

Chapter 6

GOGGLES

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Introduction

1. Goggles are worn in flight to protect the eyes from glare, airstream, fire, splinters, and accidental blows. For training purposes, tinted goggle windows are used with aircraft screens of a complementary colour to simulate night-flying conditions in the daytime. Special goggles may be worn before take-off to enable the eyes to become "dark adapted" before a night operation.

2. Goggles are designed to give as wide an angle of vision as possible and to fit comfortably. Clear vision is essential and

the goggle windows should be kept clean and free from scratches.

Goggles, Mk. 8

3. Goggles, Mk. 8 (Stores Ref. 22C/930) (fig. 1) are the standard goggles worn by aircrew. They are supplied fitted with untinted safety-glass windows; a pair of tinted anti-glare windows is provided in the goggle kit and may be fitted if required. An anti-dimming outfit is also provided.

4. The windows are mounted in metal frames connected by a metal bridgepiece,

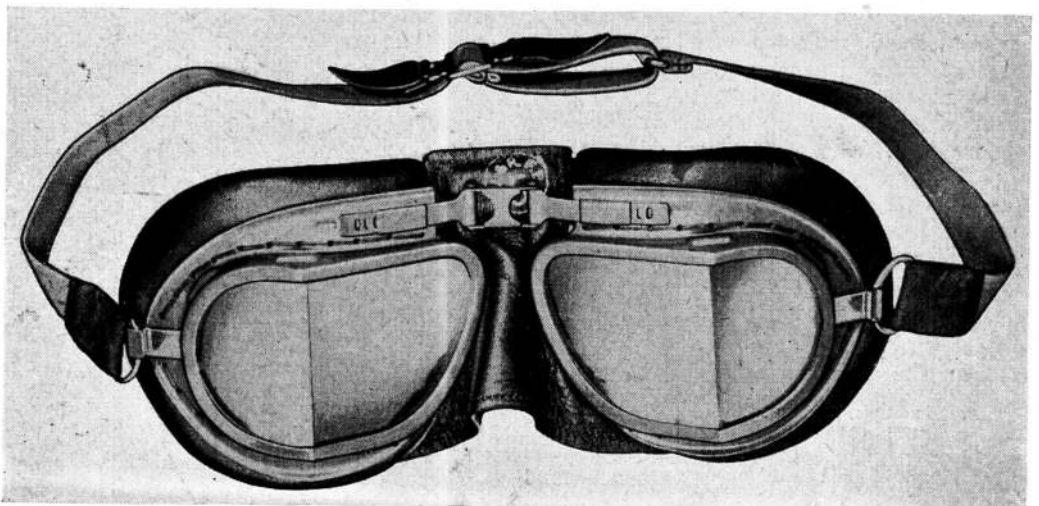


Fig. 1. Goggles, Mk. 8

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each arm of which has three slots so that the width of the facepiece can be adjusted to suit the wearer, whose eyes should look through the centres of the windows. The same adjustment should be made on both arms of the bridgepiece.

5. The frames are fitted in a padded leather facepiece held in position by an elastic headband which passes through loops on the wearer's flying helmet. Ventilation louvres around the windows tend to prevent misting.

Note . . .

Misting may be caused by a badly-fitting oxygen mask, which allows oxygen to leak past the wearer's nose.

6. To change a window, release the plate, withdraw the old window, fit the new window in the channel at the inner edge of the frame, and re-fit the metal plate as shown in fig. 2.

Changing the windows

7. The windows fit into channels in the frames and are held in position at the outer edges by small plates attached to the ends of the headband. These plates pass through slots in the facepiece and press the windows towards the fronts of the frames. The plates are held in curved spring clips riveted to the facepiece. The arrangement is shown in fig. 2.

Servicing

8. The windows, both tinted and untinted, are made of laminated safety-glass. As a result of humidity or high temperatures, the laminations may become separated; this is shown by discolouration. Any windows showing discolouration should be renewed.

Instrument flying practice goggles, Mk. I

9. These goggles (fig. 3) are provided for use in daylight to simulate night conditions for training purposes. The artificial night effect is obtained by light absorption filters incorporated in the goggles and in screens on the aircraft.

10. The facepiece (Stores Ref. 22C/862) is made of rubber and the inner surface is lined with velveteen. An adjustable elastic headband is provided and plastic ventilators are fitted on each eye-rim.

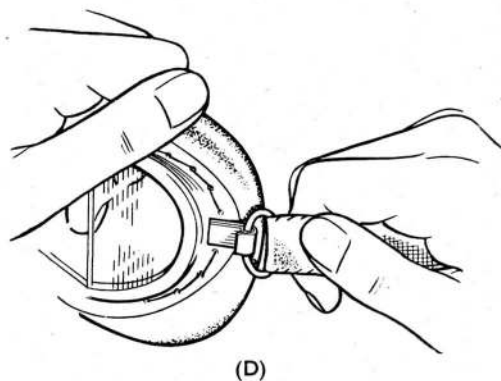
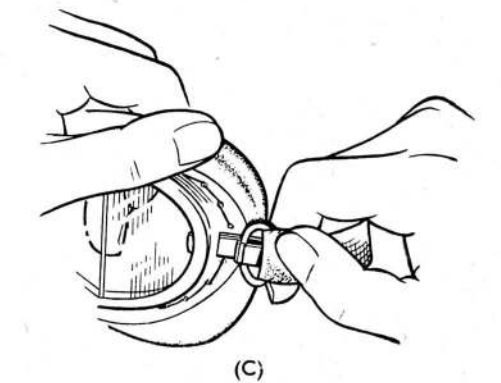
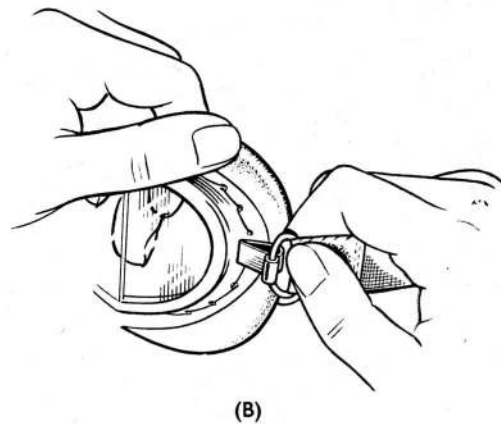
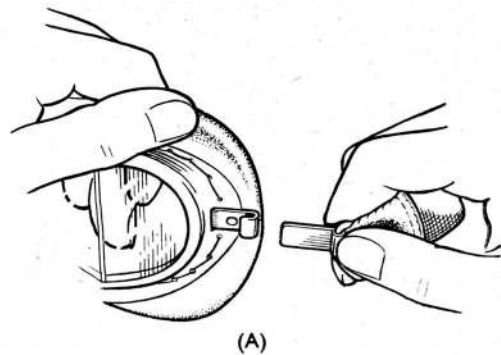


Fig. 2. Fitting a new window

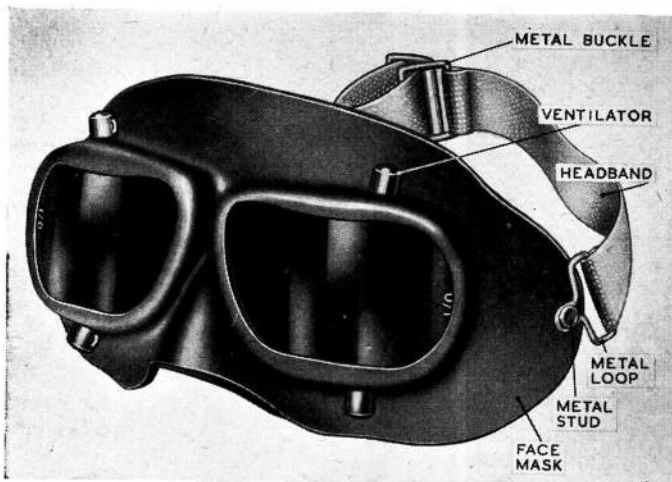


Fig. 3. Instrument flying practice goggles, Mk. I

11. Laminated filter windows of varying intensities are available as follows :—

Item	Stores Ref. 22C/—
Blue	1089
consisting of :—	
Dense	1090
Medium	1091
Weak	1092
Very weak	1093

12. When the goggles are worn, the headband should be pulled tight and the mask pressed and spread against the face to make sure that the edge is not turned in. A malleable metal strip is fitted into the edge of the facepiece round the nose.

Ventilator tube (fig. 4)

13. If the ventilators on the facepiece are not adequate, additional ventilation may be provided by the fitting of a ventilator tube (Stores Ref. 22C/1003). The tube is fitted to the goggles instead of the two upper ventilators and communicates with the atmosphere through a fitting in the fuselage, to the left and slightly forward of the wearer. The airstream past the open end of the tube creates a slight suction inside the facepiece so that the air is continuously changed. Ventilator tubes are

not, of course, used in aircraft fitted with ejection seats or pressure cabins.

14. The ventilator tube consists of a length of white P.V.C. tubing with two branch pieces of black tubing connected to it by a metal Y-piece. Hollow nipples are cemented to the branch pieces and a tapered nozzle is fitted to the end of the main tubing. In use, the nozzle is pushed into a rubber bush fitted to the fuselage.

15. The ventilator tube should be fitted to the goggles as follows :—

- (1) Remove the two upper ventilators from the goggles.
- (2) Detach the two black tubes from the Y-piece.
- (3) Insert each tube into the holes from the inside of the facepiece.
- (4) Smear the faces of each of the nipple washers and the parts of the facepiece around the holes with rubber solution, and press the nipples into position when the solution is tacky.
- (5) Pull the tubes to make sure that the rubber of the facepiece has sprung into place.

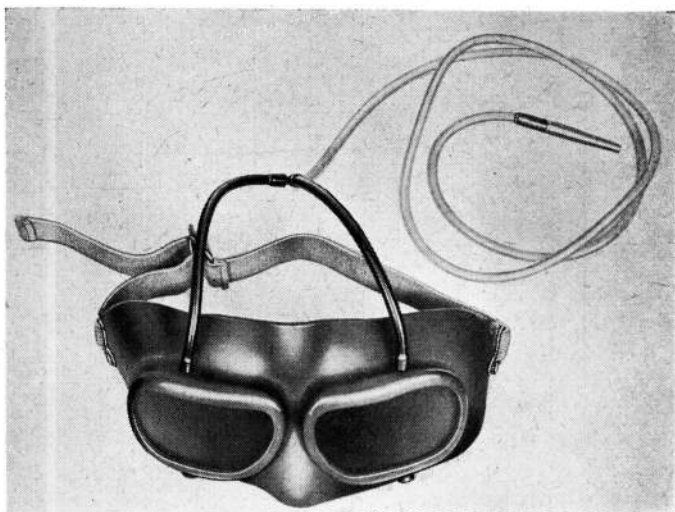


Fig. 4. Ventilator tube

- (6) Reassemble the tubes on the Y-piece. If they need stretching, dip them into hot water and reassemble them immediately, then dip them into hot water again and the joints will tighten. If necessary, bind the joints with thread.

Instrument flying practice goggles, Mk. 2

16. These goggles (fig. 5) consist of a facepiece (Stores Ref. 22C/1136) and a filter window. A set of windows of varying densities is available as follows:—

Item	Stores Ref.
Filter, blue, complete consisting of:—	1104
Dense	1106
Medium	1107
Weak	1108

The goggles are supplied fitted with a medium blue window.

17. The facepiece is a rubber moulding lined with chamois leather where it is in contact with the face. If light penetrates round the nose, the facepiece should be padded with surgical plaster or cottonwool.

18. The top and sides of the facepiece are provided with ventilating holes and

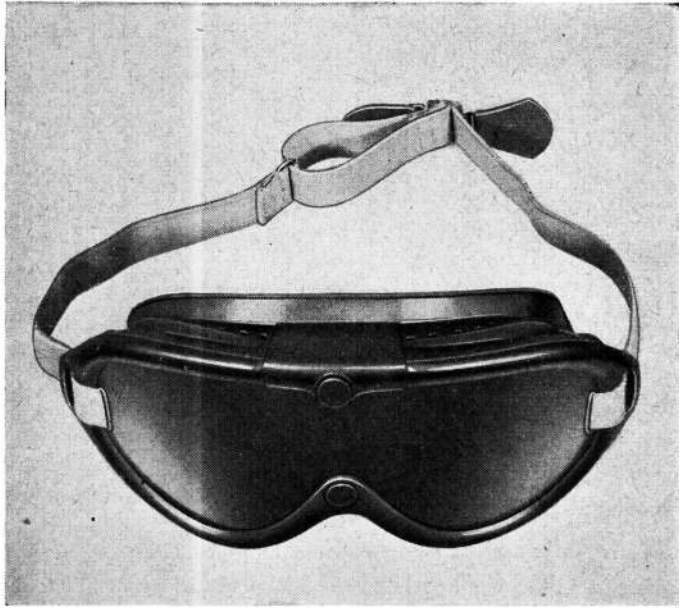


Fig. 5. Instrument flying practice goggles, Mk. 2

slots. The window is cellulose acetate 0.030 in. thick, and fits in a channel round the edge of the facepiece. It is held in position by two snap fasteners and by an elastic headband, which passes through a slot at each side of the window.

19. To change the window, undo the snap fasteners and withdraw the old window.

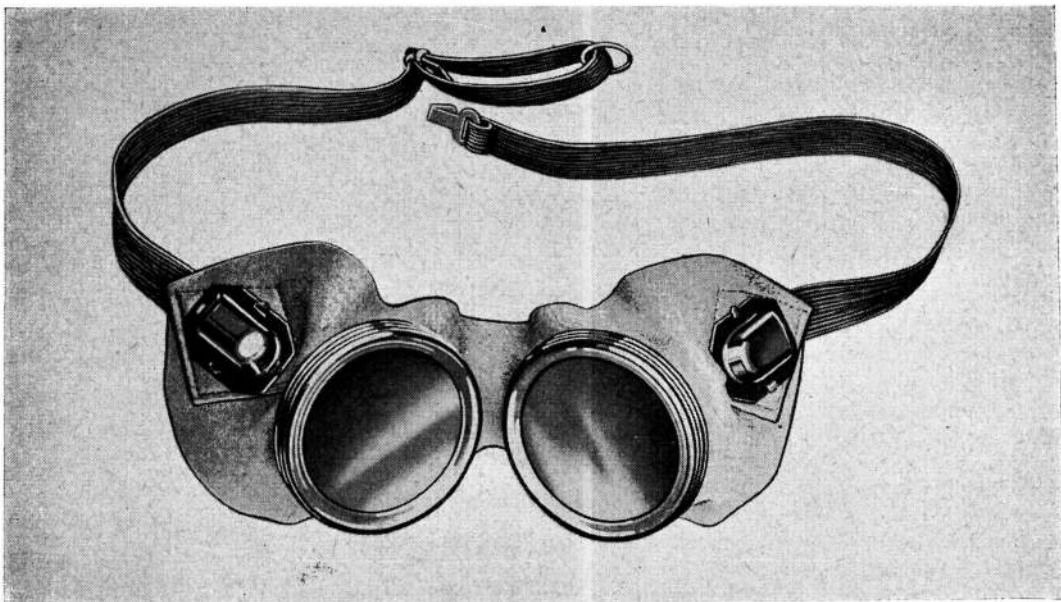


Fig. 6. Dark adaptation goggles, Mk. 1A

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The ends of the headband fit in T-shaped slots at each side of the window and should be eased out. The slots are reinforced with metal eyes, but rough handling should be avoided. The ends of the headband should be attached to the new window and the window then fitted into the channel. The windows are made of plastic, which can be scratched fairly easily, so care should be taken not to damage them.

20. The goggles should be stored with the window fitted, to maintain the shape of the facepiece.

Dark adaptation goggles, Mk. 1A

21. Dark adaptation goggles, Mk. 1A (Stores Ref. 22C/875) (*fig. 6*) enable the crews of night-flying aircraft to become "dark-adapted" before take-off. The filters consist of red-tinted cellulose acetate

material sandwiched between glass. The filter windows are mounted in a soft leather facepiece. Metal ventilators permit the entry of air but exclude light.

22. The goggles should be worn continuously for 20-30 minutes before take-off and should not be removed until the wearer is in a dim light or in the dark.

Night vision training goggles

23. These goggles have the same facepiece as the instrument flying practice goggles, Mk. 1 (*fig. 3*), but are fitted with different filter windows. The goggles are supplied under the following Stores Reference numbers:—

Indoor	22C/1040
Outdoor	22C/1041
General	22C/1042

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