T28/1 04

AP 110N-0313-1
(2nd Edn)

CARTRIDGES, SEAT EJECTION
(FOLLAND)

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

J. T. Dunnett

Ministry of Defence

FOR USE IN THE
ROYAL AIR FORCE

Prepared by the Procurement Executive, Ministry of Defence

Issued Oct 72

List of Chapters

Issued Oct.72

Chapter 1

GENERAL INFORMATION ON FOLLAND SEAT EJECTION CARTRIDGES

Introduction

1. Seat ejection cartridges for Folland aircraft are issued as separate items, although for convenience items 12K/9635670 and 12K/9635671 may be packaged together. The ejection seat and how to load the cartridges are described in AP 109B-0200-15F▶

Life of cartridges

2. The total life in storage for seat ejection cartridges for Folland aircraft from the date of filling is as follows:-

(1) In those climates where the maximum shade temperature does not normally exceed 30°C:-

Primary No.1, Mk.3	◀5 years▶
Secondary, 3 grain, No.1, Mk.1	◀5 years▶
Secondary, 4 grain, No.1, Mk.1	◀5 years▶
Drogue No.1, Mk.1	◀5 years▶

(2) In those climates where the maximum shade temperature is likely to exceed 30°C:-

All cartridges - Fifty per cent of the unexpired life in temperate climates, calculated from the date of receipt of the cartridge in a tropical area. For example, if a cartridge, Seat Ejection (Folland) Primary, No.1, Mk.3 is received in a tropical area 6 months after its date of filling, its remaining life in a tropical area is ◀two years and 3 months.▶

3. The installed life of the cartridge from the date of installation in an aircraft in both temperate and tropical climates is ◀two years▶or on the termination of its storage life, whichever is the sooner. When a cartridge is removed from an aircraft before the completion of its life, its remaining life is the same as if it has remained installed in the aircraft.

Chapter 2

Cartridges, seat ejection (Folland), Primary

LEADING PARTICULARS

	Primary cartridge No.1, Mk.3
Ref. No.	12K/9635202
Length	5·97 in approx
Diameter	2·0 in approx
Diameter of rim	2·1 in approx
Initiator	Primer, percussion, No.56, Mk.1
Delay	Between 0·5 to 0·7S
Priming charge	◀8·59 grammes of Gunpowder G7, SR317C and NRN 151▶
Main charge	◀109 grammes▶ of platonized propellant

CARTRIDGE, SEAT EJECTION (FOLLAND), PRIMARY, NO.1, MK.3

Description (fig.1)

1. The No.1, Mk.3 primary cartridge consists of a case closed at one end by a primer, and at the other by a grid.

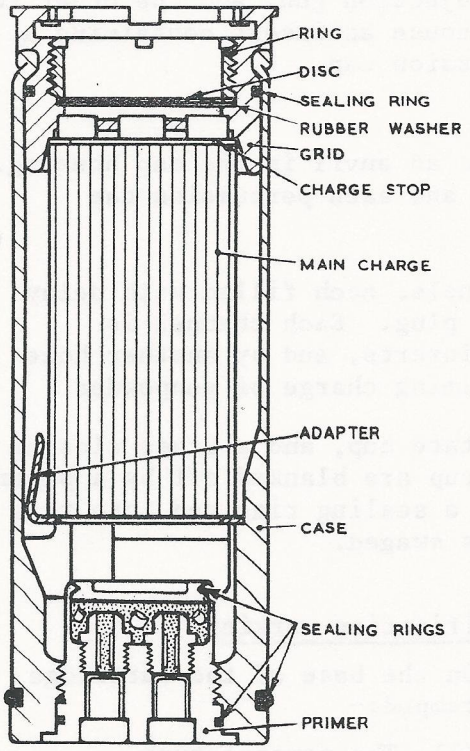


Fig.1 Cartridge, seat ejection (Folland), primary, No.1, Mk.3

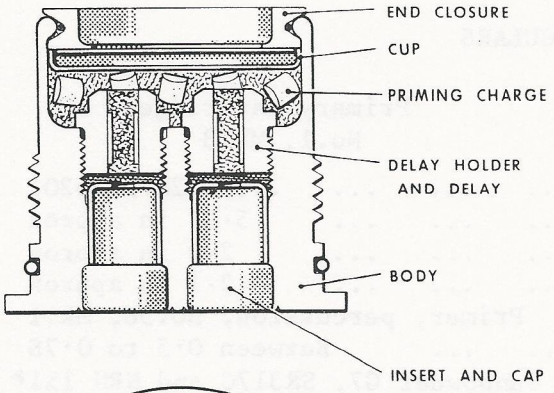
2. The case is of aluminium alloy, around which and near one end is a groove housing a rubber sealing ring. This end of the case is bored and threaded to accept the primer, and above the primer housing are three buttresses on which a charge adapter is located.

3. The adapter is in the form of a steel washer having three equi-spaced arms on its periphery. The arms are bent at approximately right angles to the washer, and are curved to embrace one end of a main charge.

4. The main charge is ◀109 grammes▶ of platonized propellant. On the end of the charge, opposite to the adapter, is a washer which serves as a charge stop. This end of the charge and the stop are located by the grid.

5. The grid is of steel, and around it are two grooves and a rim.

One groove houses a rubber sealing ring and, into the other, the end of the case is swaged to secure the grid in position.



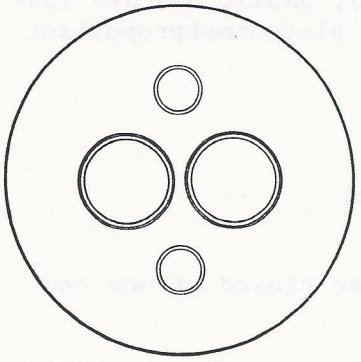


Fig.2 Primer percussion, No.56, Mk.1

6. The inner end of the grid has four parallel bars shaped to fit over the charge and charge stop. Six equi-spaced slots are in the outer end of the grid which is bored to house a manganese alloy disc and a rubber washer, and screw-threaded to accept a ring. The disc closes the apertures between the bars, and is sealed by the ring being screwed on to the rubber washer.

Primer

7. The Primer, No.56, Mk.1 has an aluminium body screw threaded externally, for insertion into the base of the cartridge case, and has a flange at its outer end. A sealing ring is interposed between the flange and screw thread. In the outer end of the primer are four recesses, two of which serve as locating holes to engage pins in the seat ejection gun, and the other two each house an insert containing a percussion cap.

8. Each insert is of brass, and incorporates an anvil in the cap housing. Leading from the housing are two flash holes, and each percussion cap contains cap composition.

9. In the primer body are two parallel channels, each filled with delay composition, and closed by an aluminium alloy plug. Each channel is connected by a hole at one end to one of the inserts, and by another hole at the other end to a chamber containing a priming charge of gunpowder.

10. The chamber is closed by a cellulose acetate cup, and a brass closing cup. Six slots in the bottom of the closing cup are blanked off by a paper disc. A groove around the closing cup houses a sealing ring and into this ring and groove, the end of the primer body is swaged.

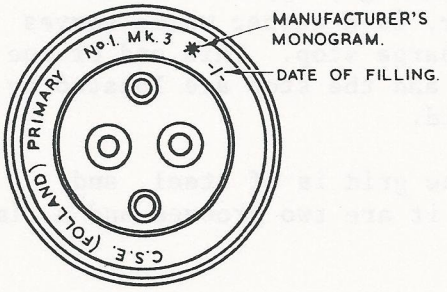


Fig.3 Marking

Identification markings

11. On the base of the cartridge are stamped:-

(1) The nomenclature

(2) The manufacturer's monogram

(3) The date of filling.

Printed for Her Majesty's Stationery Office
by I.S.I. Washington
Demand No. 176822, 140, 9/75, 1909 (12380-7)

Functioning

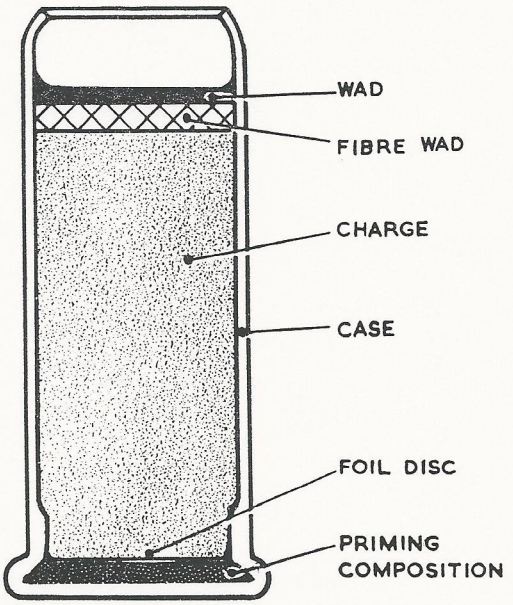
12. When the percussion caps are struck the resultant flash from each cap passes through the fire holes to ignite the delay composition in the channels. After a delay of approximately 0·6 sec, the gunpowder in the priming chamber is ignited, the burning gases consume the cellulose acetate cup and paper disc, and pass through the slots in the closing cup to ignite the main charge. The gases generated by the burning compositions, pass through the grid to disrupt the manganese alloy disc, enter the ejection seat gun, and operate the ejection piston of the seat.

Chapter 3

CARTRIDGES, SEAT EJECTION (FOLLAND), SECONDARY

LEADING PARTICULARS

	Secondary cartridge, 3 grain, No.1, Mk.1	Secondary cartridge, 4 grain, No.1, Mk.1
Ref. No.	...12K/9635670	12K/9635671
Length	0·61 in approx	0·61 in approx
Diameter	0·28 in approx	0·28 in approx
Priming composition	3 grains of TS2	4 grains of TS2
Colour marking	Yellow	Blue



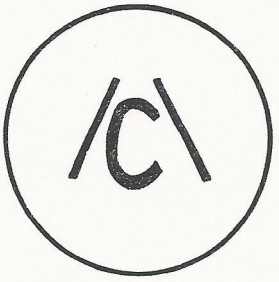


Fig.1 Cartridge, seat ejection (Folland), secondary, No.1, Mk.1

CARTRIDGES, SEAT EJECTION (FOLLAND), SECONDARY, 3 GRAIN, NO.1, MK.1, AND 4 GRAIN NO.1, MK.1

1. The Folland secondary cartridges, 3 grain No.1, Mk.1 and 4 grain No.1, Mk.1 are used to operate the parachute release mechanism and the harness release mechanism, respectively, which are fitted as part of the Folland ejection seat system. The 3 grain cartridge is similar to the 4 grain cartridge except as shown in the Leading Particulars.

4 grain, No.1, Mk.1 Secondary Cartridge (fig.1)

2. The cartridge consists of a metal case which contains a quantity of priming composition, and a charge of TS2 black powder.

3. One end of the case is closed and shaped to form a rim which houses the priming composition. A foil disc separates the priming composition from the black powder, and the other end of the case is closed by a fibre wad and a mill-board wad on to which the case is closed, and sealed by varnish.

Identification markings

4. The package containing the cartridges is marked with the following information:-

(1) Nomenclature of the cartridges in the package.

(2) The quantity contained in the package.

(3) The manufacturer's monogram.

(4) The date of filling.

5. In addition to the markings on the package, the sealing varnish on the Cartridge, seat ejection (Folland), secondary, 3 grain No.1, Mk.1 is coloured yellow, and that of the Cartridge, seat ejection (Folland), secondary, 4 grain, No.1, Mk.1 is coloured blue.

Functioning

6. When the rim of the cartridge is struck the priming composition is ignited, and the burning gases disrupt the foil disc and ignite the charge. The pressure of the gases, generated by the burning compositions, forces the wads out of the case, and the gases enter and operate the release mechanism.

Chapter 4

CARTRIDGES, SEAT EJECTION (FOLLAND), DROGUE

LEADING PARTICULARS

Ref. No.	12K/9635207
Length	2·02 in approx
Diameter	0·75 in approx
Diameter of rim	0·875 in approx
Initiator	Percussion cap
Delay	None
Priming charge	None
Main charge	6 grammes of G12 gunpowder

CARTRIDGE, SEAT EJECTION (FOLLAND) DROGUE, NO.1, MK.1

Description (fig.1)

1. The drogue cartridge consists of a case containing a charge of gunpowder. The case is of aluminium alloy, having a rimmed base integral with the case at one end, and threaded to accept a cap at the other.

2. Around the case, near the rim, is a groove, which houses a rubber sealing ring, and in the base is a housing for an insert.

3. The insert houses a percussion cap, and leading from the cap housing are two flash holes. A passage in the case leads from the flash holes to the charge.

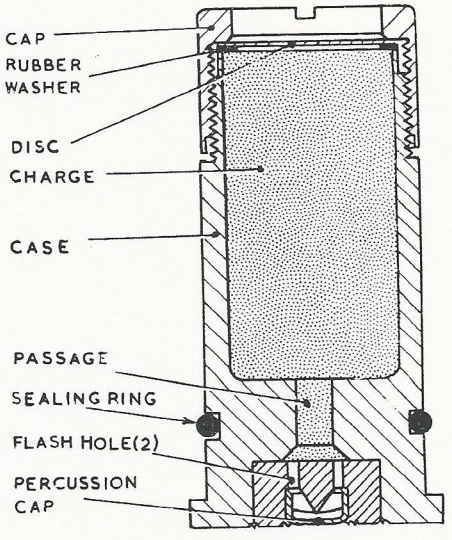


Fig.1 Cartridge, seat ejection (Folland) drogue, No.1, Mk.1

4. The end of the case is closed by a rubber washer and a foil disc of aluminium alloy, which are secured in position by the cap (para.1). The cap is threaded to screw on to the end of the case, and has an internal flange to engage the disc. The cap has a central hole, and is provided with two key slots to aid assembling.

Identification markings

5. Stencilled in black on the wall of the cartridge case are:-

(1) The filling contractor's monogram

(2) The date of filling

(3) The filled Lot number.

6. Stamped on the base are:-

(1) The nomenclature

(2) The manufacturer's monogram.

Functioning

7. When the percussion cap is struck, the resultant flash passes through the flash holes and the passage to ignite the charge. The gases generated by the burning charge burst the foil disc, pass through the cap, and enter the drogue gun to operate the release mechanism.