Chapter 19

FLYING SUIT, Mk. 3 COMBINED WITH HARNESS, TYPE D, Mk. 3

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LIST OF ILLUSTRATIONS

Introduction

1. The Mk. 3 flying suit is intended for use by aircrew who, while in the aircraft, occupy seats and perform duties of a nature which renders the constant wearing of a parachute pack impracticable. The suit accommodates an observer type parachute harness to which a chest type pack may be attached if an emergency appears imminent. The harness is located between the suit and a lining to which it is secured by silk thread ties so disposed that none of the straps can slip out of position. The assemblies include a harness in which standard snap hooks are incorporated. This necessitates a means of quickly releasing the canopy after a descent hence a knife (*Ref. No.* 22C/1864) is provided with the suit so that the lift webs or rigging lines can be severed if necessary. The knife is complete with a sheath and this has to be stitched to the suit. The positioning of the knife is optional, a stay being provided on each thigh for this purpose.

DESCRIPTION

Suit

2. The suit (*fig.* 1 *to* 5) is an overall-type garment made from linen cloth fastened in front with a sliding fastener. Integral with the suit is an inflatable stole of the same capacity as the aircrew life jackets, which is inflated from a 34 gr. CO_2 cylinder mounted on the left breast and fitted with an operating head. On the right-hand stole is a rubber button on which the lamp is fitted when the wearer is in the water: an oral valve and inflation tube are also fitted. Pockets are provided for the accommoda-

tion of S.A.R.A.H., emergency oxygen, sea-activated battery and lamp, gloves, pilots notes, maps, heliograph, whistle and lanyard. A life line and toggle are secured to the front of the left-hand lifting becket of the stole. The locations of the pockets may be seen in fig. 1, which also shows the types of fastening provided for the various pockets and the main opening in the front of the suit. The two straps and buckles shown on the right leg are fitted to enable the oxygen set pocket to be strapped tightly to the leg to provide comfort and minimise the load taken by the material of the suit. Buttons are sewn inside the legs and arms to enable the lining to be fastened to them and on each side of the front opening is one chain of a sliding fastener. This matches a similar chain on the lining. Adjustment is provided at the waist, by straps and buckles and lifting beckets made from a continuous length of webbing and sewn to the back of the suit to emerge from slots in the front.

Fig. 1. Flying suit, Mk. 3—front view

Fig. 2. Flying suit, Mk. 3—rear view showing waist adjustment

Fig. 3. Flying suit, Mk. 3—stole open to show lifting beckets

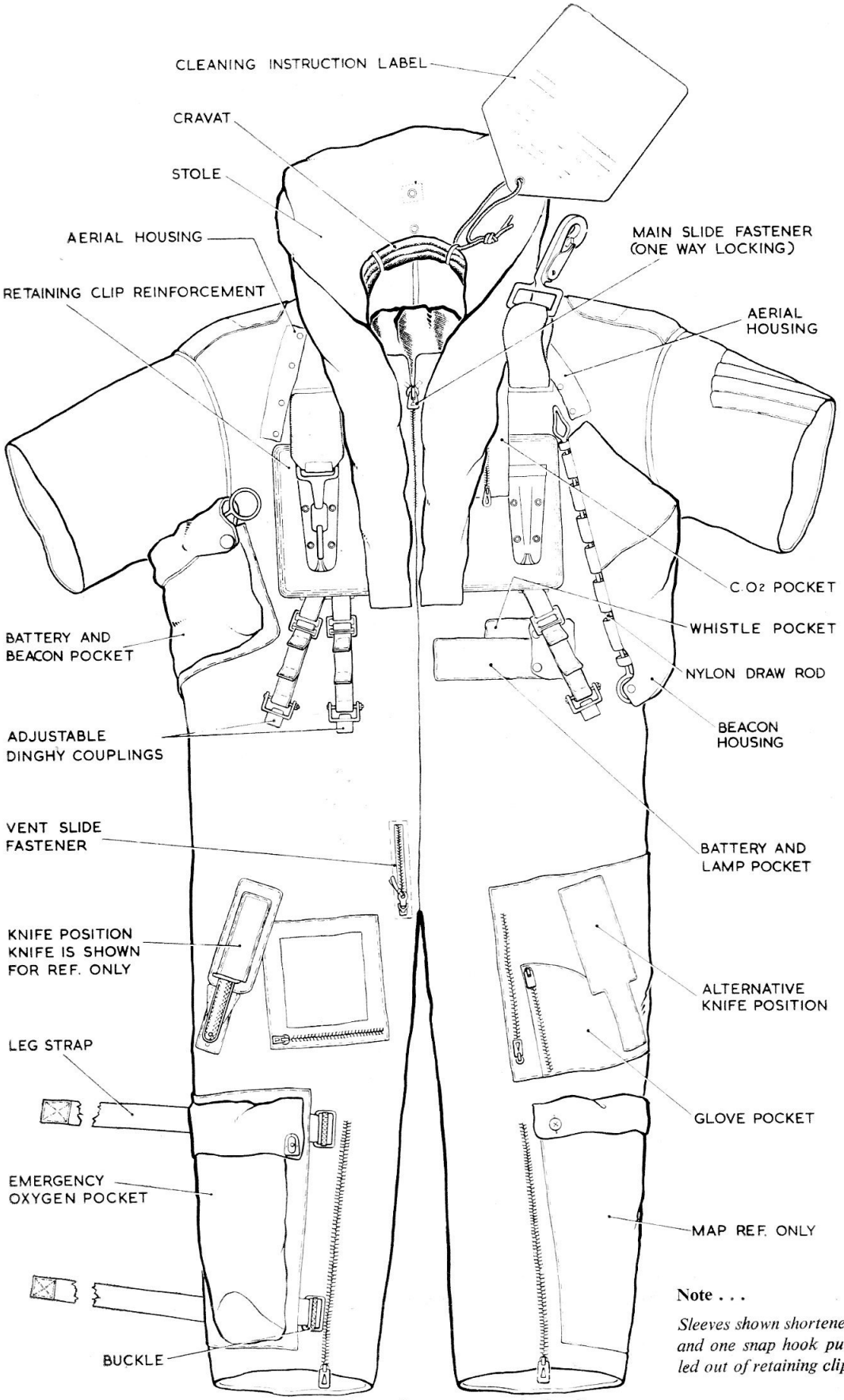

Fig. 4. General arrangement of suit

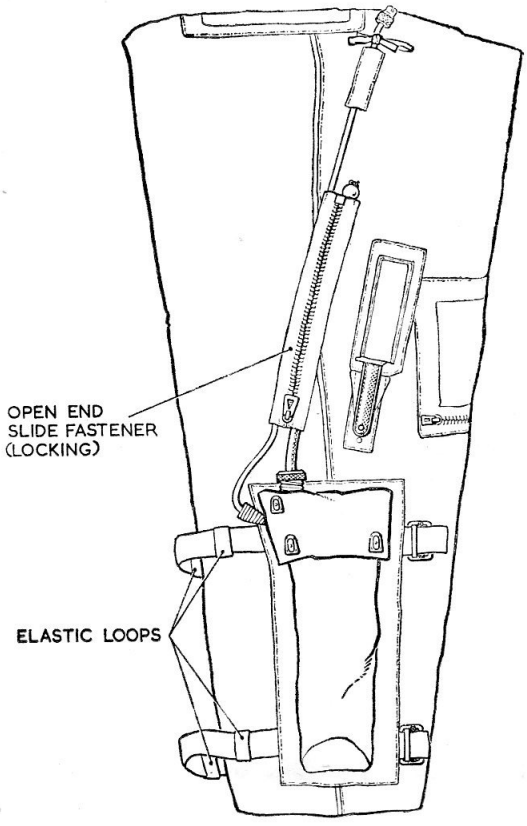

Fig. 5. Lower right leg details

Lining

3. Refer to fig. 6. The lining is a trunk-fitting garment made from nylon. The front is open from crotch to throat and each side is fitted with the chain of a sliding fastener to enable it to be secured to the matching chain on the short flap described in para. 2. The sleeves and legs are short and have buttonholes in the hems to coincide with the buttons inside the suit. On the outside of the lining are thirteen pairs of beckets which are provided so that the lining can be tied to the suit.

Harness

4. The harness (*fig.* 6) consists of eight lengths of 700 lb. nylon cord and nylon webbing cross strap and waist belt, back strap and leg straps. Nylon restraining straps 1 in. wide connect the seat strap and waist belt and prevent the latter from riding up on the wearer as the loads are taken when the canopy develops. Special shoulder adapters, in which there are four slots each affording a passage for two of the cords, are fitted and permit a small measure of self adjustment in the harness during a descent. Harnesses are fitted with standard snap hooks for the attachment of the pack and three dinghy connectors on adjustable straps are provided for the attachment of the personal survival pack. Release of the canopy after alighting is accomplished by severing the lift webs with the knife provided with the flying suit. A sliding bar buckle and a tongue, one on each end of the waist belt, enable the harness to be fastened round the wearer's waist. At various points on the harness, beckets are fitted to match similar beckets on the lining of the suit so that the harness and lining can be fastened together.

Sizes

5. Suits, linings and harnesses are made in six sizes and are issued under the following reference numbers:—

Size	*Assembly*	*Harness*	*Suit and Lining (minus harness)*
1	15A/810	15A/875	22C/1974
2	15A/811	15A/876	22C/1975
3	15A/812	15A/877	22C/1976
4	15A/813	15A/878	22C/1977
5	15A/814	15A/879	22C/1978
6	15A/815	15A/880	22C/1979

When selecting an assembly all appropriate inner clothing should be worn and the choice of size made with particular care.

To assemble a suit, lining and harness

6. *Fitting a harness to a lining.* Ensure that the harness is free from twists and then pursue the following sequence:—

(a) Hold one side of the seat strap at the bottom of the harness cords and pull the shoulder adapter on that side of the harness as far up the cords as it will go. Then repeat this action on the other side of the harness.

(b) Position the tops of the leg straps on the pencil marks on the cords.

(c) Tie the cords to the beckets on the leg straps, back strap, waist belt and cross strap with single lengths of thread, silk, light (*Ref. No.* 15A/510) commencing with those on the leg straps. The two short distance webs lying between the cords will then cause the

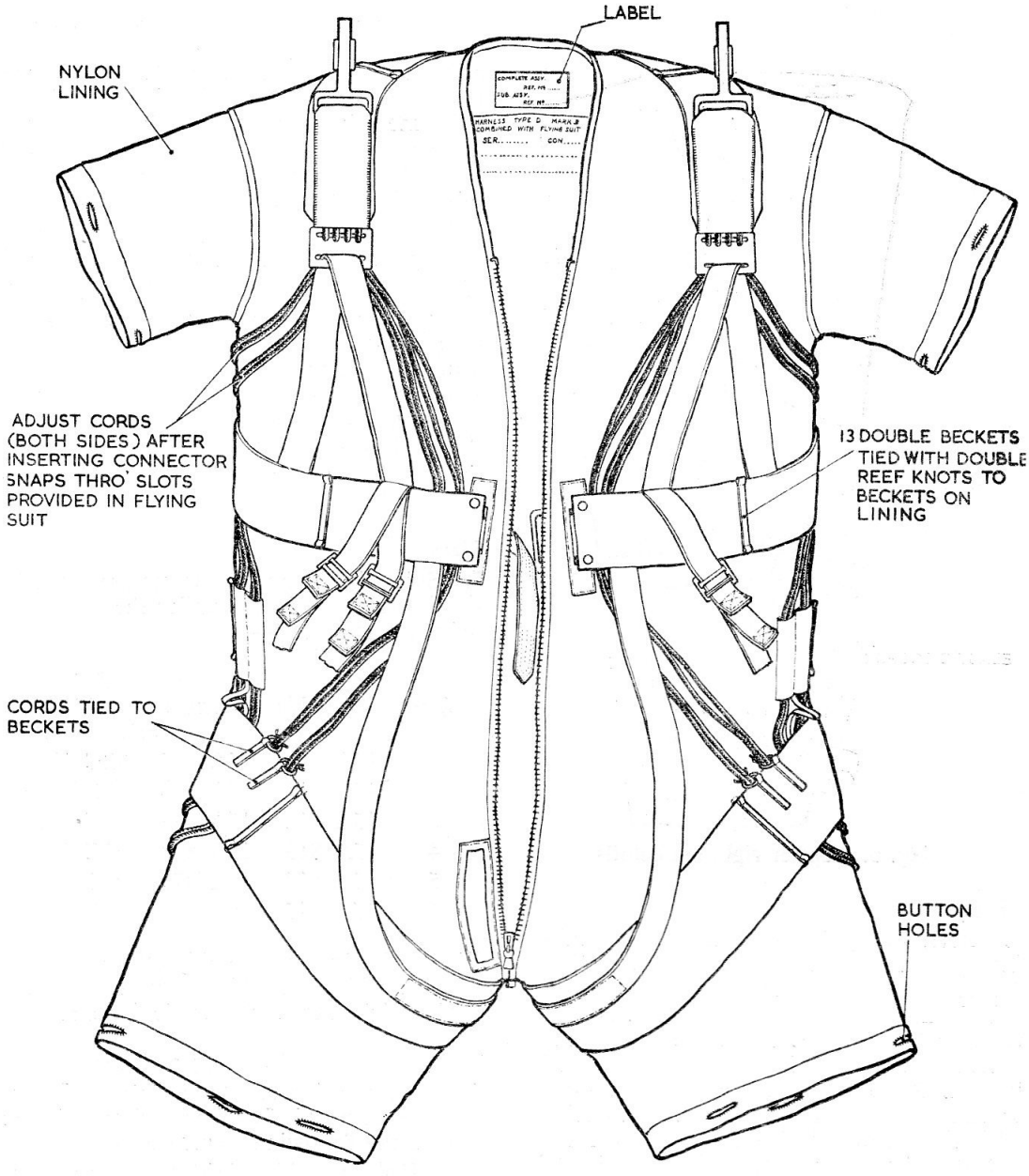

Fig. 6. General arrangement of lining and harness

back strap to take up the correct position in relation to the leg straps. Where the beckets are double-ended, both ends must be tied to the cords.

(d) Place the lining inside the harness and tie the two together using the matching beckets of which there are thirteen pairs located as follows:—

Left shoulder	1
Right shoulder	1
Centre of back	1
Spaced round waist	3
Just above waist level in front	2
Back of legs	2
Front of legs	2
Crotch	1

(e) Pull the buckle and tongue on the ends of the waist belt through the slots in the edges of the front opening of the lining. Then fasten the ' babydot ' fasteners.

(2) *Fitting the lining and harness to a suit.*

(a) Place the lining and harness inside the suit, ensuring that the backs of the lining and suit are together, and pass the harness snap hooks through the apertures in the suit. Position the sleeves and legs of the lining so that they lie in front of the cross-brace and legs loops respectively, turn the sleeves and legs inside out, place the seams on the lining to coincide with those of the suit so that the correct buttons and holes line up and button the suit and lining together. Return the sleeves and legs to the correct positions.

(b) Pass the survival pack attachment fittings through the apertures above the waist of the suit and then, using double light silk thread, stitch the top edge of the snap hook openings to the socks covering the ends of the harness cords. Secure the sides of the opening in the front of the lining to the front of the suit by the sliding fasteners.

(c) Finally tie the snap hooks to the spring clips with ties of 250 lb. nylon cord passed round the shanks of the hooks and through the hollow rivets holding the bottom parts of the clips to the suit. Tie the ends of the cords together with double reef knots.

Installing S.A.R.A.H.

7. (1) Place the battery in its pocket with the coding unit facing the front of the garment. Secure it in position with the straps and buckles.

(2) Holding the beacon as shown in fig. 7, loop a length of wire or suitable cord through the length of cord provided, thread between the clip and the beacon and pull through.

(3) Pass the cord round the beacon and again thread it under the clip and position it as shown in fig. 8.

(4) Pass the longer end through the loop at the other end (*fig.* 9).

(5) Place the loop at the end of the cord over the beacon switch release pin as illustrated in fig. 10, and position the pin as shown by the arrow so that it retains the loop of cord.

(6) Raise the switch plunger (*fig.* 11) by lifting the ring with a loop of cord and insert the switch pin through the hole which becomes exposed when the plunger is lifted.

(7) Place the beacon in its stowage over the battery pocket, bring the two edges of the flaps together and secure them by passing the draw rod through the beckets from front to rear, using them alternately.

(8) Pull over the outer flap and secure it with the press studs.

(9) Stow the loop of cable between the battery and the beacon under the cable retaining flap in front of the armhole of the suit.

(10) Pass the battery cable through the retaining flaps beside the armhole and behind the neck.

(11) Stow the speech unit and any surplus cable in the speech unit pocket on the left front of the garment and close the pocket by passing the draw rod from bottom to top through alternate beckets.

(12) Secure the finger ring on the draw rod with the snap fastener on the bottom of the pocket.

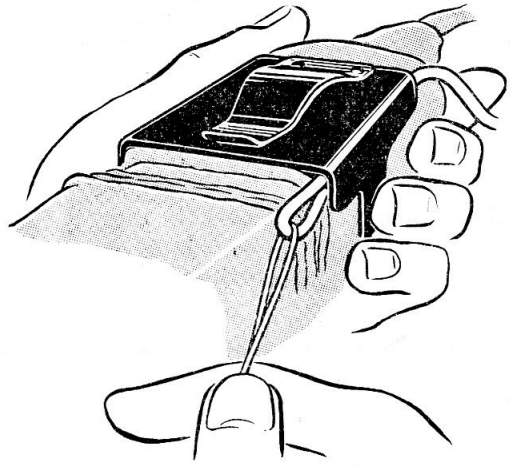

Fig. 7. Connecting the beacon to the battery switch pin—1st stage

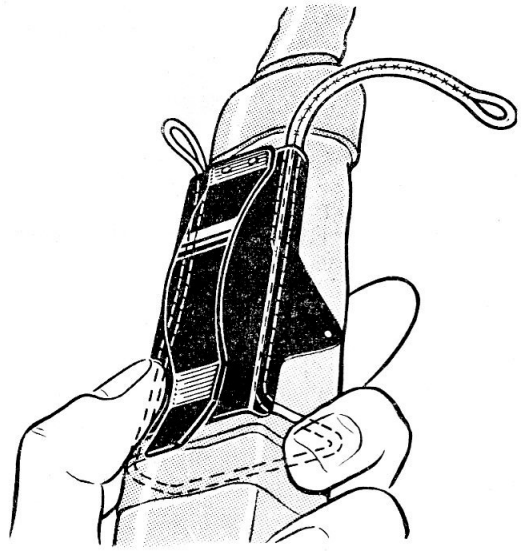

Fig. 8. Connecting the beacon to the battery switch pin—2nd stage

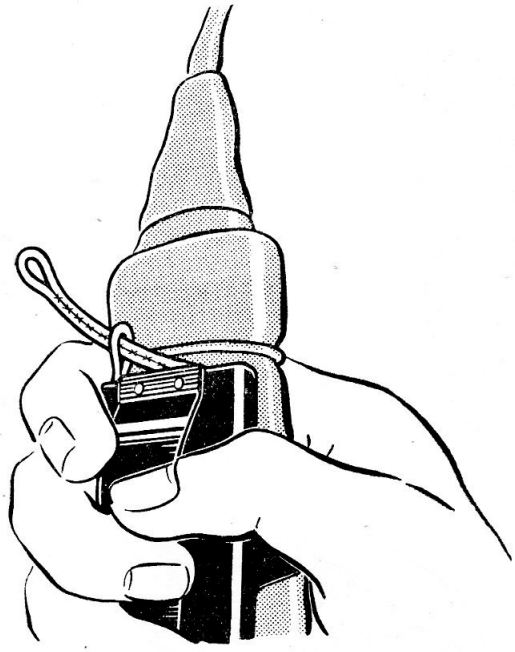

Fig. 9. Connecting the beacon to the battery switch pin—3rd stage

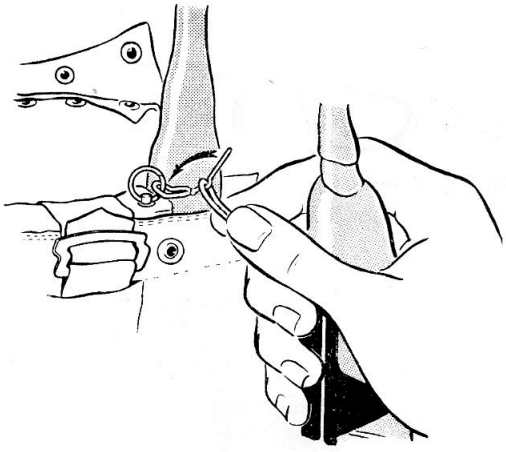

Fig. 10. Connecting the beacon to the battery switch pin—4th stage

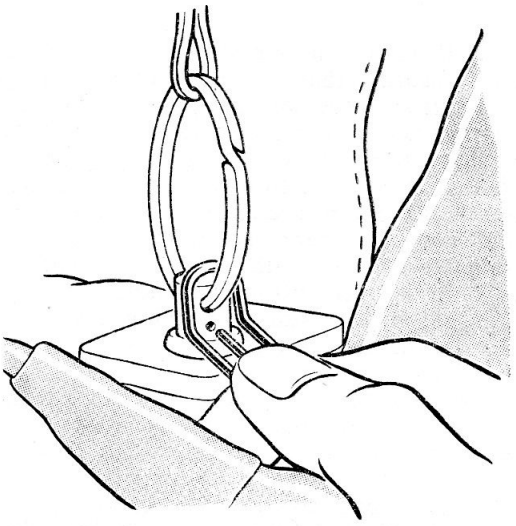

Fig. 11. Connecting the beacon to the battery switch pin—5th stage

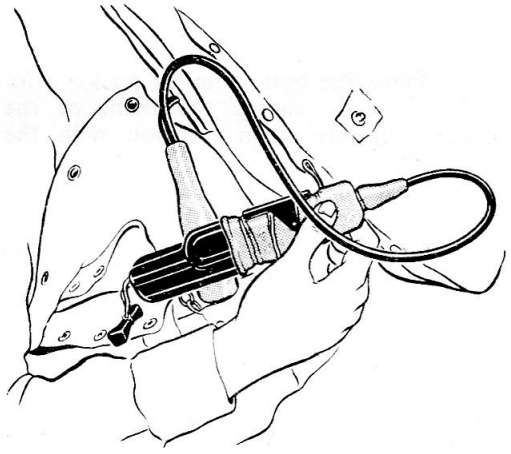

Fig. 12. Automatic extraction of battery switch pin as beacon is withdrawn

Stowing the emergency oxygen cylinder

8. Place the emergency oxygen cylinder in the pocket at the bottom of the right leg and feed the rubber tube through the nylon channel and up through the keeper. Then tie the tube with the two tapes sewn to the suit. Lay the release cable in its housing beside the nylon channel and close the sliding fastener.

Stowing the sea-activated battery and light

9. Before putting the battery in its pocket ensure that there is a length of cord between the studs on the battery case and the eyelet in the corner of the pocket. This cord should be $3\frac{1}{2}$ in. long, which is sufficient to permit the battery to be removed from the pocket before the studs are torn out and permit water to enter the battery. A

second length of cord should be knotted to the same eyelet in the pocket and through the hole in the battery case to act as a retaining lanyard. This cord should be 33 in. long.

◀ **10.** The method of packing new lamps and batteries originally adopted resulted in the cable taking up a permanent set at the point where it emerges from the plug, especially when the equipment had a long shelf life before being issued. As a result, when the equipment has been brought into use or the cable disturbed for examination, there has been a tendency for the insulation to split and open out at the point of set. This tendency has been aggravated by repeated tight wrappings of the cable during servicing. At the intervals given in Vol. 4, special attention is to be given to the examination of the cable to ascertain whether splitting of the insulation has occurred. Lamps with exposed conductors are to be rejected but those with marked or kinked cable may remain in use if there is no splitting of the insulation. When re-stowing lamps and batteries the cable is to be led away from the plug in a bend of approximately 1 in. across, wrapped round four fingers and the coil secured to the plug side of the battery with a rubber band. The lamp is to be located in a suitable position for stowage flat side up on top of the flex. When stowing the equipment ensure that the loop leading away from the plug is not flattened. ▶

11. Stow the battery in the pocket, studded side forward, with the longer cord looped across the bottom of the case so that it will not snag up when it is withdrawn.

12. To use the lamp:—

(1) Open the pocket.

(2) Withdraw the lamp housing and its cable.

(3) Remove the battery by pushing it up from the bottom.

(4) Holding the battery in the left hand and the lamp in the right, tug the battery away from the suit, so tearing away the studs from the battery.

(5) Drop the battery in the water.

(6) Attach the lamp to the stud on the stole.

To conserve the battery remove the plug by pulling on the lamp cable, which is strong enough to take the pull without parting from the plug. The battery may be left in the water, as nothing is gained by removing it.

Stowing the whistle and lanyard

13. The end of the lanyard should be secured to the corner of the whistle pocket, and the remainder of the lanyard hanked and stowed with the whistle in the pocket beside that in which the sea-activated battery and lamp are stowed.

Stowing the heliograph and ground/air emergency code

14. The heliograph and ground/air emergency code are stowed in the small pocket on the front of the S.A.R.A.H. battery pocket.

Servicing

15. Servicing of the harness is included in the notes covering the whole assembly, suit, lining, harness and accessories in A.P.1182E, Vol. 4.