampoule. Preliminary mixing is unnecessary. Observe the instructions on the ampoule. You will earn the gratitude of your engine if you use this special oil. Apart from this any other brand-name oil having a viscosity equivalent to SAE 50 or 40 can be used in conjunction with the high-grade two-stroke oils marketed by the leading oil companies. If self-mixing 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.

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 the gears and pedal drive, and the clutch housing. Check the

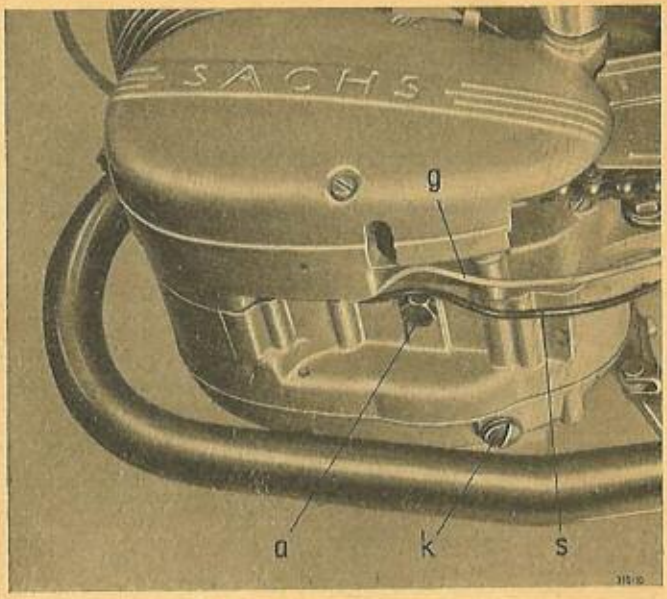

Fig. 2: **Gearbox Lubrication**
a = Oil drain plug g = Lighting cable k = Oil check plug
s = Short circuiting cable

oil level in the gearbox when you take over your new machine, and subsequently every three months. To do this, the oil check plug situated on the right on the underside of the engine should be screwed out. If oil runs out here, this indicates that sufficient oil is present. If no oil appears, top up without delay. 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 at 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 to permit topping up the oil.
Top up with gear oil until the oil begins to run out underneath at the check plug hole. The gear oil should preferably be of the type known as "SACHS Gear Oil" supplied in handy tins containing approx. ⅓ 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 undergo loss or become contaminated to any appreciable extent in use, it is nevertheless affected in the 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 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 right-hand 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 also are 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 can be obtained.

Rear Chain

From time to time, at the latest 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 chain grease of the normal type. The chain should be moved about in the grease periodically, so that the grease can penetrate effectively into the joints and rollers. Surplus lubricant must be allowed to drain from the chain on removing from the grease. 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.

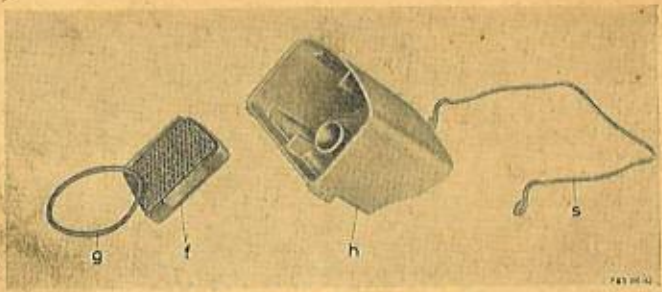

Fig. 3: **Air Filter in Carburettor**
g = Gasket ring f = Filter element h = Filter cap s = Spring clip

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 gadgets made for the purpose. 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. To do this, 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.

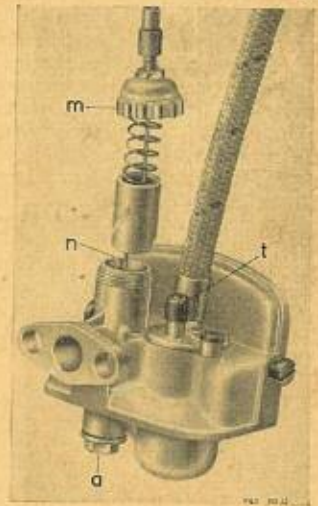

Fig. 4
a = Mixing chamber plug
m = Mixing chamber cover with control cable
n = Jet needle
t = Tickler

Cleaning the Jet

For cleaning purposes, the jet screwed in to 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 overtighten the jet, otherwise the transverse holes may be closed up under the excessive pressure.

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 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 taken out, 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 n o t 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.

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-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

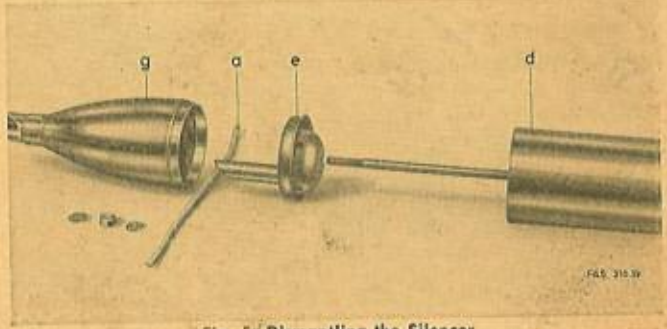

Fig. 51 **Dismantling the Silencer**
a = Asbestos gasket
d = Silencer shell
e = Silencer element
g = Silencer cap

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 outside. Any carbon which has dropped on to the piston will 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 the course of time. To dismantle the silencer, unscrew the nut on its rear end.
The carbon should then be burnt out of the silencer element 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 THE ELECTRICAL SYSTEM

A flywheel magneto-dynamo provides both an H. T. supply for ignition as well as a 6 volt A. C. supply for lighting purposes.
If a 17 watt lighting coil is fitted the current delivered is sufficient for a 6 volt 15/15 watt Bilux bulb and a 6 volt 2 watt tail light.
In addition to the H. T. cable, two further cables lead out of the magneto-dynamo 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

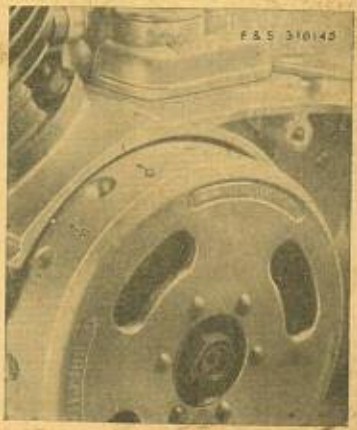

Fig. 6: **Marks on the flywheel**
M = Timing mark
O = T. D. C.

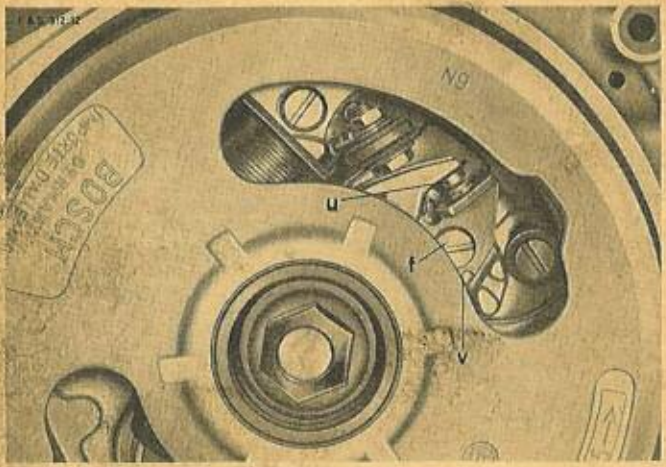

Fig. 7: **Adjustment of the SACHS 50 Contact Breaker**
f = Clamping screw u = Breaker contacts v = Adjusting slot of fixed contact

the lighting system if bulbs or wiring become defective. Make sure that the therminal screws for the various connections in the headlamp are tightened securely. If the tail lamp bulbs burns out prematurely and the headlamp has a dip switch, always ensure that at the instant of operating the dip switch the main beam and dipped beam filaments burn simultaneously. If this is not the case, the tail lamp bulb will inevitably burn out. The only attention required by the magneto-dynamo is a check on the contact breaker gap approximately every 3000 miles (5000 km). Remove the left-hand crank and take out the two cheese head screws on the left-hand side of the housing so that it is possible to remove the cover below which are situated the magneto flywheel and the driving sprocket. The magneto flywheel has large openings affording easy access to the breaker contacts. To check the gap, turn the flywheel in the normal direction of rotation until the breaker contacts just begin to separate. The contact breaker gap and the engine timing are correct if at this instant the mark "M"

coincides with a line scribed on the housing. The piston is then in the firing position. If at this moment the marks are more than approx 0.078—0.098 in. (2—2.5 mm) apart, the contact breaker gap needs adjustment. If on rotating the engine in the normal direction the mark "M" has not reached the mark on the housing, the gap between the contacts must be reduced, otherwise it must be increased. To do this, the screw which secures the anchor plate, i. e. the fixed breaker contact, to the baseplate must be slackened.
With the aid of a screwdriver, which should be inserted between the recess on the anchor plate and two small pins on the base-plate, the contact breaker gap can then be accurately adjusted. Finally, the clamping screw must be securely retightened and the adjustment checked again.
Any work on the flywheel magneto-dynamo which entails removal of the flywheel from the crankshaft should be entrusted to a competent workshop — and preferably to a SACHS or Bosch service station. For withdrawing the flywheel, extractor 277 750 and cop 277 700 are absolutely essential.
Apart from contact breaker contacts, the only other component liable to natural wear is the sparking plug. The plug gap when in new condition is 0.016—0.02 in. (0.4—0.5 mm), but gradually increases due to erosion. If the gap has increased beyond 0.031 in. (0.8 mm), the outer earth electrodes should be bent in towards the centre electrode, by using a suitable tool or by tapping lightly, until the gap has been restored to the original value of 0.016—0.02 in.
If ignition trouble is experienced, always examine the sparking plug first, as the electrodes and insulator must not be allowed to become fouled with combustion residues or oil.

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 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 cranks again a vigorous spark should now jump across the electrodes.

ADJUSTING THE GEAR SELECTOR

The gear actuating lever on the engine the small lever on the top of the gearbox at the right-hand side — is operated via a control cable from the gear twistgrip on the handlebar. The gearbox incorporates a spring which always tends to rotate the gear actuating lever into the position giving second or high gear. Thus, even if the control cable is damaged it is always possible to ride 2nd 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 right-hand side of the gearbox is used for this purpose. If the control cable is taken down at any time, the lock nut must be screwed to the full extent on to the adjuster screw and the latter in turn screwed as far as possible into the housing lug. After selecting 2nd gear by means of the twistgrip, the free end of the control cable can easily be hooked into the gear actuating lever. The control cable adjuster screw must be unscrewed until only a very small amount of clearance can be felt in the cable sheath. Then select neutral by means of the handlebar control, pull up the clutch lever until the gear locking catch is released, and try to find the mid-position between the two gears by turning the gear twistgrip. Turn the adjuster screw until this mid-position corresponds exactly to the neutral mark on the grip.

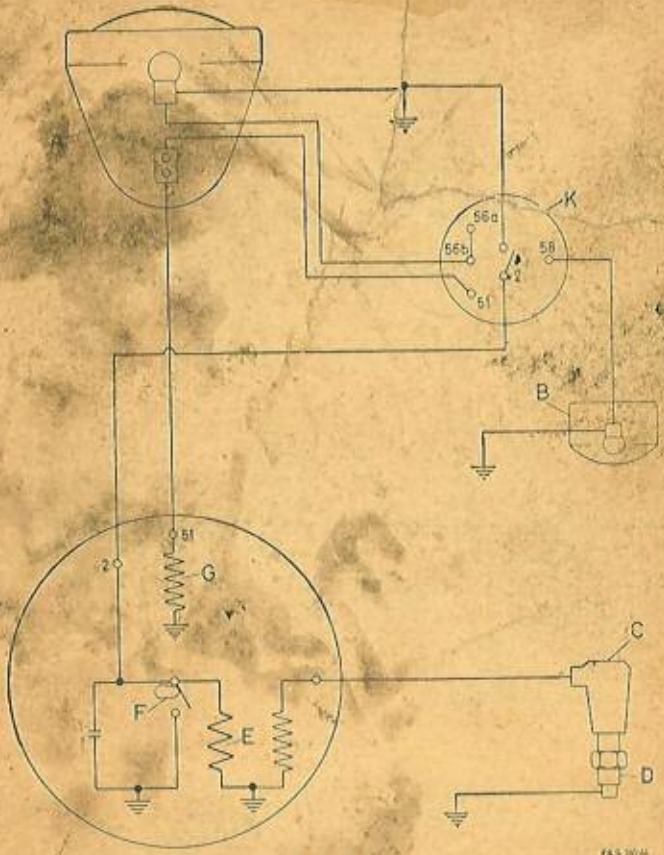

Fig. 8:
Wiring Diagram of Lighting and Ignition System

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

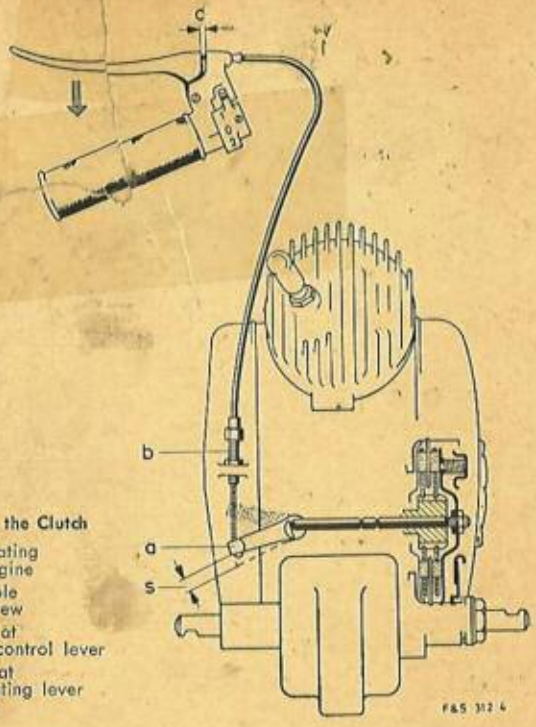

Fig. 9: **Adjusting the Clutch**

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

Adjusting the Clutch

The clutch in the SACHS 50 must 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

Fig. 10: **Adjusting the Clutch**

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 at the left-hand side and check whether the end of the lever can be moved through approx. 0.4 in. (10 mm).
2. With the engine cold, set the adjuster 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 handlebar.
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 adjuster screw together with the lock nut will then be accessible. After slackening the lock nut, the inner adjuster screw should be turned until the free travel, specified for the clutch actuating lever in para. 1 above, has been restored.

Adjusting the Carburettor

Steady, slow running 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 slow running can be achieved with the SACHS 50 if care is taken in setting the adjuster screw on the carburettor control cable. The adjustment should be made when the engine is thoroughly warmed up, since a throughly warmed up engine will run too quickly if the slow-running adjustment is made when the engine is cold. Make sure also that steering movements of the handlebar do not affect the slow-running speed. If any such movements do have this effect, the control cable from the handlebar to the carburettor is too short or not correctly routed.

Main jet no. 56 in the carburettor need not be changed under any operating conditions, even during the running-in period.

Fig. 11: Jet and Jet Needle with Clip

Fuel Consumption

The engine's fuel consumption is not a factor which remains fixed for all time. Just like appetite in a human being, so does the fuel consumption of an I. C. engine depend — largely — 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. 10. 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

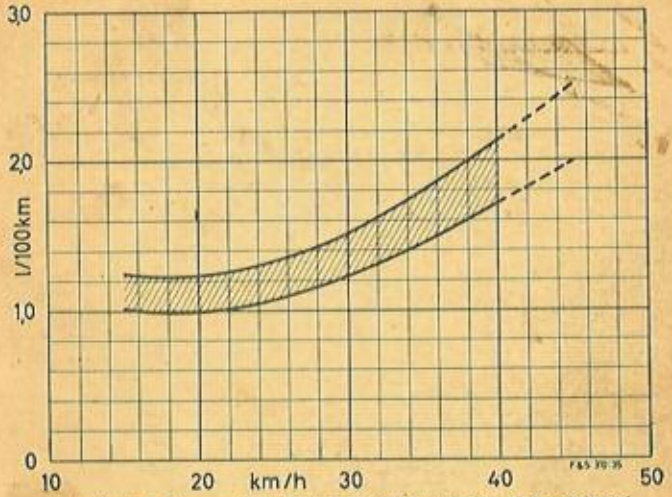

Fig. 12: **Fuel Consumption Figures shown in relation to Road Speed Weight of Rider 165 lbs.**

1/100 km = Imp. gals./60 miles 1 l. = 0.22 2 l. = 0.44 3 l. = 0.66
10 km/h = 6 m. p. h. 20 km/h = 12 m. p. h. 30 km/h = 19 m. p. h.
40 km/h = 25 m. p. h. 50 km/h = 31 m. p. h.

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 above.

Hubs and Hub Maintenance

SACHS Moped hubs feature ruggedly-proportioned brakes having a drum diameter of 3½ inches and thus conform to licensing regulations.
Even on long downhill runs the brakes maintain their high efficiency and ample reserve of braking power due to careful

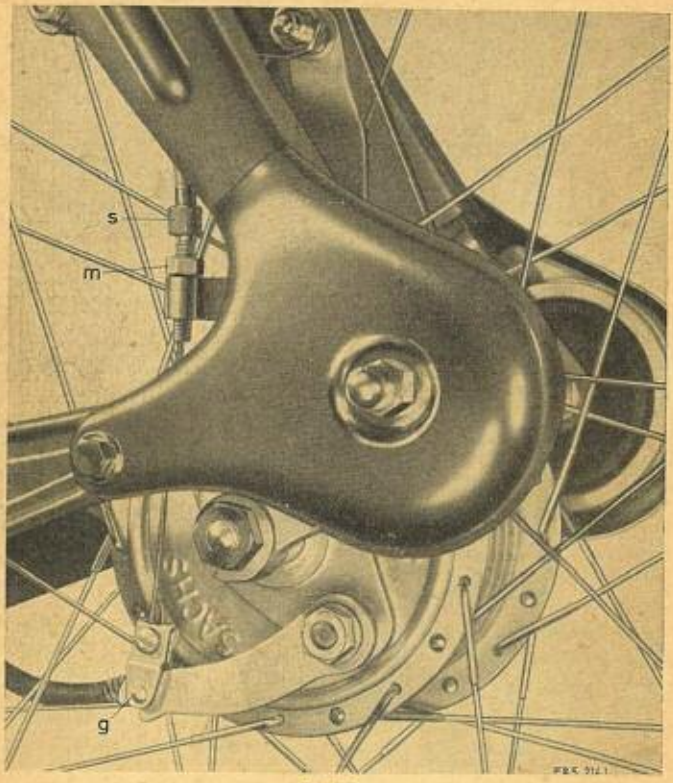

Fig. 13:
g = Fork end m = Lock nut s = Adjuster screw

selection of the anti-fade 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

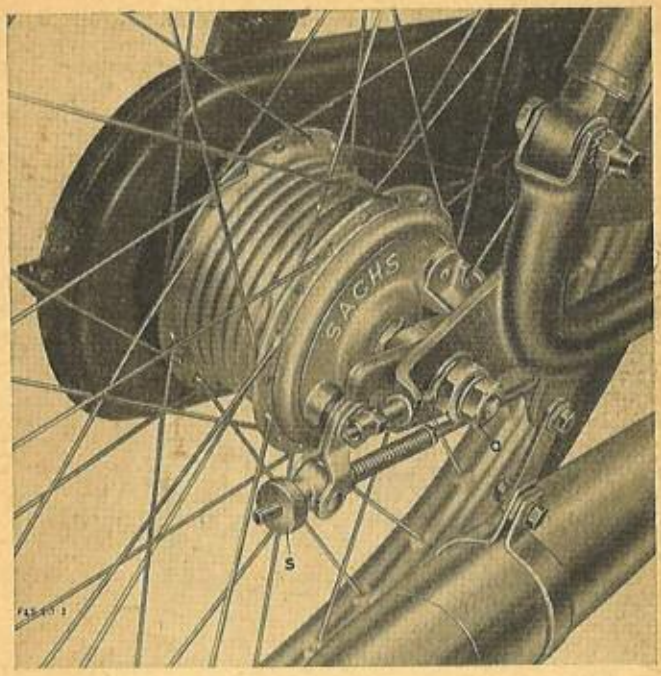

Fig. 14:
a = Spindle nut s = Adjuster nut

freely. When mounted in the machine the wheel should have a slight amount of endwise play.
On Mopeds with totally enclosed chaincase the brake hub unit is used in conjunction with a quick-detachable 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 55/64 in. spanner). The 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 illustration, page 24) 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 whereupon 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 — accurately positioned by the spindle — can then be readily engaged via its 4 cush rubbers with the companion coupling on the sprocket. When inserting the brake backplate holder, make sure that it slides in between the twin lugs on the backplate and on the frame respectively, and 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 (¼ in.) — which must be cleaned beforehand — should then be embedded in the grease. Any balls having a dull appearance should be replaced by new — and not by ordinary bicycle balls but by Grade II anti-friction bearing balls (order 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 be ensured with great care 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 brak-

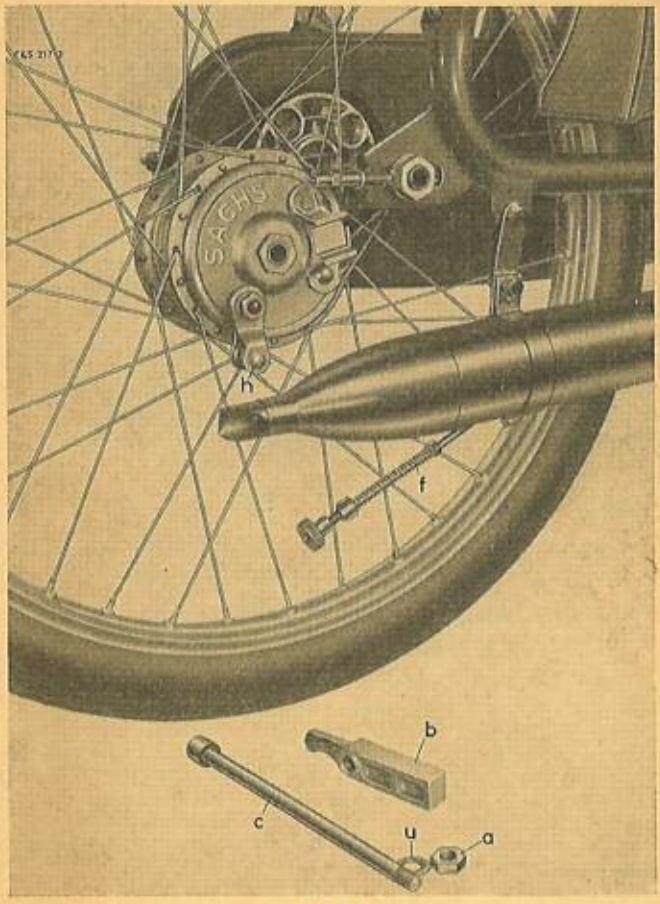

Fig. 15:
a = Spindle nut b = Brake backplate holder c = Hub spindle
f = Brake rod h = Brake lever

ing on a loose or slippery surface otherwise there is a danger of skidding. As a general rule both brakes should be applied together with due care, but avoid pulling them on 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 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 run 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 rodding. If 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 which 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 normally applied only lightly, since this has the effect of polishing up the drum-contacting surfaces of the brake 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:

Take down high spots on brake linings and drums by using 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.
All other methods adopted, such as chamfering off the linings, slotting the linings, fitting bands around the drum and reinforcing the backplates and brake shoes, have failed to yield any definite improvement in the tests carried out by us. 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:	Remedy:
Fuel tap shut	Open tap
Tickler has not been used	Press tickler on carburettor down for 6 seconds
No fuel in tank	Fill up
Jet blocked	Unscrew jet and clean by blowing out
Fuel pipe blocked	Clean fuel pipe, tap and strainer in tap filter
H. T. cable detached or damaged	Clip plug an again or renew cable
Sparking plug sooted up, bridged or defective	Replace sparking plug, or clean
Earth fault in short-circuiting cable or push button sticking	Check and repair short-circuiting cable and push button
Spark too weak	Bend in sparking plug electrodes temporarily to 0.012 in. (0.3 mm); have ignition system checked

Engine starts, but quickly stops

Cause:	Remedy:
Blocked air hole in tank filler cap	Loosen or remove filler cap. Clear the vent. If necessary, drill extra air holes.
Fuel pipe blocked	Clean fuel pipe, tap and strainer in tap filter
Sparking plug electrodes bridged	Clean or replace the sparking plug

Engine runs with reduced power, or 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
Sparking plug incandescent, thus giving wrong heat value	Use sparking plug with prescribed heat value
Exhaust system blocked	Clean exhaust port and silencer
Air filter blocked	Clean the filter
Piston sticking due to residue formed by unsuitable oil	Use only brand-name oils having a viscosity of SAE 40

Engine runs unevenly

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

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 defective	Renew float needle and float chamber cover

Float leaking	Fit new float
Jet loose in carburettor	Tighten jet
Exhaust system blocked	Decarbonise exhaust port and silencer casing

Engine will not pull

Cause:	Remedy:
Jet blocked	Clean jet
Fuel supply inadequate owing to dirty fuel pipe	Clean fuel pipe, tap and strainer in tap filter
Carburettor dirty	Clean float chamber, jet and mixing chamber plug
Clutch slipping	Check setting of clutch and clutch control cable. Renew the cork plates if necessary

Engine misfires with blow-back in carburettor

Cause:	Remedy:
Sparking plug incandescent, owing to wrong heat value	Use sparking plug with prescribed heat value
Sparking plug electrodes or insulator bridged	Clean or replace sparking plug
Engine receiving too little fuel	Check and clean fuel pipe, air vent in tank filler cap and carburettor

Engine cannot be started because clutch slips

Cause:	Remedy:
Wrong clutch setting	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 SAE 80

Fuel consumption too high

Cause:	Remedy:
Leak in tank, fuel pipe or carburettor	Check and repair
Fuel level in carburettor too high	Carburettor must not overflow when machine is standing still. Check float, float needle and seating
Needle and needle jet seriously worn after long service	Replace needle and jet

Engine does not stop when switched off

Cause:	Remedy:
Ignition switch defective or short-circuiting cable broken	Arrange for overhaul. Until this is done pull decompressor lever to stop engine

Spare Parts and Repairs

The SACHS 50 is such a light-weight and finely constructed engine that any jobs to be carried out on it call for 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 jobs will be carried out by specialist mechanics who have been trained in the Schweinfurt works. Here, too, all genuine spares are either in stock or readily obtainable, and you will be able to obtain exchange units. Worn cylinders, crankshafts and clutch plates can be handed in, and in return — at moderate prices — you will receive exchange units reconditioned "as new" in the Schweinfurt works.
In special cases the Schweinfurt works also undertake repairs to SACHS engines. In every case, however, the engine requiring repair must be forwarded to the factory via a dealer.

FICHTEL & SACHS AG

SCHWEINFURT (MAIN)

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