Civil Aviation Authority

SUPPLEMENT TO
BOEING / FAA APPROVED
MASTER MINIMUM EQUIPMENT LIST
FOR

BOEING 747-400

(Rolls Royce and General Electric Engines Only)

REVISION 8j

6 March 2013

CIVIL AVIATION AUTHORITY

MASTER MINIMUM EQUIPMENT LIST

SUPPLEMENT

Revision 8j
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BOEING 747-400
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REVISION 8j

This Master Minimum Equipment List (MMEL) Supplement is issued by the Civil Aviation Authority at the above revision and is approved as the basis for the preparation and approval of individual operators' Minimum Equipment Lists (MELs) for aircraft of this Type.

H A Fowler
For and on behalf of the
Civil Aviation Authority

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REVISION RECORD

REVISION No.	ISSUE DATE	INCORPORATED BY	DATE
Original	13 January 1990		
Revision 1	1 April 1994		
Revision 2	18 April 1997		
Revision 3	18 May 2001		
Revision 4	1 November 2002		
Revision 5	4 July 2003		
Revision 5a	28 November 2003		
Revision 5b	9 January 2004		
Revision 5c	7 April 2004		
Revision 5d	27 July 2004		
Revision 5e	13 September 2004		
Revision 6	24 June 2005		
Revision 6a	4 November 2005		
Revision 6b	29 August 2006		
Revision 6c	8 August 2007		
Revision 7	29 November 2007		
Revision 7a	23 October 2008		
Revision 8	17 July 2009		
Revision 8a	22 October 2009		
Revision 8b	27 November 2009		

REVISION RECORD (Cont.)

REVISION No.	ISSUE DATE	INCORPORATED BY	DATE
Revision 8c	28 September 2010		
Revision 8d	10 January 2011		
Revision 8e	25 March 2011		
Revision 8f	21 July 2011		
Revision 8g	27 June 2012		
Revision 8h	10 October 2012		
Revision 8i	26 February 2013		
Revision 8j	6 March 2013		

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S47-1	Revision 6a	4 November 2005
S52-1	Revision 8d	10 January 2011
S52-2	Revision 8e	25 March 2011
S52-3	Revision 8	17 July 2009
S53-1	Revision 6	24 June 2005
S73-1	Revision 6b	29 August 2006
S75-1	Revision 6	24 June 2005
S77-1	Revision 6	24 June 2005
S78-1	Revision 6	24 June 2005
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INTRODUCTION

GUIDANCE IN THE USE OF THIS SUPPLEMENT

1. This supplement defines the standard of MMEL approved by the CAA for the above aircraft type. The Supplement identifies the differences from the FAA MMEL. To assist users of this supplement, changes made from the standard presented in the FAA MMEL are highlighted in **bold** type.

2. The information presented in the CAA MMEL for the aircraft type is acceptable to the CAA except where superseded by an item in this supplement.

   NOTE Items within this supplement will use the same reference number as the corresponding item in the FAA MMEL, where applicable.

3. Unless superseded by information within this supplement, where the FAA MMEL refers to an item "as required by FAR" it shall be interpreted as meaning, "As required by Operating Requirements".

4. The MMEL and supplement apply a category (A, B, C or D) to each MMEL item which defines the length of time the deficiency may be carried (see Definitions item 3).

5. This supplement is applicable to aircraft having Rolls Royce RB211 or General Electric CF6 engines only. All items in the FAA MMEL which are annotated for Pratt and Whitney engines are not applicable and should not be used.

6. The standard Preamble and Definitions appropriate to a CAA MMEL are included here. These, in conjunction with those in the FAA MMEL, should be applied to any MEL generated by the use of this supplement.

7. This supplement is based upon the FAA approved Boeing 747-400 MMEL up to **Revision 29 dated 1 March 2013**.

8. The FAA MMEL includes MMEL relief for some equipment and modifications which have been approved as FAA Supplemental Type Certificates (STCs). The UK CAA reviews MMEL relief only for those STCs which have been subject to approval by either the CAA or the European Aviation Safety Agency (EASA). That approval may have been for a CAA or EASA STC, produced for the same modification.

   The STCs for which the FAA STC MMEL relief has been reviewed and accepted by the CAA are:

   NONE at Revision **8j** of this CAA MMEL Supplement.

   MMEL relief for STCs granted in the relevant FAA MMEL revision is not permitted by the CAA unless the STC is included in the above list of STCs reviewed and accepted by the CAA.

   Note: If an aircraft is to be modified in accordance with an FAA STC, any applicable MMEL relief should be detailed as part of the STC approval application. MMEL relief for this STC will then be reviewed and the CAA MMEL Supplement will be changed if required.

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PREAMBLE

1. The CAA approved Master Minimum Equipment List (MMEL) provides owners/operators of United Kingdom registered aircraft, of the relevant type, with the basis for the preparation of their individual Minimum Equipment List (MELs). In the case of holders of Air Operator Certificates the MEL will be included in that Company's Operations Manual.

2. The approved MMEL represents a list of items of equipment which, under particular circumstances, can, to the satisfaction of the CAA, be unserviceable when the aircraft is dispatched, while still retaining the required level of safety.

3. The CAA recognises that in some respects the standard and scale of equipment provided in the aircraft may exceed the minimum required to satisfy airworthiness or Air Navigation Legislation requirements. Where necessary to achieve a satisfactory level of safety with an inoperative item, appropriate limitations are imposed or the function transferred to another component.

4. The MMEL does not include items such as wings, engines and landing gear that are always required, nor is reference made to equipment such as passenger convenience and entertainment items which when inoperative obviously do not affect airworthiness. It is important to note therefore that ANY ITEM WHICH IS RELATED TO THE AIRWORTHINESS OF THE AIRCRAFT AND WHICH IS NOT INCLUDED IN THE MMEL IS ALWAYS REQUIRED TO BE OPERATIVE BEFORE A FLIGHT IS DISPATCHED. This also applies to items required by Air Navigation Legislation. Additional Certification Requirements as appropriate, which are not listed, must be operative.

5. The MMEL may not waive a limitation or an emergency procedure which is given in the Flight Manual (FM) or override an Airworthiness Directive (AD) /Mandatory Inspection unless the FM/AD provides otherwise. Similarly any Additional Certification Requirements, or other special provisions, as appropriate, which have been determined as necessary by the CAA shall not be waived unless otherwise agreed or varied by the CAA.

6. An Owner/Operators MEL must receive CAA approval which thereby conveys the permission, required by the UK Air Navigation Order, to the Commander, for operation of the aircraft with specified items of equipment unserviceable.

7. The MEL may not be less restrictive than the MMEL, therefore the number of items required for dispatch shall not be less than the corresponding number in column 4 of the MMEL and any associated conditions shall be at least as severe as those specified in column 5.

8. The MMEL does not anticipate the effects of combinations of apparently unrelated unserviceabilities or allow for situations where systems are made inoperative for special purposes such as demonstration, test or crew training. Other provisions may apply to positioning or ferrying flights but these may not necessarily be included in the MMEL.

PREAMBLE (Cont.)

9. The MEL should indicate that a decision to operate the aircraft with multiple unserviceabilities should only be made after due consideration of possible inter-related or additive effects and, if necessary, following consultation with appropriate engineering specialists.

10. It is not the purpose of the MMEL to allow defects of other than optional items to remain unrectified indefinitely. The operational flexibility provided under the MMEL policy is justified only within a framework of controlled and sound programmes of repairs, replacement and servicing. Defects should be rectified expeditiously thus retaining the intended overall level of safety and reducing the possibility of a subsequent failure necessitating the removal of the aircraft from service. Particular items in the MMEL may be subject to a limitation of flight hours, number of flights or consecutive calendar days, and these must be transferred into the MEL. A limit of three calendar days for completion of repairs or replacements has been applied to some items. Other time limits for rectification, such as those specified by the ANO, may also be applied as appropriate. Operators with established routes shall specify in the MMEL at which stations, in additional to the main maintenance base, repair facilities exist.

11. This MMEL is based upon UK legislation and some of the alleviations it provides may not therefore necessarily comply with foreign legislation.

12. Where entries specify the use of (O) and/or (M) procedures the information contained in the Boeing 747-400 Dispatch Deviations Guide have been taken as the minimum required.

13. The CAA MMELs and Supplements are produced in conjunction with a base document, generally either the MMEL issued/approved by a Foreign Airworthiness Authority or the aircraft manufacturer at a specific quoted revision number and date. There may be occasions whereby the CAA MMEL or Supplement has not been updated to consider later revisions of the base document. This could lead to instances where there are alleviations in the base MMEL which have either been revised or deleted and are now more restrictive than the corresponding CAA MMEL or Supplement entry. Operators are invited to review all new base document MMEL revisions and where necessary advise the CAA MMEL section of any significantly more restrictive alleviations introduced by the revision. The CAA will then expedite review of these variations and, where required, issue amendments to the CAA MMEL or Supplement.

    New or amended alleviations given in later issues of the base document shall not be used until the CAA MMEL or Supplement has been updated to confirm that issue of the base document is acceptable.

DEFINITIONS

1. In this list, the items of equipment are classified in systems according to the ATA 100 specification. Individual items within a given ATA classification are numbered sequentially.

2. "Item" (Column 1): The equipment, system, components or function as listed in Column 1.

   NOTE: Items annotated in UPPER CASE letters indicates the precise flight deck legend used.

3. "Rectification Interval" (Column 2) : Inoperative items or components, deferred in accordance with the MEL, must be rectified at or prior to the rectification intervals established by the following letter designators given in the "Rectification Interval" column (2) of the MMEL.

   NOTE: Subject to the approval of the Authority, the operator may permit a one-time extension of the applicable Rectification Interval B, C or D for the same duration as that specified in the MEL.

   Category A
   No standard interval is specified, however, items in this category shall be rectified in accordance with the conditions stated in the Remarks column (5) of the MMEL.

   Where a time period is specified it shall start at 00:01 on the calendar day following the day of discovery.

   Category B
   Items in this category shall be rectified within three (3) consecutive calendar days, excluding the day of discovery. For example, if it were recorded at 10 am on January 26th, the three day interval would begin at midnight on the 26th and end at midnight on the 29th.

   Category C
   Items in this category shall be rectified within ten (10) consecutive calendar days, excluding the day of discovery. For example, if it were recorded at 10 am on January 26th, the 10 day interval would begin at midnight on the 26th and end at midnight on February 5th.

   Category D
   Items in this category shall be rectified within one hundred and twenty (120) consecutive calendar days, excluding the day of discovery.

4. "Number Installed" (Column 3): The number of the specified items normally installed in the aircraft. This number identifies the aircraft configuration considered in developing the MMEL.

   NOTE: The operator's MEL should list the number installed in a particular aircraft.

5. "Number Required for Dispatch" (Column 4): The minimum number of the specified items required for operation provided the conditions defined in Column 5 are met.

6. "Remarks or Exceptions" (Column 5): This column includes a statement prohibiting operation or permitting operation with a specific number of items inoperative, provisos (conditions and limitations) for such operation and appropriate notes.

DEFINITIONS (Cont.)

7. Dash (-): This symbol indicates a variable quantity when used in Columns 3 or 4.

   NOTE: The operator's MEL should list the numbers appropriate to his particular aircraft in Columns 3 and 4.

8. "Placarding" : Each inoperative item must be placarded to inform and remind the crew members and maintenance personnel of the equipment condition. To the extent practicable, placards should be located adjacent to the control or indicator for the item affected such that it is clear to the operating crew that it or its associated system is inoperative.

   NOTE: The practice of specifying which items must be placarded, by means of an asterisk (*), has been discontinued.

9. "Inoperative": A system or item of equipment is deemed inoperative if it malfunctions such that it does not accomplish its intended purpose and/or is not consistently functioning within its designed operating limit(s) or tolerance(s).

10. "(O)": The use of this symbol in Column 5 indicates that an appropriate operating procedure (or change to an existing procedure) must be established, published and utilised to maintain the required level of safety while operating under the terms of the (M)MEL.

    Normally, these procedures are accomplished by the flight crew. However, other personnel may be qualified and authorised to perform certain functions.

11. "(M)": The use of this symbol in Column 5 indicates that an appropriate maintenance procedure must be established, published and utilised prior to the first flight undertaken following discovery of the defect and, if necessary, repeated at specified intervals during operation under the terms of the (M)MEL to maintain the required level of safety.

    Normally, these procedures are accomplished by maintenance personnel. However, other personnel may be qualified and authorised to perform certain functions.

    NOTE: Where an item is annotated (O)/(M), the "/" is defined as "and/or", which shows that there may be different options available in respect of the MEL procedures.

12. "As required by Air Navigation Legislation / Operating Requirements": The associated item must comply with legal provisions such as the Air Navigation Order or any other legislation (EU-OPS) in force during the flight.

    Operators should refer to the JAR-OPS 1 MEL Policy document (Temporary Guidance Leaflet number 26) for suitable alleviations based upon the required equipment identified within EU-OPS, subparts K and L (published in the JAA Administrative and Guidance, section four, Operations, part three).

13. "VMC" and "IMC": The definitions of these terms are those used in Section 2 of the Air Navigation Order - Rules of the air. The definition of VMC does not include ‘VFR-on-Top’.

DEFINITIONS (Cont.)

14. "Icing Conditions": An atmospheric condition that may cause ice to form on the aircraft or in the engines.

15. "Visible Moisture": An atmospheric environment containing water in any form that can be seen in natural or artificial light, i.e. clouds, fog, rain, sleet, hail, snow.

16. "Flight Hour": The time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.

    NOTE: The definition differs from that given in the Air Navigation Order.

17. "Flight": For the purpose of a MEL, a flight is the period of time between the moment when an aeroplane begins to move by its own means, for the purpose of preparing for take-off, until the moment the aeroplane comes to a complete stop on its parking area, after the subsequent landing (and no subsequent take-off).

18. "ETOPS": Refers to "extended range operations" which may be defined as "operation of a two-engined aeroplane over a route that contains a point farther than one hour flying time at the normal one-engine inoperative cruise speed (in still air) from an adequate airport".

    In the MEL, for an operator who has received approval to extend maximum diversion time from 120 minutes to 138 minutes, unless otherwise stated, "120 minutes" may be interpreted as "138 minutes".

19. "Flight day": A 24 hour period (from midnight to midnight) during which at least one flight is scheduled for the affected aircraft.

20. "Authority": The competent regulatory authority according to the country of registry; for aircraft registered in the U.K. this is the Civil Aviation Authority.

21. "It is not reasonably practical to repair or replace before the commencement of flight / It is not reasonably practicable for repairs or replacements to be made": These statements are intended to cover situations where there is a lack of a replacement part(s), inadequate engineering resources or manpower to enable the defect to be rectified.

    NOTE: The intention of either of these statements in an MMEL is that the aircraft may be dispatched if there are inadequate available spares or if there are no qualified and authorised personnel on base to perform the task. The definition is not dependent on whether there is enough time available to complete the task before the next flight. If the aircraft is at a maintenance base or any other airport, but the spare(s) or manpower are not available, then the aircraft may be dispatched. As soon as the aircraft lands at an airport where the spares are available and there are qualified and authorised personnel on base, the defect must be rectified.

DEFINITIONS (Cont.)

22. "The aircraft may depart on the flight or series of flights for the purpose of returning directly to a base where repairs or replacements can be made / the aircraft may continue the flight or series of flights but shall not depart an airport where repairs or replacements can be made": These statements are intended to allow the aircraft to be flown, using the most direct route, to the nearest maintenance base where arrangements for repairs or replacements can be made.

NOTE: Once the aircraft lands at the maintenance base, the aircraft shall not be dispatched until the defect has been rectified.

23. "Combustible (Material)": is defined as material which is capable of catching fire and burning.

When an MMEL item specifies the condition that only non-combustible materials are to be carried, it is the operator's responsibility to determine that all material (including containers, packing material and pallets etc) in the associated compartments is of a non-combustible nature.

If it cannot be determined whether any proposed cargo is non-combustible, it must not be loaded in compartments where combustible materials are prohibited.

24. "System": System means the group of directly related components which together performs a specified function, for example 'RPM indication system' would include the RPM indicator, tachometer generator, circuit breaker and associated circuitry.

25. "Extended Over-water Flight": Refers to an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline.

26. "Dispatch": The point at which an aircraft first moves under its own power for the purpose of commencing a flight.

NOTE: The definition above is in accordance with that given in Article 256(1)(a) of the ANO. The MMEL/MEL applies to all defects identified that occur up to the point of dispatch. They come into effect again when the aircraft next comes to rest at the end of its flight.

27. Base Documents used for the preparation of this MMEL Supplement are:

(a) FAA B747-400 MMEL at **Revision 29, dated 1 March 2013**.

(b) CAA Policy as at **6 March 2013.**

(c) CAA MMEL Supplement for the B747-400 at **Revision 8i,** dated **26 February 2013**.

28. This MMEL is applicable to Boeing 747-400 Series aircraft that are equipped with either Rolls Royce or General Electric Engines only, but are not equipped with an Auxiliary Fuel Tank.

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HIGHLIGHTS OF REVISION 8

GENERAL This CAA MMEL Supplement has been updated principally to reflect Revisions 24 and 24a to the FAA MMEL. Additional miscellaneous changes and corrections also made.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that revision 24a, dated 1 July 2009, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No	3	Note relating to Rectification Interval Extension revised in accordance with CAA MMEL Policy Item GEN-6.
Item No.	27	Amended to reflect the base documents used in preparation of this MMEL Supplement.

ATA 22 AUTO FLIGHT

22-11-4	Mode Control Panel Switches	The FAA MMEL at Revision 24a is acceptable.

ATA 23 COMMUNICATIONS

23-76-1	Cockpit Door Surveillance System	Title corrected.

ATA 25 EQUIPMENT/FURNISHINGS

25-20-1	Passenger Convenience Items	Item unchanged but now shown in bold type (as difference from FAA MMEL) as NEF program not used in UK.
25-63-5	Emergency Locator Transmitter	Revised to identify fixed type and survival type ELTs.

ATA 33 LIGHTS

33-41-1	Wing Illumination Lights	Revised in line with JAA policy.

ATA 34 NAVIGATION

34-13-3	Standby Altimeter Vibrator	EUI part no. corrected. (No change to unit but previous number was Boeing specification number).
34-22-2	Standby RMI	EUI part no. corrected.
34-22-4	Standby Attitude/ILS Ind.	EUI part no. corrected.
34-22-5	Integrated Standby Flight Display	EUI part no. corrected.

HIGHLIGHTS OF REVISION 8 (Cont.)

ATA 34 NAVIGATION (Cont.)

34-33-1	Radio Altimeter	Reinstated relief for sub-item 1) a), in line with FAA MMEL.
34-46-1	GPWS/TAWS	Added reference to Service Bulletin which reinstates relief for Modes 1 to 4 and Test Mode, in line with FAA MMEL.
34-53-1	Transponder	Revised to read "As required by Operating Requirements".

ATA 36 PNEUMATICS

36-11-11	Intermediate Bleed Check Valves	New supplement item to add 'Note' re AFM performance decrement, previously omitted in error.
36-21-4	Engine Bleed Overpressure Switch	New supplement item to add 'Note' re AFM performance decrement, previously omitted in error.

ATA 52 DOORS

52-34-1	Main Lower Lobe Cargo Doors	Note added for clarity.

ATA 56 WINDOWS

56-11-1	Windshields	The FAA MMEL at Revision 24a is acceptable.

HIGHLIGHTS OF REVISION 8a

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 25 to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that Revision 25, dated 29 September 2009, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in preparation of this MMEL Supplement.

ATA 22 AUTO FLIGHT

Section deleted (FAA MMEL entry for 22-11-4 was accepted at Rev. 23).

HIGHLIGHTS OF REVISION 8a (Cont.)

ATA 28 FUEL

28-21-1	Pressure Fuelling System	Item deleted (FAA MMEL entry was accepted at Rev. 23).

ATA 56 WINDOWS

Section deleted (FAA MMEL entry for 56-11-1 was accepted at Rev. 24a).

HIGHLIGHTS OF REVISION 8b

GENERAL This CAA MMEL Supplement has been updated to revise the entry for ADF in line with JAA (EASA) policy.

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in preparation of this MMEL Supplement.

ATA 34 NAVIGATION

34-57-1	Navigation Systems (ADF)	Revised to read "As required by Operating Requirements" (Refer to JAA Administrative and Guidance Material, Temporary Guidance Leaflet (TGL) 26).

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HIGHLIGHTS OF REVISION 8c

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 26 to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that Revision 26, dated 16 July 2010, is now the appropriate version of the FAA MMEL.

PREAMBLE The following changes have been made:

Item No.	4	Minor wording correction.

DEFINITIONS

Item No.	26	ANO reference updated.
Item No.	27	Amended to reflect the base documents used in preparation of this MMEL Supplement.

ATA 25 EQUIPMENT / FURNISHINGS

25-54-1	Cargo Restraint Systems	New Supplement Entry
25-63-5	Emergency Locator Transmitter	Corrected designations for Survival Type to 'ELT(S)' and for Fixed Type to 'ELT'.

ATA 31 INDICATING / RECORDING

31-31-1	FDR / CVFDR	'Combined Voice and Flight Data Recorder (CVFDR)' added to title.

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HIGHLIGHTS OF REVISION 8d

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 26a to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that Revision 26a, dated 10 November 2010, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in the preparation of this MMEL Supplement.

ATA 33 LIGHTS

33-24-1	Passenger Lighted Information Signs	New supplement entry.

ATA 46 PNEUMATIC

46-20-1	Electronic Flight Bag Systems	New supplement entry.

ATA 52 DOORS

52-11-1	Main Entry Doors / Slides	Revised in line with JAA (EASA) policy.

HIGHLIGHTS OF REVISION 8e

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 26b to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No. 7 Amended to reflect that Revision 26b, dated 11 March 2011, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No. 27 Amended to reflect the base documents used in the preparation of this MMEL Supplement.

ATA 28 FUEL

28-11-1	Fuel Sump Drain Valves	Supplement entry withdrawn. The FAA MMEL entry at Revision 26b is acceptable.

ATA 52 DOORS

52-23-1	Upper Deck Escape Door / Slide	Added sub-item 1).

HIGHLIGHTS OF REVISION 8f

GENERAL This CAA MMEL Supplement has been updated to accept the FAA MMEL entry for Lavatory Smoke Detection Systems.

DEFINITIONS

Item No. 27 Amended to reflect the base documents used in the preparation of this MMEL Supplement.

ATA 26 FIRE PROTECTION

26-13-1	Lavatory Smoke Detection System	Supplement entry withdrawn. The FAA MMEL entry at Revision 26b is acceptable.

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HIGHLIGHTS OF REVISION 8g

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 27 to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that Revision 27, dated 29 March 2012, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in the preparation of this MMEL Supplement.

ATA 23 COMMUNICATIONS

23-11-1	HF Communication System	Revised to "As required by Operating Requirements".
23-42-4	Cabin Interphone Alerting System	Revised item title in line with FAA MMEL.

ATA 34 NAVIGATION

34-33-1	Radio Altimeters (RA)	Removed (M) from sub-item 1) a), b) & c) in line with FAA MMEL.

ATA 34 NAVIGATION

35-31-2	Protective Breathing Equipment	New supplement item in line with EASA policy.

HIGHLIGHTS OF REVISION 8h

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 28 to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that Revision 28, dated 4 September 2012, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in the preparation of this MMEL Supplement.

ATA 25 EQUIPMENT / FURNISHINGS

25-40-1	Exterior Lavatory Door Ashtrays	New supplement item in line with EASA policy.
25-40-2	Interior Lavatory Ashtrays	New supplement item in line with EASA policy.

HIGHLIGHTS OF REVISION 8i

GENERAL This CAA MMEL Supplement has been updated to correct an error at Revision 8h where the introduction of supplement item 25-40-2 (Interior Lavatory Ashtrays) inadvertently caused the deletion, by overwriting, of FAA item 25-40-2 (Lavatory Waste Receptacle Access Doors/Covers)

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in the preparation of this MMEL Supplement.

ATA 25 EQUIPMENT / FURNISHINGS

25-40-2	Interior Lavatory Ashtrays	Moved to 25-40-4.
25-40-4	Interior Lavatory Ashtrays	Moved from 25-40-2.

CIVIL AVIATION AUTHORITY

MASTER MINIMUM EQUIPMENT LIST

SUPPLEMENT

Revision 8j
6 March 2013

BOEING 747-400
(Rolls Royce & General Electric Engines Only)

HIGHLIGHTS OF REVISION 8j

GENERAL This CAA MMEL Supplement has been updated to reflect Rev. 29 to the FAA MMEL.

INTRODUCTION The following changes have been made:

Item No.	7	Amended to reflect that Revision 29, dated 1 March 2013, is now the appropriate version of the FAA MMEL.

DEFINITIONS

Item No.	27	Amended to reflect the base documents used in the preparation of this MMEL Supplement.

No technical changes to this supplement at this revision.

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8g DATE: 27 June 2012	PAGE: S23-1

(1) System & Sequence Numbers Item		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
23	**COMMUNICATIONS**				
-11-1	High Frequency (HF) Communication System	-	-	-	**As required by Operating Requirements.**
-31-1	Passenger Address System	**-**	**-**	**-**	**As required by Operating Requirements.**
-42-1	Crewmember Interphone System	**-**	**-**	**-**	**As required by Operating Requirements.**
-42-3	Handset System	**-**	**-**	**-**	**As required by Operating Requirements.**
-42-4	Cabin Interphone Alerting System	**C**	**-**	**-**	**The visual signal may be inoperative on the flight deck.**
		C	**-**	**-**	**Both visual and aural signals may be inoperative in the cabin provided the PA system is operative from the flight deck.** **<u>Note</u>: Any station that is operative may be used.**
-51-2	Headset/Boom Microphones	D	-	-	Any in excess of those required for flight deck crewmembers (including official observer in forward observer's seat) may be inoperative. **<u>NOTE</u>: An operative Headset, including Boom Microphone, must be available for each flight deck crewmember.**
-51-4	Audio Control Panels	**D**	-	-	**One required for each flight crew member on flight deck duty. Any in excess of those required may be inoperative.**
-71-1	Cockpit Voice Recorder	**-**	**-**	**-**	**As required by Operating Requirements.**
-72-1	Cabin Video Surveillance System (CVSS) (If installed)	-	-	-	**As required by Operating Requirements.**
-76-1	AirWorks Cockpit Door Surveillance System (CDSS) (STC ST01541 LA)	**-**	**-**	**-**	**Please refer to 23-72-1.**
-76-2	Flight Deck Door / Cabin Surveillance Systems (If installed)	**-**	**-**	**-**	**Please refer to 23-72-1.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8 DATE: 17 July 2009	PAGE: S25-1

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25 EQUIPMENT/FURNISHINGS				
-11-2 Flight Crew Seats				
1) Power Adjustment System (If Installed)	D	2	0	**May be inoperative.**
2) Manual Adjustment System				
(a) Horizontal Adjustment	**-**	**2**	**2**	**Must be operative.**
(b) Vertical and Recline Adjustment	**B**	**2**	**0**	**(M) May be inoperative provided:** **(a) Associated power control is operative.** **OR** **(b) Associated seat is secured in a position acceptable to the pilot.**
(c) Other Adjustments	**C**	-	0	(M) May be inoperative provided: **(a) Associated seat is secured in a position acceptable to the pilot, and** (b) Inoperative armrest is in the up position or removed.
-11-3 Observer Seat(s)				
1) Primary Observer Seat	**D**	-	**0**	May be inoperative **provided the seat is not required and is correctly stowed.**
-20-1 **Passenger Convenience Items**	**D**	**-**	**0**	**Passenger Convenience Items, as expressed in this MMEL, are those related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ashtrays, stereo equipment, overhead reading lamps. Items addressed elsewhere in this document shall not be included. (M) and (O) procedures may be required and included in the operator's appropriate document.** **NOTE: Lavatory door ashtrays (internal and external) are not considered convenience items.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 6b DATE: 29 August 2006	PAGE: S25-2

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25 EQUIPMENT/FURNISHINGS				
-25-1 Flight Attendant Seat Assemblies				
1) Non-Required Flight Attendant Seats	**D**	-	-	(M) **(O) As required by Air Navigation Legislation, any in excess of those required by Legislation may be inoperative (see notes at overleaf).**
2) Required Flight Attendant Seats	B	-	-	(M) (O) One seat position may be inoperative provided: (a) Affected seat position or seat assembly is not occupied, (b) Flight attendant displaced by inoperative seat occupies either the adjacent flight attendant seat or the passenger **aisle** seat **nearest** to the inoperative seat, (c) Alternate procedures are established **/ approved for displaced flight attendant,** (d) Folding type seat **is stowed or** secured in the retracted position, and (e) The passenger seat assigned to the flight attendant is placarded FOR FLIGHT ATTENDANT ONLY. NOTE 1: A **fully** automatic folding seat that will not stow automatically **or remain stowed** is considered to be inoperative **and shall be secured in the retracted position or removed. An exception should only be made where cabin layout is such that emergency egress is not in any way compromised by a seat in the deployed position.** NOTE 2: A seat with an inoperative or missing **seat belt or harness** is considered to be inoperative. NOTE 3: **This requirement does not preclude use of passenger seats by Flight Attendants carried in excess of the required complement.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8h DATE: 10 October 2012	PAGE: S25-3

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25 EQUIPMENT/FURNISHINGS				
-29-2 Flight Crew / Flight Attendant Rest Area Door Lock(s) (If installed)	**A**	-	0	(M) May be inoperative provided: (a) Associated rest area door is deactivated in the unlocked position, (b) Associated rest area door opens and closes normally, and **(c) Repairs or replacements are made within six flight days.**
-40-1 Exterior Lavatory Door Ashtrays	**A**	**-**	**0**	**One or more may be inoperative or missing provided repairs are made within three calendar days.**
	A	**-**	**-**	**One or more may be inoperative or missing provided:** **(a) One operative exterior lavatory door ashtray can be readily seen and accessed from the affected lavatory door, and** **(b) Repairs are made within ten calendar days.**
	D	**-**	**0**	**(M)(O) One or more may be inoperative or missing provided:** **(a) Affected lavatory door is locked closed and placarded to prohibit passenger entrance, and** **(b) Affected lavatory is used only by crew members.**
	D	**-**	**0**	**One or more may be inoperative or missing provided flight is non-smoking.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8i DATE: 26 February 2013	PAGE: S25-4

(1) System & Sequence Numbers Item		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25	**EQUIPMENT/FURNISHINGS**				
-40-4	Interior Lavatory Ashtrays	**B**	**-**	**0**	**One or more may be inoperative or missing provided associated lavatory fire extinguishing system, when installed, is operative.**
		D	**-**	**0**	**(M)(O) One or more may be inoperative or missing provided:** **(a) Affected lavatory door is locked closed and placarded to prohibit passenger entrance, and** **(b) Affected lavatory is used only by crew members.**
-54-1	Cargo Restraint Systems	**D**	-	-	(M) May be inoperative or missing provided acceptable cargo loading limits from an approved source, i.e., an Approved Cargo Loading Manual, Cargo Handling Manual, or Weight and Balance Manual are observed.
		D	-	-	(M) May be inoperative or missing provided associated cargo compartment remains empty.
-63-5	Emergency Locator Transmitter (ELT) (If installed)				
	(1) Survival ELT(S)	D	-	-	**(M) Any in excess of the minimum required may be inoperative or missing provided the equipment is placarded inoperative, removed from the installed location and placed out of sight so that it cannot be mistaken for a functional unit.**
	(2) Fixed ELT	A	-	**-**	**May be inoperative provided repairs or replacements are made within 6 further flights or 25 flying hours, whichever occurs first.**
		D	-	-	Any in excess of those required by **Operating Requirements** may be inoperative.
-64-1	Flexible Smoke Barrier (Passenger Aircraft)	**-**	**1**	**1**	**Must be operating normally.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8h DATE: 10 October 2012	PAGE: S25-5

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
25 EQUIPMENT/FURNISHINGS				
-64-2 Emergency Medical Equipment				
1) First Aid Kit and/or Associated Equipment	D	-	-	Any in excess of those required by legislation may be incomplete, missing or inoperative provided required distribution is maintained.
	A	**-**	**-**	**If more than one kit is required, one of the required first aid kits may be incomplete for a maximum of 2 flight days.**
2) Emergency Medical Kit and/or Associated Equipment	D	-	-	Any in excess of those required by legislation may be incomplete, missing or inoperative provided required distribution is maintained.
	A	**-**	**-**	**Required emergency medical kit(s) may be incomplete for flight to a destination where repairs or replacements can be made but not to exceed a maximum of 2 calendar days.**
3) Automated External Defibrillators (AED) and/or Associated Equipment	D	-	-	Any in excess of those required by legislation may be incomplete, missing or inoperative provided required distribution is maintained.

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8f DATE: 21 July 2011	PAGE: S26-1

(1) System & Sequence Numbers Item		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
26	**FIRE PROTECTION**				
-13-1	Lavatory Smoke Detection System				**The FAA MMEL at Revision 26b is acceptable.**
-14-1	Main Deck Cargo Smoke Detector System (Combi Only)	**-**	1	**1**	**Must be operating normally.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 6 DATE: 24 June 2005			PAGE: S27-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
27 FLIGHT CONTROLS				
-51-1 Flap Control Units (FCU)	C	3	2	(M) (O) One may be inoperative or removed provided **any displayed EICAS status messages are fully investigated prior to departure,** and (a) It is verified that flap position RVDT sensors operate normally before each departure, (b) For GE, if right FCU is inoperative or removed, No 1 demand pump is selected ON during takeoff and landing, and (c) For GE, if left FCU is inoperative or removed, No 4 demand pump is selected ON during takeoff and landing. NOTE: If SB 747-34-2349 or production equivalent has not been incorporated and centre FCU is inoperative or removed, MODE 4 of GPWS system is inoperative **(see 34-46-1).**
-62-2 Speed Brake Solenoid	-	1	**1**	**Must be operative.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8e DATE: 25 March 2011	PAGE: S28-1

(1) System & Sequence Numbers Item		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
28	**FUEL**				
-11-1	Fuel Sump Drain Valves				**The FAA MMEL at Revision 26b is acceptable.**
-21-4	Fuelling Receptacle Caps	C	4	0	**(M)** May be inoperative (missing) provided: **(a) Refuelling receptacle is visually checked for contamination before each refuelling, and** (b) No leakage can be detected after refuelling is complete.
-42-2	Stabiliser Fuel Pump low PRESS Lights	C	2	0	**May be inoperative provided associated pump(s) operate normally.** **Note: No other alleviation for this item is given.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 6 DATE: 24 June 2005			PAGE: S30-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
30 ICE AND RAIN PROTECTION				
-31-1 Pitot-Static Probe Heater Systems	B	4	3	Heater elements in one probe may be inoperative provided airplane is not operated in visible moisture or in known or forecast icing conditions. Note 1: For probe heat to be considered operative, both heater elements in that probe must operate normally. **Note 2: The pitot-static probe heater system is required to be operative for RVSM operations.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8c DATE: 28 September 2010	PAGE: S31-1

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
31 INDICATING/RECORDING SYSTEMS				
-31-1 Flight Data Recorder (FDR) or Combined Voice and Flight Data Recorder (CVFDR)	**-**	**-**	**-**	**As required by Operating Requirements.**
-31-2 Quick Access Recorder (QAR) **or other Data Recording Equipment used in Operators Flight Data Monitoring Programmes** (If Installed)	**A**	**-**	**-**	**May be inoperative subject to arrangements approved by the Authority. Alternate Data Sources, where practicable, should be considered and used in absence of primary data source.** **<u>Note 1</u>: Any alleviation and corresponding rectification interval will be dependent on the usage requirements of the QAR for individual operators, but should not exceed 60 days, and will be subject to approval by the Authority.** **<u>Note 2</u>: If the equipment is used for purposes other than meeting the operators Flight Data Monitoring Programme, then the dispatch deviation and rectification interval quoted elsewhere within the MMEL must be observed.**

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CIVIL AVIATION AUTHORITY
MASTER MINIMUM EQUIPMENT LIST

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 6 DATE: 24 June 2005				PAGE: S32-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions	
32 LANDING GEAR					
-10-1 Main Gear Wheel Tie Bolts	-	**288**	**288**	**All essential.**	

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8d DATE: 10 January 2011	PAGE: S33-1

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
33 LIGHTS				
-21-1 Cabin Interior **Lighting**	C	-	-	**Individual lights may be inoperative provided:** **(a) Lighting is adequate for cabin crew to perform their required duties, and** **(b) Cabin emergency lighting is operative.** **OR** **(c) Passengers are not carried.** **<u>Note</u>: Cabin emergency lighting does not include floor proximity lights (refer to item 33-51-3)**
-24-1 Passenger Lighted Information Signs (No Smoking / Fasten Seat Belt / Return to Seat)	C	-	-	(M) May be inoperative provided: (a) No passenger seat, lavatory, **cabin crew member seat** or crew rest area bunk is occupied from which a Passenger Lighted Information Sign is not readily legible, and (b) Associated seat, lavatory or bunk is blocked and placarded 'DO NOT OCCUPY'. NOTE: These conditions are not intended to prohibit lavatory use or inspections by crew members.
	C	-	-	(O) May be inoperative and associated passenger seat(s), lavatories, **cabin crew member seat(s)** or crew rest area bunk(s) occupied provided: (a) Passenger Address System operates normally, and (b) PA system is used to notify passengers and cabin crew when associated signs are placed on or off.
	C	**-**	**-**	**May be inoperative provided passengers are not carried.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8d DATE: 10 January 2011			PAGE: S33-2
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
33 LIGHTS (Cont…)				
-41-1 Wing Illumination Lights	**D**	**-**	**0**	**One or more may be inoperative for daylight operations.**
	B	**-**	**0**	**(O) One or more may be inoperative for night operations provided, an alternate means is operative and used to illuminate ice accretion on another outside surface visible from the flight deck.**
-42-2 Landing Lights	**B**	4	2	**Any one or two may be inoperative.**
	C	4	0	May be inoperative for day operations.
(1) Dim Position	C	4	0	May be inoperative.
-51-1 Interior Emergency Lighting				
(1) Overhead Emergency Lighting (Each aisle)	**B**	-	-	**A maximum of one in four consecutive overhead emergency lights (or light assemblies) may be inoperative.**
(2) EXIT signs	**C**	-	-	**Up to 50% of the bulbs may be inoperative in one or more signs.**
	-	-	-	**(M) (O) One may be inoperative provided the associated exit is considered inoperative, refer to 52-11-1.**
(3) Exit Area Lighting	**B**	-	-	**One may be inoperative.**
-51-3 Floor Proximity Emergency Path Marking System	**A**	1	-	**Individual lights may be inoperative in accordance with arrangements approved by the Authority.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8 DATE: 17 July 2009	PAGE: S34-1

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34 NAVIGATION				
-13-3 Standby Altimeter Vibrator				
1) Aircraft fitted with EIU p/n 622-8589-104		**1**	**1**	**Must be operative**
2) Aircraft fitted with EIU other than that in 1)				**The FAA MMEL is acceptable.**
-16-1 Altitude Alerting System	**B**	**-**	0	(O) May be inoperative provided: (a) Autopilot with altitude hold is operative, and (b) Enroute operations do not require its use. **Note: The altitude alerting system is required to be operative for RVSM operations.**
-22-1 Non-Stabilised Magnetic Compass (Standby)	B	1	0	May be inoperative provided **at least two independent stabilised compass systems are installed and operative.**
-22-2 Standby Radio Magnetic Indicator (RMI)				
1) Aircraft fitted with EIU p/n 622-8589-104	C	**-**	0	May be inoperative provided **Non-Stabilised Magnetic Compass is operative, and** standby power to Captain's ND is installed and available.
2) Aircraft fitted with EIU other than that in 1)				**The FAA MMEL is acceptable.**
-22-4 Standby Attitude/ILS Indicator (If Installed)				
1) Aircraft fitted with EIU p/n 622-8589-104		**2**	**2**	**Both Attitude and ILS functions must be operative.**
2) Aircraft fitted with EIU other than that in 1)				**The FAA MMEL is acceptable.**
22-5 Integrated Standby Flight Display (IFSD) System (If Installed)				
1) Aircraft fitted with EIU p/n 622-8589-104				**The Attitude Display must be operative, all other functions may be inoperative in line with the FAA MMEL.**

(Cont…)

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8g DATE: 27 June 2012	PAGE: S34-2

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34 NAVIGATION (Cont'd)				
22-5 Integrated Standby Flight Display (IFSD) System (If Installed) (Cont…)				
2) Aircraft fitted with EIU other than that in 1)				**The FAA MMEL is acceptable.**
-33-1 Radio Altimeters (RA)				
1) Single Source Datalink to GPWS				
a) Left RA	A	1	0	(O) May be inoperative provided: (a) Dispatch deviation **and rectification interval** for GPWS**/TAWS** inoperative is observed (refer to 34-46-1), (b) Approach minimums or operating procedures do not require its use, (c) Right RA operates normally, (d) Boeing Service Bulletin 747-31-2410 or production equivalent is incorporated, and (d) Repairs are made within two flight days.
b) Centre RA	C	1	0	(O) May be inoperative provided approach minimums or operating procedures do not require its use.
c) Right RA	C	1	0	(O) May be inoperative provided: (a) Approach minimums or operating procedures do not require its use, and (b) Left RA operates normally.
2) Multi-Source Datalink to GPWS	C	3	1	(M)(O) Two may be inoperative provided: (a) GPWS**/TAWS** is supplied with radio altitude data, and (b) Approach minimums or operating procedures do not require their use. **<u>Note</u>: If the loss of the radio altimeter prohibits normal operation of the ACAS, the dispatch deviation and rectification interval for an inoperative ACAS must be observed (refer to 34-45-1).**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 7 DATE: 29 November 2007	PAGE: S34-3

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34 NAVIGATION (Cont'd)				
-43-1 Weather Radar System	**A**	-	0	**(O) Required when flying for the purposes of public transport except that a flight may commence if the system is unserviceable:** **(a) such that the weather radar display is provided to only one pilot, as long as the aircraft is flying only to a place where it is reasonably practicable for the system to be repaired; or** **(b) when the weather report or forecasts available to the commander of the aircraft indicate that cumulonimbus clouds or other potentially hazardous weather conditions, which can be detected by the system when in working order, are unlikely to be encountered on the intended route or any planned diversion therefrom or the commander has satisfied himself that any such weather conditions will be encountered in daylight and can be seen and avoided, and the aircraft is in either case operated throughout the flight in accordance with any relevant instructions given in the operations manual.**
1) Auxiliary Side Panel Displays (If installed)	D	2	0	
2) Windshear Alert Mode (Predictive) (If installed)	B	-	0	(O) May be inoperative provided alternate procedures are established and used. Note: Operators' alternate procedures should include reviewing windshear avoidance and windshear recovery procedures.
	C	-	0	(O) May be inoperative provided: (a) Alternate procedures are established and used, and (b) Windshear Warning and Guidance System (Reactive) operates normally. (b) Takeoffs and landings are not conducted in known or forecast Windshear conditions.
3) Auto Tilt Function (If installed)	C	1	0	May be inoperative provided manual tilt function operates normally.

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8 DATE: 17 July 2009	PAGE: S34-4

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34 NAVIGATION (Cont'd)				
-45-1 **Airborne Collision Avoidance System (ACAS II) (If Installed)**				
1) ACAS II System	**A**	**-**	**0**	**(O)(M) As required by Air Navigation Legislation. May be inoperative provided the system is deactivated and secured, and** **(a) It is not reasonably practicable for repairs or replacements to be made before the commencement of flight, and** **(b) Repairs or replacements must be carried out within 10 calendar days.**
2) Combined Traffic Alert (TA) and Resolution Advisory (RA) Dual Displays	**C**	**-**	**1**	**(O) May be inoperative on the non-flying pilot side provided the TA and RA elements and audio functions are operative on the flying pilot side.**
3) Resolution Advisory (RA) Display System(s)	**C**	**-**	**1**	**(O) One may be inoperative on the non-flying pilot side.**
	C	**-**	**0**	**(O) May be inoperative provided:** **(a) All Traffic Alert (TA) display elements and voice command audio functions are operative, and** **(b) TA only mode is selected by the crew.**
4) Traffic Alert (TA) Display System(s)	**C**	**-**	**0**	**(O) May be inoperative provided all installed RA display and audio functions are operative.**
-46-1 Ground Proximity Warning System (GPWS) **(including TAWS)**	**-**	**-**	**-**	**As required by Operating Requirements except that Modes 1 to 4 and Test Mode must be operative if Boeing Service Bulletin 747-31-2410, or production equivalent, is not incorporated, due to an issue concerning MAWEA Config Gear Warning.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8b DATE: 27 November 2009	PAGE: S34-5

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
34 NAVIGATION (Cont'd)				
-53-1 **ATC Mode S Transponder System**	-	**-**	**-**	**As required by Operating Requirements.**
-57-1 Navigation Systems (ADF)	**-**	**-**	**-**	**As required by Operating Requirements.**
-57-2 Automatic Dependent Surveillance Broadcast (ADS-B) System (If installed)	D	-	**-**	**As required by Operating Requirements.**
-61-1 Flight Management Computer Systems				
1) Navigation Databases	**A**	**-**	**-**	**May be inoperative provided pilots' charts are used as a primary navigation information source and repairs or replacements are made within 10 calendar days.**
	A	**-**	**-**	**(O) May be out of currency provided:** **(a) Current aeronautical information is used to verify Navigation Fixes prior to dispatch,** **(b) Procedures are established to verify suitability of Navigation Facilities to define route of flight, and** **(c) The navigation database is updated to the current standard within 10 calendar days.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8g DATE: 27 June 2012	PAGE: S35-1

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
35 OXYGEN				
-31-2 Protective Breathing Equipment	D	-	-	**(M) (O) Any in excess of those required may be inoperative or missing provided:** **(a) Required distribution is maintained,** **(b) Inoperative PBE and its installed location are placarded inoperative,** **(c) Inoperative PBE unit is secured out of sight in an approved stowage, and** **(d) Procedures are established and used to alert crew members of inoperative or missing equipment.** **<u>Note</u>: Inoperative PBE units may be subject to dangerous goods requirements.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 6 DATE: 24 June 2005			PAGE: S36-1
(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
36 PNEUMATICS				
-11-3 Engine High Pressure Bleed Systems	C	4	3	(M)(O) One may be inoperative provided: a) Associated High Pressure Shutoff Valve (HPSOV) is secured closed, b) A minimum of 70% N1 (60% N1 for RR) is maintained at or above 10,000 ft MSL, or 55% N1 is maintained below 10,000 ft MSL on the associated engine while in icing conditions, c) Bleed systems on remaining engines operate normally, and d) For GE, associated engine thrust reverser is deactivated. **<u>Note</u>: Flight Manual performance decrements will be applicable if performance credit is taken for the availability of reverse thrust on GE powered aircraft.**

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
36 PNEUMATICS				
-11-8 Bleed Air Pressure Regulating Valve (PRV) Systems (PW & GE) **<u>Note</u>: Flight Manual performance decrements will be applicable if performance credit is taken for the availability of reverse thrust on GE powered aircraft.**	C	4	3	(M)(O) One may be inoperative with associated PRV secured closed provided: a) Airplane is not operated into known or forecast icing conditions, b) L and R ISLN valves are open for takeoff, and when flaps are operated, c) Bleed systems on remaining engines operate normally, d) Associated ENGINE BLEED switch is selected OFF except for engine start, e) For GE, associated engine thrust reverser is deactivated, and f) Appropriate performance adjustments are applied.
	C	4	3	(M)(O) One may be inoperative with associated PRV secured closed provided: a) Associated fan air valve is secured in the intermediate open position, b) Airplane is not operated in known or forecast icing conditions, c) L and R ISLN valves are open for takeoff, and when flaps are operated, d) Bleed systems on remaining engines operate normally, e) Associated ENGINE BLEED switch is selected OFF except for engine start, f) For GE, associated engine thrust reverser is deactivated, and g) Appropriate performance adjustments are applied.

(Cont…)

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
36 PNEUMATICS				
-11-8 Bleed Air Pressure Regulating Valve (PRV) Systems (PW & GE) (Cont…) **<u>Note</u>: Flight Manual performance decrements will be applicable if performance credit it taken for the availability of reverse thrust on GE powered aircraft.**	C	4	3	(M)(O) One may be inoperative with associated PRV open provided: a) Associated PRV operates pneumatically in the full open position, b) Associated HPSOV is secured closed, c) Associated Bleed Air Over-pressure switch is deactivated, d) Associated ENGINE BLEED switch is selected OFF except for engine start, e) L and R ISLN valves are open for takeoff, and when flaps are operated, f) Bleed systems on remaining engines operate normally, g) A minimum of 70% N1 is maintained at or above 10,000 ft MSL, or 55% N1 is maintained below 10,000 ft MSL on the associated engine while in icing conditions, and h) For GE, associated engine thrust reverser is deactivated.
-11-11 Intermediate Bleed Check Valves **<u>Note</u>: Flight Manual performance decrements will be applicable if performance credit it taken for the availability of reverse thrust on GE powered aircraft.**	C	4	3	(M)(O) One may be inoperative open provided: a) A minimum of 70% N1 (60% N1 for RR) is maintained at or above 10,000 ft MSL, or 55% N1 is maintained below 10,000 ft MSL on the associated engine while in icing conditions, b) Associated HPSOV is secured closed, c) Bleed systems on remaining engines operate normally, and d) For GE, associated engine thrust reverser is deactivated.

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
36 PNEUMATICS				
-21-4 Engine Bleed Overpressure Switch	C	4	3	(M)(O) One may be inoperative deactivated provided: a) Associated HPSOV is secured closed, b) Associated Bleed switch remains OFF for takeoff, c) A minimum of 70% N1 (60% N1 for RR) is maintained at or above 10,000 ft MSL, or 55% N1 is maintained below 10,000 ft MSL on the associated engine while in icing conditions, d) Bleed systems on remaining engines operate normally, and d) For GE, associated engine thrust reverser is deactivated.
Note: Flight Manual performance decrements will be applicable if performance credit it taken for the availability of reverse thrust on GE powered aircraft.				

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
46 INFORMATION SYSTEMS				
-20-1 Electronic Flight Bag (EFB) System (If installed)				
(1) Class 1, 2 & 3 EFB **The purpose of this entry is not to require inclusion of Class 1 & 2 EFBs in an operator's MEL, but it is one means of controlling inoperative EFB equipment. Other means may also be agreed with the NAA**	**C**	**-**	**0**	**(M) (O) May be inoperative provided alternate procedures are established and used where operating procedures are dependent upon the use of the affected EFB.** **<u>Note:</u> Any EFB function which operates normally may be used.**
(2) Class 2 EFB				
(a) Mounting Device	**C**	**-**	**1**	**(M) (O) Any in excess of one may be inoperative provided the affected EFB is secured by an alternative means**
	C	**-**	**0**	**(M) (O) May be inoperative provided:** **(a) The associated EFB is used in accordance with Class 1 EFB stowage criteria, and** **(b) Alternate procedures are established and used where operating procedures are dependent upon the use of the affected EFB.**
(b) Data Connectivity	**C**	**-**	**1**	**(M) (O) Any in excess of one may be inoperative provided an alternative means of data connectivity is used.**
	C	**-**	**0**	**(M) (O) May be inoperative provided alternate procedures are established and used where operating procedures are dependent upon the use of the affected EFB.** **<u>Note:</u> Any EFB function which operates normally may be used.**
(3) Power Connection for Class 1 and Class 2 EFB	**C**	**-**	**1**	**(M) (O) Any in excess of one may be inoperative provided an alternative power source is available and can be used for the planned duration of use of the affected EFB.**
	C	**-**	**0**	**(M) (O) May be inoperative provided alternate procedures are established and used.**

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CIVIL AVIATION AUTHORITY

MASTER MINIMUM EQUIPMENT LIST

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
47 INERT GAS SYSTEM				
-11-1 Nitrogen Generation System				**Not applicable.**
-11-2 Nitrogen Generation System (Boeing line numbers 1363 and 1366)				**Not applicable.**

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
52 DOORS				
-11-1 Main Entry Doors / Slides	**A**	-	-	**(M) (O) One may be inoperative for a maximum of 5 flights provided:** **(a) Passenger number reduction and distribution policy, and cabin safety procedures are established and used,** **(b) The affected door is closed and locked,** **(c) A conspicuous barrier, strap or rope and a placard stating "DO NOT USE" are placed across the affected door prior to passenger boarding,** **(d) The affected door is not used for passenger boarding, nor for any other purpose,** **Note: If the affected door is operative mechanically, it may still be used for evacuation in the event of an emergency.** **(e) Visual indications (illuminated and non-illuminated) directing passengers to the affected emergency exit are obscured.** **(f) All crew members are briefed on the location and condition of the affected door, passenger distribution and modified cabin safety procedures,** **(g) The affected door and blocked seating layout are checked before each flight by the appropriate cabin crew member, and** **(h) The escape path to the affected door is checked by the appropriate cabin crew member to be unobstructed before each take-off and landing.** **Note: Reference may be made to CAA(UK) CAP 789 for guidance relating to passenger number reduction.**

AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 8e DATE: 25 March 2011	PAGE: S52-2

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
52 DOORS (Cont.)				
-21-1 Crew Compartment Overhead Hatch Latch Pins	**-**	4	**4**	**Must be installed and operating normally.**
-23-1 Upper Deck Escape Door/Slide				
1) Passenger / Combi	C	2	1	(M)(O) One may be inoperative, or a slide missing provided upper deck occupancy is limited to 24 passengers, with airplane capacity limited to 550 passenger's total.
	C	2	0	(M)(O) May be inoperative or slide missing provided **only flight crew members essential to the flight occupy the upper deck.**
2) Freighter with Draw-Through Smoke Detection System	C	1	0	(M)(O) May be inoperative or slide missing provided **only flight crew members essential to the flight occupy the upper deck.**

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(1) System & Sequence Numbers Item		(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
52	**DOORS (Cont.)**				
-32-4	Cargo Door Lift Systems (Main Lower Lobe Cargo Doors and Main Deck Slide cargo Door)	B	-	0	(M) May be inoperative provided: (a) There is no damage to the latch mechanism, (b) There is no damage to the master latch lock mechanism, (c) Associated door is opened, closed and locked using an accepted maintenance manual procedure, and **(d) All latch cams are visually confirmed to be in the closed position.**
-32-5	Cargo Door Hook Systems (Main Lower Lobe Cargo Doors and Main Deck Side Cargo Door) (Electrical Function)	C	-	0	(M) May be inoperative provided: (a) Manual function operates normally, (b) There is no damage to the hook mechanism, (c) Doors are closed and locked using an accepted maintenance manual procedure, and **(d) All latch cams are visually confirmed to be in the closed position.**
-34-1	Main Lower Lobe Cargo Doors	**-**	2	**2**	**Must be operative.** **<u>Note</u>: Relief only permissible under items 52-32-4, 52-32-5 and 52-34-2.**
-51-1	**Lockable** Flight Deck Door	**-**	**-**	**-**	**As required by Air Navigation Legislation.**
-51-2	Enhanced Flight Deck Security Door Automatic Locking System (FAR 25.795 compliant) (If Installed)				**Please refer to 52-51-1.**
-51-3	Enhanced Flight Deck Security Door Dead Bolt (FAR 25.795 compliant) (If Installed)				**Please refer to 52-51-1.**
-51-4	JAMCO Flight Deck Security Door Automatic Locking System				**Please refer to 52-51-1.**
-51-5	JAMCO Flight Deck Security Door Mechanical Catch Pin Lock				**Please refer to 52-51-1.**
-73-1	Door Indication	C	1	0	(M)(O) May be inoperative provided door(s) is verified closed, **latched** and locked by an **approved** procedure.

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
53 FUSELAGE				
ADDITIONAL ITEM				
-30-1 Fuselage adjacent to Main Static Vents / Pitot / Static Systems	**-**	**-**	**-**	**(M) For RVSM operations, fuselage damage must be within approved limits.**

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AIRCRAFT: BOEING B747-400 CAA Supplement to FAA MMEL	REVISION NO: Revision 6b DATE: 29 August 2006	PAGE: S73-1

(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
73 ENGINE FUEL AND CONTROL				
-21-1 Minimum Idle/Approach Idle Selection Systems				
1) Ground Minimum Idle Selection Systems	C	4	2	(O) **Two** may be inoperative provided:- (a) Anti-Skid operates normally, and (b) Appropriate performance adjustments are applied.
2) Continuous Ignition Selected Approach Idle (GE) (If installed)	C	4	0	May be inoperative provided during operation in or near heavy rain or hail, N1 is maintained at 45% for Flight Levels below 10,000 ft and N1 is maintained at 50% for Flight Levels at or above 10,000 ft.

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions	
75 BLEED AIR					
-24-1 Turbine Case Cooling Air Flow Systems					
2) GE	**A**	4	0	(M)(O) May be inoperative provided: (a) Associated turbine case cooling valve remains closed, and **(b) Repairs or replacements are carried out within 120 calendar days.**	

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions	
77 ENGINE INDICATING					
-31-1 Vibration Indicating Systems	C	4	**3**	**One may be inoperative.**	

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
78 ENGINE EXHAUST				
-31-1 Thrust Reverser Systems (such as, but not limited to: thrust reverser air system and REV unlock indications)	C	4	3	(M) (O) One may be inoperative provided: (a) Associated reverser is **deactivated and** secured in the forward thrust position, (b) On associated engine, both T/R Control and T/R indication circuit breakers are pulled and collared, **(c) Operating procedures appropriate to the various configurations of inoperative reverser(s) are devised, and** **(d) Appropriate Flight Manual performance decrements are applied.**
	A	4	2	(M)(O) Two may be inoperative provided: (a) Inoperative thrust reversers are on symmetrical engines only, (b) Associated reversers are **deactivated and** secured in the forward thrust position, (c) On associated engine, both T/R Control and T/R Indication circuit breakers are opened and collared, (d) Anti-skid and auto spoiler systems operate normally, **(e) Operating procedures appropriate to various configurations of inoperative reverser(s) are devised, and** (f) Repairs are made within three flight days.

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(1) System & Sequence Numbers Item	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
78 ENGINE EXHAUST				
-34-1 Engine Reverse Lever Interlock	C	4	3	**(O) One may be inoperative extended.**
	C	4	3	**(O) One may be inoperative retracted provided:** **(a) Flight Manual performance decrements for inoperative reversers are applied, and** **(b) Operating procedures appropriate to the various configurations of inoperative reverser(s) are devised.** **<u>NOTE</u>: Associated reverse thrust is limited to idle with the interlock retracted.**
-36-1 Reverser Position Sensing System	C	4	3	**(M)(O) One may be inoperative provided the associated reverser is considered inoperative, refer to item 78-31-1.**
	A	4	2	**(M)(O) Two may be inoperative provided the associated reversers are considered inoperative, refer to item 78-31-1.**