BINOCULARS PRISMATIC NO. 2

Inspection Standards

INTRODUCTION

This instruction details the standards to be followed when the equipment is overhauled in RCEME workshops. The limits and tolerances listed will be a guide to instrument personnel engaged in the repair of the equipment.

Inspection Sheet CAFC 2116 (Fig 1) will be used for the OUT inspection of the equipment after overhaul. It will also be used for the inspection of equipment at units; in this case certain examinations and tests which do not apply will be omitted.

EXAMINATION

GENERAL

1. The general standard of workmanship and finish will be assessed by comparison with a sample or pattern prepared by workshops to the satisfaction of the inspector.

2. Screws and screwthreads will be in good condition and properly sealed.

3. The binoculars will be free from corrosion.

4. Painting will be such as to form an adherent film, free from runs, breaks or thin patches.

5. Scales, indexes, and engraving on cover plates will be sharply defined.

6. The neck sling will be undamaged and complete with buttons.

MECHANICAL

Bodies

7. The bodies will be free from fracture or other damage. The exterior finish will be completely adherent and undamaged.

Hinge

8. The action of the hinge will be smooth, even and with no sign of shake; it will remain in any set position. The interocular scale will be fixed firmly to the hinge plug.

Prism Assemblies

9. Seatings in the prism plates will be such that the prisms will seat squarely and without rocking. The prism straps will be free from distortion and will hold the prism firmly without strain. The prisms will be correctly cemented to the supporting plate. Prism shields will be clean and securely held in place by the prism strap. The graticule cell of the right prism assembly will be securely threaded into the prism plate.

Eyepiece Assemblies

10. The focusing screw threads will be a smooth running fit throughout their movement. The dioptre collar should not foul the eyepiece stack.

Eyecups should be undamaged, but small chips may be accepted provided that all sharp edges have been removed. They will be a good fit on the screw threads and tightened against the dioptre collar.

The separate type of eyepiece stack (where applicable) will be a good fit in the bodies and will be tightened against the body covers.

The eyepieces should be capable of being focused over a range of plus 5 dioptres to minus 4 dioptres. When the eyepieces are set at zero focus, the dioptre scales should read zero. Tolerance $\pm$ 0.5 dioptre.

With the dioptre scales set to zero the eyecups will be of equal height above the cover plates. Tolerance $\pm$ 1/32-in.

Object Glass Assemblies

11. The object glass will be securely held in the eccentric adjusting ring. The eccentric adjusting rings will be a close running fit in their respective object glass cells. The object glass adapters will be securely threaded in the body. The object glass shields will be fitted and the covers securely threaded on the object glass adapters.

OPTICAL

12. The interior of the bodies and eyepieces will be free from dirt, dust or other foreign matter. The lenses, prisms and graticule will be clean, highly polished and free from fungus, filming or fogging.

13. The optical cement should not be deteriorated.

14. Damage to the optical elements will be accepted providing it does not appreciably affect the overall optical performance of the instrument. The

following will serve as a guide to the assessment of serviceability of the various elements:

(a) Object Glass

Small pits, scratches or permanent surface stains are permissible providing they do not impair definition.

(b) Prisms

Small cracks or chips at the corners or edges of a prism will be accepted providing they show no sign of further extension. Chips will not be blacked out.

(c) Graticule

The polished surfaces of the graticule should be free of pits and scratches when examined by transmitted light under the magnification of the instrument eyepiece. Minor defects may be accepted providing they are small in number and in the outer areas of the graticule surface.

The graticule etching will be completely filled and opaque and will appear clearly defined when the eyepiece is correctly focused.

(d) Field Lenses

The central portion up to 2/3 of the effective diameter of the lens will be free of surface defects. Defects in the remaining area will be accepted provided that they are minor and do not cause distracting interference.

(e) Eye Lenses

The central portion up to 2/3 of the effective diameter of the lens will be free of surface defects such as scratches, pits, and abrasions. Defects in the remaining area may be accepted providing they are small in number and do not cause distracting interference.

TESTS

Focus

15. The test will be made by means of a Telescope, auxiliary, No. 2 and a Collimator, No. 2 or with a Collimator, binocular, Mk 4.

(a) Right Eyepiece

The image of the collimator graticule and the binocular graticule should appear sharp and well defined when the dioptre scale is set at zero.

(b) Left Eyepiece

The image of the collimator graticule should appear sharp and well defined when the dioptre scale is set at zero.

Tolerance ± 0.5 dioptre in each case.

Parallax

16. With the right eyepiece set as in para 15 (a) there should be no relative movement between the graticule and the image when the eye is moved across the eyepiece.

Definition

17. The test will be done using a definition chart, a Collimator No. 2 or a well defined distant object. The field of view will be bright, sharply defined and free from aberration.

Verticality of Image

18. Test by means of a Telescope, auxiliary, No. 2 and known vertical reference mark or by means of the Collimator, binocular, Mk 4. Errors will not exceed 30 min in either ocular or 30 min between oculars.

Interocular Distance

19. The reading of the interocular scale will be in correct relationship with the distance between the exit pupils of the eyepieces. Tolerance ± 1 mm.

Graticule

20. (a) Verticality

The vertical line of the graticule will be at right angles to a horizontal line joining the axis of each ocular when the binoculars are set at 63 mm interocular distance. Tolerance ± 1 mm.

(b) Subtense

The graticule markings will be checked by means of an Instrument, testing, scales, Mk 1 or a prepared chart set up at a distance from the testing position. Maximum error between the two 50 mil deflection marks should not exceed ± 5 mils (approx 17 mins).

Equal Magnification

21. Test by means of a Telescope, auxiliary, No. 2 and a Collimator, No. 2 or other suitable reference scale. The magnification of the instrument will be

within 5% of six power. The difference between the two oculars will not be more than 2%.

Parallelism of Axes (Collimation)

22. The optical axes will maintain parallelism with the mechanical axis of the hinge between interocular settings of 60 to 70 mm.

Tolerance in horizontal plane - Convergence 6 minutes
- Divergence 2 minutes

Tolerance in vertical plane - Divergence 1 1/2 minute

Rigidity

23. Drop the binocular (eyepieces upward) from a height of 6 ft into a box of dry fine sand which is 6-in deep and covered with a cloth. The binocular must again pass the tests.

Sealing

24. The binocular must be adequately sealed with the authorized sealing materials.

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BINOCULARS, PRISMATIC
INSPECTION SHEET

SITE_____ REGIMENT_____ UNIT_____

DATE_____ REASON FOR INSPECTION_____

INSPECTED BY

INSTRUCTIONS

Check Every Item

	Condition Classification					
	Unit Maintenance					
	Modifications Outstanding					
	Model No. and Mark					
	Reg'd No.					
EXAMINATION						
General						
1. Workmanship and finish						
2. Screws and threads						
3. Corrosion						
4. Painting						
5. Scales						
6. Neck sling						
Mechanical						
7. Bodies						
8. Hinge						
9. Prism assemblies						
10. Eyepiece assemblies						
11. Object glass assemblies						
Optical						
12. Cleanliness						
13. Cement						
14. Damage						
(a) Object glasses						
(b) Prisms						
(c) Graticule						
(d) Field lenses						
(e) Eye lenses						

Fig 1 - Inspection Sheet CAFC 2116

TESTS					
15. Focus of eyepieces Tol. ± 0·5 D					
(a) Right eyepiece					
(b) Left eyepiece					
16. Parallax					
17. Definition					
18. Verticality of image Tol. ± 30 min.					
19. Interocular distance Tol. ± 1 mm					
20. Graticule					
(a) Verticality Tol. ± 1 min.					
(b) Subtense Tol. ± 5 mils (17 min)					
21. Equal magnification Tol. 2%					
22. Parallelism of axes					
(a) Horizontal —Convergence Tol. 6 min					
Divergence Tol. 2 min					
(b) Vertical —Divergence Tol. 1½ min					
23. Rigidity					
24. Sealing					

REMARKS

Signature of inspecting officer

Fig 2 - Reverse side of Inspection Sheet

END