GENERAL AND TECHNICAL INFORMATION

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LEADING PARTICULARS

	No 1 Mk 1	No 3 Mk 1
Size of case (mm)	76.4 x 76.4 x 19.05 (3in x 3in x 0.75in)	152.4 x 152.4 x 45.18 (6in x 6in x 1.7in)
Weight	0.453kg (1 lb)	4.53kg (10 lb)
Hook capacity	12.7mm (0.5in)	28.4mm (1.12in)
Suspension pin	12.7mm (0.5in)	28.4mm (1.12in)
Working voltage	24 volts	24 volts
Rotor coil resistance	5 ohms	8 ohms
Speed of operation	0.005 sec	0.005 sec
Ref No	11A/1082730	11A/3673

Introduction

1 The No 1 and 3 E.M. release units are similar in design, differing only in size.

2 The release units are designed for use with stores fitted with flush suspension lugs of either type, i.e. raised or recessed (fig. 4 and 5).

3 The rectangular case, free from projections, with a single pin suspension, facilitates several alternative methods of mounting.

4 The unit is used in conjunction with a release unit housing and to avoid damaging the tumbler, must always be cocked before it is inserted in the housing. The housing contains the electrical connections and interlocks applicable to the particular equipment with which the unit is used.

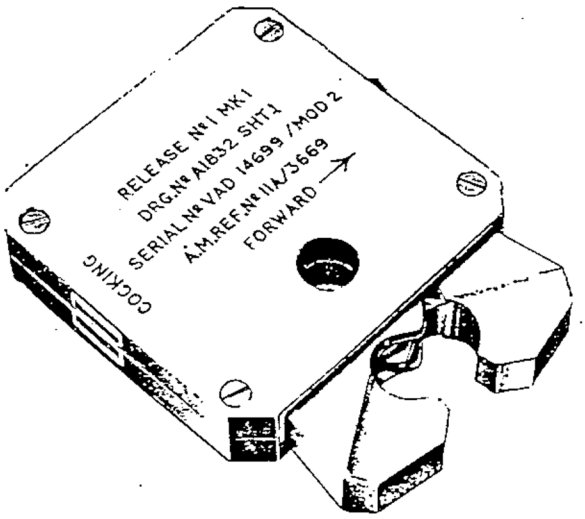


Fig.1 E.M. release unit, No 1 Mk 1

5 The housings are described in the Air Publication dealing with the particular equipment.

WARNING ...

TO ENSURE THE EFFICIENT WORKING OF THESE UNITS, IT IS ESSENTIAL THAT DUST AND MOISTURE ARE EXCLUDED FROM THE INTERIOR. TO THIS END, A DUST EXCLUDER (REF NO 11A/1052734 AND 11A/4486606 FOR NO 1 AND 3 RELEASE UNITS RESPECTIVELY) IS TO BE FITTED TO THE UNIT WHENEVER PRACTICABLE, SO THAT, IN CONJUNCTION WITH THE DUST EXCLUDER ATTACHED TO THE LOWER PART OF THE RELEASE UNIT HOUSING, THE INSIDE OF THE HOUSING AND THE UNIT ARE SEALED AGAINST THE ENTRY OF DUST AND MOISTURE.

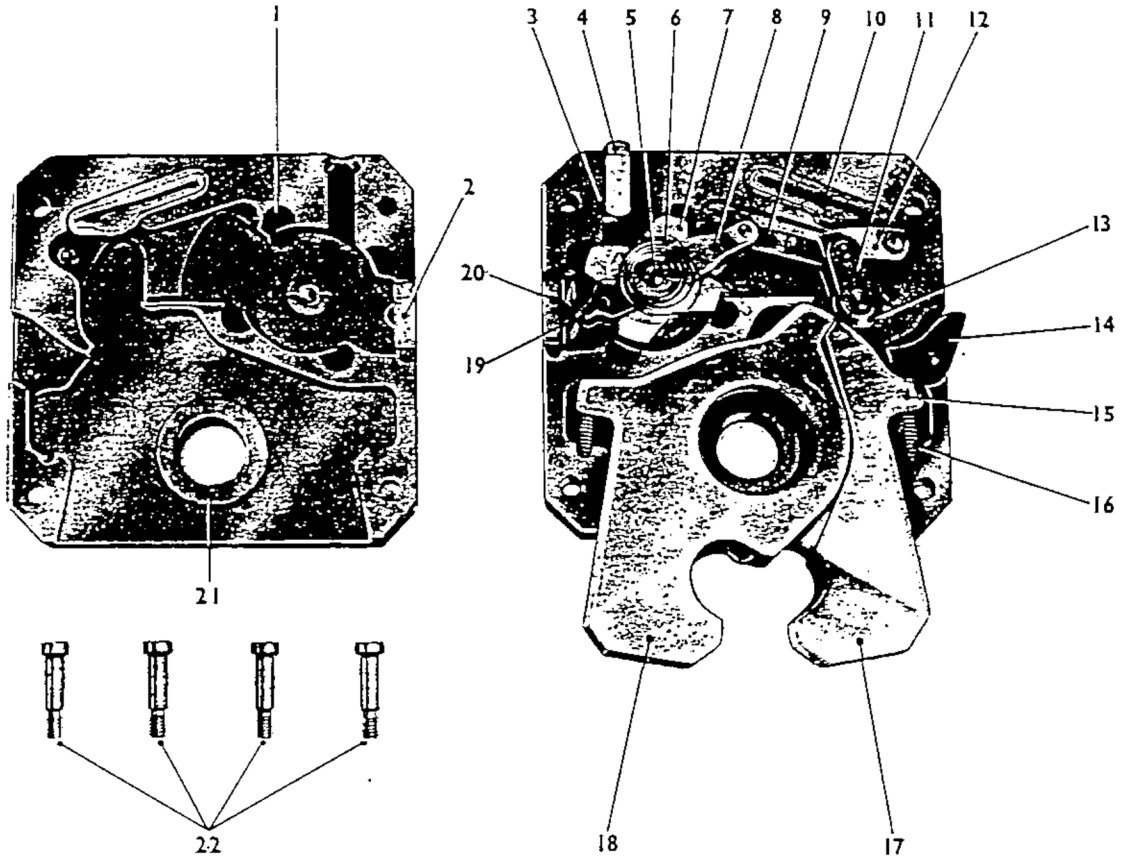
NO.1 MK 1 UNIT

Description (fig. 1 and 2)

6 The case is in two halves, which are secured together by four bolts. Imbedded in each half are four, equally spaced, iron inserts which serve as fixed poles in an electro-magnetic rotor. A boss, on the inside of each half of the case, serves as a journal on which two bomb hooks are mounted, and also forms a bearing for the single suspension pin of the release unit.

7 The two bomb hooks are constructed of high-tensile steel and are mounted on the common journal. The hooks are shaped to give a clean drop, free from drag. They are spring-loaded which ensures that the hooks remain open when the unit is released.

8 The electro-magnetic rotor is fitted with four pole arms. Two rotor springs rotate the rotor to its cocked position when the bomb hooks are closed. An insulated extension of the rotor houses a contact strip which, when the unit is cocked, makes contact with two springs mounted in an insulated feed plug. Each spring is attached to an external contact strip, the strips being marked COCKING and RELEASE. The spring attached to the COCKING strip is shortened so that contact to it is only made when the rotor has fully rotated to the cocked position. This enables the unit to be tested after it has been cocked.



1	Fixed pole (4)	12	Toggle link
2	Cocking contact	13	Roller ← 11A/44440
3	Manual release plate	14	Tumbler
4	Manual release slide	15	Extension on bomb hook
5	Rotor	16	Bomb hook spring (2)
6	Rotor spring	17	Right bomb hook
7	Pole arm (4)	18	Left bomb hook
8	Rotor link	19	Rotor extension
9	Connecting link	20	Release contact
10	Buffer	21	Journal
11	H-link	22	Case securing screws

Fig.2 E.M. release unit, No 1 Mk 1 - internal view

9 A linkage, consisting of a rotor link, a connecting link, a toggle-link and an H-link is attached to the rotor, and is positioned when the rotor is rotated. A roller, fitted to the bottom of the H-link engages projections on the top of the bomb hooks, and maintains the hooks in the closed position when the unit is cocked. To prevent damage to the linkage, when a loaded release unit is operated, the upper surface of the toggle link strikes a buffer which absorbs the shock.

10 The roller axis and pivot pins are each 16.76mm (0.66in) long, are removeable and do not have centre punching.

11 An interlock tumbler is operated by a hump on the right-hand bomb hook and caused to engage an interlock switch in the release unit housing. This

switch ensures that, when the bomb hooks of one release unit are open the circuit to the release unit interlocked with it is completed.

12 A manual release consisting of a slide, a spring inside the slide, and a plate, is contained in a housing at the top of the case. It is operated by mechanism in the release unit housing.

Cocking the release unit (fig. 3)

13 When the bomb hooks are closed, the rotor is rotated by its spring, and causes the linkage to position the roller between the projections on the top of the bomb hooks. The linkage is locked in the cocked position by the axis of the rotor and connecting links being positioned slightly below the horizontal.

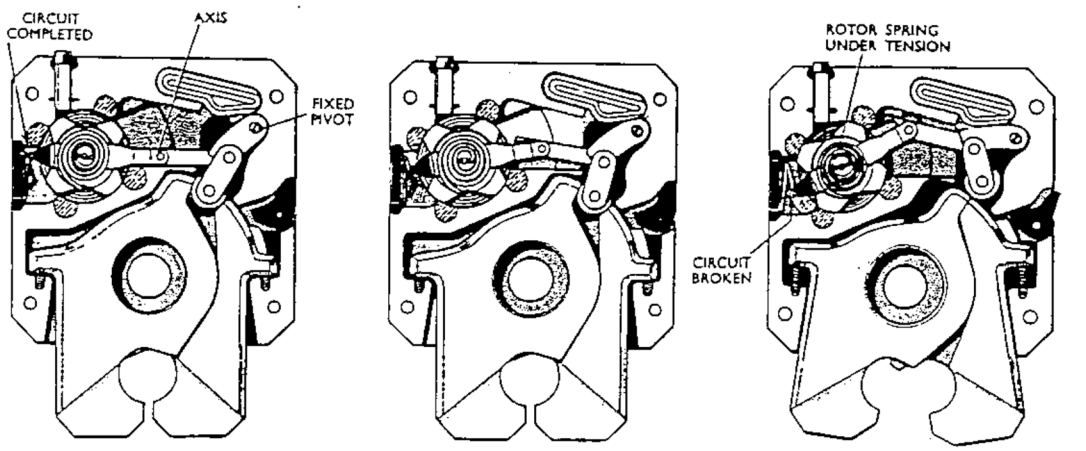


Fig.3 Functioning diagrams, E.M. release unit, No 1 Mk 1

14 When the rotor rotates, its contact meets the spring of the feed plug, and completes the electrical circuit through the feed switch.

15 The extension on the right-hand bomb hook moves away from the tumbler, which pivots away from the interlock switch and enables the switch to break the circuit.

Actuating the release unit

16 When the firing switch is pressed, the rotor is energised. The rotor rotates and, by means of the linkage, withdraws the roller from between the projections on the bomb hooks. The hooks open, and the store carried is released.

17 When the rotor rotates, its contact moves away from the spring of the feed plug, and the electrical circuit is broken. The extension on the right-hand bomb hook causes the tumbler to pivot and engage the interlock switch to close the interlock circuit.

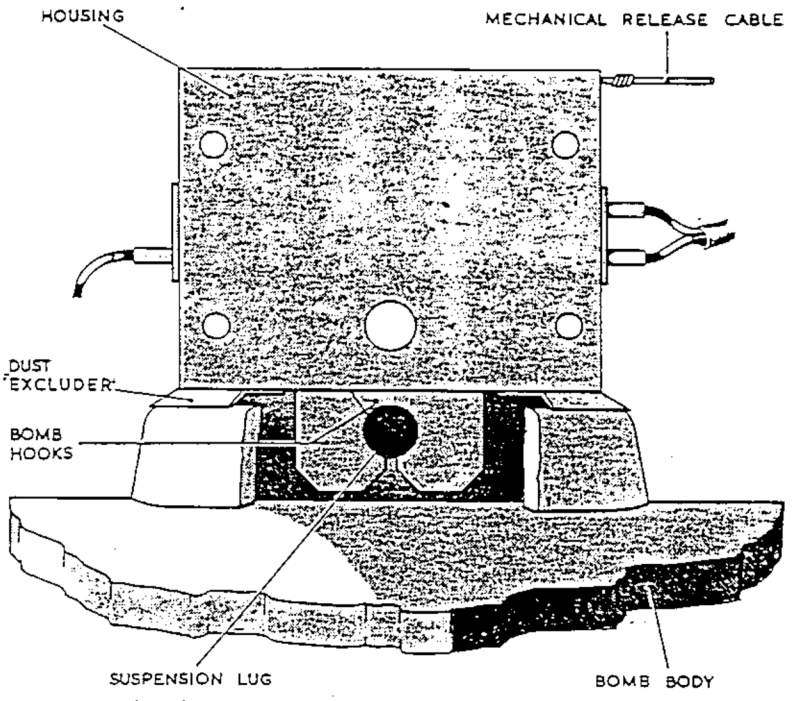


Fig.4 Raised suspension lug, with release unit fitted

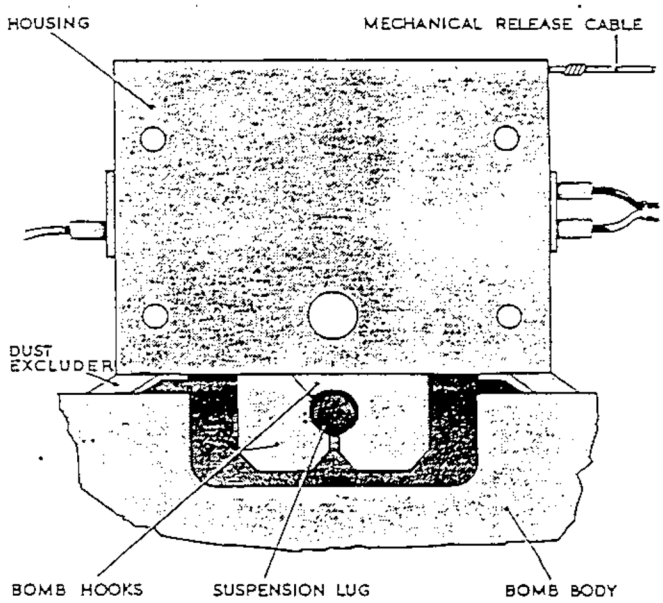


Fig.5 Recessed suspension lug, with release unit fitted

Manual release

18 The manual release of the unit is operated through mechanism contained in the housing in which the unit is fitted. This mechanism depresses the manual release slide which contacts one of the rotor pole arms causing the rotor to rotate. The units is then released similarly to an electrical release.

Instructions for use

19 The instructions for use, together with the instructions for loading the release unit, are contained in the Section and Chapter of the publication dealing with the equipment in which the unit is installed.

NO 3 MK 1 UNIT

Comparison with No 1 Mk 1

20 The No 3 Mk 1 release unit is similar to the No 1 Mk 1 release unit except that it is proportionately larger.

Instructions for use

21 The instructions for use and loading are contained in the Air Publication dealing with the equipment in which the unit is installed.

DISMANTLING, EXAMINATION, ASSEMBLING AND TESTING

General Instructions

22 Release units removed from bomb carriers or other installations are to be kept in a dry and dust proof storage whilst awaiting, and on completion of servicing. The bomb hooks should be closed, and the units stored with the bomb hooks downwards.

23 Units in store, supplied as spares, should be retained in their packages until required for use.

24 When units are stored complete with their housings, the dust excluder is to be fitted to the unit to exclude dust and moisture from the unit and the housing which are to be kept in this storage, except while being serviced, until required for use.

25 The dismantling of units is only to be undertaken by armanent fitters, and then only to enable a thorough examination to be made. Cases, bomb hooks, and certain other components of the unit are matched during manufacture; therefore the components of one unit are not to be exchanged with those of another by User Units.

26 Repairs are not to be undertaken by Service Units. Unserviceable units are to be returned to the appropriate Maintenance Unit and new units demanded as replacements.

27 After the pole pieces have been cleaned, they are to be coated with PX-1 to protect them against corrosion. The PX-1 is to be applied with a clean dry rag, any excess being removed to leave a fine film on the pole pieces.

28 On no account must a voltage higher than 4.5 volts be applied when testing the unit for cocking without a suitable limiting resistance in series to limit current to 70 milliamps or less. Care is to be taken, when using higher voltage necessary to release the unit electrically, that the positive lead is connected only to the contact strip indicated by the word RELEASE; if this lead is connected to the contact strip indicated by the word COCKING, it will result in the burning of the rotor contacts.

29 In all servicing and testing operations where the unit is to be manually released when it is out of its housing, a No 6 drift is to be used to depress the manual release slide.

30 The assembling tool only is to be used when assembling and tensioning the rotor springs. Pliers or other unauthorised tools are not to be used for this purpose.

31 The following tools and materials are required to complete the servicing:-

Ref No	Nomenclature
	Composite tool kit to local requirement
1C/9105853	Screwdriver, ¼in x 3in
1E/4658089	Drift, No 6
1H/9107945	Tweezers, steel, No 1
11A/1082734	Tool, assembly
32B/1250398	Cloth, cleaning
33C/9426823	Crocus paper
33H/224597	Cement, rubber resin
34B/9100479	PX-1
6E/948	Allen M5 magnifier
75T/9138081	Dispenser Arcton

No 1 Mk 1 unit dismantling (fig 6)

32 Remove the four securing screws, and separate the two parts of the case. Do not use a metal tool to separate the case as this may cause burrs on the mating surfaces.

33 Lift out the rotor and the linkage as one complete assembly. Remove the two pins from the H-link and separate the roller and the link from the toggle link.

34 Remove the manual release, consisting of the slide, spring and plate, as a complete assembly.

35 Remove the bomb hooks from the common journal, and slide them apart.

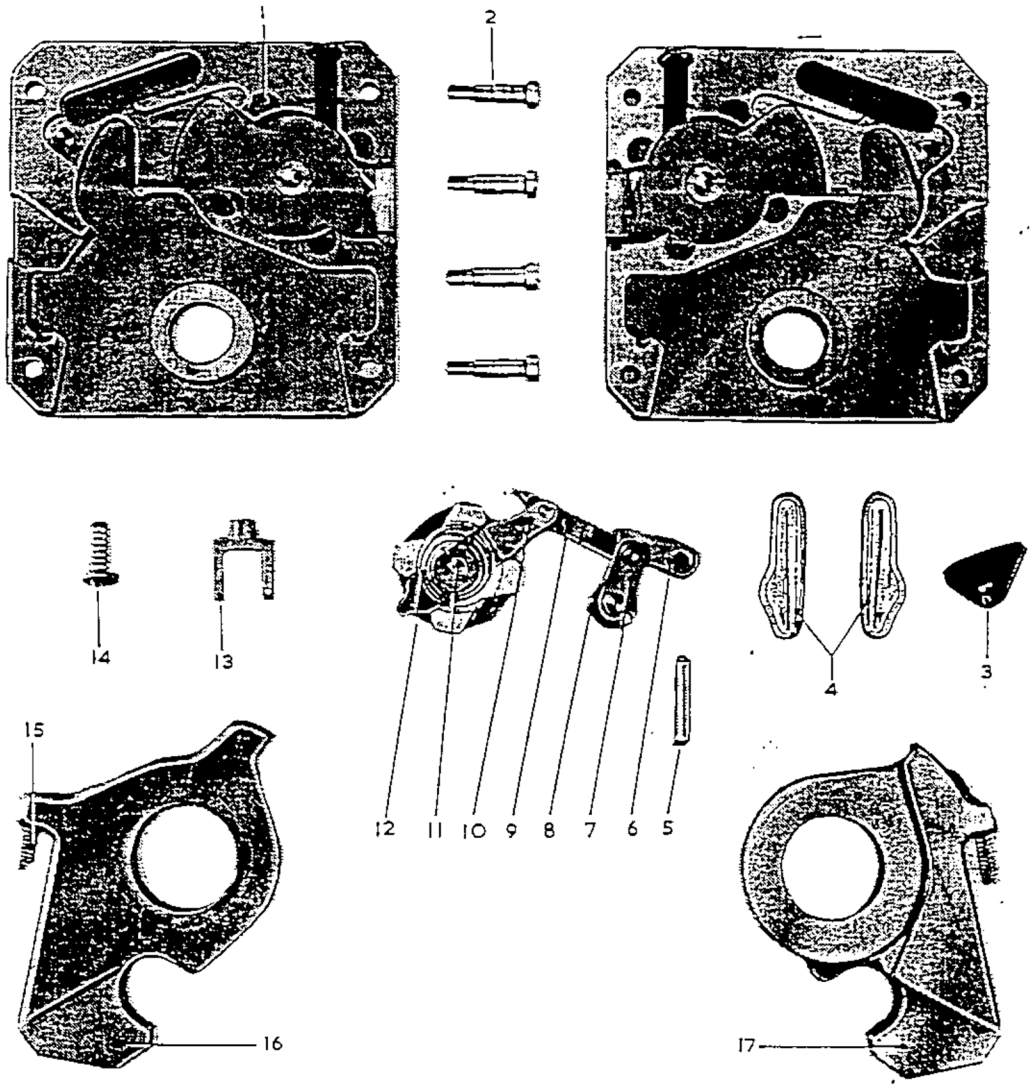
36 Remove the buffer without distorting it.

37 Remove the tumbler.

Examination (fig 6)

38 Examine and thoroughly clean each component, removing all signs of corrosion, dust or moisture, using arcton spray as required.

39 Examine the rotor and pole pieces for corrosion. Corrosion may be removed by very light rubbing with crocus paper. Coat the pole pieces with protective PX-1.



1 Fixed pole (4)
2 Case securing screws
3 Tumbler
4 Buffers
5 Fixed pivot pin
6 Toggle link
7 H-link
8 Roller
9 Connecting link
10 Rotor link
11 Rotor axis pin
12 Rotor spring
13 Manual release spring
14 Manual release spring and plate
15 Bomb hook spring
16 Left bomb hook
17 Right bomb hook

Fig.6 Release unit dismantled for examination

40 Examine the solenoid to ensure that it is completely insulated, and that no wire is protruding.

41 Examine the spring contact for serviceability. Clean the contacts with crocus paper, taking care not to distort the springs.

42 Examine both rotor springs; ensure that the ends are not distorted, and that the ends are securely fitted into the rotor axis and the rotor.

43 Examine the bomb hook springs and ensure that they are efficient and capable of retaining the hooks in the open position when the unit is un-cocked. Check both the free length of the springs which should be 0.62in (+0.02in -0), and the colour should be blue.

44 Examine the linkage, particularly the register faces where the connecting link abuts the rotor link, for burrs, corrosion and distortion. Check that the links move freely about their axis pins, and that the roller rotates freely and is not damaged. Examine the toggle link for cracks extending from the fixed pivot-pin hole and also from the hole for the pin which links the toggle link and H-link to the connecting link.

45 Examine the triple link axis pin for scoring and deterioration of the surface finish. If any such signs are apparent, the pin is to be discarded and a new one fitted.

46 Examine both halves of the journal for scoring, and ensure that each bomb hook rotates freely on its own part of the journal.

47 Examine the buffer, and ensure that:

47.1 The buffer is supple.

47.2 There are no signs of deterioration in the form of mildew, tearing, etc.

47.3 The buffer is not distorted beyond the slight distortion which occurs when the buffer is initially fitted and used.

47.4 The buffer fits freely but snugly into its housing.

48 Examine the insulated contact holder of the rotor and the contact strips for signs of burning. Ensure that the contact strips are firmly secured in the nylon inserts, securing them if necessary with cement, rubber, resin, and that the inserts are firmly secured in the case.

49 Assemble the rotor to the cover, and check that the contour of the cocking contact spring and its relation to the contact bridge of the rotor are as shown in fig. 8. Remove the rotor from the cover, and, if necessary, proceed as follows:

49.1 Remove the cocking contact spring and its nylon insert from the cover.

49.2 Using the tweezers, straighten the internal prongs as shown in 2 in fig. 8. Fit the switch insert to the cover, ensuring that it is firmly secured to the cover.

49.3 Assemble the rotor to the cover; check the contour of the contact and its relation to the contact bridge of the rotor (2 in fig. 8). When the contact spring is correct, remove the rotor from the cover, and complete the assembling and testing as detailed in this chapter.

Assembling

50 Assemble the H-link to the toggle link, ensuring that the chamfered face of the centre bar faces towards the rotor, and insert the pivot pin. Assemble the roller to the H-link and insert the axis pin.

51 Put back the rotor with the linkage attached as a complete assembly. The assembly is to be positioned in the released position to avoid damage to the spring contacts. Insert the pivot pin through it axis hole in the toggle link and engage the end of the pin in the recess in the lower part of the case. Engage the assembling tool over the axis of the rotor so that the end of the upper rotor spring is engaged in the slot at the base of the tool. Turn the tool approximately 90 deg. in a clockwise direction, and press downwards on the tool to engage the end of the lower rotor spring in the slot in the lower half of the case. Remove the tool.

52 Assemble the bomb hooks, and place them over the journal. Engage each bomb hook spring in its recess in the case.

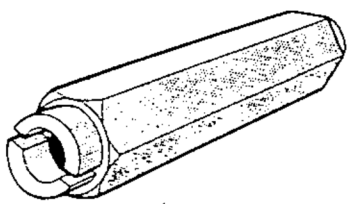


Fig.7 Tool assembling

53 Close the bomb hooks, and the rotor springs should rotate the rotor and position the roller between the projections on the top of the bomb hooks.

54 Assemble the manual release into its housing, and ensure that the plate enters the slot in the lower part of the housing.

55 Fit the tumbler into the recess in the case.

56 With the release unit in the cocked position assemble the upper part of the case on to the lower part. Providing the components are correctly assembled, the inner face of each part of the case will meet.

57 Secure the two parts of the cast together by the four securing screws. Lightly depress the manual release plunger before tightening the screws adjacent to it.

Testing

58 Test the release unit as detailed in Topic-5F, Chap 1-1.

No 3 Mk 1 unit

59 The No 3 Mk 1 E.M. release unit is to be dismantled and assembled in a similar manner to the No 1 Mk 1 release unit. Testing is detailed in Topic-5F Chap. 1-2.

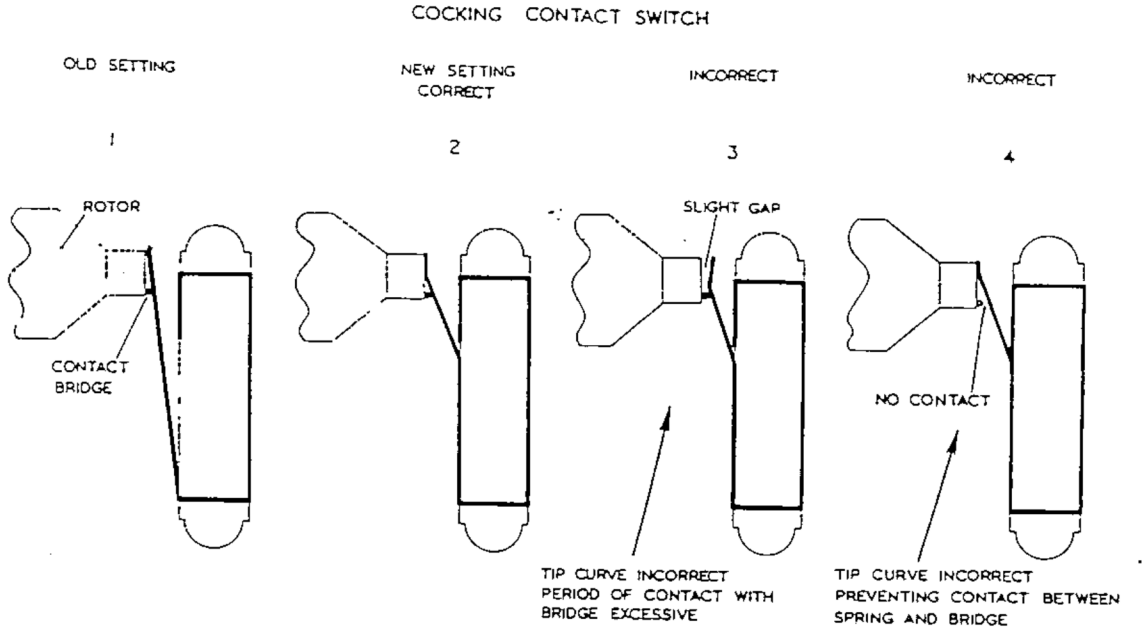


Fig.8 Setting of the cocking contact spring