Chapter 2

LIFE JACKETS, Mk. 2

(This chapter supersedes that issued with A.L. 29 and 38)

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LIST OF ILLUSTRATIONS

TABLE 1
Stores Reference Numbers

Description	Stores Ref.
Aircrew life jacket, Mk. 2 (one size only) consisting of:—	22C/1180
Waistcoat	22C/1181
Stole, complete with oral inflation valve	22C/1182
Operating head, Type M	6D/1624
CO_2 cylinder—34 grammes, light alloy	6D/1623
Fluorescine sea marker	22C/1185
Whistle	22C/1186
Lifeline and toggle	22C/1187
Ground/air emergency code	27H/2733
Heliograph, 2in. × 2in.	27H/2107
Life-jacket lamp, complete with skull cap	5A/3739

Introduction

1. The aircrew life jacket, Mk. 2 (*fig.* 1) consists of a waistcoat containing a stole which can be inflated with carbon dioxide (CO_2) from a small cylinder. *The life jacket cannot be inflated while the parachute harness is worn.* The stole cover is normally folded and held in position by snap fasteners which are burst open when the stole is inflated. The stole can be "topped up" or deflated by an oral inflation valve. There is a hole in the right-hand side of the cover for the connection of the pressure-breathing waistcoat.

2. The life jacket is provided with a fluorescine sea marker, toggle and lifeline, whistle, ground/air emergency code, heliograph, and a life-jacket lamp, which are stowed in pockets. Attachments for the dinghy pack, the dinghy lanyard, and the oxygen mask tube are also provided. In certain areas, a pack containing shark repellent may be fitted.

3. The life jacket supports an unconscious man with his face clear of the water and

Fig. 1. Life jacket, Mk. 2

his body floating at an angle of about 45 deg. The survivor can be lifted out of the water by two webbing loops, retained in the stole cover when the stole is folded but easily located when the stole is inflated (*fig.* 2).

4. The CO_2 cylinder cannot be discharged accidentally, and the wearer can use either hand for its operation, the strength of pull required being about 15 lb.

DESCRIPTION

Waistcoat and stole

5. The waistcoat (*fig.* 3) which incorporates the stole cover, is made of fabric dyed yellow, and the stole (*fig.* 4) is made of rubberproofed fabric. The life jacket buttons at the front, and can be adjusted by a webbing waistband with non-slip buckles. The dinghy pack is attached by two quick-release fittings on adjustable straps, one on each side in front of the life jacket. The dinghy lanyard is connected to a third quick-release fitting attached to a webbing loop on the right-hand side of the life jacket.

Fig. 2. Life jacket inflated

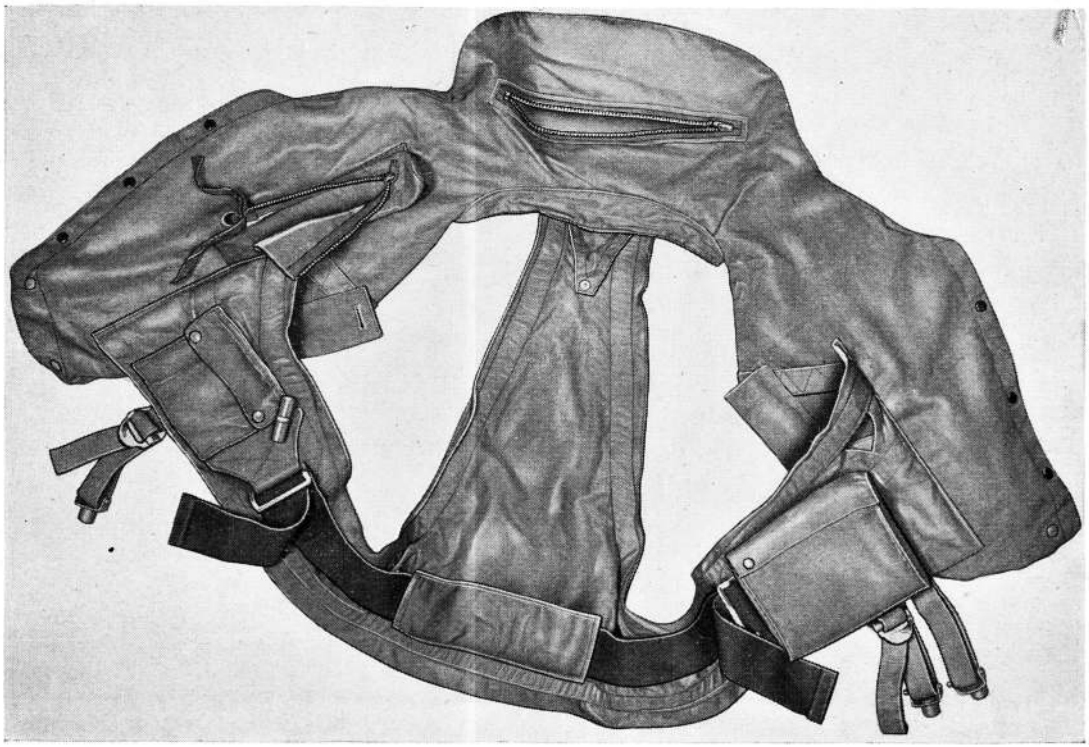

Fig. 3. Waistcoat portion

6. For R.A.F. personnel, the female portion of the quick-release fitting is fitted on all three waistcoat attachments ; for R.N. personnel, the female portion is fitted to the waistcoat for the dinghy pack attachments, and the male portion for the dinghy lanyard attachment.

7. A D-ring is fitted to the right-hand edge of the stole cover to form an anchorage point for the oxygen mask tube.

8. The stole can be inserted and removed through an opening at the back of the stole cover. The oral inflation tube, which is attached to the stole, passes through a hole on the right-hand side of the cover. The housing for the CO_2 cylinder, on the left-hand side of the cover, is an open-ended pocket secured to a stiffened flap and closed by a sliding fastener. The cylinder is held in position by two short lengths of cotton webbing, which are securely tied round the gas outlet union.

9. Snap fasteners are used to assemble the component parts of the life jacket (for example, to hold the ends of the stole in place, and to position the lifting straps before the cover is folded), and to hold the folded cover in position.

10. The lifeline, heliograph, and ground/air emergency code are stowed in a pocket on the left-hand side of the life jacket, with the whistle in a separate pocket beside them. The lamp is stowed in a pocket on the right-hand side.

11. The fluorescine sea marker is supplied in a rubber pack, which is fitted in a rip-off pocket on the right-hand side of the stole cover. Tapes at the top of the rubber pack are sewn to the pocket so that when the pocket is pulled open the pack is also pulled open and an inner pack containing the chemical is released (*fig.* 5). The inner pack is attached to the life jacket by a cord. Shark repellent (if provided) is fitted in a pocket similar to that containing the sea marker.

Inflation mechanism

12. The inflation mechanism consists of a CO_2 cylinder, an operating head, Type M, and a connection to the stole. The

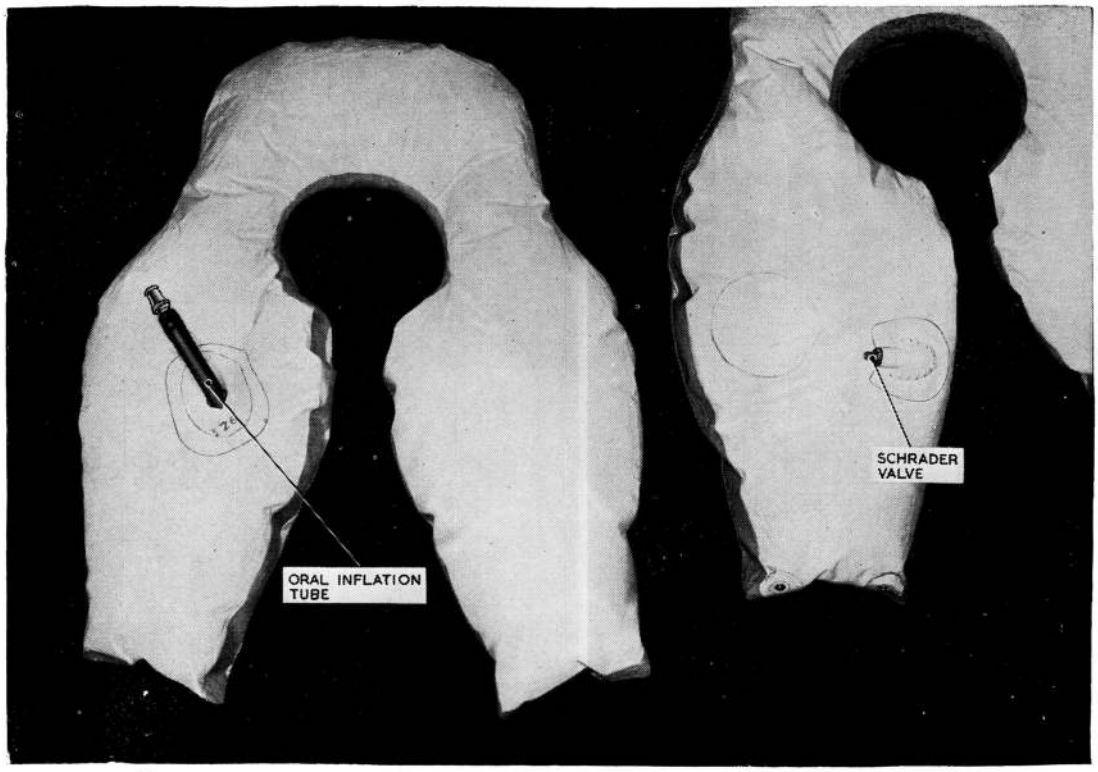

Fig. 4. Stole

operating head and cylinder are described in Chap. 11. The connection on the stole is a Schrader valve mounted in a rubber housing cemented to the stole.

Oral inflation valves

13. Three types of oral inflation valves have been used in the production of stoles ; they are not interchangeable and are as follows :—

Stores Ref.	*Details*
22C/1356	This is a metal valve used in earlier production and although still in use has been superseded by a nylon valve.
22C/1429	Nylon, Mk. 1, valve. This was introduced to replace the metal valve but has since been superseded by a larger model to provide easier inflation.
22C/1429	Nylon, Mk. 2, valve. This is now the standard valve for stoles and replaces both the previous valves in current and new production.

Metal valve

14. The oral inflation valve (*fig.* 6) is connected to the stole by a rubber tube. The valve consists of a mouthpiece and body, inside which is a spindle carrying a rubber sealing ring. The base of the mouthpiece fits inside the body and bears on a spring. A screwed portion of the spindle engages a threaded shoulder in the mouthpiece, and the sealing ring seats on a shoulder in the body. The mouthpiece is covered by a rubber sleeve (Stores Ref. 22C/1320).

15. The wearer should unscrew the mouthpiece and top up the stole as necessary, pushing down the mouthpiece to open the valve. The valve is closed by the spring during inhalation. To deflate the stole, the mouthpiece should be pushed down and the valve held open. To lock the valve so that air cannot escape, the mouthpiece should be screwed down tightly.

Nylon valve, Mk. 1

16. The valve (*fig.* 7) consists of two hollow

cylindrical mouldings, one is the mouthpiece and the other is the body into which the mouthpiece is fitted; the overall diameter of the body is 0·5 in. Internally, there is a coil spring over the mouthpiece which rests between a shoulder about two-thirds of the way down the mouthpiece and another shoulder near the lower end of the body. This spring holds a rubber sealing washer on the end of the mouthpiece against seating in the end of the body; there is a shoulder recessed in the end of the body to provide a seating for the sealing washer. Nylon is used because it is hygienic in that it does not collect dirt or dust particles, it will not freeze against the lips in very cold weather and it is a strong material.

17. When not being used, the mouthpiece is locked in the " up " position by rotating it until a tongue-shaped cam engages over a shoulder in the body; this prevents inadvertant depression of the mouthpiece with consequent loss of air in the stole. To inflate the stole, rotate the mouthpiece until the tongue-shaped cam engages with a similar cam in the body and depress the mouthpiece with the lips as inflation is commenced; the action of depressing the mouthpiece " lifts " the sealing washer off its seating, exposes the orifice at the end of the body, and allows air to pass through the valve to the stole. The mouthpiece MUST be depressed before inflation can take place.

Nylon valve, Mk. 2

18. This valve is identical in design with the Mk. 1 valve, but is larger, The outside diameter of the body is 0·6 in. and there is a larger orifice for the passage of air into the stole; these alterations in dimensions make inflation easier.

Life-jacket lamp

19. The life-jacket lamp (*fig.* 8 *and* 9) consists of a battery, a skull cap on which the bulb is mounted, and a cable, all stowed inside a watertight plastic case. The battery consists of plates of silver chloride and magnesium which operate when in contact with fresh or salt water.

20. A 3-volt, 2-watt filament bulb protected by a plastic screw-on cover is mounted on a housing attached to the yellow nylon skull cap. The skull cap and the cable are stowed in a compartment on the side of the battery case, with the bulb housing

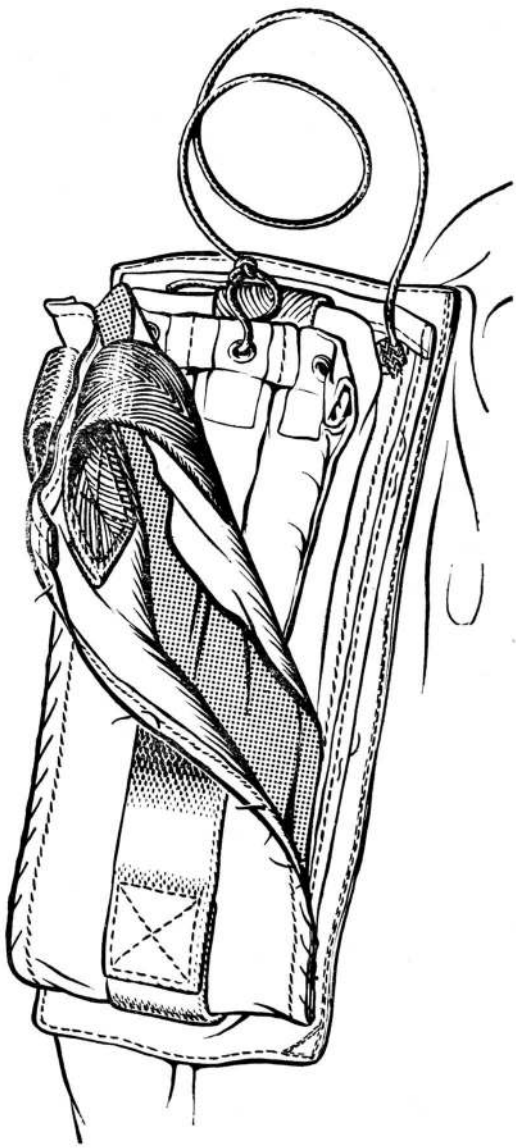

Fig. 5. Fluorescine sea marker

protruding. The joint between the flanges of the housing and the case is sealed by a spring clip to which is attached a pull-off linen tag. The lamp is attached to the life jacket by a nylon lanyard. Further information on the lamp is given in A.P. 4343E, Vol. 1, Sect. 16.

21. When the spring clip is pulled off and the bulb housing and skull cap taken out, water enters the battery through holes in the side compartment, and activates

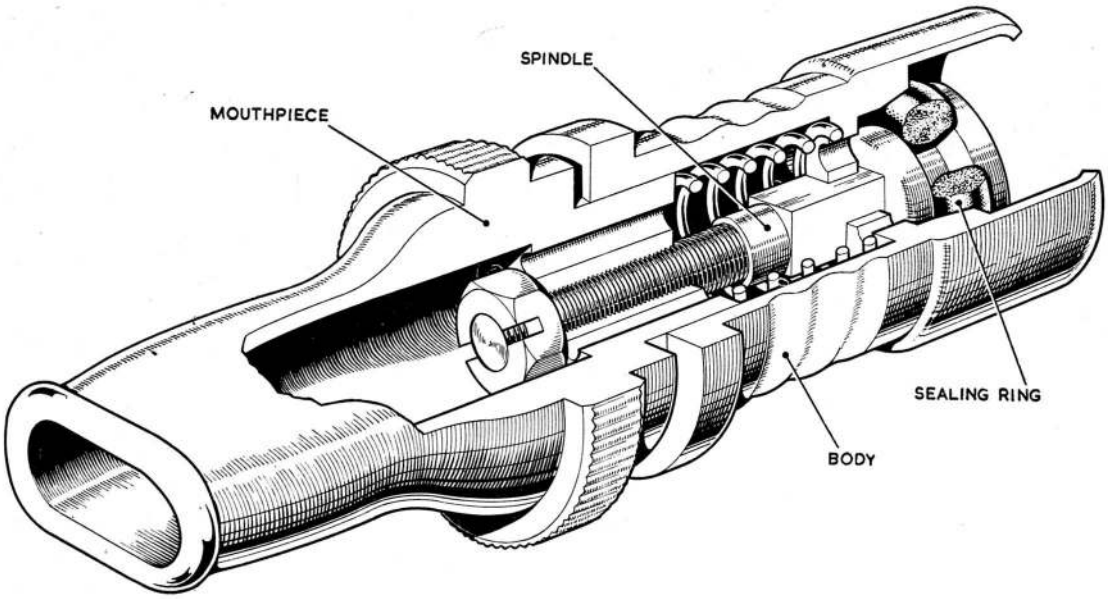

Fig. 6. Metal oral inflation valve

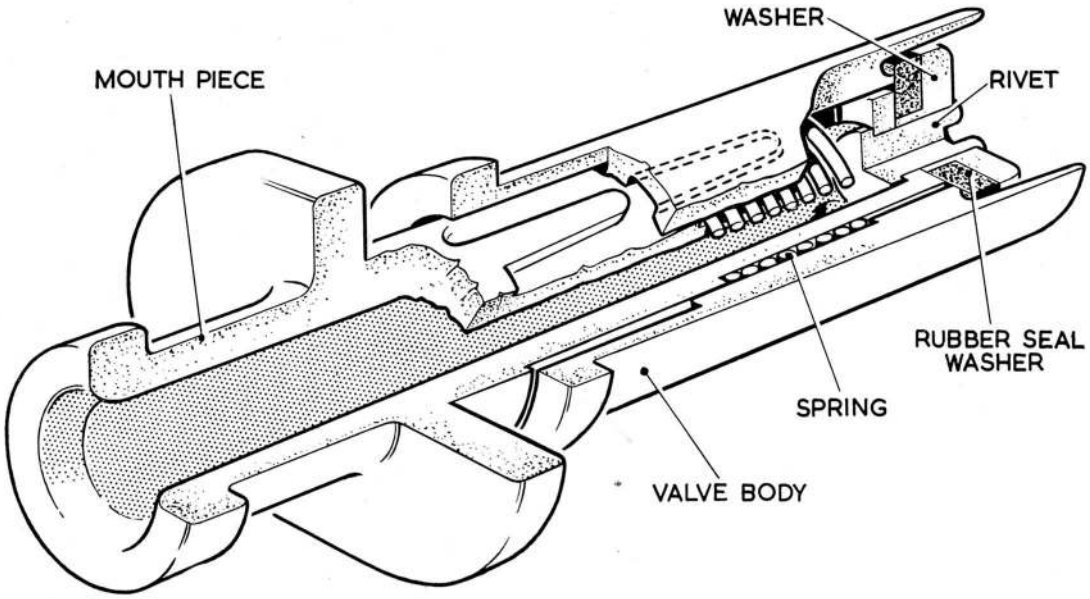

Fig. 7. Nylon oral inflation valve

the plates. The battery has a minimum endurance of 16 hours at full brilliance. It can be used only once.

Instructions for use

22. (1) If necessary, take the lamp out of its pocket. It may be more convenient not to remove it completely, but merely to open the pocket so that the skull cap and cable can be withdrawn.

(2) Pull off the spring clip.

Note . . .

The clip must not be removed until the lamp is required for immediate use, otherwise water may seep through to the battery.

(3) Pull out the bulb housing and put on the skull cap. The cap is a loose fit and may be worn on a bare head, a helmet, or an immersion suit hood.

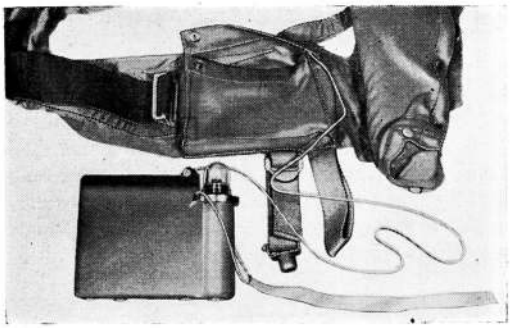

Fig. 8. Life-jacket lamp

The Y-shaped securing lines on each side of the cap should pass over the ears, as on a water-polo cap, and the drawstring should be pulled tight under the chin.

(4) If the wearer is in the water, the battery may be left in the life-jacket pocket. If the wearer is in a dinghy, the battery should be placed over the side in the water. The weight is taken by the lanyard and not by the electric cable.

ASSEMBLING

23. All stitching must be done before the stole is inserted. Knots tied in the ends of the nylon cords securing the lamp, whistle and lanyard must be stitched or sealed to prevent their coming undone.

Emergency code and lifeline

24. Place the ground/air emergency code in the pocket containing the lifeline and toggle and secure it with a few stitches to prevent its getting lost. Attach the toggle end of the line lightly to the top of the pocket with two or three stitches of scarlet locking thread (Stores Ref. 15A/181), leaving the toggle protruding.

Whistle

25. Attach the whistle to the nylon cord, making sure that the cord cannot slip. Ensure that the other end of the cord is securely attached to the life jacket.

Life-jacket lamp

26. Attach the end of the 39-in. nylon lanyard to the lamp and fit the lamp into the pocket.

Quick-release fittings

27. Attach the appropriate quick-release fittings to the adjustable straps (for the dinghy pack) and to the webbing loop (for the dinghy lanyard).

Fluorescine sea marker

28. Stitch the cord on the fluorescine sea marker firmly to the life jacket. Stitch one of the tapes at the top of the marker to the life jacket and the other to the top of the rip-off pocket, using 50/3 cord linen or a suitable equivalent linen thread (*fig.* 10). There should be 8-12 stitches per inch, and the ends of the thread must be securely fastened off. Sew down the free sides of the pocket with scarlet locking thread (5 stitches to the inch).

Stole

29. Inflate the stole slightly and insert it in the outer cover through the opening at the back of the cover. Ensure that the stole lies flat and is not twisted. Secure the two snap fasteners at the bottom of each lobe. Bring the oral inflation tube through the hole at the front of the cover and pass it under its retaining loop. Deflate the stole. Make sure that the mouthpiece of the oral inflation valve is screwed down firmly. Bring the Schrader connection through the hole on the back left-hand side of the cover. Clip the lifting straps back to their snap fasteners.

Inflation mechanism

30. The inflation mechanism should be assembled on the life jacket as follows:—

(1) Set the operating head and fit the red cap. A locating pin on the body ensures that the cap is aligned correctly; check that the chain is not twisted round the arm of the lever.

(2) Thread a length of well-waxed No. 40 thread (Stores Ref. 32B/654) through one of the holes in the cap, through the holes in the body, and back through the other hole in the cap.

(3) Pass the ends of the thread through a lead seal (Stores Ref. 29H/2115); place the seal in the slot on the cap and tie off the ends of the thread. Expand the seal with a punch.

(4) Screw the operating head on to the Schrader connection on the stole, and tighten it securely. Use two spanners to avoid straining the rubber bonding on the connection.

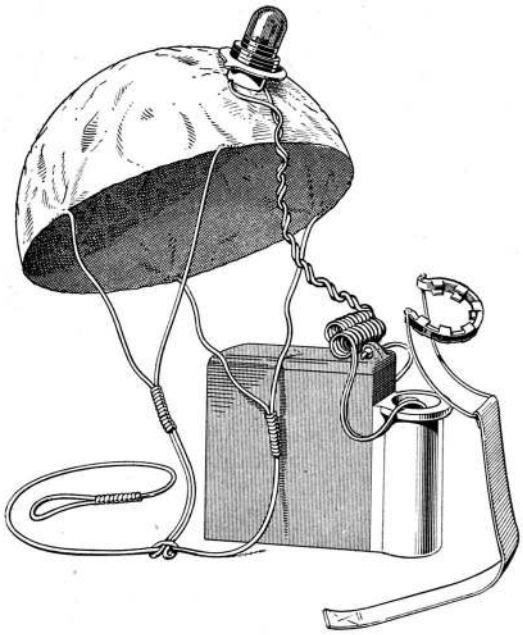

Fig. 9. Lamp and skull cap

(5) Screw a charged CO_2 cylinder into the operating head and tighten the locking screw.

(6) Fit the cylinder into its pocket and close the sliding fastener.

(7) Tie the tapes at the mouth of the pocket securely round the gas outlet union.

Folding

31. Finally, fold the lobes of the stole cover and fasten them back with the snap fasteners. Fold back the head rest and fasten it in position.

SERVICING

After immersion in salt water

32. The operating head and CO_2 cylinder should be removed, and the life jacket thoroughly rinsed in fresh water. Ensure that the oral inflation valve is well rinsed. The operating head should be dismantled and cleaned as soon as possible to prevent corrosion. Dismantling instructions are given in Vol. 6, Sect. 2. R.A.F. units are to return CO_2 cylinders to the appropriate Maintenance Unit, clearly labelled "This cylinder has been immersed in sea water".

Removing the inflation mechanism

33. If the cylinder is to be unscrewed from the operating head, whether for check weighing or because it has been discharged, the locking screw on the head must first be released. If this is not done, the threads on the cylinder will be damaged.

34. When the operating head is removed from the stole, care must be taken not to damage the Schrader valve. The head and the valve should be held firmly and the coupling nut unscrewed : use two spanners. It is very easy to pull the Schrader valve out of its mounting.

Testing the stole

35. During periodic servicing, the life jacket should be inflated through the oral inflation valve to check that the snap fasteners open correctly and that the valve operates satisfactorily.

36. The stole should be inflated through the Schrader valve with air to a pressure equal to 30 cm. (about 11·75 in.) of water and the pressure maintained for 5 minutes.

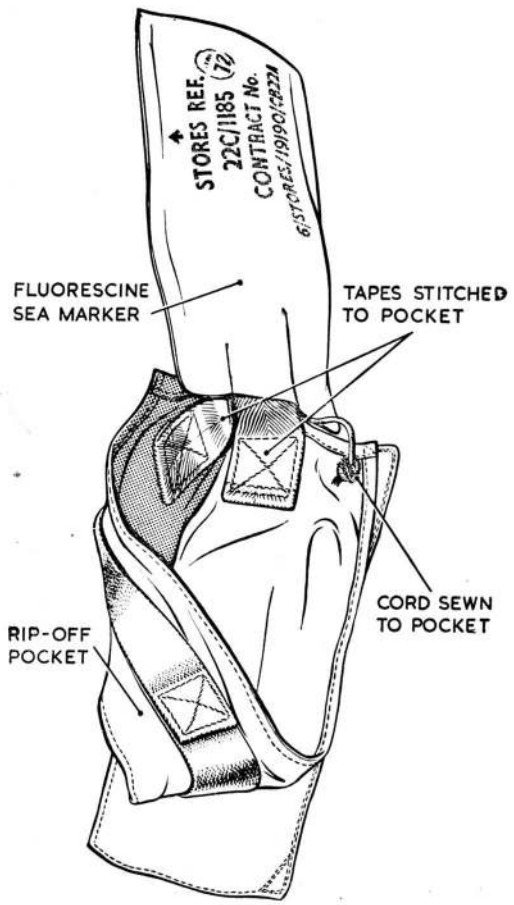

Fig. 10. Attachment of sea marker to pocket

The air supply should then be cut off and the stole left for a further 5 minutes. The pressure must not drop more than 2 cm. (about 0·8 in.) of water. A defective stole must be renewed.

Oral inflation valve

37. If air leaks through the oral inflation valve and the valve is metal or a nylon, Mk. 1, the stole is to be renewed. If, however, a Mk. 2 nylon valve is fitted and air leaks through this valve, only the valve need be renewed.

38. To renew a Mk. 2 nylon valve, proceed as follows :—

(1) Carefully remove the tube from the body of the valve by rolling the tube towards the stole. The end of the tube should be eased off the valve body with the thumbs, bent back towards the stole and then rolled off ; alternatively the tube may be pushed off, but no attempt must be made to pull the valve out of the tube.

(2) Having removed the defective valve, turn the tubing inside out, as far as this can be done, and clean off any solution which adheres to the inner surface.

(3) Apply one coat of rubber solution, self-vulcanising, KB63 or KB156, to the outside of the body up to the flange ; ensure that the rubber solution does not enter the body and foul the valve mechanism.

(4) Insert the valve body into the exposed part of the rolled tube, after the solution has become tacky, and roll the tube upwards until it butts against the flange of the valve body ; the tube may be lightly pulled to ensure that it fits snugly round the valve body and to remove creases.

Note . . .

When a new valve is fitted, ensure that the flat sides of the flange of the mouthpiece are parallel with the flanged base of the inflation tube when the mouthpiece is in the " open " position.

(5) Place the stole on one side for the solution to cure. After the solution has set, test the stole as described in para. 36.

Waistcoat

39. The waistcoat should be examined for signs of wear, tears, broken stitches, loose buttons, faulty sliding fasteners, and damaged or corroded snap fasteners, buckles or straps. Slight damage to the fabric may be repaired, providing there is no loss of strength. Broken stitches should be made good.

CO_2 cylinder

40. Pending the issue of further information, the cylinder used with this life jacket is to be subjected to a hydraulic test once every TWO YEARS. Provided the cylinder remains undamaged, or has not been immersed in sea water, it may be used for two years from the date of the last test ; the date of the last test is stamped on the cylinder.

R.A.F. cylinders

41. To ensure that cylinders are retested at the expiry of this " life ", Units, other than Maintenance Units, are to keep a record of the date on which the last test was applied to each cylinder " in use " as part of a life jacket or held as a spare. When cylinders become due for retesting, they are to be categorized as " repairable at depot " and returned empty to No. 14 Maintenance Unit, where arrangements will be made for retest or repair, or both.

42. Cylinders issued by Maintenance Units should have the following minimum useful " life " :—

(1) Cylinders issued to		
	(a) Commands abroad	
	(b) No. 41 Group and other Units when demands are marked " For use abroad "	One year or more
(2) Cylinders issued for all other requirements		Six months or more