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# Master Minimum Equipment List

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Enstrom Report 28-DO-374

Revision No. A

February 24, 2016

**ENSTROM F-28F**  
**ENSTROM F-28F-R**  
**ENSTROM 280FX**

This Master Minimum Equipment List (MMEL) is approved by the European Aviation Safety Agency (EASA) at the hereafter revision under the type certificate EASA.IM.R.122 as part of the Operational Suitability Data (OSD) as per Regulation (EU) 748/2012 as amended by Regulation (EU) No. 69/2014.

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**EUROPEAN AVIATION SAFETY AGENCY  
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**LOG OF REVISIONS**

<b>Rev. No.</b>	<b>Date</b>	<b>Revision Description</b>	<b>EASA Approval</b>
-	12/09/2015	Original	10056013
A	02/24/2016	Added Enstrom Model F-28F-R; revised Page 25-1 Item 2562-01	10057140

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**CONTROL PAGE**

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**HIGHLIGHTS OF CHANGE**

<b>System</b>	<b>Item</b>	<b>Explanation</b>
2562	-01	This revision is a reissuance of F-28F, F-28F-R, and 280FX MMEL, Enstrom Report 28-DO-374. This revision revised the Remarks & Exceptions of 2562-01 to align with CS-MMEL.

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**DEFINITIONS**

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:
  - 1) Cargo handling equipment (unloaded, empty or with ballast);
  - 2) 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

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**DEFINITIONS**

- 3) 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.
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. **'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.
12. **'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. **'ETOPS'** or **'ER operations'** refers to extended range operations of a two- engine airplane as defined by Part-SPA.
13. **'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.
14. **'If installed'** means that the item is either optional or is not required to be installed on all aircraft covered by the MMEL.
15. **'Inoperative'** means that the item does not accomplish its intended purpose or is not consistently functioning within its approved operating limits or tolerances.

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**DEFINITIONS**

16. **'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.
17. **'Intended flight route'** corresponds to any point on the route including diversions to reach alternate aerodromes required to be selected by the operational rules.
18. **'Item'** means component, instrument, equipment, system or function.
19. **'(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.
20. **'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.
21. **'Maximum distance from an adequate aerodrome for two-engine aeroplanes'** as defined in SPA.ETOPS and CAT.OP.AH.140.
22. **'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.
23. **'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



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**DEFINITIONS**

the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the dispatch conditions.

24. **'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.

25. **'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.

26. '-' 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.

27. **'(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.

28. **'Operating minima'** means the set of requirements associated to operations requiring a specific approval (refer to Part-SPA).

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29. **'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.

30. **'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.

31. **'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.

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**DEFINITIONS**

32. **'Required Cabin Crew Seat'** is a seat in the aircraft cabin which meets the following conditions:
- 1) Where the certification of the cabin requires this seat to be occupied by a qualified cabin crew member as specified in the Operations Manual;
  - 2) This seat is a part of the station to which a qualified cabin crew member is assigned for the flight; and
  - 3) The qualified cabin crew member assigned to the station is a member of the minimum cabin crew designated for the flight.
33. **'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.

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**PREAMBLE**

**Introduction**

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.

**Purpose and limitations**

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.

**Utilisation**

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.

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**PREAMBLE**

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.

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.**

**Multiple inoperative items**

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.

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**PREAMBLE**

**Rectification interval extension**

[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.]

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**GUIDELINES FOR (M) & (O) PROCEDURES**

The aircraft manufacturer has identified a need for certain procedures to provide an adequate level of safety while providing relief for some items. These procedures must be established by the operator and may be based on the aircraft manufacturer's recommended procedures, or equivalent operator procedures. When recommended procedures are published the operator should comply with these procedures. If recommended procedures are not published, the following guidelines delineate the aspects to be considered by the operator in the development of required procedures.

JASC	Item	Explanation
2140	-01	(M) Procedure to inspect, deactivate and secure the system.
2300	-02	(O) Procedures to provide alternate means for communication between the flight crew compartment and the cabin, in normal and emergency situations.
2520	-03	(M) Procedure to inspect, deactivate and secure the system.
2562	-01	(M) Procedure to inspect, deactivate and secure the system.
3120	-02	(O) Procedure for alternate means to record time in service.
3400	-01	(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.
3400	-02	(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.
3451	-01	(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.
3454	-01	(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.
3455	-01	(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.
3457	-01	(O) Procedures must be established to give alternate procedures in case existing operational procedures are affected.
5210	-01	(M) Procedure to replace jettison hinge pin with standard door hinge bolt if jettison cable jams or breaks and placard.

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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>21. AIR CONDITIONING</b>					
<b>2120-01</b> <b>***</b>	Fresh Air Ventilation Outlets	<b>C</b>	<b>-</b>	<b>1</b>	Any in excess of one may be inoperative.
<b>2140-01</b>	Heating System	<b>C</b>	<b>1</b>	<b>-</b>	<b>(M)</b> May be inoperative provided: <b>a)</b> ventilation is used as dynamic ventilation, if necessary, <b>b)</b> system is deactivated and secured.



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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>23. COMMUNICATIONS</b>					
<b>2300-01</b>	Communications Systems (FM)	<b>D</b>	-	<b>0</b>	Any in excess of those required may be inoperative.
<b>2300-02</b> ***	Cabin ICS System	<b>D</b>	-	<b>0</b>	May be inoperative provided procedures do not depend upon its use.
		<b>C</b>	-	<b>0</b>	<b>(O)</b> May be inoperative provided alternate procedures are established and used.
<b>2310-01</b>	Communication System (HF)	<b>D</b>	-	<b>0</b>	Any in excess of those required may be inoperative.
<b>2311-01</b>	Communication System (UHF)	<b>D</b>	-	<b>0</b>	Any in excess of those required may be inoperative.
<b>2312-01</b>	Communication System (VHF)	<b>D</b>	-	<b>0</b>	Any in excess of those required may be inoperative.

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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>24. ELECTRICAL POWER</b>					
<b>2435-01</b>	Generator Caution System	<b>B</b>	<b>1</b>	<b>0</b>	May be inoperative provided ammeter is operative and monitored during the flight.

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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>25. EQUIPMENT/FURNISHINGS</b>					
<b>2510-01</b>	Crew Member Shoulder Harness	<b>C</b>	-	<b>1</b>	Any in excess of one may be inoperative provided: <b>a)</b> the flight is conducted in single pilot operations, and <b>b)</b> the affected seat is not occupied.
<b>2520-01</b>	Passenger Seat Belts	<b>C</b>	-	<b>0</b>	May be inoperative or missing provided the seat is blocked and placarded.
<b>2520-02</b>	Passenger Shoulder Harness	<b>C</b>	-	<b>0</b>	May be inoperative or missing provided the seat is blocked and placarded.
<b>2520-03</b> ***	EMS Equipment  Special/Mission Equipment (e.g. Cargo Hook, Rescue Hoist, Loud-Speaker, EMS Equipment, etc.)	<b>C</b>  <b>C</b>	-  -	<b>0</b>  -	<b>(M)</b> May be inoperative provided system is deactivated and secured. May be inoperative provided the inoperative system is deactivated, secured, and placarded. <b>Note:</b> Appropriate maintenance action has to be developed by the operator.
<b>2562-01</b> ***	Automatic Portable ELTs	<b>A</b>	-	<b>0</b>	<b>(M)</b> May be inoperative provided: <b>a)</b> the ELT system is deactivated, <b>b)</b> the helicopter shall not fly for more than 6 hours after the ELT was found to be inoperative, and <b>c)</b> a maximum of 24 hours have elapsed since the ELT was found to be inoperative.
<b>2562-02</b> ***	Automatically Deployable Emergency Locator Transmitter	<b>D</b>	-	-	Any in excess of those required may be inoperative.

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			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>26. FIRE PROTECTION</b>					
<b>2622-01</b>	Portable Fire Extinguisher	<b>B</b>	-	-	Any in excess of those required by the operating rules may be inoperative or missing.

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JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>28. FUEL</b>					
<b>2810-01</b> ***	Auxiliary Fuel Tank System	<b>C</b>	<b>-</b>	<b>0</b>	May be inoperative provided: <b>a)</b> flight is not predicated upon the use of the system, and <b>b)</b> auxiliary tank fuel is considered in weight and balance computations.
<b>2842-01</b>	Analog Fuel Quantity Gauge	<b>B</b>	<b>1</b>	<b>0</b>	May be inoperative provided the Shadin Fuel Totalizer System (Item 2842-02) is installed, operative, and utilized and the fuel quantity is measured with the aircraft fuel dipstick at each refueling.
<b>2842-02</b> ***	Shadin Fuel Totalizer System	<b>C</b>	<b>1</b>	<b>0</b>	May be inoperative provided the fuel quantity gauge is operative.

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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>31. INSTRUMENTS</b>					
<b>3120-01</b>	Clock, Displaying Hours, Minutes and Seconds, with Sweep Second Pointer or Electric Digital Clock.	<b>C</b>	<b>-</b>	<b>0</b>	May be inoperative provided an accurate timepiece is operative on the flight crew compartment indicating the time in hours, minutes and seconds. <b>Note:</b> On the basis that the timepiece required does not need to be approved, an accurate pilot's wristwatch which indicates hours, minutes and seconds is acceptable.
<b>3120-02</b>	Hour Meter	<b>C</b>	<b>-</b>	<b>0</b>	<b>(O)</b> May be inoperative provided alternate means is utilized for recording time in service.
<b>3120-03</b> ***	Elapsed Timer	<b>C</b>	<b>-</b>	<b>0</b>	

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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		4. REMARKS & EXCEPTIONS
			3. NUMBER REQUIRED FOR DISPATCH		
<b>33. LIGHTS</b>					
<b>3310-01</b>	Flight Crew Compartment Lighting System	<b>C</b>	<b>-</b>	<b>-</b>	Individual lights may be inoperative provided the remaining lights are: <b>a)</b> sufficient to clearly illuminate all required instruments, controls, and other devices for which they are provided, <b>b)</b> lighting configuration and intensity is acceptable to the flight crew.
<b>3320-03</b>	Cockpit Utility Light	<b>C</b>	<b>1</b>	<b>0</b>	May be inoperative provided lighting configuration at dispatch is acceptable to the flight crew.
<b>3340-01</b>	Position Light System	<b>C</b>	<b>1</b>	<b>0</b>	May be inoperative for daylight operations.
<b>3340-02</b>	Anti-Collision Strobe Lights	<b>C</b>	<b>2</b>	<b>1</b>	One may be inoperative for daylight operations.
<b>3340-03</b>	Landing Light(s)	<b>C</b>	<b>-</b>	<b>1</b>	Any in excess of one adjustable landing light may be inoperative for night operations.
<b>3340-06</b>	Search Light	<b>C</b>	<b>-</b>	<b>0</b>	May be inoperative for daylight operations.
<b>***</b>					

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JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>34. NAVIGATION</b>					
<b>3400-01</b> ***	Navigation Equipment	<b>D</b>	<b>-</b>	<b>0</b>	<b>(O)</b> One or more may be inoperative provided: <b>a)</b> the navigation systems required for each segment of the intended flight route are operative, and <b>b)</b> alternate procedures are established and used, where applicable.
<b>3400-02</b> ***	RMI	<b>D</b>	<b>-</b>	<b>0</b>	<b>(O)</b> One or more may be inoperative provided: <b>a)</b> the navigation systems required for each segment of the intended flight route are operative, and <b>b)</b> alternate procedures are established and used, where applicable.
<b>3400-03</b> ***	HSI	<b>B</b>	<b>-</b>	<b>0</b>	May be inoperative on the pilot flying side for day VFR operations, in sight of the surface with adequate external attitude reference.
<b>3411-01</b>	Altimeter	<b>C</b>	<b>1</b>	<b>1</b>	May be inoperative provided: <b>a)</b> flight is conducted under VFR, and <b>b)</b> an altitude indication is available at each required pilot's station. <b>Note:</b> For single pilot operations, a secondary/standby or off-side indication may satisfy condition (b) if visibility requirements are met.
<b>3413-01</b> ***	Vertical Speed Indicator	<b>C</b>	<b>-</b>	<b>0</b>	May be inoperative for day VFR operation.



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JASC SYSTEM & TITLE		1. REPAIR CATEGORY			
JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
			3. NUMBER REQUIRED FOR DISPATCH		
			4. REMARKS & EXCEPTIONS		
<b>34. NAVIGATION (Cont'd)</b>					
<b>3421-01 ***</b>	Gyroscopic Bank and Pitch Indicator	<b>C</b>	-	<b>0</b>	May be inoperative for single pilot operations provided operations are conducted under day VFR and in sight of the surface with adequate external attitude reference.
<b>3421-03 ***</b>	Attitude Indicator	<b>C</b>	-	<b>0</b>	May be inoperative for single pilot operations provided operations are conducted under day VFR and in sight of the surface with adequate external attitude reference.
<b>3422-01 ***</b>	Directional Gyro	<b>C</b>	-	<b>0</b>	May be inoperative on the pilot flying side for day VFR operations, in sight of the surface with adequate external attitude reference.
<b>3424-01 ***</b>	Gyroscopic Rate of Turn with Slip Indicator	<b>C</b>	-	<b>0</b>	Any in excess of one may be inoperative provided the operative slip indicator is on the pilot flying side.
<b>3434-01 ***</b>	Marker Beacon	<b>D</b>	-	<b>0</b>	May be inoperative under VFR operations.
<b>3442-01 ***</b>	Weather Radar/ Thunderstorm Detection Equipment	<b>C</b>	-	<b>0</b>	May be inoperative.
<b>3444-01 ***</b>	Radar Altimeter	<b>C</b>	-	<b>0</b>	May be inoperative provided approach minima or operating procedures are not dependent upon its use.
<b>3451-01 ***</b>	DME	<b>D</b>	-	-	<b>(O)</b> One or more may be inoperative provided: <b>a)</b> the navigation systems required for each segment of the intended flight route are operative, and <b>b)</b> alternate procedures are established and used, where applicable.

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JASC CODE & ITEM NO.	COMPONENT DESCRIPTION		2. NUMBER INSTALLED		
				3. NUMBER REQUIRED FOR DISPATCH	
					4. REMARKS & EXCEPTIONS
<b>34. NAVIGATION (Cont'd)</b>					
<b>3452-01</b>	Transponders & Automatic Altitude Reporting Systems	<b>D</b>	-	<b>1</b>	Any in excess of those required by the airspace may be inoperative.
<b>3452-02</b>	SSR Transponder Mode S	<b>D</b>	-	-	Any in excess of those required for the intended flight route may be inoperative.
<b>3452-03</b>	Automatic Dependent Surveillance-Broadcast (ADS-B) System	<b>D</b>	-	<b>0</b>	One or more extended squitter transmissions may be inoperative when not required for the intended flight route.
<b>3454-01</b>	VOR	<b>D</b>	-	<b>0</b>	<b>(O)</b> One or more may be inoperative provided: <b>a)</b> the navigation systems required for each segment of the intended flight route are operative, and <b>b)</b> alternate procedures are established and used, where applicable.
<b>3455-01</b>	ADF	<b>D</b>	-	<b>0</b>	<b>(O)</b> One or more may be inoperative provided: <b>a)</b> the navigation systems required for each segment of the intended flight route are operative, and <b>b)</b> alternate procedures are established and used, where applicable.
<b>3457-01</b>	Navigation System (GPS) (B- or P-RNAV Equipment)	<b>D</b>	-	-	<b>(O)</b> One or more may be inoperative provided: <b>a)</b> the navigation systems required for each segment of the intended flight route are operative, and <b>b)</b> alternate procedures are established and used, where applicable.

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			4. REMARKS & EXCEPTIONS		
<b>52. DOORS</b>					
<b>5210-01</b> ***	Door Jettison System	<b>C</b>	<b>-</b>	<b>0</b>	<b>(M)</b> Procedure to jettisonable hinge pin with standard door hinge hardware.

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**CERTIFICATION DOCUMENT**

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**24. ELECTRICAL POWER**

<b>2435-01</b>	Generator Caution System	System is a low voltage light in the annunciator panel. The aircraft is equipped with an ammeter and a voltmeter. This system alerts the pilot to conditions that are also displayed on the voltmeter and the ammeter. If the pilot monitors either the voltmeter or the ammeter, this system is redundant.
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**28. FUEL**

<b>2810-01</b>	Auxiliary Fuel Tank System	Optional system not required for normal operation.
<b>2842-01</b>	Analog Fuel Quantity Gauge	Standard fuel gauge (fuel quantity indicator). If the aircraft is equipped with a Shadin Fuel Totalizer system, the Shadin Totalizer will provide equivalent information as long as the pilot verifies and sets the fuel quantity prior to flight.
<b>2842-02</b>	Shadin Fuel Totalizer System	Optional fuel flow/fuel totalizing system. The pilot inputs the fuel on board at the start of the flight, and the system measures fuel rate of consumption and calculates fuel and time remaining. It can be an excellent cross check of the standard fuel quantity system but is unnecessary if the analog gauge is operating.

**31. INSTRUMENTS**

<b>3120-03</b>	Elapsed Timer	Optional equipment not required for normal operation. Any timing functions can be done using the clock.
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**33. LIGHTS**

<b>3340-06</b>	Search Light	Optional equipment not required for normal operation.
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**52. DOORS**

<b>5210-01</b>	Door Jettison System	Optional system not required for normal operation.
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