



CONDITIONS OF RELEASE

- 1 ~~This information is released by the UK Government for Defence purposes only.~~
- 2 ~~This information must be accorded the same degree of security protection as that accorded thereto by the UK Government.~~
- 3 ~~This information may be disclosed only within the Defence Department of the recipient Government, except as otherwise authorized by the Ministry of Defence (Army).~~
- 4 This information may be subject to privately owned rights.

**GOGGLES, IMAGE INTENSIFIED,
GENERAL PURPOSE,
CASED L1A2**

FAILURE DIAGNOSIS

REPRINTED INCORPORATING AMDT 1

~~THIS DOCUMENT IS THE PROPERTY OF HER BRITANNIC MAJESTY'S GOVERNMENT, and issued for the information of such persons only as need to know its contents in the course of their official duties. Any person finding this document should hand it in to a British forces unit or to a police station for its safe return to the MINISTRY OF DEFENCE, D MOD Sy, LONDON SW1A 2HB, with particulars of how and where found. THE UNAUTHORIZED RETENTION OR DESTRUCTION OF THE DOCUMENT IS AN OFFENCE UNDER THE OFFICIAL SECRETS ACTS OF 1911-1989. (When released to persons outside Government service, this document is issued on a personal basis and the recipient to whom it is entrusted in confidence, within the provisions of the Official Secrets Acts 1911-1989, is personally responsible for its safe custody and for seeing that its contents are disclosed only to authorized persons.)~~

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence
Issued by

**ARMY TECHNICAL SUPPORT AGENCY
DIRECTORATE OF TECHNICAL SERVICES**

AMENDMENT RECORD

Amdt No.	Incorporated by (signature)	Date
1		2/8/9
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Amdt No.	Incorporated by (signature)	Date
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		

CONTENTS

Preliminary material	Page
Title page	(i)/(ii)
Amendment record	(iii)/(iv)
Contents (this page)	(v)
Warnings	(vi)
Cautions	(vii)/(viii)
 Para	
1 Special tools and test equipment	
2 Adhesives, sealants and solvents	
Dismantling	
3 Neutral density filter	
4 Objective lens assembly	
5 Image intensifier tube housing (WARNING)	
6 Image intensifier tube	
7 Switch assembly	
8 Collimator	
9 Rubber eyecup	
10 Eyepiece	
11 Focus grip	
12 Battery cap spring	
13 Cantilever sub assembly	
14 Faceframe sub assembly	
15 Facepad	
16 Infra red emitting diode sub assembly	
17 Light emitting diode	
Cleaning and examination	
18 Cleaning (CAUTION)	
Examination	
20 Objective assembly	
23 Image intensifier tube housing	
28 Collimator	
31 Eyepiece	
Repair and replacement	
32 General	
33 Focus grip	
34 Objective lens assembly	
37 Image intensifier tube housing	
52 Image intensifier tube	
53 Eyeguard	
54 Eyepiece assembly	
60 Collimator sub assembly	
63 Switch knob	
65 Switch	
71 Infra red light emitting diode sub assembly	
72 Light emitting diode	
73 Battery cap spring	
74 Tests after reassembly	
75 Adjustments	

(continued)

CONTENTS (continued)

Table		Page
1	Special tools and test equipment	1
2	Adhesives, sealants and solvents	1
3	Shim selection	13

Fig		Page
1	Goggles with interface (LH view)	2
2	Goggles with interface (RH view)	3
3	Objective assembly	3
4	IIT housing (front view)	4
5	Collimator wiring	5
6	IIT housing (sectional view)	5
7	Switch assembly	6
8	Eyepiece	7
9	Headmount	8
10	Shim selection diagram	12
11	IIT and connector	14
12	Switch and knob orientation	15
13	LED wiring	16
14	Wiring diagram	17
15	Eyepiece adjustment	18

ANNEXES

Annex

- A Detailed repair policy - repair charts

WARNINGS

- (1) TOXIC GASES. THESE BATTERIES ARE CAPABLE OF GENERATING TOXIC GASES AT HIGH PRESSURE AND MAY BURST IF THEY ARE SUBJECT TO EXCESSIVE HEAT, SHORT CIRCUIT OR IF DISCHARGED WELL BEYOND THEIR NORMAL WORKING LIFE.
- (2) DISCHARGED BATTERIES. BATTERIES WHICH HAVE BEEN DISCHARGED SO THAT THEY WILL NO LONGER OPERATE MUST BE PROMPTLY REMOVED AND RETURNED TO STORES. THEY MUST NOT BE BURIED, BURNED, PLACED ON A FIRE, OR PLACED IN ANY RECEPTACLE SUPPLIED FOR ANY OTHER WASTE.
- (3) PERSONNEL HAZARD. LITHIUM BATTERIES MUST NOT BE OPENED.
- (4) BATTERY DISPOSAL. UNSERVICEABLE BATTERIES MUST BE RETURNED THROUGH STORES CHANNELS FOR DISPOSAL. THEY MUST BE SO PACKED AS TO PREVENT ACCIDENTAL SHORT CIRCUITING. THE PACKAGE AND ACCOMPANYING CORRESPONDENCE MUST BE CLEARLY MARKED 'UNSERVICEABLE LITHIUM BATTERIES FOR DISPOSAL'.
- (5) HIGH VOLTAGE. THE IMAGE INTENSIFIER TUBE (IIT) CONTAINED IN THE GOGGLE MAY RETAIN A POTENTIAL OF UP TO 10 kV BETWEEN INPUT AND OUTPUT WINDOWS. THE TUBE ASSEMBLY MUST NOT BE REMOVED UNTIL THE GOGGLE HAS BEEN SWITCHED OFF FOR AT LEAST 15 MINUTES. WHEN REMOVED THE TUBE ASSEMBLY SHOULD BE HANDLED WITH CARE AND SHOULD NOT BE DISCHARGED BY SHORTING THE TWO TUBE CONTACTS TOGETHER.

CAUTIONS

- (1) **SEALED INSTRUMENT.** The equipment is a sealed instrument and the user must not tamper with, or strip the equipment, in excess of that shown in AESP 5855-G-100-201.
- (2) **CLEANING DAMAGE.** Dirt or moisture entering the equipment will badly affect its performance. Great care must be taken to avoid scratching the glass surfaces during cleaning. No attempt should be made to wipe off mud or grit in a dry state. **DO NOT** use petroleum spirit to clean glass surfaces.
- (3) **BRIGHT LIGHT.** The photocathode or IIT may be damaged if bright light either natural or artificial, is allowed to enter the objective system. In daylight and when the equipment is not in use the Neutral Density (ND) filter must be fitted.
- (4) **DISCHARGED BATTERIES.** Remove discharged batteries from the equipment and return the batteries to stores. Remove batteries from the equipment before returning to stores; return the batteries to stores.
- (5) **BATTERY LIFE.** Continuous use of the infra-red light source will reduce the life of the battery.
- (6) **LIGHT SOURCE.** Inadvertent switching on of the infra-red light source could reveal the position of an operator to the enemy.
- (7) **EQUIPMENT DAMAGE.** Lithium batteries used in this equipment must not be recharged.

SPECIAL TOOLS AND TEST EQUIPMENT

1 The Special Tools and Test Equipment (STTE) required to carry out the repairs detailed in this category are listed at Table 1.

TABLE 1 SPECIAL TOOLS AND TEST EQUIPMENT

Serial (1)	Catalogue No. (2)	Designation (3)	Qty (4)
1	6650-99-782-4465/66	Collimator, General Purpose, L2A1/L2A2	1
2	6685-99-962-5713	Leak Detector Kit	1
3	4440-99-965-7190	Dehydrator Desiccant Electric 28V Series 7 Mk 2	1
	OR		
	4440-99-964-8511	Dehydrator Desiccant Electric Series 3 Mk 3	1
4	5855-99-967-0246	Spanner, Wrench	1
5	5855-99-967-0417	Diode Insertion Tool	1
6	4931-99-965-2409	Telescope Dioptre Setting	1
7	5210-99-955-1730	Gauge, Depth Micrometer 0-3in.	1
8	3649-99-206-3694	Bench, Laminair	1
9	5180-99-130-2083	Tool Kit, Instrument Technician Basic	1

ADHESIVES, SEALANTS AND SOLVENTS

2 Adhesives, sealants and solvents required to carry out the repairs detailed in this category are listed at Table 2.

TABLE 2 ADHESIVES, SEALANTS AND SOLVENTS

Serial (1)	Catalogue No. (2)	Designation (3)	Qty (4)
1	6810-99-220-0965	Isopropyl Alcohol	As reqd
2	6640-99-961-6291	Lens Cleaning Tissue	As reqd
3	5510-99-122-3709	Cotton Wool	As reqd
4	5805-99-447-3053	Pegwood	As reqd
5	6810-99-220-0984	Methylated Spirit Absolute	As reqd
6	6810-99-220-0481	Acetone	As reqd
7	8030-99-224-1397	Silcoset 105	As reqd
8	8030-99-225-0471	Silcoset 153	As reqd
9	9150-99-910-0610	Grease XG271 (Aeroshell No.6)	As reqd
10	8030-99-220-2370	Universal Jointing Compound	As reqd
11	8010-99-942-8917	Varnish, Red, Anti Tracking	As reqd
12	8030-99-225-1104	RTV 732	As reqd

DISMANTLING**Neutral density filter**

3 To remove the Neutral Density (ND) filter (Fig 1(10)) proceed as follows:

3.1 Push the filter housing forward out of the focus grip (9).

Objective lens assembly

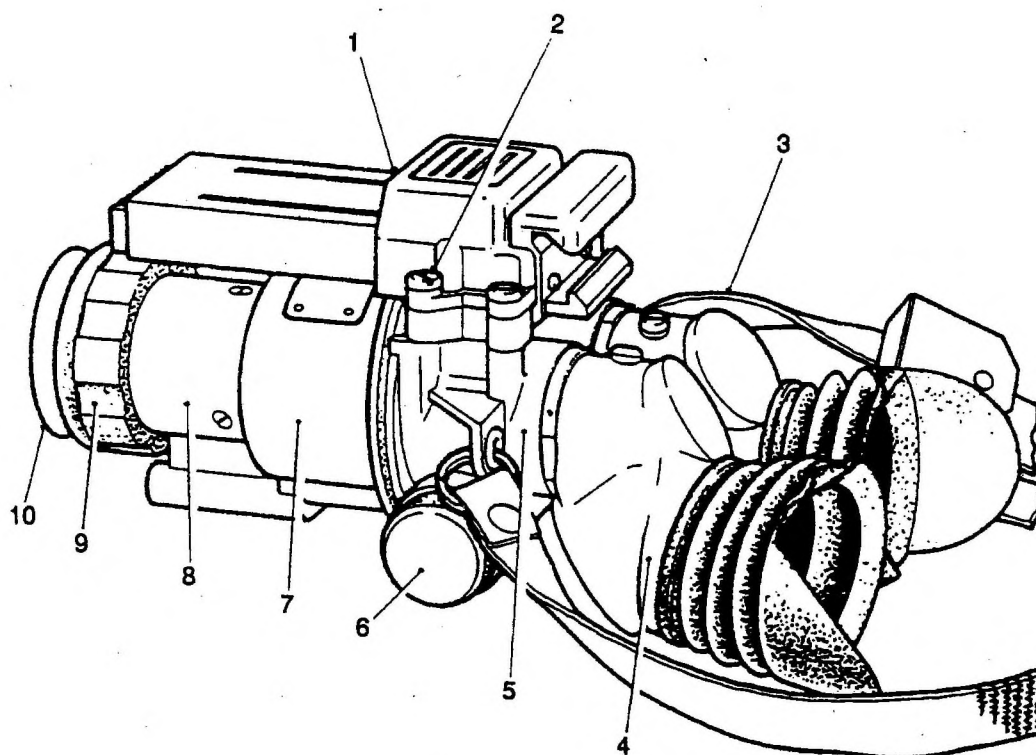
4 To remove the objective lens assembly (Figs 2 and 3) proceed as follows:

4.1 Remove purging screw and bonded seal (Fig 2(1)). This is a red headed screw.

4.2 Remove the three M2.5 countersunk screws (2).

4.3 Withdraw the objective lens assembly from the Image Intensifier Tube (IIT) housing by pulling the objective lens assembly forward, away from the IIT housing.

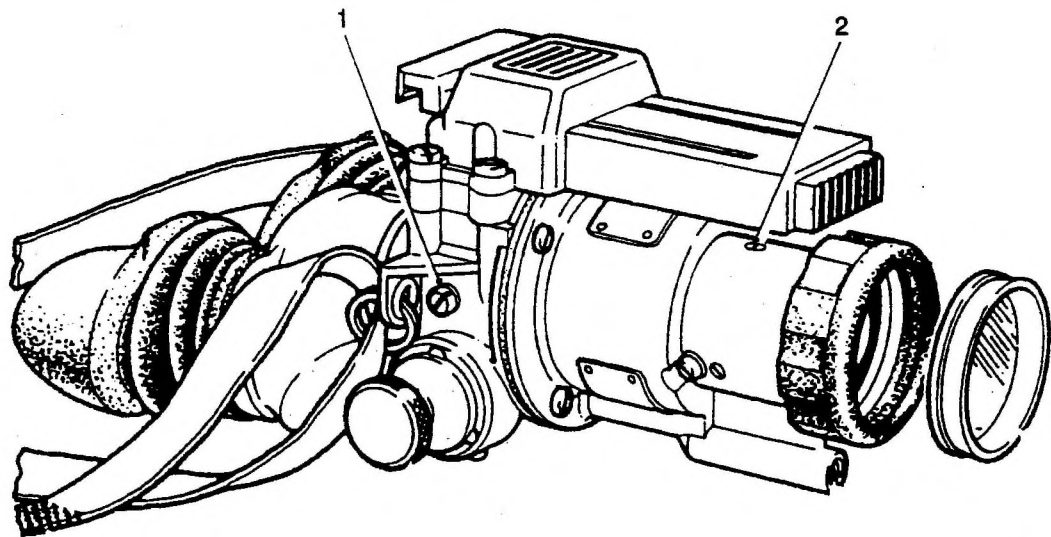
4.4 The roof seal (Fig 3(2)) may now be removed if necessary, by carefully lifting it out of its groove.



GPG/004

- | | |
|---------------------------|------------------|
| 1 Cantilever sub assembly | 6 Battery cap |
| 2 Screws (4 off) | 7 Tube housing |
| 3 Strap, neck | 8 Screws (3 off) |
| 4 Eyepiece | 9 Focus grip |
| 5 Collimator | 10 ND filter |

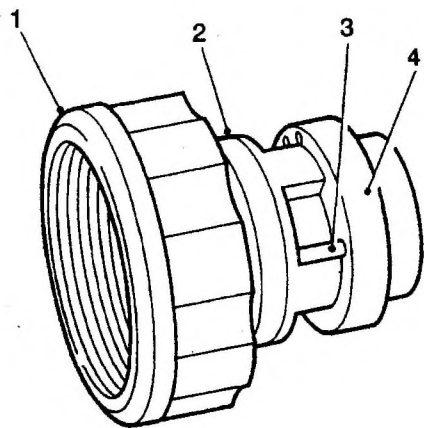
Fig 1 Goggles with interface (LH view)



PPE 8304-135K

- | | | | |
|---|---------------|---|----------------|
| 1 | Purging screw | 2 | Screw, (3 off) |
|---|---------------|---|----------------|

Fig 2 Goggles with interface (RH view)



PPE 8304-134C

- | | | | |
|---|------------|---|------------|
| 1 | Focus grip | 3 | Stop pin |
| 2 | Roof seal | 4 | Focus ring |

Fig 3 Objective assembly

Image intensifier tube housing

5 To remove the IIT housing (Figs 4, 5 and 6) proceed as follows:

WARNING

HIGH VOLTAGE. THE IMAGE INTENSIFIER TUBE (IIT) CONTAINED IN THE GOGGLES MAY RETAIN A POTENTIAL OF UP TO 10 kV BETWEEN INPUT AND OUTPUT WINDOWS. THE TUBE ASSEMBLY MUST NOT BE REMOVED UNTIL THE GOGGLES HAVE BEEN SWITCHED OFF FOR AT LEAST 15 MINUTES. WHEN REMOVED THE TUBE ASSEMBLY SHOULD BE HANDLED WITH CARE AND SHOULD NOT BE DISCHARGED BY SHORTING THE TWO TUBE CONTACTS TOGETHER.

5.1 Remove the battery from the goggles.

5.2 Remove the four screws (Fig 4(1)), which secure the IIT housing to the collimator. this allows the IIT housing to be parted from the collimator, care must be taken not to pull sharply on the electrical wires between the two assemblies.

5.3 Disconnect the wires by pulling connectors (Fig 5(1 and 2)) apart.

5.4 Fully separate the two assemblies.

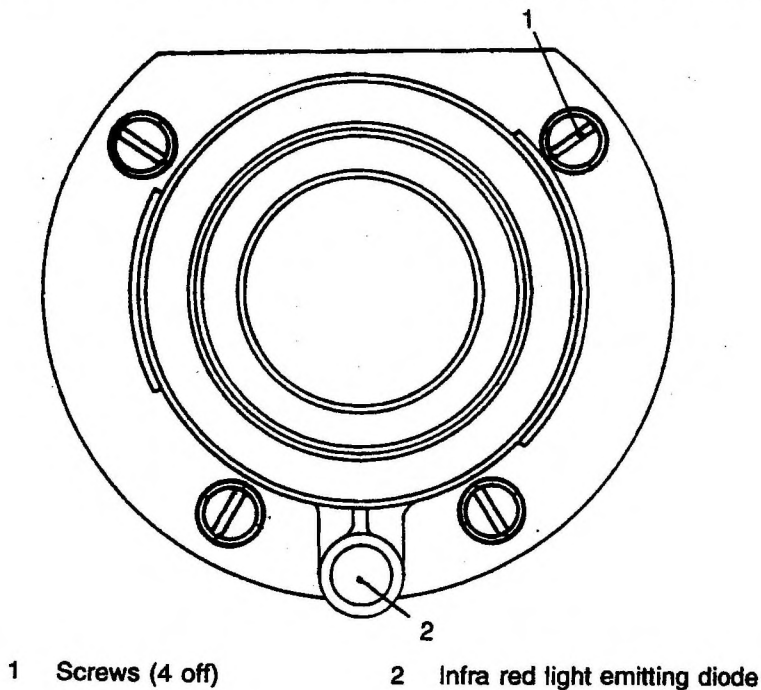
5.5 Lift off the shim (Fig 6(1)), and the 'O' ring (2).

Image intensifier tube

6 To remove the IIT (Fig 6) proceed as follows:

6.1 Remove the IIT housing assembly as described at Para 5.

6.2 Remove the IIT from the housing by pushing gently on the objective end of the tube. Use tissue paper to avoid scratching the input window. DO NOT remove by pulling on supply wires.

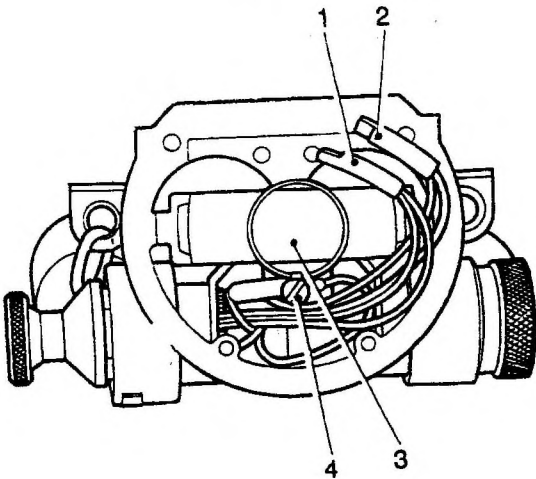


PPE 8309-25

1 Screws (4 off)

2 Infra red light emitting diode

Fig 4 IIT housing (front view)



GPG/005

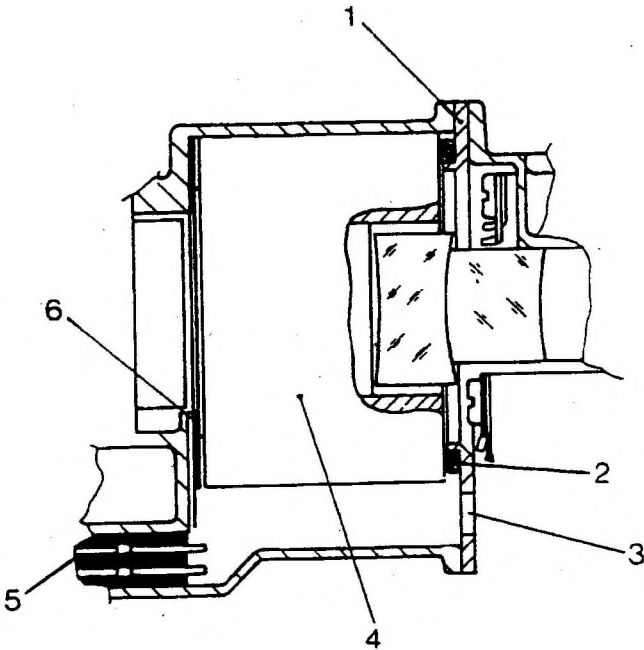
- | | | | |
|---|--------------------------------|---|----------------------|
| 1 | IIT connector | 3 | Light emitting diode |
| 2 | Light emitting diode connector | 4 | Terminal screw |

Fig 5 Collimator wiring

6.3 Remove the plastic seating ring (6) from the housing.

CAUTION

EQUIPMENT DAMAGE. Protect the input window from bright light, eg sunlight or bench lamps and protect surface from scratching.



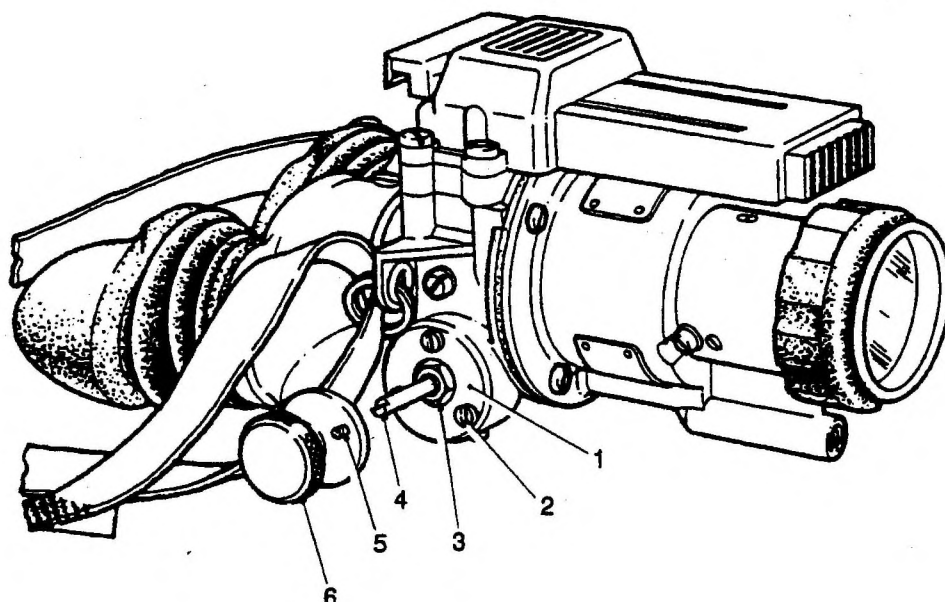
PPE 8309-24

- | | | | |
|---|--------------|---|---------------|
| 1 | Shim | 4 | ITT |
| 2 | 'O' ring | 5 | IRLED sealing |
| 3 | Hole in shim | 6 | Seating ring |

Fig 6 ITT housing (sectional view)

Switch assembly

- 7 To remove the switch assembly proceed as follows:
- 7.1 Remove the IIT housing as detailed at Para 5.
 - 7.2 Remove the switch knob by slackening the two screws (Fig 7(5)) and pulling the knob off.
 - 7.3 Partially remove the switch flange and switch assembly by removing the three countersunk screws (2).
 - 7.4 Unsolder the green wire from the tag board and the blue wire from the battery supply.
 - 7.5 Unscrew the solder tag retaining screw.
 - 7.6 Completely remove the switch assembly and the switch flange from the goggles.
 - 7.7 Remove the switch assembly from the switch flange by unscrewing the switch retaining nut (3).



PPE 8304-135J

- | | | | |
|---|-----------------------|---|---------------|
| 1 | Switch mounting plate | 4 | Switch |
| 2 | Screw (3 off) | 5 | Screw (2 off) |
| 3 | Switch retaining nut | 6 | Switch knob |

Fig 7 Switch assembly

Collimator

8 To remove the collimator (Fig 5) proceed as follows:

8.1 Remove the IIT housing as described at Para 5.

8.2 Remove both of the eyepieces as described at Para 10.

Rubber eyecup

9 To remove the rubber eyecup pull the eyecup (Fig 8(3)) off the eyepiece (4).

Eyepiece

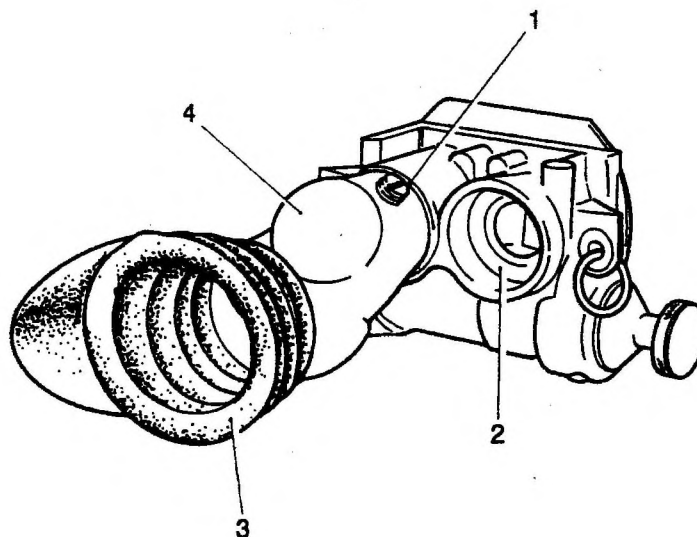
10 To remove an eyepiece proceed as follows, the procedure detailed is suitable for either eyepiece.

10.1 Remove the purging screw from the collimator housing, (Fig 2(1)). This is a red screw with a bonded seal.

10.2 Unscrew the eyepiece bearing ring (Fig 8(1)), using the 'C' spanner - torque wrench assembly (Table 1 Serial 4).

10.3 Withdraw the eyepiece from the collimator housing.

10.4 Remove the 'O' ring (2).



1 Bearing ring
2 'O' ring

3 Eyecup
4 Eyepiece

Fig 8 Eyepiece

PPE 8304-135G

Focus grip

- 11 To remove the focus grip (Fig 1(9)) proceed as follows:
 - 11.1 Cut across the rubber with a sharp knife - take care not to scratch the glass surfaces.
 - 11.2 Peel the rubber away from the metal housing.
 - 11.3 Scrape off any adhesive remaining on the objective housing.

Battery cap spring

- 12 To remove the battery spring proceed as follows:
 - 12.1 Remove the battery cap (6) from the goggles.
 - 12.2 Pull the spring out of the cap.

Cantilever sub assembly

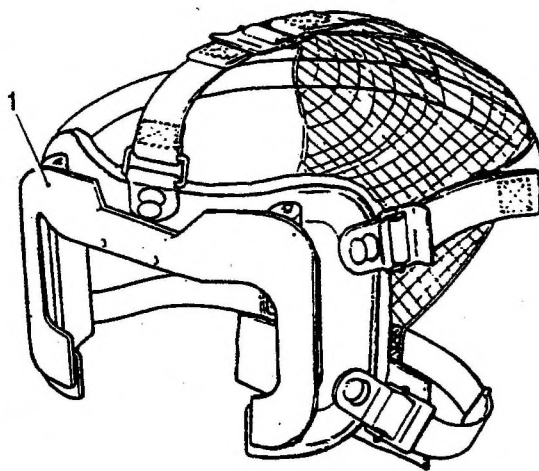
- 13 To remove the cantilever sub assembly. Remove the four screws (2), lift the cantilever (1) away from the goggles.

Faceframe sub assembly

- 14 To remove the faceframe sub assembly press out the five keyhole connectors which connect the faceframe assembly to the skull cap.

Facepad

- 15 To remove the facepad (Fig 9(1)) from the faceframe pull the facepad material from around the periphery of the faceframe.



1 Facepad

Fig 9 Headmount

PPE 8304-134E

Infra red light emitting diode sub assembly

- 16 To remove the Infra Red Light Emitting Diode (IRLED) sub assembly proceed as follows:
- 16.1 Remove the IIT housing as detailed at Para 5.
 - 16.2 Remove the IIT assembly as detailed at Para 6.
 - 16.3 Remove the potting compound (Fig 6(5)) from around the IRLED and withdraw the IRLED sub assembly.

Light emitting diode

- 17 To remove the Light Emitting Diode (LED) proceed as follows:
- 17.1 Remove the IIT housing as detailed at Para 5.
 - 17.2 Unsolder the LED leads from the LED tag board.
 - 17.3 Carefully remove the LED from the collimator optics.

CLEANING AND EXAMINATION

Cleaning

CAUTION

CLEANING DAMAGE. Dirt or moisture entering the equipment will badly affect its performance. Great care must be taken to avoid scratching the glass surfaces during cleaning. No attempt should be made to wipe off mud or grit in a dry state. DO NOT use petroleum spirit to clean glass surfaces.

18 Extreme care must be taken when cleaning the goggles. Glass surfaces must be cleaned in accordance with instructions contained in EMER Inst A 274. Light losses caused by dirty optical surfaces and internal reflections will seriously impair the goggles performance, and finger marks, grease or moisture will encourage short circuiting of the IIT supply. If the fixed lenses within the collimator assembly require cleaning, the following procedures must be carried out.

- 18.1 Remove the housing.
- 18.2 Remove both eyepieces.
- 18.3 Clean all traces of grease from both eyepiece recesses of the collimator using isopropyl alcohol (Table 2 Serial 1) and tissue (Table 2 Serial 2). Care must be taken not to allow any grease onto the lens surface.
- 18.4 Remove dust particles from within the collimator housing and from the glass surface using a low pressure air blower.
- 18.5 Using a piece of pegwood (Table 2 Serial 4) with a small piece of cotton wool (Table 2 Serial 3) on the end, carefully clean any marks on the glass surface immediately adjacent to the eyepiece recess. The cotton wool should be wetted with isopropyl alcohol.

18.6 If the small circular lens requires cleaning its surface should be carefully wiped with a tissue dampened with isopropyl alcohol.

18.7 If the inner surfaces of the doublet lens are contaminated by grease or water stains they cannot be cleaned without removing the lens assembly from the housing. Refitting of the lens assembly is a factory process, therefore if these surfaces are contaminated the collimator must be replaced.

19 The ND filter can be washed in soap and plenty of water and then dried with a clean cloth or tissue; or it can be cleaned with Methylated Spirit Absolute (Table 2 Serial 5) and dried with a tissue.

Examination

Objective assembly

20 If any of the optical components are damaged or misplaced the objective assembly must be renewed.

21 The seal (Fig 3(2)) must be examined and if the sliding surface is damaged in any way the seal must be renewed.

22 The stop pin (3) must be examined for damage. If the pin or the focus ring (4) is damaged the objective assembly must be renewed.

Image intensifier tube housing

23 With the tube removed, the inside of the housing must be examined for any damage or dirt. If dirt is present it must be wiped out using a clean cloth and Methylated Spirit Absolute. Traces of jointing compound should be removed from the mating surfaces using acetone (Table 2 Serial 6).

24 If the housing is physically damaged in any way, it must be renewed, since any damage can cause misalignment of the optical axes of the assemblies fixed to the tube housing.

25 If the IR light source has failed, it can be replaced using diode insertion tool (Table 1 Serial 5) and sealing compound Silcoset 105 (Table 2 Serial 7) or similar.

26 Special care must be taken to avoid scratching or touching the fibre optic input and output windows of the IIT. solvents, such as methylated spirit or acetone, should not be used as they may remove the anti-reflection coating which is deposited on the IIT input and output windows. If necessary clean with 'Glenklene' and cotton wool to remove grease/stains.

27 Overall equipment luminous performance is to be tested using the Assessor, Night Sight as detailed in Category 513 of this AESP.

Collimator

28 If the housing of the collimator is damaged sufficiently to affect the optical performance the collimator assembly must be renewed

29 If the optical components have become misplaced the collimator assembly must be renewed because the optical components must be accurately located to ensure the performance of the goggles.

30 If the visible LED has failed it can be replaced using RTV 732 (Table 2 Serial 12) or equivalent.

Eyeiece

31 If an eyeiece is to be re-used ensure that the optical surfaces are clean, that the bearing ring is unworn and that the eyeiece housing is undamaged. The aperture in the collimator into which the eyeiece fits must be clean and free of damage. If the optics of an eyeiece are misted internally, it must be leak tested and purged (Para 56).

REPAIR AND REPLACEMENT

General

32 The repair policy for the goggles is for all defective sub assemblies to be renewed. Therefore repair information is not required for sub assemblies and only replacement procedures are described.

Focus grip

33 Replace the focus grip as follows:

33.1 Remove the focus grip as detailed at Para 11.

33.2 Prise the lip of the focus grip (Fig 1(9)) over the front of the objective housing and adhere to the objective housing using sealing compound Silcoset 153 (Table 2 Serial 8).

Objective lens assembly

34 Replace the objective lens assembly as follows:

34.1 Remove objective lens assembly as detailed at Para 4.

34.2 Inspect the assembly as detailed at Paras 20 to 22.

34.3 Ensure that the front face of the IIT is clean and free from dust. Remove dust with a soft brush. If moisture or water has entered the IIT housing (Fig 1(7)), it will require dismantling for cleaning. When the IIT and housing are clean, fit the new objective lens assembly. Ensure that the outer glass surfaces are clean. Slightly smear the outer surface of the seal, (Fig 3(2)) with Grease XG 271 (Table 2 Serial 9) and insert the objective into the IIT housing.

35 Replace the three screws (Fig 1(8)) sealing the threads of the screws with Varnish, Red, Anti Tracking (Table 2 Serial 11).

36 Leak test and desiccate the unit using the purging screws on the collimator housing and tube housing. Replace purging screws and bonded seals. The leak rate should be no greater than a pressure drop of 0.65 kPa (0.1 lbf/in²) in 10 minutes at an initial pressure of 17.23 kPa (2.5 lbf/in²).

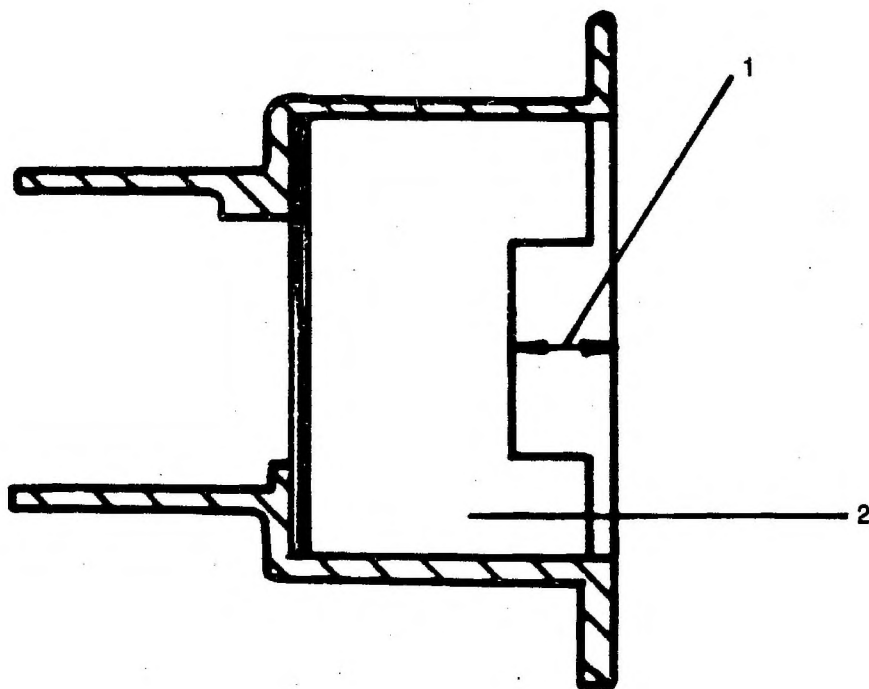
Image intensifier tube housing

37 Remove the objective lens assembly, IIT housing and IIT as detailed at Paras 4 to 6.

38 Examine the IIT housing as detailed at Paras 23 and 24.

39 Ensure that all internal surfaces and the flange of the new IIT housing are clean.

- 40 Fit the seating ring into the new IIT housing.
- 41 Fit the IIT into the IIT housing.
- 42 Using the Depth Gauge Micrometer 0-3 in (Table 1 Serial 7) measure the distance from the output face of the IIT to the mounting flange of the tube housing, (dimension 1 in Fig 10). Refer to Table 3 and select the appropriate shim to be fitted.
- 43 Smear the face of the collimator flange with sealing compound, Universal Jointing compound (Table 2 Serial 10).
- 44 Fit a new 'O' ring into the tube housing (Fig 6(2)). Smear Jointing compound onto the tube housing flange face.
- 45 Feed the four wires (two tube and two IR diode) through the hole in the shim and place the shim onto the tube housing flange.
- 46 Align the four holes in the shim with the bolt holes on the tube housing flange.
- 47 Connect the electrical leads from the tube housing onto the terminals in the collimator, ensuring that the leads are correctly connected, ie lead 1 to lead 1 and lead 2 to lead 2.
- 48 Remount the IIT housing onto the collimator using four M3 x 8.0mm screws. Seal the threads of the screws with Varnish, Red, Anti Tracking (Table 2 Serial 11).



1 Dimension 1

2 IIT

Fig 10 Shim selection diagram

PPE 8209-200

49 Replace the objective lens assembly as detailed at Paras 34 and 35.

50 Leak test and desiccate the unit using the purging screws in the collimator housing and tube housing. The leak rate should not exceed a pressure drop of 0.65 kPa (0.1 lbf/in²) in 10 minutes at an initial pressure of 17.23 kPa (2.5 lbf/in²).

TABLE 3 SHIM SELECTION

Measured dimension 1mm	Shim thickness required mm	Part No.	Identification mark
10.36 to 10.45	1.69	027273	G
10.46 to 10.55	1.59	027272	F
10.56 to 10.65	1.49	027271	E
10.66 to 10.75	1.39	027270	D
10.76 to 10.85	1.29	027269	C
10.86 to 10.95	1.19	027268	B
10.96 to 11.05	1.09	027267	A

51 Replace the purging screws and bonded seals.

Image intensifier tube

52 To replace the IIT proceed as follows:

52.1 Proceed as detailed at Paras 4 to 6.

52.2 Remove the IIT (Fig 11(6)) by sliding the insulating sleeves (4) along the wires (5) and unsoldering the solder joint thus exposed. Remove the insulating sleeves.

52.3 Cut the lengths of the wires of the replacement IIT or those of the connector (3), so as to achieve a finished wire length from IIT to connector (point (1) to point (7)) of $75 \pm 2\text{mm}$ (3 in \pm 0.1 in).

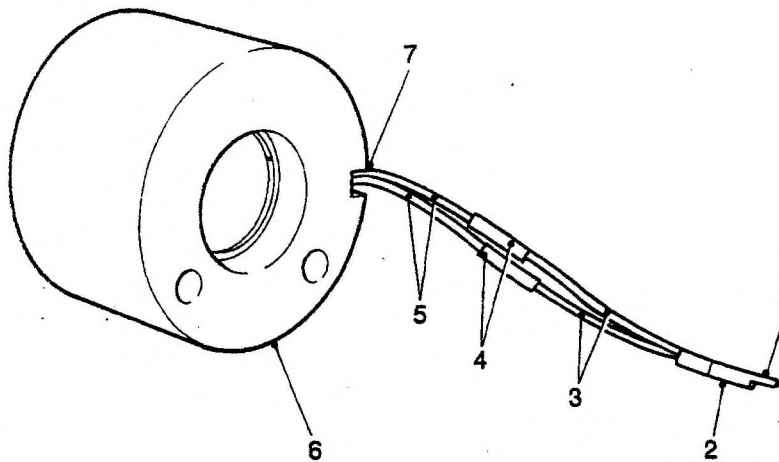
52.4 Cut the lengths of the new insulating sleeves to suit, these should be of sufficient length to completely cover the solder joint, ie approximately 12mm long. Slide these onto the wires (5).

52.5 Strip the insulation from the end of the cut wires for a length of approximately 5mm from each cut end.

52.6 Solder the connector wires onto the IIT wires, taking care to ensure that the red wire of the IIT goes to the red wire of the connector and the black wire of the IIT goes to the black wire of the connector.

52.7 Slide the insulating sleeves over the solder joints.

52.8 Proceed as detailed at Paras 39 to 51.



GPG/006

- | | | | |
|---|------------------------|---|---------------------|
| 1 | Outer end of connector | 5 | IIT wires |
| 2 | Connector | 6 | IIT |
| 3 | Connector wiring | 7 | End of wires at IIT |
| 4 | Insulating sleeves | | |

Fig 11 IIT and connector

Eyeguard

53 Push the new eyeguard over the retaining ridge on the eyepiece housing.

Eyepiece assembly

54 Remove the eyepiece as detailed at Para 10. Inspect as detailed at Para 31 and clean the glass as detailed at Para 18. Ensure that the recess enclosing the sealing ring is clean.

55 If the sealing ring is damaged, fit a new sealing ring using a light application of grease XG 271 (Table 2 Serial 9).

56 If the eyepiece optics are misted internally, leak test the eyepiece and desiccate. The leak rate should not exceed a pressure loss of 0.18 kPa (0.026 lbf/in²) after 6 hours at an initial pressure of 17.23 kPa (2.5 lbf/in²).

57 Fit the eyepiece assembly into the recess and screw in the bearing ring until its shoulder butts up against the collimator housing. Tighten the bearing ring using the 'C' spanner torque wrench assembly, (Table 1 Serial 4), to 20 Nm \pm 1.3 Nm (15 lbf in. \pm 1 lbf in.).

58 Refit the eyeguard as detailed at Para 53.

59 Leak test and desiccate the unit using the purging screws in the collimator housing and tube housing. Replace the purging screws and bonded seals. The leak rate should be no greater than a pressure drop of 0.65 kPa (0.1 lbf/in²) in 10 minutes, at an initial pressure of 17.23 kPa (2.5 lbf/in²).

Collimator sub assembly

60 To remove the collimator proceed as detailed at Para 8.

61 Inspect the collimator sub assembly as detailed at Paras 28 and 29.

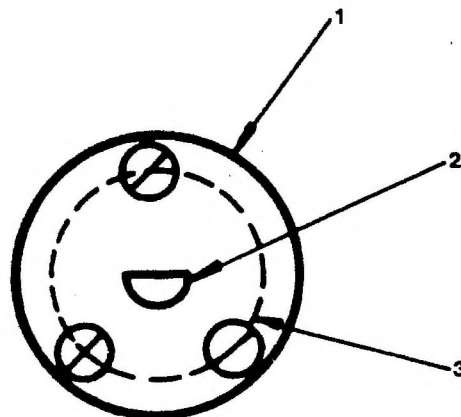
62 Replace both eyepieces as detailed at Paras 54 to 59.

Switch knob

- 63 Remove the knob as detailed at Para 7.
- 64 Place a new knob (Fig 7(6)) on the switch shaft (4) and secure by tightening the screw (5).

Switch

- 65 Remove the switch as detailed at Para 7 and remove all traces of jointing compound from the mating surfaces using acetone (Table 2 Serial 6).
- 66 Replace the switch assembly onto the switch flange assuring correct orientation (Fig 12).
- 67 Reconnect the wires and replace the switch flange in the reverse order to that detailed at Paras 7.3 to 7.5.
- 68 Refit the IIT housing to the collimator assembly as detailed at Para 43 to 51.



PPE 8209-201

1 Switch mounting plate

2 Switch shaft

3 Knob outline

Fig 12 Switch and knob orientation

- 69 Refit the switch knob as detailed at Para 64.
- 70 Leak test and desiccate the unit using the purging screws on the collimator housing and tube housing. The leak rate should not exceed a pressure drop of 0.65 kPa (0.1 lbf/in²) in 10 minutes, at an initial pressure of 17.23 kPa (2.5 lbf/in²). Replace the purging screws and bonded seals.

Infra red light emitting diode sub assembly

- 71 To replace the IRLED sub assembly proceed as follows:
- 71.1 Remove the IRLED as detailed at Para 16.

71.2 Using the Diode Insertion Tool (Table 1 Serial 5) put the new IRLED sub assembly into the IIT housing using sealing compound Silcoset 105 (Table 2 Serial 7) ensuring that the IRLED is flush to under-flush with its housing. Allow time for the sealing compound to set.

71.3 Refit the IIT housing to the collimator as detailed at Paras 39 to 50.

Light emitting diode

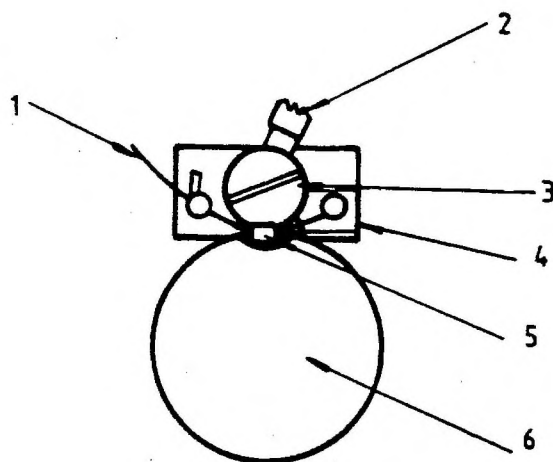
72 To replace the LED proceed as follows:

72.1 Remove the LED as detailed at Para 17.

72.2 Adhere the new LED into the groove in the collimator optics using adhesive RTV 732 (Table 2 Serial 12), ensuring the correct orientation (Fig 13).

72.3 Solder the LED leads onto the LED tag board.

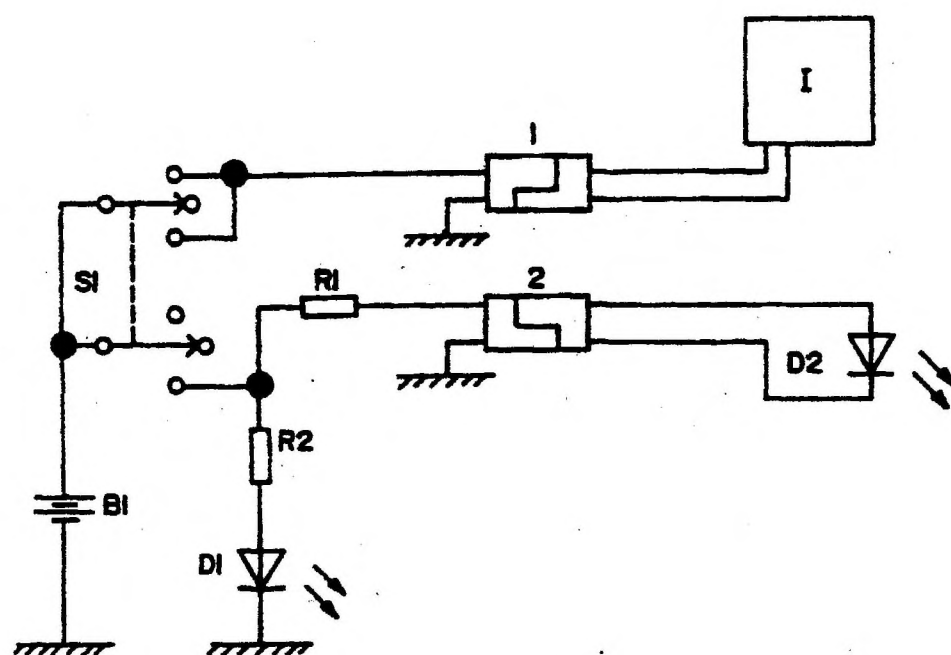
72.4 Replace the IIT housing as detailed at Paras 39 to 50.



PPE 8209-199

- | | | | |
|---|----------------|---|-----------------|
| 1 | Green wire | 4 | LED tag board |
| 2 | Black wire | 5 | LED |
| 3 | Earthing screw | 6 | Collimator lens |

Fig 13 Light emitting diode wiring



PPE 8308-146

1	IIT connector	S1	Switch
2	IRLED connector	R1	Resistor
B1	Battery	R2	Resistor
D1	LED	I	IIT
D2	IRLED		

Fig 14 Wiring diagram

Battery cap spring

- 73 Install the new spring in the cap by pressing the spring into the cap.

TESTS AFTER REASSEMBLY

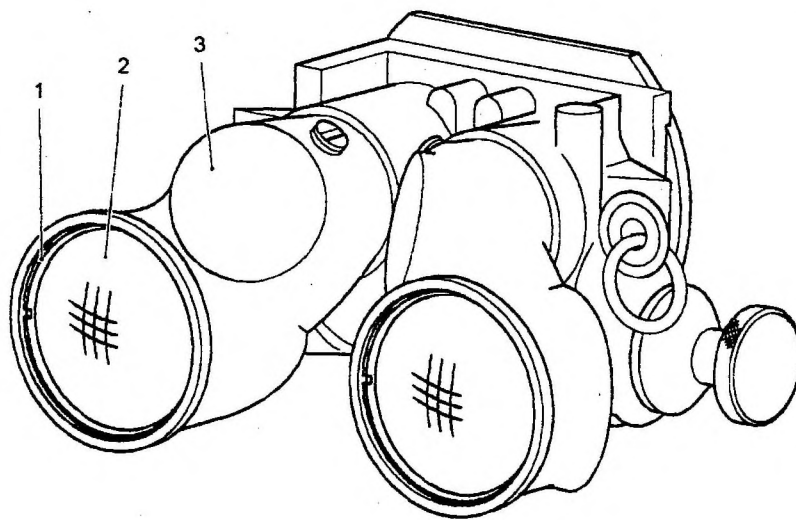
- 74 Tests to be carried out after reassembly are those diagnostic tests relating to optical and operational performance which are detailed in Category 513 of this AESP.

ADJUSTMENTS

75 The following adjustments can be made should the Goggle fail the convergence and supravergence diagnostic tests detailed in Category 513 of this AESP.

The adjustment should first be made to the left eyepiece and if the specification still cannot be achieved then the same adjustments can be made to the right eyepiece.

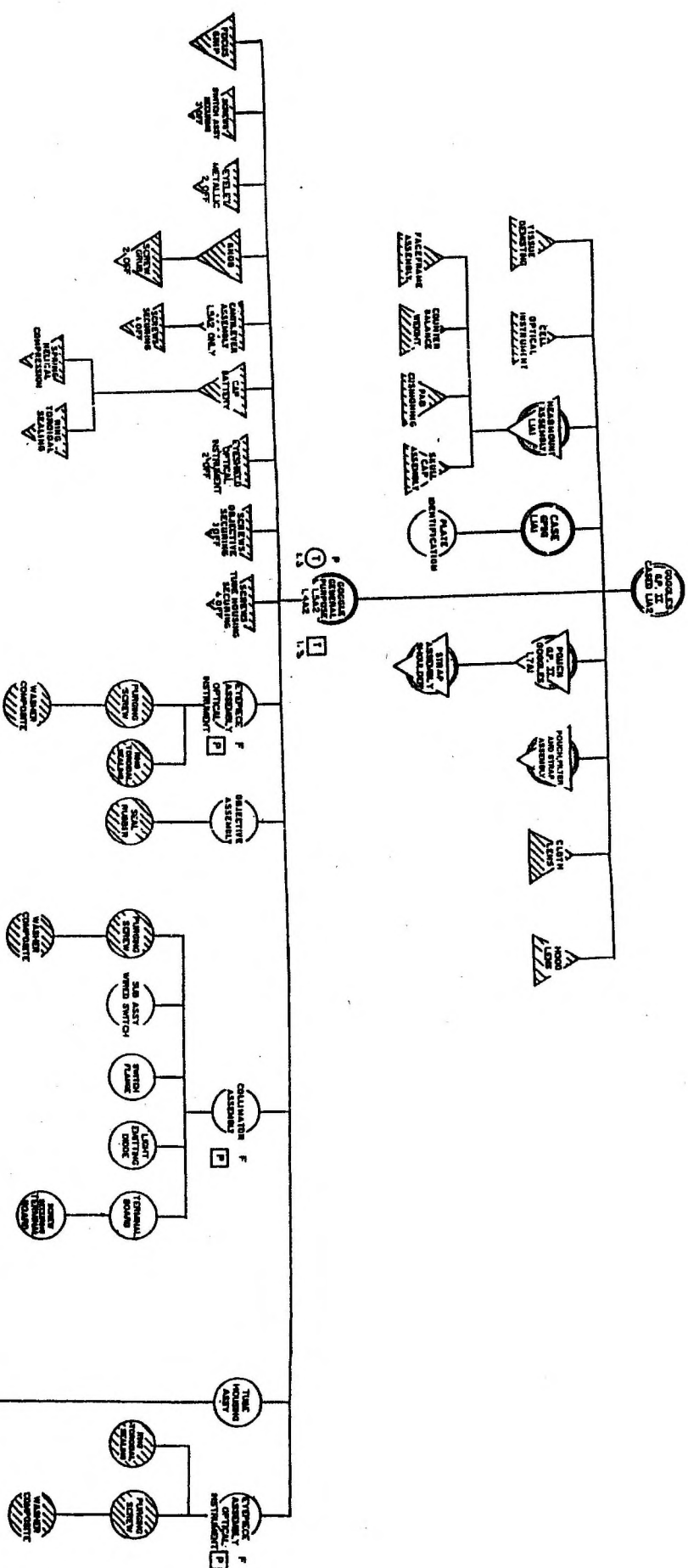
- 75.1 Carefully remove the sealing compound from around the eyepiece lens.
- 75.2 Slacken the clamp ring securing the lens until the lens can be rotated.
- 75.3 Rotate the lens slowly until the convergence or supravergence is within specification.
- 75.4 Retighten the clamp ring and recheck to make sure the specification is still achieved.
- 75.5 Clean the lens thoroughly with Isopropyl Alcohol Table 2 Serial 1 and re seal the eyepiece lens by applying a bead of RTV 732 Table 2 Serial 12 around the edge of the lens.
- 75.6 Leak test and desiccate the eyepiece as detailed in para 56.



PPE 8308-150

1. Clamp ring
2. Eyepiece lens
3. Left hand eyepiece

Fig 15 Eyepiece adjustment



Repair Chart 1

GP6/007

ANNEX A

DETAILED REPAIR POLICY - REPAIR CHARTS

NOTE

The charts in this publication may be amended to cover modifications and changes in repair policy. Where they apply to a particular build standard they are to be so annotated. The amendment state listed applies to a chart depicting the latest build standard.

CONTENTS

Para	
1	Introduction
2	Interpretation of repair charts
3	Associated publications
Repair Chart No	Equipment Part
	Page
	Arndt State
	Date
1	General Purpose Night Vision Goggles, Cased L1A2
	2
Fig	
1	Key to repair chart symbols

INTRODUCTION

1 The repair charts in this regulation are based upon agreed repair charts, but have been adapted for use in the field by simplifying the symbolic information and including additional information which will be required in the course of repair. They reflect the approved policy for the repair of Goggles, Image Intensified, General Purpose, Cased L1A2.







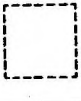

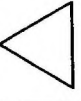

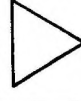
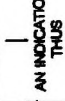

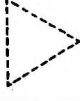
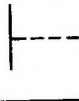

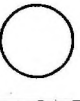


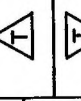



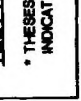
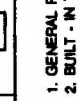


INTERPRETATION OF REPAIR CHARTS

2 Chart 1 on page 2 shows the replaceable and repairable items of the Goggles, Image Intensified, General Purpose, Cased L1A2. Reference to the key on page 3/4 will show the precise meaning of each of the symbols used in the charts.

ASSOCIATED PUBLICATION

3 The publication associated with this annex is:

AESP 5855-G-100-711 Goggles, Image Intensified, General Purpose, Cased L1A2
Illustrated Parts Catalogue

	INDICATES AN EQUIPMENT HELD ON USER CHARGE, WHICH WHEN DEFECTIVE MUST BE REPAIRED BY THE REPAIR ORGANISATION, OR IF A COMPLETE REPLACEMENT IS REQUIRED, IT MUST BE OBTAINED THROUGH THE NORMAL SUPPLY CHANNELS		INDICATES AN ITEM WHICH IS SUBJECT TO INTERMEDIATE REPAIR BUT IS NOT RANGED AS A SPARE.		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT INTERMEDIATE LEVEL	*
	INDICATES AN ANCILLARY ITEM OF THE EQUIPMENT WHICH WHEN DEFECTIVE MUST BE REPAIRED BY THE REPAIR ORGANISATION. (NORMALLY A C.E.S. ITEM)		INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANISATION AT BASE LEVEL (NORMALLY RANGED AS A SPARE)	P	INDICATES THAT A REUSABLE PACKAGE IS TO BE PROVIDED FOR GENERAL USE.	
	INDICATES AN ANCILLARY ITEM OF THE EQUIPMENT WHICH IS NOT SUBJECT TO REPAIR (NORMALLY A C.E.S. ITEM)		INDICATES AN ITEM WHICH SUBJECT TO BASE REPAIR BUT IS NOT RANGED AS A SPARE		INDICATES THAT A REUSABLE PACKAGE IS TO BE PROVIDED FOR USE BETWEEN BASE AND CONTRACTORS.	
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE OPERATOR AT UNIT LEVEL. (NORMALLY RANGED AS A SPARE)		CROSS HATCHING WITHIN ANY SYMBOL INDICATES THAT THE ITEM IS A CONSUMABLE ITEM.	F	INDICATES THAT THE ITEM IS SCHEDULED FOR REPAIR BY CONTRACTORS	
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANISATION AT UNIT LEVEL. (NORMALLY RANGED AS A SPARE)		A DESIGNATION WITHOUT A SYMBOL SURROUND IS USED TO DENOTE/ INDICATE A LOGICAL BREAKDOWN AREA WHICH DOES NOT EXIST AS AN ASSEMBLY		INDICATES A NOMINATED WORKSHOP WITH ECHELON 2 CALIBRATION FACILITIES	
	INDICATES AN ITEM WHICH IS SUBJECT TO UNIT REPAIR BUT IS NOT RANGED AS A SPARE.		SYMBOLS REPRESENTING ITEMS WHICH ARE STOWED OR CARRIED REMOTE FROM THE EQUIPMENT ARE JOINED TO THE CHART BY BROKEN LINES.		INDICATES THAT SCREENING FACILITIES ARE REQUIRED AT FIELD LEVEL	*
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANISATION AT FIELD LEVEL (NORMALLY RANGED AS A SPARE)		THE SYMBOLS SO ANNOTATED REPRESENT CENTRALISED REPAIR ITEMS (CENTREMS) SEE LIST OF CENTREMS FOR REPAIR RETURN AGENCY.	SL	SHELF LIFTED ITEM LIFE IN MONTHS TO BE INDICATED BY A FIGURE FOLLOWING THE SYMBOL	
	INDICATES AN ITEM WHICH IS SUBJECT TO FIELD REPAIR BUT IS NOT RANGED AS A SPARE.		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED BY THE OPERATOR.	LU	LIFE USAGE ITEM LIFE IN HOURS, ROUNDS FIRED, MILEAGE ETC TO BE INDICATED	
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANISATION AT INTERMEDIATE LEVEL (NORMALLY RANGED AS A SPARE)		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT UNIT LEVEL		INDICATES THAT AUTOMATIC TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT UNIT LEVEL	
	INDICATES AN ITEM WHICH CAN BE REPLACED BY THE REPAIR ORGANISATION AT INTERMEDIATE LEVEL (NORMALLY RANGED AS A SPARE)		INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT FIELD LEVEL		INDICATES THAT AUTOMATIC TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT FIELD LEVEL	
TEST FACILITIES			INDICATES THAT TEST AND DIAGNOSTIC FACILITIES ARE REQUIRED AT BASE LEVEL		INDICATES THAT AUTOMATIC TEST AND DIAGNOSTIC TEST FACILITIES ARE REQUIRED AT BASE LEVEL	
<div>1. GENERAL PURPOSE TEST EQUIPMENT 2. BUILT - IN TEST EQUIPMENT 3. SPECIAL - TO - TYPE TEST EQUIPMENT 4. SPECIAL - TO - SYSTEM TEST EQUIPMENT 5. AUTOMATIC TEST EQUIPMENT</div>						

* THESE SYMBOLS MAY BE ADDITIONALLY ANNOTATED TO INDICATE THE TYPE OF TEST FACILITY REQUIRED THUS:-

Fig 1 Key to repair charts

