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Regulations
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REGULATIONS
FOR
ARMY ORDNANCE SERVICES
PART II

PAMPHLET No. 26

1941

RESPIRATORS
INSTRUCTIONS FOR THE EXAMINATION, REPAIR,
SENTENCING, REPLACEMENT, ETC., OF :—

RESPIRATORS :—

ANTI-GAS

ANTI-DUST, Mk. IV

ANTI-PAINT AND DOPE SPRAY

By Command of the Army Council.



THE WAR OFFICE,
29th October, 1941.

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SECTION I—INSPECTION

INSTRUCTIONS

1. The procedure obtaining in peace time for the annual inspection of respirators by I.O.Os. and the completion of A.F. G 870A must necessarily be modified to conform to war time conditions.

2. Accordingly, during the present war and in view of the fact that all units possess trained officers and non-commissioned officers capable of inspecting and testing respirators, it will only be necessary to submit to I.O.Os. those respirators which it is considered should be condemned ; inspection in all other respects will be a unit responsibility.

3. Any special deterioration or abnormal wastage must be brought to the notice of the War Office.

4. A small percentage of respirators will be withdrawn from commands periodically for critical examination ; instructions for this to be done will be issued separately.

SECTION II—PROOF

5. The instructions contained in SECTION I will apply.

SECTION III

RESPIRATORS, ANTI-GAS — INSTRUCTIONS FOR VISUAL EXAMINATION AND SENTENCING INSTRUCTIONS

6.—(1) The examination of the various parts of the respirator should be carried out as set forth in paras. 7 to 10, to ensure that the points mentioned are in order.

(2) When defects are found, the following entail a sentence of " R (by unit) " :—

Faulty head harness.

Rusty wires on connecting tubes (if the rubber is not affected).

Faulty inlet valve of containers, type E.

Deficiencies of loops, whipcord, etc., from haversacks and open seams.

Faulty outlet valves.

Faulty eyepiece discs (facepieces with screwed eyepiece rims).

(3) The following defects can be dealt with at an ordnance depot and entail a sentence of " R (by R.A.O.C.) " :—

Defective eyepieces.

Defective connecting tubes.

Defective valve holders.

Containers lacking in paint.

Full details are given in **SECTION IV.**

(4) Defects not included above render the respirator (or component) "B.L.R."

A. FACEPIECES—Mks. IV AND IVA, Mks. IV AND IVA, SPECIAL T—Mks. IV AND IVA, SPECIAL T MIC., Mks. V AND VA

7. (1) Harness.—The harness may be harness, No. 4, Mks. I, II or III. The two former consist of elastic bands sewn to a canvas head pad. The latter consists of three lengths of elastic threaded through slots in a sheet rubber head pad.

Stitching of the elastic to the head pad must be sound, the tags must be securely fixed and loops in position.

The elastic bands must have good elasticity. Satisfactory elastic should have a definite "snap" back on being stretched moderately and released.

(2) Mask.—The buckles on the mask must be securely attached to the mask and the slides on the buckles must be sound and function freely.

The rubber must be free from cuts, holes and cracks and undamaged by rust at the bindings. The outer stockinet covering must be firmly attached to the rubber in the case of Mk. IV facepieces. The vulcanized joint between the inner rubber liner and the outer mask shell, must be continuous and sound.

The air port under the eyepieces must be clear, and not torn at the edges.

(3) Eyepieces.—These are of splinterless glass. Examine from the outside for firmness of attachment by gently endeavouring to pull the rubber from underneath the binding, which, in earlier issues, consists of iron wire and rubber tape.

Attachment of eyepieces to the mask in the case of later issues is by means of a securing clip fitted with a screw and nut which are covered with a rubber protecting sleeve. No rubber tape is required over the clip.

In the case of facepieces, Mk. V, it is to be noted that, when the eyepiece is secured by the binding wire, the rubber may appear to separate from the eyepiece rim at the outside of the mask when the facepiece is folded as for insertion in the haversack. This is not normally a cause for rejection as the joint will be quite gas tight, but if the gap is excessive the facepiece should be repaired.

Examine from the inside for transparency. Reject for any crack or for air films which interfere with vision. Small air

films are not grounds for rejection unless they interfere with vision. In later issues of Mk. IV, and all issues of Mk. V facepieces, the eyepieces consist of an inner and outer screwed rim, between which are secured a splinterless glass disc and rubber washer. It should be noted that this pattern of eyepiece permits of rotation of a glass disc in which an air film has formed at one side, so that the air film can be positioned at a point where acute vision is not normally required.

(4) **Rubber connecting tube.**—Mks. IV and V facepieces are fitted with short connecting tubes. Mks. IVA and VA facepieces are fitted with long connecting tubes which have a becket with eyelet for attachment to the hook on the sling of the haversack. (Later issues have the hook on the becket.) Verify that the tube is sound, not perished or distorted, and free from cuts and holes. The textile covering must be firmly attached to the rubber, and undamaged by rust from the binding wire. (As a preventative the tube should be taped and re-wired by the unit at the first suspicion of rust, see Protection against Gas and Air Raids.) The becket on the long tube must be attached firmly. Test for firm attachment to the valve holder and container by direct pull and by twisting.

The ends of the binding wires must be covered with adhesive tape.

Note that some later issues are not covered with stockinet.

(5) **Valve holder and retaining plate.**—The retaining plate should be positioned against the valve holder so that the slots around the edge correspond with the gaps between the radial arms of the valve holder. The dome in the centre of the retaining plate should not be crushed by the retaining nut, nor should the end of the retaining pin project through the nut for a greater distance than corresponds to about the depth of one thread. The rubber liner should be held securely and symmetrically under the retaining plate, and the edge of the rubber must not overlap the outer edges of the slots. Test the security of attachment of the liner all round by gentle pressure of the thumbs on the rubber.

(6) **Valve holder outside mask.**—Inspect the firmness of attachment of the valve holder in the mask by gently endeavouring to pull the rubber from underneath the binding, which consists of iron wire and rubber tape or in later issues a V-section clip with screw and rubber sleeve similar to that used on the eyepiece.

(7) **Valve guard, outlet valve and check plate.**—The valve guard may be secured with either a pinned hexagonal nut (Mk. I guards) or a captive conical nut (guards Mk. I* to Mk. V). In the former case, to remove the valve guard, first remove the cotter pin in the end of the retaining pin in the following manner:—With the end of a small screwdriver or

similar tool, bend each end of the cotter pin back far enough to enable both ends to be grasped and closed by pliers. The preliminary bending should be done by a steady and careful pressure of the pliers, so that the threads of the retaining pin are not damaged. Now grasp the head of the cotter pin with the pliers, and, while slowly twisting it to and fro, withdraw it from the hole. Next unscrew the retaining nut and remove the valve guard.

In the case of guards, valve, Mk. I* to Mk. V, the captive nut must be unscrewed with key, securing, guard valve, Mk. I.

The valve fitted may be valve, outlet, No. 2, Mk. I (buff colour) or valve, outlet, No. 2, Mk. II (green colour). If the latter is fitted there must also be, under the valve guard, a check plate Mk. I.

If the valve guard or checkplate is found to be adhering to the valve it should be loosened by inserting very carefully the end of a blunt knife under the rim, and running the knife slowly round the edge so as to separate the metal from the rubber. Inspect the checkplate and make sure that it is flat, and see that the valve guard is not distorted or the dome crushed by over-tightening of the retaining nut.

Examine the valve as follows :—

- (a) Examine the rim of the valve for surface cracks by gently stretching a short portion of it to about twice its length with the fingers and thumbs. If the valve is in an unserviceable condition, the surface of the rubber will break into cracks under this test.
- (b) Bend the valve in half and apply a light pressure with the finger and thumb to the corrugated portion so that the tips of the corrugations on opposite sides are in contact. There should be no signs of sticking when the pressure is released.
- (c) Examine the whole valve for perforations by slightly stretching it when held up to the light.

Before replacing the outlet valve see that the valve holder, in particular on the surface of the two seatings, is free from damage and that the retaining pin is not bent or loose. All dirt or other deposit on the metal must be removed by brushing. If the central seating is pitted or corroded the valve holder must be replaced.

The valve will be replaced with the central seating resting on the central seating of the valve holder. See that the valve lies concentric with the valve holder.

The Mk. I valve guard is then slipped over the retaining pin, the retaining nut screwed on finger tight and then given a half turn only with pliers or a small spanner. Replace the cotter pin, using a new one if necessary.

In the case of guards, valve, Mk. I* to Mk. V, the captive nut carrying the valve guard is screwed finger tight on to the retaining pin and then tightened half a turn with the key securing.

The use of any other tool is prohibited. If the valve, outlet, No. 2, Mk. II is fitted, the check plate Mk. I must also be placed on top of the valve before the valve guard is assembled.

(8) Facepieces, Mk. IV or IVA Special T Mic. and Facepieces, Mk. V or VA.—These may be fitted with a microphone which is secured in the rubber spigot moulded in the left side of the facepiece, by means of a clip, microphone attachment.

If the microphone is not present and a hole has been cut in the spigot, this must be closed by a plug, microphone mounting, secured by a clip. In some early issues the plug is secured by binding wire.

The microphone or plug must be securely held in the facepiece by the screw clip.

B. HAVERSACKS

8. Examine for defective stitching, holes, tears or other damage and for deficiencies of component parts.

Mks. I, ITM, IT and ITM converted are obsolete and will be replaced by Haversack, Mk. VI or VII.

The Mk. V haversack is provided with an extra back pocket and a loop for the anti-dimming outfit. It should be complete with partition, whipcord, two large and two small brass Ds, a brass S hook, press fasteners and brass vents in the base. Wire platforms should be removed. The sling should be complete with one slide, one slide with eye, brass hook, a cord loop and a brass eyelet.

The Mk. VI haversack is provided with extra pockets at the front, covered by a second flap, to accommodate eyeshields and ointment, anti-gas.

In late issues of this Mark the sling is detachable, being provided with two brass spring hooks. Haversacks, Mk. VA and Mk. VIA are fitted in addition with a waist belt and the S hook instead of being fitted to the D loop at the side of the haversack is fitted through a hole in one of the slides on the sling.

The Mk. VII haversack is provided with pockets similar to the Mk. VI for respirator, eyeshields and ointment, all covered with a single flap. At the top inside is a pocket with a length of whipcord for attachment and accommodation of the Mk. VI anti-dimming outfit. On the left outside is a pocket to accommodate the securing whipcord and on the right is a quick release button for attachment of the whipcord.

The sling is not detachable and no S hooks are fitted; when Mks. IVA or VA facepieces are used with this haversack the S hook will be attached to the becket of the connecting tube.

C. CONTAINERS, TYPE E, Mks. I TO VI

9. (1) Examine for external evidence of corrosion, also for holes and serious dents in the body of the canister. Reject for the smallest definite trace of corrosion that has penetrated the canister wall.

(2) If the container has been heavily dropped the bottom may be bent and the adjacent part of the body may be distorted. Provided that the air inlet ports are not reduced to less than $\frac{1}{16}$ -inch wide at any point and that there is no sign of fracture of the solder round the ports or of the vertical seam in the body on the opposite side of the container, the container may be regarded as serviceable.

(3) Verify that all soldered joints are sound, *i.e.* container neck top and bottom lids, side seams and inlet port seams.

(4) The presence of a few loose grains of charcoal which can be heard to rattle, or can be shaken out of the container neck, is of no importance, but if the container has been heavily dented, or if there is considerable looseness of the contents, or if a continual stream of charcoal can be shaken out of the container neck, the container should be sentenced "B.L.R."

(5) Verify that the inlet valve is present and functions properly. The inlet valve is fitted in the neck of the container and may be metal (valve, inlet, No. 3 or 3A), or rubber (valve, inlet, No. 4, with check pin).

The metal valve should have its flap functioning freely with the wire guard inclined at an angle of approximately 45 degrees. The rubber valve should be correctly positioned with the flap free to function, the rubber being unperished. See that the wire pin across the top of the valve body (under the flap) is in position.

(6) Containers which are otherwise serviceable, but from which a considerable quantity of paint has been removed, should be sentenced "R" for repainting. Khaki paint for Mks. I to V, and red paint for Mk. VI may be obtained for this purpose.

D. RUBBER COMPONENTS, GENERAL REMARKS

10. In carrying out the foregoing inspection, it should be remembered that the components likely to deteriorate most quickly with time are those consisting of rubber.

These (arranged in order of vulnerability) are :—

- (a) Elastic.
- (b) Outlet valve.
- (c) Inlet valves, No. 4, with check pin.
- (d) Mask.
- (e) Connecting tube.

Special attention must be given to the above components as indicated below :—

Elastics.—These show deterioration :—

- (i) by progressive weakening ;
- (ii) by breaking of the strands, particularly where they are sewn and where they pass through the buckles.

Slightly weakened elastic may pass if when extended moderately and released it recovers with a definite "snap."

Valve inlet, No. 4.—See that the flap of the valve is in the correct position, unhardened or curled up and free to function properly. The check pin in the body of the valve must be secure and undistorted.

Valve, outlet.—See para. 7 (7).

Mask.—This shows deterioration by becoming hard, permanently distorted and extensively cracked.

Cracks of another type may also appear on masks which are otherwise in good condition. These cracks are caused by exposure of the rubber to daylight while in a state of strain. The rubber round and between the eyepieces is always in a state of slight strain, and other parts of the mask become so if in any way distorted. Distortion or exposure to daylight must consequently be avoided as far as possible.

A mask should not be rejected because this type of cracking has begun, since a network of fine cracks extending over a considerable area does not impair its serviceability. It is large isolated cracks at the edges or round the eyepieces that are dangerous, since they may become starting-points for tears. Only in an advanced stage of decay will a crack, as such, go right through the rubber.

Connecting tubes.—Deterioration has less important effects than in the case of the facepiece, but the rubber gradually loses resilience until a stage may be reached in which the tube is so stiff that it tends to dislodge the facepiece from the wearer's face during movement.

Tubes are unserviceable when :—

- (a) the rubber has hardened so that, when held in a horizontal position at the facepiece end, the tube will not bend limply under its own weight.
- (b) the open ends crack or split when stretched slightly ;
- (c) cuts, holes or split ends occur ;
- (d) The rubber is affected by rust from the binding wire ;
- (e) the stockinet is badly frayed.

SECTION IV

RESPIRATORS, ANTI-GAS—INSTRUCTIONS FOR REPAIR

(To be carried out under the supervision of a qualified officer or N.C.O.)

A. REPLACEMENT OF FAULTY HARNESS

11.—(1) Defective harness, No. 4, Mk. I or Mk. II must be replaced by harness, No. 4, Mk. III ; no attempt at repair must be made.

(2) The faulty harness will be removed by prising open the tags, removing them and pulling the elastic bands out of the buckles on the mask. Buckle slides on facepiece, Mk. IV and IVA which are not sound or do not function freely should be replaced; loops, if in good condition, should be retained for use.

(3) Harness, No. 4, Mk. III as a whole or individual elastics in same will be fitted as described in Protection Against Gas and Air Raids, Pamphlet No. 2, 1939, Respirators, Section 9, para. 3 (ii), pages 26 and 27.

B. REPLACEMENT OF VALVES, OUTLET

12. For instructions regarding replacements of valves, outlet, *see* under valve guard and outlet valve, para. 7, sub-para. (7).

C. REPLACEMENT OF EYEPieces

13. Facepieces, Mks. IV and V.—(1) Defective eyepieces of the plain fixed rim type (eyepiece, $2\frac{1}{2}$ -inch, Mk. II) in facepieces, Mks. IV and IVA, should be replaced with eyepieces of the screwed detachable rim type (eyepiece, $2\frac{1}{2}$ -inch, Mk. III). In facepieces in which only one eyepiece Mk. II is defective, both should be replaced with eyepieces, Mk. III.

(2) The eyepieces of facepiece, Mks. IV and IVA, may be repaired by the use of (a) a single binding wire in combination with rubber tape, or (b) a clip, securing, eyepiece, with protective sleeve. The eyepieces of facepiece, Mk. V may be repaired by the use of (a) two binding wires in combination with rubber tape, or (b) a clip, securing, eyepiece, with protective sleeve. If eyepiece clips are available they should be used in preference to wire.

(3) **Attachment by wiring.**—The defective eyepiece will be removed from the facepiece by carefully cutting off the rubber tape bindings, prising up the twisted ends of the wire, and untwisting with pliers. Care must be taken during this operation not to damage the rubber of the facepiece.

(4) The new eyepieces will be lightly brushed over, round the waist, with rubber solution, and the inside of the eyepiece sockets of the facepiece which make contact with the eyepiece rims will be wiped over with naphtha. The prepared eyepieces are placed glass side upward on an eyepiece mounting jig (**Figure 1**), and the facepiece is held outside downwards so that the eyepiece apertures are directly over and in contact with the eyepieces.

(5) The facepiece will then be turned inside out and carefully worked down into position so that the rubber lies snugly against the waist of the eyepiece, which must be completely covered.

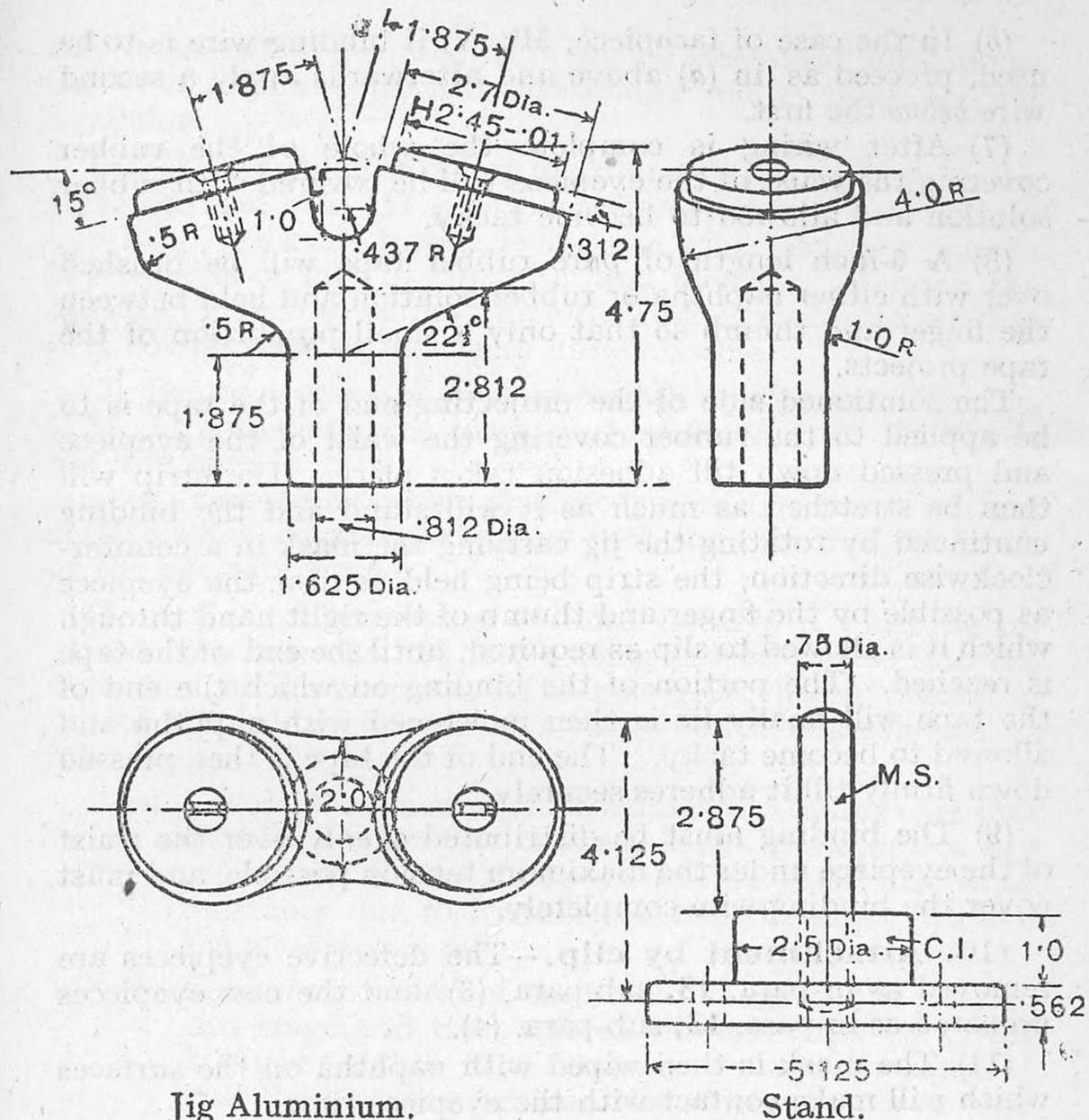


Fig. 1

(6)—(a) In the case of facepieces, Mk. IV, if binding wire is to be used one turn of binding wire, 11 inches long, will then be applied to the eyepieces so as to surround the waist immediately above the lower (larger) flange. The wire will be pulled tight and secured by twisting the ends together, the twisted ends being cut off at $\frac{3}{16}$ -inch length and turned upwards and at right angles flat against the rubber covering the waist. During wiring, care must be taken not to tighten the wire by twisting (tourniquet fashion). The wire should be tightened by a direct and careful pull, and the slack almost but not quite taken up by a twist, the tension being maintained. The two operations will be repeated if necessary. Any attempt to tighten by twisting will lead to breakage of the wire or, at any rate, to overstrain at the point where the twist begins, with consequent liability to fracture when the facepiece is handled.

(b) In the case of facepiece, Mk. V, if binding wire is to be used, proceed as in (a) above and afterwards apply a second wire *below* the first.

(7) After wiring is complete the whole of the rubber covering the waist of the eyepiece will be covered with rubber solution and allowed to become tacky.

(8) A 6-inch length of pure rubber tape will be brushed over with either naphtha or rubber solution and held between the finger and thumb so that only a small proportion of the tape projects.

The solutioned side of the projecting end of the tape is to be applied to the rubber covering the waist of the eyepiece and pressed down till adhesion takes place. The strip will then be stretched as much as it will stand and the binding continued by rotating the jig carrying the mask in a counter-clockwise direction, the strip being held as near the eyepiece as possible by the finger and thumb of the right hand through which it is allowed to slip as required, until the end of the tape is reached. The portion of the binding on which the end of the tape will finally lie is then moistened with naphtha and allowed to become tacky. The end of the tape is then pressed down firmly till it adheres securely.

(9) The binding must be distributed evenly over the waist of the eyepiece under the maximum tension possible, and must cover the binding wire completely.

(10) **Attachment by clip.**—The defective eyepieces are removed as in para. 13, sub-para. (3), and the new eyepieces prepared as in para. 13, sub-para. (4).

(11) The mask is then wiped with naphtha on the surfaces which will make contact with the eyepiece rims.

(12) The prepared eyepiece with the slotted or lugged rim outwards is inserted in the eyepiece aperture of the mask so that the edge of the rubber on the inside of the mask fits closely up to the inner flange of the eyepiece.

(13) The mask is then placed on a mounting jig (**Figure 1a**) and a clip placed round the rubber surrounding the eyepiece by means of the positioning tool (**Figures 1b and 1c**). The clip is to be located so that in the finished assembly the lugs and tongue of the clip and the screw are in the positions shown in **Figure 1c**.

(14) While the clip is held firmly in position by means of the positioning tool, the screw is tightened until the eyepiece is held securely in position.

(15) The positioning tool is then removed and the end of the screw projecting through the nut is neatly cut off as close to the nut as possible.

(16) Finally a rubber protecting sleeve is fitted over the lugs, screw and nut of the clip, as shown in **Figure 1c**. If

care is exercised, eyepiece clips can be assembled without the use of a facepiece jig and positioning tool if these are not available.

14. (1) Replacement of eyepiece discs and washers in Eyepiece, Mk. III.—Grip eyepiece from inside mask with one hand, backs of fingers facing the other eyepiece, engage key in slots or lugs in inner rim and unscrew. Remove the damaged glass disc and examine the rubber washer to see that it is not perished or otherwise unserviceable.

(2) Before re-assembling make certain that a film of "Grease, G.S." is present on the threads of eyepiece rims. If this is not the case, a thin and even coating of grease should be applied, care being taken that no grease is present on any surface which comes into contact with the rubber of the mask or the eyepiece washer.

(3) If the rubber washer is unserviceable it must be replaced by a new one, the latter being properly fitted into the outer rim of the eyepiece. The new glass disc is placed on top of the rubber washer and the eyepiece re-assembled as follows :—

- (a) Engage the inner rim in the outer rim taking care that the threads are not crossed, insert the eyepiece key and screw down lightly on to the glass disc until resistance due to friction between the inner rim and the glass disc is felt.
- (b) Note the position of the slots or lugs in the rims at this stage and then tighten the inner rim by giving a further eighth of a turn, *i.e.*, an amount equal to half the distance between the adjacent slots or lugs.

D. REPLACEMENT OF VALVE HOLDERS

15. (1) Facepieces, Mk. IV and Mk. V.—The retaining plate, valve guard, check plate and valve are first removed and then the valve holder is eased out of the facepiece after the rubber tape and binding wire have been carefully cut away, or the securing clip loosened.

The new valve holder is assembled as follows :—

(2) The channel of the valve holder which is to be bound in the mask, is to be coated with marine glue solution, consisting of equal parts by volume of Jeffery's, No. 7 marine glue, methylated spirit and mineral naphtha, and allowed to dry for at least twelve hours.

(3) The inside binding surface of the mask is to be moistened with naphtha and the valve holder is then placed in position so that it is positioned symmetrically and the binding surface of the mask is bedded down into the channel of the valve holder.

(4) (a) One turn of binding wire 11 inches long, is to be applied in the binding groove on the outside of the mask so as to hold the holder in place, the wire being tightened and finished off in the manner previously described, a 6-inch length of pure rubber tape being wound on over all, exactly as previously specified for the eyepiece binding.

(b) Alternatively, the valve holder may be secured by a clip, securing, valve holder and sleeve which is fitted in a manner similar to the eyepiece clip (*see* para. 13 (14) to 13 (16)), no positioning tool being necessary. The lugs and screws should be located behind and slightly to the left of the spigot of the valve holder.

(5) The valve holder spigot for connecting tube must be pointing downwards from the facepiece and be in line with the centre axis of the facepiece.

Note.—Tests of Facepieces.

16. After replacement of eyepieces or valve holders, facepieces should be tested for leakage by being placed on a dummy head, and the tension of the harness suitably adjusted to ensure contact all round the bearing surface of the head and submitted to a constant suction equal to 3 inches water gauge, the inlet to the facepiece being suitably closed. The rate of leakage from the exterior atmosphere to the interior of the facepiece is not to exceed 0.5 c.c. per second.

Details of the dummy head and leakage meter can be obtained from the Chief Inspector of Armaments.

E. REPAIR AND REPLACEMENT OF CONNECTING TUBES

17.—(1) Where a binding wire has rusted and the fabric covering of the tube, or the tape under the wire, is affected, the wire should be carefully removed.

(2) Remove the adhesive tape protection on the twisted ends of the wire and turn them up at right angles to the tube. Detach the wire by twisting the ends of the wire with pliers or by inserting a container detaching tool under a single strand of wire and pressing the tool over so that the wire is cut with the sharp edge inside the "U" of the tool.

(3) If the rubber is undamaged the tube is serviceable and may be re-wired—*see* below.

(4) It is not usually necessary to detach the tube but if this is done it should be noted that the ends of the tube are not of the same size. The larger end is attached to the valve holder.

18. Tubes which have been severed to accommodate auxiliary containers (e.g. container, type E.A., Mk. I) are repaired by the use of a coupling, connecting tube, which is

wired to the two parts of the connecting tube as detailed below, omitting the 5-inch length of adhesive tape and turning the twist of the wire to be parallel instead of at right angles to the turns of the wire.

Note.—Repaired connecting tubes should be submitted to an air pressure test (5-lb. a square inch) under water.

19.—(1) New or repaired connecting tubes are assembled as follows:—

- (a) The inlet tube of the valve holder will be coated externally with a very thin film of rubber solution for a distance of $\frac{3}{4}$ -inch from the open end.
- (b) The internal surface of the connecting tube will be cleaned, and the larger end of the tube will be slipped on to the prepared holder for a distance of $\frac{3}{4}$ -inch, while the solution is still wet.
- (c) A 5-inch length of $\frac{1}{2}$ -inch adhesive tape will be wound round the tube once (with the overlap at the back of the tube) just above the ridge on the inlet tube of the valve holder. An 11-inch length of binding wire will be passed round the tube over the adhesive tape twice.
- (d) The ends of the wire will be twisted together with the fingers, and the twist gripped with pliers, the binding being tightened by a steady pull applied through the pliers. Without relaxing the pull, twist the wire until the slack is almost, but not quite, taken up. A direct pull is applied a second time and the wire twisted to take up practically all the slack. The turns of the wire should now be firmly embedded in the tube.
- (e) The twisted end will be cut off to $\frac{1}{8}$ -inch length and turned down at right angles to the binding so as to lie flat on the rubber pointing towards the body of the holder. A small piece of adhesive tape will then be placed over the end of the wire and pressed down till it adheres firmly.
- (f) Wiring will be carried out with the maximum tension that can be obtained with a direct pull without overstraining.

(2) Note that when the tube, connecting, No. 2, Mk. II is wired to facepiece, Mk. IVA or VA, the assembly must be made so that the canvas becket on the tube is on the right-hand side of the tube when the facepiece is viewed from the front.

F. REPLACEMENT OF FAULTY CONTAINERS

20.—(1) To replace a container, remove the faulty container after cutting off the binding wire. If the connecting tube is found to adhere to the container neck, it is to be freed by means of a tool, detaching, Mk. I.

(2) Examine the free end of the rubber connecting tube for splits or holes. Fit the connecting tube, if undamaged, to the neck of a new container. If the tube is difficult to push over the neck the latter may be lubricated with a little moisture or French chalk.

On no account must rubber solution or other adhesive be used.

(3) The following precautions *must* be observed :—

Containers, Type E.—The inlet valve in the neck of the container must be properly located and free to function properly. In the case of metal inlet valves, the wire guard must be inclined at an angle of about 45 degrees. In the case of rubber valves see that the check pin is present and secure.

(4) Adjust the angular position of the container as follows :—hold the facepiece in the hand by the valve holder with the inside of the facepiece towards the face. When the container hangs freely with the connecting tube untwisted its position should be as follows :—

- (a) For facepiece, Mk. IV or V (short tube) with the long side parallel to the body, and the air inlet slots of the container, type E pointing to the left.
- (b) For facepiece, Mk. IVA and VA (long tube) with the long side perpendicular to the body, and the air inlet slots of the container, type E pointing towards the body.

The container is wired on as in para. 19, except that one turn only of binding wire is to be passed round the tube. Binding wires, 11-inch, are to be cut in half for attachment of containers. In this case the binding wire comes just below the ridge on the neck of the container and the twisted ends of the binding wire are turned down towards the container. Alternatively the container may be secured by the use of clip, securing, No. 3, Mk. I.

G. REVALVING CONTAINERS, TYPE E

21. Containers, type E when received may be found to be fitted with inlet valve, No. 3 or 3A (metal) or inlet valve, No. 4 (rubber). Replacements are to be made with inlet valve, No. 4, with check pin, if supply permits.

Removal of Inlet Valve, No. 3 or 3A (see Figure 2)

- (i) Set the slide of the tool at the curved end and the valve flap open.

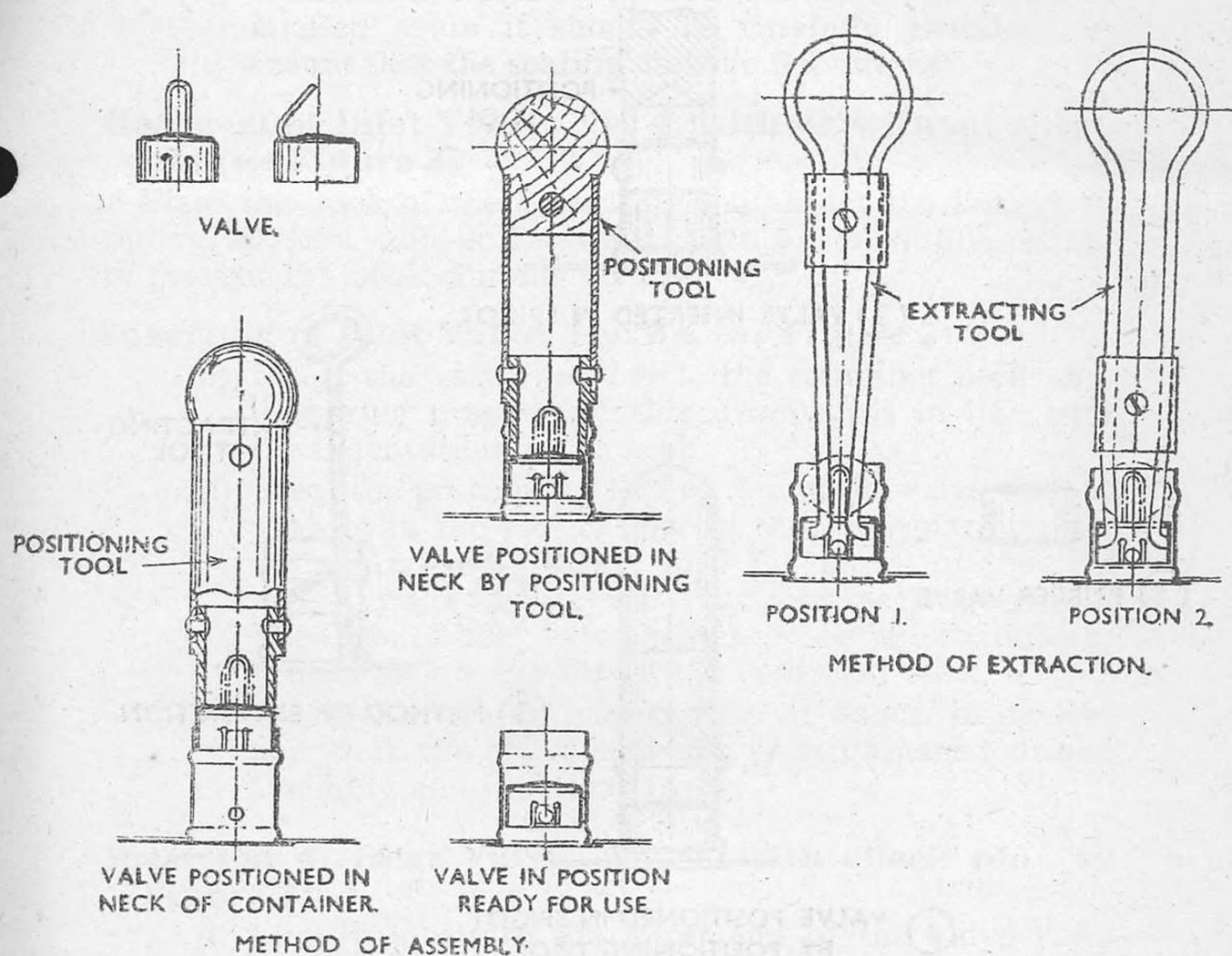


FIG. 2

ASSEMBLY AND EXTRACTION OF VALVE INLET No. 3 and 3A.

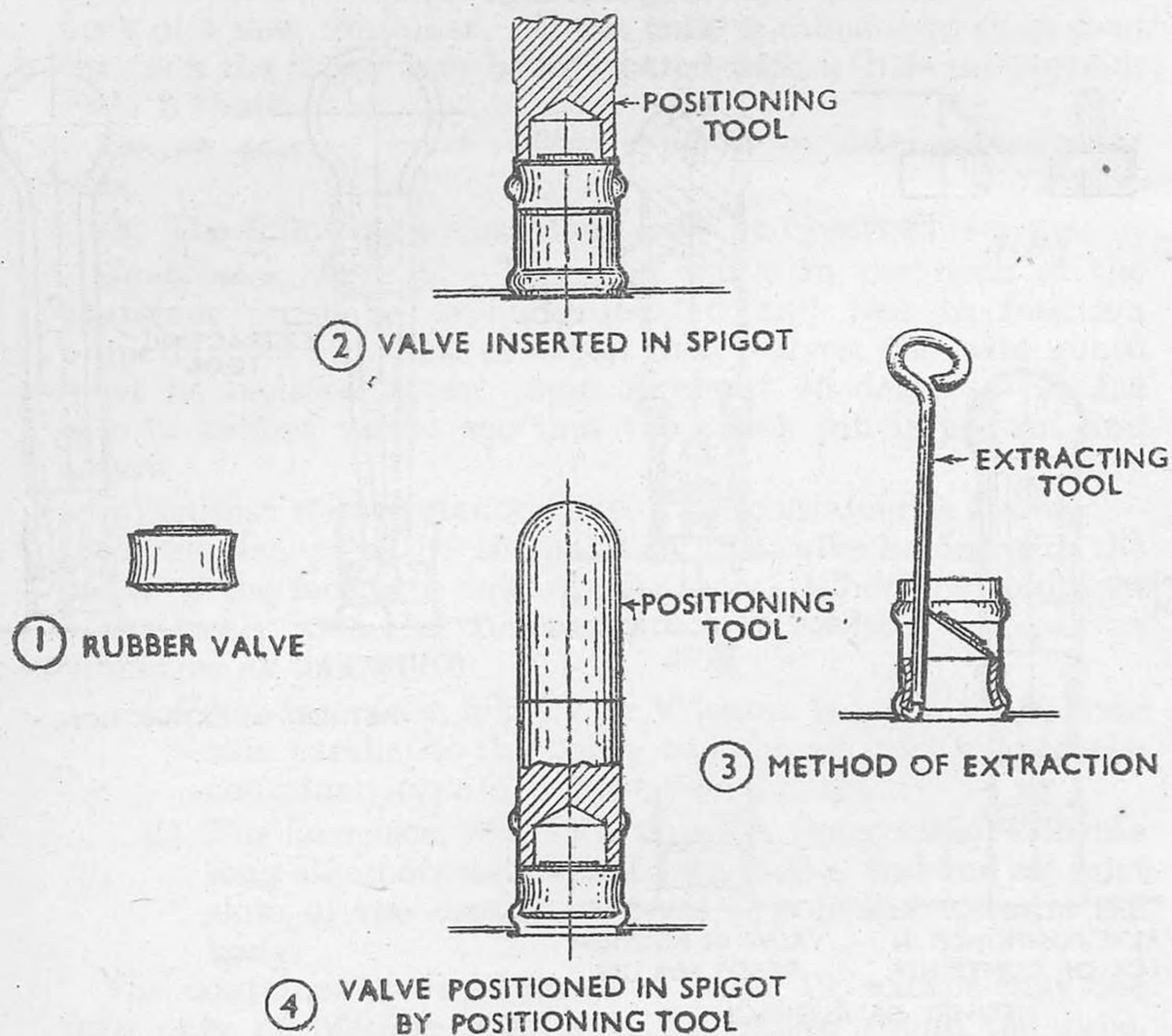


FIG. 3.

ASSEMBLY AND EXTRACTION OF VALVE INLET No. 4.

- (ii) Insert the tool in the valve till its hooked ends are under the valve seat and push the slide down so that the hooked ends are expanded and wedged under the valve seat.
- (iii) Withdraw the valve by exerting a steady pull on the tool.
- (iv) Removal is liable to distort the valve and before it is used again it should be carefully examined to ensure that the seating and the flap are flat.

Removal of Inlet Valve, No. 4, with or without check pin (see Figure 3)

Place the hook of the extracting tool under the bottom of the valve body, and pull upwards with an outward pressure to prevent the hook slipping off the body.

Insertion of Inlet Valve, No. 3A (see Figure 2)

- (i) Insert the valve just inside the container neck with its spring tongue pointing downwards in line with the indentation in the neck.
- (ii) Place the positioning tool on top of the valve, so that the slot in the tool is clear of the wire guard on the valve, and press down until the flange of the tool rests on the top of the container neck all round. The top of the valve will now be approximately $\frac{3}{16}$ -inch below the top of the container neck.
- (iii) See that the wire guard is set at about 45 degrees and that the valve has not been damaged during assembly and functions freely.

Insertion of Inlet Valve, No. 4, with check pin (see Figure 3)

- (i) Lightly lubricate the lower end of the valve body with French chalk or water.
- (ii) Insert the valve with its flap uppermost in the neck of the container. Press down carefully until the upper edge of the valve body is just below the top of the neck. Place the positioning tool on top of the valve as shown in **Figure 3**.
- (iii) Gently press down the positioning tool until its shoulder rests on the top edge of the container neck. The valve should then be in the position shown in **Figure 3**.
- (iv) Remove the positioning tool and verify that the flap is free to move and is positioned correctly. It is essential that the valve flap should be flat and centrally over the valve seating. The valve should be finally examined immediately before fitting the container in the connecting tube.

NOTE.—Test of containers.

Before re-issue, containers are to be tested for resistance to breathing by drawing air through them at a rate of three cubic feet per minute and measuring the resistance to the air flow. The resistance is not to exceed 3.0 inches water gauge. Details of the resistance meter and the method of test can be obtained from the Chief Inspector of Armaments.

H. HAVERSACK REPAIRS

22. Simple repairs to haversacks are permitted, such as the re-stitching of the seams, the replacement of metal parts by stitching, the attachment of whipcord and patching. Such repairs should be carried out by the R.A.O.C. when units are not suitably equipped.

I. CLEANING OF FACEPIECES AND HAVERSACKS

23. Facepieces.—Facepieces are to be cleaned and disinfected so that they are in a clean and wholesome condition and fit for re-issue. In particular, all grease and dried perspiration should be removed from the inside of the facepiece and headpads, and dirt and stains from the outside of facepieces and connecting tubes.

Facepieces may be cleaned and adequately disinfected by washing in hot soapy water either by hand or in bulk in a laundry washing machine. Immersion in disinfecting solution is not required if thorough washing in hot water is carried out.

(a) Hand-washing.—Remove the guard valve, valve outlet (and check plate if fitted), and in the case of the screwed eyepieces Mk. III remove the eyepiece discs and rubber washers. If a number of facepieces are to be washed in the same water it is advisable, in order to avoid transference of the black dye from the elastic to the stockinet of the mask, to remove the head-harness and treat it separately. If the elastic is defective it should be removed from the headpad.

Immerse the facepiece, eyepiece washers, headpad, valve outlet, guard valve (and check plate if fitted), in hot soapy water and wash each component thoroughly, using a suitable brush for removing grease and stains from the facepiece and headpad and any deposit from the valve holder. Only good quality washing soap is to be used. Rinse thoroughly in clear water, shake to remove excess water and hang up to dry out of contact with strong light. Wash eyepiece discs in warm soapy water and then rinse but do not immerse them for more than a few minutes.

(b) **Machine-washing.**—Facepieces may be washed in bulk in a laundry horizontal rotary washing machine. The speed of rotation is not to exceed sixty revolutions a minute and the direction of rotation should preferably be reversed at regular intervals during the washing.

The procedure to be used is as follows :—

(i) *Dismantling the facepieces.*—Remove from the facepieces the head-harness, guard valve, valve outlet (and check plate if fitted) and eyepieces, 2½-inch, Mk. II (if fitted). In the case of the screwed eyepiece Mk. III, only the inner rim, eyepiece disc and washer should be removed and then the inner rim screwed back into the outer rim hand tight so as to keep the rims in their correct pairs. Tie the eyepiece washers together loosely in a bundle. Examine the elastic and, if it is defective, remove it from the headpads and thread the headpads loosely on a length of thin cord so that water can circulate freely between them.

Head-harness in which the elastic is in new condition and does not require replacement, should be washed separately from the facepieces owing to the tendency for the black dye to be transferred to the stockinet. It is anticipated that normally the elastic in most facepieces returned after issue would require replacement, and it is to be noted that some slight weakening of the elastic, due to the washing treatment, must be allowed for when the elastic is examined.

(ii) *Washing.*—Place the facepieces, eyepiece washers and headpads in the rotary washing machine in which is water at a temperature of 175–185 degrees Fahr. containing Lissapol C soap (a product of Imperial Chemical Industries) in sufficient quantity to create and maintain throughout the washing process a good lather. In hard water about 3-lb. of soap to each 50 gallons of water may be required. Rotate the machine for a period of 20 minutes, maintaining the temperature at 175–185 degrees Fahr. by the admission of steam as required.

Valves, guards valve, and check plates, eyepiece discs and eyepieces, 2½-inch Mk. II should be washed separately by hand in hot soapy water. Eyepiece discs and eyepieces should be immersed for only a few minutes.

(iii) *Rinsing.*—Thoroughly rinse the components first in water at a temperature of about 140-degrees Fahr. and then in fresh cold water. Remove the components from the machine and examine them. Any facepiece in which the rubber is not thoroughly clean or the valve holder free from deposit should be set aside for separate hand washing as required.

(iv) *Drying.*—If available, a hydro-extractor may be used for preliminary drying. The components are then to be hung

up to dry either in the air out of contact with strong light or they may be dried in a warm drying room at a temperature of about 120-degrees Fahr.

24. Haversacks, method of cleaning.—Haversacks will be scrubbed with soap and lukewarm water and will then be reproofed by a thorough application of one of the approved types of khaki equipment cleaner.

No soda or scouring powder will be used in the cleaning process.

Haversacks which are serviceable or repairable but are in a very dirty or oily condition, will be cleaned, in accordance with current instructions issued on the subject, under command arrangements.

J. WIRE TYING MACHINES

25. It is to be noted that in depots where large numbers of respirators are to be repaired the work can be accelerated by the use of wire tying machines in all operations noted above as requiring wiring by hand.

Details of these machines and the jigs appropriate for the various components, can be obtained from the Chief Inspector of Armaments.

SECTION V.

RESPIRATORS, ANTI-DUST, Mk. IV

INSTRUCTIONS FOR VISUAL EXAMINATION

26. Masks.—The rubber mask must not be damaged nor badly cracked. It should show no tears, punctures or other damage.

Slight surface cracks in the rubber do not render the mask unserviceable, but they do indicate that deterioration has commenced and that future examination should be at frequent intervals.

The three apertures in the mask should be clean cut and not torn at the edges.

Filter units.—The inlet valve mount must be attached securely to the filter pad.

Examine the firmness of attachment by gently endeavouring to turn the valve mount.

The edge sewing of the pad and the tape loop must be secure.

Mounts, valve inlet and outlet.—These must be undamaged and should make a dust-tight joint with the mask.

Examine the valve seatings and see that they are not distorted also that the centre pin is firmly attached and allows the valve to rotate freely.

Valve inlet and outlet.—The valves must not be damaged or distorted and must seat properly in position.

If stiff, the valve should be changed.

If it is curled up but still pliable it can be removed from the pin on the valve mount, turned over and replaced.

Harness.—The elastic webbing must be sound and securely attached to the metal fittings. These, in turn, must be undamaged.

Body guard outlet valve.—The rubber must not be damaged or badly cracked.

Disc guard outlet valve.—The valve must not be damaged or distorted.

INSTRUCTIONS FOR REPAIR AND REPLACEMENT

(1) Perished and defective harness elastic will be replaced. This will be done by cutting the old elastic and replacing by new, making use of the existing metal components.

(2) All other defects will be corrected by replacing with a new part or unit.

SECTION VI

RESPIRATORS, ANTI-PAINT AND DOPE SPRAY

INSTRUCTIONS FOR VISUAL EXAMINATION

27. Masks. Harness.—As for respirator, anti-dust, Mk. IV.

Eyelets.—These must be undamaged so as to form a satisfactory housing for the valves, outlet. They must also be attached securely to the mask.

Valves, outlet.—Valves which are perished or which fail to function must be rejected. Serviceable valves should shut smartly in answer to normal breathing.

Piece, connecting.—The brass piece connecting must be undamaged and a gas-tight fit in the mask.

Tube, connecting.—As for service respirator.

Container, type E, Mk. VI.—As for service respirator.

Haversack.—As for service respirator.

INSTRUCTIONS FOR REPAIR AND REPLACEMENT

As for respirator, anti-dust, Mk. IV, and service respirator.

APPENDIX

LIST OF STORES REQUIRED BY I.O.Os. FOR
CARRYING OUT AUTHORIZED REPAIRS AND
REPLACEMENTS

Purpose for which stores are required.	Designation.	V.A.O.S. Section.
Containers, type E, Mks. V and VI—re- placement, re- painting and revalving of	Brushes, varnish and enamel, flat, 1-inch	F
	Paint, prepared for use—	H1
	red	
	khaki (for spraying)	F
	Pliers, side-cutting	A2
	Respirators, anti-gas—	
	Clips, No. 3, Mk. I	
	Containers, type E, Mk. VI	
	Tools—	
	Detaching, Mk. I	
	Extracting, inlet valve, No. 3 or 3A, Mk. I	
	Extracting, inlet valve, No. 4, Mk. I	
	Positioning inlet valve, No. 3 or 3A, Mk. I.. .. .	
	Positioning inlet valve, No. 4, Mk. I	
	Valves, inlet—	
Containers and Respira- tors, anti-paint and dope spray —replacement of	No. 3	F
	No. 3A	
	No. 4, Mk. I, with check pin..	
	Wires, binding, 11-inch	
	Ties, wire—for wiring.. .. .	
	8.5-inch—cut connecting tube, to coupling	
	5-inch—connecting tube to container	
	10-inch—eyepiece to facepiece	
	11-inch—valve holder to face- piece	
	5½-inch—connecting tube to valveholder	
	Brushes—	F
	Marking	
	Sash, tool, No. 2	H1
	Grease, G.S.	F
	Hammers, engineers, ballpane,	
	8-oz.	H1
	Naphtha, coal tar	

APPENDIX—continued.

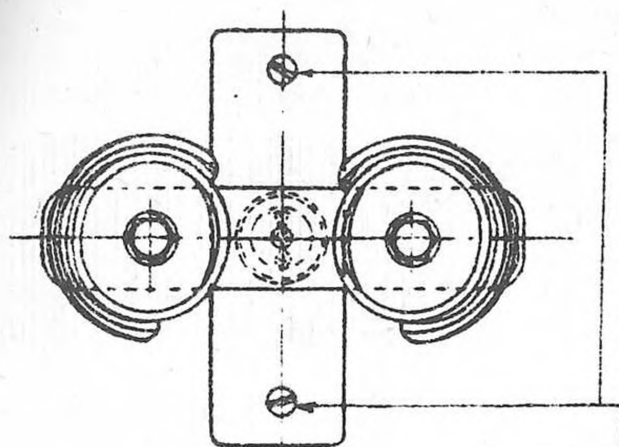
Purpose for which stores are required.	Designation.	V.A.O.S. Section.
Facepieces— repair of	Respirators, anti-gas—	A2
	Check plate, outlet valve, Mk. I	
	Clips—	
	No. 1, Mk. IE (microphone-mounting)	
	No. 4, Mk. I (eyepiece) ..	
	No. 5, Mk. I (valve holder) ..	
	Couplings, connecting tube, Mk. I	
	Discs, eyepiece, 2½-inch, Mk. II	
	Eyepieces, 2½-inch, Mk. III ..	
	Guard valve—	
	Mk. III	
	Mk. IV (a)	
	Mk. V	
	Harness No. 4, Mk. III	
	Holder, valve—	
	No. 4, Mk. I (a)	
	No. 4, Mk. II	
	No. 4, Mk. III	
	Jig, fixing eyepieces—	
	Mk. I	
	Mk. II	
	Keys, securing—	
	Eyepiece,	
	Mk. I	
	Mk. II	
	Mk. III	
	Valve guard, Mk. I	
	Loops—	
	Mk. II	
	Mk. III	
	Nuts, retaining pin	
	Pins, cotter	
	Plates, retaining, Mk. I	
	Sleeves, rubber, clip—	
	No. 4, Mk. I	
	No. 5, Mk. I	
	Tags, Mk. II	
	Tools, positioning, eyepiece clip	
	Tubes, connecting—	
	No. 2, Mk. I	
	No. 2, Mk. II	
	No. 3, Mk. I	
	No. 3, Mk. II	
	Valves, outlet, No. 2, Mk. II ..	
	Webbing, elastic, ¾-inch (a) ..	
	Scissors, 8-inch	KF MT
	Solution, rubber	

APPENDIX—continued.

Purpose for which stores required.	Designation.	V.A.O.S. Section.
Haversacks, Mks. V to VII— repair of	Tape—(b)	A2
	Adhesive, $\frac{1}{2}$ -inch	
	Rubber, pure, $\frac{1}{2}$ -inch	
	Lines , natural, whipcord	
	Canvas , scrap, for loops	
	Loops , brass, $\frac{9}{16}$ -inch	
	Outfit , fixing press fasteners—	
	No. 1, Mk. I (for Newey fasteners)	
	No. 2, Mk. I (for "Dot" fasteners)	
	Press Fasteners	
	Respirators , anti-gas—	
	Buckle (two parts), waist belt ..	
	Hooks, spring, shoulder strap ..	
	Hooks, S	
	Loops, D, 1-inch	
	Ring, $1\frac{1}{4}$ -inch	
	Slides, shoulder strap	
	Slides, shoulder strap, with eye ..	
	Spring hook and D loop assembled	
	Respirator , anti-dust, Mk. IV—	
	Body, guard, outlet valve ..	
	Disc, guard, outlet valve ..	
	Filter unit (right hand) ..	
	Filter unit (left hand) ..	
	Mount outlet valve ..	
	Valve, inlet ..	
	Valve, outlet ..	
	Respirator , anti-paint and dope spray—	
	Piece, connecting ..	
	Tube, connecting ..	
	Valve, outlet, No. 2 ..	

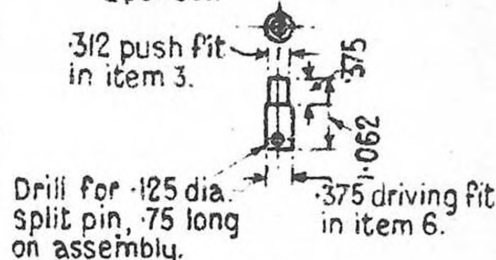
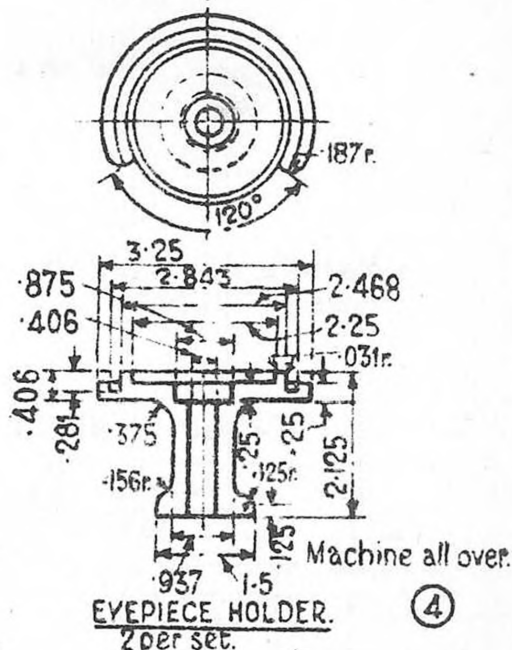
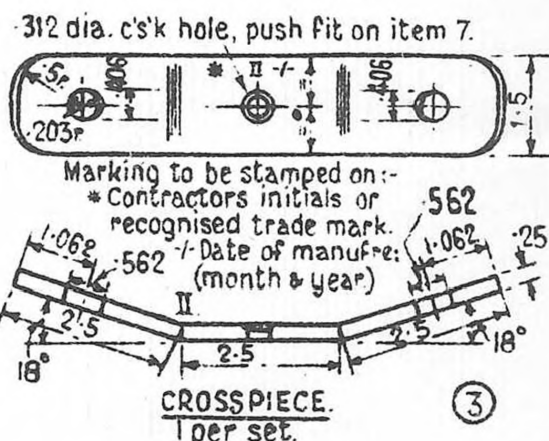
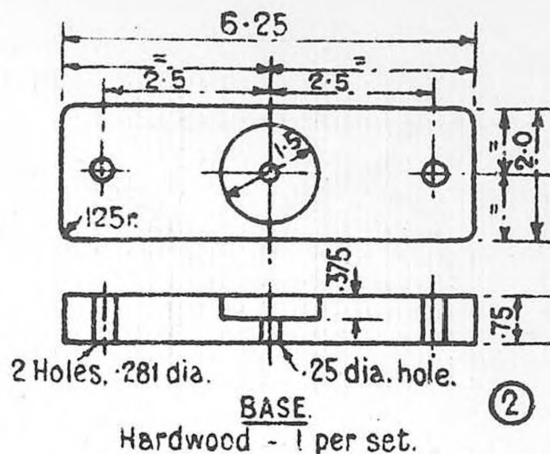
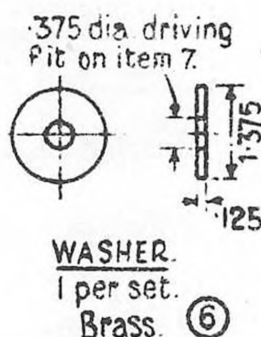
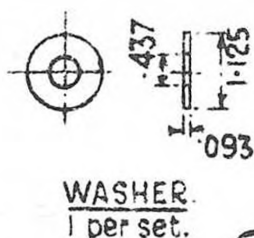
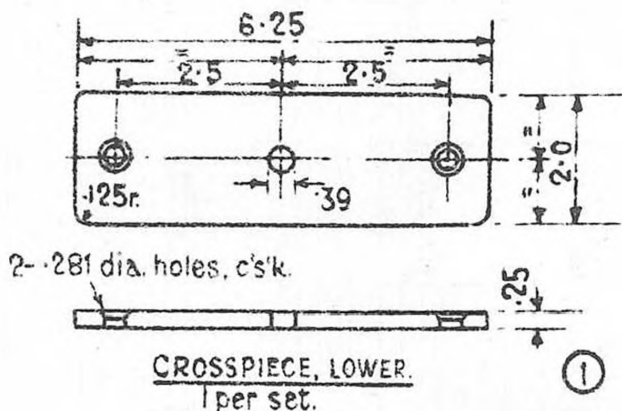
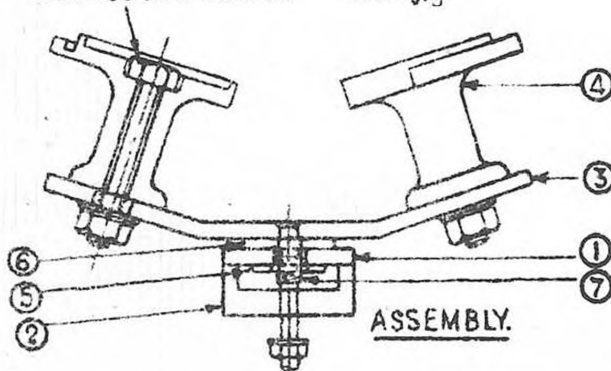
(a) Also for respirators, anti-dust, and anti-paint and dope spray.

(b) Also for respirators, anti-paint and dope spray.



2- $\frac{3}{8}$ B.S.W. Hex. hd bolts
2.5 long, each complete
with nut and washer.

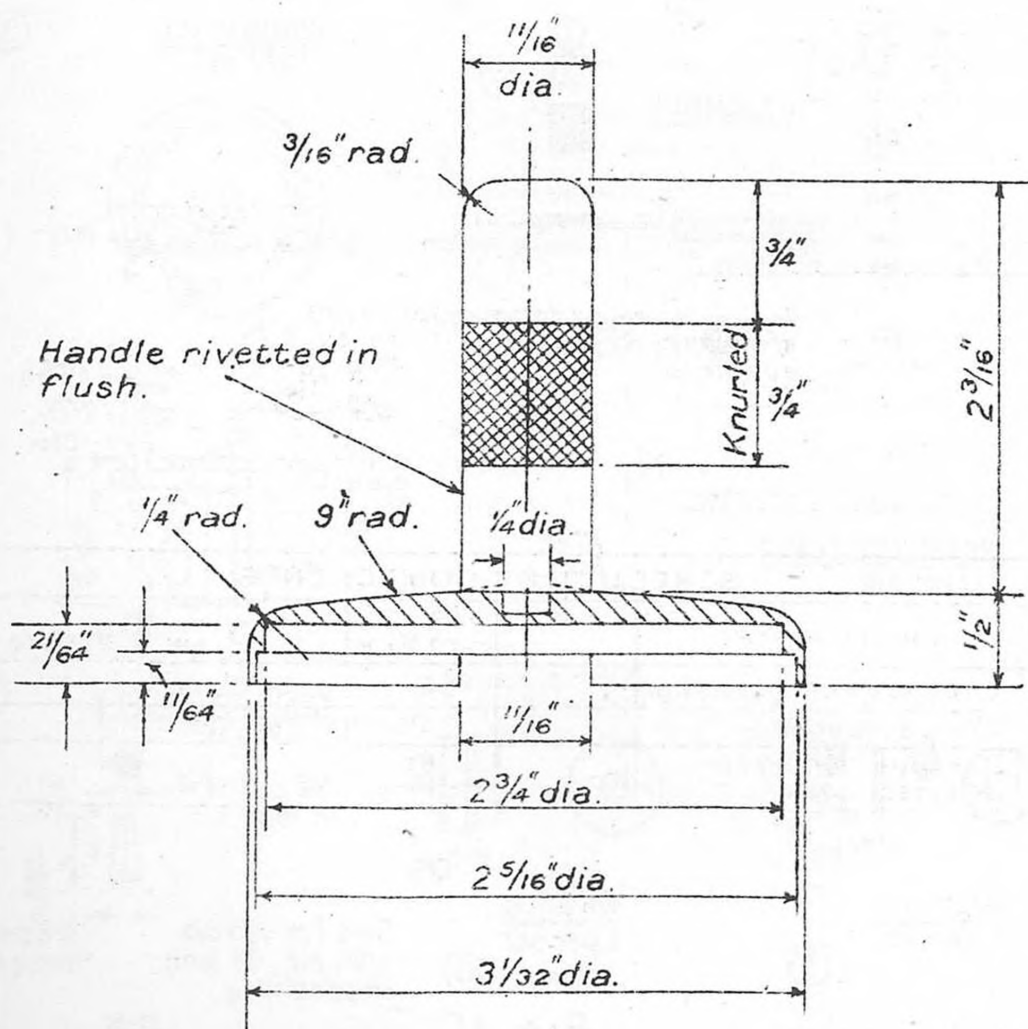
2- $\frac{1}{4}$ B.S.W. c's'k hd bolts
3.75 long, each complete
with washer and hex. nut
to be supplied with
each jig.



Dimensions are in inches.
Mild steel except where otherwise stated.

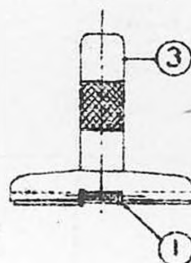
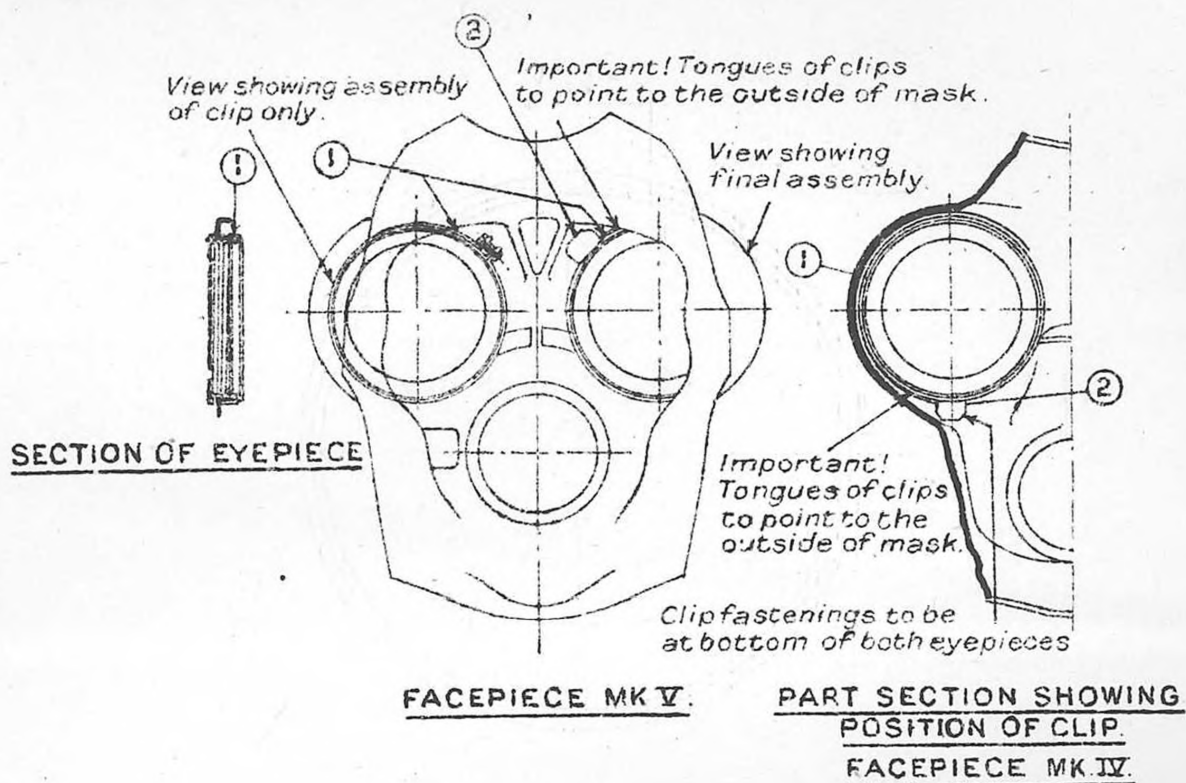
JIG, FIXING EYEPIECES, RESPIRATOR, ANTI-GAS, MARK II.

FIG. 1A.



Material:- Mild Steel.

FIG. 1B.
TOOL, POSITIONING FOR EYEPIECE CLIPS.



Tool, positioning, for eyepiece clips, showing clip ready for fitting to eyepiece.

SCHEDULE OF COMPONENTS					
Detail No	Nomenclature		No off each Mask		
1	Clip, eyepiece, securing.		2		
2	Sleeve, rubber.		2		
3	Tool positioning for eyepiece clips.		As required		

FIG. IC.
FACEPIECES, MKS IV & V ASSEMBLY OF
CLIPS, EYEPIECE, SECURING.

Notified in A.C.Is. 11th February, 1942

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26
Regulations
2379

**REGULATIONS FOR ARMY
ORDNANCE SERVICES, PART II**

PAMPHLET No. 26, 1941

AMENDMENTS (No. 1A)

Page 3. *For para. 2 substitute :—*

Amdt. 1A, 2. Accordingly, during the present war and in view of the 26
Feb., 1942 fact that all units possess trained officers and non-commissioned Regulations
officers capable of inspecting and testing respirators, all 2379
respirators will be tested under unit arrangements in the first
instance and only those considered beyond unit repair will be
returned to the R.A.O.C.

By Command of the Army Council,



THE WAR OFFICE,
11th February, 1942.

Notified in A.C.Is. 12th August, 1942.

26
Regulations
2106

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**REGULATIONS FOR ARMY
ORDNANCE SERVICES, PART II
PAMPHLET No. 26, 1941
AMENDMENTS (No. 3A)**

Page 6.

Line 8. *After " guard " insert :—*

Amdt. 3A
August, 1942

Mk. I, which must be replaced by a guard, valve,
Mks. I* to V.

26
Regulation
2106

Line 12. *Delete from " If the " to end of para. and substitute :—*

Amdt. 3A
August, 1942

If fitted with the former, this must be replaced
with valve, outlet, No. 2, Mk. II and checkplate,
Mk. I.

26
Regulation
2106

Delete lines 44 to 47 and substitute :—

Amdt. 3A
August, 1942

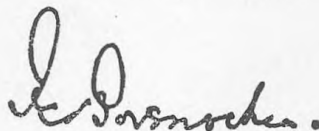
The checkplate, Mk. I is then fitted over the valve,
outlet and the captive nut of Mk. I* to Mk. V guard,
valve screwed finger tight on the retaining pin, and
then tightened half a turn with the key, securing.
The use of any other tool is prohibited.

26
Regulation
2106

Page 7. *Delete lines 1 to 7.*

26
Regulations
2106

By Command of the Army Council,



THE WAR OFFICE,
12th August, 1942.

Notified in A.C.Is. 15th April, 1942

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**REGULATIONS FOR ARMY
ORDNANCE SERVICES, PART II
PAMPHLET No. 26, 1941**

AMENDMENTS (No. 2A)

Page 14. *Below line 15 insert new sub-paragraph:—*

(6) (a) Re-touching of defective lacquering will be done with any quick air drying enamel of good quality. The colour is to be khaki green or a close approximation

Amdt. 2A

April, 1942

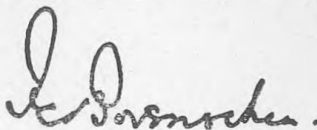
26
Regulations

2106

to it.

(b) When the components are removed from the facepiece, spraying or dipping methods will be used if large numbers are involved.

By Command of the Army Council,



THE WAR OFFICE,
15TH APRIL, 1942.

(776.) 52567. Wt. 48440-8191. 10M. 4/42. A., P. & S., Ltd.

NOT TO BE PUBLISHED

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26
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REGULATIONS
FOR
ARMY ORDNANCE SERVICES
PART II

SUB-PAMPHLET No. 1 TO PAMPHLET No. 26

1941

RESPIRATORS, ANTI-GAS
HORSE AND MULE, Mk. I/L

**Instructions for the Examination, Repair, Sentencing,
Proof, Replacement, etc., of**

By Command of the Army Council,



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SECTION II—PROOF

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SECTION III—VISUAL EXAMINATION AND SENTENCING

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Respirators, anti-gas, Horse and Mule, Mk. I/L	2
Haversacks, anti-gas, Horse, Horse Cavalry Pack, Horse Pack Transport, G.S. and Mule	2

SECTION IV—REPAIR OF RESPIRATORS AND HAVERSACKS, ANTI-GAS, HORSE AND MULE

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3. Repair to the outer-khaki drill bag	4
4. Replacement of D rings on fitting band	4
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APPENDIX

List of stores required by I.O.Os. for carrying out authorized repairs and replacements	6
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REGULATIONS FOR ARMY ORDNANCE SERVICES, PART II

SUB-PAMPHLET TO PAMPHLET No. 26, 1941

Instructions for the Examination, Proof and Repair of Respirators, Anti-Gas, Horse and Mule, Mk. I/L

SECTION I—INSPECTION

AND

SECTION II—PROOF

1. Inspection and proof will follow the lines of the corresponding sections in Pamphlet No. 26 for service respirators, observing that this respirator is not made up with facepiece and container as separate items.

This horse respirator complete will be treated in the same way as the facepiece of the service respirators.

SECTION III

1. Visual examination and sentencing

INSTRUCTIONS

- (a) The examination of the various parts of the respirator should be carried out as set forth in paras. 3 and 4 to ensure that the points mentioned are in order.
- (b) When defects are found, the following entail a sentence of " R (by unit) " :—
 - Faulty harness and deficiencies of D rings on the fitting band.
 - Faulty outlet valves, such as damaged guard, seating or mica discs.
 - Tears in outer khaki drill bag.
 - Deficiencies of leather, rubber and webbing straps ; square links, buckles, dees and studs, etc., from horse and mule haversacks and open seams.
- (c) The following defect can be dealt with at the Ordnance Depot and entail service of " R (by R.A.O.C.) " :—
 - Defective attachment of D rings to fitting band, when the side strap is still intact.
- (d) Defects not included above render the respirator (or component) " B.L.R."

2. Respirators, Anti-Gas, Horse and Mule, Mk. I/L

- (a) *Harness*.—The canvas pad and webbing straps must be sound and firmly sewn together. The top three webbing straps must also be firmly sewn to the loop of the lever buckles, and the fourth must be firmly sewn to the fitting band strap.

The hooks and lever buckles must be sound and function freely.

- (b) *Fitting band*.—The rubberized canvas and sponge portion of the fitting band must be free from cuts and holes. The side straps must be free from tears and firmly attached to the body of the fitting band. The D rings must be fixed securely to the side straps by the rivets and back-plates.

- (c) *Rubber pad*.—The pad must be free from cuts, holes and cracks. Wear on the rubber due to teeth grinding is expected, but should not be rejected unless the pad is worn down to the canvas on both sides.

- (d) *Bags*.—The fabric nest of bags must be free from cuts, tears or holes and only the outer khaki drill bag can be repaired. Tears in any of the other fabric layers renders the respirator unserviceable beyond local repair (B.L.R.). All the seams must be secure, in particular those uniting the fitting band, rubber pad and nest of bags.

- (e) *Outlet valves*.—The valves must be firmly secured to the fitting band canvas. This is ensured by the four nuts screwed to the pins on the inside of the bag. A damaged valve-guard does not necessarily render the valve defective, but steps should be taken to ensure that the valve seating is undamaged and free from rust and dirt.

The mica disc must move freely and should be firmly held on the seating by means of the spring. The disc must be free from distortion, splits and unflaked. The spring must be secured by the rivet in the centre of the valve guard.

- (f) *Spring*.—The coil spring inside the bag must be unbroken and secured to the bag so that no part of the spring overlaps the rubber pad. The flat portion of the spring behind should lie along the junction of the rubber pad and fitting band.

3. Haversacks, Anti-Gas, Horse, Horse Cavalry Pack, Horse Pack Transport G.S., and Mule.

Examine for defective stitching, holes, tears or other damage, and for deficiencies of component parts. In all patterns the square links, straps, and press studs for closing the flap, and webbing strap at the base must be present. All but the mule and cavalry pack, cover anti-gas haversack patterns are

provided with a back pocket for eyeshields, made from khaki drill. This must be intact and free from tears, or holes such as would hinder insertion of the respirator.

The various types of haversack must comply with the following :—

- (a) The mule haversack should have two 2-inch webbing straps each fitted with a buckle and hook.
- (b) The horse haversack (i.e. for cavalry) should have the following fittings :—
 One leather chape with brass D ring on either side.
 One leather strap with loop and stud, looped through one of the D rings on the side.
 One leather strap and one leather fairway with buckle on the back.
- (c) The cavalry pack haversacks (respirator and cover, anti-gas) are each fitted with two leather straps secured to the back, leather reinforcements being provided on the inside, and the free end of each strap fitted with a tinned iron ring.

Each haversack is fitted with a leather patch across the top and down the back. This patch should be replaced if worn through by rubbing.

Both patterns are fitted with leather straps attached to the bottom, the cover anti-gas pattern being fitted with loop and buckle.

- (d) The pack transport G.S. pattern is fitted with two 2-inch webbing straps.

One strap, inverted V form, is sewn into the back of the haversack, and the other fitted with a buckle, 2-in., and tinned iron ring is connected to the apex of the inverted V by a slide, 2-in.

SECTION IV

Repair of Respirators and Haversacks, Anti-Gas, Horse and Mule

(To be carried out under the supervision of a qualified I.O.O.)

1. Replacement of faulty harness

The harness consists of two separate parts and if either is badly damaged it should be replaced by a completely new part. Faulty lever buckles 1-inch, or hook 1-inch, can be replaced without complete removal of the harness.

Both parts are fixed to the fitting band by a sewing operation. The single strap is removed by cutting the seam uniting the webbing to the side strap, the rest of the harness is removed by cutting the seams which unite the webbing to the lever buckle loops.

When replacing the harness, care should be taken to ensure that all lever buckles, and hooks, face outwards. Details for replacement are as follows :—

The three-strap harness is replaced by threading the free end of the webbing straps, each through the gripping slot of the lever buckle, through the appropriate D ring, and finally through the loop of the lever buckle. The webbing is then turned over for $\frac{3}{4}$ -inch and sewn down, the turn-in being on the inside of the webbing loop so formed.

In securing the single strap the free end should be turned in by $\frac{3}{4}$ -inch and laid on the outside of the bottom right hand canvas strap of the fitting band. This is also turned in by $\frac{3}{4}$ -inch. The straps are laid together and the turned-in edges should be set at a distance of $1\frac{3}{4}$ -inch apart and sewn together in a rectangle of size $1\frac{3}{4}$ -inch by $\frac{3}{4}$ -inch.

The sewing can be done by hand or machine whichever is most convenient. All ends must be secured.

2. Replacement of outlet valves

The nuts and washers which secure the valve to the respirator should be removed with the box spanner provided. The guard and seating can then be withdrawn from the fitting band canvas and the backplate on the inside of the bag is then free for removal. The I.O.O. can then decide whether the whole or only part of the valve needs renewal.

On replacing the valve, the guard, mica disc and seating should be assembled, great care being taken to ensure that the mica disc is not trapped between the guide pins and seating flange. The threaded ends of the guide pins should then be inserted into the appropriate holes in the canvas. The backplate can then be fitted on the pins and nuts and washers fixed. During this part of the operation the mica disc should be pressed towards the guard again to prevent it from being trapped.

The nuts should be taken up together to finger tightness, the final tightening being done with the box spanner provided, care being taken not to over-tighten.

3. Repair to the outer-khaki drill bag

Small tears in this outer bag can be repaired by fixing over the tear a patch of the same material. A small stitch sewing should be used, as this bag is intended to be shower-proof.

4. Replacement of D rings on fitting band

Providing the canvas strap is undamaged the D rings can be replaced as follows :—The strap is folded round the flat of the

D ring, the free end being on the outside. A backplate is placed on either side of the doubled strap and rivets inserted and rivetted over.

The head and turned-over end of the rivets should then be painted over with black paint.

5. Haversack repairs (all types)

Simple repairs to haversacks are permitted, such as the re-stitching of the seams, replacement of leather and webbing straps and various metal components. It is expected that in general this will be done by unit saddlers and that any haversack returned by units will be sentenced B.L.R.

Any repair carried out must not interfere with the existing pattern of the haversack.

APPENDIX

List of stores required by I.O.Os. for carrying out authorized repairs and replacements

Purpose for which stores are required.	Designation.	V.A.O.S. Section.
Respirators, repair of.	Khaki, drill, No. 2, shower-proofed ..	N.I.V.
	Brush, marking	F
	Paint, prepared for use, black, G.S. ..	HI
	Rivets	N.I.V.
	Backplates	
	Rivetting tool, for above rivets ..	
	Valve outlet	
	Nuts, 4 B.A. hexagon brass, nickel-plated	
	Washers, 4 B.A. brass, nickel-plated ..	
	Single end spanner, No. 4 BA, with tommy bar	
	Buckles, lever, 1-inch	
	Hooks, 2-inch	
	Webbing, cotton, 1-inch	
	Thread—	
	Linen No. 40	
	Linen 18/7, drab	
	Needles, to suit above threads ..	
	D loop, $\frac{3}{4}$ -inch	F
Haversacks, repair of	Canvas, flax, R.N., No. 4	N.I.V.
	Webbing, cotton—	A1
	1-inch drab, thick	
	2-inch drab, thick	N.I.V.
	Square links	
	Buckle, brass, roller, single, 1-inch ..	D.I.
	Stud, $\frac{5}{16}$ -inch shank	
	Hides, brown—	
	Back, bridle	N.I.V.
	Back, collar	
	Cloak	
	Khaki, drill, No. 2	A.I.
	Hook, 2-inch	
	Buckle, 2-inch	N.I.V.
	Canvas backed rubber sheet	D.I.
	Rings, iron tinned—	
	$1\frac{1}{2}$ -inch	A2
	$1\frac{3}{4}$ -inch	
	Slide, 2-inch	N.I.V.
	Thread, linen—	
	18/3 cord, black	
	18/7 cord, drab	F
	Needles, to suit above threads ..	