PART 1

CHAPTER 8 — AIRCREW EQUIPMENT ASSEMBLY AND OXYGEN SYSTEM

(Completely revised by AL6)

Contents

EJECTION SEATS

WARNING: To make the aircraft 'Safe for Parking', safety pins must be inserted in:

Both face-screen firing handles

Both seat-pan firing handles

The canopy emergency release lever (RN)

The canopy jettison firing unit sear (RAF).

1 General

(a) A Type 4HA(N) ejection seat is provided for each pilot. The seat has a ground level ejection capability provided that the aircraft's flight path is parallel to the ground and the speed is at least 90 knots. If the aircraft is descending, the minimum safe height for ejection is about 100 feet AGL per 1000 feet/minute rate of descent.

(b) Each seat is equipped with a Type B Mk 39A parachute, a Type R(N) personal survival pack (PSP) in the seat pan and an emergency oxygen cylinder mounted on the seat at the rear of the seat pan. The PSP is contained within the parachute harness and is secured to the life preserver by a lanyard. The seat pan height can be adjusted by a lever on the starboard side of the seat. Stowages for the safety pins are on the cockpit port and starboard walls.

Note: Aircraft operated by the RAF may be fitted with a Type B Mk 41 parachute and a Type R Mk 2 PSP. The significant difference is that the PSP is located outside the parachute harness and is secured to it by two quick-release connectors. During a parachute descent, the PSP can be released from the parachute harness and lowered on the lanyard which is attached to the life preserver. For further information on this AEA, refer to the Hunter T Mk 7 & 7A Aircrew Manual.

2 Harness

(a) The combined safety and parachute harness is fastened by a single quick-release fitting (QRF). The QRF must only be released when the intention is to leave the seat without the parachute. If the ejection seat fails to operate, or if automatic separation does not take place after ejection, the safety harness is released using the manual separation handle on the port side of the seat pan (para 5).

(b) The harness inertia reel can be locked by moving the go-forward control lever on the port side of the seat pan to the rear position. When the lever is moved fully forwards against spring pressure and allowed to return to the centre position, the inertia reel is operative permitting forward movement as required but locking the harness in the event of a sudden deceleration.

3 Leg Restraint Lines

The leg restraint lines are secured to the floor by shear

pins; the lines are routed through snubbing units on the front of the seat pan, through the D-rings of the restraint garters and are then plugged into locking units on the front of the seat pan. The snubbing units can be released by pulling a ring on each unit to allow the lines to be adjusted to permit sufficient leg movement to apply full rudder. When unstrapping, the locking units are released by operating the release lever on the starboard side of the seat pan. The locking units are released automatically prior to separating from the seat during a normal ejection sequence or by use of the manual separation handle (para 5) if a manual separation is necessary.

4 Normal Ejection Sequence

(a) Ejection is initiated by pulling either the face-screen firing handle or the seat-pan firing handle to the full extent. When either handle is pulled, the canopy is immediately jettisoned (Part 1, Chapter 7) and the sear is withdrawn from the ejection gun time-delay firing unit and, after a 0·5 second delay, the ejection gun cartridge is fired. As the seat leaves the aircraft, all leads are disconnected, the emergency oxygen is turned on, the leg restraint lines are pulled tight and the attachment pins shear. After a further 0·5 second, the drogue gun fires deploying two drogues to stabilise and retard the seat which falls in a near vertical attitude.

(b) The barostatic time-release unit (BTRU) delays parachute deployment until the seat is below 10,000 feet and has decelerated to a safe speed. When the BTRU operates, the safety harness, face-screen assembly, head-rest pad and leg restraint lines are released after a delay of 1·25 seconds. The drogue attachment scissor shackle opens to allow the drogues, which are attached to the parachute withdrawal line, to withdraw the parachute from its pack and complete the separation. The seat-pan firing handle remains with the seat and therefore, if it has been used, the grip must be released. If the face-screen firing handle has been used, it remains in the hands and should be discarded as soon as convenient.

5 Manual Separation

(a) If the seat fails to eject or automatic separation fails to take place after ejection, manual separation can be effected by pulling up the manual separation handle on the port side of the seat pan after releasing the thumb-operated catch. When the handle is pulled, the safety harness is released from the seat at its three attachment points and the leg restraint lines are released allowing the pilot to leave the seat with his parachute. The QRF must not be operated otherwise the parachute harness is released.

(b) To prevent immediate deployment of the parachute on leaving the seat, a guillotine unit operates to sever the parachute withdrawal line. The guillotine unit, on the port side of the seat adjacent to the drogue gun, is fired when the sear is withdrawn by a static line attached to the rear of the parachute pack. After separation, the parachute is deployed by pulling the ripcord handle. During a normal automatic separation, the parachute withdrawal line is pulled out of the guillotine unit by the drogues before the guillotine operates.

6 Restraint Apron

When the aircraft is being flown solo, a restraint apron which is normally stowed in a container on the starboard side of the nosewheel bay can be fitted to the unoccupied seat to secure the harness, PSP and parachute pack. The apron does not secure the leg restraint lines.

ANTI-G SUIT SYSTEM

7 Air Supply

The air supply for the anti-g suits is stored in four spherical containers which are charged to 2000 PSI on the ground. The air supply is filtered and the pressure is regulated by pressure reducing valves, one for each anti-g suit.

8 Controls

(a) The air supply is controlled by the ANTI-G — ON/OFF cock between the seats. With the cock selected on,

filtered air is supplied to the pressure reducing valves and then to two anti-g valves, one adjacent to the cock and one on the starboard shelf; the air is also supplied to the pressure gauge on the starboard shelf which shows the available pressure.

(b) The anti-g valves automatically control the pressure supplied to the associated anti-g suit according to the applied g. Each valve incorporates a test button; pressing the button inflates the associated suit provided that the cock is selected on. The button should be pressed gently to avoid the discomfort of very rapid inflation.

9 Connections

A hose with a quick-release coupling for connecting to the anti-g suit is on the port side of each seat. When the aircraft is being flown solo, the hose of the unoccupied seat is connected to a blanking socket on the port side of the seat pan. On ejection, the hose is automatically disconnected from the aircraft; the quick-release coupling disconnects during separation.

OXYGEN SYSTEM

10 General

(a) Oxygen is carried in four Mk 5D cylinders. A Mk 17E or 17F demand regulator on the centre panel and another on the starboard shelf control the supply to each pilot. A contents gauge above the centre panel regulator is calibrated in fractions of full contents and gives an indication of pressure in the cylinders.

(b) The oxygen mask is connected into the system by an inlet warning connector, which permits easy breathing only when fully connected. Warning of hose disconnection is given by increased resistance to inhalation.

11 Regulators

(a) Each regulator has an ON/OFF valve which controls

the flow of oxygen, an air inlet NORMAL/100% OXYGEN switch, an EMERGENCY 3-position switch and a magnetic indicator which shows black when oxygen is not being used or when electrical power is not available and a vertical white line when oxygen is being demanded. A duplicate indicator for the instructor is on the starboard instrument panel.

(b) When the on/off valve is on and the inlet switch is at NORMAL, an air/oxygen mixture is fed to the pilot's mask, up to 30,000 feet cabin altitude at which height 100% oxygen is automatically delivered. When the inlet switch is at 100% OXYGEN, no air is added, irrespective of the altitude. Except in emergency, NORMAL should always be used. The emergency switch when moved right or left, admits oxygen under greater pressure.

(c) The mask can be tested before flight by firmly pressing in the emergency switch when in the central position. Oxygen is then supplied under pressure; the firmer the switch is pressed the greater the pressure (up to 5 times that obtained with the switch in either side position). The mask can then be adjusted until there are no leaks.

(d) To check for leaks in the system from the regulator to the mask, deflect the emergency switch; the flow magnetic indicator should show black when the breath is held.

(e) The regulator pressure gauge measures the pressure between the cylinders and the regulator and should normally read between 200 and 400 PSI when the regulator is switched on.

Note: The maximum safe cabin altitude with a Mk 17 regulator is 50,000 feet. If the canopy is lost. the cabin altitude exceeds the aircraft altitude by up to 8000 feet. For this reason the maximum safe operating altitude is 42,000 feet.

12 Emergency Oxygen

(a) Manual Operation. If the main oxygen supply fails, the supply from the emergency oxygen cylinder, which is mounted on the seat at the rear of the seat pan, can be turned on by pulling the knob on the front of the seat pan. To prevent loss of emergency oxygen into the main system, the mask hose should be disconnected from the main supply hose. The emergency oxygen supply lasts

from 8 to 10 minutes; the descent to 10,000 feet cabin altitude must, therefore, be completed within this time. When the cylinder is empty, breathing becomes difficult and the mask should be slackened or removed.

(b) Operation on Ejection. The main supply hose is automatically disconnected and the emergency oxygen supply turned on when the seat leaves the aircraft. When separation from the seat takes place, the cylinder remains with the seat and the emergency oxygen tube is automatically disconnected. After separation, the inlet warning connector on the mask hose makes breathing in difficult; to overcome this difficulty, and always when descending into water, the mask should be removed.

(c) Safety Pin. The cock on the emergency oxygen cylinder is provided with a safety pin to prevent inadvertent operation on the ground; it must be removed before flight.

NORMAL USE OF THE AEA

13 Before Strapping In

The AEA checks are covered in the **Pre-External Checks** and the **Cockpit Checks** given in the Flight Reference Cards. The checks for the unoccupied seat, if applicable, are covered in the **Aircraft Being Flown Solo Checks.**

Note: If groundcrew are not available, the face-screen firing handle safety pin and the canopy emergency release lever safety pin must be removed and stowed before strapping in.

14 Strapping-In Procedure

(a) Adjust the seat height to bring the head central against the headrest cushion.

(b) Connect the PSP lanyard to the life preserver, ensuring that the lanyard passes outside the left leg.

(c) Pass the left leg-restraint line through the right leg garter D-ring and plug it into the left locking unit. Pass the right leg restraint line through the left leg garter

D-ring, ensuring that it does not pass through the loop formed by the left line, and plug it into the right locking unit. Pull sharply on each line to ensure that it is securely locked. Adjust the leg-restraint lines in the snubbing units to permit sufficient leg movement to apply full rudder.

(d) Connect the anti-g suit hose to the anti-g air supply hose.

(e) Adjust the back pad and lumbar cushion to the most comfortable position with the body as far back as possible on the PSP.

(f) Bring the harness waistbelt across the body, position the QRF centrally and check that it is locked. Bring the leg loops and negative-g strap up between the legs, ensuring that they do not pass through the seat pan firing handle. Pass the lap straps through the appropriate leg loops and then through the appropriate loops in the negative-g strap Y-piece and insert the lugs in the QRF. Position the loops of the negative-g strap over the lap strap lugs. Tighten the lap straps and negative-g strap.

(g) Bring down the shoulder straps and insert the lugs in the QRF. Ensure that the shoulder straps pass under the folds of the life preserver stole. Tighten the shoulder straps but do not over-tighten as this may result in a poor posture for ejection. Check the operation of the go-forward lever.

(h) Put on the helmet, fasten the chin strap and fit the oxygen mask. Connect the mask hose to the main supply hose. Bring the emergency oxygen tube under the right shoulder strap and connect it to the mask hose. Connect the mask hose clip to the D-ring on the life preserver.

(i) Connect the mic/tel lead.

(j) Check that the face-screen firing handle can be reached with both hands together.

(k) Remove and stow the seat-pan firing handle safety pin. Have the canopy emergency release lever safety pin and face-screen firing handle safety pin removed by the groundcrew and stow. Ensure that all safety pin stowages are full.

15 Normal Exit Procedure

(a) Fit the seat-pan firing handle safety pin and have the face-screen firing handle safety pin and canopy emergency release lever safety pin fitted by the groundcrew; if groundcrew are not available, fit the last two pins after unstrapping.

(b) Disconnect the main oxygen hose and emergency tube from the mask hose.

(c) Operate the QRF to release the harness and then lock the QRF.

(d) Free the leg restraint lines using the lever on the starboard side of the seat pan.

(e) Disconnect the PSP lanyard.

(f) Disconnect and stow the anti-g hose.

(g) Disconnect the mic/tel lead.

16 Forced Landing

(a) If it is necessary to make a forced landing, the following actions should be taken before landing:

(i) Disconnect the PSP lanyard.

(ii) Disconnect the emergency oxygen tube when below 10,000 feet.

(iii) Disconnect the anti-g hose.

(iv) Free the leg restraint lines.

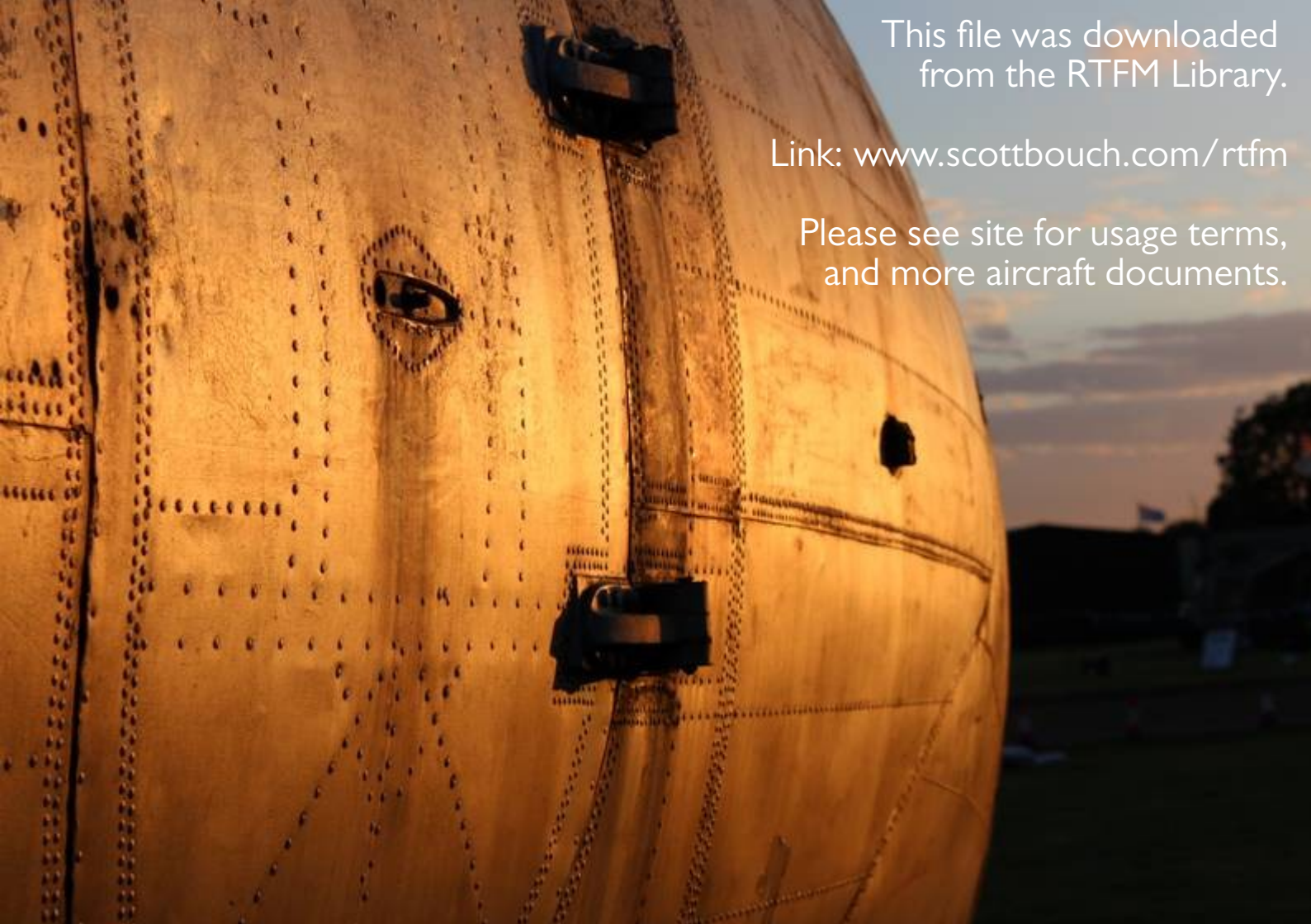
(v) Lean back and lock the harness; retighten the straps as necessary.

WARNING: These actions should not be taken if there is any possibility that the ejection seat might be used.

(b) After landing, disconnect the main oxygen hose, operate the QRF to release the harness and leave the aircraft as soon as possible. After a reasonable time, if there are no signs of fire, return and make the aircraft 'safe for parking'.

17 Abandoning and Ditching

The abandoning and ditching procedures are given in Part 4, Chapter 3.



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