

Chapter 2

(Completely revised)

EJECTION SEAT, Mk. 3B

(Vampire aircraft)

LIST OF APPENDICES

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APPENDIX E

OPERATIONS WHEN THE EJECTION SEAT IS TO BE REMOVED FROM THE AIRCRAFT

Safety precautions

1. All personnel are warned of the extreme danger of interfering with cartridge and detonator-operated jettison equipment. In no circumstances are tradesmen to work on items containing cartridge-operated ejection equipment without first ascertaining from the Armament tradesman that it is safe to do so.
2. All types of ejection seat cartridges and detonators are to be removed and fitted by an Armament tradesman only. Ejection seat primary and drogue gun cartridges are to be removed before the ejection seat is raised on the guide rails.
3. ALL PERSONNEL, before entering a cockpit or cabin of an aircraft fitted with an ejection seat, are to report to the N.C.O. immediately in charge of Airframe servicing who is to ensure that all safety pins (or other safety devices) are correctly positioned to render seat and the canopy jettison firing mechanism safe. On completion of servicing, tradesmen are to report to the N.C.O.

Item No.	Item	Operation
ARMAMENT		
Servicing notes		
(1)	Cartridges are to be renewed every six (6) months.	
(2)	Should it be necessary to change the low-pressure oxygen hose owing to damage or deterioration the Instrument tradesman is to be notified.	
(3)	The oxygen equipment and all tools associated with its servicing are to be kept free from grease or oil.	
1	Safety precautions	Before any servicing is done ensure that the safety pin is in the sear of the primary firing unit.
2	Safety lock pin (with its warning disc.)	Fit in the safety lock hole in the drogue gun.
3	Safety equipment	<ol style="list-style-type: none"> (1) Fit the safety pin in the emergency oxygen cylinder operating head. (2) Disconnect the emergency oxygen hose from the anchor socket and unscrew the male and female knurled nuts on the release cables. (3) Disconnect the static line from the spring anchor hook. (4) Separate the two ends of the parachute withdrawal line. (5) Remove and transport to the Safety Equipment Bay for servicing or storage as necessary. <p>Note . . . <i>The anchor section operating cable is to be left in position in the anchor socket.</i></p>
4	(a) Primary cartridge (b) Drogue gun cartridge	} Remove as detailed in Appendix 'G' to this chapter.
5	(a) Anti-G suit tube (If fitted) (b) Mic/tel leads	
	(c) Barostatic time-release release unit static line	Disconnect from the bulkhead terminal block, noting the identification colours and positions of the leads.
	(d) Leg restraining cords	Disconnect from the guide rail bracket.
6	Low-pressure oxygen flexible tubing	Disconnect from the aircraft floor anchorages.
7	Ejection seat	Disconnect at the quick-release connection at the side of the seat pan.
	(a) Top latch	Remove the safety pin.
	(b) Seat structure	<ol style="list-style-type: none"> (1) Ensure that the firing unit is not fitted to the ejection gun. (2) Attach the lifting sling to the scissor shackle. (3) Withdraw the top latch and raise the seat structure on the guide rails and remove from the aircraft. <p>Note . . . <i>If mechanical means of lifting are employed ensure that the lifting is at the correct angle to the guide rail.</i></p>
	(c) Ejection gun	Withdraw the bottom latch and remove from the guide rails.
8	(a) Seat structure (b) Ejection gun (c) Primary firing unit (d) Drogue gun	} <ol style="list-style-type: none"> (1) Label with the aircraft serial number. (2) Transport to the Armament Bay for servicing.
9	Form 700	

APPENDIX F

OPERATIONS WHEN THE EJECTION SEAT IS TO BE REPLACED IN THE AIRCRAFT

Safety precautions

1. All personnel are warned of the extreme danger of interfering with cartridge and detonator-operated jettison equipment. In no circumstances are tradesmen to work on items containing cartridge-operated ejection equipment without first ascertaining from the Armament tradesmen that it is safe to do so.
2. All types of ejection seat cartridges and detonators are to be removed and fitted by an Armament tradesman only. Ejection seat primary and drogue gun cartridges are to be removed before the ejection seat is raised on the guide rails.
3. ALL PERSONNEL, before entering a cockpit or cabin of an aircraft fitted with an ejection seat, are to report to the N.C.O. immediately in charge of Airframe servicing who is to ensure that all safety pins (or other safety devices) are correctly positioned to render seat and the canopy jettison ring mechanism safe. On completion of servicing, tradesmen are to report to the N.C.O.

Item No.	Item	Operation
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ARMAMENT

Serviceing notes

- (1) ~~Cartridges are to be renewed every six (6) months.~~ N/A PERMIT CATEGORY.
 - (2) When the ejection seat is to remain installed in the aircraft without cartridges fitted, the firing unit is to be replaced in the ejection gun to exclude dirt and moisture.
 - (3) ~~Should it be necessary to change the low-pressure oxygen hose owing to damage or deterioration the Instrument tradesman is to be notified.~~ PERMIT CATEGORY - NOT IN USE
 - (4) The oxygen equipment and all tools associated with its servicing are to be kept free from grease and oil.
- 1
- | | | |
|--|---|--|
| <ul style="list-style-type: none"> (a) Seat structure (b) Ejection gun (c) Primary firing unit (d) Drogue gun (e) Primary cartridges (f) Drogue gun cartridges | } | <p>Obtain the serviced items from the Armament Bay.</p> <p>Obtain the appropriate cartridges from the Explosive Store.</p> |
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Note . . .

- (1) If the ejection gun has been removed during seat removal, Operation (1) and (3) are to be checked by an Armament N.C.O.

Note . . .

- (2) If the ejection gun has not been removed during seat removal, Operation (3) is to be checked by an Armament N.C.O.

2 Ejection gun

- (1) Ensure that the piston is locked to the cylinder by grasping the piston and attempting to extend the gun.
- (2) Fit to the guide rail.
- (3) Examine the locking of the piston to the cylinder and of the cylinder to the guide rail by grasping the top of the piston and attempting to withdraw the gun from the guide rail.

Note . . .

- 3 Operations (5) and (6) of this Item are to be checked by the Armament N.C.O.

Seat structure

- (1) Ensure that the barostatic time-release unit is correctly cocked.
- (2) Attach the lifting sling to the scissor shackle.
- (3) Raise the seat and position over the guide rail.
- (4) Holding out the top latch, lower the seat onto the guide rail, engaging the bottom and top rollers with the flanges.
- (5) Place own weight on the seat and ensure that the top latch is correctly engaged and that the red mark is not showing.
- (6) Fit the top latch safety pin and check that the seat is positively locked by attempting to raise the seat on the guide rail.
- (7) Remove the sling.

Item No.	Item	Operation
4	(a) Anti-G suit tube (If fitted)	Connect to the aircraft fitting. N/A NOT FITTED
	(b) Mic/Tel leads	Connect to the correct terminals of the bulkhead terminal block. PERMIT CATEGORY.
	(c) Barostatic time-release unit static line	Connect to the guide rail bracket.
	(d) Leg restraining cords	Connect to the anchorages on aircraft floor.
5	Low-pressure flexible tubing	<ul style="list-style-type: none"> (1) Examine for chafing and deterioration. (2) Ensure that the sealing washer (Ref. No. 6D/1494) is serviceable and in position. Connect to the quick-release connection at the side of the seat pan. (3) Examine the flexible tubing for correct length and positioning. (4) Ensure that, with the seat pan adjusted to its highest position, there is no tension on the tubing likely to break the quick-release connections. (5) Ensure that the free end of the tubing is correctly stowed.
6	(a) Primary cartridge (b) Drogue gun cartridge	} Replace as detailed in Appendix 'H' to this chapter.
7	Safety equipment	Re-equip the seat as detailed in A.P.1182, Vol. 1, Sect. 4, Chap. 1. (Equipping the seat).
8	Aircraft oxygen equipment	Inform the Instrument tradesman that the ejection seat has been replaced.
9	Form 700	Sign for replacing the seat.

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APPENDIX G

OPERATIONS WHEN REMOVING EJECTION SEAT CARTRIDGES

Safety precautions

1. All personnel are warned of the extreme danger of interfering with cartridge and detonator-operated jettison equipment. In no circumstances are tradesmen to work on items containing cartridge-operated ejection equipment without first ascertaining from the Armament tradesmen that it is safe to do so.
2. All types of ejection seat cartridges and detonators are to be removed and fitted by an Armament tradesman only. Ejection seat primary and drogue gun cartridges are to be removed before the ejection seat is raised on the guide rails.
3. ALL PERSONNEL, before entering a cockpit or cabin of an aircraft fitted with an ejection seat, are to report to the N.C.O. immediately in charge of Airframe servicing who is to ensure that all safety pins (or other safety devices) are correctly positioned to render seat and the canopy jettison firing mechanism safe. On completion of servicing, tradesmen are to report to the N.C.O.

Item No.	Item	Operation
ARMAMENT		
Servicing notes		
(1)		Should it be necessary to change the low-pressure oxygen hose owing to damage or deterioration the Instrument tradesman is to be notified.
(2)		The oxygen equipment and all tools associated with its servicing is to be kept free from grease or oil.
1	Ejection seat	Before any servicing is done ensure that the safety pin is in the sear of the primary firing unit.
2	Ejection seat	<ol style="list-style-type: none"> (1) Ensure that the safety lock pin is in the safety lock of the drogue gun. (2) Disconnect the firing cable from the sear. <p>WARNING . . . <i>In no circumstances must the sear be extracted whilst the cartridge is in position. Any attempt to do so will result in the cartridge being fired.</i></p>
3	<ol style="list-style-type: none"> (a) Primary firing unit (b) Primary cartridge 	<ol style="list-style-type: none"> (1) Ensure the safety pin is in position. (2) Break the sealed locking wire. (3) Using the spanner (Ref. No. 27L/353) remove the primary firing unit. (4) Remove the primary cartridge and spring. (5) Refit the firing unit. <p>Note . . . <i>Ensure that the firing unit is screwed fully home to avoid damage to the aircraft canopy.</i></p> <ol style="list-style-type: none"> (6) Place the cartridge in a suitably fitted container marked with the aircraft serial number and the cartridge expiry date.
4	Drogue gun	<ol style="list-style-type: none"> (1) Ensure that the safety lock pin with the warning disc is in the safety lock of the drogue gun. (2) Disconnect the drogue shackle from the piston by withdrawing the quick-release pin. (3) Remove the static rod quick-release pin. (4) Operate the two (2) quick-release clamps and lift out the firing unit. (5) Transport immediately to the Drogue Gun Arming/Disarming point. (6) Ensure the safety lock with warning disc, pin is fitted and place the drogue gun in a suitable jig.

Item No.	Item	Operation
4— <i>continued</i>		(7) Break the sealed locking wire and, using the $\frac{7}{16}$ in. Whit. spanner, unscrew the barrel from the firing unit body. (8) Remove the cartridge. (9) Place the cartridge in a suitably fitted container marked with the aircraft serial number and cartridge expiry date. (10) Refit the barrel to the body. (11) Label with the aircraft serial number and certificate to the effect that the cartridge(s) have been removed.
5 (a) Primary cartridge(s) (b) Drogue gun cartridge(s)	}	Place in the Explosive Store labelled with the aircraft serial number in the suitably fitted container.
Note . . .		
6 <i>This Item is applicable only if servicing is to be done before cartridge(s) are fitted.</i> Form 700		Endorse 'Free from Explosives'.

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APPENDIX H

OPERATIONS WHEN REPLACING EJECTION SEAT CARTRIDGES

Safety precautions

1. All personnel are warned of the extreme danger of interfering with cartridge and detonator-operated jettison equipment. In no circumstances are tradesmen to work on items containing cartridge-operated ejection equipment without first ascertaining from the Armament tradesmen that it is safe to do so.
2. All types of ejection seat cartridges and detonators are to be removed and fitted by an Armament tradesman only. Ejection seat primary and drogue gun cartridges are to be removed before ejection seat is raised on the guide rails.
3. ALL PERSONNEL, before entering a cockpit or cabin of an aircraft fitted with an ejection seat, are to report to the N.C.O. immediately in charge of Airframe servicing who is to ensure that all safety pins (or other safety devices) are correctly positioned to render seat and the canopy jettison firing mechanism safe. On completion of servicing, tradesmen are to report to the N.C.O.

Item No.	Item	Operation
ARMAMENT		
Servicing notes		
	(1)	Should it be necessary to change the low-pressure oxygen hose owing to damage or deterioration the Instrument tradesman is to be notified.
	(2)	The oxygen equipment and all tools associated with its servicing is to be kept free from oil or grease.
1	Ejection seat	
	(a) Primary cartridge(s)	} (1) Obtain the appropriate cartridges for the aircraft from the Explosive Store. (2) Examine the date scribed on the cartridges and ensure the cartridges are not due for renewal. (3) If the cartridges obtained are new, scribe on the side of the cartridge(s) the date six (6) months hence of the date fitted.
	(b) Drogue gun cartridge(s)	
2	(a) Primary cartridge and spring (b) Primary firing unit	} (1) Fit the primary cartridges spring in the breech. (2) With the safety pin fitted ensure that the firing pin is not protruding and that sear is correctly engaged. (3) Remove the cartridges from their container. (4) Insert the primary cartridge into the breech and press into place with the firing unit body until the threads engage. (5) Screw in the firing unit body as far as possible by hand. Tighten, using the spanner (Ref. No. 27L/353). WARNING . . . <i>In no circumstances must the sear be extracted while the cartridge is in position. Any attempt to do so will result in the cartridge being fired.</i> (6) Lock with 20 S.W.G. nickel chromium wire (Ref. No. 30A/2296) and seal with a lead seal, using the sealing press. (7) Reconnect the firing cable to the sear. Note . . . <i>Ensure the cable passes UNDER the lifting shackle.</i>
3	Drogue gun	(1) Transport to the Drogue Gun Arming/Disarming point. (2) Ensure that the safety lock pin with its warning disc is fitted and place the drogue gun in a suitable jig. (3) Remove the label and certificate. (4) Unscrew the barrel from the firing unit body.

(A.L.55, Apl. 58)

Item No.	Item	Operation
3—continued		<ul style="list-style-type: none"> (5) Remove the cartridges from the container. (6) Insert the cartridges. (7) Ensure that the firing pin is not protruding and that the sear is correctly engaged. (8) Screw the barrel firmly into the firing unit body, using the $\frac{7}{8}$ in. Whit. spanner. <p>Note . . . <i>Ensure that the top edge of the gun body coincides with the scribed line on the gun barrel.</i></p> <ul style="list-style-type: none"> (9) Lock with 20 S.W.G. nickel chromium wire (Ref. No. 30A/2296) and seal with lead seal, using the sealing press. (10) Refit in the quick-release clamps, ensuring the dowel in the lower clamp engages correctly. (11) Connect the drogue withdrawal line with the lug on the piston by inserting the quick-release pin, ensuring that the white drogue withdrawal line passes OVER both the nylon rope attached to the scissor shackle and the black PVC covered lifting line and is free to extract the drogues without any entanglement. (12) Connect the static rod by replacing the quick-release pin. (13) Remove the safety lock pin with its warning disc from the safety lock.
4 Safety pins		Transfer the Safety pins to the face screen and report to the Airframe N.C.O. that this has been done.
5 Form 700		<ul style="list-style-type: none"> (1) Annotate the Form 700 that the safety lock pin has been removed. (2) Ensure that the date of the next change of cartridges is entered in Red ink in the 'Out of Phase Servicing Table'.

APPENDIX J

OPERATIONS AT THE MINOR SERVICING OF THE AIRCRAFT

Safety precautions

1. All personnel are warned of the extreme danger of interfering with cartridge and detonator-operated jettison equipment. In no circumstances are tradesmen to work on items containing cartridge-operated ejection equipment without first ascertaining from the Armament tradesmen that it is safe to do so.
2. All types of ejection seat cartridges and detonators are to be removed and fitted by an Armament tradesman only. Ejection seat primary and drogue gun cartridges are to be removed before the ejection seat is raised on the guide rails.
3. ALL PERSONNEL, before entering a cockpit or cabin of an aircraft fitted with an ejection seat, are to report to the N.C.O. immediately in charge of Airframe servicing who is to ensure that all safety pins (or other safety devices) are correctly positioned to render seat and the canopy jettison firing mechanism safe. On completion of servicing, tradesmen are to report to the N.C.O.

Item No.	Item	Operation
ARMAMENT		
Servicing notes		
(1)		Before commencing to strip the ejection seat, ensure the seat pan is raised to the top position.
(2)		Stripping and assembling of components as detailed in this servicing may be done by an Armament Mechanic. Examination, gauging and repairs are to be done by an Armament Fitter.
(3)		The oxygen equipment and all tools associated with its servicing are to be kept free from grease or oil.
(4)		Before conducting any inspection on safety equipment, the packing of drogues or face screens, the hands are to be clean.
(5)		Should it be necessary to change the low-pressure oxygen hose owing to damage or deterioration, the Instrument tradesman is to be notified.
1	Ejection seat	Before any servicing is done ensure that the safety pin is in the sear of the primary firing unit.
2	Safety equipment	Remove as detailed in Appendix 'E' and transport to the Safety Equipment section for Bay servicing.
		Note . . . <i>The emergency oxygen bottle is to be Bay serviced in conjunction with the safety equipment.</i>
3	(a) Ejection seat	Remove as detailed in Appendix 'E' to this chapter.
	(b) Guide rails	Withdraw the quick-release pins and remove.
	(c) Ejection seat	} Transport to the Bay for servicing.
	(d) Guide rails	
		Note . . . <i>Items (4) to (29) are to be done in the Bay.</i>
4	Low-pressure oxygen hose	Remove and hand to Instrument tradesman for Bay servicing.
5	(a) Barostatic time-release mechanism	Withdraw the sear complete with the static line. Check that the release unit operates and runs for the appropriate time, this should be 3 sec. \pm 0.25 sec.
	(b) Static line	Examine for fraying, damage and security of attachment to the end fittings.
	(c) Safety harness release cable and safety harness	(1) Unscrew the $\frac{5}{8}$ in. B.S.F. union nut and remove the harness release cable, housing and plunger from the release unit. (2) Remove the safety harness shoulder straps from the parachute container. (3) Hand the safety harness, harness release cable, housing and plunger to the Safety Equipment Worker for Bay servicing.
	(d) Barostatic time-release unit	Remove the $\frac{1}{4}$ in. B.S.F. bolts and remove the release unit from the seat structure.

Item No.	Item	Operation
6	Barostat	(1) Cut the locking wire locking the barostat to the release unit body. (2) Remove from the release unit, using the adjustable 'C' spanner (Ref. No. 27Y/2739). WARNING . . . <i>In no circumstances must the star wheel or gearing be disturbed. Any movement will result in the incorrect meshing of the rack teeth.</i> (3) Check the setting of the micrometer zero as detailed in Vol. 1, Part 2, Sec. 6, Chap. 1. (4) Check the barostat as detailed in Vol. 1, Part 2, Sect. 6, Chap. 1. IMPORTANT . . . <i>Should the barostat fail this test, no adjustment of the barostat height setting screw is permitted. The barostat is to be returned to stores labelled 'Repairable at Depot'.</i> (5) Refit the barostat to the release unit using the adjustable C spanner. WARNING . . . <i>Great care is to be taken when refitting the barostat to the release unit to prevent damage to the threads and to ensure that the barostat is screwed fully home.</i> (6) Lock the barostat to the release unit body with 22 S.W.G. Chromium nickel wire (Ref. No. 30A/3055).
7	Mic/tel lead	Request the Wireless tradesman to do in-situ servicing.
8	(a) Drogue and apron assembly (b) Face screen and firing handle assembly (c) Leg restraining cords	(1) Remove as detailed in Vol. 1, Part 2, Sect. 5, Chapter 2. (2) Transport to the Safety Equipment section for Bay servicing. Remove and transport to Safety Equipment section for Bay servicing.
9	Parachute container assembly (a) Parachute container	(1) Clean. (2) Examine for loose rivets, cracks, corrosion, distortion and damage.
10	(b) Apron strap spring clips (c) Parachute restraining clips (d) Sear safety pin stowages	Examine for distortion, damage and security of attachment.
10	Parachute container radius arms	(1) Clean. (2) Examine for loose rivets, cracks, corrosion, distortion and damage.
11	Seat pan	(1) Clean. (2) Examine for loose rivets, cracks, corrosion, distortion and damage.
12	(a) Emergency oxygen bracket (b) Low-pressure oxygen bracket (c) Anti-G suit hose clip (d) Safety harness lap strap brackets (e) Parachute harness restraining strap spring clips (f) Emergency oxygen anchor socket (g) Emergency oxygen anchor section operating cable (h) Snubbing units (j) Harness manual release unit (k) Anti-G suit hose	Examine for cracks, corrosion, damage and security of attachment. Examine the socket for distortion and damage. Examine the cable for fraying, the screwed connector for burrs and the anchor hook and phosphor bronze fingers for distortion and damage. Examine for damage and security of attachment. (1) Examine for cracks, corrosion and security of attachment. (2) Examine the cable for fraying, kinks, damage and security of attachment to the end fittings. Examine for damage, deterioration and security of attachment.

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Item No.	Item	Operation
13	Seat pan balance spring assemblies	Examine externally for damage.
14	Seat raising mechanism	Examine externally for damage and security of attachment.
15	Seat structure	<ol style="list-style-type: none"> (1) Clean and examine for distortion and damage. (2) Examine the scissor shackle for cracks, corrosion, distortion and freedom of movement. (3) Examine the drogue gun brackets for damage and security of attachment. (4) Examine the drogue gun quick-release clamps (by operation) for correct functioning. (5) Lightly lubricate the quick-release clamp hinges and the plunger with oil, OM-150. (6) Examine the guide rollers for distortion, damage and freedom of rotation and lubricate with oil, OM-13.
16	Top latch	<ol style="list-style-type: none"> (1) Clean. (2) Examine for burrs, cracks, corrosion and damage and lubricate the plunger with grease, XG-275. (3) Examine the cross-beam locking clip for distortion, damage and security of attachment. (4) Examine (by operation) for correct functioning.
17	(a) Drogue container	<ol style="list-style-type: none"> (1) Clean and examine for cracks, corrosion, distortion, security of attachment and loose rivets. (2) Examine the firing cable conduit for corrosion, distortion and security of attachment. (3) Examine the safety pin for distortion, damage, fraying of the lanyard and security of attachment to the drogue container. (4) Ensure that the DANGER notices are legible. (5) Examine the lifting line stowage clips for distortion, damage and security of attachment. (6) Examine the safety strap for damage, fraying and security of attachment.
	(b) Drogue container flaps	<ol style="list-style-type: none"> (1) Examine for defective stitching, deterioration, holes, tears and damage. (2) Examine the metal eyelets for distortion, damage and security of attachment. (3) Examine the wire loop for fraying and security of attachment.
	(c) Protective sleeve	<ol style="list-style-type: none"> (1) Examine for security of attachment to the container. (2) Examine for dampness, tears, holes and damage.
18	Seat pan	Examine (by operation) that the seat locks in all positions.
19	(a) Safety harness, harness release cable housing and plunger	} Obtain serviced items from Safety Equipment Bay.
	(b) Face screen and firing handle assembly	
	(c) Drogue and apron assembly	
	(d) Leg restraining cords.	
	(e) Low-pressure oxygen hose	
		} Obtain serviced hose from Instrument Bay.
20	(a) Parachute container radius arms	Examine (by operation) for correct functioning
	(b) Parachute container	Refit safety harness shoulder straps.
21	(a) Safety harness lap straps	} Refit to seat.
	(b) Safety harness auto-release cable	
	(c) Low-pressure oxygen hose	

Item No.	Item	Operation
22	Face screen assembly	<ol style="list-style-type: none"> (1) Pack as detailed in Vol. 1, Pt. 2, Sect. 11, Chap. 2. (2) Test as detailed in Vol. 1, Pt. 2, Sect. 11, Chap. 2. (3) Repack as in Operation (1) above. (4) Pass the sear operating cable through the drogue container tube.
23	<ol style="list-style-type: none"> (a) Apron (b) Headrest pad (c) Lifting line (d) Face screen 	<ol style="list-style-type: none"> Refit to seat as follows:— <ol style="list-style-type: none"> (1) Refit the apron in the parachute container, inserting the metal lugs on the base of the apron into the spring clips (2) Refit the lugs on the headrest and face screen into the brackets of the drogue container. Lock by inserting the face screens pins <p>Note . . . <i>The lugs of the headrest must be BELOW those of the face screen.</i></p> <ol style="list-style-type: none"> (3) Refit the lifting lines, testing and adjusting the spring clips as detailed in Vol. 1, Pt. 2, Sect. 11, Chap. 2.
24	<ol style="list-style-type: none"> (a) Main drogue (b) Controller drogue 	<ol style="list-style-type: none"> (1) Insert the drogue shackle into the scissor shackle. (2) Repack as detailed in Vol. 1, Part 2, Sect. 5, Chap. 2.
25	Barostatic time-release unit	<ol style="list-style-type: none"> (1) Fit the serviced release unit, ensuring that the specially shouldered bolt is fitted into the lower left-hand hole in the release unit. (2) Refit the harness release cable housing and plunger and lock the $\frac{3}{8}$ in. B.S.F. union nut to the body of the release unit, using 22 S.W.G. chromium nickel wire (Ref. No. 30A/3055). (3) Replace the sear (complete with the static line) through the slot in the locking plunger. (4) Turn the plunger through 90 deg., press in and turn back through 90 deg. (5) Close the scissor shackle over the drogue shackle pin and keep the restraining plunger pressed inwards to hold the scissor shackle closed. (6) Using the rack plunger tool (Ref. No. 27L/272) exercise the primary plunger by moving the tool up and down against the spring tension, with the intention of feeling for friction over the whole range of the gear train, until the rack is fully cocked. Ensure that the scissor locking plunger is pressed against the moving arm of the scissor shackle. (7) Using the harness release plunger tool (with the cut away portion facing forwards), press the actuating plunger home until it is heard to engage with the operating lever. (8) Withdraw the sear (complete with the static line) and check that the release operates within the time limits (this should be 3 sec. \pm 0.25 sec.) and that the release unit operates the harness release and frees the scissor shackle. (9) Repeat Operations (3) to (7).
26	Leg restraining cords	<ol style="list-style-type: none"> (1) Refit. (2) Grasp the cords below the snubbing units and pull downwards. The cords should run through the units freely. (3) Grasp the cords above the snubbing units and attempt to draw upwards. The cords should not pass through the units. (4) Press the release button under each unit in turn and ensure that the cord can be drawn upwards whilst the button is pressed.
27	Ejection gun	<ol style="list-style-type: none"> (1) Ensure the gun is unloaded. (2) Service as detailed in Vol. 5, Sect. 2, Chap. 3.
28	Drogue gun	<ol style="list-style-type: none"> (1) Ensure the gun is unloaded. (2) Service as detailed in Vol. 5, Sect. 3, Chap. 2.
29	(a) Guide rails	<ol style="list-style-type: none"> (1) Clean. (2) Examine for cracks, corrosion, distortion, damage and security of attachment. (3) Examine the flanges for burrs.

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Item No.	Item	Operation
<i>29—continued</i>		
(b)	Ejection gun mounting block.	(1) Clean. (2) Examine for damage and security of attachment to the guide rail.
(c)	Bottom latch	(1) Clean. (2) Examine for burrs, cracks, corrosion and damage. (3) Lubricate the plunger with grease, XG-275. (4) Examine (by operation) for correct functioning.
(d)	Quick-release pins	(1) Examine for damage. (2) Examine the cords which secure the pins to the guide rail for fraying.
(e)	Mic/Tel quick-release socket bracket	} Examine for damage, distortion and security of attachment.
(f)	Barostatic time-delay unit static line bracket	
(g)	Drogue gun static rod bracket	
Note . . .		
<i>Items 30 and 31 are to be done as near as possible to the completion of the aircraft servicing.</i>		
30	(a) Leg restraining cord anchorages	(1) Clean and examine for damage and security of attachment to the aircraft floor. (2) Examine the quick-release pins for damage.
	(b) Emergency oxygen static lines	Examine for fraying, damage to the end fittings and security of attachment to the aircraft floor.
31	(a) Guide rails (b) Ejection seat (c) Safety equipment (d) Guide rails	} Transport from Bay. Refit to aircraft top and bottom attachment brackets by their quick-release pins.
	(e) Ejection seat (f) Safety equipment	} Replace as detailed in Appendix 'F' to this chapter.
32	Ejection seat	Leave the safety pins in position in the sears.
33	Form 700 and Servicing Records	Sign for completing Minor servicing of the aircraft.

APPENDIX K

OPERATIONS AT THE MAJOR SERVICING OF THE AIRCRAFT

Safety precautions

1. All personnel are warned of the extreme danger of interfering with cartridge and detonator-operated jettison equipment. In no circumstances are tradesmen to work on items containing cartridge-operated ejection equipment without first ascertaining from the Armament tradesmen that it is safe to do so.
2. All types of ejection seat cartridges and detonators are to be removed and fitted by an Armament tradesman only. Ejection seat primary and drogue gun cartridges are to be removed before the ejection seat is raised on the guide rails.
3. ALL PERSONNEL, before entering a cockpit or cabin of an aircraft fitted with an ejection seat, are to report to the N.C.O. immediately in charge of Airframe servicing who is to ensure that all safety pins (or other safety devices) are correctly positioned to render seat and the canopy jettison firing mechanism safe. On completion of servicing, tradesmen are to report to the N.C.O.

Item No.	Item	Operation
ARMAMENT		
Servicing notes		
	(1)	Before commencing to strip the ejection seat, ensure the seat pan is raised to the top position.
	(2)	Stripping and assembling of components as detailed in this servicing may be done by an Armament Mechanic. Examination, gauging and repairs are to be done by an Armament Fitter.
	(3)	The oxygen equipment and all tools associated with its servicing are to be kept free from grease or oil.
	(4)	Before conducting any inspection on safety equipment, the packing of drogues or face screens, the hands are to be clean.
	(5)	Should it be necessary to change the low-pressure oxygen hose owing to damage or deterioration, the Instrument tradesman is to be notified.
1	Ejection seat	Before any servicing is done ensure that the safety pin is in the sear of the primary firing unit.
2	Safety equipment	Remove as detailed in Appendix E and transport to the Safety Equipment section for Bay servicing. Note . . . <i>The emergency oxygen bottle is to be Bay serviced in conjunction with the safety equipment.</i>
3	(a) Ejection seat	Remove as detailed in Appendix 'E' to this chapter.
	(b) Guide rails	Withdraw the quick-release pins and remove.
	(c) Ejection seat	} Transport to the Bay for servicing.
	(d) Guide rails	
	Note . . . <i>Items (4) to (29) are to be done in the Bay.</i>	
4	Low-pressure oxygen hose	Remove and hand to Instrument tradesman for Bay servicing.
5	(a) Barostatic time-release release mechanism	Withdraw the sear complete with the static line. Check that the release unit operates and runs for the appropriate time, this should be 3 sec. \pm 0.25 sec.
	(b) Static line	Examine for fraying, damage and security of attachment to the end fittings.
	(c) Safety harness release cable and safety harness	(1) Unscrew the $\frac{5}{8}$ in. B.S.F. union nut and remove the harness release cable, housing and plunger from the release unit. (2) Remove the safety harness shoulder straps from the parachute container. (3) Hand the safety harness, harness release cable, housing and plunger to the Safety Equipment Worker for Bay servicing.
	(d) Barostatic time-release unit	Remove the $\frac{1}{4}$ in. B.S.F. bolts and remove the release unit from the seat structure.

Item No.	Item	Operation
6	Barostat	<p>(1) Cut the locking wire locking the barostat to the release unit body.</p> <p>(2) Remove from the release unit, using the adjustable 'C' spanner (Ref. No. 27Y/2739).</p> <p>WARNING . . . <i>In no circumstances must the star wheel or gearing be disturbed. Any movement will result in the incorrect meshing of the rack teeth.</i></p> <p>(3) Check the setting of the micrometer zero as detailed in Vol. 1, Part 2, Sec. 6, Chap. 1.</p> <p>(4) Check the barostat as detailed in Vol. 1, Part 2, Sec. 6, Chap. 1.</p> <p>IMPORTANT . . . <i>Should the barostat fail this test, no adjustment of the barostat height setting screw is permitted. The barostat is to be returned to stores labelled 'Repairable at Depot'.</i></p> <p>(5) Refit the barostat to the release unit using the adjustable C-spanner.</p> <p>WARNING . . . <i>Great care is to be taken when refitting the barostat to the release unit to prevent damage to the threads and to ensure that the barostat is screwed fully home.</i></p> <p>(6) Lock the barostat to the release unit body with 22 S.W.G. Chromium nickel wire (Ref. No. 30A/3055).</p>
7	Mic-tel lead	Request the Wireless tradesman to do in-situ servicing.
8	<p>(a) Drogue and apron assembly</p> <p>(b) Face screen and firing handle assembly.</p> <p>(c) Leg restraining cords</p>	<p>(1) Remove as detailed in Vol. 1, Part 2, Sect. 5, Chapter 2.</p> <p>(2) Transport to the Safety Equipment section for Bay servicing.</p> <p>Remove and transport to Safety Equipment section for Bay servicing.</p>
9	<p>Parachute container assembly</p> <p>(a) Parachute container</p> <p>(b) Apron strap spring clips</p> <p>(c) Parachute restraining clips</p> <p>(d) Sear safety pin stowages</p> <p>(e) Spring-loaded plungers</p> <p>(f) Transverse bar</p>	<p>(1) Remove.</p> <p>(2) Clean.</p> <p>(3) Examine for loose rivets, cracks, corrosion, distortion and damage.</p> <p>Examine for distortion, damage and security of attachment.</p> <p>Examine (by operation) for correct functioning.</p> <p>Examine for bowing and damage.</p>
10	Parachute container radius arms	<p>(1) Slacken off the lever clamp bolts and nuts and remove the stub shaft nuts and washers.</p> <p>(2) Remove the radius arms, the levers and the cross-shaft.</p> <p>(3) Remove the tab washers and retaining screws.</p> <p>(4) Remove the split pins, spring retaining blocks, springs, plungers and sliding members.</p> <p>(5) Clean and examine all components for burrs, cracks, corrosion, distortion and loose rivets.</p> <p>(6) Examine the cross-shaft for bowing, corrosion, damage, security and freedom of rotation.</p> <p>(7) Examine the manual harness release cable end for security of attachment to the lever.</p> <p>(8) Lubricate the plungers and springs with grease, XG-275.</p>

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Item No.	Item	Operation
11	Seat pan	<ol style="list-style-type: none"> (1) Remove the bracket securing the harness manual release cable to the seat beam. (2) Taking the weight of the reaction springs withdraw both plungers simultaneously and allow the seat to ease forward. (3) Remove the reaction spring assemblies. (4) Unscrew the nuts and bolts from the seat raising levers and remove the seat pan. (5) Clean the seat pan and examine for loose rivets, burrs, cracks, corrosion, distortion and damage. (6) Examine the seat pan plungers for burrs, cracks, corrosion and damage and lubricate with grease, XG-275.
12	<ol style="list-style-type: none"> (a) Emergency oxygen bracket (b) Low-pressure oxygen bracket (c) Anti-G suit hose clip (d) Safety harness lap strap brackets (e) Parachute harness restraining strap spring clips (f) Emergency oxygen anchor socket (g) Emergency oxygen anchor section operating cable (h) Snubbing units (j) Harness manual release unit (k) Anti-G suit hose 	<p>Examine for cracks, corrosion, damage and security of attachment.</p> <p>Examine the socket for distortion and damage.</p> <p>Examine the cable for fraying, the screwed connector for burrs and the anchor hook and phosphor bronze fingers for distortion and damage.</p> <p>Examine for damage and security of attachment.</p> <ol style="list-style-type: none"> (1) Examine for cracks, corrosion and security of attachment. (2) Examine the cable for fraying, kinks, damage and security of attachment to the end fittings. <p>Examine for damage, deterioration and security of attachment.</p>
13	Seat pan balance spring assemblies	<ol style="list-style-type: none"> (1) Clean the springs with gasoline (no lead) and examine for cracks, corrosion and distortion. (2) Examine the tubes for bowing, cracks and corrosion. (3) Lubricate the springs and bearing surfaces with grease, XG-275. (4) Examine the studs on the side beams and on the seat pan for cracks, corrosion and distortion.
14	<ol style="list-style-type: none"> (a) Seat raising mechanism (b) Seat raising handle (c) Sear bar (d) Plungers and springs (e) Countershaft and starboard seat raising lever (f) Port seat raising lever, spring retainer, spring and plunger 	<ol style="list-style-type: none"> (1) Remove the 2BA nut and taper pin from the port end of the countershaft. <p>Note . . . <i>Do not remove the $\frac{1}{4}$ in. B.S.F. bolts from the seat raising lever bosses.</i></p> (2) Remove the split pin and roller from the port countershaft. (3) Remove the quadrant lock-nuts and quadrants, depressing the trigger control to free the plungers. <p>Remove the split pin, washer, hinge pin and handle.</p> <ol style="list-style-type: none"> (1) Remove the split pin and sear lever pivot pin. (2) Depress the two plungers simultaneously and withdraw the sear bar. <p>Remove.</p>

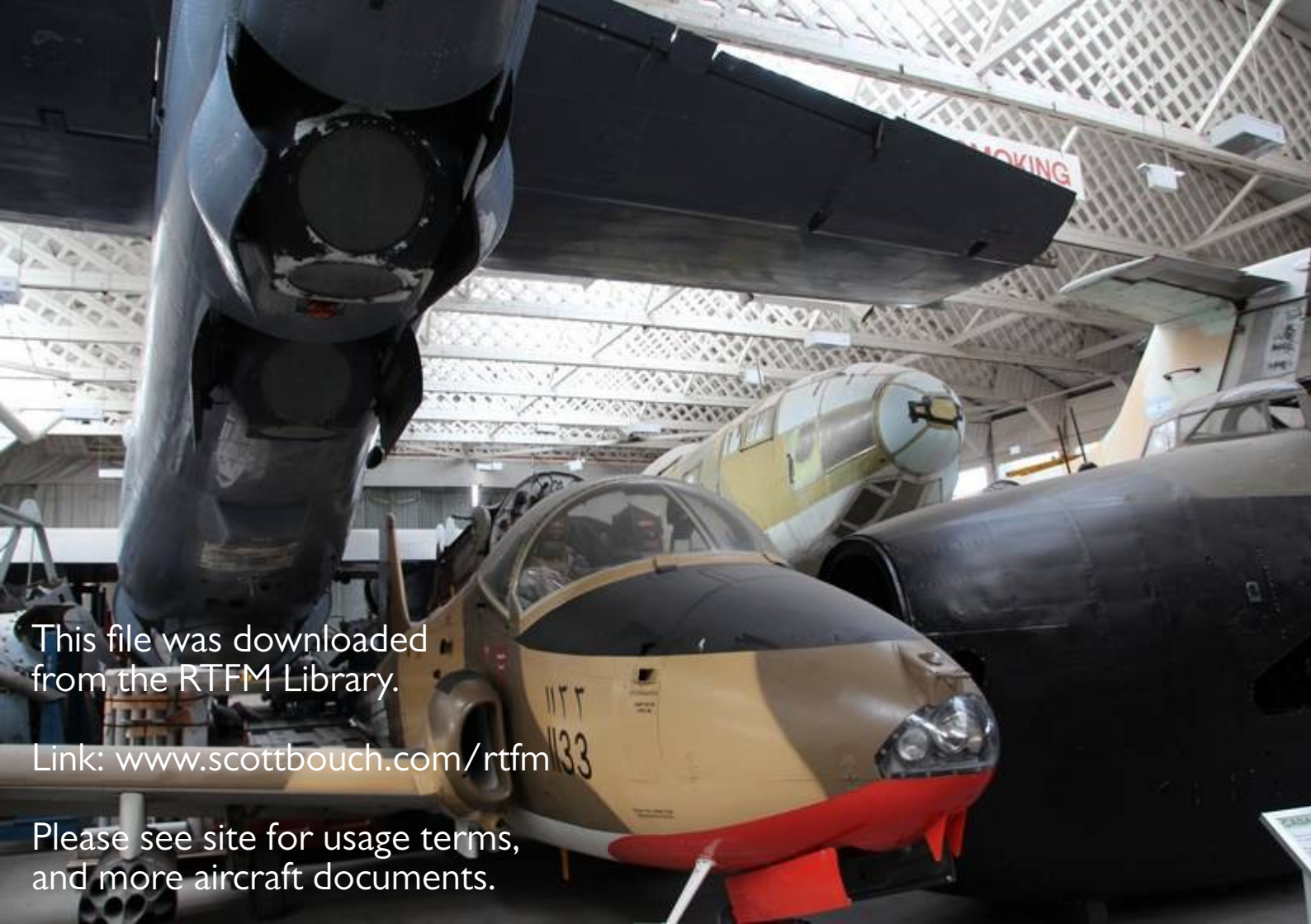
Item No.	Item	Operation
14	<i>continued</i>	
	(g) Seat raising mechanism	(1) Clean all parts and examine for burrs, cracks, corrosion, damage, distortion and wear. (2) Lubricate plungers, springs, rollers, and sear bar with grease, XG-275. (3) Re-assemble to the seat structure.
		Note . . . <i>Ensure that the end of the sear bar engages the port countershaft roller.</i>
15	Seat structure	(1) Clean and examine for distortion and damage. (2) Examine the scissor shackle for cracks, corrosion, distortion and freedom of movement. (3) Examine the radius arm stub shafts for damage and security of attachment. (4) Examine the drogue gun brackets for damage and security of attachment. (5) Examine the drogue gun quick-release clamps (by operation) for correct functioning. (6) Lightly lubricate the quick-release clamp hinges and the plunger with oil, OM-150. (7) Examine the side beam seat pan plunger guideways for burrs, cracks, corrosion and damage and lubricate with grease, XG-275. (8) Examine the guide rollers for distortion, damage and freedom of rotating and lubricate with oil, OM-13. (9) Examine the bottom distance tube for damage and security of attachment.
16	Top latch	(1) Clean. (2) Examine for burrs, cracks, corrosion and damage and lubricate the plunger with grease, XG-275. (3) Examine the cross-beam locking clip for distortion, damage and security of attachment. (4) Examine (by operation) for correct functioning.
17	(a) Drogue container	(1) Clean and examine for cracks, corrosion, distortion, security of attachment and loose rivets. (2) Examine the firing cable conduit for corrosion, distortion and security of attachment. (3) Examine the safety pin for distortion, damage, fraying of the lanyard and security of attachment to the drogue container. (4) Ensure that the DANGER notices are legible. (5) Examine the lifting line stowage clips for distortion, damage and security of attachment. (6) Examine the safety strap for damage, fraying and security of attachment.
	(b) Drogue container flaps	(1) Examine for defective stitching, deterioration, holes, tears and damage. (2) Examine the metal eyelets for distortion, damage and security of attachment. (3) Examine the wire loop for fraying and security of attachment.
	(c) Protective sleeve	(1) Examine for security of attachment to the container. (2) Examine for dampness, tears, holes and damage.
18	Seat pan	(1) Refit the seat pan and balance spring assemblies. (2) Refit the bracket securing the manual harness release cable to the seat beam. (3) Examine (by operation) that the seat locks in all positions.

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Item No.	Item	Operation
19	(a) Safety harness, harness release cable housing and plunger (b) Face screen and firing handle assembly (c) Drogue and apron assembly (d) Leg restraining cords (e) Low-pressure oxygen hose	<p>} Obtain serviced items from Safety Equipment Bay.</p> <p>Obtain serviced hose from Instrument Bay.</p>
20	(a) Parachute container radius arms (b) Parachute container	<p>(1) Refit. (2) Examine (by operation) for correct functioning. Refit complete with safety harness shoulder straps.</p>
21	(a) Safety harness lap straps (b) Safety harness auto-release cable (c) Low-pressure oxygen hose	<p>} Refit to seat.</p>
22	Face screen assembly	<p>(1) Pack as detailed in Vol. 1, Pt. 2, Sect. 11, Chap. 2. (2) Test as detailed in Vol. 1, Pt. 2, Sect. 11, Chap. 2. (3) Repack as in Operation (1) above. (4) Pass the sear operating cable through the drogue container tube.</p>
23	(a) Apron (b) Headrest pad (c) Lifting line (d) Face screen	<p>} Refit to seat as follows:— (1) Refit the apron in the parachute container, inserting the metal lugs on the base of the apron into the spring clips. (2) Refit the lugs on the headrest and face screen into the brackets of the drogue container. Lock by inserting the face screens pins.</p> <p>Note . . . <i>The lugs of the headrest must be BELOW those of the face screen.</i></p> <p>(3) Refit the lifting lines, testing and adjusting the spring clips as detailed in Vol. 1, Pt. 2, Sect. 11, Chap. 2.</p>
24	(a) Main drogue (b) Controller drogue	<p>{ (1) Insert the drogue shackle into the scissor shackle. (2) Repack as detailed in Vol. 1, Part 2, Sec. 5, Chap. 2.</p>
25	Barostatic time-release unit	<p>(1) Fit the serviced release unit, ensuring that the specially shouldered bolt is fitted into the lower left-hand hole in the release unit. (2) Refit the harness release cable housing and plunger and lock the $\frac{5}{8}$ in. B.S.F. union nut to the body of the release unit, using 22 S.W.G. chromium nickel wire (Ref. No. 30A/3055). (3) Replace the sear (complete with the static line) through the slot in the locking plunger. (4) Turn the plunger through 90 deg., press in and turn back through 90 deg. (5) Close the scissor shackle over the drogue shackle pin and keep the restraining plunger pressed inwards to hold the scissor shackle closed. (6) Using the rack plunger tool (Ref. No. 27L/272) exercise the primary plunger by moving the tool up and down against the spring tension, with the intention of feeling for friction over the whole range of the gear train, until the rack is fully cocked. Ensure that the scissor locking plunger is pressed against the moving arm of the scissor shackle. (7) Using the harness release plunger tool (with the cut away portion facing forwards), press the actuating plunger home until it is heard to engage with the operating lever.</p>

Item No.	Item	Operation
25— <i>continued</i>		(8) Withdraw the sear (complete with the static line) and check that the release operates within the time limits (this should be 3 sec. \pm 0.25 sec.) and that the release unit operates the harness release and frees the scissor shackle. (9) Repeat Operations (3) to (7).
26	Leg restraining cords	(1) Refit. (2) Grasp the cords below the snubbing units and pull downwards. The cords should run through the units freely. (3) Grasp the cords above the snubbing units and attempt to draw upwards. The cords should not pass through the units. (4) Press the release button under each unit in turn and ensure that the cord can be drawn upwards whilst the button is pressed.
27	Ejection gun	(1) Ensure the gun is unloaded. (2) Service as detailed in Vol. 5, Sect. 2, Chap. 3.
28	Drogue gun	(1) Ensure the gun is unloaded. (2) Service as detailed in Vol. 5, Sect. 3, Chap. 2.
29	(a) Guide rails	(1) Clean. (2) Examine for cracks, corrosion, distortion, damage and security of attachment. (3) Examine the flanges for burrs.
	(b) Ejection gun mounting block	(1) Clean. (2) Examine for damage and security of attachment to the guide rail.
	(c) Bottom latch	(1) Clean. (2) Examine for burrs, cracks, corrosion and damage. (3) Lubricate the plunger with grease, XG-275. (4) Examine (by operation) for correct functioning.
	(d) Quick-release pins	(1) Examine for damage. (2) Examine the cords which secure the pins to the guide rail for fraying.
	(e) Mic/Tel quick-release socket bracket	} Examine for damage, distortion and security of attachment.
	(f) Barostatic time-delay unit static line bracket	
	(g) Drogue gun static rod bracket	
	Note . . . <i>Items 30 and 31 are to be done as near as possible to the completion of the aircraft servicing.</i>	
30	(a) Leg restraining cord anchorages	(1) Clean and examine for damage and security of attachment to the aircraft floor. (2) Examine the quick-release pins for damage.
	(b) Emergency oxygen static lines	Examine for fraying, damage to the end fittings and security of attachment to the aircraft floor.
31	(a) Guide rails	} Transport from Bay.
	(b) Ejection seat	
	(c) Safety equipment	} Refit to aircraft top and bottom attachment brackets by their quick-release pins.
	(d) Guide rails	
	(e) Ejection seat	} Replace as detailed in Appendix 'F' to this chapter.
	(f) Safety equipment	
32	Ejection seat	Leave the safety pins in position in the sears.
33	Form 700 and Servicing Records	Sign for completing Major servicing of the aircraft.

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