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ROYAL CANADIAN AIR FORCE



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DESCRIPTION AND MAINTENANCE

INSTRUCTIONS

COMPASS DATUM

TYPE 0.6A

(KELVIN HUGHES CO)

(This EO replaces EO 20-25AG-2 dated 25 Jun 57 revised 10 Dec 57)

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

25 FEB 59

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INTRODUCTION

This EO contains a description of and instructions for the service, maintenance and overhaul periods of the compass datum Type O.6A, RCAF Sec./Ref. 6B/532.

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PART 1

DESCRIPTION

GENERAL DESCRIPTION

1 The type O.6A compass is a hand bearing compass used for taking bearings on the ground. It is used mainly for determining aircraft headings during compass swinging. The O.6A compass, Figure 1-1, has an overall length of 9" and the diameter of the verge ring is 3.8".

DETAILED DESCRIPTION

2 Two magnets are used and four damping filaments are attached to the magnet system. The compass card is of astrafoil and is white, with the scale marking in black, the letters and figures being laterally reversed for viewing in a reflecting prism. The pivot is tipped with iridium and rests in a sapphire cup. It is retained in the cup by means of a split sleeve round the jewel housing, see Figure 1-2.

3 The bowl is filled with 34A/111 compass fluid CGSB Spec. 3-GP-31. The expansion of the liquid is allowed for by a bellows which carries a frosted glass plate (5). In the centre of this plate the vertical stem (4) supporting the jewel cup is mounted. The filling plug projects from the side of the bowl.

4 The prism (6) is mounted on a bracket (7) attached directly to the verge ring. It turns on horizontal trunnions in rigid bearings, and

spring washers provide the necessary friction. A V-sight (8) only is fitted to the top of the prism. The sloping face of the prism forms

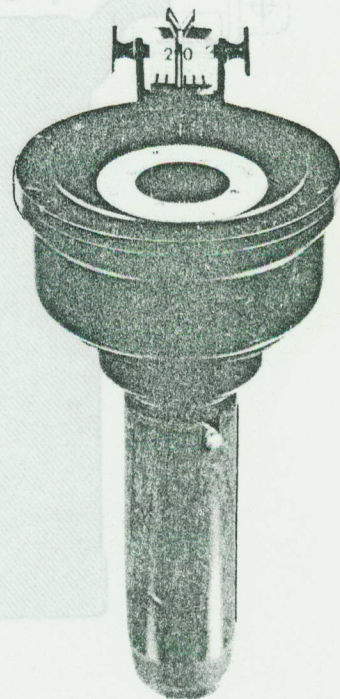
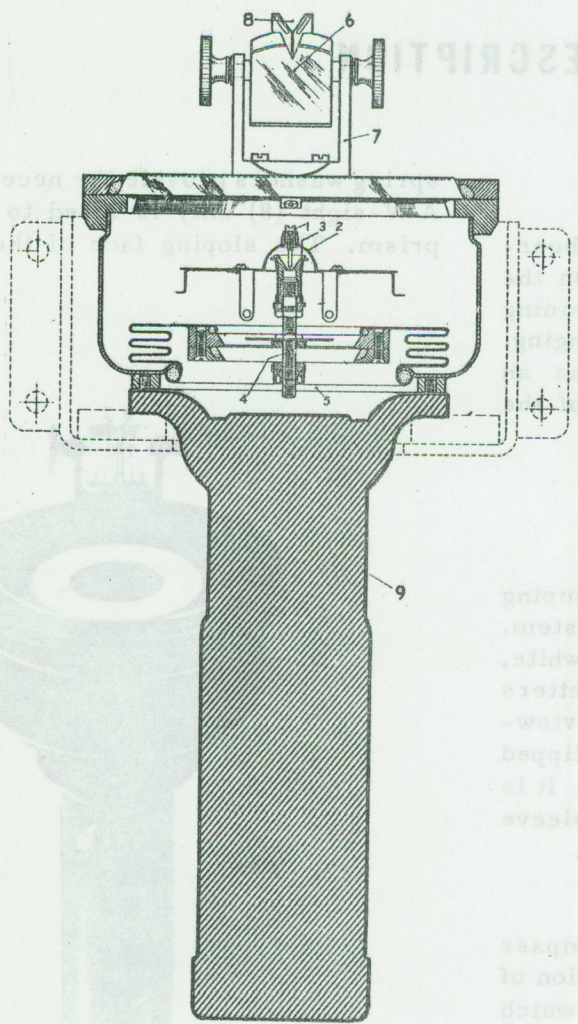


Figure 1-1 Type O.6A Datum Compass



- 1 Pivot screw
- 2 Dome
- 3 Jewel cup
- 4 Vertical stem
- 5 Glass plate
- 6 Prism
- 7 Bracket
- 8 V-sight
- 9 Handle

Figure 1-2 Cut-Away View - Type O. 6A Datum Compass

mirror and the front surface is curved to magnify the image of the scale. An index line is fitted in the bowl immediately below the prism and the scale is read from this line.

When a 6B/87 tripod is being utilized to hold the datum compass the handle (9) is replaced with an adapter 6B/468, see Figure 1-3

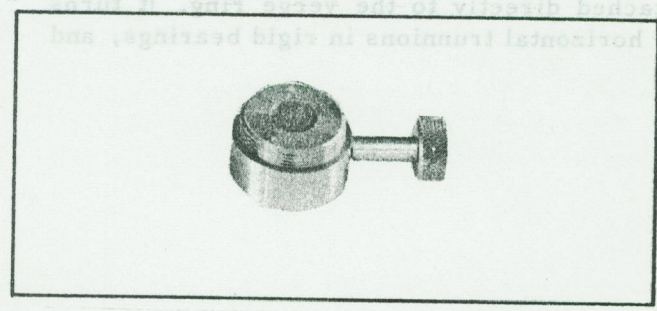


Figure 1-3 Adapter Tripod

PART 2**OPERATION**

1 The type O.6A datum compass is operated by hand so no corrector is used during its operation. As the deviation is unknown while bearings are being taken, the operator must select a position as free as possible from

magnetic interference.

2 For full details on the operation and use of the datum compass refer to EO 20-25-1A, Part 5.

PART 3**SERVICE INSPECTION, MAINTENANCE AND OVERHAUL PERIOD****SERVICE INSPECTION**

1 Prior to each use of the type O.6A datum compass, and at least every 30 days, the following checks are to be carried out to determine serviceability:-

- (a) Check compass for discolored liquid and ensure that no air bubbles are present.
- (b) Check that compass bowl is free of all foreign particles and that no unpainted metal is visible internally.
- (c) Ensure that all screws are tight and that the prism is rigidly mounted.
- (d) Align the north-south axis of the instrument with the magnetic meridian and peer through the prism. The heading should be within 2° of north. Repeat this check on

all four quadrants using 2° as the tolerance.

- (e) Check pivot friction by deflecting the heading 10° each side of zero. The card should return to its original position within $\pm 2^\circ$.
- (f) Check for damping by deflecting the compass card 90° to left (and right) of zero. Hold card in the deflected position for 30 seconds then release. The card should return to within 5° of zero in 3 to 5 seconds.
- (g) Check for heeling by tilting the compass at an angle of 15° . This can be accomplished by holding the compass in the normal manner and tilting the bowl away from the body at approximately a 15° angle (towards the body to the left and to the right). The card should remain level and free of obstructions during this test.

NOTE

The prism and its mounting must be handled with extreme care otherwise heading errors will result. In this regard personnel are instructed not to lift these compasses from their cases using the prisms as handles.

MAINTENANCE

Repairs or maintenance other than out-

lined in preceding paragraphs, are not to be attempted by personnel in the field. If compass is in need of repair, or does not conform to any of the tests outlined in paragraph 1, it is to be returned for overhaul.

OVERHAUL PERIODS

3 All type O.6 datum compasses are to be returned for overhaul every 36 months. This time expiry period is applicable to compasses whether in use or storage.

PART 3

SERVICE INSPECTION, MAINTENANCE AND OVERHAUL PERIOD

SERVICE INSPECTION

- (e) Check pivot friction by deflecting the heading 10° each side of zero. The card should return to its original position within 5°.
- (f) Check for damping by deflecting the compass card 90° to left (and right) of zero. Hold card in the deflected position for 30 seconds then release. The card should return to within 5° of zero in 3 to 5 seconds.
- (g) Check for heading by tilting the compass at an angle of 15°. This can be accomplished by holding the compass in the normal manner and tilting the bowl away from the body at approximately a 15° angle (towards the body to the left and to the right). The card should remain level and free of obstructions during this test.

- 1. Prior to each use of the type O.6A datum compass, and at least every 30 days, the following checks are to be carried out to determine serviceability:
 - (a) Check compass for discolored liquid and ensure that no air bubbles are present.
 - (b) Check that compass bowl is free of all foreign particles and that no unpainted metal is visible internally.
 - (c) Ensure that all screws are tight and that the prism is rigidly mounted.
 - (d) Align the north-south axis of the instrument with the magnetic meridian and peer through the prism. The heading should be within 5° of north. Repeat this check on