Ministry of Defence

# Defence Standard 00-970 Part 13

**Issue 14** **Date:** **28 August 2020**

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# Certification Specifications for Airworthiness

# Part 13: MILITARY COMMON FIT EQUIPMENT

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# Section 1
# Foreword

**Defence Standard Structure**

**Section 1** (Generated by the StanMIS toolset)

- Revision Note
- Historical Record
- Warning
- Standard Clauses

**Section 2** (Technical information provided by Subject Matter Expert)

- Title
- Introduction (optional)
- Table of Contents
- Scope
- Technical Information to include Tables and Figures
- Annexes (as required)

**Section 3** (Generated by StanMIS toolset)

- Normative References
- Definitions
- Abbreviation

## REVISION NOTE

Up-issue to record changes to Parts 0, 1, 5, 7, 11 and 13 as a result of the Def Stan 00-970 Transformation programme, authorised changes identified by the regulated community and changes resulting from EASA CS amendments. Significant review and update of normative and informative references.

### HISTORICAL RECORD

This standard supersedes the following:

Defence Standard 00-970 part 13 Issue 13 dated September 2017
Defence Standard 00-970 Part 13 Issue 12 dated 19 September 2016
Defence Standard 00-970 Part 13 Issue 11 dated 13 July 2015
Defence Standard 00-970 Part 13 Issue 10 dated 30 January 2015
Defence Standard 00-970 Part 13 Issue 9 dated 11 July 2014
Defence Standard 00-970 Part 13 Issue 8 dated 10 January 2014
Defence Standard 00-970 Part 13 Issue 7 dated 05 July 2013
Defence Standard 00-970 Part 13 Issue 6 dated 07 January 2013
Defence Standard 00-970 Part 13 Issue 5 dated 06 July 2012
Defence Standard 00-970 Part 13 Issue 4 dated 31 October 2011
Defence Standard 00-970 Part 13 Issue 3 dated 31 January 2011
Defence Standard 00-970 Part 13 Issue 2 dated 15 January 2010
Defence Standard 00-970 Part 13 Issue 1 dated 12 December 2007

### WARNING

The Ministry of Defence (MOD), like its contractors, is subject to both United Kingdom and European laws regarding Health and Safety at Work. Many Defence Standards set out processes and procedures that could be injurious to health if adequate precautions are not taken. Adherence to those processes and procedures in no way absolves users from complying with legal requirements relating to Health and Safety at Work.

## STANDARD CLAUSES

a) This standard has been published on behalf of the Ministry of Defence (MOD) by UK Defence Standardization (DStan).

b) This standard has been reached following broad consensus amongst the authorities concerned with its use and is intended to be used whenever relevant in all future designs, contracts, orders etc. and whenever

practicable by amendment to those already in existence. If any difficulty arises which prevents application of the Defence Standard, DStan shall be informed so that a remedy may be sought.

c) Please address any enquiries regarding the use of this standard in relation to an invitation to tender or to a contract in which it is incorporated, to the responsible technical or supervising authority named in the invitation to tender or contract.

d) Compliance with this Defence Standard shall not in itself relieve any person from any legal obligations imposed upon them.

e) This standard has been devised solely for the use of the MOD and its contractors in the execution of contracts for the MOD. To the extent permitted by law, the MOD hereby excludes all liability whatsoever and howsoever arising (including, but without limitation, liability resulting from negligence) for any loss or damage however caused when the standard is used for any other purpose.

# SECTION 2

## CERTIFICATION SPECIFICATIONS FOR AIRWORTHINESS

## PART 13 – MILITARY COMMON FIT EQUIPMENT

### 2.0.1 PREFACE

There are no applicable EASA Certification Specifications.

### 2.0.2 Changes incorporated in this issue

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## 2.1 GENERAL REQUIREMENTS



## 2.2 COMMON FIT EQUIPMENT

## 2.1 GENERAL REQUIREMENTS

### 2.1.1 INTRODUCTION

**2.1.1.1** This Part of the Defence Standard has been issued to provide requirements and guidance for the certification of UK Military Air Systems for operation in all classes of airspace.

**2.1.1.2** This document shall be used as described in Def Stan 00-970 Part 0 - Procedures for Use, Guidance and Definitions.

### 2.1.2 SCOPE

**Note 1** Where a CS makes reference to 'the Agency', this should be considered to mean the certifying authority.

## 2.2 Common Fit Equipment

| Requirement | Compliance | Guidance |
|---|---|---|
| Air-to-Air Refuelling | | |
| Air-to-Air Refuelling (AAR) | | |
| UK13.1.1.1<br>Safe AAR shall be demonstrated throughout the full AAR operational flight envelope. | INTENTIONALLY BLANK | a. See STANAG 7207.<br>b. See STANAG 3447 for drogue systems.<br>c. See STANAG 7191 for boom systems.<br>d. The AAR operational flight envelope includes extension, retraction and jettison |
| AAR - Air System Centre of Gravity (CofG) | | |
| UK13.1.2.1<br>The CofG of both the Tanker and the Receiver Air Systems shall remain within authorised limits before, during and after transfer of fuel. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| AAR - Fuel Transfer | | |
| UK13.1.3.1<br>a. The system shall be designed to transfer fuel without damage to the fuel system or tanks in either the Tanker or Receiver Air Systems.<br>b. The refuelling pressure shall be capable of being regulated at all Receiver Air System delivery flow-rates. | Compliance should be in accordance with:<br>a. STANAG 3447 for drogue systems.<br>b. STANAG 7191 for boom systems. | INTENTIONALLY BLANK |
| AAR - Receiver Air System Controls and Indications | | |
| UK13.1.4.1<br>AAR Receiver Air Systems shall have the following controls and indications (as applicable to the type of system):<br>a. Controls:<br>(1) Air refuel selector;<br>(2) Reset button;<br>(3) Disconnect button;<br>(4) Refuel valve control;<br>(5) Probe position; | a. Air to Air refuelling controls which are required to be operated by the flight crew should be located with the main fuel system controls.<br>b. Unless otherwise specified, fuel amount transferred should be measured in kg and the fuel flow indicator gauged in kg/min.<br>c. Opening of the refuelling valves in the Receiver should be selected by the crew of the Receiver Air System. | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
|---|---|---|
| (6) Probe lighting controls.<br>b. Indications:<br>(1) Tanks full indication;<br>(2) Disconnect indication (Master caution);<br>(3) Probe position indication. | | |
| UK13.1.4.2<br>When night refuelling is specified, it shall be possible to illuminate the probe and the drogue and to floodlight the wings of the Tanker Air System, so as to provide a datum for the pilot of the Receiver Air System. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| AAR - Tanker Air System Controls and Indications | | |
| UK13.1.5.1<br>For Air-to-Air Refuelling (AAR), Tanker Air Systems shall have the following controls and indications (as applicable to the type of system):<br>a. Controls:<br>(1) ON/OFF master switch<br>(2) Signal light brightness;<br>(3) Fuel valve control;<br>(4) Emergency signal control;<br>(5) Hose jettison control; and<br>(6) Hose trail and rewind control.<br>b. Indications (as applicable to the type of system):<br>(1) Fuel flow indicator (ie when fuel is flowing and the rate of flow);<br>(2) Fuel available for transfer (ie the amount of fuel available (in kgs));<br>(3) Fuel transferred (ie the amount of fuel (in kgs) transferred to the Receiver Air System);<br>(4) Fuel valve position;<br>(5) Signal repeater indicators;<br>(6) Hose stowed indicator;<br>(7) Hose position or movement indicator (including the length of the hose that is trailing (for centre-line units));<br>(8) Hose pressure; and<br>(9) Drogue at full trail and ready for engagement. | a. Air to Air refuelling controls which are required to be operated by the flight crew should be located with the main fuel system controls.<br>b. The fuel contents available for transfer may be assessed by reference to existing indicators or by provision of additional indicators. | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| AAR - Residual Fuel | | |
| UK13.1.6.1<br>No fuel shall be left in the refuelling pipelines after completion of the operation, if it could constitute a fire hazard. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| AAR - Static Discharge | | |
| UK13.1.7.1<br>Electrical connection (to discharge static) shall be established between the Tanker and Receiver Air Systems before fuel is transferred. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| AAR - Fuel Leakage | | |
| UK13.1.8.1<br>There shall be:<br>a. No hazardous leakage when the Receiver Air System makes contact.<br>b. No leakage whilst in contact.<br>c. No hazardous leakage on disconnect; this shall apply under normal or emergency breakaway conditions. | INTENTIONALLY BLANK | See STANAG 7191 for boom systems. |
| Drogue Systems | | |
| AAR - Fuel Hose and Probe | | |
| UK13.1.9.1.1<br>a. The accelerating capability of the hose drum unit shall be such that the hose will not whip when the Receiver Air System makes contact at any closing speed up to 5 kts.<br>b. The probe shall be provided with:<br>(1) A weak link, so that the nozzle will break away in the event of excessive loads occurring due to instability of the hose or of failure of the nozzle and coupling to release under normal operating conditions; | INTENTIONALLY BLANK | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| (2) A non-return valve so that in the event of such breakage, fuel spillage will not occur. | | |
| AAR - Fuel Transfer Hose Marking | | |
| UK13.1.9.2.1<br>The 'root end' length of the hose, which it is necessary to wind in after engagement before fuel transfer can be initiated, shall be marked so as to be clearly distinguishable to the Receiver pilot. | INTENTIONALLY BLANK | See STANAG 7207. |
| AAR - Signal Lights | | |
| UK13.1.9.3.1<br>A system of red, amber and green signal lights shall be provided at the following positions in the Tanker:<br>a. On the control panel from which the refuelling operation is controlled; and<br>b. Externally in a position readily visible to the pilot, or appropriate crewmember, of the Receiver. | a. The lights should operate in the following order:<br>(1) Red, when the master switch is switched on to start the refuelling operation;<br>(2) Amber, when the hose has reached the full trail position;<br>(3) Green, when successful contact has been made and partial wind-in of the hose under the thrust of the Receiver's probe has opened the valves, permitting fuel flow;<br>(4) Amber, when fuel flow ceases; and<br>(5) Red, when winding in of the hose has started.<br>b. It should be possible, at any stage, to flash the red lamps to warn the Receiver pilot to disengage or stand off. | See STANAG 7215 |
| UK13.1.9.3.2<br>When night refuelling is specified, it shall be possible to illuminate the probe and the drogue and to floodlight the wings of the Tanker Air System, so as to provide a datum for the pilot of the Receiver Air System. | INTENTIONALLY BLANK | INTNTIONALLY BLANK |
| Arresting Hooks | | |
| Arresting Hook Design Loads | | |
| UK13.2.1.1 | a. The Normal Axial Design Hookload should be the greatest hookload arising under conditions where the | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| The hook shall be designed to both Normal and Maximum Axial Design Hookloads. | Air System mass and speed are within normal limits. No more than minor superficial damage to the Air System should be acceptable, even if the entry is at maximum off-centre distance, which is to be taken as 12 m.<br>b. The Maximum Axial Design Hookload should be the greatest hookload arising in high speed or high mass cases where some structural damage to removable parts of the arresting hook and its suspension system is acceptable and more severe superficial damage to the Air System is expected. Those removable parts should have an ultimate factor of not less than 1.0 under the Maximum Axial Design Hookload. | |
| UK13.2.1.2<br>The resultant Air System structural loads shall be determined from the Normal and Maximum Axial Design Hookloads. | Vertical and lateral components of the Design Hookloads should be determined by applying:<br>a. The Normal or Maximum Axial Design Hookload (as appropriate) at any angle within a cone of 10°, whose axis is the intersection of the longitudinal vertical plane through the Air System CofG and the plane containing both the hook pivot point and the runway edge sheaves and whose apex is at the hook pivot point;<br>b. 60% of the Normal or Maximum Axial Design Hookloads (as appropriate) at any angle within a cone of 20° with the same axis and apex. | INTENTIONALLY BLANK |
| Arresting Hook Suspension System Factors of Safety | | |
| UK13.2.2.1<br>The down stop shall have proof and ultimate factors of not less than 1.5 and 2.0 respectively on the maximum dynamic down load. | INTENTIONALLY BLANK | The maximum dynamic download can be introduced by releasing the hook with the Air System jacked up to allow full movement of the hook suspension system. |
| UK13.2.2.2<br>With the hook in its stowed position, all attachments shall have proof and ultimate factors of not less than 1.5 and 2.0 respectively on the maximum loads arising from the combination of any flight envelope load with | INTENTIONALLY BLANK | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| any pre-stressing load which may be present in the suspension system. | | |
| Arresting Hook Suspension Arm Design | | |
| UK13.2.3.1<br>The length of the arresting hook suspension arm shall be adequate to provide for engagements at all attitudes which could arise during an arrest. | Compliance should be shown:<br>a. At any time during normal take-off;<br>b. During heavy braking following a decision to abort a take-off;<br>c. At any time during normal landing; and<br>d. Following a heavy landing with maximum nose-down pitch. | Note: All these cases will normally be met if the hook suspension arm is long enough to provide for the case where the nose wheel tyre and oleo are fully compressed and the mainwheel tyres and oleos are fully extended, with the mainwheel just touching the runway. |
| UK13.2.3.2<br>The angle of the axis of the hook suspension arm to the ground (the trail angle) shall not exceed 80° in the most adverse attitude during landing or taxiing. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| Arresting Hook Suspension System Design | | |
| UK13.2.4.1<br>To prevent the arresting hook skipping over the arresting cable means shall be provided to prevent vertical instability of the arresting hook suspension system. | Compliance should be shown when:<br>a. Landing at maximum speed at maximum pitch and roll angles; and<br>b .Taxiing at any speed up to the maximum specified and at any possible pitch angle over a 12.5 mm step-up (chamfered at 45°) or 12.5 mm (90°) step-down in the landing surface at a point 15 m from the arresting wire. | INTENTIONALLY BLANK |
| UK13.2.4.2<br>Means shall be provided to prevent lateral instability of the arresting hook suspension systems. | Compliance should be shown when:<br>a. Landing at maximum speed at maximum pitch and roll angles; and<br>b .Taxiing at any speed up to the maximum specified and at any possible pitch angle over a 12.5 mm step-up (chamfered at 45°) or 12.5 mm (90°) step-down in the landing surface at a point 15 m from the arresting wire. | INTENTIONALLY BLANK |
| UK13.2.4.3<br>In the case of roll-back with the hook down and jammed against an obstruction, the hook suspension arm shall fail as a strut or break out before the Air | The rear face of the hook heel should be designed to minimise the possibility of jamming during roll-back against a 90° step of 12.5 mm depth. | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| System structure or any non-removable part sustains permanent deformation. | | |
| Arresting Hook Release Control | | |
| UK13.2.5.1<br>A ground safety lock with appropriate flag, capable of preventing inadvertent lowering of the hook from the stowed position. shall be provided on the hook or suspension arm. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| Arresting Hook Ground Safety Lock | | |
| UK13.2.6.1<br>A ground safety lock with appropriate flag, capable of preventing inadvertent lowering of the hook from the stowed position, shall be provided on the hook or suspension arm. | It should not be possible for the safety lock to damage the Air System in the event of inadvertent operation of the arresting hook system. | INTENTIONALLY BLANK |
| Towed Installations | | |
| Towing Categorisation | | |
| UK13.3.1.1 | INTENTIONALLY BLANK | a. Towing includes ground-launched and air-launched systems in the following categories:<br>(1) Anti-aircraft gunnery/missile practice;<br>(2) Anti-missile gunnery/missile practice;<br>(3) Combat decoy target deployment;<br>(4) Surveillance device deployment;<br>(5) Deception device deployment;<br>(6) Radar target deployment.<br>b. The towing of manned aircraft (ie gliders or sailplanes) is not covered by these requirements. |
| Operational Functions | | |
| UK13.3.2.1 | The trajectory adopted by the target/tow line during launch, tow, recovery and release of the towed | Consideration is to be given to the effects of jettisoning the equipment, frangible covers |

| Requirement | Compliance | Guidance |
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| The carriage, launch, tow, recovery, release or jettison of the towed equipment shall not affect the operational function or safety of the Air System. | equipment should not interfere with the function of the various Air System flying control surfaces. | and protective devices, including the impact of discarded pieces on the Air System structure. |
| UK13.3.3.1<br>The Air System shall have at least two options for terminating the towing operation prior to landing. The pilot shall be able to:<br>a. Recover any towed assembly;<br>b. Jettison the towed assembly; and<br>c. Where permitted, jettison the fixed installation. | In the event of the aircrew having to eject from the aircraft before being able to jettison the towed assembly by other means, jettison of the streamed tow should be activated by the ejection system. | INTENTIONALLY BLANK |
| Systems & Installations | | |
| Airborne Collision Avoidance Systems (ACAS) | | |
| UK13.4.1.1<br>All Air Systems shall be fitted with an Airborne Collision Avoidance System (ACAS). | a. An assessment should be carried out to determine the most appropriate system for the intended role, usage and operating environment of the Air System type.<br>b. The selected system should provide:<br>(1) Awareness to the crew of traffic in the vicinity of the aircraft which may contribute to the risk of Mid-Air Collision;<br>(2) Traffic Advisory: An indication given to the flight crew that a certain intruder aircraft is a potential collision threat;<br>(3) Resolution Advisories: An indication given to the flight crew recommending a manoeuvre or a manoeuvre restriction to avoid collision with an intruder aircraft. | INTENTIONALLY BLANK |
| Cockpit Voice Recorders (CVR) | | |
| UK13.4.2.1<br>All Air Systems shall be fitted with a Cockpit Voice Recorder (CVR). | a. The CVR should be compliant with European Organisation for Civil Aviation Equipment (EUROCAE) specification ED-112 (latest edition), Minimum Operational Performance Specification for Crash-Protected Airborne Recorder Systems. | It may be necessary to inhibit recording and, particularly, transmission of information which is often a feature of Commercial Off the Shelf (COTS) systems, but which may conflict with military operational requirements. |

| Requirement | Compliance | Guidance |
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| | b. The CVR should be compliant with European Technical Standard Order (ETSO) 123b (latest edition), Cockpit Voice Recorder.<br>c. The minimum duration of CVR recording should be greater than the maximum sortie duration of the Air System. | |
| Flight Data Recorders (FDR) | | |
| UK13.4.3.1<br>All Air Systems shall be fitted with a Flight Data Recorder (FDR). | a. The FDR should be compliant with European Organisation for Civil Aviation Equipment (EUROCAE) specification ED-112 (latest edition), Minimum Operational Performance Specification for Crash-Protected Airborne Recorder Systems.<br>b. The FDR should be compliant with European Technical Standard Order (ETSO) 124b (latest edition), Flight Data Recorder Systems.<br>b. The minimum duration of FDR recording should be greater than the maximum sortie duration of the Air System. | It may be necessary to inhibit recording and, particularly, transmission of information which is often a feature of Commercial Off the Shelf (COTS) systems, but which may conflict with military operational requirements. |
| UK13.4.3.2<br>The letters 'FDR' shall be painted on the external surface of the panel covering the structure to which the recording device is mounted. | The marking should be:<br>a. As close as practicable to the recorder location; and<br>b. As large and bright as practicable. | a. Where the recording device is mounted on a combat Air System, paint that changes colour on heating may be used.<br>b. Refer to DAP119A-0601 Series for operational colours and markings. |
| Ground Manoeuvring Illumination | | |
| UK13.4.4.1<br>While manoeuvring on the ground, all Air Systems shall be capable of illuminating any obstruction to the passage of the Air System. | Obstructions should be clearly visible at a distance of 4 lengths ahead of the Air System and at any point from dead ahead to 8 metres outside the extremities of the Air System. | INTENTIONALLY BLANK |
| Tail Lights (Aft Extremity Lights) | | |
| UK13.4.5.1<br>Shipborne Air Systems shall be fitted with aft extremity lights controlled by:<br>a. A FLASHING/OFF/STEADY switch; and<br>b. A BRIGHT/DIM switch. | Aft extremity lights should be fitted with a flashing white light(s):<br>a. Visible in all directions; and<br>b. Capable of independent operation. | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| OME Installations | | |
| OME Certification | | |
| UK13.5.1.1<br>All Part 13 systems shall comply with the appropriate certification requirements of the parent Air System, unless specified differently in this Part. | Maximum reaction loads due to the firing, release and jettison of stores should be addressed in the parent Air System load assessment. | INTENTIONALLY BLANK |
| OME Assurance | | |
| UK13.5.2.1<br>All OME shall be assured in accordance with Defence Ordnance Safety Regulator (DOSR) Regulations. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| Weapon System Installation | | |
| UK13.5.3.1<br>a. The position, operation and firing of any weapon system, in all combinations, shall not adversely affect the flight characteristics, operational function or safety of the Air System or other stores.<br>b. Fixed or free guns shall be located so that, throughout the full range of gun movement, there shall be no obstruction to the line of sight or restriction of the operator equipped with the clothing and equipment detailed in the Aircrew Equipment Assembly (AEA) Schedule appropriate to the particular Air System. | a. Compliance should be demonstrated by firing weapons at a range of conditions and configurations that establishes the Service Flight Envelope for the Air System.<br>b. The design of the weapon system installation should mitigate against the risk of damage or contamination to the Air System structure, systems or stores by:<br>(1) Ingestion of weapon efflux or wake, causing propulsion system surge or flameout;<br>(2) The effect of vibration;<br>(3) Blast or debris (including strikes from empty cartridge cases or complete rounds and links); and<br>(4) Self-damage. | For the installation of all weapon systems, consideration is to be given to the following:<br>a. Installation air conditioning;<br>b. Installation thermal environment;<br>c. Fuel tank vent lines. |
| Ammunition Container Installations | | |
| UK13.5.4.1<br>Ammunition container installations shall protect both the crew and Air System in the event of an explosion within the container. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
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| OME Control System | | |
| UK13.5.5.1<br>The OME Control System shall:<br>a. Incorporate progressive removal of safety layers to provide protection against human factors and technical failure;<br>b. Permit the OME to be made safe after having been selected live;<br>c. Prevent arming of the OME before release is irrevocable; and<br>d. Prevent the arming, release or jettison of the OME when the aircraft is on the ground.<br>e. Provide a visible indication to the groundcrew the OME System is safe. This indication should be visible from a safe position. | a. In addition to the operation of the trigger, a minimum of two crew-controlled layers of safety should be required (eg Master Arm Safety Switch (MASS) and Late Arm). At least one should be implemented solely in hardware.<br>b. If the second switch is software controlled, the software should be developed in accordance with Def Stan 00-055 (latest edition).<br>c. For rotary switches, a 'gate' system should be used, so that it is not possible to select LIVE without a positive first action to allow passage through the 'gate'. Detent indexing should be provided at each selectable position.<br>d. The second break (sometimes called the Late Arm Switch) should be positioned so that it can be closed during the final stages of an attack to minimise the consequences of a short-circuit fault across the release switch.<br>e. Where more than one position of the hardware break control is required to energise OME EWIS, the fuzing, arming, firing, release and jettison circuits should not be made live until the control position furthest from SAFE is reached.<br>f. For highly autonomous Remotely Piloted Air Systems, an equivalent level of protection against inadvertent/accidental operation should be provided as that provided through the use of guarded hardware switches on manned aircraft. | In the auto mode, the release switch/button normally acts as an enabling device or commit button, thereby allowing the OME control system to initiate release pulses. If at any time this switch is opened, store release is interrupted. |
| OME Control Connections - Safety | | |
| UK13.5.6.1<br>Installation of connections between Air System and stores shall ensure that:<br>a. The risk of incorrect mechanical or electrical connection is prevented; | INTENTIONALLY BLANK | Connections typically include:<br>a. Static lines;<br>b. Umbilicals;<br>c. Leads electrical fuze arming (LEFAs);<br>d. Cable assemblies fuze arming (CAFAs);<br>e. Shear wire assemblies; and |

| Requirement | Compliance | Guidance |
|---|---|---|
| b. During carriage and after release or jettison of the store:<br>(1) Failure to make any connection properly shall not create a situation where damage to the Air System can occur;<br>(2) Connections cannot become entangled with the store or the lines to other stores or the Air System. | | f. Lanyards. |
| Stores - Arming initiation | | |
| UK13.5.7.1<br>Arming initiation of the store shall not be possible until separation from the release unit or launcher is irrevocable. | INTENTIONALLY BLANK | Note: The store may still be connected to the Air System. Refer to UK13.5.6 for a list of connectors. |
| Stores - Automatic Release | | |
| UK13.5.8.1<br>Automatic release of stores shall be carried out in a predetermined order to ensure that no hazardous asymmetric condition occurs. | a. The pilot should not have to intervene until after the attack manoeuvre has been completed and the Air System has recovered to a safe height and speed.<br>b. The system should automatically take into account the possibility of a failure to release a store. | INTENTIONALLY BLANK |
| Stores - Status Indication | | |
| UK13.5.9.1<br>An indication shall be provided to the aircrew if any of the stores selected:<br>a. Cannot be released, jettisoned or launched; or<br>b. Does not release, jettison or launch. | The control system should keep count of stores loaded, expended and of failures to release, jettison or launch. | INTENTIONALLY BLANK |
| Stores - Release Units | | |
| UK13.5.10.1<br>a. The release unit shall:<br>(1) Satisfy the requirements of STANAGs 3441 and 3558 (and STANAG 3605, where applicable) with respect to the interface between the release unit and the store; | Activation of the release unit mechanism should:<br>a. Break the electrical release circuits;<br>b. Provide 'store on station' information, as required; and | Note: Release units include:<br>a. Multi-stores carriers;<br>b. Specialised carriers;<br>c. Adaptors;<br>d. Launchers. |

| Requirement | Compliance | Guidance |
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| (2) Be equipped with a mechanical ground safety lock, and it shall not be possible to apply this lock unless the release unit is in the locked condition.<br>b. It shall not be possible to remove the ground safety lock following:<br>(1) Inadvertent actuation of the ejector release unit (ERU) or pneumatic release unit (PRU), until the gas pressure has fallen to a safe level;<br>(2) Inadvertent release of the hook mechanism actuators of an electro-mechanical release unit (EMRU), until the actuators have been reset to the cocked position. | c. When an ERU or PRU, be provided with a means for controlling the ejection and reaction loads. | |
| UK13.5.10.2<br>It shall be possible to lock and unlock a release unit manually on the ground. | a. The operating mechanisms of release units should be so designed that a deliberate action is required to lock or unlock them.<br>b. Visual indication should be provided that the release unit linkage is correctly locked. | INTENTIONALLY BLANK |
| Stores Release - Weapon Bay Doors (WBD) | | |
| UK13.5.11.1<br>Release or jettison of internally-carried stores shall not be possible until the WBD are fully open. | a. The weapon release sequence should include the opening and closing of the WBD.<br>b. Automatic operation of the WBD should be inhibited until the selection of 'Late Arm'.<br>c. Manual operation of the WBD should be available in the event of failure to release or launch.<br>d. When two systems are employed to open the WBD, power for each system should be from an independent source.<br>e. Spring-operated doors should not be used. | INTENTIONALLY BLANK |
| Stores - Safe Jettison | | |
| UK13.5.12.1<br>Provision shall be made for:<br>a. Emergency Jettison; and<br>b. Selective Jettison. | a. Selective jettison should initiate independent jettison of all jettisonable armament and stores.<br>b. Emergency jettison should initiate jettison of all jettisonable armament and stores in a single jettison sequence. | INTENTIONALLY BLANK |

| Requirement | Compliance | Guidance |
|---|---|---|
| | The initiation of jettison should be as simple as possible and involve the minimum number of control actions on the part of the aircrew.<br>c. The jettison control(s) should be independent of the normal weapon release control(s).<br>d. Where a safe order of jettison is required, this should be predetermined and automatic.<br>e. Where relevant, the operation of WBD should be automatic.<br>f. Emergency Jettison should:<br>(1) Be implemented by high-integrity electronic hardware that meets the requirements of Def Stan 00-056 (latest edition).<br>(2) Always be under the control of the pilot/operator, except for Air Systems where control resides with the Air System management system.<br>(3) Not hazard the Air System. | |
| Weapon Bay Doors (WBD) | | |
| UK13.5.13.1<br>Means shall be provided for operating the WBD in flight. | a. WBD should be operable in-flight without weapon release.<br>b. A single failure should not prevent the WBD from operating. | INTENTIONALLY BLANK |
| Weapon Firing Position | | |
| UK13.5.14.1<br>In cases where a store or free gun is moved from a flight carriage position to a firing position, firing shall be inhibited until the weapon is correctly positioned. | INTENTIONALLY BLANK | INTENTIONALLY BLANK |
| Gun Safety | | |
| UK13.5.15.1<br>Each gun shall have a visible indication to show that it has been inhibited. | The visible indication should be in addition to requirements of the hardware safety break at UK13.5.5. | INTENTIONALLY BLANK |
| OME EWIS | | |

| Requirement | Compliance | Guidance |
|---|---|---|
| UK13.5.16.1<br>OME EWIS shall be:<br>a. Uniquely identified;<br>b. Protected from accidental and environmental damage. | OME EWIS installations should be common for all Air Systems of the same type. | INTENTIONALLY BLANK |
| OME EWIS Segregation | | |
| UK13.5.17.1<br>OME EWIS shall be segregated from all other services. | a. OME EWIS should:<br>(1) Use separate connectors and wiring looms;<br>(2) Be segregated from EWIS carrying standing voltages.<br>b. OME initiation lines should not occupy connections adjacent to pins or sockets carrying standing voltages. | Standing voltages include both those that are present throughout the flight, and those which are switched on at some point before release or firing is intended. |
| OME EWIS - Cable Splices | | |
| UK13.5.18.1<br>Cable splices shall not be used in OME EWIS. | INTENTIONALLY BLANK | Refer to SAE Std AS50881 (latest edition). |
| OME Electrical Power Supplies | | |
| UK13.5.19.1<br>OME systems shall be immune to single point failures of the electrical power supply:<br>a. OME electrical safety shall not to be degraded by any form of load shedding or any other legitimate action.<br>b. The status of the OME electrical power supplies shall be clearly indicated to the crew.<br>c. The Emergency Jettison circuits shall operate correctly despite a complete failure of the normal generating system. | a. A failure mode analysis should be carried out to demonstrate the immunity of the system to single point failure.<br>b. A load analysis should be carried out to demonstrate the immunity of the Electrical Power Supplies to transients.<br>c. OME power supplies should be duplicated and separate from the main aircraft bus bars.<br>d. Each side of a duplicated circuit should have its own independent frame connections and both should be independent of the frame connections of other systems. | INTENTIONALLY BLANK |
| OME - Electromagnetic Interference (EMI) | | |
| UK13.5.20.1<br>EMI shall not initiate the release or stimulate generation of a valid signal of any kind in the OME installation or prevent normal operation of any OME function. | Compliance should be in accordance with Def Stan 59-114 (latest issue). | INTENTIONALLY BLANK |

# Section 3

Please refer to Def Stan 00-970 part 0 Issue 22 for the master list of Normative references, Informative references, Definitions and Acronyms.

Defence Standards are published by and obtainable from:

Defence Equipment and Support

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Kentigern House

65 Brown Street

GLASGOW

G2 8EX

**DStan Helpdesk**

Tel: +44 (0) 141 224 2531

Internet e-mail: enquiries@dstan.mod.uk

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