

G159R5.txt

DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
WASHINGTON, D. C.

Revision: 5  
Date: 12/27/95

M A S T E R   M I N I M U M   E Q U I P M E N T   L I S T

Grumman G-159 Models

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Highlights of Change

EFFECTIVE ABOVE DATE, the Gulfstream G-159 Master Minimum Equipment List (MMEL) is revised. Revision 5 is a STANDARD revision which is the result of a public Flight Operations Evaluation Board (FOEB) meeting held on September 15, 1994 to consider approximately 400 proposals for MMEL relief. Many new items are given relief in this revision. Some relief that was granted in the past has been removed as a result of FAA policy changes since the last MMEL revision. FAA Policy Letters 1-78 and FAA Global Changes 2-26 have been reviewed and incorporated in this revision. This revision also incorporates the four column MMEL format and Category A-D repair intervals.

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Definitions

1. System Definitions.

System numbers are based on the Air Transport Association (ATA) Specification Number 100 and items are numbered sequentially.

- a. "Item" (Column 1) means the equipment, system, component, or function listed in the "Item" column.
- b. "Number Installed" (Column 2) 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) a number is not required.
- c. "Number Required for Dispatch" (Column 3) is the minimum number (quantity) of items required for operation provided the conditions specified in Column 4 are met.

NOTE: Where the MMEL shows a variable number required for dispatch, the MEL must reflect the actual number required for dispatch or an alternate means of configuration control approved by the Administrator.

- d. "Remarks or Exceptions" (Column 4) in this column includes a statement either prohibiting or permitting operation with a specific number of items inoperative, provisos (conditions and limitations) for such operation, and appropriate notes.
- e. A vertical bar (change bar) in the margin indicates a change, addition or deletion in the adjacent text for the current revision of that page only. The change bar is dropped at the next revision of that page.

2. "Airplane/Rotorcraft Flight Manual" (AFM/RFM) is the document required for type certification and approved by the responsible FAA Aircraft Certification Office. The FAA approved AFM/RFM for the specific aircraft is listed on the applicable Type

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Certificate Data Sheet.

3. "As required by FAR" means that the listed item is subject to certain provisions (restrictive or permissive) expressed in the Federal Aviation Regulations operating rules. The number of items required by the FAR must be operative. When the listed item is not required by FAR it may be inoperative for time specified by repair category.

4. Each inoperative item must be placarded to inform and remind the crewmembers and maintenance personnel of the equipment 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.

5. "-" symbol in Column 2 and/or Column 3 indicates a variable number (quantity) of the item installed.

6. "Deleted" in the remarks column after a sequence item indicates that the item was previously listed but is now required to be operative if installed in the aircraft.

7. "ER" refers to extended range operations of a two-engine airplane which has a type design approval for ER operations and complies with the provisions of Advisory Circular 120-42A.

8. "Federal Aviation Regulations" (FAR) means the applicable portions of the Federal Aviation Act and Federal Aviation Regulations.

9. "Flight Day" means a 24 hour period (from midnight to midnight) either Universal Coordinated Time (UCT) or local time, as established by the operator, during which at least one flight is initiated for the affected aircraft.

10. "Icing Conditions" means an atmospheric environment that may cause ice to form on the aircraft or in the engine(s).

11. Alphabetical symbol in Column 4 indicates a proviso (condition or limitation) that must be complied with for

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operation with the listed item inoperative.

12. "Inoperative" means a system and/or component malfunction to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its approved operating limit(s) or tolerance(s).

13. "Notes:" in Column 4 provides additional information for crewmember 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 provisos.

14. Inoperative components of an inoperative system: Inoperative items which are components of a system which is inoperative are usually considered components directly associated with and having no other function than to support that system. (Warning/caution systems associated with the inoperative system must be operative unless relief is specifically authorized per the MMEL).

15. "(M)" symbol 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 authorized to perform certain functions. Procedures requiring specialized knowledge or skill, or requiring the use of tools or test equipment should be accomplished by maintenance personnel. 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.

16. "(O)" symbol indicates a requirement for a specific operations 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 authorized to perform certain functions. The satisfactory accomplishment of all procedures, regardless of who performs them, is the responsibility of the operator. Appropriate procedures are

NOTE: The (M) and (O) symbols are required in the operator's MEL unless otherwise authorized by the Administrator.

17. "Deactivated" and "Secured" means that the specified component must be put into an acceptable condition for safe flight. An acceptable method of securing or deactivating will be established by the operator.

18. "Visual Flight Rules" (VFR) is as defined in FAR Part 91. This precludes a pilot from filing an Instrument Flight Rules (IFR) flight plan.

19. "Visual Meteorological Conditions" (VMC) means the atmospheric environment is such that would allow a flight to proceed under the visual flight rules applicable to the flight. This does not preclude operating under Instrument Flight Rules.

20. "Visible Moisture" means an atmospheric environment containing water in any form that can be seen in natural or artificial light; for example, clouds, fog, rain, sleet, hail, or snow.

21. "Passenger Convenience Items" means those items related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ash trays, stereo equipment, overhead reading lamps, etc.

22. Repair Intervals: All users of an MEL approved under FAR 121, 125, 129 and 135 must effect repairs of inoperative systems or components, deferred in accordance with the MEL, at or prior to the repair times established by the following letter designators:

Category A. Items in this category shall be repaired within the time interval specified in the remarks column of the operator's approved MEL.

Category B. Items in this category shall be repaired within three (3) consecutive calendar days (72 hours), excluding the day the malfunction was recorded in the aircraft maintenance

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record/logbook. For example, if it were recorded at 10 a.m. on January 26th, the three day interval would begin at midnight the 26th and end at midnight the 29th.

Category C. Items in this category shall be repaired within ten (10) consecutive calendar days (240 hours), excluding the day the malfunction was recorded in the aircraft maintenance record/logbook. For example, if it were recorded at 10 a.m. on January 26th, the 10 day interval would begin at midnight the

26th and end at midnight February 5th.

Category D. Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2880 hours), excluding the day the malfunction was recorded in the aircraft maintenance log and/or record.

The letter designators are inserted adjacent to Column 2.

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 are customized definitions (specific to each manufacturer) 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.

a. BOEING (B-757/767, B-747-400, B-777)

Boeing airplanes equipped with Engine Indicating and Crew Alerting Systems (EICAS), provide different priority levels of system messages (WARNING, CAUTION, ADVISORY, STATUS and MAINTENANCE). Any messages that affects airplane dispatch status will be displayed at a STATUS message level or higher. The absence of an EICAS STATUS or higher level (WARNING, CAUTION, ADVISORY) indicates that the system/component is operating within its approved operating limits or tolerances.

System conditions that result only in a maintenance level message, i.e. no correlation with a higher level EICAS message,

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do not affect dispatch and do not require action other than as addressed within an operators standard maintenance program.

b. DOUGLAS (MD-11)

Some Douglas aircraft are equipped with an alerting function which is a subsystem within the Electronic Instrument System (EIS). The alerting function provides various levels of system condition alerts (WARNING, CAUTION, ADVISORY, MAINTENANCE and STATUS).

Alerts that affect aircraft dispatch will include WARNING, CAUTION, STATUS or MAINTENANCE level. MAINTENANCE alerts are displayed on the status page of the EIS display panel under the maintenance heading.

A MAINTENANCE alert on the EIS indicates the presence of a system fault which can be identified by the Central Fault Display System (CFDS) interrogation. The systems are designed to be fault tolerant, however, for any MAINTENANCE alert, the MEL must be verified for dispatch purposes.

c. AIRBUS (A-300-600, A-310, A-320/319/321, A-330, A-340

Airbus aircraft equipped with Electronic Centralized Aircraft Monitoring (ECAM) provide different levels of system condition messages (WARNING, CAUTION, STATUS, and ADVISORY). A-320/319/321, A-330, and A-340 also provide MAINTENANCE status messages.

Any message that affects airplane dispatchability will normally be at the WARNING, CAUTION or STATUS level. MAINTENANCE messages (A-320/319/321, A-330, and A-340 only) are also indicated on ECAM Status Page below the white Maintenance Label.

A MAINTENANCE status (Class II) message on ECAM indicates the presence of a system fault which can be identified by CFDS (A-320/319/321) or CMS (A-330/A-340) interrogation. The systems are designed to be fault tolerant, however for any MAINTENANCE status (Class II) message, the A-320/319/321 MEL must be verified for dispatch capability. For the A-330 and A-340, MAINTENANCE status messages do not affect dispatch.

d. FOKKER (FK-100)

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Fokker aircraft are equipped with Multi Function Display System (MFDS) which provides electronic message referring to the different priority levels of system information (WARNING (red), CAUTION (amber), AWARENESS (cyan) AND STATUS (white). Any messages that affects aircraft dispatch will be at the WARNING, CAUTION or AWARENESS level. In these cases the MEL must be verified for dispatch capability and maintenance may be required.

System conditions that only require maintenance are not presented on the flight deck. These maintenance indications/messages may be presented on the Maintenance & Test Panel (MAP) or the Centralized Fault Display Unit (CFDU) and by dedicated Built In Test Evaluation (BITE) of systems.

24. "Administrative control item" means an item listed by the operator in the MEL for tracking and informational purposes. It may be added to an operator's MEL by approval of the Principal Operations Inspector provided no relief is granted, or provided conditions and limitations are contained in an approved document (i.e. Structural Repair Manual, airworthiness directive, etc.). If relief other than that granted by an approved document is

sought for an administrative control item, a request must be submitted to the Administrator. If the request results in review and approval by the FOEB, the item becomes an MMEL item rather than an administrative control item.

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 provide authority to install or remove an item from an aircraft.

26. "Excess Items" means those items that have been installed that are redundant to the requirements of the FARs.

27. "Day of Discovery" is the calendar day an equipment/instrument malfunction was recorded in the aircraft

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maintenance log and or record. This day is excluded from the calendar days or flight days specified in the MMEL for the repair of an inoperative item of equipment. This provision is applicable to all MMEL items, i.e., categories "A, B, C, and D."

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Preamble  
(Effective 6/14/89)

The following is applicable for authorized certificate holders operating under Federal Aviation Regulations (FAR) Parts 121, 125, 129, 135: The FAR require that all equipment installed on an aircraft in compliance with the Airworthiness Standards and the Operating Rules must be operative. However, the Rules also permit the publication 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 component may not be necessary when the remaining operative equipment can provide an acceptable level of safety. A Master Minimum Equipment List (MMEL) is developed by the FAA, with participation by the aviation industry, to improve aircraft utilization and thereby provide more convenient and economic air transportation for the public. The FAA approved MMEL includes those items of equipment related to airworthiness and operating regulations and other items of equipment which the Administrator 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. The MMEL is the basis for development of individual operator MELs which take into consideration the operator's particular aircraft equipment configuration and operational conditions. Operator MELs, for administrative control, may include items not contained in the MMEL; however, relief for administrative control items must be approved by the Administrator. An operator's MEL may differ in format from the MMEL, but cannot be less restrictive than the MMEL. The individual operator's MEL, when approved and authorized, permits operation of the aircraft with inoperative equipment.

Equipment not required by the operation being conducted and equipment in excess of FAR requirements are included in the MEL with appropriate conditions and limitations. The MEL must not deviate from the Aircraft Flight Manual Limitations, Emergency Procedures or with Airworthiness Directives. It is important to remember that all equipment related to the airworthiness and the operating regulations of the aircraft not listed on the MMEL must be operative.

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Preamble  
(Effective 6/14/89)

Suitable conditions and limitations in the form of placards, maintenance procedures, crew operating procedures and other restrictions as necessary are specified in the MEL to ensure that an acceptable level of safety is maintained.

The MEL is intended to permit operation with inoperative items of equipment for a period of time until repairs can be accomplished. It is important that repairs be accomplished at the earliest opportunity. In order to maintain an acceptable level of safety and reliability the MMEL establishes limitations on the duration of and conditions for operation with inoperative equipment. The MEL provides for release of the aircraft for flight with inoperative equipment. When an item of equipment is discovered to be inoperative, it is reported by making an entry in the Aircraft Maintenance Record/Logbook as prescribed by FAR. The item is then either repaired or may be deferred per the MEL or other approved means acceptable to the Administrator prior to further operation. MEL conditions and limitations, do not relieve the operator from determining that the aircraft is in condition for safe operation with items of equipment inoperative.

When these requirements are met, an Airworthiness Release, Aircraft Maintenance Record/Logbook entry, or other approved documentation is issued as prescribed by FAR. Such documentation is required prior to operation with any item of equipment inoperative.

Operators are responsible for exercising the necessary operational control to ensure that an acceptable level of safety is maintained. When operating with multiple inoperative items, the interrelationships between those items and the effect on aircraft operation and crew workload will be considered.

Operators are to establish a controlled and sound repair program including the parts, personnel, facilities, procedures, and schedules to ensure timely repair.

WHEN USING THE MEL, COMPLIANCE WITH THE STATED INTENT OF THE PREAMBLE, DEFINITIONS, AND THE CONDITIONS AND LIMITATIONS SPECIFIED IN THE MEL IS REQUIRED.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
21	AIR CONDITIONING				
-1	Cabin Blower				
	1) Pressurized Configuration	C	1	0	(M)(O) May be inoperative provided: a) Blower Dump System is operative, b) APU is operative, and c) APU Air Load System is operative. OR d) Blower drive shaft is removed, e) APU is operative, and f) APU Air Load System is operative.
		C			
	2) Unpressurized Configuration	C	1	0	(M)(O) May be inoperative provided: a) Blower Dump System is operative, and b) Aircraft is operated at or below 10,000 feet. OR c) Blower drive shaft is removed, and d) Aircraft is operated at or below 10,000 feet.
		C			

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21	AIR CONDITIONING				
-2	Cabin Pressure Warning System	C	1	0	(M)(O) May be inoperative provided: a) Cabin Altitude Indicator is operative, and b) Manual Pressure Control System is operative. OR c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.
		C			
		C	1	0	(M)(O) May be inoperative provided: a) Cabin Differential Pressure Indicator is operative, and b) Manual Pressure Control System is operative. OR c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.
		C			

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
21	AIR CONDITIONING				
-3	Cockpit Temperature Control System & Cabin Temperature Control Systems	C	4	0	(0)All may be inoperative provided: a) Aircraft is operated in unpressurized configuration, and b) Aircraft is operated at or below 10,000 feet.
	1) Automatic Systems	C	2	0	Both Systems may be inoperative provided: a) Associated Manual Control System is operative, and b) Cabin Temperature Indicator is operative.
	2) Manual Systems	C	2	0	Both Systems may be inoperative provided: a) Associated Automatic Control System is operative, and b) Cabin Temperature Indicator is operative.
-4	Cabin Pressure Differential Indicator	C	1	0	(0)May be inoperative provided: a) Cabin Altitude Indicator is operative, and b) A chart is provided for the crew to convert Cabin Altitude to Differential Pressure. OR c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.
		C			

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SYSTEM & SEQUENCE	ITEM	1.	2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH

NUMBERS				4. REMARKS OR EXCEPTIONS	
21	AIR CONDITI ONI NG				
-5	Blower Dump System				
	1) Pressuri zed Confi gurati on	C	1	0	(M)May be i noperati ve provi ded: a) Spill valve is secured OPEN, b) APU is operative, and c) APU Air Load System is operative. OR d) Blower drive shaft is REMOVED, e) APU is operative, and f) APU Air Load System is operative.
		C			
	1) Unpressuri zed Confi gurati on	C	1	0	(M)(O)May be i noperati ve provi ded: a) Spill valve is secured OPEN, and b) Aircraft is operated at or below 10,000 feet. OR c) Blower Drive Shaft is removed, and d) Aircraft is operated at or below 10,000 feet.
		C			
-6	Cockpi t Temperature Indi cator	C	1	0	May be i noperati ve provi ded: a) Cockpi t Automatic Temperature Control System is operative, and b) Cabin Temperature indi cator is operative.
***					
-7	Ground Cool ing Fan System	C	1	0	(M)(O)May be i noperati ve provi ded: a) Ram Air Li mi ter doors are secured in full OPEN position, and b) APU Air Load System is utilized in flight only.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER I NSTALL ED	3. NUMBER REQUI RED FOR DI SPATCH	4. REMARKS OR EXCEPTI ONS
21	AIR CONDITI ONI NG			

-8	Cabin Temperature Indicator	C	1	0	May be inoperative provided: a) Cabin Automatic Temperature Control System is operative, OR b) Cabin Manual Temperature Control System is operative.
-9	Cooling Turbine	C	1	0	(0)May be inoperative provided: a) Aircraft is operated in an unpressurized configuration, b) Blower Dump System is operative, and c) Aircraft is operated at or below 10,000 feet. OR d) Aircraft is operated in an unpressurized configuration, e) Blower drive shaft is removed, f) Aircraft is operated at or below 10,000 feet.
-10	Outflow Valve System	C	1	0	(M)(0)May be inoperative provided: a) Valve is secured OPEN, b) Blower Dump System is operative, c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.		2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
21	AIR CONDITIONING					
-11	Safety Valve	C	1	0		(M)(0)May be inoperative provided:

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-12 Cabin Altitude Indication System	C	1	0	a) Valve is secured OPEN, b) Blower Dump System is operative, c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.
	C			(0) May be inoperative provided: a) Cabin Differential Pressure Indicator is operative, and b) A chart is provided for the crew to convert differential pressure to cabin altitude. OR c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.
-13 Cabin Rate of Climb Indication System	C	1	0	May be inoperative provided: a) Cabin Altitude Indicator is operative, and b) Automatic Cabin Pressure Control System is operative. OR c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.
	C			c) Aircraft is operated in unpressurized configuration, and d) Aircraft is operated at or below 10,000 feet.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
21 AIR CONDITIONING				
-14 Automatic Cabin Pressure Control System	C	1	0	(0) May be inoperative provided: a) Cabin Altitude Indicator is operative, b) Cabin Differential Pressure

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- Indicator is operative,
- c) Cabin Rate of Climb Indicator is operative, and
- d) Cabin Pressure Warning System is operative.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
22	AUTO FLIGHT				
-1 ***	Autopilot System	C	1	0	(M) (0) May be inoperative provided approach procedures do not require its use.
-2	Yaw Damper System	C	1	0	(M)

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-3 ***	Yaw Damper Engage Indication System	C	1	0	(O)May be inoperative provided Yaw Damper is considered inoperative.
-4 ***	Electric Trim Systems	C	-	0	(M)May be inoperative provided: a) System(s) are mechanically and electrically locked out, and b) All Mechanical Trim Systems are operative.
-5 ***	Autopilot Engage Indication System	C	1	0	(O)May be inoperative provided autopilot system is also made inoperative.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
23	COMMUNICATIONS				
-1	Communication Systems (VHF, HF, UHF)	C	-	-	As required by FAR and no relief may be provided to an inoperative system or component if powered by an emergency bus or equivalent and required to accomplish an emergency procedure.
-2	Cockpit to Cockpit				DELETED, Rev. 5.

Interphone System				
-3 ***	Cockpit Cabin Interphone Systems			
	1) Passenger Configuration	C	-	0
	2) Cargo Configuration	C	-	0
-4 Passenger Address System				
***	1) Passenger Configuration	B	1	0
***	2) Cargo Configuration	D	1	0
-5 ***	Cabin to Cabin Interphone System	C	-	0
May be inoperative provided paging (PA) system is operative on passenger carrying flights.  (0) May be inoperative provided: a) Alternate, normal and emergency procedures and/or operating restrictions are established and used, and b) Flight Deck/Cabin Interphone system operates normally.				

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
23 COMMUNICATIONS					
-6 ***	Prerecorded Passenger Announcement Systems	C	-	0	(0) May be inoperative provided alternate procedures are established and used.
-7	Hand Held Microphones	C	-	0	May be inoperative provided: a) Each cockpit crewmember uses a boom microphone, and b) Each (Control Wheel) Press-to-Talk Switch is operative.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
23	COMMUNICATIONS			
-8	Boom Microphones			
	Cockpit Voice Recorder and Flight Data Recorder Installed			
1)	Cockpit Voice Recorder Equipped To Record Boom Microphone per FAR 121.139(e), 135.151(d) or 125.227(e)	A - 0	0	May be inoperative provided: a) Flight Data Recorder operates normally, and b) Repairs are made within three flight days.

***	2) Cockpit Voice Recorder Not Equipped To Record Boom Microphone	D	-	0	
Cockpit Voice Recorder and NO Flight Data Recorder Installed					
	1) Cockpit Voice Recorder Equipped To Record Boom Microphone per FAR 121.139(e), 135.151(d) or 125.227(e)	A	-	0	May be inoperative provided repairs are made within three flight days.
***	2) Cockpit Voice Recorder Not Equipped To Record Boom Microphone	D	-	0	

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SYSTEM & SEQUENCE NUMBERS	1. ITEM		2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
23	COMMUNICATIONS				
-9 ***	Selective Call Systems (SEL/CAL)	C	-	0	May be inoperative provided procedures do not require its use.
-10 ***	Emergency Locator Transmitters (ELT)	C	-	-	As required by FAR.
-11 ***	Flitephone System	C	1	0	
-12	Cockpit Speakers	C	2	0	May be inoperative provided: a) Affected speaker is not required for aural warnings, and b) An operative headset is provided for each person on cockpit duty.

-13 ***	Cockpit Voice Recorder (CVR)				
	Flight Data Recorder (FDR) installed	A	1	0	(M)May be inoperative provided flight Data Recorder (FDR) is operative.
	NO Flight Data Recorder (FDR) installed	A	1	0	(M)May be inoperative provided repairs are made within three flight days.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
24 ELECTRICAL POWER					
-1	Batteries	B	2	1	(M)(0)One may be inoperative provided: a) Aircraft is operated during day VMC, b) There are no other electrical power source failures, c) Associated battery cables are disconnected and secured, and d) Associated battery disconnect switch is pushed.
-2	DC Generators	B	2	1	(M)(0)One may be inoperative provided: a) Generator drive shaft is removed and generator is reinstalled, b) Associated electrical cables

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-3	Al ternators	B	2	1	are secured, and c) APU Generator is operative. (M)(0)One may be i noperative provi ded: a) Aircraft is not operated in known of forecast icing condi tions, b) Al ternator drive shaft is removed and alternator is reinstalled, and c) Associ ated electrical cables are secured.
-4	Main Inverters	C	2	1	(M)(0)One may be i noperative provi ded remaini ng inverter is veri fied to power AC buses.
-5	E Inverter				DELETED, Rev. 5.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
24	ELECTRICAL POWER			
-6	AC Voltmeter			DELETED, Rev. 5.
-7	Engine Generator D.C. Volt/Amp meter			
	1) Voltmeters	C 2	0	(0)Both may be i noperative provi ded: a) Associ ated Engine Generator DC Ammeter is operative, b) DC Bus Voltmeter is operative, and c) Associ ated Generator Off Warni ng Li ght is operative.
	2) Ammeters	C 2	1	One may be i noperative provi ded associ ated Engine Generator DC voltmeter is operative.
-8	DC Bus Voltmeter			DELETED, Rev. 5.
-9	APU Generator Ammeter	C 1	0	(0)May be i noperative provi ded APU Generator is not used.

-10 APU Generator	C	1	0	(M) (0) May be inoperative provided: a) Both DC Generators are operative, b) APU generator belt is removed, and c) Associated electrical cables are secured.
-11 "C" Inverter ***	D	1	0	(M)
-12 Frequency Meter *** System	C	1	0	

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
24 ELECTRICAL POWER					
-13 Alternator/Overheat Warning Systems	C	2	1	(0) (M) One may be inoperative provided: a) Aircraft is not operated in known or forecast icing conditions, b) Associated Alternator drive shaft is removed and alternator is reinstalled, c) Associated electrical cables are secured, and d) Aircraft is operated in accordance with AFM Limitations.	
-14 Battery Temperature *** Monitor Systems (Indicator & Caution Light)					
Nicad Batteries Installed	C	-	-	(M) (0) One may be inoperative provided associated Battery is electrically disconnected and secured.	
-15 DC Generator	C	2	1	(M) (0) One may be inoperative	

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Overheat Warning  
Lights

provided:

- a) Affected Generator drive shaft is removed and generator is reinstalled,
- b) Associated electrical cables are secured, and
- c) APU Generator is operative.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
24	ELECTRICAL POWER				
-16 ***	Battery Monitor System Ammeters				
	Ni cad Batteries Installed	C	2	0	Both may be inoperative provided: a) Essential D.C. Voltmeter is operative, b) Associated Battery Fail Lights are operative, and c) Battery Disconnect Lights are operative.
-17	Generator Off Lights	C	2	1	(0)One may be inoperative provided: a) Associated Engine Generator D.C. Voltmeter is operative, and b) Associated Engine Generator D.C. Ammeter is operative.
-18	Alternator Off Lights	C	2	1	(0)One may be inoperative provided Engine Driven Alternator A.C. Voltmeter is operative.
-19	External Power System	C	1	0	(M)

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
25	EQUIPMENT/FURNISHINGS				
-1	Crash Axe	B	-	-	As required by FAR.
-2	First Aid Kits	D	-	-	Any in excess or those required by FAR may be incomplete or missing provided required distribution is maintained.
-3	Hand Fire Extinguisher				Moved to Chapter 26, Rev. 5.
-4	Overwater Equipment	C	-	-	As required by FARs.
-5	Passenger Seats	C	-	0	(M)May be inoperative provided the following are accomplished using an approved maintenance procedure: a) Appropriately secure or stow affected seat so that it does not block egress to an aisle or exit, and b) Ensure that affected Seat is blocked and placarded "DO NOT OCCUPY".  NOTE 1: A seat with an inoperative seatbelt is considered to be inoperative.  NOTE 2: A seat with an inoperative recline mechanism is considered inoperative if

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-6 Crewmember Shoulder B Harnesses

- -

the seat cannot be secured in the upright position.

Any in excess of those required for flight deck crew members (including official observer in observer seat) may be inoperative.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25	EQUIPMENT/FURNISHINGS			
-7	Observer Seat(s)			
	1) Primary Observer Seat (including associated equipment)	A -	-	May be inoperative provided:
				a) A passenger seat in passenger cabin is available to an FAA inspector for performance of official duties, and
				b) Repairs are made within two flight days.
				OR
		A		c) The secondary observer's seat is available to the FAA inspector for the performance of official duties, and
				d) Repairs are made within two flight days.
				OR
		A		e) The primary observer's seat is available with the required minimum safety equipment (safety belt and oxygen) and acceptable to the FAA for the performance of official duties, and
				f) Repairs are made within two flight days.
				(continued)

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.		2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25	EQUIPMENT/FURNISHINGS						
-7	Observer Seat(s) (cont'd)						
	1) Primary Observer Seat (including associated equipment) (cont'd.)						NOTE 1: These provisions are intended to provide for occupancy of the above seats by an FAA inspector when the minimum safety equipment (oxygen and safety belt) is functional and the inspector determines the conditions to be acceptable.
	2) Additional Observer Seat(s)	D	-	0			NOTE 2: The pilot-in-command will determine if the minimum safety equipment is functional for other persons authorized to occupy any observer seat(s).  May be inoperative.
***							
-8	"Fasten Seat Belt While Seated" sign or placards	C	-	-			One or more signs or placards may be illegible or missing provided a legible sign or placard is readable from each occupied passenger seat.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
25	EQUIPMENT/FURNISHINGS			
-9	Passenger Convenience Items	-	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, ash trays, stereo equipment, overhead reading lamps, etc. Items addressed elsewhere in this document shall not be included. (M) and (O) procedures may be required and included in the air carrier's appropriate document.  NOTE: LAVATORY DOOR ASHTRAYS ARE NOT CONSIDERED CONVENIENCE ITEMS.
-10 ***	Megaphones	B -	0	Any in excess of those required by FAR may be inoperative or missing provided: a) Inoperative megaphone is removed from passenger cabin, and b) Required distribution is maintained.  NOTE: Not required for all-cargo operations.
-11	Flotation Devices	C -	-	Any in excess of those required by FAR may be inoperative.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
26	FIRE PROTECTION				
-1	APU Fire Detection System	C	1	0	(M)(O)May be inoperative provided APU is not used.
-2	Fire Extinguishing System Engines				DELETED, Rev. 5.
-3	APU Fire Extinguishing System	C	-	-	(O)May be inoperative provided APU is not used.
-4	Rear Baggage *** Compartment Smoke Detector Systems	C	-	0	(O)May be inoperative provided cabin to baggage compartment door remains OPEN.
-5	Passenger *** Compartment Closet Smoke Detector	C	-	0	(O)May be inoperative provided door remains OPEN for visual check from crew stations.
-6	Entranceway Baggage *** Compartment Smoke Detector	C	-	-	(O)May be inoperative provided doors remain OPEN for visual check from crew stations.
-7	Portable Fire Extinguishers	D	-	-	Any in excess of those required by FAR may be inoperative or missing provided: a) The inoperative fire extinguisher is tagged inoperative, removed from the installed location, and placed out of sight so it can not be mistaken for a functional unit, and b) Required distribution is maintained.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
26	FIRE PROTECTION				
-8 ***	Lavatory Fire Extinguisher Systems				
	1) Passenger Configuration	C	-	-	(M)(O)May be inoperative in each lavatory provided: a) Lavatory Smoke Detector System operates normally. OR b) Lavatory waste receptacle is empty, c) Lavatory door is locked CLOSED and placarded, "INOPERATIVE-DO NOT ENTER", and d) Lavatory is not used for any purpose.
	2) Cargo Configuration	D	-	0	NOTE: These provisos are not intended to prohibit lavatory inspections by crewmembers.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
26	FIRE PROTECTION				
-9 ***	Lavatory Smoke Detection Systems				
	1) Passenger Configuration	C	-	-	(M)(O)May be inoperative in each lavatory provided: a) Lavatory Fire Extinguisher System operates normally. OR b) Lavatory waste receptacle is empty, c) Lavatory door is locked CLOSED and placarded, "INOPERATIVE-DO NOT ENTER", and d) Lavatory is not used for any purpose.  NOTE: These provisions are not intended to prohibit lavatory inspections by crewmembers.
	2) Cargo Configuration	D	-	0	
-10 ***	Galley Fire Extinguishing Systems	C	-	0	
-11 ***	Galley Smoke Detection Systems	C	-	0	
-12 ***	Flame Detectors	C	-	0	

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
27	FLIGHT CONTROLS			
-1	Stall Warning System			DELETED, Rev. 5.
-2	Flap Position Indicator			DELETED, Rev. 5.
-3 ***	Trim Tab Indicators C (Electric)	-	0	(0) May be inoperative provided electric trim or electronic flight control systems are considered inoperative.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
28	FUEL					
-1	Fuel Quantity Indicators	C	2	1	(M)(0)One may be inoperative provided:	<ul style="list-style-type: none"> <li>a) Both tanks are completely filled using overwing refueling,</li> <li>b) Both fuel flow meters are operative,</li> <li>c) Circuit breaker of the inoperative system is pulled and collared,</li> <li>d) After takeoff, power is set by matching TGT indications on both engines, and</li> <li>e) Flight crew maintains a log of fuel burned.</li> </ul> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> <li>f) Affected tank is defueled before each refueling,</li> <li>g) Affected tank is fueled with a known quantity of fuel,</li> <li>h) Both fuel flow meters are operative,</li> <li>i) Circuit breaker of the inoperative system is pulled and collared,</li> <li>j) After takeoff, power is set by matching TGT indications on both engines, and</li> <li>k) Flight crew maintains a log of fuel burned.</li> </ul>
-2	Fuel Crossfeed Valve	C				DELETED, Rev. 5.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
28	FUEL				
-3	Fuel Filter Heat Systems	C	2	0	(M)(0)Both may be inoperative provided: a) Anti-icing additives are added to fuel, b) Hot Air Gate Valve remains CLOSED, and c) Aircraft is operated in accordance with AFM Limitations and Procedures. OR d) Aircraft is operated with fuel temperatures above +10 degrees C.
		C			
-4	Fuel Boost Pumps	C	4	3	(0)One may be inoperative provided: a) Fuel Intertank Valve is installed and operative, and b) Aircraft is operated in accordance with AFM Procedures.
-5	Low Fuel Quantity Warning Systems	C	2	1	(M)(0)One may be inoperative provided both Fuel Quantity Indicators are operative.
		C	2	0	(M)(0)Both may be inoperative provided: a) Both Fuel Quantity Indicators are operative, b) All Fuel Boost Pumps are operative, and c) Fuel Crossfeed Valve is OPENED when either wing tank contains 2000 pounds or less fuel.

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SYSTEM &	1.	2. NUMBER INSTALLED
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SEQUENCE NUMBERS	ITEM			3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
28	FUEL				
-6 ***	Fuel Intertank Valve	C	1	0	(O)May be inoperative provided: a) All Fuel Boost Pumps are operative, and b) All Fuel Quantity Indicators are operative.
-7 ***	Single Point Refueling System	C	1	0	(M)May be inoperative provided procedures are established to deactivate single point refueling system.
-8 ***	Fuel Temperature Indication Systems	C	2	0	(O)Both may be inoperative provided: a) Fuel Filter Heat System is operative for affected engine. b) OAT Indicator is operative, and c) Aircraft is operated in accordance with AFM Limitations and Procedures. OR d) Aircraft is operated at outside air temperatures above +10 degrees C.
		C			

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH

-----			4. REMARKS OR EXCEPTIONS	
29	HYDRAULIC POWER			
-1	Hydraulic Pumps (engine driven)			DELETED, Rev. 5.
-2	Auxiliary Pump			DELETED, Rev. 5.
-3	Normal Hydraulic Pressure Gauge			DELETED, Rev. 5.
-4	Auxiliary Hydraulic C Pressure Gauge	1	0	
-5	Brake Accumulator C Pressure Gauge (Nose Wheel well)	1	0	

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
30	ICE AND RAIN			

PROTECTION					
-1	Engine and Propeller Deicing Systems	C	2	0	(M)(0)Both may be inoperative provided aircraft is not operated into known or forecast icing conditions.
-2	Pitot Heaters	B	2	1	(M)(0)One may be inoperative provided aircraft is not operated in visible moisture or known or forecast icing conditions.
-3	Windshield Wiper Systems	C	2	0	(0)Both may be inoperative provided aircraft is not operated in precipitation within 5 NM of the airport of takeoff or intended landing.
-4	Airfoil Deicing System (Wing & Empennage)	C	1	0	(M)(0)May be inoperative provided aircraft is not operated into known or forecast icing conditions.
-5	Windshield Heat Systems	B	2	0	(0)(M)Both may be inoperative provided: a) Aircraft is not operated in known or forecast icing conditions, and b) Aircraft is operated in accordance with AFM Limitations.
-6	DV Window Heat Systems	C	2	0	(M)(0)Both may be inoperative provided: a) Aircraft is not operated in known or forecast icing conditions, and b) Aircraft is operated in accordance with AFM Limitations.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
30	ICE AND RAIN PROTECTION				
-7	Side Window Heat	C	2	0	

*** Systems					
-8	Pneumatic Boots Pressure Gauge	C	1	0	(0)May be inoperative provided: a) Suction Gauge is operative, and b) Suction Gauge is verified to have normal indications before takeoff.
-9	Pitot Heat Light Systems	B	2	0	(M)(0)Both may be inoperative provided: a) All other elements of the pitot heat system are checked and operate normally, and b) Aircraft is not operated in known or forecast icing conditions.
-10	Ice Detection Systems	C	1	0	
-11	Pneumatic Boots Suction Gauge	C	1	0	(0)May be inoperative provided: a) Aircraft is not operated in known or forecast icing conditions, b) Aircraft is operated in an unpressurized configuration, and c) Aircraft is operated at or below 10,000 ft.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
31	INDICATING/RECORDING SYSTEMS				
-1	Clock	C	-	1	
-2	Flight Data	A	1	0	May be inoperative provided:

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\*\*\* Recorder (FDR) System

- a) Cockpit Voice Recorder (CVR) System is operative, and
- b) Repairs are made within three flight days.

-3 Cockpit Voice Recorder (CVR) System

Moved to Chapter 23, Rev. 5.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
32	LANDING GEAR			
-1	Anti-Skid Systems			
	1) Mechanical	C 1	0	(0) May be inoperative provided aircraft is operated in accordance with AFM Limitations.

***	2) Electrical	C	1	0	(M)(0)May be inoperative provided aircraft is operated in accordance with AFM Limitations.
-2	Landing Gear Position Indicator				DELETED, Rev. 5.
-3	Park Brake				DELETED, Rev. 5.
***	-4 Anti-Skid Indication Systems (Electronic Anti-Skid)	C	-	0	(M)(0)May be inoperative provided: a) Anti-skid System is electrically disabled, and b) Aircraft is operated in accordance with AFM Limitations.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS	
33	LIGHTS				
-1	Cockpit/Flight Deck/Flight Compartment and Instrument Lighting Systems (Excluding EFIS)	C	-	-	Individual lights may be inoperative provided remaining lights are: a) Sufficient to clearly illuminate all required instruments, controls and other devices for which it

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					is provided,
					b) Positioned so that direct rays are shielded from flight crewmembers' eyes, and
					c) Lighting configuration and intensity is acceptable to the flight crew.
-2	Passenger Cabin Interior Illumination Systems	C	-	-	(0)May be inoperative provided:
					a) Sufficient lighting is operative for crew to perform required duties, and
					b) Lighting configuration at dispatch is acceptable to flight crew.
-3	Passenger Notice System (No Smoking/Fasten Seat Belts)	B	1	0	(0)May be inoperative provided procedures are established and used for notifying the passengers when seat belts should be fastened and smoking is prohibited.
-4	Exterior Emergency Lights	B	-	-	As required by FAR.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
33	LIGHTS				
-5	Landing Light Systems	C	2	1	(M)(0)One may be inoperative provided Taxi Lights are operative.
		C	2	0	(M)(0)Both may be inoperative provided airplane is not operated at night.
-6	Taxi Lights	C	2	0	(M)
-7	Position Light	C	-	-	(0)May be inoperative provided:

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Bulbs					a) One light bulb is operative at each position. OR b) Aircraft is not operated at night.
-8 Beacons	C	3	0		(0) All may be inoperative provided aircraft is not operated at night.
-9 Strobe "Anti - *** Collision) Lights	B	3	0		(0) All may be inoperative provided: a) Aircraft is not operated at night. OR b) All Beacons are operative.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
33 LIGHTS				
-10 Wing Inspection Lights	C	4	0	All may be inoperative provided: a) Portable lamp/light of adequate capacity for wing and/or control surface inspection is available for night operation in icing conditions. OR b) Aircraft is not operated into known or forecast icing conditions. OR c) Aircraft is not operated at
	C			

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-11 Interior Emergency Lighting

DELETED, Rev. 3.

-12 Master Warning System

DELETED, Rev. 3.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
33	LIGHTS			
-13 ***	Floor Proximity Emergency Escape Path Marking System Lights	C -	0	Individual lights may be inoperative provided it is verified that the FAA approved Minimum acceptable lighting levels specified in one of the following documents are complied with: a) FAA Engineering Approval Letter. b) FAA approved report of the Type Design Holder. c) Limitations and conditions section of the applicable Supplemental Type Certificate (STC). d) An FAA approved report incorporated in the Master

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Drawing List for the  
Applicable STC.

-14 ***	Logo Lights System	C	1	0
-15 ***	Recognition Lights System	C	1	0

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
34 NAVIGATION					
-1	Airspeed Indicator				DELETED, Rev. 5.
-2	Attitude Indicator				DELETED, Rev. 5.
-3	Turn and Slip Indicator	B	2	1	Turn function may be inoperative provided Standby Attitude Indicator (Third Gyro Horizon) is installed and operative.
-4	Directional Gyro Compass System				DELETED, Rev. 5.
-5	Altimeter				DELETED, Rev. 5.
-6	Rate-of-Climb Indicators	C	2	1	(0)One may be inoperative provided aircraft is operated during day VMC conditions.

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-7	Outside Air Temperature				DELETED, Rev. 5.
-8	Magnetic Compass (Standby)	C	1	0	(0)May be inoperative provided both directional gyro compass systems are operative and slaved in the Mag position.
-9	MACH/Airspeed Warning System				DELETED, Rev. 5.
-10	Radio Navigation Equipment, DME, VOR Radar, ADF, Transponder, ILS Marker Beacon				Item Deleted and moved to separate items within this ATA Chapter, Rev. 5.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34	NAVIGATION				
-11	Ground Proximity Warning System (GPWS)				
1)	Terrain Avoidance Modes 1-4	A	-	0	(0)May be inoperative provided: a) Alternate procedures are established and used, and b) Repairs are made within two flight days.
2)	Test Mode	A	1	0	May be inoperative provided: a) GPWS is considered inoperative, and b) Repairs are made within two flight days.
3)	Glide Slope Deviation (Mode 5)	B	2	0	
***	4) Advisory	C	-	0	(0)May be inoperative provided

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Call outs					
***	5) Windshear Mode	C	-	0	alternate procedures are established and used.
-12	Radar Altimeter Systems	C	-	-	(0) All may be inoperative provided: a) Landing weather minimums or operating procedures do not require its use, and b) Other systems affected (GPWS, FD, AP, etc.) are considered.
-13 ***	Flight Director System	C	-	0	May be inoperative provided approach minimums do not require its use.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
34 NAVIGATION					
-14 ***	Area Navigation Systems	D	-	-	As required by FAR.
-15 ***	Horizontal Situation Indicators (HSI)	C	2	1	(0) One may be inoperative provided: a) Aircraft is operated day VMC only, and b) Compass heading indication is available on each pilot's instrument panel.
-16	Standby Attitude Indicator (Third Gyro Horizon)	B	1	0	(0) May be inoperative provided: a) EFIS is not installed, and b) Aircraft is operated day VMC only.
***	1) Glideslope/Localizer Indicator	C	1	0	
-17	Weather Radar System	C	1	0	As required by FAR.
-18	VOR/ILS Navigation Systems	C	-	-	As required by FAR and no relief may be provided to an inoperative

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-19 Marker Beacon Systems	C	-	-	system or component if powered by an emergency bus or equivalent and required to accomplish an emergency procedure.
-20 Automatic Direction Finding Systems (ADF)	C	-	-	May be inoperative provided approach procedures do not require its use. As required by FAR.

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SYSTEM & SEQUENCE NUMBERS	1. ITEM	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS	
34	NAVIGATION				
-21	ATC Transponders and Automatic Altitude Reporting Systems	C D	- -	- -	As required by FAR. Any in excess of those required by FAR may be inoperative.
-22	Distance Measuring Equipment (DME) Systems	C	-	-	As required by FAR.
-23 ***	Long Range Navigation Systems (INS, IRS, OMEGA, LORAN, GPS, VLF, and OSS)	C	-	0	As required by FAR.
-24 ***	Attitude Reference Systems (Vertical Gyros, AHRS, IRS) (Excludes Standby Attitude Indicator)	C	-	2	May be inoperative provided independent Primary Attitude information is available on each pilot's panel.
-25 ***	Angle of Attack Indicator	C	-	0	
-26 ***	Comparator Monitor System	C	-	-	As required by FAR.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
34	NAVIGATION				
-27 ***	Electronic Flight Instrument System (EFIS)				
	1) Multifunction Display Unit	C	1	0	May be inoperative provided: a) Weather radar information can be displayed at each pilot station or weather radar is considered inoperative, and b) Procedures do not require its use.
	2) Symbol Generators	C	-	2	One may be inoperative provided EFIS displays at pilot's and copilot's stations are operative from independent Symbol Generators.
-28 ***	Inertial Sensor Display Unit (ISDU)	C	1	0	May be inoperative provided at least one Flight Management System is operative.
-29 ***	Microwave Landing Systems (MLS)	C	-	-	As required by FAR.
-30 ***	Navigation Data Storage Systems	C	-	0	May be inoperative provided aircraft is operated in accordance with AFM Limitations.
-31	Stormscopes	C	-	0	

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
34	NAVIGATION				
-32 ***	Traffic Alert Collision Avoidance System (TCAS)				
	1) TCAS System	C	- 0		(M)May be inoperative provided the system is deactivated and secured.
***	2) Combined TA and RA Dual Displays	C	2 1		(0)May be inoperative on the non-flying pilot side provided: a) TA and RA elements and audio functions are operative on flying pilot side, and b) TA and RA display indications are visible to the non-flying pilot.
	3) Resolution Advisory (RA) Display System(s)	C	2 1		(0)One may be inoperative on non-flying pilot side.
		C	- 0		(0)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) TA Display System	C	- 0		(0)May be inoperative provided all installed RA display and audio functions are operative.
-33 ***	Vertical Navigation System	C	- 0		

-34 ***	Voice Advisory System	C	-	0	
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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
34	NAVIGATION				
-35 ***	Voice Terrain Advisory (VTA) System (not part of Ground Proximity Warning System)	C	1	0	
-36 ***	Windshear Detection and Guidance Systems	C	-	0	(0) May be inoperative provided alternate procedures are established and used.
-37 ***	Fuel Management System	C	1	0	
-38 ***	Altitude Alerting System	A	-	0	(0) May be inoperative provided: a) Autopilot with altitude hold is operative, and b) Operators are limited to not more than three flight days before repairs are made.
-39 ***	Lightning Sensor Systems (LSS)	C	-	0	

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
35	OXYGEN				
-1	Oxygen System and Supply	C	-	-	As required by FAR.
-2	Cabin Oxygen System	C	1	0	May be inoperative provided:
***	ON Warning System				a) Cabin Altitude Indicator is operative, b) Cabin Differential Pressure Indicator is operative, and c) Cabin Pressure Warning System is operative. OR d) Aircraft is operated in unpressurized configuration, and e) Aircraft is operated at or below 10,000 feet.
-3	Portable Oxygen	B	-	-	Any in excess of those required by FAR may be inoperative or missing provided required distribution is maintained throughout the aircraft.
***	Dispensing Units (Bottles and Mask)				NOTE: Any bottle not properly serviced is considered inoperative and should be removed.
-4	Oxygen Service Panel Gauge (External)	C	1	0	(M)(O)
-5	Protective Breathing Equipment (PBE)	B	-	-	Any in excess of those required by FAR may be inoperative.
***					

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
49	AIRBORNE AUXILIARY POWER				
-1	Auxiliary Power Unit	C	1	0	(M)(0)May be inoperative provided: a) Both DC Generators are operative, b) Both DC Generator Overheat Warning Lights are operative, c) Procedures do not require its use for electrical power or as an air source, and d) Aircraft is operated in accordance with AFM Limitations.
-2	APU Air Load Valve	C	1	0	(M)(0)May be inoperative provided: a) Procedures do not require its use as an air source, and b) Aircraft is operated in accordance with AFM Limitations.
-3 ***	APU RPM Indicator	C	1	0	
-4 ***	APU EGT Indicator	C	1	0	
-5	APU Oil Pressure Indicator Light	C	1	0	(M)(0)May be inoperative provided APU is considered inoperative.
-6	APU Operating RPM Indicator Light	C	1	0	(0)

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
49	AIRBORNE AUXILIARY POWER				
-7	APU Generator Off Indicator Light	C	1	0	(O)May be inoperative provided: a) APU Generator Ammeter is operative, and b) APU Operating RPM Indicator Light is operative OR c) APU Generator Ammeter is operative, and d) APU RPM Indicator is operative.
		C			
-8	APU Start Indicator Light	C	1	0	(O)May be inoperative provided APU is considered inoperative.
-9 ***	APU External Fire Warning Alarm (Fire Warning Bell)	C	1	0	(M)(O)May be inoperative provided APU operation is monitored in cockpit.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
52	DOORS				
-1	Door Warning Light System	C	1	0	(0)May be inoperative provided: a) A crewmember verifies by visual inspection before each departure that the associated doors are CLOSED and LOCKED, and b) Locking pin is removed from the baggage door lock handle before each departure.
-2	Door Inflatable Seal Systems	C	2	0	(0)Both may be inoperative provided: a) Flight is conducted in an unpressurized configuration, and b) Aircraft is operated at or below 10,000 feet.
-3 ***	Cargo Door Warning Light System	C	1	0	(0)May be inoperative provided a crewmember verifies by visual inspection before each departure that the cargo door is CLOSED and LOCKED.
-4 ***	Cargo Door Operating System	C	1	0	(0)(M)May be inoperative provided: a) Door is not used, and b) A crewmember verifies by visual inspection before each departure that the cargo door is CLOSED and LOCKED.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
61 PROPELLERS					
-1	Below Flight Fine Pitch Lock Lights				DELETED, Rev. 3.
-2	Flight Fine Pitch Lock Lights	B	2	1	(0)
-3	Cruise Lockout Lights				DELETED, Rev. 3.
-4	Cruise Pitch Lights	B	2	1	(0)
-5	Auto Feathering System				DELETED, Rev. 3.
-6	Propeller Synchronizer System	C	1	0	(M) (0)
-7	Propeller Brake	C	1	0	(M) (0)
***					

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		4. REMARKS OR EXCEPTIONS
			3.	NUMBER REQUIRED FOR DISPATCH	
73	ENGINE FUEL & CONTROL				
-1	Fuel Flowmeters	B	2	1	(0)One may be inoperative provided both Fuel Quantity Indicators are operative.
-2	Fuel Trim Indicators	C	2	1	(0)One may be inoperative provided: a) Both trim actuators are set simultaneously utilizing operative indicator starting at 0% trim for engine starting and takeoff, and b) TGT indicator is used for setting trim in flight. OR
		C	2	0	(0)Both may be inoperative provided takeoff and landing operations are confined to ambient air temperatures below I. S. A.
-3	Fuel Trimmer Actuator				DELETED, Rev. 3.
-4	Fuel Low Pressure Warning Lights	C	4	2	(0)Two may be inoperative provided: a) One is operative on each engine, and b) Fuel Crossfeed Valve is OPEN.
-5 ***	Fuel Used Indicators	C	2	0	(0)Both may be inoperative provided both Fuel Quantity Indicators are operative.
-6	Fuel Trim Computer	D	1	0	(0) May be inoperative provided AFM fuel trimmer/datum charts are available in cockpit.

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.		2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH		4. REMARKS OR EXCEPTIONS
77	ENGINE INDICATING							
-1	Tachometers							DELETED, Rev. 3.
-2	TGT Indicators							DELETED, Rev. 3.
-3	Torque Pressure Indicator							DELETED, Rev. 3.
-4	Engine Turbine *** Vibration Indicators (TVI)	C	2	0				
-5	Engine Synchroscope *** Indicator	C	1	0			(M)	

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED		3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
79	ENGINE OIL					
-1	Oil Temperature Indicator					DELETED, Rev. 5.
-2	Oil Pressure Indicator					DELETED, Rev. 5.
-3	Oil Low Pressure Warning Lights	C	2	1		

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SYSTEM & SEQUENCE NUMBERS	ITEM	1.	2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
80	STARTING				
-1 ***	Starter Engaged Lights	C	- 0		(0) May be inoperative provided Engine Selector Switch is switched to OFF when engine has reached self-sustaining speed.

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SYSTEM &	1.	2. NUMBER INSTALLED
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SEQUENCE NUMBERS	ITEM			3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
82	WATER INJECTION				
-1	Water/Methanol Injection Systems	C	2	0	(0)One or both systems may be inoperative provided performance requirements are met with dry power.
-2	Water Methanol Pumps	C	2	1	(M)(0)One may be inoperative provided: a) An adequate water-methanol supply, as determined from AFM, is in the tank with the operative pump, and b) Associated Water Methanol Low Pressure Warning Light is operative.
-3	Water Methanol Low Pressure Warning Lights	C	2	1	
-4	Water Methanol Quantity Indicators	C	2	0	(M)(0)One or both may be inoperative provided Water methanol quantity in tank with the inoperative Indicator is checked with a dipstick before each wet takeoff.