STANDARDS RELATED DOCUMENT

NATIONAL SRD – THE NETHERLANDS

June 2018

Published by Royal Netherlands Air Force
1. **Introduction.** The Royal Netherlands Air Force (RNLF) operates one tanker type: KDC-10 (Boom AAR). A new tanker type (A-330 MRTT, Boom and Probe/Droge AAR) is due to enter service from 2020. The RNLF complies with all ATP 3.3.4.2 procedures unless stated otherwise in this national SRD.

2. **Tanker Aircraft Type.**
   a. **KDC-10.** See Annex A for full details of the KDC-10.

3. **National AAR Clearance Process.** Requests for AAR clearances with RNLF tankers should be made IAW ATP 3.3.4.2 SRD-1 Guide to Obtaining Air-To-Air Refueling Clearances and Compatibility Certification. The format, content and addresses for a clearance request are at Annex B of this document, along with additional information on KDC-10 and RNLF receiver AAR clearances.

4. **AAR Arrangements.** Relevant bi-lateral or multi-lateral AAR Implementing Arrangements are to be in place between The Netherlands and the nation requiring AAR support. These arrangements will include conduct of operations, training and currency of aircrews, certification and testing of the tanker-receiver pair, logistics / fiscal issues and relevant legal / liability issues. See annex B for the NL AAR arrangements.

5. **Receiver Aircrew Qualification and Currency.** The RNLF complies with NATO SRD 2 Recommended Air-To-Air Refuelling (AAR) Aircrew Certification and Currency.
   a. Unless specifically agreed otherwise, before attempting to refuel from the KDC-10 RNLF tanker, foreign national aircrew must be receiver qualified within their own Air Force. Additionally, the receiver aircrew must have been briefed by one of the following:
      (1) A qualified and current RNLF KDC-10 tanker captain.
      (2) Receiver AAR instructor qualified, and current, to refuel from the RNLF KDC-10.

As a minimum, this briefing will include: closure limitations, lighting schemes, Boom procedures as applicable, possible difficulties and emergency actions. The briefing is to be given with the aid of the relevant RNLF Annexes of the ATP 3.3.4.2.
After initial qualification, receiver currency requirements for foreign national aircrew receiving from Dutch tanker include both of the following:

(1) AAR currency and qualifications in accordance with receiver national regulations, and;

(2) AAR mission in the preceding 6 months, including a minimum of 1 contact as a receiver (wet or dry).

c. Re-qualifying if AAR currency has lapsed to regain currency. If foreign national AAR currency has lapsed, a current and qualified instructor (who may be in another aircraft) must brief and monitor at least one re-qualifying flight, which must include a minimum of 1 contact (wet or dry).

d. RNLAF Boom Operators have a currency period of 45 days. 
Instructor Boom Operators have a currency period of 90 days.

e. Boom Operators do not have/need a separate night currency because of the quality of the KDC-10 Tanker Remote Vision System (TRVS) in combination with the external lighting.

f. Dutch boom operator’s uses synthetic training (BOT) to meet the different receiver class currencies.

6. AAR POCs.

a. POC for National SRD and Tanker/Receiver Clearances.

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P.O. Box 8762
4820 BB Breda
The Netherlands
Telephone: +31 76 544191
Mob: +31 6 83624343
Email: ajam.v.alphen@mindef.nl

b. POC for Technical Compatibility Assessment (TCA) and Certification.

Defense Material Organization (DMO)
Major S.W.D. Kusters
KROMHOUTKAZERNE
Herculeslaan 1
3584 AB Utrecht
The Netherlands
Telephone +31 6 53362400
Email: SWD.Kusters.01@mindef.nl, KDC10@mindef.nl
c. **POC for STAN/EVAL.**

   See POC for National SRD

**NOTE**

POC INFORMATION IS TO INCLUDE JOB TITLE, FULL POSTAL ADDRESS, TELEPHONE NUMBER AND EMAIL ADDRESS. AN OFFICE EMAIL ADDRESS IS PREFERRED.

7. **National SRD Last Updated: June 2018.** Please check the date of this SRD and check it against the national SRD posted at the following website to ensure this is the most current national SRD: [http://www.japcc.org/aar](http://www.japcc.org/aar)

8. **National Reservations.**

   a. **KDC-10 AAR Precautions.** HF radio, including data link transmissions shall not be made within ½ NM of KDC-10 tankers. Additionally, hot armament safe checks and forward radar/emitters to OFF/STBY checks shall be made prior to AAR with KDC-10 tankers.

   b. **Practice Emergency Separations.** RNLAF tankers regularly conduct practice emergency separation for training purposes. Practice emergency separations are conducted under the following guidance using published ATP 3.3.4.2 breakaway procedures. The term “Breakaway” is an exclusive word solely reserved for the execution of that procedure. The following requirements apply:

      (1) Prior to accomplishment of a practice emergency separation, coordination between the tanker pilot, Boom Operator (BO) and the receiver pilot is mandatory. Coordination must include a briefing from the BO on when the separation will occur and who will give the command of execution. Positive response from the receiver pilot is required. Response from the tanker pilot to the BO may be given over interphone.

      (2) If the separation is to be initiated while the receiver is in contact with the boom, the receiver’s AAR system must be in the normal mode.

      (3) In some cases the receiver may move down and forward out of view of the BO’s camera system during a separation. In this situation the BO shall request the receiver to confirm well clear before advising the tanker captain that the receiver is well clear. If there is uncertainty of the receiver’s position or a lack of response, the tanker will continue with the separation maneuver and consider climbing until safe separation is confirmed.

9. **Multinational Simultaneous AAR and AT Matrix Structure and Contents.**
The Multinational Simultaneous AAR and AT Matrix list tanker assets along the left side and list various national and multinational combinations of AT missions conducted simultaneously with AAR missions. Each combination will be colour coded, as per the key below, depending on the presence of restrictions enforced by each nation for each tanker and circumstance.

Colour Key:

- **PERMITTED**
- **SUBJECT TO RESTRICTIONS** (Case-by-case basis)
- **NOT PERMITTED**
10. **SIMULTANEOUS EMPLOYMENT MATRIX FOR AAR PLATFORMS**

(Including Air Transport, Air-to-Air Refueling and Aeromedical evacuation only. Excluding ISR, C², EW, SOF and any weaponization).

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<td>Simultaneous AAR whilst carrying Cargo</td>
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<td>Simultaneous AAR whilst carrying Dangerous Goods (DG) Cargo</td>
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# LIST OF EFFECTIVE PAGES TO NATIONAL SRD-
## THE NETHERLANDS

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<td>LEP-1</td>
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1. **Introduction.** The RNLAF has 2 KDC-10 tankers in service. The KDC-10 is only equipped with an AAR boom and has a reverse fuel pumping capability.

2. **Receiver Types Certified.** Details of receiver technical clearances together with AAR speeds and altitudes are published in Annex B, Receiver Data/Clearance. In addition, Appendix B3 provides boom operators with receiver information essential to achieving safe AAR operations.

3. **AAR Equipment.** One centerline flyable boom, which is identical to the boom system of the USAF series KC-10 aircraft. Procedures for refuelling from the boom are identical to those used with the USAF KC-10 boom. The KDC-10 boom is controlled from a remote aerial refuelling operator (RARO) station using a closed circuit 5 camera 3-dimensional video system, rather than from a visible station as in the USAF KC-10. The cameras are located in a fairing just in front of the boom attachment. Prior to and during refuelling, a heading change may be required if sun or shadow adversely affect camera operation.

4. **AAR Boom System**
   a. **Description.** The boom is approximately 11 m (36 ft 9 in) long with an additional 7 m (22 ft) of telescoping inner fuel tube. When the boom is fully extended it has a total length of 58 ft 3 in. All KDC-10 booms are equipped with a Boom Interphone System which permits direct communication with suitably equipped receivers.

   b. **Basic Operation.** Procedures for refueling from the boom are identical to those used with the KC-135 boom; however, the boom has a more sophisticated control system which provides a number of additional operating facilities.

   (1) When ready to refuel, the boom is lowered from its stowed position and about 3.6 m (12 ft) of the retractable portion is extended by the boom operator.

   (2) When cleared, the receiver moves from a stabilized (zero rate of closure) astern position to a steady boom contact position.

   (3) Closure to contact will be slow and stable (approximately 1 foot per second) with the receiver stabilizing in the contact position.

   (4) When this is achieved, the boom operator flies the boom to the receiver aircraft’s receptacle and extends the boom to make contact.
Locking toggles in the receptacle operate to hold the boom nozzle in contact.

(5) The receiver then maintains its position within the boom operating envelope.

(6) The digital fly-by-wire control system has an Automatic Load Alleviation System (ALAS). The ALAS reduces and maintains constant radial forces on the nozzle and receptacle; this permits a larger AAR envelope without nozzle binding.

**WARNING**

THE RECEIVER WILL STABILISE IN THE ASTERN POSITION AND ATTAIN A ZERO RATE OF CLOSURE. IF THE RECEIVER FAILS TO ATTAIN STABILISED POSITION, OR IT BECOMES APPARENT THAT A CLOSURE OVERRUN WILL OCCUR, BREAKAWAY PROCEDURES WILL BE INITIATED. FAILURE TO DO SO COULD RESULT IN A MID-AIR COLLISION.

EXCESSIVE CLOSURE RATE COULD CAUSE THE TANKER TO DESCEND INTO THE PATH OF THE RECEIVER. THE TANKER PILOT MUST BE PREPARED TO DISCONNECT THE AUTOPILOT TO PREVENT ALTITUDE DEVIATIONS. INITIATE A BREAKAWAY AT THE FIRST INDICATION OF A CLOSURE OVERRUN.

**CAUTION**

BINDING OF THE BOOM NOZZLE IN THE RECEIVER’S RECEPTACLE IS POSSIBLE, EVEN WITH A DISCONNECT SIGNAL. WHILE NOZZLE BINDING CAN OCCUR IN MOST DISCONNECT POSITIONS, IT IS MOST LIKELY AT HIGH RECEIVER ROLL AND LOW BOOM ELEVATION. IF NOZZLE BINDING OCCURS OR IS SUSPECTED, NEUTRALISE BOOM FLIGHT CONTROL INPUTS. AVOID ABRUPT BOOM FLIGHT CONTROL INPUTS.

c. **Independent Disconnect System.** The boom has an Independent Disconnect System (IDS). In the event of the receptacle toggles failing to unlatch from the boom using the normal electrical signaling system, the IDS can be used. The IDS employs compressed air to retract the toggle latches on either side of the boom nozzle; this obviates the requirement for brute force disconnects.
d. **Boom Envelope.** The envelope is defined by automatic limit switches connected to the boom; the envelope permits a limited amount of fore and aft movement and some freedom of maneuver in the pitching, rolling and yawing planes. The envelope limits are set well within the mechanical limitations of the boom; therefore, provided the envelope limits are not approached too rapidly, the automatic disconnect will occur before the boom is damaged. The full boom envelope is illustrated in Appendix A3; however, the freedom of maneuver in the upper boom elevation is reduced for some receiver aircraft because of their receptacle characteristics.

e. **Failure of the Boom Flight Control System.** Should the boom fly-by-wire control system suffer certain failures, the boom operator may not be able to control the boom in one or more axis of movement; coordinated action between the boom operator and the receiver pilot will then be required to prevent the boom from striking the receiver. The receiver pilot must remain in contact and follow the boom operator’s instructions explicitly; the boom operator will direct the receiver to a safe disconnect position. This may be preceded by a period when the receiver pilot is required to maintain a stabilized in-contact position to allow the boom control surfaces to free stream to a neutral position. The safe position is defined as “the position during a partial or complete boom control system failure that it is safe for the boom operator or receiver to initiate a disconnect”. During one of these system failures, the boom operator will direct the receiver to this safe position, which is achieved when the receiver is approximately zero degrees roll and moving down and back.

f. **Normal Disconnect.** To make a normal disconnect, the receiver releases the receptacle toggles (this may also be effected remotely by the boom operator) and remains stabilized in the contact position until the boom operator confirms a disconnect has been achieved; the receiver then moves to the astern position.

g. **Brute Force Disconnect.** There are two types of brute force disconnect, inadvertent, and controlled tension (coordinated).

   (1) **Inadvertent Brute Force Disconnect.** An inadvertent brute force disconnect is defined as any unplanned disconnect which is the result of one of the following:

   (a) The receiver aircraft moves rapidly to the aft limit, causing mechanical tanker/receiver separation.

   (b) Boom pullout occurs at 38 degrees elevation or below.

   ![CAUTION]
FOLLOWING AN INADVERTENT BRUTE FORCE DISCONNECT, AAR WILL BE TERMINATED EXCEPT DURING FUEL EMERGENCIES OR WHEN CONTINUATION OF AAR IS DICTATED BY OPERATIONAL NECESSITY.

(2) Controlled Tension Brute Force Disconnect. A controlled tension brute force disconnect is defined as an intentional coordinated disconnect occurring above 38 degrees elevation, accomplished by gradual aft movement of the receiver aircraft (approximately 1 foot per second) until the boom is fully extended, and ending with a controlled tension boom pullout. Coordination between the receiver pilot and boom operator is required to ensure an as smooth as possible disconnect. Following a controlled tension disconnect, AAR may be continued with other receivers, provided the results of the following checks are satisfactory:

(a) Operational check of the boom for binding or uncontrollability.

(b) Test of the tanker signal coil.

CAUTION

A CONTROLLED TENSION BRUTE FORCE DISCONNECT WILL BE ACCOMPLISHED ONLY AS A LAST RESORT, AFTER ALL OTHER NORMAL AND EMERGENCY METHODS OF DISCONNECT HAVE FAILED.

AAR FOR THE RECEIVER THAT REQUIRED A CONTROLLED TENSION DISCONNECT WILL BE TERMINATED EXCEPT DURING FUEL EMERGENCIES OR WHEN CONTINUATION OF AAR IS DICTATED BY OPERATIONAL NECESSITY. IF THE RECEIVER REQUIRES FURTHER AAR, THE FOLLOWING ACTIONS MUST BE ACCOMPLISHED BEFORE ATTEMPTING ANOTHER CONTACT:

(c) Visual inspection of the receiver receptacle area and AAR boom.

(d) Operational check of the boom for binding or uncontrollability.

(e) Test of the tanker signal coil.

5. AAR Boom Lighting

a. Description. Pilot Director Lights (PDL) provide positioning information to receiver pilots during boom type AAR. The PDLs are located on the bottom of the fuselage, aft of the nose landing gear; they consist of 2
panels of lights. The left panel gives boom elevation information and the right panel gives boom telescoping information. Appendix A2, see page A1-3 and A1-5.

b. **Basic Operation.** The lights are controlled by movement of the boom in elevation and by the in and out movement of the telescoping portion. These lights provide positional trending information about the boom in relation to the boom operating envelope and command the direction of receiver movement required to bring the boom to the ideal refueling position.

c. **Receiver Actions**

(1) **Elevation.** At one end of the elevation panel is the illuminated letter U (for up); at the other end is the illuminated letter D (for down). Adjacent to the letters are red arrowheads. If a receiver is in contact with the boom near the upward elevation limit, the red arrowhead next to the D will be illuminated; this indicates a downward movement is required. As the receiver moves down, the red light extinguishes and a yellow arrowhead illuminates, indicating the boom is approaching the ideal elevation. When the ideal elevation is reached, the green light extinguishes and two parallel green bars illuminate.

(2) **Forward/Aft.** Forward/Aft position is verified using similar indications to those described above for the vertical position. The right-hand telescoping panel is similar in function, although the display is slightly different. The ends of the panel have the illuminated letters F and A (forward and aft). The position information and movement commands are given by illuminated horizontal bars with red leading into yellow, with the ideal position shown by two parallel green bars illuminating. The command indications are separated by illuminated vertical white bars to give contrast. The telescoping part of the boom is in colored segments, which duplicate PDL indications; at night these segments are illuminated by boom marker lights. Lateral position lights are not provided for roll positioning; however, a fluorescent yellow stripe on the undersurface of the tanker fuselage is provided for centerline reference.

(3) **Radio Silent Procedures.** During radio silence, the PDLs can be used to give positioning commands to direct a receiver into the boom contact position. A steady red PDL light commands a large movement in the direction indicated, and a flashing red light commands a small correction.

(4) **Failure of PDLs to Illuminate**

(a) **PDLs Fail to Illuminate.** When Making Contact. If the PDLs do not illuminate when a receiver makes contact, the receiver pilot
will inform the boom operator if AAR will continue. Subsequently, if refueling is continued, verbal corrections from the boom operator may be requested.

(b) **PDLs Fail during Contact.** If the PDLs go out during contact, the receiver is to initiate a disconnect and return to the astern position. If AAR is continued, verbal corrections from the boom operator may be requested.

(c) **Flashing PDLs.** Flashing PDLs and tanker lower strobe light on command a breakaway; the receiver will disconnect immediately and move back and down to clear the tanker.

(d) **Other Illumination.** During night AAR, the tail mounted floodlight (TMF), and the boom nozzle lights will also be used to illuminate the boom.

6. **Refuelling Altitude/Level and Speeds.** The boom AAR height band is sea level to 37,000 ft; speed range is 180 to 350 KIAS.

   a. Minimum: 180 KIAS from sea level to 20,000 ft. MSL and then linear to 0.88 MACH at 37,000 ft. MSL.

   b. Maximum: 350 KIAS or 0.88 MACH whichever is lower, up to a maximum altitude of 37,000 ft. MSL.

7. **Maximum Transferable Fuel.** Total fuel load is 110,993 kg (244,940 lb). Transferable fuel is dependent on sortie duration; about 71,810 kg (158,000 lb) is available for transfer during a 4 hr flight, assuming a fuel burn rate of 8170 kg/hr (18,000 lb/hr). (For standardization purposes use fuel density at 15ºC (59ºF))

8. **AAR Fuel transfer rate.** 2270 kg/min (5000 lb/min) through the boom.

9. **Regulated Fuel Pressure.** 3.5 bars ± 0.35 bar (50 ± 5 psi).

10. **Reverse AAR.** The KDC-10 has a reverse fuel pumping capability via the boom, receiver pump dependent.

11. **Fuel Types Available for AAR:**

    a. Primary/usual type of fuel is F34 (JP8) when operating from RNLAF airfields.

    b. Alternative fuels depend upon airfield of loading; tanker can accept F35 (JET A1), F44 (JP5).
12. **Lighting.** Aircraft lighting is identical to the USAF KC-10A with the exception of logo and floodlights. The aft edge of the wing-tips is equipped with logo lights, possible of illuminating the vertical fin if required; see Appendix A2.

   a. **Pilot Director Lights.** The PDLs have the same function and meaning as those fitted to the KC-10, see Appendix A2.

   b. **Receiver Aircraft Floodlights.** The receiver aircraft floodlights in the KDC-10 are used to illuminate the receiver aircraft during night refueling. To achieve near day performance on the KDC-10 video camera’s Tanker Remote Vision System, the floodlights are infrared and can hardly be seen by the human eye.

13. **Mark facilities.** The KDC-10 has the ability to change the flash pattern of the rendezvous lights. The KDC-10 can initiate a fuel dump to provide a mark. In response to a receiver request to “Mark”, the tanker can dump fuel and/or switch on High Intensity Lighting. If required, the tanker will dump fuel in 500 to 1000 pound increments until positive visual contact can be maintained. The KDC-10 is equipped with Link-16 which enhances location awareness to modern combat aircraft.

14. **RV aids.** The KDC-10 has the following radio, navigation and RV aids:

   a. VHF, UHF and HF radios.

   b. VOR, TACAN, INS and weather radar

   c. UDF, A/A TACAN (bearing and DME), ETCAS

   d. MIDS/Link-16 with MIDS Voice A.

15. **Fuel Load** (ISA, 10,000’ runway, 1,500’ MSL) – This data is not available due to the way performance is calculated for the KDC-10. Any approximation would be significantly in error and would impede the planning process rather than assist it.

16. **Fuel Load** (ISA + 10, 10,000’ runway, 1,500’ MSL) – This data is not available due to the way performance is calculated for the KDC-10. Any approximation would be significantly in error and would impede the planning process rather than assist it.

17. **Average Fuel Burn Rate** – 18,000 lbs/hr.

18. **Nominal Average Reserve** - 23,000 lbs.

19. **Dimensions.** The KDC-10 is 55 m (180 ft) long and has a wingspan of 50 m (165 ft). See appendix A1.
20. **Receiver Clearances.** Please see Figures B1-1 and B2-1 for receiver and tanker clearances and compatibility. (any limitations or restrictions to these clearances will be included in the tables) See Annex D, Appendix D1 Figure D1-1 for receiver and tanker clearances and compatibility. (any limitations or restrictions to these clearances will be included in the table)

21. **Limitations.** There are no provisions for deicing the air refuel boom during flight. Air refueling may be accomplished during icing conditions, however, a flight control check should be accomplished to determine boom stability and control effectiveness when ice forms on the boom or control surfaces. Additional ice buildup may reduce boom flight control effectiveness. Air refueling should be terminated except when continuance is dictated by operational necessity.

22. **Documentation.**

   a. CSTO NE 1C-10(K)A-1 Vol 1/ 2(KDC-10 Flight Manual)

   b. ATP 3.3.4.2
## APPENDIX A1 – KDC-10 DIMENSIONS

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### VERTICAL CLEARANCE / DIMENSION (FEET – INCHES)
APPENDIX A2 – KDC-10 EXTERIOR LIGHTING (2)
APPENDIX A3 – KDC-10 Boom Limits
APPENDIX A4 – KDC-10 – PILOT DIRECTOR LIGHTS
ILLUMINATION PROFILE

Boom Movement/PDL
Indications Schematic

Boom Markings

PDL

A1-5
June 2018
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THE NETHERLANDS

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ANNEX B TO NATIONAL SRD – THE NETHERLANDS
RECEIVER DATA/CLEARANCE

1. **Introduction.** This annex provides technical compatibility, clearances and important data essential for safe Boom/Receptacle operations with RNLAF tankers.

**NOTE**

IT IS THE RESPONSIBILITY OF NATIONS PERFORMING AAR WITH THE NETHERLANDS TO INFORM THE RNLAF OF ANY EVOLUTION OF THEIR RECEIVER AIRCRAFT WHICH MAY CHANGE THE AAR CAPABILITY (ADDITION OF ANTENNA, MODIFICATION OF FUEL SYSTEM AND/OR PROBE, PARTICULARITIES OF NEW TANKS, MODIFICATION OF FLIGHT CONTROLS LAW, ETC).

2. **RNLAF Tankers/Foreign Military Receivers Technical Clearance.** Confirmation that a technical compatibility assessment has been conducted and found to be satisfactory is published by the appropriate tanker technical authority and incorporated into Appendix E1 to this Annex. Additional clearances subject to compatibility tests can be obtained from RNLAF POC for TCA and Certification (see contact details at page 2, SRD the Netherlands).

3. **RNLAF Receivers/Foreign Military and Non Military Tankers Technical Clearance.** Confirmation that a technical compatibility assessment has been conducted and found to be satisfactory is published by the appropriate tanker technical authority in its own National SRD. The aim of Appendix E2 to this Annex is to list RNLAF Receiver technical clearance on foreign military and Non Military tankers in order to help RNLAF receiver pilot to identify the availability of a clearance before performing AAR operations.

4. **Introduction.** This annex provides technical compatibility, clearances and important data essential for safe Boom/Receptacle operations with RNLAF tankers.

5. **National AAR Clearance Process**

a. In order to have an assessment of a specific AAR technical compatibility and obtain an official clearance from the Dutch Military Aviation Authority (MAA-NLD) to refuel from the RNLAF tanker, foreign nation’s receiver operators need to submit a written request to the Royal Netherlands Air Force Command: Attention to Director of Operations. For Information: Head of Air Transport & Tanker Operations Branch.

August 2017
b. A formal request for an AAR Clearance could be tanker or receiver initiated.

c. The below information is an example of, but not limited to, what should be included in the formal request.

(1) AAR Clearance Category sought. (CAT1, CAT2, CAT3).

(2) Details of AAR MoU or AAR Implementing Arrangements between Nations.

(3) Estimated magnitude of support. Location and timeline of support required.

(4) Operational Mission Requirements, including preferred AAR envelope (e.g. day and/or night).

(5) Type of refuelling system involved. (Boom/receptacle).

(6) Type and mark of all aircraft requiring AAR. (Can be model IE F-16D, receiver flagged nation).

(7) Availability of Standardised Technical Data Sheet (STDS)

(8) POC for TCA (Technical Compatibility Assessment).

(9) Data on all receiver aircraft emitters (i.e. peak power, average power, gain and frequency band data for all receiver RF emitters). These are required for inadvertent HIRF and HERP effects on tanker systems and personnel. Note: Our clearance process requires us to assess/quantify risk if EME levels are above applicable KDC-10 thresholds.

(10) Flight test results/reports and POC.

(11) POC and authority for operational evaluation concerning training, currency and AAR operations.

(12) Authority for direct contact with receiver and tanker aircraft manufacturers, AR system manufacturers, OEM or others. (including limitations on data exchange)

(13) POC of receiver and tanker aircraft and AAR system manufacturers, OEM or others.

(14) Previous AAR clearances between the designated receiver and other tankers.

(15) Fuel type required.
d. Documents which might accelerate the clearance process are: confirmation by the Airworthiness Authority and/or the system design responsible, that receiver aircraft is equivalent to aircraft already possessing a TCA with USAF KC-10.

e. Nations, agencies or operational planning groups seeking access to AAR clearance certificates can contact the RNLAF POC for Technical Compatibility Assessment (TCA) and Certification.

f. **AAR Certification.** RNLAF POC for Technical Compatibility Assessment (TCA) and Certification assesses the technical and operational compatibility of the tanker-receiver pair using the process identified in ATP-3.3.4.2.-SRD-1 Guide to obtaining Air-to-Air Refuelling Clearances and Compatibility Certification. If flight testing is required, the RNLAF Flight Test Department will develop test plans and conduct flight testing. POC for TCA and Certification and the Flight Test Department assesses and recommends technical compatibility for the pairing using the relevant information from the Technical Compatibility Assessments and flight test reports from tanker - receiver testing. The MAA-NLD assesses and recommends operational compatibility for the pairing and approves the AAR Certificate for the tanker receiver pair which lists the relevant envelope and limitations of AAR operations. The Dutch SRD will contain updates to envelope and limitations, and pre-briefing is required to cover any temporary limitations that apply to AAR operations. Further information is available through the Dutch POC for National SRD and Tanker/Receiver Clearances.

g. A technical compatibility assessment for a receiver/tanker combination remains valid only when AAR related items on either platform are not modified. Items that affect AAR compatibility include, but are not limited to:

1. Physical changes to the area around the fuel on-take system
2. Modifications to the fuel system (e.g., new fuel pumps, external fuel tanks etc)
3. Upgrades to a platform's flight control system or (for fly by wire aircraft) control laws
4. Any modification that amends the data that was previously submitted in the Technical Data Survey that informed the original assessment
5. For tankers, the AAR associated markings and lighting.
NOTE

WHENEVER A PLATFORM (TANKER OR RECEIVER) IS MODIFIED SUCH THAT IT MAY IMPACT AAR OPERATIONS, THE TECHNICAL COMPATIBILITY OF THE TANKER/RECEIVER COMBINATION MUST BE REVIEWED. IT IS INCUMBENT UPON THE NATION OPERATING THE MODIFIED PLATFORM TO INFORM THE OTHER NATION/S WHEN SUCH MODIFICATIONS ARE PLANNED OR INCORPORATED AND REQUEST AN UPDATED TECHNICAL COMPATIBILITY ASSESSMENT.
APPENDIX B1 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS
DUTCH TANKER TO DUTCH AND FOREIGN MILITARY RECEIVERS:
CLEARANCE AND TECHNICAL COMPATIBILITY

1. **Information.** The following boards are to be read with additional information listed in Appendix B3, Appendix B4 and Appendix B5 of Annex B.

2. **Requirements for an AAR Compatibility Review.** AAR participants, whether a tanker or a receiver, must be reviewed by a competent technical authority to ensure that they are technically compatible with the other participant. The absence of technical compatibility letter means that AAR technical risk review as not been conducted and AAR should not be undertaken.

3. **Publication of Information Resulting from an AAR Compatibility Review.** Confirmation that a technical compatibility assessment has been conducted and found to be satisfactory is published by the appropriate tanker technical authority and incorporated into figure B1-1. Through this, the technical authority confirms that combination of a receiver platform and the Dutch tanker has been reviewed, including any receiver modification significant to AAR, and, where necessary, recommends procedural or technique changes that are necessary to ensure safe AAR. The relevant information is incorporated into the receiver specific data published in this Annex, Appendix B5.

4. **Figure B1-1 FAF and FN Tankers/Foreign Military Receivers Technical Clearance Matrix.** Key:

   - X - Receiver has technical compatibility, no clearance, with this equipment
   - C1 – Receiver has Category 1 Clearance with this equipment
   - C2 – Receiver has Category 2 Clearance with this equipment
   - C3 – Receiver has Category 3 Clearance with this equipment

**Category 1 AAR Clearance.** Definition. A CAT1 is used when there is an urgent requirement for an AAR clearance due to war, conflict, contingency operation or other urgent operational need. This clearance will have a limited duration of validity

**Category 2 AAR Clearance.** Definition. A CAT2 is used when an AAR clearance is required due to war, conflict, contingency operation or other operational need but with time available to conduct supplemental testing to reduce restrictions in the AAR clearance envelope or reduce limitations that would be imposed on systems/equipment during AAR. This type of clearance requires a thorough Compatibility Assessment, although a read-across may

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B1-1

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make only an academic Compatibility Assessment necessary. This clearance should have a limited duration of validity.

**Category 3 AAR Clearance.** Definition. A CAT3 is used when an AAR clearance is required in support of a routine AAR requirement as defined by the requester. The CAT3 clearance can have an open-ended duration of validity. It is recommended that all AAR clearances be reviewed periodically to ensure currency.

Figure B1-1 – Tankers to Foreign Military Receivers Clearance and Technical Compatibility Matrix

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<thead>
<tr>
<th>COUNTRY</th>
<th>AIRCRAFT</th>
<th>TANKER</th>
<th>BOOM</th>
<th>REMARKS</th>
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<td>F-16A/B</td>
<td>KDC-10</td>
<td>C3</td>
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<td>F-35A</td>
<td>KDC-10</td>
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<tr>
<td>AUSTRALIA</td>
<td>E-7A</td>
<td>KDC-10</td>
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</tr>
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<td>C-17A</td>
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APPENDIX B2 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS
DUTCH RECEIVERS TO FOREIGN MILITARY AND NON MILITARY
TANKERS CLEARANCE AND TECHNICAL COMPATIBILITY

1. **Introduction.** This matrix constitutes the Dutch receiver clearances on Foreign Military and Non-Military Tankers.

2. **RNLAF Receivers and Foreign Military and Non Military Tankers Technical Clearance.** Confirmation that a technical compatibility assessment has been conducted and found to be satisfactory is published by the appropriate tanker technical authority in its own National Annex. The aim of Appendix B2 to this Annex is to list RNLAF AAR clearances on foreign military and non-military tankers in order to help RNLAF receiver crew to identify the availability of a clearance before performing AAR operations.

   **NOTE**

   RNLAF RECEIVER CREWS MUST ACCESS TANKER’S NATIONAL ANNEX TO VERIFY LAST TECHNICAL CLEARANCE UPDATES BEFORE CONDUCTING AAR OPERATIONS WITH A FOREIGN MILITARY AND NON-MILITARY TANKER.

3. Further information and access to AAR clearance certificates can be obtained from the AAR interoperability matrix in ATP-3.3.4.2 or by contacting the AAR POC in each nation’s SRD.
### Figure B2-1 COUNTRY Receivers/Foreign Military and Non Military Tankers Clearance and Technical Compatibility Matrix

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<tr>
<th>COUNTRY</th>
<th>TANKER</th>
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<th>REMARKS</th>
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<td>BOOM</td>
<td></td>
<td>C3</td>
</tr>
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<td>SINGAPORE</td>
<td>KC-130B</td>
<td>BOOM</td>
<td></td>
<td>C3</td>
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<td>SINGAPORE</td>
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<td>BOOM</td>
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<td>C3</td>
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<td>KC-46</td>
<td>BOOM</td>
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</table>

**Key:**
- X - Receiver has technical compatibility, no clearance, with this equipment.
- C1 – Receiver has Category 1 Clearance with this equipment
- C2 – Receiver has Category 2 Clearance with this equipment
- C3 – Receiver has Category 3 Clearance with this equipment
APPENDIX B3 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS
KDC-10 – AAR RECEIVER INFORMATION

1. **AAR Mission Planning and Inflight Data.** The following boards are to be read with additional information listed in Appendix B5 to this Annex. This Appendix publishes AAR planning data for all receiver aircraft with an AAR technical compatibility assessment has been conducted and a letter issued permitting operations with the TANKER A. Dependent upon the fuel transfer mechanism in use, (POD, or Boom) the appropriate tanker/receiver data are contained in the following figures:

2. **Mission Planning and In-flight Data.** The data listed in the following table is optimum for each type of receiver. Actual air refueling altitude may be as much as 2000 ft above listed. All speeds and Mach numbers shown in the Optimum AR block relate to the altitude listed. Actual Mach Numbers may vary with temperature and altitude.
a. Figure B3-1 KDC-10 AAR Mission Planning and inflight Data (Boom)

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<th>BUDDY CRUISE IAS / MACH</th>
<th>OPTIMUM AAR ALT/IAS/MACH</th>
<th>AAR ALT/CAS / MACH</th>
<th>RCVR RV SPEED IAS</th>
<th>OVERRUN IAS/MACH</th>
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<th>VHF</th>
<th>HF</th>
<th>X</th>
<th>Y</th>
<th>A/A TAC</th>
<th>RV VIS SINGLE / MULTI</th>
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<td>310 / -</td>
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Notes: 1) A-10 with 2 external tanks and 2 ECM PODS use A/R altitude of 15,000FT.

juni 2018

B3-2
3. **KDC-10 RBO Settings.** Under certain conditions, the Tanker Remote Vision System has shown sensitivity to ambient light conditions during day, dusk and night operations and glare from direct sunlight or reflected light. Refer to Figure for preferred and initial settings for each type of receiver.

**NOTE**

**DAY AND DUSK CONTACTS SHOULD NOT BE ATTEMPTED IF EITHER GLARE FROM DIRECT SUNLIGHT OR SUNLIGHT REFLECTION FROM THE RECEIVER CAUSES THE BOOM REFUELING PICTURE TO WASH OUT OR IF SHADOWS CAUSED BY THE TANKER OR RECEIVER FUSELAGE MASK THE BOOM OPERATOR TO CLEARLY DISTINGUISH THE RECEPTACLE CONTOURS, NOZZLE/RECEPTACLE SEPARATION DISTANCE AND CUES AND BORDERS. THE TANKER SHOULD ADJUST ITS COURSE TO REMOVE THE SHADOWS WITHOUT INDUCING GLARE.**

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**Figure B3-2**

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### KDC-10 RARO INITIAL SETTINGS

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<th>TANKER LIGHT SETTING</th>
<th>AFT FUSE LAGE</th>
<th>RECEIVER SLIPWAY LIGHT SETTING</th>
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*Set probe outline lights during dusk and night AAR to 75%*

### AIR REFueling MISSION PLANNING AND IN-FLIGHT DATA

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<tr>
<th>TYPE RECEIVER</th>
<th>BUDDY CRUISE CAS/MACH</th>
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<th>OVERRUN CAS/MACH</th>
<th>PPM/ # PUMPS</th>
<th>RENDEZVOUS</th>
<th>VISIBILITY SINGLE/CELL</th>
<th>BOOM INTERPHONE</th>
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<td>600/2</td>
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juni 2018
1. **WARNINGS, CAUTIONS and NOTES.** The following WARNINGS, CAUTIONS and NOTES are common to all receiver aircraft and must be read in conjunction with the receiver-specific information published in the appropriate Appendix B5 to this Annex.

**WARNING**

*(ALL) HOT ARMAMENT CHECK (IF EXISTS) IS REQUIRED BEFORE REFUELING.*

*(ALL) ALL AIRCRAFT DO NOT TRANSMIT ON THE HF RADIO WHEN THE RECEIVER IS WITHIN ½ NM AROUND THE TANKER. THIS INCLUDES DATALINK. *(ALL) UNLESS OTHERWISE SPECIFIED, ALL ELECTRONIC STORES, RADAR, AND ELECTRONIC COUNTER MEASURES MUST BE TURNED OFF PRIOR TO AAR. A/A TACAN WILL BE SWITCHED STANDBY AT LEAST 100M JOINING THE TANKER.*

*(ALL) TANKER AIRSPEED AND ALTITUDE CHANGES MUST BE MADE SMOOTHLY AND CAUTIOUSLY WHILE THE RECEIVER IS IN OR NEAR THE CONTACT POSITION. ANY AIRSPEED OR ALTITUDE ADJUSTMENTS REQUIRED BY THE TANKER DUE TO AERODYNAMIC EFFECT OF RECEIVER CLOSURE SHOULD BE ACCOMPLISHED AFTER THE RECEIVER IS STABILISED IN THE CONTACT POSITION.*

*(ALL) THE BOOM OPERATOR MUST BE CONSTANTLY AWARE OF THE RECEIVER’S POSITION AND RATE OF CLOSURE MOVEMENT. THE RECEIVER’S RATE OF MOVEMENT TOWARD AN ENVELOPE LIMIT WILL Dictate THE NEED TO INITIATE A DISCONNECT. IF THE MOVEMENT IS TOWARD THE INNER LIMIT, BOOM OPERATORS WILL EXERCISE SOUND JUDGMENT IN INITIATING A DISCONNECT OR BREAKAWAY PRIOR TO THE RECEIVER EXCEEDING THE LIMIT OR OVERRUNNING THE TANKER.*
CAUTION

(ALL) ALL RECEIVER PILOTS SHALL BE AAR QUALIFIED AND CURRENT IN ACCORDANCE WITH NATIONAL SRD-NETHERLANDS.

(ALL) CONTACT WILL NOT BE ATTEMPT UNTIL THE FIGHTER TYPE RECEIVER HAS STABILIZED 2 TO 3 FEET FROM THE CONTACT POSITION. (ALL) NIGHT AAR MAY BE A DIFFICULT OPERATION ESPECIALLY FOR A RECEIVER NOT EQUIPPED WITH A PROBE NOZZLE LIGHT. IT IS THE RESPONSIBILITY OF THE RECEIVER’S NATION TO DECIDE WHETHER ITS PILOTS WILL CONDUCT NIGHT AAR OR NOT.

FOR ALL FIGHTER AND C-130 AIRCRAFT, THE TELESCOPE-AT DISCONNECT SWITCH WILL BE IN MANUAL DURING AAR OPERATIONS.

FOR ALL FIGHTER RECEPTACLES AND UARRSI, THE BOOM NOZZLE MUST BE INSERTED INTO THE RECEPTACLE WITHOUT AID OF THE SLIPWAY; USING THE SLIPWAY MAY CAUSE THE NOZZLE TO COCK, PREVENTING CONTACT.

DURING AAR OPERATIONS, EXERCISE CAUTION TO AVOID STRIKING ANY ANTENNA IN THE VICINITY OF THE AAR RECEPTACLE.

FOR ALL FIGHTER AIRCRAFT, AVOID EXCESSIVE RETRACTION RATES TO PREVENT PULLING THE RECEIVER FORWARD IF A BOOM RELEASE IS NOT OBTAINED.

ATTEMPTS TO AFFECT A CONTACT DURING LOSS OF ANY AAR LIGHTING THAT RESULTS IN LESS THAN DESIRED ILLUMINATION WILL BE AT THE DISCRETION OF THE BOOM OPERATOR.
APPENDIX B5 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS
RECEIVER SPECIFIC AAR INFORMATION

Information:
Read this Appendix in conjunction with Appendix B4 – Common Warnings, Cautions and notes and Appendix B1 – COUNTRY Tankers/Foreign Military Receivers Clearance and Technical Compatibility.

<table>
<thead>
<tr>
<th>RECEIVER</th>
<th>APPENDIX</th>
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<td>B-52H</td>
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<td>KC-10</td>
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1. **General Information.** The A-10 has a UARRSI receptacle located 26 inches AFT of the nose on centerline, and is 32 inches in front of the pilot's windscreen. Receptacle slipway lights are rheostat controlled.

2. **AAR of Deployment Configured A-10s.** For AAR of deployment configured A-10's (two external tanks and two ECM pods) use the following guidelines.
a. AAR altitude: 15,000 ft MSL (Max)
b. Buddy cruise altitude: 20,000 ft MSL (Max)
c. AAR airspeed: 210 KCAS (Min)
d. Buddy cruise airspeed: 230 KCAS (Max)
e. Maximum KDC-10 start AAR gross weight: 540,000lbs

3. **Rendezvous Procedures.**
   a. KDC-10 orbit speed for rendezvous with A-10 receivers is 255 KIAS, but not below A-10 AAR orbit speed.
   b. During the rendezvous maneuver, consideration should be given to adjusting to minimum maneuver speed halfway through the rendezvous turn.
   c. Maintain at least minimum maneuver speed until less than 15 degrees of bank.
   d. Slow to AAR speed when rolling out on AAR heading.

4. **Air Refuelling Restrictions.**
   a. **Tanker Gross Weight;** The tanker’s gross weight at the beginning of AAR operations will not be greater than 540,000 pounds (deployment configured A-10 with two external tanks and two ECM pods).
   b. **Bank Angle;** the tanker’s angle of bank during AAR will be limited to 15 degrees.
   c. **Tanker Aircraft Response - Low Airspeed;** Airspeed must be monitored closely, as aircraft response to power adjustment for lost airspeed is slower than normal.
   d. **Power Control;** Judicious power control is critical at the relatively low airspeeds required during AAR.
   e. **Fuel Spray;** the boom operator is to immediately notify the receiver pilot of any fuel spray from the boom nozzle or receiver receptacle during contact.
   f. **Enroute Formation Join-Up;** when join-up involves one tanker with one or more receivers, the tanker will level off at the highest altitude in the formation with receivers stacked down at 500 feet intervals with 1 NM in trail separation. Airspeeds at level-off will be adjusted as necessary to close the formation.
g. RV Procedures; The AAR formation will be 30 degrees right echelon, 2 NM separation, stacked up at 500 foot intervals. Adjust to AAR speed when rolled out toward the ARCP.

NOTE

(1) THE KDC-10 MINIMUM AAR SPEED WILL BE DETERMINED FROM THE APPROPRIATE CRUISE BUFFET ONSET CHART.

(2) WHEN REFUELING A-10 RECEIVERS, POWER CONTROL IS CRITICAL AT THE RELATIVELY LOW AIRSPEEDS REQUIRED. AIRSPEED MUST BE MONITORED AS AIRCRAFT RESPONSE TO POWER ADJUSTMENTS FOR LOW AIRSPEEDS IS SLOWER THAN NORMAL.

(3) WHEN REFUELING A-10 RECEIVERS, CONSIDERATION SHOULD BE GIVEN TO ESTABLISHING THE FUEL CONFIGURATION PRIOR TO SLOWING TO REFUELING SPEED.

(4) BANK ANGLE DURING AAR WITH A-10 RECEIVERS WILL BE LIMITED TO 15 DEGREES.

(5) THE BOOM ELEVATORS MAY BLOCK OUT THE VIEW OF THE RECEPTACLE AS THE RECEIVER MOVES IN FROM APPROXIMATELY 30 FEET, ESPECIALLY IF THE RECEIVER IS HIGH IN THE ENVELOPE.

(6) TO ENSURE SUCCESSFUL CONTACT WITH THE A-10, PRECISE POSITIONING OF THE BOOM STRAIGHT INTO THE RECEPTACLE IS REQUIRED. THE NOZZLE TIP MAY HANG UP ON A GAP IN THE FORWARD ROLLERS IF ATTEMPTING CONTACT FROM EITHER SIDE OF THE SLIPWAY. NOTIFY RECEIVER PILOT IMMEDIATELY OF ANY FUEL SPRAY FROM THE BOOM NOZZLE OR RECEIVER RECEPTACLE DURING CONTACT.

(7) DUSK AAR OPERATIONS CAN BE ACCOMPLISHED WITH THE A-10 WITH EITHER THE KDC-10 TMF (TAIL MOUNTED FLOOD LIGHT) OR BNL (BOOM NOZZLE LIGHT) INOPERATIVE.

(8) NIGHT AAR OPERATIONS ARE NOT RECOMMENDED WITH THE A-10 WITH EITHER THE KDC-10 TMF OR BNL INOPERATIVE, EXCEPT FOR EMERGENCIES.
(9) THE BOOM OPERATOR IS TO IMMEDIATELY NOTIFY THE RECEIVER PILOT OF ANY FUEL SPRAY FROM THE BOOM NOZZLE OR RECEIVER RECEPCTACLE DURING CONTACT.

(10) WITH CERTAIN GROSS WEIGHTS AND AIRCRAFT CONFIGURATION, THE TANKER RATE OF ACCELERATION ON A BREAK-AWAY MAY EXCEED THE RATE OF ACCELERATION FOR THE RECEIVER AIRCRAFT IN THE OBSERVATION POSITION.

(11) THE KDC-10 WILL REQUIRE SLATS EXTENDED UNTIL THE GROSS WEIGHT REACHES APPROXIMATELY 420,000 POUNDS, STANDARD DAY CONDITIONS. THIS GROSS WEIGHT AND BELOW WILL ALLOW THE KC-10 TO MAINTAIN CLEAN THE 210 KCAS AAR SPEED AT 15,000 MSL AND 230 KCAS AT 20,000 MSL DURING CRUISE.

(12) THE 540,000 POUND KDC-10 MAXIMUM GROSS WEIGHT IS LIMITING ONLY SO FAR AS THE A-10 IS POWER-LIMITED AND UNABLE TO BREAK THROUGH THE KDC-10 BOW WAVE UNDER THESE CONDITIONS. THE ONLY WAY POSSIBLE FOR THE A-10 TO EFFECT A HOOKUP ABOVE 540,000 POUNDS KDC-10 GROSS WEIGHT MAY BE FOR THE KDC-10 TO TOBOGGAN FOR EACH RECEIVER. THIS SHOULD BE DONE ONLY AS A LAST RESORT.

\[!\]

CAUTION

DURING BOOM RETRACTION, THE RECEIVER SLIPWAY DOOR FORWARD AREA MAY BE DAMAGED BY THE BOOM NOZZLE CATCHING ON A GAP IN THE FORWARD END OF THE SLIPWAY. RETRACT THE BOOM SLOWLY AND RAISE IT TO CLEAR THE DOOR AREA.
APPENDIX B5.2 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS

B-52H

General information:

1) The receptacle doors on the B-52 rotate up, forming a large slipway 2.5ft long and located 14.5ft AFT of the nose and 7.5ft behind the center window on the fuselage centerline.

2) Lead-in stripes are located in front of the receptacle at 5, 4, and 3ft intervals.

3) Receptacle lights are located on the inside of each door illuminating the slipway and receptacle, and are rheostat controlled.

Restrictions:

Altitude / Airspeed:

1) The optimum airspeed and altitude is 275 KCAS and FL300
Lighting:
1) KDC-10 optimum flood light setting 6-9
2) Standard B-52H Night AR procedures with the USAF KC-10A shall be followed: this includes any advisories listed in ATP 3.3.4.2 App. 8E.4.1.
3) Night AAR is prohibited in any degraded lighting mode for either aircraft unless follow up testing or analysis is performed.

Fuel system:
1) Up to 2 AR pumps may be used for fuel transfer.
2) Mission planning: Flow rates from the KDC-10 should be approx. 2/3 the flow rate of the KC-10 due to having fewer AR pumps. Expect KDC-10 flow rates to be approx. 4900PPM. There will be a corresponding increase in time to accomplish refueling.

Boom Limits:
1) Azimuth: 19° Left/ 19° Right.
2) Elevation: 20° Up/ 40° Down.
3) Disconnect delay: 0.25sec.

Other:
1) During night AAR, the floodlight may cause a momentary reflection from the receiver’s center windscreen as the receiver moves from astern to the contact position.
2) Conditions may exist when the receptacle may be masked by the shadow of the tanker. Contacts should not be attempted. If the receptacle area is not clear, consideration should be given to moving the receiver within the contact position or changing tanker heading. If the receptacle area is still not clear, do not attempt a contact.
3) B-52H Standard AR procedures with USAF KC-10A shall be followed.

END
1. **General Information.**
   
   a. The C-17A has a UARRSI receptacle, located 15 feet AFT of the nose and 10 feet AFT of the centre windows, on the fuselage centerline.
   
   b. Lead-in stripes are located in front of the receptacle at 1 foot intervals.
   
   c. The receptacle is illuminated by lead-in perimeter lights and slipway lighting.
   
   d. There is a 6 inch tall blade type antenna located approximately 6 feet aft of the UARRSI on the aircraft centerline.
   
   e. Except when mission requirements dictate, do not attempt contacts at night with the receiver lead-in perimeter lights and the tanker TMF failed, or with the receiver slipway light and tanker boom nozzle light failed.
   
   f. A formation of C-17’s will use SKE procedures during AAR.

2. **AAR Procedures** for AAR of deployment configured A-10’s (two external tanks and two ECM pods) use the following guidelines.
a. When initiating fuel transfer to the C-17A, arm at least one A/R pump prior to contact.

b. If positive fuel pressure does not occur within 15 seconds after a boom contact made signal, initiate a disconnect.

c. Select the second pump prior to re-accomplishing contact.

d. Both A/R pumps may be used.

NOTE

IT IS NORMAL FOR FUEL TRANSFER TO INDICATE ZERO FLOW FOR UP TO 15 SECONDS AFTER THE FIRST PUMP IS SELECTED.

e. The receiver bow wave effect is pronounced. The bow wave effects are accentuated when the receiver is above 25 degrees elevation.

f. During receiver closure from, or backing out to, approximately 40 ft, pilots must anticipate elevator trim changes of approximately ±2 units. Pilots should monitor the elevator trim wheel for excessive trim cycling. Autopilot elevator trim authority may be exceeded.

g. Reverse AAR with the C-17 is prohibited.

h. Unless mission requirements dictate, do not attempt contacts at night with the loss of the following lighting: C-17 lead-in perimeter lights and both TMFs failed, or with the C-17A slipway lights and both boom nozzle lights failed.

i. Boom operators must be alert to the C-17’s capability of rapid movement in both pitch and roll axes within the AAR envelope.

WARNING

EXCESSIVE CLOSURE RATE MAY CAUSE THE TANKER TO DESCEND INTO THE PATH OF THE RECEIVER. THE PILOT MUST BE PREPARED TO DISCONNECT THE AUTOPilot TO PREVENT ALTITUDE DEVIATIONS. INITIATE A BREAKAWAY AT THE FIRST INDICATION OF A CLOSURE OVERRUN.

TANKER AIRSPEED AND ALTITUDE CHANGES MUST BE MADE SMOOTHLY AND CAUTIOUSLY WHILE THE RECEIVER IS IN OR NEAR THE CONTACT POSITION. ANY AIRSPEED OR ALTITUDE ADJUSTMENT
REQUIRED BY THE TANKER DUE TO AERODYNAMIC EFFECTS OF THE RECEIVER SHOULD BE ACCOMPLISHED AFTER THE RECEIVER IS STABILIZED IN THE CONTACT POSITION.

BOOM OPERATORS MUST BE ALERT TO THE RECEIVER’S CAPABILITY OF RAPID MOVEMENT IN BOTH PITCH AND ROLL AXES WITHIN THE AAR ENVELOPE. MONITOR THE RECEIVER’S RATE OF MOVEMENT AND USE SOUND JUDGMENT IN DETERMINING WHEN TO INITIATE A DISCONNECT, TO ENSURE THAT THE NOZZLE DISCONNECTS FROM THE RECEPTACLE PRIOR TO GETTING INTO A POSITION WHERE NOZZLE BINDING CAN OCCUR. IF RECEIVER MOVEMENT IS TOWARD THE INNER LIMIT, BOOM OPERATORS WILL EXERCISE SOUND JUDGMENT IN INITIATING A DISCONNECT OR BREAKAWAY PRIOR TO THE RECEIVER EXCEEDING THE LIMIT OR OVERRUNNING THE TANKER.

THE BOOM OPERATOR MUST AGGRESSIVELY ADVISE THE RECEIVER TO SLOW THE RATE OF CLOSURE TO APPROXIMATELY 1 FOOT PER SECOND

DO NOT MAKE CONTACT WITH BOTH TMF LIGHTS UNSERVICEABLE, REMAINING LIGHTS WILL NOT GIVE A SATISFACTORY IMAGE ON THE RBO STATION DISPLAY SYSTEM.
1. General Information.
   a. The C-130 has a UARRSI receptacle located 12 feet AFT of the nose and 5.5 feet behind centre window on fuselage centreline.
   b. Distance lead-in stripes are located in front of the receptacle at 1-foot intervals.
   c. Approximately 17 inches forward of the receptacle is a set of lights offset on both sides to illuminate the area around the receptacle.
   d. There is additional lighting in the slipway area.

2. Rendezvous Procedures
   a. En-Route Overtaking Rendezvous
      (1) An overtaking enroute rendezvous will be normally used for all C-130 operations.
      (2) When executing an overtaking rendezvous with more than one tanker, delay adjusting airspeed, lowering the flaps, or maneuvering to AAR formation until all aircraft are established on the AAR heading.
(3) Tanker(s) and receiver(S) arrive from the same general direction; each aircraft will fly individual flight plans to a common RVIP/RV and join-up enroute to the RVCP.

(4) The receiver(s) will plan to arrive at the RVIP/RV 1 minute prior to RVCT.

(5) This procedure makes use of the tanker’s increased overtake ability to compensate for the receiver’s lower airspeed.

(6) To be effective, tanker(s) and receiver(s) must be arrive at the RVIP/RV at their respective times.

(7) Tanker(s) and receiver(s) will adjust enroute airspeed/flight path to make the rendezvous control time.

(8) Tanker(s) and receiver(s) should communicate as soon as possible (in no case later than 15 minutes prior to the rendezvous control time) to update ETAs.

(9) Receiver(s) and tanker(s) will be at their assigned altitude prior to reaching the RVIP/RV.

(10) These altitudes will provide at least 1000feet separation between the highest receiver and the lowest tanker with the receiver always at the lower altitude.

(11) The receiver will proceed down track from the RVIP/RV at 215 KIAS, and the tanker will overtake the receiver at 275 KIAS.

(12) Once visual/radar contact is established with the receiver, the tanker will maneuver to pass overhead the receiver.

(13) The pilot not flying will call when the tanker passes overhead the receiver.

(14) After the receiver passes under the tanker glare shield (½ NM on TCAS 1/3 NM on radar for KDC-10), the tanker will maintain 275 KIAS for another 15 seconds, then reduce power to idle and begin slowing to 200 KIAS (190 KIAS for AC130H).

**NOTE**

(1) DUE TO ENGINE SPOOL-UP TIME AND RAPID AIRPLANE DECELERATION WHEN FLAPS ARE LOWERED TO 20 DEGREES, PILOTS MUST BE PREPARED TO ADVANCE THROTTLES SIMULTANEOUSLY WITH EXTENSION OF FLAPS
(2) IF RADIO COMMUNICATIONS BETWEEN AIRPLANES HAVE NOT BEEN ESTABLISHED BY THE RENDEZVOUS CONTROL TIME, AIRPLANES WILL DEPART THE RVIP/RV TO MAKE GOOD THE ARCT AT THE RVCP.

(3) USE NORMAL ORBIT PROCEDURES WHEN DELAYING AT THE RVCP.

(4) ONCE JOIN-UP HAS BEEN ACCOMPLISHED, NORMAL FORMATION PROCEDURES APPLY.

(5) IF THE TANKER HAS OVERRUN THE RECEIVER DURING THE FINAL PHASE OF THE RENDEZVOUS, THE FOLLOWING PROCEDURES ARE RECOMMENDED:

(a) THE TANKER WILL REDUCE AIRSPEED TO 200 KIAS (0.6 AOA MINIMUM) WITH FLAPS SET FOR AAR AND MAINTAIN AT THE ASSIGNED AAR ALTITUDE.

(b) THE RECEIVER WILL ADJUST AIRSPEED, MAINTAIN AN ALTITUDE 1000FEET BELOW ASSIGNED BASE AAR ALTITUDE, ADJUST TRACK AS REQUIRED, AND CLOSE ON THE TANKER.

b. Overtaking RV Delta (Point Parallel Rendezvous).

(1) The overtaking RV Delta (point parallel rendezvous) uses normal RV Delta procedures except the tanker plans to roll out behind the receiver.

(2) The tanker than overtakes the receiver using the speed schedule and procedures outlined in the Enroute Overtaking Rendezvous.

(3) For formation operations, the tanker will adjust to AAR formation (stacked up 500 feet, 1 NM nose-to-nose, 60 degrees echelon) after completing the turn to the AAR heading.

c. Overtaking Modified Point Parallel Rendezvous.

(1) The modelled point parallel rendezvous with C-130 receivers is standard with the exception that the tanker will utilize overtaking procedures.

NOTE

(1) WHEN EXECUTING TANKER OVERTAKING RENDEZVOUS WITH ONE OR MORE TANKERS, DELAY ADJUSTING AIRSPEED, EXTENDING SLATS, OR MANEUVERING TO AAR CELL FORMATION UNTIL ALL AIRCRAFT ARE ESTABLISHED ON AAR HEADING.

(2) IF TANKER HAS OVERRUN THE RECEIVER DURING THE FINAL PHASE OF THE RENDEZVOUS, THE FOLLOWING PROCEDURES ARE
RECOMMENDED. THE TANKER WILL REDUCE AIRSPEED TO 200 KCAS WITH SLATS EXTENDED AND MAINTAIN TRACK AT THE ASSIGNED AAR ALTITUDE. THE RECEIVER WILL INCREASE AIRSPEED, MAINTAIN ON ALTITUDE 1000 FEET BELOW ASSIGNED BASE AAR ALTITUDE, ADJUST TRACK AS REQUIRED, AND CLOSE ON THE TANKER.

(3) THE RECEIVER WILL MAINTAIN 215 KIAS UNTIL ½NM IN TRAIL, THEN SLOW DURING CLOSURE TO REACH THE ASTERN POSITION AT 200 KIAS.

3. Air Refuelling Procedures

WARNING

DO NOT RAISE OR LOWER SLATS/FLAPS WHILE THE RECEIVER IS CLOSER THAN THE ASTERN POSITION BECAUSE OF THE RESULTANT PITCH CHANGE OF THE TANKER.

BOOM NOZZLE POSITION SHALL BE MONITORED CLOSELY PRIOR TO CONTACT AND FOLLOWING DISCONNECT AS RECEPTACLE TO PROPELLER LINE DISTANCE IS ONLY 15.5 FEET.

NOTE

(1) THE KDC-10 TANKER MINIMUM AIR REFUELING SPEED WILL BE DETERMINED FROM THE APPROPRIATE CRUISE BUFFET ONSET BOUNDARY CHART.

(2) BANK ANGLE DURING AAR WITH C-130 RECEIVERS WILL BE LIMITED TO 15 DEGREES.

(3) NIGHT AAR OPERATIONS ARE NOT RECOMMENDED WITH THE KDC-10 TMF INOPERATIVE, EXCEPT FOR EMERGENCIES

(4) THE MC-130H COMBAT TALON II (CTII) HAS AN ELONGATED TEAR SHAPED ANTENNA LOCATED APPROXIMATELY 5 FEET IN FRONT OF THE RECEPTACLE, PROTRUDING OUT FROM THE FRONT OF THE RECEPTACLE AND AIRCRAFT. THIS ANTENNA IS NOT VISIBLE IN SHADOWS.

(5) DUSK OPERATIONS CAN BE ACCOMPLISHED WITH THE MC-130H SLIPWAY LIGHT AND RECEPTACLE AREA LIGHTS INOPERATIVE AND WITH EITHER THE KDC-10 TMF OR BNL INOPERATIVE.
(6) IT IS RECOMMEND THAT THE BOOM OPERATOR MOVE THE NOZZLE OVER EITHER THE PILOT’S OR COPILOT’S WINDSHIELD AND BOUND THE TEAR SHAPED ANTENNA LOCATED JUST FORWARD OF THE MC-130H RECEPTACLE WHEN MAKING CONTACTS.

(7) EC-130J AIRCRAFT AAR ENVELOPE IS 190 TO 230 KIAS AT 0 TO 20,000 FEET MSL. OPTIMUM IS 210 KIAS/10,000 FEET MSL

(8) ON EC-130J AIRCRAFT, FUEL MAY BE SEEN SWIRLING WITHIN THE UARRSI PRESSURE BOX DURING AAR.
1. **E-A/D/F: General Information.**

   a. The receptacle doors on the E-3 rotate up forming a large slipway 2.5 feet long and are located approximately 15 feet aft of the nose section and 7 feet behind the centre windows on aircraft centerline.

   b. Receptacle lights, located on the inside of each door illuminating the slipway and receptacle area are rheostat controlled.
NOTE

All) PROVIDE E-3 RECEIVERS WITH TYPE OF FUEL TO BE OFFLOADED. IF JP-4 (NATO F-40) OR JET B (NATO F-45) FUEL IS BEING OFFLOADED INFORM E-3 RECEIVER OF FUEL TEMPERATURE. E-3 FUEL BOOST PUMPS ARE NOT CERTIFIED FOR FLIGHTS USING JP-4 OR JET B FUEL WITH FUEL TEMPERATURES EXCEEDING 85°C. ANY FUEL MIXTURE CONTAINING MORE THAN 0.1% JP-4/ JET-B IS TO BE CONSIDERED JP-4.

2. E-3D: General Information

   a. The refueling probe is situated 6 feet above and 36 inches to the right of the aircraft centerline. The probe protrudes 5 inches in front of the nose of the aircraft.

   b. On top of the probe rheostat controlled electroluminescent outline lights are fitted. These lights are used during receptacle-boom AAR to assist the tanker boom operator avoid probe/boom contact.

   c. The probe is approximately 10 feet in length and has electroluminescent outline lighting, except for the last 1.5 feet of the probe tip.

   ! CAUTION

   THE BOOM MAY BE BLOCK THE PROBE FROM VIEW DURING APPROACH TO CONTACT IF THE RECEIVER IS OFFSET APPROXIMATELY 5 DEGREES TO THE LEFT.

   NIGHT AAR WITH E-3D RECEIVER WILL NOT BE ATTEMPTED IF THE PROBE ELECTRO-LUMINESCENT LIGHTING, BOOM NOZZLE LIGHT(S), AND TMF(S) ARE INOPERATIVE.

   THE E-3D AIRCRAFT IS CLEARED FOR BOOM AAR ONLY. PROBE/DROGUE AAR IS NOT PERMITTED.

   REVERSE FLOW AAR IS PROHIBITED

NOTE

(1) DURING DAY CONDITIONS THE RECEPTACLE DOORS MIGHT CREATE A SHADOW OVER THE RECEPTACLE AREA AT BANK ANGLES EXCEEDING 15 DEGREES. THE BANK ANGLE DURING TURNS MUST BE
LIMITED TO 15 DEGREES. THE SEVERITY OF ANOMALY IS DEPENDENT ON SUN ANGLE.

(2) DURING DAY AND DUSK CONDITIONS, THE INBOARD RECEPTACLE DOORS BLEND WITH THE RECEIVER’S UPPER FUSELAGE FROM BOOM ROLL ANGLES OF APPROXIMATELY 15 TO 19 DEGREES LEFT AND RIGHT ROLL. THE SEVERITY OF THIS ANOMALY IS DEPENDENT ON SUN ANGLE.

(3) AT LOW SUN ANGLES WITH THE SUN IN THE 4 TO 8 O’CLOCK POSITION, SUN REFLECTIONS FROM THE AIRCRAFT WINGS MIGHT SATURATE THE STEREO CAMERA IMAGE. HEADING CHANGES MIGHT BE NECESSARY TO TRANSIT THE SUN OUTSIDE THE 4 TO 8 O’CLOCK POSITION.

(4) TO ENSURE SUCCESSFUL CONTACT WITH THE RECEIVER, PRECISE POSITIONING OF THE BOOM STRAIGHT INTO THE RECEPTACLE IS REQUIRED. THE NOZZLE TIP MAY HANG-UP ON THE GAP IN THE AFT END OF THE RECEPTACLE SLIPWAY.

(5) NIGHT AAR OPERATIONS CAN BE ACCOMPLISHED WITH THE E-3D SLIPWAY LIGHT INOPERATIVE AND WITH THE KDC-10 BNL INOPERATIVE, PROVIDED AT LEAST ONE KDC-10 TMF LIGHT IS OPERATIVE.

3. E8-A: General Information
   a. The E-8A is a B-707 airframe with a UARRSI receptacle located approximately 15 feet Aft of the nose section and 7 feet behind the center windows on the aircraft centerline. A blade antenna is located 18 inches aft of the receptacle.

   b. The E-8A is boom interphone equipped.

   CAUTION

   NIGHT AAR CAN BE SAFELY ACCOMPLISHED WITH FAILED RECEIVER RECEPTACLE LIGHTS PROVIDED THAT AT LEAST ONE TMF IS OPERATIONAL.

4. KC/RC-135: General Information
   a. The receptacle doors on all models of -135's rotate up forming a large slipway 2.5 feet long.
b. Location distance from radome to receptacle will vary depending on aircraft model.

c. From center windows to receptacle is approximately 7 feet.

d. Receptacle lights are on the inside of each door illuminating the slipway and receptacle area and are rheostat controlled.

NOTE

REVERSE FLOW AAR CAN ONLY BE ACCOMPLISHED WITH AIRCRAFT NOT RESTRICTED FOR REVERSE FLOW AAR.

5. **Air Refuelling Procedures.**

   a. Dusk AAR operations can be accomplished with the slipway light inoperative and with either the KDC-10 TMF or BNL inoperative.

   b. During day and dusk conditions the inboard receptacle doors blend with the receiver’s upper fuselage from boom rolls angles of approximately 15 to 19 degrees left and right roll. The severity of this anomaly is dependent on sun angle.

   c. Night AAR operations can be accomplished with the slipway light inoperative and with the KDC-10 BNL inoperative.
d. Night AAR operations can be accomplished with the slipway light inoperative and with the KDC-10 TMF inoperative except for emergencies.
APPENDIX B5.6 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS
E-7A WEDGETAIL 737 AEW & C

General Information:

a). The Wedgetail has a UARRSI receptacle which is located approximately 16 feet from the nose on aircraft centerline, 8 feet behind the cockpit.

b) If the Wedgetail is refueled to top-off, it is likely that the receiver's pressure disconnect switch will be activated and initiate a disconnect once top-off is achieved.

c) During AAR the Wedgetail mission radar must be in standby mode or off. AAR lighting and formation lighting have varied intensity.

A) AAR Envelope

Altitude: FL150-FL280 Airspeed: 250 KIAS to 295 KIAS
The optimum AR envelope is FL200 -FL250 at 270 KIAS

AR Boom Refueling Envelope

20° UP – 40° DOWN elevation
10°L – 10°R roll (contact)
25°L – 25°R roll (disconnect)
Disconnect delay setting – 0.5 seconds
B) Tanker

- Fuel transfers shall be conducted with no more than two aerial refueling pumps

NOTE - If the E-7A is refueled to top-off, it is likely that the receiver's pressure disconnect switch will be activated and initiate a disconnect once top-off is achieved

- All AR lights must be operational

NOTE - Optimum lighting settings for night AR not available

C) Receiver

- No aerial refuelling with rudder yaw damper disabled

- Mission radar must be in Standby or Off

- HF radio must be in Standby or Off

- All AR lights must be operational

NOTE - Optimum lighting settings for night AR not available

Following lighting settings from E-7A / KC-10 TCA are acceptable to start from. Adapt settings as required on guidance from RARO

- Air-to-air refuelling lights: one to three o'clock position
- Formation lights: ten to eleven o'clock position
- Position light: ON
- Anti-Collision lights: OFF
- Wing lights: ON

Additional Information

Beacon and Anti-collision lights

The RAAF E-7A cannot independently turn off its top fuselage anti-collision (rotating beacon) light without turning off the bottom fuselage and tail cone anti-collision lights. This non-standard lighting configuration could have significant implications for formation flight, as well as see-and-avoid clearance for operations in VFR environments such as MOAs and AOR AR tracks. The receiver's upper rotating beacon must be extinguished for night operations to preclude distracting/blinding the boom operator, which results in the receiver's other anti-collision lighting to be extinguished. Coupled with the fact that the tanker's lower rotating beacon will be extinguished for aerial refueling operations, VFR aircraft would not have the anti-collision lighting aids when approaching the formation from below or aft of the formation, thereby increasing the likelihood of mid-air collisions or avoidable TCAS Resolution Advisories.
Boom Interphone

The RAAF E-7A is not equipped with a "through the boom" interphone communication capability.

- CAUTION –
Use of the automatic boom retraction feature is prohibited

- CAUTION –
Aerial Refueling shall not be attempted with the RAAF E-7A yaw damper disabled

- CAUTION –
When refueling the RAAF E-7A the use of the automatic boom retract feature of the KDC-10 is prohibited.
1. **General Information**

   a. The receptacle on the F-15 has a fold down door which forms a small slipway. It is located 30 feet from the nose and 3 feet left of centerline in the aircraft wing root area.

   b. Lights for the slipway are in the receptacle and on the aft portion of the canopy which illuminates the area around the receptacle.

   **NOTE**

   **DURING NIGHT AAR, EXERCISE EXTREME CARE DUE TO REDUCED DEPTH PERCEPTION AND LACK OF VISUAL CUES ON THE F-15E DARKER PAINT SCHEME.**

2. **Air Refuelling Procedures**

   **CAUTION**

   DO NOT ATTEMPT CONTACT IF THE FORWARD AAR DOOR IS VIBRATING. CONTACT WITH THE BOOM MAY CAUSE LOSS OF THE AAR DOOR.

   **NOTE**

   (1) TO ASSURE SUCCESSFUL CONTACT, PRECISE POSITIONING OF THE BOOM STRAIGHT INTO THE RECEPTACLE IS REQUIRED. THE NOZZLE TIP MAY HANG-UP ON A GAP IN THE FORWARD END OF THE RECEPTACLE SLIPWAY. THE TIP MAY ALSO HANG-UP ON THE RECEPTACLE FORWARD ROLLERS IF ATTEMPTING CONTACT FROM EITHER SIDE OF THE SLIPWAY.
(2) WHEN THE F-15 RECEPTACLE DOOR IS CLOSED, IT MAY NOT BE DISTINGUISHED FROM SURROUNDING AIRFRAME DURING DAY AND DUSK CONDITIONS DUE TO THE LACK OF DEPTH PERCEPTION AND SHARPNESS PROVIDED BY THE RBO SYSTEM. THEREFORE, THE BOOM OPERATOR SHOULD CONFIRM WITH THE RECEIVER PILOT THAT THE F-15 RECEPTACLE DOOR IS OPEN PRIOR TO CONDUCTING AAR OPERATIONS TO AVOID THE BOOM STRIKING THE RECEPTACLE DOOR.

(3) DUSK AAR OPERATIONS CAN BE ACCOMPLISHED WITH THE F-15 WITH EITHER THE KDC-10 TMF OR BNL INOPERATIVE.

(4) NIGHT AAR OPERATIONS CAN BE ACCOMPLISHED WITH THE F-15 WITH THE BNL INOPERATIVE.

(5) NIGHT AAR OPERATIONS ARE NOT RECOMMENDED WITH F-15 WITH THE KDC-10 TMF INOPERATIVE EXCEPT FOR EMERGENCIES.
1. **General Information**

a. The F-16 has a UARRSI receptacle which is located 27 feet from the nose on aircraft centerline, 6.5 feet aft of the canopy.

b. The F-16B/D/F/I model (two-seater) receptacle is slightly closer to the canopy.

c. There is a 2-inch high antenna on the upper fuselage centerline, 3 feet forward of the receptacle.

d. On F-16B/D/F/I models, the antenna is 8 inches higher due to being mounted on the aft portion of the raised panels that blend the canopy to the fuselage.
Annex B to NATIONAL SRD – The Netherlands
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e. F-16C/D/F/I (single-/two-seater) models are modified with a tapering fillet at the base of the vertical stabilizer approximately 9 inches aft of the UARRSI.

f. A single antenna on the fillet is approximately 2 feet aft of the receptacle.

g. On F-16B/D/F/I models, the area forward and aft of the receptacle is reduced.

h. Lighting for the receptacle is of fixed intensity; some models however have the capability to adjust the intensity of the receptacle light.

i. The floodlight on the upper fuselage, which illuminates the AAR markings around the receptacle, can be varied in intensity.

j. The receivers may be equipped with conformal fuel tanks (CFTs); receivers with CFTs will be refueled using standard F-16 procedures with the following exceptions:

(1) The AAR altitude is restricted to 15,000 to 30,000 feet MSL with optimum altitude being 20,000 feet MSL.

(2) Tanker A/R airspeed is 310 ± 10 KCAS (no slower than 300 KCAS)

k. On airplanes with CFTs installed, the top of the CFT is above the level of the AAR receptacle the tanks are especially high toward the forward end.

l. Airplanes with CFTs may have a green receptacle light that is visible during night AAR.

m. CFT configured aircraft are limited to gross weights of 48,000 lbs.

2. AAR Refuelling Procedures

WARNING

DURING AAR WITH AN AIRPLANE WITH CFT’S IMMEDIATELY INFORM THE RECEIVER OF ANY FUEL VENTING IN THE AREA OF THE ENGINE EXHAUST; THERE IS A POSSIBILITY THAT VENTED FUEL COULD BE IGNITED DURING AFTERBURNING OPERATION.
CAUTION

F-16B/D MODEL - AVOID STRIKING THE PANELS THAT BLEND THE AFT PORTION OF THE CANOPY WITH THE FUSELAGE DURING CONTACT AND AFTER DISCONNECT. THESE PANELS ARE APPROXIMATELY 18 INCHES FROM SLIPWAY DOORS.

DURING AAR WITH AN AIRPLANE WITH CFT’S, DO NOT ALLOW THE BOOM TO CONTACT THE CFT’S; A BOOM STRIKE ON EITHER CFT COULD LEAD TO TANK FAILURE AND CATASTROPHIC FUEL LEAK. IMMEDIATELY INFORM THE RECEIVER OF ANY STRIKE TO A CFT.

SOME F-16B/D/F/I (TWO-SEATER) MODELS ARE MODIFIED WITH A RAISED AVIONIC HUMP ON THE SPINE OF THE AIRCRAFT WHICH RAISES THE RECEPTACLE APPROXIMATELY 1 FOOT.

NOTE

(1) THE SAME BOOM ENVELOPE LIMITS APPLY AS FOR USAF KC-10A.

(2) F-16’S DO NOT HAVE MBL CAPABILITY.

(3) DURING F-16 REFUELING, BE AWARE THAT PRESSURE DISCONNECTS MAY OCCUR.
APPENDIX B5.9 – ANNEX B TO NATIONAL SRD – THE NETHERLANDS

F-35A

Production F-35A

F-35A as seen from KC-135
1. **General Information**

   a. The F-35A has an AR receptacle located aft of the cockpit on the centerline.

   b. The AR receptacle doors, when open, are raised from the aircraft mold line with serrated leading edges on either side of the receptacle.

   c. The F-35A has three lighting groups to aid in night refueling operations:

      (1) **REF BAY** Inner receptacle bay lights.

      (2) **REF FLD** Floodlights installed under the AR doors illuminating the outline of the raised doors.

      (3) **REF SPT** Aerial refueling spotlight shining aft illuminating the slipway and top of the fuselage.

      The intensity of these groups can individually be changed from 1 to 99.

2. **AIR REFUELING**

   a. Air refueling the F-35A may be accomplished both day and night, use the following guidelines:

   b. (1) Air refueling altitude: FL 100 to FL 300

   (2) Air refueling airspeed: between 265 KCAS to 325 KCAS

   c. AAR with any F-35A store configuration is authorized up to a maximum F-35A gross weight of 58,000 lbs and 30,000 ft-lbs zero-fuel asymmetry.
CAUTION

THE BOOM OPERATOR SHALL AVOID THE RECEPTACLE DOORS DURING THE APPROACH TO CONTACT AND IMMEDIATELY AFTER DISCONNECT. THE RECEIVER PILOT SHALL BE NOTIFIED IF A BOOM STRIKE OCCURS OUTSIDE THE RECEPTACLE.

d. At the discretion of the boom operator, night AAR may be accomplished with up to two lights inoperative on the F-35A or the boom nozzle light (BNL) inoperable.

CAUTION

DO NOT CONDUCT NIGHT AAR WITH THE KDC-10 TAIL-MOUNTED FLOODLIGHT INOPERATIVE UNLESS ALL THE FOLLOWING ARE MET: DURING AN EMERGENCY SITUATION, ALL F-35A AR LIGHTS ARE FULLY OPERATIONAL AND SET TO 99 PERCENT AND THE KDC-10 BOOM NOZZLE LIGHT IS OPERATIONAL.

3. LIMITATIONS

a. No tanker HF radio transmissions are permitted inside 0.5 nm
b. AAR is restricted to VMC conditions per ATP 3.3.4.2.

c. The F-35A does not have manual boom latching capability.

<table>
<thead>
<tr>
<th>Lights limitations during dusk &amp; night operations</th>
<th>Requirements if inoperative</th>
</tr>
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<tbody>
<tr>
<td><strong>Tanker KDC-10</strong></td>
<td>Both TMF lights inoperative: AR not allowed, except:</td>
</tr>
<tr>
<td>TMF (Tail Mounted Floodlight)</td>
<td>a. During emergency or urgent operational need,</td>
</tr>
<tr>
<td></td>
<td>b. All receiver AR lights are operational, set at 99%.</td>
</tr>
<tr>
<td></td>
<td>c. BNL light on tanker is operational.</td>
</tr>
<tr>
<td><strong>BNL (Boom Nozzle Light)</strong></td>
<td>At the discretion of the BO.</td>
</tr>
<tr>
<td><strong>PDL (Pilot Director Light)</strong></td>
<td>Voice guidance.</td>
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Receiver F-35A | Ref bay | At the discretion of the BO up to two lights may be inoperative.
--- | --- | ---
| Ref fld | |
| Ref spt | |

**Boom Envelope**

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<tr>
<th></th>
<th>Contact Envelope</th>
<th>Disconnect Envelope</th>
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<tbody>
<tr>
<td>Elevation</td>
<td>25° - 40°</td>
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<tr>
<td>Roll</td>
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<tr>
<td>Extension</td>
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<td>Disconnect Delay</td>
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**MISSION PLANNING AND IN-FLIGHT DATA**

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<tr>
<td>Optimum AAR Alt / CAS/Mach</td>
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<td>Receiver RV Speed CAS</td>
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</tr>
<tr>
<td>Overrun CAS / Mach</td>
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<td>Bank Angle</td>
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<td>PPM / # Pumps</td>
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<td>Rendezvous</td>
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<td>RV VIS Single / Multi</td>
<td>Radar Lock</td>
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<td>Boom Interphone</td>
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<td>TMF Setting</td>
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<td>Reverse AR Capable</td>
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**LIGHT SETTINGS**

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<tr>
<th>Guidance for initial settings:</th>
<th>Dust</th>
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<tbody>
<tr>
<td>Tanker KDC-10</td>
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<td>TMF (Tail Mounted Floodlight)</td>
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<td>BNL (Boom Nozzle Light)</td>
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<td>PDI (Pilot Director Light)</td>
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<td>AR Fuselage</td>
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<td>Receiver F-35A</td>
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<td>Strobe Light</td>
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<td>Formation Lights</td>
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B5-33  September 2017
1. **General Information**

   a. The KC-10 has a UARRSI receptacle located 12 feet aft of the nose and 6 feet behind cockpit windows on aircraft centerline.

   b. AAR receptacle floodlights are located on both sides and just forward of the leading edge of the receptacle. Black lead-in stripes in front of the receptacle are 4 inches wide and 1 foot apart.

   c. The AAR area is outlined with a 4 inch wide black stripe. The black stripe directly bound the receiver door is 2 inches wide.
d. Modified aircraft have electroluminescent (EL) light strips that replace the red lead-in stripes. Each light strip is 3 inches wide.

e. The EL light strips form a forward perimeter, lead-in stripes, and aft left and right perimeters.

f. During AAR with less than optimum lighting, extreme care should be exercised due to reduced depth perception and lack of visual cues on the camouflaged aircraft.

CAUTION

AAR RECEPTACLE FLOOD LIGHT DOORS ARE LOCATED ON BOTH SIDES AND JUST FORWARD OF THE LEADING EDGE OF THE RECEPTACLE. IF AAR RECEPTACLE FLOOD LIGHTS ARE TURNED ON, CAUTION MUST BE EXERCISED TO PREVENT STRIKING THE DOORS.

NOTE

(1) DURING NIGHT AAR, THE NOSE SECTION OF THE AIRCRAFT APPEARS TO BE FLAT SURFACE WHILE IN REALITY, IT IS RAISED. THE ILLUSION MAY CAUSE DEPTH PERCEPTION ERRORS PRIOR TO MAKING CONTACT.

(2) DURING NIGHT TRAINING MISSIONS, BOTH TANKER AND RECEIVER AIRCRAFT WILL USE ALL AVAILABLE EXTERNAL LIGHTING. AS A MINIMUM, EITHER ONE TMF, OR ONE NOZZLE LIGHT WITH OVERRIDE CAPABILITY WILL BE OPERABLE. DURING AAR WITH LESS THAN OPTIMUM LIGHTING, EXTREME CARE SHOULD BE EXERCISED DUE TO REDUCED DEPTH PERCEPTION AND LACK OF VISUAL CUES. AAR WILL BE AT THE DISCRETION OF THE BOOM OPERATOR.
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<th>PAGE NUMBERS</th>
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<tr>
<td>B1-1 to B1-2</td>
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<tr>
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<tr>
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