

European Aviation Safety Agency

**MASTER MINIMUM EQUIPMENT LIST
SUPPLEMENT**

EMBRAER 145 family

Revision 9

This supplement is issued as revised in its entirety

European Aviation Safety Agency

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REVISION 9

This Master Minimum Equipment List (MMEL) supplement is approved by the European Aviation Safety Agency (EASA) at the hereafter revision under the type certificate EASA.IM.A.032 as part of the Operational Suitability Data (OSD) as per Regulation (EU) 748/2012 as amended by Regulation (EU) No 69/2014. This EASA MMEL Supplement must only be used in conjunction with the ANAC approved MMEL at Revision 13 dated 13 March 2014.

Signed by



Laurent Gruz

Regional Transport Aeroplanes Section Manager

For and on behalf of the EASA

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PREAMBLE

The following is applicable for operators under European air operations regulations (Regulation Air Operations). Paragraph 1.c.2 of Annex I to Article 5 (essential requirements for airworthiness) of Regulation (EC) No 216/2008 (the 'Basic Regulation') requires that all equipment installed on an aircraft required for type certification or by operating rules shall be operative. However, paragraph 2.a.3 of Annex IV to Article 8 (essential requirements for air operations) of the Basic Regulation also allows the use of a Minimum Equipment List (MEL) where compliance with certain equipment requirements is not necessary in the interests of safety under all operating conditions. Experience has shown that with the various levels of redundancy designed into aircraft, operation of every system or installed items may not be necessary when the remaining operative equipment can provide an acceptable level of safety.

This Master Minimum Equipment List (MMEL) is developed by the applicant and holders of (Supplemental) Type Certificate and approved by the European Aviation Safety Agency to improve aircraft use and thereby providing more convenient and economic air transportation for the public. This MMEL includes those items related to airworthiness, air operations, airspace requirements and other items the Agency finds may be inoperative and yet maintain an acceptable level of safety by appropriate conditions and limitations; it does not contain obviously required items such as wings, flaps, and rudders. In order to maintain an acceptable level of safety, the MMEL establishes limitations on the duration of and conditions for operation with inoperative items. Unless specifically allowed by this MMEL, an inoperative item may not be removed from the aircraft.

The MMEL is the basis for the development of individual operator's MEL which take into consideration the operator's particular aircraft equipment configuration and operational conditions. An operator's MEL may differ in format from the MMEL, but shall not be less restrictive than the MMEL. The individual operator's MEL, when approved, allows operation of the aircraft with inoperative items of equipment for a certain period of time until rectification can be accomplished.

The MEL cannot deviate from Airworthiness Directives, or any other additional mandatory requirements. It is important to remember that all items related to the airworthiness and the operational regulations of the aircraft not listed on the MMEL shall be operative.

Suitable conditions and limitations in the form of placards, maintenance procedures, crew operating procedures and other restrictions as prescribed in this MMEL shall be specified in the MEL to ensure that an acceptable level of safety is maintained. It is important that rectifications be accomplished at the earliest opportunity.

PREAMBLE
(Continued)

When an item is discovered to be inoperative, it is reported by making an entry in the continuing airworthiness record system or the operator's technical log, as applicable. Following sufficient fault identification, the item is then either rectified or deferred following the MEL or other approved means of compliance acceptable to the competent authority and the Agency prior to further operation. MEL conditions and limitations do not relieve the operator from determining that the aircraft is in a condition for safe operation with items inoperative.

Prior to operation with any item inoperative acceptance by the crew is required in accordance with the continuing airworthiness management procedures.

Operators shall establish a controlled and sound rectification programme including the parts, personnel, facilities, procedures and schedules to ensure timely rectification.

Operators should include guidance in the MEL to deal with any failures which occur between the commencement of the flight and the start of the take-off.

When developing the MEL, compliance with the stated intent of the preamble, definitions and the conditions and limitations specified in this MMEL is required.

Operators are responsible for exercising the necessary operational control to ensure that an acceptable level of safety is maintained. The exposure to additional failures during continued operation with inoperative items shall also be considered. Wherever possible, account has been taken in this MMEL of multiple inoperative items. However, it is unlikely that all possible combinations of this nature have been accounted for. Therefore, when operating with multiple inoperative items, the inter-relationships between those items and the effect on aircraft operation and crew workload shall be considered.

The operator may be permitted, by its competent authority, to extend the rectification intervals of the MEL.

This MMEL has been evaluated taking into account a one-time extension of the rectification intervals of category B, C and D.

DEFINITIONS AND EXPLANATORY NOTES

DEFINITIONS AND EXPLANATORY NOTES

1. **"Airplane/Rotorcraft Flight Manual"** (AFM/RFM) means the document required for type certification and approved by the Agency. The AFM/RFM for the specific aircraft is listed on the applicable Type Certificate Data Sheet.
2. **"Alternate procedures are established and used"** or similar statement, means that alternate procedures (if applicable), to the affected process, must be drawn up by the operator as part of the MEL approval process, so that they have been established before the MEL document has been approved. Such alternate procedures are normally included in the associated operations (O) procedure.
3. **"Any in excess of those required by regulations"** means that the listed item is required by applicable legislation (e.g. Part OPS, Single European Sky legislation or the applicable airspace requirements) must be operative and only excess items may be inoperative. When the item is not required, it may be inoperative for the time specified by its rectification interval category. Whenever this condition is used in the MMEL, the applicable regulations for the intended flight routes and the resulting dispatch restrictions need to be clarified at the operator's MEL level.
4. **"As required by (operational) regulations"** means that the listed item of equipment is subject to certain provisions (restrictive or permissive) expressed in the applicable legislation (e.g. regulation Air Operations, Single European Sky legislation or the applicable airspace requirements). When the equipment is not required, it may be inoperative for the time specified by its rectification interval category.
5. **"Calendar Day"** means a 24-hour period from midnight to midnight based on either UTC or local time, as selected by the operator. All calendar days are considered to run consecutively.
6. **"Combustible Material"** means the material which is capable of catching fire and burning. In particular: if a MEL item prohibits loading of combustible (or flammable or inflammable) material, no material may be loaded except the following:
 - a) Cargo handling equipment (unloaded, empty or with ballast);
 - b) Fly away kits (excluding e.g. cans of hydraulic fluid, cleaning solvents, batteries, capacitors, chemical generators, etc.);
NOTE: If serviceable tyres are included, they should only be inflated to a minimum pressure that preserves their serviceability; and
 - c) Inflight service material (return catering — only closed catering trolleys/boxes, no newspapers, no alcohol or duty free goods).
7. **"Commencement of flight"** is the point when an aircraft begins to move under its own power for the purpose of preparing for take-off.

DEFINITIONS AND EXPLANATORY NOTES
(Continued)

8. "**Considered Inoperative**" as used in the dispatch conditions, means that item must be treated for dispatch, taxiing and flight purposes as though it were inoperative. The item shall not be used or operated until the original deferred item is repaired. Additional actions include: documenting the item on the dispatch release (if applicable), placarding, and complying with all remarks, exceptions, and related MMEL provisions, including any (M) and (O) procedures and observing the rectification interval.
9. "**Daylight**" means the period between the beginning of morning civil twilight and the end of evening civil twilight relevant to the local aeronautical airspace; or such other period, as may be prescribed by the appropriate authority.
10. "**Day of discovery**" means the calendar day that a malfunction was recorded in the aircraft maintenance record/log book.
11. "**ETOPS**" or "**ER operations**" refers to extended range operations of a two engine airplane as defined by Part-SPA.
12. "**Flight**" for the purposes of this MMEL, means the period of time between the moment when an aircraft begins to move under its own power, for the purpose of preparing for take-off, until the moment the aircraft comes to a complete stop on its parking area, after the first landing.
13. "**Flight Day**", a 24-hour period from midnight to midnight based on either UTC or local time, as selected by the operator, during which at least one flight is initiated for the affected aircraft.
14. "**Icing Conditions**" means an atmospheric environment that may cause ice to form on the aircraft or in the engine(s) as defined in the AFM/RFM.
15. "**If installed**" means that the item is either optional or is not required to be installed on all aircraft covered by the MMEL.
16. "**Inoperative**" means that the item does not accomplish its intended purpose or is not consistently functioning within its approved operating limits or tolerances.
17. "**Is not used**" in the provisions, remarks or exceptions for an MMEL item may specify that another item relieved in the MMEL 'is not used'. In such cases, crew members should not activate, actuate, or otherwise utilise that item under normal operations. It is not necessary for the operators to accomplish the (M) procedures associated with the item.

However, operations-related provisions, (O) procedures must be complied with. An additional placard must be affixed, to the extent practical, adjacent to the control or indicator for the item that is not used to inform crew members that an item is not to be used under normal operations.

DEFINITIONS AND EXPLANATORY NOTES
(Continued)

18. "**Intended flight route**" corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.
19. "**Item**" means component, instrument, equipment, system or function.
20. "**(M)**" indicates a requirement for a specific maintenance procedure which must be accomplished prior to operation with the listed item inoperative. Normally these procedures are accomplished by maintenance personnel, however, other personnel may be qualified and authorised to perform certain functions. The satisfactory accomplishment of all maintenance procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are required to be published as part of the Operator's Manual or MEL.
21. "**Master Minimum Equipment List**" means a document approved by the Agency that establishes the aircraft equipment allowed to be inoperative under conditions specified therein for a specific type of aircraft.
22. "**Maximum distance from an adequate aerodrome for two-engine aeroplanes**" as defined in **SPA.ETOPS** and **CAT.OP.AH.140**.
23. **Electronic fault alerting system** - General: New generation aircraft display system fault indications to the flight crew by use of computerized display systems. Each aircraft manufacturer has incorporated individual design philosophies in determining the data that would be represented. The following is the customized definition specific to Embraer airplanes to help determine the level of messages affecting the aircraft's dispatch status. When preparing the MEL document, operators are to select the proper Definition No. 23 for their aircraft, if appropriate.
The EMB-145/135 airplanes are equipped with Engine Indicating and Crew Alerting Systems (EICAS), providing different priority levels of system messages (WARNING, CAUTION, ADVISORY and MAINTENANCE). Any message that affects airplane dispatch status will be displayed at an ADVISORY message level or higher. The absence of an EICAS ADVISORY or higher level (WARNING, CAUTION) indicates that the system/component is operating within its approved operating limits or tolerances.
System conditions that result only in a maintenance level message do not affect dispatch and do not require action other than as addressed within an operators standard maintenance program.
24. "**Minimum Equipment List**" means a document established as specified under 8.a.3. of Annex IV to Regulation (EC) No 216/2008 and approved by the competent authority, in accordance with ORO.MLR.105, that authorises an operator to dispatch an aircraft with aircraft equipment inoperative as per CAT.IDE.A/H.105 or NCC.IDE.A/H.105 under the conditions specified therein.

DEFINITIONS AND EXPLANATORY NOTES
(Continued)

25. "****" symbol in Column 1 indicates an item which is not required by regulation but which may have been installed on some models of aircraft covered by this MMEL. This item may be included on the operator's MEL after the approving office has determined that the item has been installed on one or more of the operator's aircraft. The symbol, however, shall not be carried forward into the operator's MEL. It should be noted that neither this policy nor the use of this symbol provides authority to install or remove an item from an aircraft.
26. "**Notes**" provide additional information for flight crew or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the dispatch conditions.
27. "**Number Installed**" is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MMEL. Should the number be a variable (e.g. passenger cabin items), or not applicable, a number is not required; a '-' is then inserted.
- NOTE:** Where the MMEL shows a variable number installed, the MEL should reflect the actual number installed, as far as practical.
28. "**Number required for dispatch**" is the minimum number (quantity) of items required for operation provided the conditions specified are met. Should the number be a variable (e.g. passenger cabin items) or not applicable, a number is not required; a '-' is then inserted.
- NOTE:** Where the MMEL shows a variable number required for dispatch, the MEL should reflect the actual number required for dispatch, as far as practical, or an alternate means of configuration control approved by the competent authority.
29. "-" in the Number Installed Column (respectively Number Required for Dispatch Column) indicates a variable number (quantity) of the item installed (respectively item required) or not applicable.
- NOTE:** Where the MMEL shows a variable number installed, the MEL should reflect the actual number installed, as far as practical.
30. "**(O)**" indicates a requirement for a specific operational procedure which must be accomplished in planning for and/or operating with the listed item inoperative. Normally these procedures are accomplished by the flight crew; however, other personnel may be qualified and authorised to perform certain functions. The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator.
- Appropriate procedures are required to be published as a part of the operator's manual or MEL.
- NOTE:** The (M) and (O) symbols are required in the operator's MEL.
31. "**Operating minima**" means the set of requirements associated to operations requiring a specific approval (refer to Part-SPA).

DEFINITIONS AND EXPLANATORY NOTES
(Continued)

32. **"Placarding"** Each inoperative item must be placarded, as applicable, to inform and remind the crew members and maintenance personnel of the item's condition.

NOTE: To the extent practical, placards should be located adjacent to the control or indicator for the item affected; however, unless otherwise specified, placard wording and location will be determined by the operator.

33. **"Rectification intervals"** 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:

Category A:

No standard interval is specified. However, items in this category shall be rectified in accordance with the conditions stated in the MMEL.

(i) Where a time period is specified in calendar days or flight days, the interval excludes the day of discovery.

(ii) Where a time period is specified other than in calendar days or flight days, it shall start at the point when the defect is deferred in accordance with the operator's approved MEL.

Category B:

Items in this category shall be rectified within three (3) calendar days, excluding the day of discovery.

Category C:

Items in this category shall be rectified within ten (10) calendar days, excluding the day of discovery.

Category D:

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

34. **"Remarks or Exceptions"** include statements either prohibiting or allowing operation with a specific number of items inoperative, provisos (conditions and limitations), notes, (M) and/or (O) symbols, as appropriate for such operation.
35. **"Required Cabin Crew Seat"** is a seat in the aircraft cabin which meets the following conditions:
- a) Where the certification of the cabin requires this seat to be occupied by a qualified cabin crew member as specified in the Operations Manual;
 - b) This seat is a part of the station to which a qualified cabin crew member is assigned for the flight; and
 - c) The qualified cabin crew member assigned to the station is a member of the minimum cabin crew designated for the flight.
36. **"Visible Moisture"** means an atmospheric environment containing water in any form that can be seen in natural or artificial light; for example, clouds, fog, mist, rain, sleet, hail, or snow.

DEFINITIONS AND EXPLANATORY NOTES
(Continued)

37. EMBRAER Corporate airplanes are commercially designated as "LEGACY 600" or "LEGACY 650".

The EMB-135 BJ airplanes mentioned in MMEL are related to those airplanes equipped with:

LEGACY 600: EMB-135BJ equipped with winglets, auxiliary fuel tanks (two forward and two aft fuel tanks), personalized interior arrangement and AE3007A1P or AE3007A1E engines.

LEGACY 650: EMB-135BJ equipped with winglets, auxiliary fuel tanks (one ventral tank, two forward and two aft fuel tanks), personalized interior arrangement and AE3007A2 engines.

For all other "LEGACY", equipped with personalized interior arrangement but not equipped with winglets or auxiliary fuel tanks, they should be considered as standard EMB-135 airplanes for the purpose of MMEL.

38. When EMB-135BJ is considered for approval under the provisions of EU-OPS 1.245 (a)(2) for 180 minutes diversion with one engine inoperative provided a special approval is granted for operation. It should be noted that this supplement reflects the conclusion in terms of systems capability as per Embraer GP-135/3763 on item 24-31-01 Engine Driven Generator only. Other items have not been reviewed and may need to be revised at MEL level as part of the operator approval to ensure compliance with EU-OPS 1.245 (a)(2) requirements, as applicable.
39. This revision shall not incorporate the inclusion of the word 'AND' between each proviso, mainly due the aeronautical standard present in the MMEL. Most of other manufacturer's MMELs comply with the standard applied herein, which is the word AND only before the last proviso.
40. The ANAC MMEL also includes items for models EMB-135KE/KL and EMB-145XR which are currently not yet approved by EASA. Therefore all MMEL items applicable to those models must be disregarded.

GUIDANCE FOR USE OF THIS SUPPLEMENT

1. This supplement defines the standard of MMEL recommended for the above aircraft type by the European Aviation Safety Agency (EASA) by identifying the differences from the ANAC MMEL at the latest revision.
2. The information presented in the ANAC MMEL for the aircraft type is acceptable to the European Aviation Safety Agency (EASA) 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 ANAC MMEL.

3. Unless superseded by information within this supplement, where the ANAC MMEL refers to an item "as required by FAR (local) regulations" it shall be interpreted as meaning, "As required by Operating Requirements".
4. Unless otherwise stated within this Supplement the Definition and Preamble contained in the ANAC MMEL are applicable. However, European equivalents must be assumed in reading and applying both.
5. The Preamble and Definitions of the ANAC MMEL, adjusted by use of European equivalents, should be applied to any MEL generated by use of this supplement in conjunction with the ANAC MMEL.
6. This supplement is based upon the ANAC approved EMBRAER 145 MMEL up to Revision 13 dated March 13, 2014 and/or EASA CS-MMEL.

HIGHLIGHTS OF CHANGE

REVISION 9:

- | | |
|---|--|
| PREAMBLE &
DEFINITIONS AND
EXPLANATORY
NOTES | – Updated according to GM5 MMEL 120 Format and Content. |
| GUIDANCE FOR USE
OF THIS SUPPLEMENT | – Paragraph 6 updated to refer to latest ANAC MMEL revision. |
| S21-1 | – Item 21-32-02 – Included a new item for EASA operators. |
| S23-1 | – Item 23-00-00 – Editorial correction. |
| S25-1 | – Item 25-40-00 – Updated item according to CS-MMEL 25-40-2 and created a new item 25-60-04 Life Raft. |
| S25-2 | – Item 25-61-01 – Updated item according to CS-MMEL 25-63. |
| S28-1 | – Item 28-14-00 – Updated item increasing time dispatch and merged with conditions presented on items 25-45-10, 25-45-16 and 25-45-17. |
| S28-2 | – Item 28-21-04 – General update. |
| S28-2 | – Item 28-21-06 – General update. |
| S28-3 | – Item 28-21-12 – General update. |
| S28-5 | – Item 28-45-03 – General update. |
| S28-5 | – Item 28-45-10 – General update. |
| S28-6 | – Item 28-45-15 and 28-45-16 – General update. |
| S28-7 | – Item 28-45-17 – General update. |
| S30-1 | – Item 30-41-04 – Included a new item according to CS-MMEL 30-40. |
| S34-1 | – Item 34-41-00 – Included a new item according to CS-MMEL 34-41 and 34-43. |
| S34-2 | – Item 34-52-00 – Included a new item according to CS-MMEL 34-54. |
| S52-1 | – Item 52-10-00 – Included a new item according to CS-MMEL 52-11. |

EUROPEAN AVIATION SAFETY AGENCY		MASTER MINIMUM EQUIPMENT LIST SUPPLEMENT TO ANAC MMEL REVISION NO: 13 DATE: 13.03.14		
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(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
<u>21 AIR CONDITIONING</u> -32-02 Cabin Pressure Control *** System High Altitude Mode	D	(3) Number installed		
		1	(4) Number required for dispatch	
			0	(5) Remarks or Exceptions May be inoperative provided takeoff and landing is limited to airports below 8000 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			
<u>23 COMMUNICATIONS</u>				
-00-00 Communications Systems (VHF, HF, UHF)				
-1) Very High Frequency (VHF) Communication System	-	-	-	As required by Operating Requirements.
-00-00 Communications Systems (VHF, HF, UHF)				
-2) High Frequency (HF) Communication System	D	-	-	Any in excess of those required for the intended route may be inoperative.
	C	-	1	(O) Any in excess of one may be inoperative while conducting operations that require two Long Range Communication Systems (LRCS) provided: a) SATCOM (High or Low Gain) Voice or Data Link system operates normally, b) SATCOM Voice communications with Air Navigation Service Provider(s) are available for the intended route, c) Prior to each flight, coordination with the appropriate Air Navigation Service Provider(s) is established where INMARSAT codes, or equivalent, are not available whilst using SATCOM voice function, and d) Alternate communication procedures are established and used. NOTE 1: SATCOM is to used only as backup to normal HF communications unless otherwise authorised by the appropriate Air Navigation Service Provider(s). NOTE 2: For the intended routes, consider the need for ACARS.

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(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
<u>23 COMMUNICATIONS</u>				
-30-01 Passenger Address System (PA)	B	1	0	(O) May be inoperative provided: a) Alternate normal and emergency procedures and/or operating restrictions are established and used, b) Flight crew compartment/cabin interphone system (including audio and visual alerting system) is operative, and c) Operators are conducted with a cabin attendant on duty occupying a cabin attendant seat. NOTE: Any station function(s) that operate normally may be used.
-a) Lavatory Speakers	C	1	0	(O) May be inoperative provided alternate procedures are established and used.
-31-01 Crewmember Interphone System(s)				
-a) Flight Deck to Cabin, Cabin to Flight Deck Function	B	-	-	(O) May be inoperative provided: a) The cabin handset at standard (FWD) cabin attendant seat occupied by a required cabin attendant is operative, and b) Alternate communication procedures are established and used. NOTE: Any station function(s) that operate normally may be used.

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(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
<u>23 COMMUNICATIONS</u>				
-31-03 Handset System(s) -2) Cabin ***	B	-	-	(O) May be inoperative provided: a) The cabin handset at standard (FWD) cabin attendant seat occupied by a required cabin attendant is operative, b) Alternate communication procedures are established and used, and c) Flight deck audio alerting system is operative. NOTE: Any station function(s) that operate normally may be used.
-71-00 Cockpit Voice Recorder System	A	-	0	May be inoperative provided: a) The aeroplane does not exceed 8 further consecutive flights with the CVR inoperative, b) No more than 72 hours have elapsed since the CVR became inoperative, and c) Any FDR required to be carried is operative.

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(1) System & Sequence Numbers ITEM	(2) Rectification Interval	(3) Number installed	(4) Number required for dispatch	(5) Remarks or Exceptions
<u>24 ELECTRICAL POWER</u> -31-01 Engine Driven Generators (EMB-135BJ only)	C	4	3	(M) One may be inoperative provided: a) APU generator is operative and used to replace the affected generator during takeoff and landing, and b) Operations are not conducted on routes which contain a point further from an adequate aerodrome than the distance flown in 120 minutes at the one-engine inoperative cruise speed. NOTE: Refer to Explanatory Note 4 of this supplement for further information.

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(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
<u>25 EQUIPMENT/FURNISHINGS</u>				
-11-02 Observer's Seat (Including associated equipment)	-	-	-	As required by Operating Requirements.
-26-07 Baggage Compartment *** Partition Door	C	1	0	Door frame may be damaged, and/or lock may be inoperative to keep door closed, and/or sealing fitness may be impaired to any extend provided cargo compartment remains empty or only non combustible materials are carried and tied down.
-40-00 Lavatory Door Ashtrays	A	-	0	One or more may be missing or inoperative provided it is replaced within 3 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 passengers' entrance, and b) Affected lavatory is used only by crewmembers.
-60-02 Passenger Convenience/NEF Item(s)				
-2) Non-Essential Equipment & Furnishings				Not applicable to EASA operators.
-60-04 Life Raft ***	D	-	-	(O) May be inoperative or missing provided: a) Extended overwater flights are not conducted, and b) Procedures are established and used to alert crewmembers of inoperative or missing equipment.
	C	-	-	(M)(O) Any in excess of those required for the intended flight may be inoperative or missing for extended overwater flights provided: a) Required distribution is maintained, b) Inoperative life raft and its installed location are placarded inoperative, c) When practical, the inoperative life raft is secured out of sight, and d) Procedures are established and used to alert crewmembers of inoperative or missing equipment.

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<u>25 EQUIPMENT/FURNISHINGS</u>	(3) Number installed			(4) Number required for dispatch
	(5) Remarks or Exceptions			
-60-09 Emergency Medical Equipment				
-1) Automatic External Defibrillator (AED) and/or associated equipment ***	-	-	-	As required by Operating Requirements.
-2) Emergency Medical Kit (EMK) and/or associated equipment ***	-	-	-	As required by Operating Requirements.
-61-00 Crash axe / Crow Bar	D	-	-	Any in excess of those required may be inoperative or missing.
-61-01 Emergency Locator Transmitter (ELT)				
-1) Survival Type ELTs ***	D	-	-	(M)(O) Any in excess of those required may be inoperative or missing provided: a) Inoperative equipment and its installed location are placarded inoperative, b) Inoperative equipment is secured out of sight, and c) Procedures are established and used to alert crewmembers of inoperative or missing equipment.
-2) Fixed ELTs	A	1	0	May be inoperative for a maximum of 6 flights or 15 flight hours, whichever occurs first, provided no operation with diversion time greater than 60 minutes is allowed.
-64-02 Flotation Equipment	-	-	-	As required by Operating Requirements.

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			(5) Remarks or Exceptions	
<u>26 FIRE PROTECTION</u>				
-15-00 Baggage Compartment *** Smoke Detection System	-	-	-	Not applicable to EASA operators.
-3) Airplanes equipped with Class B Baggage Compartment				
-21-01 Fire Illumination Handle		2	2	

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	(3) Number installed			(4) Number required for dispatch
				(5) Remarks or Exceptions
<u>27 FLIGHT CONTROLS</u>				
-10-01 Aileron Damper	-	-	-	Not applicable to EASA Operators.
-36-03 Stick Shaker	B	2	1	May be inoperative provided the airspeed is monitored to avoid operation in or below the white range.

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<u>28 FUEL</u>				
-14-00 FUEL TK VENT OPEN Message (EMB-135BJ) (only for Legacy 600)	C	1	0	(M)(O) May be inoperative provided: a) FWD and AFT vent valves secured closed, b) Both AFT tank relief valves verified prior to the first flight under this item and then every 10 flight hours, c) FWD and AFT tanks of both FUS Auxiliary Fuel Systems remain empty, d) Electric fuel transfer pumps of affected FUS Auxiliary System are deactivated, and e) Alternate procedures are established and used. NOTE: Refueling of FUS Auxiliary System cannot be accomplished if this valve is inoperative.
(EMB-135BJ) (only for Legacy 650)	C	1	0	(M)(O) May be inoperative provided: a) FWD, AFT and VTRL vent valves secured closed, b) Both AFT tank relief valves verified prior to the first flight under this item and then every 10 flight hours, c) VTRL, FWD and AFT Auxiliary Fuel Tanks remain empty, d) Electric fuel transfer pumps of affected FUS Auxiliary System and Ventral tank are deactivated, and e) Alternate procedures established and used. NOTE: Refueling of FUS Auxiliary System cannot be accomplished if this valve is inoperative.

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	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
<u>28 FUEL</u>				
-21-04 Forward Auxiliary Tank Electric Fuel Transfer Pumps Operating Indications (EMB-135BJ)	C	4	0	(M)(O) May be inoperative provided: a) Associated pump is verified to operate normally before departure, b) EICAS messages FUEL XFER INOP and FUSELAGE FUEL IMB are verified to operate normally, and c) Alternate procedures are established and used.
	D	4	0	(M)(O) May be inoperative provided: a) Forward and aft tanks of the affected FUS Auxiliary fuel system remain empty, b) Electric fuel transfer pumps of affected FUS Auxiliary System are deactivated, and c) Alternate procedures are established and used.
-21-06 Aft Auxiliary Tank Electric Fuel Transfer Pumps Operating Indications (EMB-135BJ)	C	2	0	(M)(O) May be inoperative provided: a) Associated pump is verified to operate normally before departure, b) EICAS messages FUEL XFER INOP and FUSELAGE FUEL IMB are verified to operate normally, and c) Alternate procedures are established and used.
	D	2	0	(M)(O) May be inoperative provided: a) Forward and aft tanks of the affected FUS Auxiliary fuel system remain empty, b) Electric fuel transfer pumps of affected FUS Auxiliary System are deactivated, and c) Alternate procedures are established and used.

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	(5) Remarks or Exceptions			
<u>28 FUEL</u>				
-21-12 Ventral Tank Electric Fuel Transfer Pumps Operating Indications (EMB-135BJ) (only for Legacy 650)	C	2	1	(O) May be inoperative provided: a) Both pumps operate normally, b) One pump indication operates normally, and c) EICAS message FUEL XFR VTR INOP is verified to operate normally.
	C	2	0	(M)(O) May be inoperative provided: a) VTRL tanks of Auxiliary Fuel System remain empty, b) Electric fuel transfer pumps of ventral tank are deactivated, and c) Alternate procedures established and used.
-40-00 Wing Tank Fuel Quantity Indications (EICAS and MFD) (EMB-135/140/145)	B	4	2	(M)(O) Indications for one tank may be inoperative provided: a) Fuel quantity indication in other tank is operative, b) Both fuel flow indications and fuel used indication is available and monitored throughout flight, c) Direct quantity measuring sticks are available and the fuel quantity is directly measured prior to each flight, and d) Corresponding FUEL LO LEVEL message verified operative.
				(continued)

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		(4) Number required for dispatch	(5) Remarks or Exceptions	
<u>28 FUEL</u>				
-40-00 Wing Tank Fuel Quantity Indications (EICAS and MFD) (continued) (EMB-135BJ)	B	4	2	(M)(O) Indications for one tank may be inoperative provided: a) Fuel quantity indication in other tank is operative, b) Both fuel flow indications and fuel used indication is available and monitored throughout flight, c) Direct quantity measuring sticks are available and the fuel quantity is directly measured prior to each flight, d) Corresponding FUEL LO LEVEL message verified operative, and e) Ventral tank (only for Legacy 650), Forward and Aft tanks of both FUS 1 and FUS 2 Auxiliary Fuel Systems remain empty.
-44-00 Fuel 1 (or 2) LO level Messages	B	2	1	(M)(O) One may be inoperative provided: a) Fuel quantity indication is available and is monitored throughout the flight, and b) FUEL LO LEVEL message on non-affected side is verified operative.
-45-01 E1 (or E2) Fuel Low Press Messages	B	2	1	(O) One may be inoperative provided: a) The associated fuel pump automatic function operates normally, and b) The associated electric fuel booster pump operating indication is operative.

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	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
<u>28 FUEL</u>				
-45-03 FUEL 1(2) XFER INOP Messages (EMB-135BJ)	B	2	0	(M)(O) May be inoperative provided: a) Affected FUS Auxiliary Fuel Systems are verified to operate normally, b) EICAS message CHECK ACFT LOAD or FUEL XFER CRITICAL is verified to operate normally, and c) Fuel transfer is monitored through EICAS and/or MFD Fuel Page during the flight.
	D	2	0	(M)(O) May be inoperative provided: a) Forward and Aft tank of the affected FUS Auxiliary Fuel System remain empty, b) Electric fuel transfer pumps of affected FUS Auxiliary System are deactivated, and c) Alternate procedures established and used.
-45-10 Forward Auxiliary Tank Vent Valve (EMB-135BJ)	C	2	0	(M)(O) May be inoperative provided: a) Affected vent valve secured closed, b) Forward and Aft tank of the affected FUS Auxiliary Fuel System remain empty, c) Electric fuel transfer pumps of affected FUS Auxiliary System are deactivated, and d) Alternate procedures established and used. NOTE: Refueling of FUS Auxiliary Systems cannot be accomplished if this valve is inoperative secured closed.

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<u>28 FUEL</u>				
-45-15 FUEL XFR VTR INOP message (EMB-135BJ) (Legacy 650 only)	B	1	0	(M)(O) May be inoperative provided: a) Ventral tank electric fuel transfer pumps and associated indication operates normally, b) Ventral tank transfer system is operative when selected on fuel transfer master switch, c) EICAS message FUEL XFER CRITICAL is verified to operate normally, and d) Fuel transfer is monitored through EICAS and/or MFD fuel page during the flight.
	D	1	0	(M)(O) May be inoperative provided: a) VTRL Auxiliary Fuel Tank remains empty, b) Electric fuel transfer pumps of ventral tank are deactivated, and c) Alternate procedures established and used.
-45-16 Aft Auxiliary Tank Vent Valve (EMB-135BJ)	C	2	0	(M)(O) May be inoperative provided: a) Affected vent valves are secured closed, and b) Relief valve of affected tank is verified prior to the first flight under this item and then every 10 flight hours, c) Forward and Aft tank of the affected FUS Auxiliary System remain empty, d) Electric fuel transfer pumps of affected FUS Auxiliary System are deactivated, and e) Alternate procedures established and used. NOTE: Refueling of FUS Auxiliary Systems cannot be accomplished if this valve is inoperative secured closed.

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	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
<u>28 FUEL</u> -45-17 Ventral Tank Vent Valve (EMB-135BJ) (only for Legacy 650)	C	1	0	(M)(O) May be inoperative provided: a) Affected valve is secured closed, b) Ventral tank remain empty, c) Electric fuel transfer pumps of ventral tank are deactivated, and d) Alternate procedures established and used. NOTE: Refueling of FUS Auxiliary Systems cannot be accomplished if this valve is inoperative secured closed.

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(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
<u>30 ICE AND RAIN PROTECTION</u>				
-21-01 Engine Anti-Icing Valves	B	2	0	(M)(O) May be inoperative provided: a) Valve is secured open, and b) Performance penalties are applied. NOTE: On airplanes equipped with EICAS version 16.5 and on, the message ENG A/ICE OVERPRES may be present.
-21-02 Engine Anti-Icing Valve Open Lights	B	2	1	(M) One may be inoperative provided airplane system is verified to operate normally.
	B	2	0	May be inoperative provided airplane is not operated in known or forecast icing conditions.
-41-04 Rain Repellent Coating	C	2	0	May be inoperative provided: a) No precipitation is forecasted during a period from one hour before until one hour after the estimated time of departure and arrival at the takeoff and destination aerodromes, and b) Affected system is not part of the equipment required for the intended operation. NOTE: Takeoff destination aerodromes include any takeoff and destination alternate aerodromes required by the operational rules.
	D	2	0	May be inoperative provided windshield wipers are operative.

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	(3) Number installed			
	(4) Number required for dispatch			
	(5) Remarks or Exceptions			
<u>31 INDICATING/RECORDING SYSTEM</u>				
-21-01 Clocks				
-2) Pilot's Clock	A	1	0	May be inoperative provided: a) FDR is considered inoperative and, b) No more than 72 hours have elapsed since the FDR is considered or became inoperative.
-3) Both Clocks	A	2	0	May be inoperative provided: a) Both pilot and copilot have ready access to a reliable timepiece which display seconds (a wrist watch is acceptable), b) Approach procedures do not require timing, c) FDR is considered inoperative, and d) No more than 72 hours have elapsed since the FDR is considered or became inoperative.

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(1) System & Sequence Numbers ITEM	(2) Rectification Interval			
<u>31 INDICATING/RECORDING SYSTEM</u>	A	1	(3) Number installed	(4) Number required for dispatch
			0	(5) Remarks or Exceptions
-30-01 Digital Flight Data Recorder System (DFDRS)				<p>May be inoperative provided:</p> <p>a) The aeroplane does not exceed 8 further consecutive flights with the FDR inoperative,</p> <p>b) No more than 72 hours have elapsed since the FDR became inoperative, and</p> <p>c) Any CVR required to be carried is operative.</p> <p>NOTE 1: The flight data recorder is considered to be inoperative when any of the following conditions exist:</p> <p>(i) Loss of the flight recording function is evident to the flight crew during the pre-flight check e.g. by means of a system status monitor, or</p> <p>(ii) The need for maintenance has been identified by the system monitors, where available, with the setting of an indicator and the cause of that setting has not been determined, or</p> <p>(iii) Analyses of recorded data or maintenance actions have shown that more than 5% of the total number of individual parameters (variable and discrete) required to be recorded for the particular aircraft, are not being recorded properly.</p> <p>NOTE 2: Where improper recording affects 5% of the parameters or less, timely corrective action will need to be taken by the aeroplane operator in accordance with approved maintenance procedures.</p>

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<u>32 LANDING GEAR</u>			
-50-02 Control Wheel Steering Disengage Button		2	2

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	(5) Remarks or Exceptions			
<u>34 NAVIGATION</u>				
-32-00 VOR Navigation	-	-	-	As required by Operating Requirements.
-32-00 ILS	-	-	-	As required by Operating Requirements.
-41-00 Enhanced Ground Proximity Warning System (EGPWS)				
-1) GPWS	A	1	0	May be inoperative for a maximum of 6 flights or 2 calendar days, whichever occurs first.
-a) Modes 1 to 4	B	4	0	One or more mode may be inoperative provided FLTA and PDA functions are operative.
-b) Test Mode	A	1	0	May be inoperative for a maximum of a 6 flights or 2 calendar days, whichever occurs first.
-c) Glide Slope Deviation (Mode 5)	B	1	0	May be inoperative.
-d) Advisory Callouts	C	-	0	(O) May be inoperative provided: a) Low visibility approaches requiring the use of affected callouts are not performed, and b) Alternate procedures are established and used.
-e) Windshear Mode (Reactive)	C	1	0	(O) May be inoperative provided alternate procedures are established and used.
-2) Terrain System – Forward Looking Terrain Avoidance (FLTA and Premature Descent Alert (PDA) Functions)	B	1	0	May be inoperative provided: a) Mode 1-4 are operative, and b) Approaches procedures do not require its use.
-3) Runway Awareness & *** Advisory System (RAAS)	C	1	0	

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<u>34 NAVIGATION</u>				
-42-00 Weather Radar System (s), (Antenna(s), XCVR (s), Controller (s), Display (s))	-	-	-	As required by Operating Requirements.
-43-00 ACAS/TCAS	-	-	-	As required by Operating Requirements.
-51-00 DME System	-	-	-	As required by Operating Requirements.
-52-00 ATC Transponder and Automatic Reporting System				
-1) Mode S Transponder	A	-	0	(O) May be inoperative for a maximum of 5 flights provided: a) Flight is conducted under VFR over routes navigated by reference to visual landmarks and b) Permission is obtained from the Air Navigation Service Provider(s) along the route or any planned diversion.
	D	-	-	Any in excess of those required may be inoperative.
-2) Extended Squitter *** (ADS-B OUT) Transmissions	D	-	0	One or more extended squitter transmissions may be inoperative when not required for the intended flight route.
	C	-	0	One or more extended squitter transmissions may be inoperative when required for the intended flight route.
-53-00 ADF System	-	-	-	As required by Operating Requirements.
-55-00 Long Range Navigation *** Systems (LRNS)				
-1) Unrestricted operations in MNPS airspace	C	-	2	Any in excess of two may be inoperative.
-2) Operations along notified special routes within MNPS airspace	C	-	1	Any in excess of one may be inoperative provided the operational equipment is visible and usable to either crewmember seated at their crew station.
-3) Non MNPS Operations	D	-	0	One or more may be inoperative provided the routes to be flown do not require their use.

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<u>35 OXYGEN</u> -20-00 Passenger Oxygen System	-	-	-	As required by Operating Requirements.

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<u>46 INFORMATION SYSTEMS</u>				
-20-01 Electronic Flight Bag *** Systems (EFBs)	-	-	-	
-1) Data Connectivity *** (class 2)	C	-	-	As required by Operating Requirements.
-2) Power Connection *** (class 1 and 2)	C	-	-	As required by Operating Requirements.
-3) Mounting Device *** (class 2)	C	-	-	As required by Operating Requirements.

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	(5) Remarks or Exceptions			
<u>52 DOORS</u>				
-10-00 Service Door (EMB-135/140/145)	A	1	0	(M)(O) May be inoperative for a maximum of 5 flights provided: a) Passenger number is limited to 19 maximum, b) Adequate cabin safety procedures are established and used, c) Affected door/exit is closed and locked, d) The affected door/exit is not used for passenger boarding, nor for any non-emergency purpose whilst passengers are on board, e) Affected door/exit is marked with a placard to prohibit utilisation, as applicable, and f) All the door/exit markings, signs and lights associated with the affected door/exit must be obscured, as applicable.
-51-00 C&D Aerospace Flight Deck *** Security Door				
-1) Door Latch	B	1	0	(M)(O) May be inoperative provided: a) Latch is deactivated, b) A safe position of the door is ensured for takeoff and landing, and c) Alternate crew procedures are established and used for controlling access to the flight deck, in accordance with applicable Security requirements.
-2) Flight Deck Door Panel Pressure Relief Latch	A	1	0	(M)(O) May be inoperative provided the flight is conducted in an unpressurized configuration to a station where repair can be made.