

INSTRUCTION BOOK

No. 1377 *

MAGNETOS

Types KC and BKH—Spigot Mounted

and

Types KD and KH—Base Mounted

For Motor-cycle, Marine, and Stationary Engines



THE BRITISH THOMSON-HOUSTON Co., LTD.,
COVENTRY, ENGLAND

01356

EDITION E.
*Cancels Edition D.

NOTICE

Replacements and service are obtainable from any BTH approved Magneto Service Station. Service Stations will also supply instructions should it be necessary to return apparatus to our Works for repairs or other reason.

If you are not in the vicinity of a Service Station please communicate with:

The British Thomson-Houston Co., Ltd.,
Aero Equipment Sales,
Alma Street,
Coventry, England.

Compliance with this request will save delay and inconvenience.

MAGNETOS

Types KC and BKH—Spigot Mounted and Types KD and KH—Base Mounted

GENERAL

All Type K magnetos are generally similar and can be supplied for single-, 180° and 'V' angle twin-cylinder engines. They all conform to the standardized dimensions for 'K' type magnetos specified in BS. 5027:1947.

The Types KD and KH are base-mounted magnetos, whilst the Types KC and BKH are the corresponding spigot-mounted machines. All magnetos are noteworthy for low overall height and consequently are very suitable for engines where the available height is restricted.

The Types KH and BKH have been designed with a cast-in Alcomax magnet and will in time replace the Types KC and KD which have cobalt steel and Alnico magnets.

All types can be relied upon for excellent low-speed sparking performance and are well suited to meet the requirements of stationary and marine engines, as well as motor-cycle engines. They can also be supplied as 'TT' replica machines, having in addition to other special features for racing and trials purposes, a petrol-, oil-, dust-, and water-proof contact-breaker cover.

The Types K, KA, and KV are now superseded by the Types KD and KH. The instructions given herein are, however, still applicable to the earlier designs.

TIMING CONTROL

For variable manual control, alternative designs are supplied namely: internal control by Bowden wire, Fig. 1, and external control by timing lever, Fig. 4.

Provision is also made for fixed ignition requirements as shown in Figs. 5 and 6, the latter indicating the sealed and ventilated contact-breaker cover specially developed for T.T. racing, which has also proved highly satisfactory for other motor-cycle sporting events and for industrial applications.

Automatic timing control is provided for by the Forms 'Y' and 'Z' automatic timing devices (see Fig. 2) which are incorporated with the magneto driving gear or sprocket and fitted to the magneto driving spindle. These devices provide the correct magneto timing, in relation to the engine, for all running conditions, obviating manual control and ensuring optimum timing at all road speeds.

When stationary, and at idling speeds, the device automatically returns to the retarded position, advancing as the speed of the engine increases.

IMPORTANT

The high standard of performance of BTH Magnetos is the result of skilful design and meticulous care in every stage of manufacture. Every Magneto is fully tested and accurately adjusted before leaving the Factory.

Regular attention to the small amount of maintenance recommended in this Instruction Book will ensure a continued high level of performance throughout the life of the Magneto.

In case of difficulty, further information and assistance can be obtained from the nearest BTH Magneto Service Station, the BTH Co., Ltd., Coventry, or the Engine Manufacturer concerned, mentioning the particulars stamped upon the apparatus.

Should, for any reason, it be necessary to remove the magneto, the magneto gear and timing device can be removed by undoing the self-extracting nut on the end of the magneto spindle. After the nut loosens, it will almost immediately tighten again and generally the device can be loosened by reasonable pressure on the spanner. In some cases, however, after long service the taper fit may be very tight and if undue force is used there is a risk of damaging the front plate of the automatic timing device with the extracting nut. When the self-extracting nut has been loosened and reasonable force does not withdraw the device, a sharp tap with a light hammer on the end of the nut or on the end of the spanner will effect the necessary release.

Do not in any circumstances, take the automatic timing device to pieces, or attempt to remove it from the gear wheel.

INSTALLATION

Secure the magneto in position and adjust the tension of the driving chain so that there are no tight spots when the engine shaft is rotated. If the magneto is gear driven, adjust the meshing of the gears so that there is a slight backlash.

When the contact-breaker control is as shown in Fig. 1, remove the Bowden adjusting screw A and the screw cap E; slip screw A over the end of the Bowden cable and allow the inner cable to project about two inches from the Bowden casing. Securely solder the nipple B to the end of the cable. Screw the adjusting screw into the body of the endplate C, allowing the cable and the nipple to thread through the endplate until projecting through the lower side as shown in the illustration. Fit the split washer D and pull the inner cable from the control end until both the nipple and the washer are located in the recess provided in the plunger in the endplate. Replace the cap E. Fit the cable to the control lever and adjust if necessary by means of screw A.

Timing the Magneto on the Engine

For details of timing refer to the engine-maker's Instruction Book. If this is not available proceed as follows:

Rotate the crankshaft in the right direction until the piston is in the correct position on its compression stroke for fully advanced timing. Then, with the driving pinion, sprocket, or automatic timing device loose on the magneto spindle, rotate the magneto shaft in the normal direction of rotation until the contacts are just about to open with the timing control at the fully advanced position. Lastly, secure the driving member on the magneto shaft, taking care that neither the engine nor the magneto shaft moves during the operation.

In the case of twin-cylinder engines, time the magneto to No. 1 cylinder and, when setting the magneto shaft, also see that the segment of the slip-ring is opposite No. 1 collector brush.

Safety Spark Gap

To prevent damage to the armature in the event of the external high-tension circuit being interrupted, twin-cylinder magnetos are provided with safety spark gaps, the earth electrodes of which are two screws, one on the top and one on the underside of the main housing. These two screws must never be removed except when dismantling, and then it will be necessary in order to withdraw the armature from the housing.

ATTENTION IN SERVICE

Lubrication

The magneto armature runs on ball bearings which are packed with grease before the magneto leaves the Works. This lubricant should not require renewal for a considerable period.

Contact-breaker

It is of the utmost importance that the points on the contact-breaker should be kept absolutely free from oil, because any oil on the contacts will become oxidized and prevent good electrical contact between the points when closed. Failure to observe this may result in a considerable reduction in the current from the magneto.

The magneto is intended to operate with a gap of approximately 0.012 inch between the contact points. This gap should be checked occasionally by means of the feeler gauge attached to the small spanner provided with each machine. Do not unnecessarily re-adjust the contact gap. Great care should be taken to keep the contacts absolutely clean. The points are made slightly convex and when necessary, may be cleaned with a very fine emery cloth, but in no circumstances should they be filed.

The contact-breaker may be removed for cleaning by unscrewing the central hexagon-headed screw and withdrawing the breaker. The contact lever may then be lifted from its bearing bush by first raising and then moving to one side the check spring which is located in the end of the bearing bush. Care should be taken not to distort the contact-lever control spring in any way. When replacing the contact lever it is advisable to smear the bearing bush lightly with thin lubricating oil, taking the utmost care to wipe off any surplus oil for the reasons already stated.

Collector Brush

The collector brush moulding should be periodically removed and the surface wiped clean with a cloth moistened with petrol. Before replacing this moulding, insert a corner of a clean cloth in the aperture in the housing so that it bears against the slip-ring track and the flanges, and at the same time turn the engine slowly. This will remove any oil or carbon deposit likely to cause



leakage over the slip-ring flanges. On no account must any implement be used to exert undue pressure with the cloth on the slip-ring flanges, as this may cause them to be broken.

See that the cleaned parts are dry and that the petrol vapour is expelled before restoring the magneto to service.

DISMANTLING THE MAGNETO

Total dismantling of the magneto should be rarely necessary, but in case this should be required, instructions are given below, and the following procedure should be closely followed:—

- (1) The contact-breaker cover should be removed after rotating the securing spring on its pillar.
 - (2) The hexagon-headed screw in the centre of the contact-breaker should then be unscrewed, allowing the contact-breaker to be withdrawn bodily.
 - (3) The collector moulding should next be removed and also, in the case of the twin-cylinder magnetos, the two safety spark gap screws.
- It is important to note that the collector moulding and, in the case of twin-cylinder magnetos, also the safety spark gap screws must be removed before any attempt is made to withdraw the armature from the housing. Failure to observe this will result in damage to the collector moulding and slip-ring.*
- (4) The contact endplate may now be removed by unscrewing the fixing screws and the contact-breaker cover spring pillar. If the contact-breaker control is as shown in Fig. 1, the timing movement is an integral part of the contact endplate and is removed with it.
 - (5) The armature may then be withdrawn from the housing.

NOTE.—If the armature is actually withdrawn from the housing it will be necessary to remagnetize the magnet after replacing the armature.

When re-assembling the magneto great care should be taken to ensure that the key on the contact-breaker base engages with the slot in the armature endplate.

LOCATION OF FAULTS

If the engine is firing irregularly due to faulty ignition, the investigator should first of all satisfy himself that the fault does not lie in the plug, the sparking gaps of which should be set at 0.018 in.

Faulty ignition may result if the high-tension cable becomes detached, loose, broken, or earthed, so that a careful examination of the connections and cable should be made. If sparking persistently occurs at the safety gap, it is an indication that there is a break in the external high-tension circuit.

Irregular firing may result from defective operation of the contact-breaker. To determine whether this is the case, remove the contact-breaker cover and make sure that the contact-breaker fixing screw is securely tightened. Attention should also be given to the contacts; the adjustable one should be securely locked in position. The gap should be checked and, if necessary, adjusted to the thickness of the feeler gauge attached to the spruner supplied with the machine.

If at any time trouble occurs which users are unable to overcome, they are urged to communicate with The British Thomson-Houston Company, Ltd., or with one of the BTH Magneto Service Stations, when advice and the necessary information to overcome the trouble will be gladly given. When returning a magneto for overhaul, care should be taken to detach and retain any sprockets or couplings.



Fig. 1. Method of fitting Bowden wire to timing control (internal type).



Fig. 2. Form Z automatic timing device.

