## B.T.H. IGNITION EQUIPMENT
(Mk. 1 and 2 only)

## DESCRIPTION

17. The ignition system on the Mk. 1 and 2 machines consists of a separate B.T.H. Magneto K.C.2. R.H. rotation. The magneto is driven at half engine speed and provides two sparks per revolution. The bearings are pre-packed with grease and need re-packing only when the magneto is overhauled. The drive is through an automatic timing device incorporated in the magneto pinion. This device advances the spark as the engine speed increases, returning to the retarded position when the engine slows down or stops. In common with the rest of the timing gears this device is lubricated by oil-mist.

## TO ADJUST THE CONTACT BREAKER

18. Remove the three screws securing the magneto end cover and inspect the contact breaker, as it is important that the points are kept free from oil and grease. If the points are left in a dirty state they will become oxidised, causing bad electrical contact between the points when closed and also result in difficult starting and misfiring. The points are made slightly convex and when necessary may

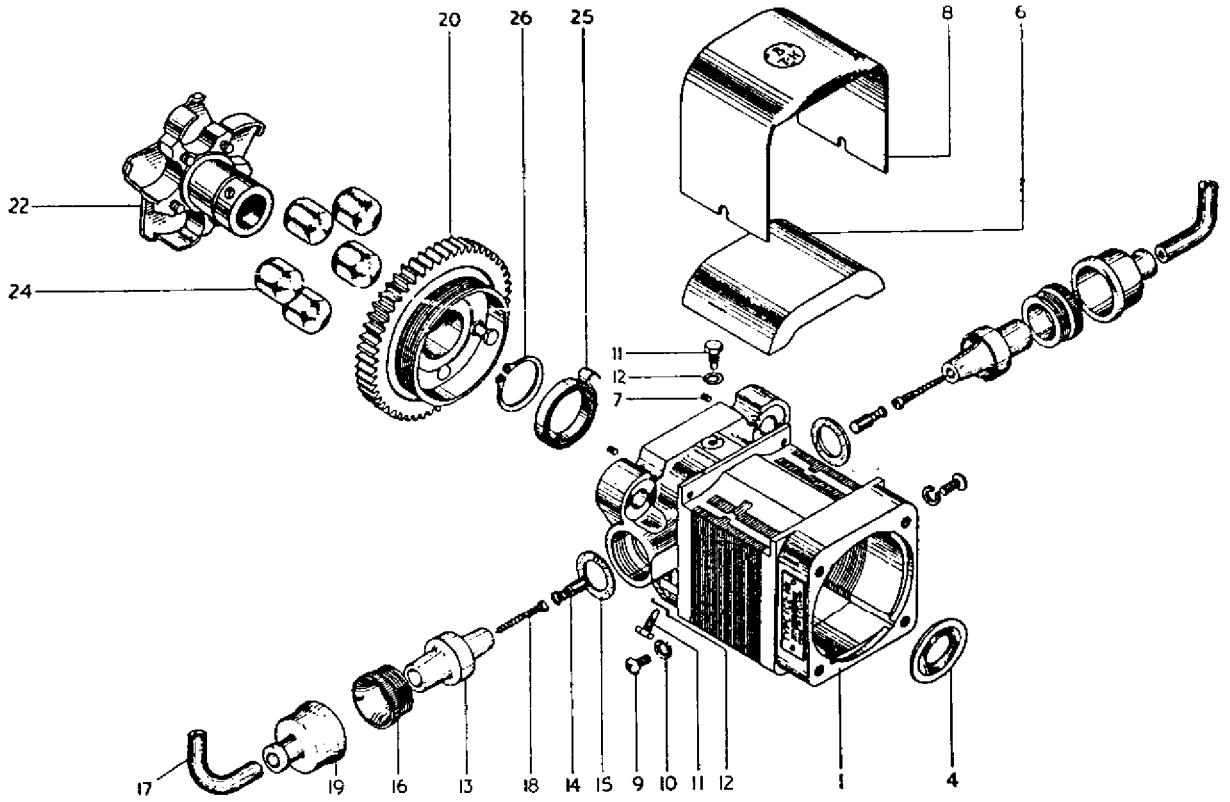


**Fig. 2. Magneto Housing and Automatic Timing Device.**

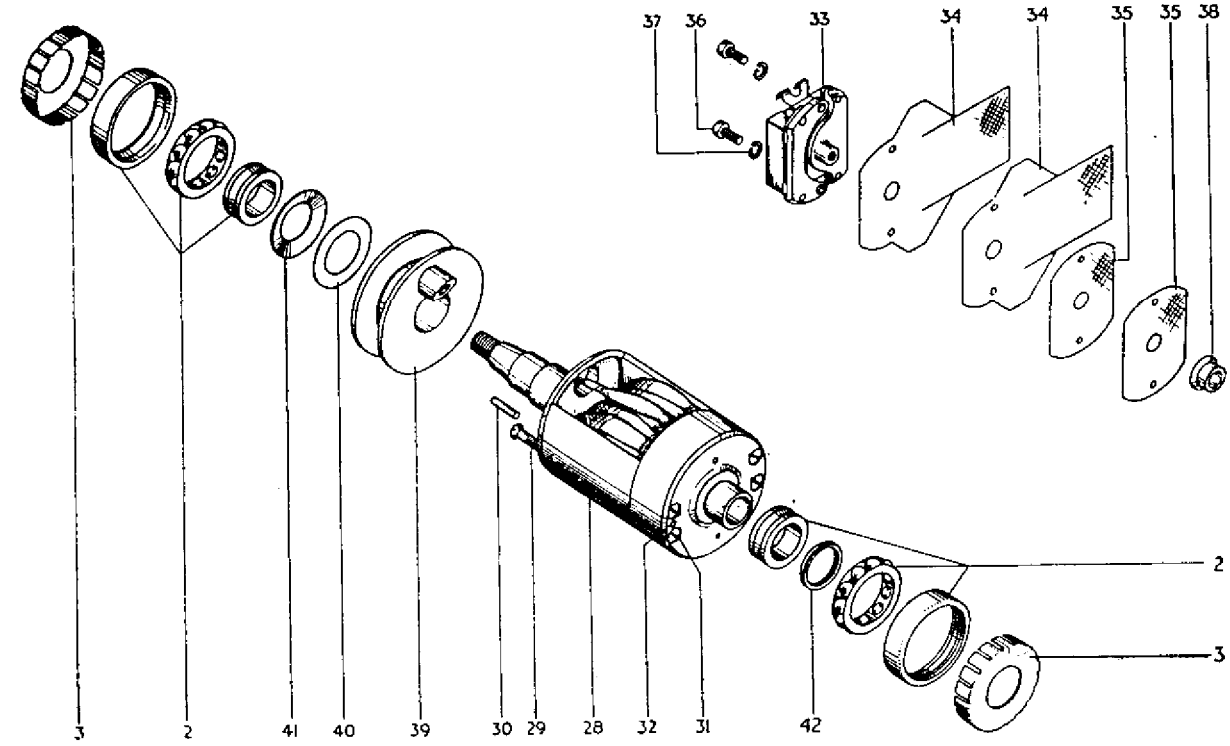


**Fig. 3. Magneto Armature.**

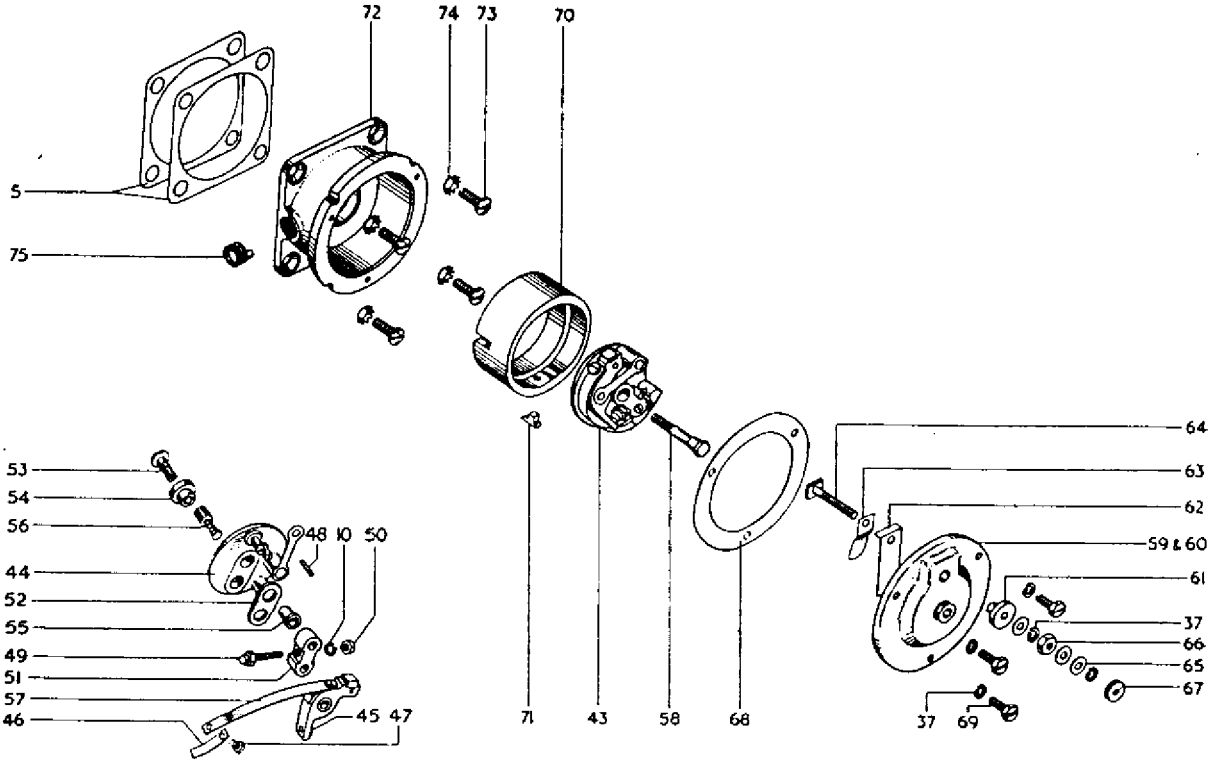


**Fig. 4. Magneto Contact Breaker.**

## INDEX TO FIGS. 2, 3 & 4. B.T.H. MAGNETO.

1 Housing, main.
2 Bearing, ball.
3 Insulation, bearing.
4 Seal, oil.
5 Shim, bearing adjusting.
6 Magnet.
7 Screw, magnet locating.
8 Cover, magnet.
9 Screw, magnet cover.
10 Washer, cover screw.
11 Screw, safety gap.
12 Washer, tab.
13 Holder, collector brush.
14 Brush and spring.
15 Washer, brush holder.
16 Knurled ring, brush holder.
17 H.T. cable.
18 Screw, H.T. cable securing.
19 Grommet, rubber.
20 Gear, A.T.D.
22 Hub assembly, A.T.D.
24 Roller, A.T.D.
25 Spring, A.T.D.
26 Circlip, hub to gear.
28 Armature.
29 Screw, spindle to core.
30 Dowel, armature end plate.
31 Screw, end plate fixing.
32 Dowel, armature, end plate.
33 Condenser.
34 Insulation, condenser (large).
35 Insulation, condenser (small).
36 Screw condenser fixing.
37 Washer, condenser screw.
38 Bush, condenser insulating.
39 Slip-ring.
40 Washer, slip-ring.
41 Washer, slip-ring.
42 Ring, reinforcing.
43 Contact breaker.
44 Base, contact breaker.
45 Lever, contact.
46 Spring, backing.
47 Screw, spring fixing.
48 Wick, lever lubricating.
49 Contact, stationary.
50 Nut, contact locking.
51 Block, contact holding.
52 Strip, insulating.
53 Screw, block to base.
54 Bush, screw insulating.
55 Bush, centre.
56 Brush and spring, earthing.
57 Spring, contact lever.
58 Screw, contact breaker fixing.
59 Contact breaker cover.
60 Contact breaker cover.
61 Bush, terminal insulating.
62 Insulation, terminal.
63 Strip, contact.
64 Terminal.
65 Washer, terminal nut.
66 Nut, terminal locking.
67 Nut, terminal knurled.
68 Washer, cover joint.
69 Screw, cover fixing.
70 Ring, cam.
71 Wick, cam lubricating.
72 Housing, cam ring.
73 Screw, housing fixing.
74 Washer, shakeproof.
75 Screw, cam stop.

be cleaned with a carborundum stone; 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 assembly from its housing.
The contact lever may then be lifted from its bearing pin 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 spring. When replacing the contact lever, smear the bearing pin lightly with thin lubricating oil; carefully wipe off any surplus oil.

## TO CLEAN THE COLLECTOR BRUSHES

19. The collector brush holder should be removed by pulling back the rubber grommets on the plug leads and unscrewing the knurled ring, and the surface wiped clean with a cloth moistened with spirit. Before replacing the mouldings, the slip-ring track should be cleaned. To do this insert a corner of clean cloth into the aperture from which the holders have been taken, so that it bears against the slip-ring track and the flange; at the same time turn the magneto. This will remove any oil, or carbon deposit which would be likely to cause an electrical leakage. See that the cleaned parts are dry and that the spirit vapour is expelled before restoring the magneto to service.

## TO REMOVE THE MAGNETO

20. See Section 1, paras. 20 and 23.

## TO DISMANTLE THE MAGNETO

21. Remove the three contact breaker cover securing screws and when detaching the cover, take care not to damage the sealing washer.
Unscrew the hexagon headed screw in the centre of the contact breaker, when the contact breaker can be withdrawn complete.
Remove the collector mouldings by unscrewing the knurled retaining rings. Take care not to damage the carbon brushes.
The safety gap screws are situated at the top and bottom of the main housing at the drive end. Ease back the locking tabs and unscrew the screws from the housing. It is most important to observe this as failure to do so will result in damage to the slip ring when the armature is withdrawn.
Unscrew the four cam ring housing fixing screws. The special locking washers which retain the screws should be preserved for re-assembling.
Withdraw the armature assembly from the main housing.

## TO ASSEMBLE THE MAGNETO

22. Re-assembly of the magneto is exactly the reverse of dismantling but the following points must be observed:—

(1) If the armature is withdrawn from the housing it will be necessary to re-magnetise the magneto after replacing the armature.

(2) Make sure that all parts are thoroughly cleaned and that no foreign matter is present, particularly in the tunnel of the main housing, otherwise binding and ultimate seizure of the armature will follow.

(3) It is essential that all washers and locking tabs should be replaced in their original positions. Damaged tabs should not be used, but replacements obtained.

(4) If the cam ring has been removed from the housing, be sure that the lubricating wick is in position and lubricated with thin oil and that the cam is properly located in the housing with the timing slot engaged with the timing stop screw. In no circumstances should the timing stop screw be moved from its original position, as this is set by an electrical process at the manufacturers, and has been peened over as a safety measure.

(5) Care should be taken when replacing the contact breaker to ensure that the key on the contact breaker base engages with the corresponding slot in the armature and is held firmly in position during the tightening of the retaining screw.

(6) All carbon brushes should move freely in their holders and the spring pressure should not be adjusted unnecessarily.

(7) High-tension cables should be examined for cracks, caused by dry or perished rubber and should be screwed securely home in the collector mouldings. A special screw is fitted in the collector mouldings for this purpose and has a woodscrew-threaded portion protruding in the cable outlet position into which the cables are screwed.

## TO REPLACE THE MAGNETO AND TIME THE IGNITION

23. See Section 1, paras. 47 and 50.