BSA DANDY 70

Instruction Booklets

From B.S.A. MOTOR CYCLES LIMITED
BIRMINGHAM, 11.

FILL IN THE INFORMATION CALLED FOR ON THE CARD BELOW (making sure that WE can read your name and address) DETACH AND POST FOR YOUR INSTRUCTION BOOK and GUARANTEE.

BSA

Running Instruction Card

DANDY 70

OIL RECOMMENDATIONS

(Summer and Winter)

Mix one of the following Oils with petrol in the ratio of:
1 : 20 unless otherwise shown in the table below.
1 : 20—two filler cap measures to each half gallon of petrol.
1 : 16—two and a half filler cap measures to each half gallon of petrol.

BRAND	OIL		GREASE POINTS
	ENGINE	GEARBOX	
Wakefield	Castrol Two-Stroke Oil (1 : 16) or Castrol XXL	Castrol XXL	Castrolease Heavy
Shell ...	Shell-BP Petroiler Mix No. 1 or Shell X100–40.	Shell X100–40	Shell Retinax A
Esso ...	Esso Two-Stroke Motor Oil (1 : 16) or Essolube 40.	Esso Extra Motor Oil 40/50	Esso High Temperature Grease.
Mobil	MobilMix TT (1·16) or Mobiloil BB.	Mobiloil BB	Mobilgrease MP
BP	Shell-BP Petroiler Mix No. 1 or Energol SAE 40.	Energol SAE 40	Energrease C3.

Note.—Lighter oils must not be used.

Petrol Recommendations.
Standard grades are satisfactory but Premium grades may be used if desired.

Tyre Pressures (p.s.i.)
Front 18 Rear 24

Note.—The recommended tyre pressures are based on a rider's weight of 140 lb. If the rider is heavier, increase the pressures as follows:—

Front tyre. Add two lb. per sq. in. for every 14 lb. increase above 140 lb.

Rear tyre. Add four lb. per sq. in. for every 14 lb. increase above 140 lb.

B.S.A. Motor Cycles Limited reserve the right to alter designs or any constructional details of their manufactures at any time without giving notice

B.S.A. MOTOR CYCLES LTD., Birmingham 11.

MC945-5

Printed in England January, 1957

Follow these instructions before taking your BSA DANDY on the road

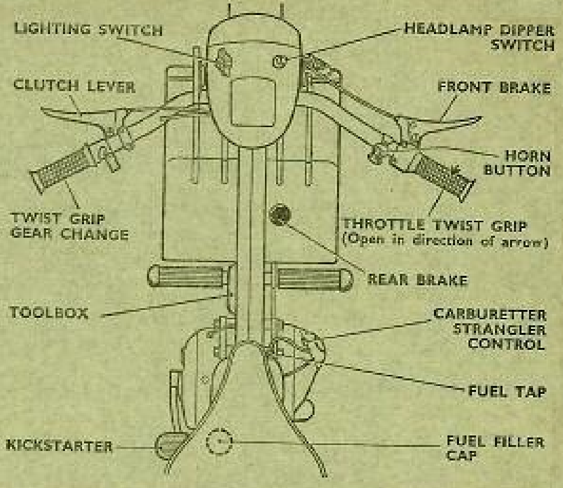
1. Fill the tank with petroil, prepared by adding oil to the petrol, mixing thoroughly before pouring in. Approx. capacity—6 pints. For the correct proportion of oil to petrol see Lubrication Recommendations on the back of this card. The measure is incorporated in the tank filler cap.
2. Remove the higher of the two caps from the side of the gearbox, and pour in ⅓ pint (190c.c.) of engine oil through the orifice.
3. Turn the petrol tap on by pulling out the serrated button.
4. Close the strangler by pulling up the wire loop; this can be seen on top of the engine.
5. Check that the twist grip gearchange is in the neutral position, this is the "N" position on the left handlebar. Also make certain that the rear wheel revolves; if not, disengage the clutch and engage it again immediately. This will cause the preselector mechanism inside the gearbox to engage neutral.
6. Open the throttle twist grip slightly.
7. Press the kickstarter pedal down gently until its ratchet is felt to engage, then push down sharply whereupon the engine should fire. (Note:—If the ratchet fails to operate, engage low gear and rock the machine gently backward and forwards).
8. As soon as possible after the engine has started open the strangler by pushing the wire loop downwards.
9. Sit astride the scooter and move the twist grip gearchange to the low position (marked "1"), and raise the clutch. Then, slowly release the clutch and at the same time gradually open the throttle. The Dandy will move forward.
10. To change up to high gear, move the twist grip gearchange to the "2" position, momentarily close the throttle and raise the clutch. Then, slowly release the clutch and open the throttle, high gear will then be engaged.
11. To change down to low gear, move the twist grip gearchange to the "1" position, close the throttle and raise the clutch. Then, slowly release the clutch. **Low gear must not be engaged if the Dandy is exceeding 10 m.p.h.**

SPECIAL NOTE.—While the centre stand is sturdy enough to support the weight of the machine, it is emphasised that it **will not** support the weight of both rider and machine.

THE CONTROLS

To stop with engine running, close throttle partially, raise clutch lever and apply brakes.

To stop engine, close throttle.



NOTE.—When fitted with Wico-Pacy electrical equipment the horn push and dipper switch become a combined mounting on the right-hand handlebar.

IT IS IMPORTANT THAT YOU DO NOT EXCEED ONE HALF THROTTLE IN EITHER GEAR DURING THE FIRST 500 MILES ON A NEW MODEL, AND THAT NO FULL THROTTLE work is done until the engine is thoroughly run-in. In this way you will get the greatest ultimate satisfaction from your Dandy.

DETACH AND POST THIS CARD FOR YOUR INSTRUCTION BOOK AND GUARANTEE

Copy of

Guarantee

BSA

MOTOR CYCLES
SCOOTERS
AND SIDECARS

BSA

Copy of

B.S.A. MOTOR CYCLE SCOOTER & SIDECAR GUARANTEE

which is given by B.S.A. Motor Cycles Ltd. to Dealers in B.S.A. Motor Cycles, Scooters and Sidecars

Every motor cycle, scooter and/or sidecar which is sold by us carries the following express agreements, which take the place of and exclude all conditions, warranties, and liabilities whatsoever which exist either by Common Law, statute, or otherwise. Any statement, description, condition, or representation contained in any catalogue, advertisement, leaflet, or other publication shall not be considered as enlarging, varying, or overriding these.

1. We give no guarantee as to performance, quality, or fitness for any particular purpose. Should any defect be alleged in material or workmanship within six calendar months after purchase of a motor cycle, scooter or sidecar from us or our accredited Dealers we undertake, on the immediate return of the part which is alleged to be defective to our Works, carriage paid, within such period, to examine the same and should any fault be found by us on examination to be solely due to defective material or workmanship, we will repair the defective part or supply a new part in the place thereof free of charge. We do not undertake to bear the cost of any work involved in reinstating a repaired or inserting a new part.

2. This guarantee as to material or workmanship does not extend to (1) a second-hand motor cycle, scooter and/or sidecar, or (2) to a motor cycle, scooter and/or sidecar which has been used for "hiring out" purposes, or any motor cycle, scooter and/or sidecar, used for any dirt track, cinder track, or grass track racing or competitions (or any competition of any kind within an enclosure for which a charge is made for admission to take part in or view the competition), or (3) a motor cycle, scooter and/or sidecar, from which our trade marks or manufacturing numbers have been removed, or (4) to a motor cycle, scooter to which has been attached a sidecar by any form of attachment not provided, supplied or approved by us, or (5) to a motor cycle or scooter to which has been attached a sidecar in such a manner as to cause damage or render the cycle or scooter unsafe when ridden, or (6) to a motor cycle, scooter or combination which has carried more persons or a greater weight than they are designed to bear. And this guarantee does not extend to defects caused by racing, wear and tear, dirt, neglect, misuse, or accident.

3. Our responsibility is limited to the terms of this guarantee, and we will not be answerable for any contingent or resulting liability or loss arising through any defect or for any claim for labour, material or other expenditure incurred in remedying any defect.

4. When claiming under this guarantee the claimant must furnish us with the number of the machine and engine (which will be found stamped on the seat lug and crankcase respectively), the name of the Dealer from whom he purchased, and the date of purchase.

5. This guarantee shall apply to parts repaired or replaced under Clause 1, and such guarantee shall run concurrently with, and shall terminate on the same date as

the guarantee given under Clause 1, all the aforesaid implied conditions, liabilities and warranties being excluded.

6. When returning machine for repairs all accessories should be removed. This guarantee shall not apply to any part of a motor cycle, scooter or sidecar which are not manufactured by us and all conditions, warranties and liabilities whatsoever implied either by Common Law, statute, or otherwise relating to such parts are hereby excluded, but we will assist the purchaser by any guarantee given to him by the manufacturer of such parts as shall not have been made by us.

The Purchaser's copy of the Guarantee applicable to this motor cycle or scooter will be sent on receipt of the postcard quoting date of purchase, engine and frame numbers, purchaser's name and address and signature of dealer.

Failure to apply for the copy of guarantee may render it invalid.

B.S.A. Motor Cycles Ltd., Birmingham 11

MC850-20-5 Printed in England, Oct. 1956

Facts about Sparking Plugs and Engines

DEPENDABLE

CHAMPION

PLUGS

FACTS ABOUT SPARKING PLUGS AND ENGINES

How an Engine Operates

Cycle 1. The downward stroke of the piston draws into the cylinder a charge of highly inflammable gas, produced by the proper uniting of petrol and air in the carburettor and intake manifold.

Cycle 2. The upward stroke of the piston compresses this gas, and at a point just before the piston reaches the top of its stroke the compressed gas is ignited by a spark at the points of the sparking plug, developed by passing a high tension electric current through the sparking plug at that particular fraction of a second.

Cycle 3. The ignited gas burns very rapidly and the more complete the combustion the better the engine operates, the almost instantaneous expansion of the rapidly burning gas driving the pistons down and thus developing power.

Cycle 4. On the next upward stroke of the piston the exhaust valve opens and the burned gas is expelled from the cylinder, preparatory to the drawing in of another fresh charge as explained in Cycle 1.

These are the four cycles of the ordinary internal combustion engine and are constantly repeated in each cylinder of the engine: (1) Intake of gas; (2) Compression of gas; (3) Rapid expansion of burning gas developing power; and (4) Scavenging of cylinder of burned gas.

The rapidity of the instantaneous ignition and the completeness of the combustion help to determine the efficiency and economy of the engine performance—the aim being to convert the highest possible percentage of the fuel used into power.

The completeness of the combustion at all speeds further determines car performance, the ease with which the car performs at low speeds, the power that it shows under acceleration, the high speed and the power on hills. The spark at the points of each sparking plug must be of full strength at all engine speeds and under all conditions of operation in order to give the maximum initial impetus for the almost instantaneous burning

and expansion of the compressed gas and this is very definitely dependent upon the efficiency of the sparking plugs themselves and upon their operating condition. Otherwise there is a lag to the burning process and a sluggish performance of the whole car as a result.

It is very necessary that the sparking plugs be of the right type for the vehicle in which they are used and that they be well designed and well made. They should be reasonably hot at lower engine speeds to keep free from oil and fouling matter, and at the same time run cool at the top engine speeds. They should perfectly insulate the high tension current at all speeds and at all changes of temperature to which they are subjected throughout the range of engine operation.

If sparking plugs are of the wrong type or are inefficient, the compressed gas does not burn with sufficient rapidity. There is incomplete combustion and only part of the fuel used is converted into power, some going out of the exhaust ports in the form of unburned gas, while some remains as a residue in the cylinder and forms carbon, which further interferes with proper development of power and satisfactory performance.

Many other factors can contribute to incomplete combustion and consequent waste of power and these will be referred to later under specific cases and definite types of trouble and what to look for to eliminate the causes thereof.

The sparking plug is of such great importance in satisfactory engine performance that one should have a detailed understanding of it and of its most necessary functions under all conditions of engine operation.

It is poor economy to use any but the most efficient sparking plugs. This is plainly evident when their importance is realized. The better plug will soon pay for itself by delivering more complete combustion with a maximum development of power from the fuel supply, and by eliminating the waste and annoyance caused by the reduced power delivered by partially unburned fuel.

The whole subject is handled here in a series of questions and answers, presented so as to give the information desired, under the varying conditions encountered in the operation of a motor, as logically and completely as possible.

1. Q. What is a sparking plug? What is its function?

A. It is a very important part of an engine, and consists of two wires carefully insulated from each other. The wires are spaced to form a spark gap at the lower end of the plug which projects into the firing chamber.

Its function is to bring the high tension current into the cylinder of the engine and to deliver it in the form of a spark which ignites the combustible gases, thus furnishing the power stroke of each cylinder of the engine.

2. Q. What are the important elements of a sparking plug?

A. (1) The insulator which must retain its efficiency under all temperatures and pressures in the firing chamber or cylinder of the engine.

(2) The metal parts such as the shell, bushing and gaskets which introduce the insulator into the cylinder without loss of compression.

(3) The centre electrode which conveys the current through the insulator and the side electrode which is brought up adjacent to the inner end of the former to form the gap over which the high tension current passes in the form of a spark.

3. Q. What is the definite function of the insulator?

A. To prevent the current from flowing in any direction except across the gap formed by the two electrode wires.

4. Q. What are the principal operations in the making of finished sparking plugs?

A. (1) The complete and careful manufacture of the metal parts, such as the various shells, bushings, gaskets, terminals, electrode wires, etc.

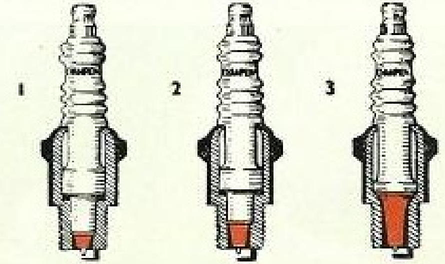
(2) The production of the most satisfactory material for the electrode wire is an art in itself. The next step, which consists of sealing this electrode in the insulator, is one in which much progress has been made in the past few years.

5. Q. Why is the maintenance of gas tightness so important in sparking plugs?

A. Gas leakage, either between centre electrode and insulator or between insulator and shell, will cause a plug to overheat very rapidly. In fact, what seems to be a very slight leak between centre electrode and insulator will raise the temperature at the tip of the insulator as much as 40 to 45 degrees Fahrenheit.

6. Q. What is the heat range of sparking plugs?

A. The arrangement of plugs by types according to their ability to transfer heat from the firing end to the cooling water or air.



1. COLD PLUG—Low Insulator seat quickly carries heat from insulator and makes a cold plug.
2. NORMAL PLUG—Intermediate seat permits insulator to retain a normal amount of heat.
3. HOT PLUG—High Insulator seat allows insulator to retain maximum amount of heat, making a hot plug.

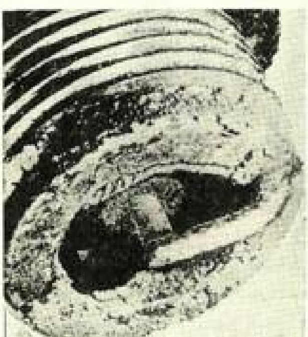
7. Q. Why is it necessary in ordinary sparking plugs to have different types with different lengths of insulator projecting into the firing chamber of the plug?

A. To control the rate of heat flow from the gap of the plug to the cooling medium which is either water or air. The rate of heat flow depends on the length and shape of the cylinder end of the insulator from the tip to the inside gasket.

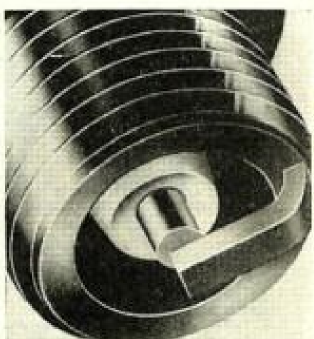
8. Q. What service should sparking plugs have ?

A. (1) When a new vehicle is taken in for three hundred or five hundred mile inspection plugs should be thoroughly serviced and gaps reset to the correct dimension specified in the vehicle manufacturer's Handbook.

(2) At regular intervals—when changing oil is usually convenient. However, ensure that Plugs are thoroughly serviced on the machines specially designed for the purpose at approximately three thousand mile intervals.



OILY, DIRTY, WORN-OUT SPARKING PLUGS
A sluggish, wasteful engine



NEW, CLEAN, EFFICIENT SPARKING PLUGS
A snappy, responsive engine

(3) At regular intervals plugs should be replaced, on an average after approximately ten thousand miles.

(4) Whenever a vehicle is washed the upper portion of the Sparking Plug Insulator should be wiped clean with a dry cloth.

9. Q. What is fouling of sparking plugs?

A. There are two kinds of fouling.

(1) Petrol fouling. When an engine is started, carbon, resulting from the combustion of the petrol and air mixture, is deposited on the firing end of the Insulator. With a plug of suitable heat range the firing end of the Insulator rapidly attains a sufficiently high temperature to burn this off but in instances where contributory causes prevent the insulator attaining its self-cleaning temperature some of the carbon deposit remains and oil vapour present in the combustion chamber in turn carbonizes and amalgamates thereby forming a hard crust. This deposit increases until a conductive path is established on the firing end of the insulator between the centre electrode and the gasket which seals the insulator to the steel plug shell. The High Tension current arcs across this path instead of sparking across the gap formed by the electrodes of the plug thereby causing misfiring and possible final failure.

(2) Oil fouling. When excess oil is permitted to pass the pistons or down the valve guides and enter the combustion chamber, it is turned to a hard cakey material on insulator and shell, and gradually fills up the space between insulator and shell until the plug is definitely short circuited.

When plugs are petrol fouled, the insulator shows a dull black, fluffy carbon deposit. When they are oil fouled the insulator more often shows a shiny black hard deposit, and in severe cases a filling of the space between insulator and shell with caked carbon.

10. Q. In what manner do sparking plugs wear out?

A. (1) Gaps are burned open by constant application of spark, heat, pressure and the chemical action of the petrol mixture.

(2) Electrodes become oxidized and corroded, causing increased resistance to the passage of current.

(3) Firing end of insulator becomes crusted with carbon and other deposits, resulting in missing because of loss of current over and through these deposits.

(4) Plugs develop a gas leakage between insulator and shell or between centre electrode and insulator.

11. Q. Why are there many sizes of sparking plugs?

A. This is a case of evolution, in many cases justifiable and in others not. Sizes at present in use are ½" gas thread, 22 mm, 18 mm, 14 mm, and 10 mm. The smaller sizes will, of course, reach their levelling off temperatures slightly faster, but they will also tend to oil foul much more rapidly than the larger plugs where more clearance can be provided between insulator and shell. The principal justification for smaller plugs is lack of sufficient clearance for the larger sizes.

12. Q. What is the proper way of setting gaps?

A. Gaps should always be adjusted by bending the shell electrode and never by bending the centre electrode. The correct setting will be found in the vehicle instruction book or manual.

13. Q. If one or more cylinders tend to foul sparking plugs, what is most likely the reason?

A. (1) Compression may be weak in the cylinders in question. It should be checked with the crank to determine which cylinders are weak. Difficulty may be either in pistons or rings, out of round cylinders, or in the valves. A valve stem may be stuck, the seat damaged or the valve tappets may not allow the valves to close.

(2) The cable leading from the distributor to the sparking plug may be faulty or broken.

(3) Petrol distribution may not be uniform.

(4) There may be dirt or paint on the upper end of the insulator, causing arcing between the brass terminal and steel plug body.

(5) The gaps of the plugs may not be correctly set, usually found too close.

14. Q. Why do new engines often tend to foul all sparking plugs?

A. (1) Use of wrong grades of oil in petrol or excessive use of upper cylinder lubricant to help "running in" the engine.

(2) Inhibiting oil poured on top of pistons at factory to seal pistons and guard against rusting and seizing.

(3) Long idling run to warm up engine.
(4) Carburettor requiring adjustment.
(5) Excessive use of choke.
(6) Car driven too slowly while "running in."
(7) Distributor points require re-setting.
(8) Plug gaps incorrectly set.

15. Q. What causes an occasional miss at high speed?

A. (1) Breaker points incorrectly set or point surfaces may be glazed over.
(2) Weak coil or condenser.
(3) Carburation incorrect.
(4) One or more valve tappets need adjusting.
(5) Gap set too wide.

16. Q. What causes a miss on a hard pull up-hill or through sand?

A. (1) Weak coil.
(2) Spark too far advanced.
(3) Carburation incorrect.
(4) Poor compression in one or more cylinders.
(5) A partial "surface short" of the plug, that is, sufficient carbon deposit on the insulator so that part of the current will go across the carbon surface on a hard pull instead of across the gap.
(6) Gaps incorrectly set.

17. Q. When engine will not idle, what may be the cause?

A. (1) Incorrect Carburettor adjustment.
(2) Leaking carburettor gasket or intake.
(3) Burnt or badly set distributor points.
(4) Weak coil or condenser.
(5) Lack of compression.
(6) Incorrect valve tappet adjustment.
(7) Improper valve timing.
(8) Sticking valve stems.
(9) Gaps set too wide.

18. Q. What is the cause when sparking plugs run satisfactorily until high speed is reached; then after short time the car slows down and there is a tendency to spit back in the carburettor?

A. This is clear evidence of pre-ignition caused by some item in the combustion chamber becoming sufficiently hot to ignite the mixture before the spark occurs at the sparking plug gap. This hot spot may be carbon, a valve holding open, or a hot sparking plug. If the sparking plug used is the one normally recommended for the engine, it is essential that the following items be checked before coming to the conclusion that a colder sparking plug should be used.

The cause of the extreme heat may be:

(1) A lean mixture or a stoppage in the petrol pipe, such as a dirty filter or dirt in the line.

(2) The vacuum tank or petrol pump may be too low capacity for the speed desired, causing a period of starving in which the lean mixture will cause overheating.

(3) Lack of cooling, due to the water being too low in the radiator.

(4) A stoppage in the water system—a defective pump—a broken or slipping fan belt.

19. Q. What causes the engine to knock or "pink" when accelerating or at high speed?

A. Petrol not sufficiently high test is usually the answer.

To meet the condition of the high compression engine for operation without knocking or pinking, it is often necessary to use premium grades. Examples of anti-knock petrol are those blended with benzol, alcohol or tetra-ethyl-lead.

Another reason for detonation or pinking is having the spark too far advanced.

Detonation is caused by the uneven burning of the gases in the combustion chamber. Sparking plugs are not ordinarily a factor in detonation.

Examination of plugs used with leaded petrol after a considerable period of operation, shows a heavy deposit of yellowish, glassy substance which leads many people to believe that the plugs have been injured. Numerous tests have definitely proved that this deposit is not injurious, and that the plugs will be entirely satisfactory in operation.

It is not advisable to attempt to scrape this deposit; utilise instead a compressed air cleaner.

20. Q. What may cause the engine to give unsatisfactory performance with the plugs being used?

A. Before concluding that different plugs are needed the engine should be checked for the following items:

(1) Compression.
(2) Distributor points.
(3) Spark timing.
(4) Valves—action, timing, tappets.
(5) Grade of petrol used.
(6) Gap setting.

CLEANING PLUGS

The only efficient way to clean sparking plugs is to have them properly serviced on machines specially designed for this purpose. These machines operate from compressed air supply and utilise a dry abrasive material specially graded and selected to remove harmful deposits from the plug insulator without damaging the insulator surface. In addition, the majority of the machines incorporate electrical testing apparatus and the plugs can be pressure tested to check their electrical efficiency and gas tightness. In outlandish districts where it may not be immediately convenient to have plugs thoroughly serviced then if a plug becomes carboned or oiled we suggest the best "first-aid" method is as follows:—

Compressed air unit for cleaning and testing Plugs

Remove the plug from the engine and fill the cavity between the insulator and body of shell with petrol or methylated spirits and set fire to it, which action will burn off the majority of the deposits. Alternatively, with large size plugs, such as used in some tractors and stationary engines, it is possible to carefully push a piece of cloth, previously soaked in petrol, round the firing end of the insulator to remove the loose carbon deposits. To complete the process dress the gap areas of the electrodes with a fine file, reset the gap correctly, as recommended by the vehicle manufacturer, and—this is very important — where possible refit the sparking plug into a different cylinder where a plug has been firing satisfactorily. By this means we give the sparking plug that may be a little on the weak side a chance in a good dry cylinder, and we are putting into the oily cylinder a dry sparking plug which has been functioning perfectly in one of the other cylinders. This changing around of the sparking plugs often prevents recurrence of the oiling or sooting up.

If the engine is a 6-cylinder, and it is necessary to find which sparking plug is missing, it is always much easier to use a tool and " short out " two cylinders, that is, connect our tool, say a hammer-head, against any two sparking plug terminals and cut these out entirely. One then has the equivalent of a 4-cylinder engine, and by shorting each of the remaining plugs in turn it is much easier to locate the plug that is missing than in attempting to short one cylinder at a time in a 6-cylinder engine. When a 4-cylinder engine runs on three cylinders it is much more noticeable than when a 6-cylinder engine is running on five cylinders.

It is also advisable, when examining plugs and cleaning them TO WIPE THE TOP OF THE INSULATOR, as grease and dirt which gets blown against the insulator from the fan will often cause the spark to flash over or, in other words, jump from the brass terminal to the body of the sparking plug, especially when the vehicle has been standing in a damp atmosphere. If the sparking plugs are of the detachable type, that is, a plug that can be dismantled for cleaning purposes, always be careful when replacing the insulator to see that the copper seating washer is down square, before attempting to tighten the gland nut. It is advisable to obtain new washers, as once a copper washer has been tightened hard to make a joint, the softness and elasticity has gone, and plugs of the detachable variety often leak after reassembly. GAS LEAKAGE, as mentioned previously, will cause RAPID OVERHEATING of the sparking plug.

Another important point is the copper or steel washer which goes on the outside of the plug between the plug and the cylinder head. This should be renewed from time to time, as it is this washer which is to a great extent responsible for transferring the heat from the plug body to the cylinder head and then to the cooling medium. When a plug has been screwed down a number of times on to a copper washer, the washer becomes very hard and consequently does not transfer the heat from the plug body as it was intended to, and slight overheating of the plug takes place.

HINTS FOR EASY STARTING

When you remove Ceramic sparking plugs for examination you will usually find the appearance of the insulator either ASHY WHITE, a DULL BLACK or a LIGHT BROWN shade. If the insulator is ashy white it is a sure sign that the plug is overheating, and this may be caused by numerous reasons—for example, wrong type plug, improper installation of plug, shortage of water or shortage of oil, poor quality oil, ignition too much retarded, and a weak mixture in particular will cause the engine to overheat. If the insulator is a dull black colour, this is a sign that the plug is running too cold or, in other words, the insulator is not getting hot enough to burn the carbon that gets deposited on the insulator, with the result that this carbon builds up on the insulator until the plug begins to miss and ultimately completely cuts out. This condition can be brought about by the engine idling for long periods, or EXCESSIVE USE OF THE CHOKE and, of course, the wrong type of sparking plug. If the insulator appears a brownish shade, this is a sign that the plug is running at its correct self-cleaning temperature, and the carburettor mixture is correct.

CONCLUSION

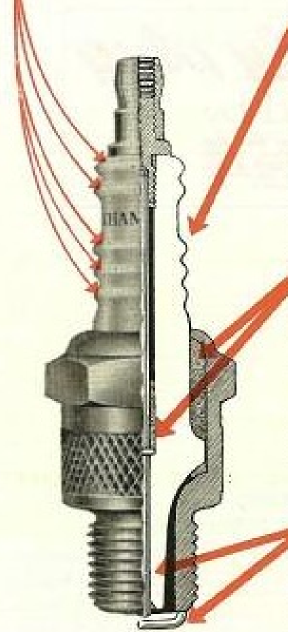
Although it should be understood that many factors besides sparking plugs may cause improper operation of engines, it must not be forgotten that the best of sparking plugs do not wear for ever. The intense stresses and strains imposed, especially in the up-to-date higher compression engines, often under conditions which are not of the best because of defection of some item in the engine other than sparking plugs, are so terrific that there is gradual deterioration of the sparking plug.

Almost any of the many items mentioned as having a bearing on engine operation may bring about a condition where it is impossible for the sparking plug to operate at its highest efficiency.

Inefficient functioning of the sparking plug means incomplete combustion in the engine cylinder. Incomplete combustion means unburned gas going out of the exhaust. In this case the full heat value of the fuel is not used and as a result power is lost and petrol is wasted.

5-RIB CHAMPION FEATURES

that make Champion the better spark plug



CHAMPION-CERAMIC 5-RIB INSULATOR

A product of the world's finest ceramic research laboratory. Composed of rare mineral oxides, the insulator blank is formed under extreme hydraulic pressure and fired under scientifically controlled conditions to assure great mechanical strength, high electrical resistance and rapid heat dissipation.

SILLMENT SEALS

A dry powder compressed between the insulator and centre electrode and between the insulator and shell. This feature eliminates troublesome compresssion leakage throughout the life of the spark plug, assuring protection against overheating, electrode deterioration and loss of engine efficiency.

ELECTRODES

Erosion-resistant alloys containing a special catalytic agent to prevent gap bridging. Developed after intensive metallurgical studies, this material resists deterioration due to heat and chemical attack and assures longer spark plug life.

53121

Ref. 531/L/11/B

The only plug fitted by BSA

CHAMPION SPARKING PLUG COMPANY LIMITED
FELTHAM : MIDDLESEX

Telephone:
HOUnslow 4494
Telegrams:
CHAMPLUG, Phone, Hounslow

Factories:
FELTHAM England
WINDSOR Canada
TOLEDO U.S.A.

83121

Ref. 531/L11/B

Facts about Sparking Plugs and Engines

DEPENDABLE

CHAMPION

PLUGS

FREE SERVICE SCHEME

Every rider of a new B.S.A. Scooter is advised to take advantage of the B.S.A. Free Service Scheme detailed overleaf. It affords a complete maintenance check by experts during the vital running-in period, and ensures a "good start in life" for your machine.

B.S.A. MOTOR CYCLES LTD., Birmingham 11.

Details of B.S.A. Free Service Scheme

The Dealer from whom you purchased your Dandy 70 Scooter has undertaken to carry out a single inspection of your machine free of charge at 300 miles or at the latest three months after delivery. The inspection will include the following work:—

(a) Check and if necessary adjust:—

1. Sparking Plug.
2. Clutch.
3. Rear Chain.
4. Wheel Bearings.
5. Brakes.
6. Forks and Steering Head.
7. Alignment of Wheels.
8. Tyre Pressures.

(b) Tighten all external Nuts and Bolts including Cylinder Bolts.

(c) Check Carburation.

(d) Adjust and lubricate all Cables.

(e) Grease all Nipples.

(f) Top up Gearbox to correct level.

(g) Test machine on road.

NOTE: Oils, Grease and Materials used are chargeable to the customer.

In case of difficulty write to: B.S.A. MOTOR CYCLES LTD., Service Dept., Birmingham 11.

Postage
will be
paid by
Licensee

No Postage
Stamp
necessary if
posted in
Great Britain
or
Northern
Ireland.

BUSINESS REPLY CARD

Licence No. 8820.

Advertising Dept.,

B.S.A. MOTOR CYCLES LTD.,

BIRMINGHAM 11

Now you have your new B.S.A. we hope you will enjoy many miles of pleasant motor cycling.

Perhaps you are a newcomer to the joys of the open road: if you are, and have not read the Highway Code may we recommend that you do so. We shall be glad to send one post free if you will complete and return this card.

Name..

Address..

....

B.S.A. MOTOR CYCLES LTD., Birmingham 11

IMPORTANT

DUNLOP TYRES FOR MOPEDS, AUTOCYCLES AND LIGHTWEIGHT SCOOTERS

When refitting a tyre, before finally inflating to riding pressure, it is essential to ensure that:—

(a) The rim tape is seated correctly in the well of the rim.

(b) The tyre seats itself correctly on the rim and runs truly.

To assist the tyre to correctly seat itself on the rim it is advisable to lubricate the rim and tyre beads with water, soapy water, glycerine or French chalk. The fitting line of the cover, just above the bead, should be concentric with the top of the rim flange.

For inflation pressure see over:—

INFLATION PRESSURE TABLE

MOPEDS & AUTOCYCLES

Tyre Size	Rim Size		Max. Speed m.p.h.	80	100	120	140	160	180	200
				Load per tyre — lb.						
				lb. per sq. in.						
20 x $2\frac{3}{8}$"	20 x $2\frac{1}{2}$"	'G' Section	40	19	20	23	26	30	34	38
23 x 2.00	1522 mm.		30	23	25	30	35	40	45	50
25 x 2.00	24 x $1\frac{1}{2}$"	'F' Section	30	21	23	28	33	37	43	48
26 x 2.00	1755 mm.		30	20	22	28	32	35	40	45
26 x 2 x $1\frac{3}{4}$"	26 x $1\frac{3}{4}$"	'F' Section	30	20	22	28	32	35	40	45
2.25—21	2.25—21	'G' Section	—	16	18	20	23	26	29	32

LIGHTWEIGHT SCOOTERS

Tyre Size	Rim Size	100	120	150	180	200	230
		Load per tyre — lb.					
2.50—15	WMO—15	18	20	24	28	32	36
20 x $2\frac{3}{8}$" "R"		18	20	24	28	32	36