


EASA	AIRWORTHINESS DIRECTIVE
	<p>AD No.: 2011-0114R2</p> <p>Date: 07 July 2011</p> <p>Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.</p>
<p>This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].</p>	
<p>Type Approval Holder's Name : DASSAULT AVIATION</p>	<p>Type/Model designation(s) : Falcon 7X aeroplanes</p>
TCDS Number :	EASA.A.155
Foreign AD :	Not applicable
Revision :	This AD revises EASA AD 2011-0114R1 dated 23 June 2011. EASA AD 2011-0114R1 revised EASA Emergency AD 2011-0114-E dated 16 June 2011, which superseded EASA AD 2011-0102-E dated 26 May 2011.
ATA 27	Flight Controls - Horizontal Stabilizer Pitch Trim - Modification / Operational Limitations
Manufacturer(s):	Dassault Aviation
Applicability:	All Falcon 7X aeroplanes, all serial numbers
Reason:	<p>Recently, a Dassault Aviation Falcon 7X aeroplane experienced an uncontrolled pitch trim runaway during descent. The crew succeeded in recovering a stable situation and performed an uneventful landing.</p> <p>This condition, if occurring again, could lead to a loss of control of the aeroplane.</p> <p>To address this potential unsafe condition, pending investigations by the manufacturer, EASA issued emergency AD 2011-0102-E which prohibited further flights from its effective date.</p> <p>The initial results of the investigations show that there was a production defect in the Horizontal Stabilizer Electronic Control Unit (HSECU) which could have contributed to the cause of the event. There are two different HSECU part numbers (P/N) in use: P/N 051244-02 is not affected by this production defect and P/N 051244-04 is potentially affected by this production defect. The aeroplane that experienced the uncontrolled pitch trim runaway event was equipped with a HSECU P/N 051244-04. Investigations are continuing to confirm this cause.</p> <p>In the meantime, to allow re-starting flight operations and providing protection against further pitch trim runaway events, Dassault Aviation have developed two modifications (M1235 and M1236) which are implemented through</p>

	<p>accomplishment of Dassault Aviation Service Bulletin (SB) F7X-211.</p> <p>Furthermore, the flight envelope must be restricted, compared to the original certified flight envelope. Dassault Aviation have developed the corresponding Aircraft Flight Manual (AFM) limitations and a placard, to be installed in the cockpit (part of the instructions of SB F7X-211) to remind the flight crew of the limitations. In addition, modified operational procedures have been developed for in-flight activation of the new protection.</p> <p>A Certification Maintenance Requirement (CMR), to repetitively test the new Horizontal Stabilizer Trim Actuator (HSTA) electric motors reversion relays (installed with M1235 and M1236), has been developed and must be introduced into chapter 5.40 of the Aircraft Maintenance Manual (AMM).</p> <p>Additionally, the Master Minimum Equipment List (MMEL) is temporarily modified by this AD to prohibit dispatch of the aeroplane with some specific identified failures.</p> <p>To correct this unsafe condition and allow resumption of flights for aeroplanes equipped with HSECU P/N 051244-02, EASA issued AD 2011-0114-E, which superseded EASA AD 2011-0102-E, to require:</p> <ol style="list-style-type: none"> 1. accomplishing two Dassault Aviation modifications, 2. amending the AFM and installing a placard in the cockpit, 3. amending the Minimum Equipment List (MEL), and 4. implementing an operational test of the HSTA electric motors reversion relays. <p>For aeroplanes equipped with HSECU P/N 051244-04, the prohibition of flights was maintained.</p> <p>Since EASA AD 2011-0114-E was issued, Dassault Aviation have issued SB F7X-212 which gives instructions, for aeroplanes equipped with HSECU P/N 051244-04, to remove the HSECU for verification by Rockwell Collins and replace it with an HSECU that has passed the verification, having a name plate with a stamped V. After replacement of the HSECU P/N 051244-04 with a verified HSECU P/N 051244-04 "V", the aeroplane can resume flights, provided the requirements of this AD are complied with.</p> <p>For the reasons described above, EASA AD 2011-0114R1 was issued to allow aeroplanes equipped with HSECU P/N 051244-04 to resume flights under the same conditions as those previously established for aeroplanes equipped with HSECU P/N 051244-02, provided an HSECU P/N 051244-04 with stamped "V" is installed.</p> <p>Since EASA AD 2011-0114R1 was issued, Dassault Aviation have developed a modification of HSECU P/N 051244-04 which corrects the production defect found on some of these units inspected during the initial investigation. This modified unit has a new P/N 051244-05 and it is eligible for installation on an aeroplane.</p> <p>For the reasons described above, this revised AD is issued to allow aeroplanes equipped with HSECU P/N 051244-05 to resume flights under the same conditions as those previously established for aeroplanes equipped with HSECU P/N 051244-02 or HSECU P/N 051244-04 with stamped "V".</p> <p>This revised AD is still considered to be an interim measure. Pending results of the ongoing investigations, further AD action may follow to restore a fully certified flight envelope for aeroplanes of this type design.</p>
Effective Date:	<p>Revision 2 : 07 July 2011</p> <p>Revision 1 : 23 June 2011</p> <p>Original issue : 16 June 2011</p>
Required Action(s) and Compliance	<p>Required as indicated before next flight, unless previously accomplished:</p> <p>(1) Modify the aeroplane as specified in paragraph (1.1) and (1.2) of this AD,</p>

Time(s):	<p>as applicable:</p> <p>(1.1) For all aeroplanes, accomplish Dassault Aviation modifications M1235 and M1236 in accordance with the instructions of Dassault Aviation SB F7X-211.</p> <p>(1.2) For aeroplanes equipped with HSECU P/N 051244-04, replace the HSECU with an HSECU P/N 051244-02 or verified HSECU P/N 051244-04 with a stamped V or HSECU P/N 051244-05, in accordance with the instructions of Dassault Aviation SB F7X-212.</p> <p>(2) Amend the AFM in accordance with Dassault Aviation Change Proposal (CP) 055 and CP056 to AFM F7X DGT105608, attached to this AD. Inserting a copy of Dassault Aviation CP055 and CP056 is an acceptable method to comply with this requirement until publication of the AFM revision incorporating these amendments.</p> <p>(3) Install a placard in the cockpit, in full view of the pilots, in accordance with the instructions of Dassault Aviation SB F7X-211.</p> <p>(4) Amend the MEL by removing the following items:</p> <ul style="list-style-type: none"> - <i>item 34-9 air data systems(ADS)</i> - <i>item 30-1 Multi Function Probe (MFP) Heating system</i> - <i>item 27-3 ACMU3 and ACMU4</i> - <i>item 27-5-(6) LH REAR POWER #3</i> - <i>item 27-8 Back-up Mode</i> <p>The result of this removal means that dispatch of the aeroplane is prohibited with any of these inoperative conditions.</p> <p>Inserting a copy of this AD in the operator's Minimum Equipment List is an acceptable method to comply with the requirement of paragraph (5) of this AD.</p> <p>(5) Within 1 850 flight hours (FH) after modification of an aeroplane as required by paragraph (1) of this AD and thereafter at intervals not to exceed 1 850 FH, accomplish an operational test of the HSTA electric motors reversion relays as described in Dassault Aviation document CP009 to Chapter 5.40 of F7X AMM.</p> <p>(6) If during any operational test as required by paragraph (5) of this AD, the HSTA electric motors reversion relays fail the test, before next flight, contact Dassault Aviation for approved repair instructions and, within the time period specified in those instructions, accomplish the repair accordingly.</p> <p>(7) Compliance with the new CMR as required by paragraphs (5) and (6) of this AD can be demonstrated by:</p> <p>(7.1) Revising as follows, the Aircraft Maintenance Programme on the basis of which the Operator or the Owner ensures the continuing airworthiness of each operated aeroplane:</p> <p style="padding-left: 40px;">Incorporate the Operational Tests of the HSTA electric motors reversion relays as described in CP009 to Chapter 5.40 of F7X AMM DGT 107838. Inserting a copy of this AD in the aircraft documentation is acceptable until publication of this AMM revision.</p> <p>(7.2) Complying with the approved Aircraft Maintenance Program described in paragraph (7.1) of this AD.</p>
Ref. Publications:	<p>Dassault Aviation Service Bulletin F7X-211 Revision 1 dated 14 June 2011.</p> <p>Dassault Aviation Service Bulletin F7X-212 Revision 1 dated 23 June 2011 or Dassault Aviation Service Bulletin F7X-212 Revision 2 dated 07 July 2011.</p> <p>Dassault Aviation CP009 to F7X Aircraft Maintenance Manual DGT107838</p>

	<p>chapter 5.40 (Attached to this AD).</p> <p>Dassault Aviation CP055 and CP056 to F7X Aircraft Flight Manual DGT105608 (Attached to this AD).</p> <p>The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks :	<ol style="list-style-type: none"> 1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. The safety assessment has requested not to implement the full consultation process and an immediate publication and notification. 3. Enquiries regarding this AD should be referred to the Safety Information Section, Executive Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, please contact your Dassault Falcon Technical Assistance: <ul style="list-style-type: none"> - For Europe, Middle East and Africa based operators: Hot Line: (33) 1 47 11 37 37 / Fax: (33) 1 47 11 89 49 - For USA, Canada and Mexico based operators: Help Desk: (1) 800-2FALCON (2325266) / Fax: (1) 201 541 4740 - All other areas: Help Desk: (1) 201 541 4747 / Fax: (1) 201 541 4740

FALCON 7X - CHAPTER 5-40-00 after Rev01

SECTION 5. CMRs AND OTHER ALI THAN FATIGUE and DAMAGE TOLERANCE's
(scheduled ALI CDCCLs and ALI from qualification tests)

Before CP009 dated 10/Jun/2011 :

- No task for OPERATIONAL TEST OF THE HSTA ELECTRIC MOTORS
REVERSION

After CP009 dated 10/Jun/2011:

MPD task	Code Oper	Origin	Title	Max Limit	comment effectivity
27-40-00-710-801	01	CMR	OPERATIONAL TEST OF THE HSTA ELECTRIC MOTORS REVERSION	1850 FH	A/C with M 1236 or with SB 211 embodied

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PITCH TRIM RUNAWAY

Pitch Trim Runaway

Possibly: **FCS: TRIM LIMIT**, **FCS: THS DEGRAD**, **FCS: ALTN LAWS ACTIVE** and **AFCS: AP FAIL** messages in CAS.

- ▶ Counteract using Side Stick
- ▶ Counteract using the manual pitch trim
- ▶ Emergency panel: **TRIM EMERG** pushbutton Push
 - Status light Amber **ON**
 - FCS: THS DEGRAD**, **FCS: ALTN LAWS ACTIVE** and **AFCS: AP FAIL** appear

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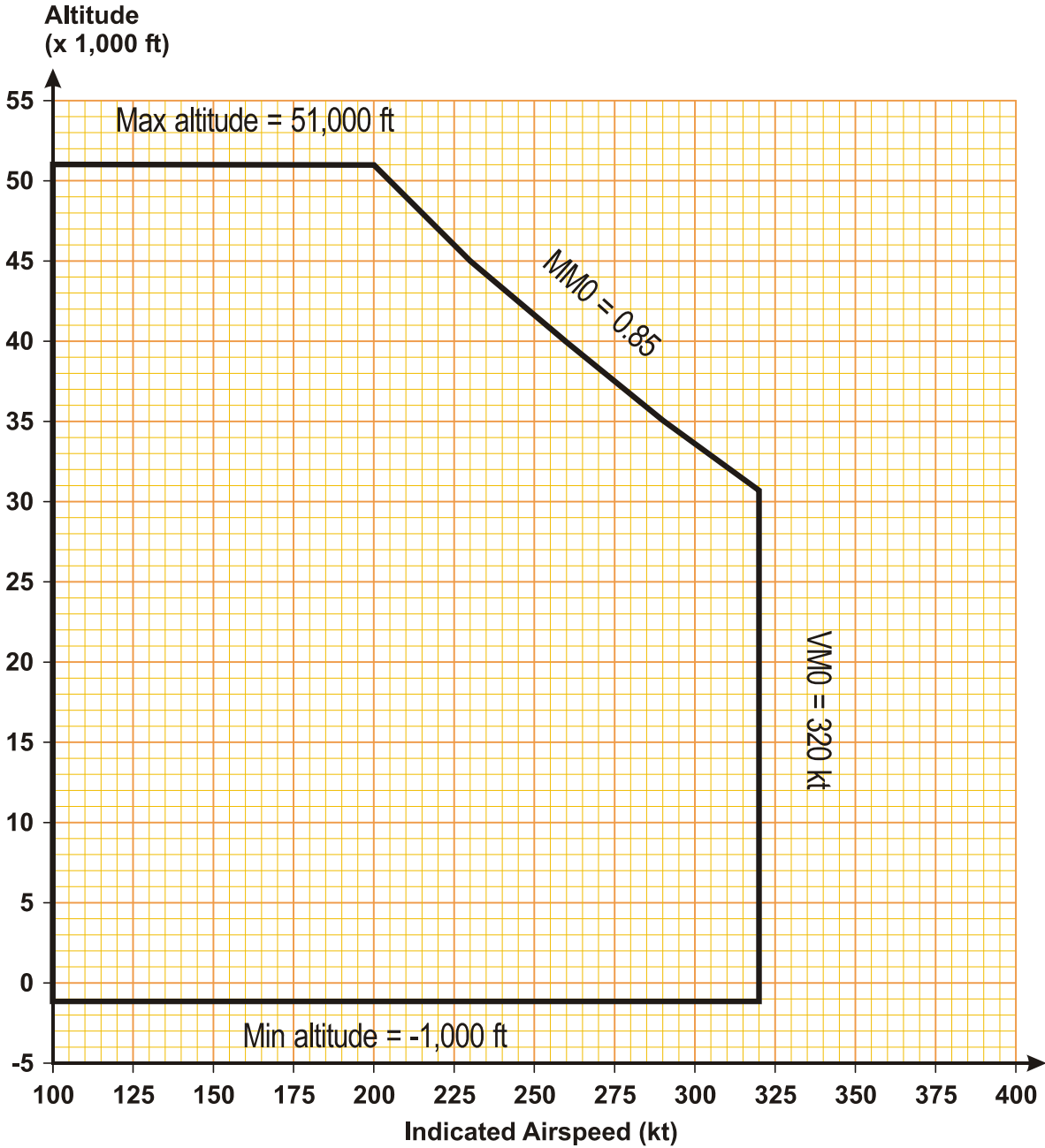
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DASSAULT AVIATION Proprietary Data

MAXIMUM OPERATING LIMIT SPEED: VMO / MMO

VMO / MMO ENVELOPE

Unless otherwise specified, limits are expressed in terms of indicated values.
Instrument error is assumed to be zero.



MAXIMUM OPERATING LIMITS

MMO = 0.85
VMO = 320 kt

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WARNING

OVERSPEED PROTECTIONS AND AURAL WARNINGS ARE NOT TRIGGERED AT MMO / VMO.

CAUTION

The maximum operating limit speed MMO / VMO must not be deliberately exceeded in any regime of flight (climb, cruise, descent) unless a higher speed is authorized for flight tests or pilot training.

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AUTOMATIC PILOT

Autopilot must not be engaged for take-off or landing.

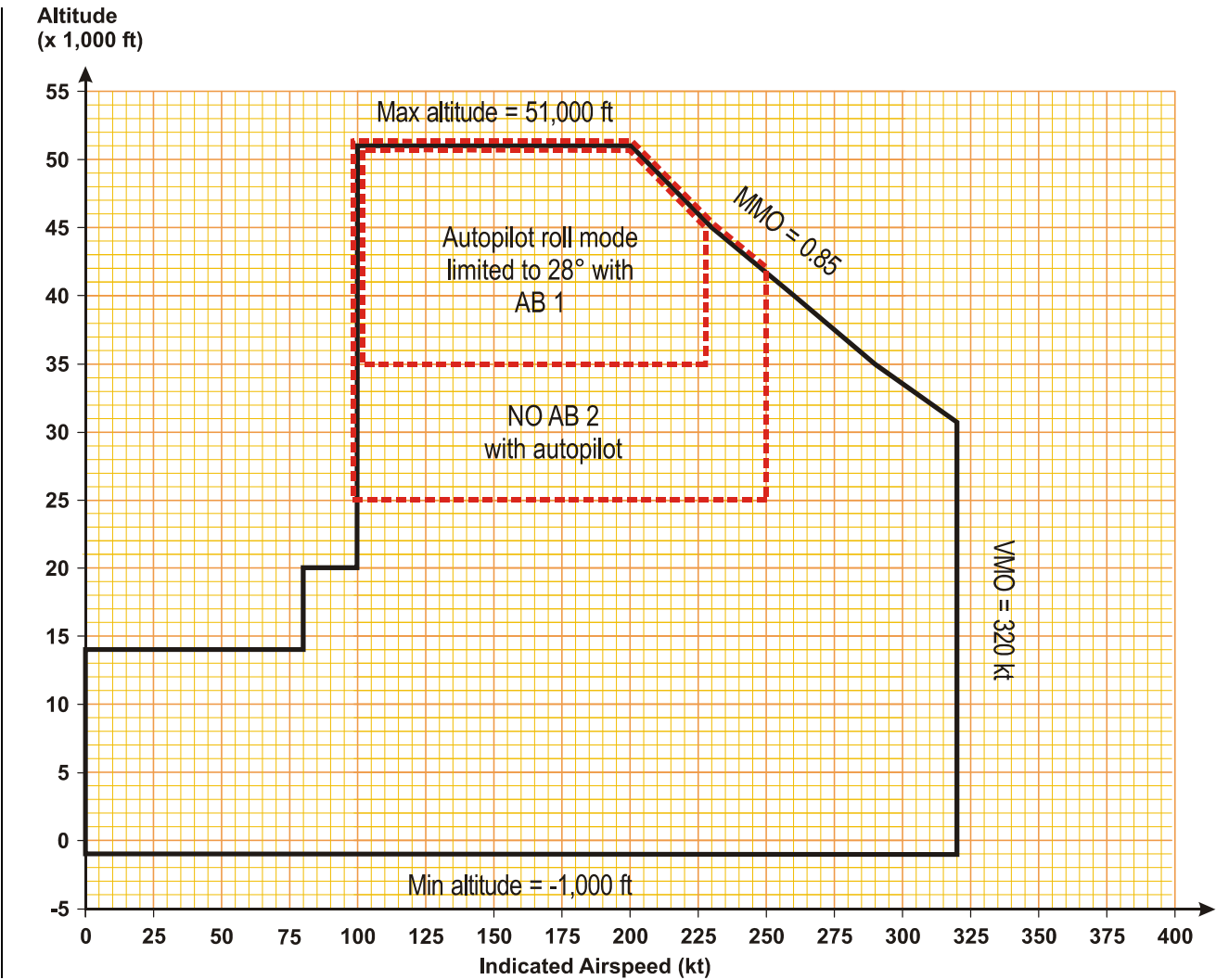
- Minimum height to engage autopilot after take-off400 ft
- Minimum height for autopilot operation except during approach400 ft
- Minimum height for autopilot operation during approach without path reference 120 ft
- Minimum height for autopilot operation during approach
with vertical path reference (ILS-CAT1)80 ft

CAUTION

- Above 35,000ft and airspeed below 230 KIAS
Do not use airbrakes AB1 position while automatic pilot is in use in roll mode with a bank angle above 28.
- Above 25,000ft and airspeed below 250 KIAS
Do not use airbrakes AB2 position while automatic pilot is in use.

DASSAULT AVIATION | Proprietary Data

DASSAULT AVIATION Proprietary Data



AUTOTHROTTLE

The autothrottle must not be engaged for take-off, go-around and landing.

- Minimum height to engage autothrottle in climb after take-off400 ft
- Minimum height to disengage autothrottle at landing.....50 ft

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OPERATION BARO-SETTING

Below transition altitude or level, altimeter setting must be set to QNH to use VNAV and VSD.

FMS

Barometric VNAV guidance during approach including the approach transition, final approach segment, and the missed approach procedure is not temperature compensated. Unless a temperature limitation is reflected on the approach chart, operating at uncompensated minimum IFR altitudes will not provide expected terrain and obstacle clearance for temperatures below ISA.

AVIONICS WINDOW

FMS SPEED TAB

- AUTO Spd Tab:
 - In descent, the crew must not select “Vmo/Mmo”,
 - Crew must ensure that selected speeds are below 0.85/320 kt.

FLIGHT MANAGEMENT WINDOW

- Alt/Spd Tab:
 - If CRZ Spd is in “manual”, the crew must check that selected speeds are below 0.85/320 kt.
 - If CRZ Spd is in “LRC” or “Max End”, the crew must check that selected speeds are below 0.85/320 kt.
- The crew must not use “Max Spd”.

SENSORS WINDOW

FMS OPERATING MODE

FMS support synchronous and single-mode operation. Selecting synchronous for an FMS which is in single operation will result in the synchronization of that FMS with the Pilot Flying FMS (Master FMS).

NAVIGATION MODE AND PERFORMANCE

GPS: GPS, as installed, has been found to comply with the requirements for the use of GPS for IFR oceanic, domestic en route, and terminal area operations, as defined in JAA Leaflet No. 3 REV 1, when used in conjunction with the Pre-flight Integrity Prediction Software, part number 050-03462-0003 or later approved prediction program. The statements here-above are valid if there is no FMS and/or GPS related failure message/label on the PDU / MDU.

GPS updating must be disabled when operating in countries whose national airspace is not referenced to the WGS-84 reference datum in accordance with the criteria of AC20-130A, unless other appropriate procedures are used.

NAVIGATION

RNP flight operations are subject to GPS satellite availability and/or navaid coverage for the selected route. Navigation based on DME/DME or VOR/DME updating modes is permitted but may be

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restricted by the availability or performance of the applicable ground nav aids. Crews should deselect (NOTAM) ground nav aids that are not to be used for navigation.

NAVIGATION MAP (INAV, VSD) AND LOG (WPT LIST):

INAV AND VSD DATA LAYERS

INAV including VSD (obstacle, terrain) are provided for advisory purpose only.

AIRWAYS layer should be used for flight planning on ground to avoid cluttering INAV display in flight.

INAV including VSD must not be displayed with amber **DGR** in HSI or displayed EPU above 15NM.

GRAPHICAL FLIGHT PLANNING

Hold dialog box:

- The FMS does not always take into account the published maximum Holding Pattern speed. Only the protection area calculated in accordance with the FAA (7130-3) model is taken into account.
- Adapt and stabilize the airplane speed 2 minutes prior the airplane over flies the fix for the first time.
- Check that the FMS message **HIGH HOLDING GRD SPD** is out when passing the fix.

CRUISE PERFORMANCE

FUEL, TIME and SMART PERF prediction information are provided for advisory purpose only and must not be used for flight planning.

SID / STAR / APPROACHES / TERMINAL PROCEDURES

WARNING

INSERTING AND ACTIVATING A NEW APPROACH OR A NEW FPLN WILL RESET MINIMUMS SELECTIONS. THEREFORE, THEY SHOULD BE VERIFIED AFTER SUCH ACTION.

CAUTION

- It is crew responsibility to check the system-proposed VGP angle against the chart-published descent angle.

- Once VGP is armed, no pilot intervention should be made to ease the capture.

Step App check box must only be used during steep approach operation.

NOTE

During holding pattern Flight Director mode may revert from VPATH to PATH mode.

- It is crew responsibility to check procedures retrieved from data base with SID / STAR / approach charts.

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- Approach procedures retrieved from data base cannot be modified by the crew.
- For approach procedures retrieved from data base where only one approach transition (IAF) is proposed, this transition will not be automatically selected by the system. It is crew responsibility to select this approach transition or not (vector to FAF), depending on the intended trajectory to execute the approach.
- Some approaches and STAR procedures are not in the data base. This is because of the way some procedures are defined by the controlling agency and the limitations of the FMS.

FMS-BASED APPROACHES

The following table describes the approach procedures approved for automatic execution with the FMS (i.e. use of LNAV/VNAV flight director guidance, either flown manually or coupled to the autopilot).

FMS navigation mode must be checked prior to IAF.

Performing a Vertical Direct TO (VDTO) on an altitude constrained FAF will lead to a late activation capability, and may result in a steep flight path angle up to minus 10 degrees.

Whatever the kind of FMS-based approach, following one of the 3 events, the approach must be discontinued:

- **UNABLE RNP** in FMS message window (I-NAV),
- or
- Green **APPR** not displayed prior to FAF (ADI),
- or
- Amber **DGR** displayed (HSI).

Observing the Minimum Safe Altitude and obstacle clearances remains crew responsibility.

Prior to executing an FMS based approach, the RNP Value on the sensor page shall be set to the value indicated in the first column. The FMS navigation and synchronization modes shall be checked against the second and third columns.

Approach type and RNP	Approved FMS navigation mode	Special considerations	Specific events following which the approach must be discontinued
NDB or NDB-DME RNP 0.6 (or lower)	GPS	Dual FMS synchro	NAV: FMS..GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in the HSI	
	DME-DME	Dual FMS synchro	NAV: FMS..GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in the HSI	

Approach type and RNP	Approved FMS navigation mode	Special considerations	Specific events following which the approach must be discontinued
VOR RNP 0.5 (or lower)	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	DME-DME	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	VOR-DME, provided the procedure-specified NAVAID has DME capability	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	

Approach type and RNP	Approved FMS navigation mode	Special considerations	Specific events following which the approach must be discontinued
VOR-DME or TACAN RNP 0.5 (or lower)	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	DME-DME	Dual FMS synchro	NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	VOR-DME	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
RNAV RNP 0.3	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS or GPS RAIM UNAVAILABLE or GPS RAIM ABOVE LIMIT FMS message
	DME-DME unless otherwise indicated on the approach chart	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
GPS RNP 0.3	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS or GPS RAIM UNAVAILABLE or GPS RAIM ABOVE LIMIT FMS message

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Approach type and RNP	Approved FMS navigation mode	Special considerations	Specific events following which the approach must be discontinued
NDB or NDB- DME RNP 0.6 (or lower)	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	DME-DME	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	

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Approach type and RNP	Approved FMS navigation mode	Special considerations	Specific events following which the approach must be discontinued
VOR RNP 0.5 (or lower)	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	DME-DME	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	VOR-DME provided the procedure specified NAVAID has DME capability	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	

DASSAULT AVIATION Proprietary Data

Approach type and RNP	Approved FMS navigation mode	Special considerations	Specific events following which the approach must be discontinued
VOR-DME or TACAN RNP 0.5 (or lower)	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	DME-DME	Dual FMS synchro	NAV: FMS/GPS 1+2 MONIT message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
	VOR-DME	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC message in CAS
		Single FMS and procedure-specified NAVAID available and displayed in HSI	
RNAV RNP 0.3	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS or GPS RAIM UNAVAILABLE or GPS RAIM ABOVE LIMIT FMS message
	DME-DME unless otherwise indicated on the approach chart	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS
GPS RNP 0.3	GPS	Dual FMS synchro	NAV: FMS..-GPS 1+2 POS MISC NAV: FMS/GPS 1+2 MONIT message in CAS or GPS RAIM UNAVAILABLE or GPS RAIM ABOVE LIMIT FMS message

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LOCALIZER-BASED APPROACHES

The use of FMS guidance (lateral and vertical) on the final approach segment of a localizer-based approach (LOC, LOC-DME, LOC B/C, LDA, SDF, ILS, ILS-DME) is prohibited.

The final part of these approaches shall be executed on LOC or LOC/GS guidance only (depending on the type of procedure).

However, the FMS LNAV / VNAV can be used up to interception of the localizer. For these phases (initial approach and intermediate approach), the limitations associated with the following events (**UNABLE RNP** in FMS message window, amber **DGR** on HSI, **NAV:FMS ..-GPS 1+2 POS MISC** and **NAV: FMS/GPS 1+2 MONIT** in CAS message) are applicable.

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EMERGENCY DESCENT

CAUTION

The following procedure assumes structural integrity of the airplane.
 If structural integrity is questioned:
 - Limit airspeed to lowest practicable value,
 - Avoid high maneuvering load factors.

- **FASTEN BELT** pushbutton Push
 Status light Blue **ON**
- Autopilot Disconnect
- Power levers (all 3) Idle
- AIRBRAKES AB2
- Descent airspeed: 0.85 / 320 kt, smooth air conditions
- ATC transponder Mayday code

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MASTER + gong with **66 FCS: DIRECT LAWS ACTIVE** in Crew Alerting System

"DIRECT LAWS" voice warning
Loss of protection, autotrim and autopilot.

- ▶ Operating technique **DIRECT LAWS** procedure (section 2-100-15) Applied →
- ▶ Maneuver with caution.

CAUTION

Loss of protections (low speed, high speed, G load), autotrim, autopilot.

Loss of airbrakes auto retraction and inboard slats auto retraction.

Do not use AB 2 in flight while flaps are extended.

Use autothrottle until Minimum Use Height.

- ▶ Airspeed Below 260 KIAS or MI 0.80
- ▶ Manual trims Use
- ▶ **FASTEN BELT** pushbutton Push
 - ☑ Status light Blue **ON**
- ▶ **A/B AUTO EXT.** pushbutton Push
 - ☑ Status light Amber **OFF**
- ▶ Maximum landing crosswind 10 kt.
- If **FCS: BOTH AILERONS FAIL** NOT in CAS:
 - If **FCS: BOTH ELEVATORS FAIL** NOT in CAS:
 - If **FCS: MFCC FAULT** NOT in CAS:
 - ▶ Perform a long stabilized approach.
 - ▶ **APPROACH**
 - SLATS/FLAPS handle SF 3
 - Approach speed (zero wind) VREF
 - Increase landing distance by 23 % (multiply by 1.23).
 - ▶ **AT 50 FT**
 - Reduce progressively flight path angle to approximately minus 1.5° at touch down.

WARNING

PILOT MUST MINIMIZE SIDE STICK INPUTS AND TRIM ACTIVITY DURING FLARE.

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▶ **AIRPLANE ON GROUND**

- ▶ Manual airbrakes only when nose gear is maintained firmly on ground.
- ▶ End of procedure. ☒

■ If **FCS: MFCC FAULT** in CAS:

- ▶ Airplane stabilized.
- ▶ Wait at least one minute or MFCC 1 or 2 or 3 green lighted in FCS synoptic page.
- ▶ **FASTEN BELT** pushbutton Blue **ON** – Check
- ▶ Release pressure on flight controls.
- ▶ NORM **FCS ENGAGE** pushbutton Push

■ If blue status light **ENGAGE** does not light:

- ▶ ST-BY **FCS ENGAGE** pushbutton Push

■ If **66 FCS: DIRECT LAWS ACTIVE** goes out:

- ▶ **A/B AUTO EXT.** pushbutton Push
 - ☑ Status light Unlighted - On
- ▶ End of procedure. ☒

■ If **66 FCS: DIRECT LAWS ACTIVE** remains on:

- ▶ Perform a long stabilized approach.

▶ **APPROACH**

- ▶ SLATS/FLAPS handle SF 3
- ▶ Approach speed (zero wind) VREF
- ▶ Increase landing distance by 23 % (multiply by 1.23).

▶ **AT 50 FT**

- ▶ Reduce progressively flight path angle to approximately minus 1.5° at touch down.

WARNING

PILOT MUST MINIMIZE SIDE STICK INPUTS AND TRIM ACTIVITY DURING FLARE.

▶ **AIRPLANE ON GROUND**

- ▶ Manual airbrakes only when nose gear is maintained firmly on ground.
- ▶ End of procedure. ☒

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■ If **FCS: BOTH AILERONS FAIL** in CAS:

CAUTION

Roll control is accomplished only through rudder pedal inputs.
Roll trim is inoperative: Use Rudder trim.

- ▶ Airplane stabilized.
- ▶ **FASTEN BELT** pushbutton Blue **ON** – Check

CAUTION

Be prepared to counteract roll tendency in case of effective FCS engage.

- ▶ Release pressure on flight controls.
- ▶ NORM **FCS ENGAGE** pushbutton Push
- If blue status light **ENGAGE** does not light:
 - ▶ ST-BY **FCS ENGAGE** pushbutton Push
- If **66 FCS: DIRECT LAWS ACTIVE** goes out:
 - ▶ **A/B AUTO EXT.** pushbutton Push
 - ☑ Status light Unlighted - On
 - ▶ End of procedure. ☒
- If **66 FCS: DIRECT LAWS ACTIVE** remains on:
 - ▶ Perform a long stabilized approach.

▶ **APPROACH**

- ▶ SLATS/FLAPS handle SF 3
- ▶ Approach speed (zero wind) VREF
- ▶ Increase landing distance by 23 % (multiply by 1.23).

▶ **AT 50 FT**

- ▶ Reduce progressively flight path angle to approximately minus 1.5° at touch down.

WARNING

PILOT MUST MINIMIZE SIDE STICK INPUTS AND TRIM ACTIVITY DURING FLARE.

▶ **AIRPLANE ON GROUND**

- ▶ Manual airbrakes only when nose gear is maintained firmly on ground.
- ▶ End of procedure. ☒

■ If **FCS: BOTH ELEVATORS FAIL** in CAS:

CAUTION

Pitch control is accomplished only through the manual pitch trim.

Manual airbrakes only when nose gear is on ground.

- ▶ Airplane stabilized.
- ▶ **FASTEN BELT** pushbutton Blue **ON** – Check
- ▶ Release pressure on flight controls.
- ▶ NORM **FCS ENGAGE** pushbutton Push
- If blue status light **ENGAGE** does not light:
 - ▶ ST-BY **FCS ENGAGE** pushbutton Push
- If **66 FCS: DIRECT LAWS ACTIVE** goes out:
 - ▶ **A/B AUTO EXT.** pushbutton Push
 - ☑ Status light Unlighted - On
 - ▶ End of procedure. ☒
- If **66 FCS: DIRECT LAWS ACTIVE** remains on:
 - ▶ Perform a long and flat stabilized approach (path angle approximately minus 1.5°).
- ▶ **APPROACH**
 - ▶ SLATS/FLAPS handle SF 3
 - ▶ Approach speed (zero wind) VREF + 20kt
 - ▶ Increase landing distance by 120 % (multiply by 2.20).
- ▶ **AT 50 FT**
 - ▶ Maintain flight path angle until touch down.

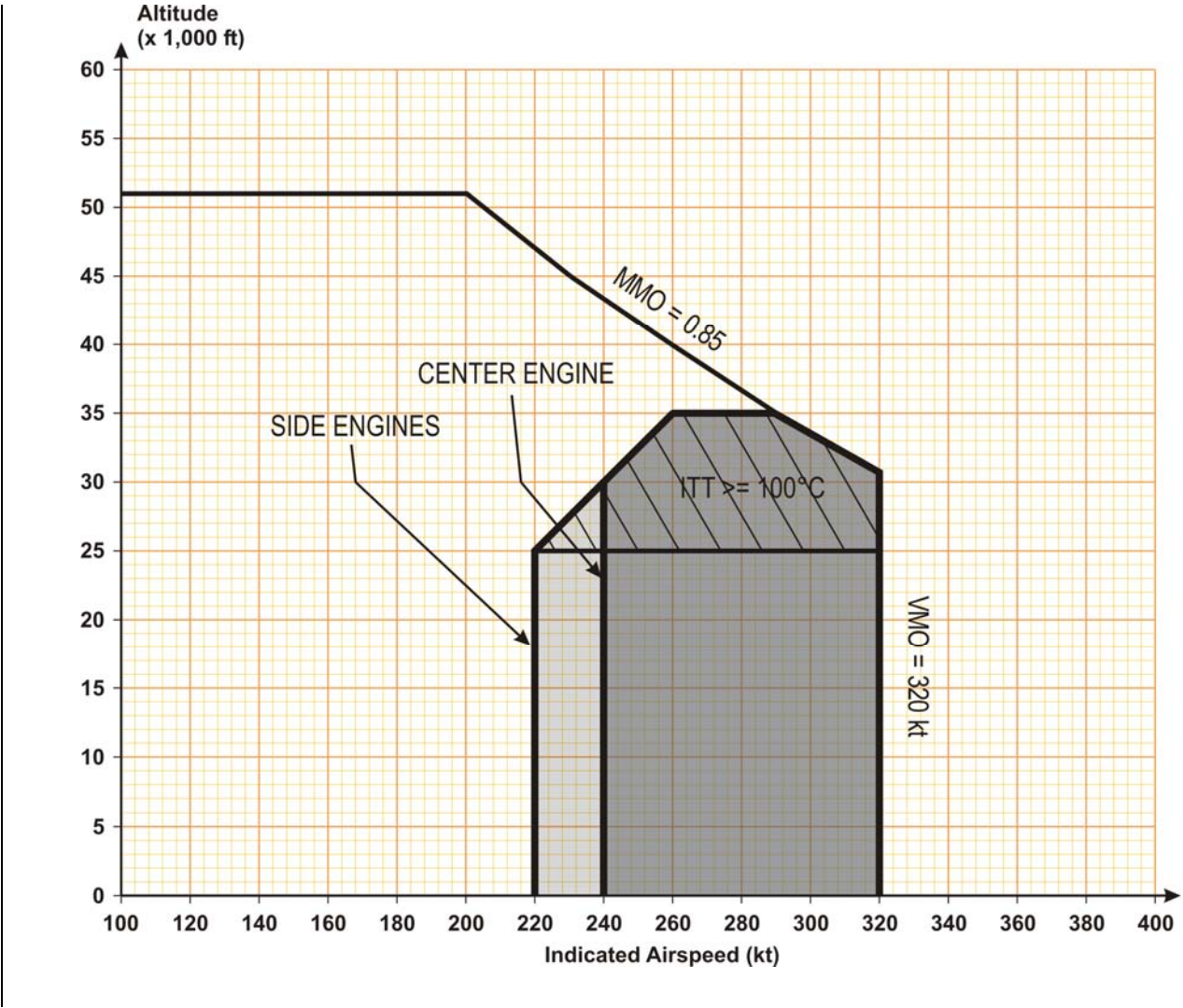
WARNING

PILOT MUST MINIMIZE SIDE STICK INPUTS AND TRIM ACTIVITY DURING FLARE.

- ▶ **AIRPLANE ON GROUND**
 - ▶ Apply brake pressure then manually extend airbrakes at AB 2.

DASSAULT AVIATION Proprietary Data

IN FLIGHT RELIGHT ENVELOPE: WINDMILLING



DASSAULT AVIATION Proprietary Data

WINDMILLING RELIGHT

WARNING

STARTER ASSISTED RELIGHT procedure must be applied before attempting a WINDMILLING RELIGHT.

For corresponding engine:

- Engine .. FUEL switch..... OFF
- Establish airplane within windmilling envelope.

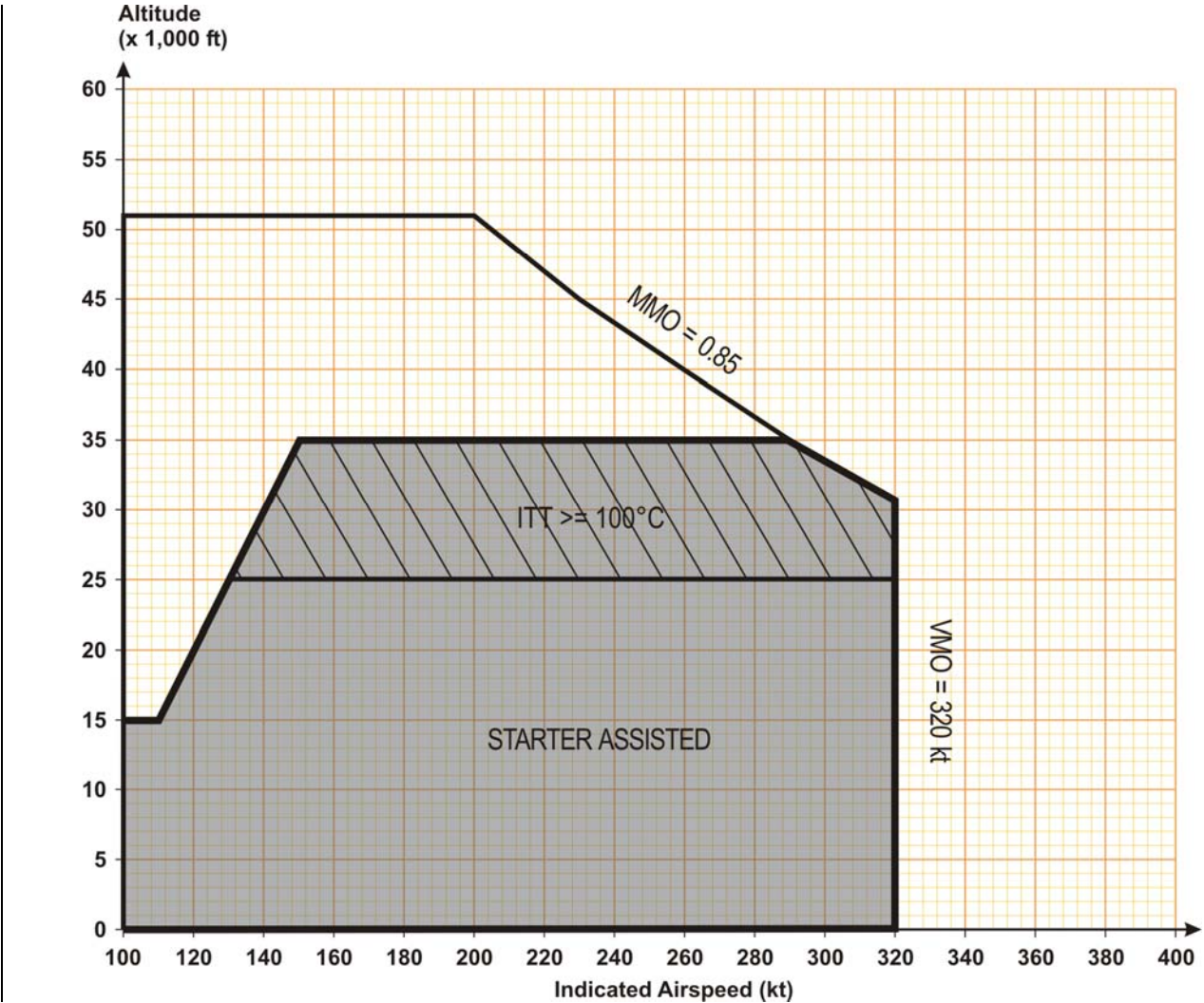
NOTE

Wait for N2 below 45 % before attempting a windmilling relight.

- ▶ **BOOST ..** status light.....Unlighted - On - Check
- ▶ ANTI-ICE: **ENG ..** and **WINGS** status lightsUnlighted - Off - Check
- ▶ **BLEED ..** status light Amber **OFF** - Check
- ▶ Power lever Idle - Check
- ▶ Engine .. FUEL switch..... ON
 - ☑ On PDU Green **START** and amber **IGN**
- ▶ Monitor ITT and N2.
- **If engine is relighted (N2 stabilized):**
 - ▶ **IGN** annunciation..... Out
 - ▶ **START** annunciation Out
 - ▶ Engines parameters Check
- **If engine 2 is operative:**
 - ▶ **BUS TIE** pushbutton Push
 - ☑ Status light Unlighted - Untied
 - ▶ Release pressure on flight controls.
 - ▶ NORM **FCS ENGAGE** pushbutton Push
- **If blue status light **ENGAGE** does not flash:**
 - ▶ ST-BY **FCS ENGAGE** pushbutton Push
 - ▶ **GALLEY MASTER** and **CABIN MASTER** pushbuttons As required
 - ▶ ANTI-ICE: **ENG ..** and **WINGS** pushbuttons As required
 - ▶ TA/RA Select
 - ▶ **BLEED..** pushbutton.....Push to set On
 - ☑ Status light Unlighted - On
 - ▶ WINDSHIELD HEAT: **LH** and **RH** pushbuttonPush to set On
 - ☑ Status lights Unlighted - On

DASSAULT AVIATION Proprietary Data

IN FLIGHT RELIGHT ENVELOPE: STARTER ASSIST



DASSAULT AVIATION Proprietary Data

STARTER ASSISTED RELIGHT

NOTE

If possible, wait 1 minute between engine shutdown and engine start.

- ▶ **BUS TIE** pushbutton..... Push
- Status light Amber **TIED**
- For corresponding engine:
- ▶ Engine .. FUEL switch..... OFF

- ▶ Establish airplane within starter assist envelope (below 35,000 ft).
- ▶ **BOOST..** status light Unlighted - On - Check
- ▶ ANTI-ICE: **ENG ..** and **WINGS** status lights Unlighted - Off - Check
- ▶ **BLEED ..** status light Amber **OFF** - Check

- ▶ Maintain N1 above 70 % on other engines.
- ▶ Engine .. FUEL switch ON
- ▶ MAN START / MOTORING **ENG ..** pushbutton Push and hold (0.75 sec.)
 - On PDU Green **START** and amber **IGN**
- ▶ Monitor ITT and N2.

- **If engine is relighted (N2 stabilized):**
 - ▶ **IGN** annunciation Out
 - ▶ **START** annunciation Out
 - ▶ Engines parameters Check
- **If engine 2 is operative:**
 - ▶ **BUS TIE** pushbutton Push
 - Status light Unlighted - Untied
 - ▶ Release pressure on flight controls.
 - ▶ NORM **FCS ENGAGE** pushbutton Push
- **If blue status light **ENGAGE** does not flash:**
 - ▶ ST-BY **FCS ENGAGE** pushbutton Push
 - ▶ **GALLEY MASTER** and **CABIN MASTER** pushbuttons As required
 - ▶ ANTI-ICE: **ENG ..** and **WINGS** pushbuttons As required
 - ▶ TA/RA Select
 - ▶ **BLEED..** pushbutton Push to set On
 - Status light Unlighted - On
 - ▶ WINDSHIELD HEAT: **LH** and **RH** pushbutton Push to set On
 - Status lights Unlighted - On
- **If engine is not relighted:**
 - ▶ Relight engine with **WINDMILLING RELIGHT** procedure (section 3-200-15A). →

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MASTER + gong with **FCS: THS DEGRAD** in Crew Alerting System

FCS: ALTN LAWS ACTIVE and **AFCS: AP FAIL** messages in CAS.

- Maneuver with caution.
- Use the manual pitch trim.
- Airspeed Below 260 KIAS or MI 0.80
- Emergency Panel: **TRIM EMERG** pushbutton..... Push
 - Status light Amber **ON**
- **If the manual pitch trim is operative:**
 - Maximum landing crosswind 15 kt
 - End of procedure.
- **If the manual pitch trim is inoperative:**
 - **CRUISE**
 - Recover speed for which side stick forces are acceptable.

CAUTION

SLATS/FLAPS in clean configuration is forbidden at airspeed below 160 kt.

- **APPROACH**
 - Maximum landing crosswind 15 kt
 - **A/B AUTO EXT** pushbutton Push
 - Status light Amber **OFF**
 - SLATS/FLAPS handle SF 2
 - Airspeed..... VREF + 25 kt
 - Landing gear handle..... Down
 - On HSI: GEAR symbols (all 3) Green
- **If in this configuration airplane has a nose up tendency:**
 - SLATS/FLAPS handle SF 3
 - Approach speed (zero wind) VREF
 - Increase landing distance by 24 % (multiply by 1.24).

CAUTION

Manual airbrakes extension at landing is not authorized.

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■ **If in this configuration airplane has a nose down tendency or is steady:**

- SLATS/FLAPS handle SF 2
- Approach speed (zero wind) VREF + 25 kt
- FMW window: Arrival POF: Landing Config tab Select Flaps Override
- Increase landing distance by 120 % (multiply by 2.2).

CAUTION

Manual airbrakes extension at landing is not authorized.

CAUTION

The landing gear not extended aural warning may not sound.

NOTE

This procedure incorporates the procedure for: **FCS: ALTN LAWS ACTIVE**.

Do not complete the procedure for **FCS: ALTN LAWS ACTIVE**.

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BEFORE PARK BRAKE IS RELEASED

NOTE

For the first flight of the day COCKPIT CHECK must start from an electrical power off condition.

Before APU is started, safety area must be verified, nav lights must be turned on.

Before engines are started, park brake must be set, safety area must be verified, anticoll red lights must be turned on.

Before park brake is released, following actions must be performed:

- Verifications of cabin and cockpit fire extinguishers and smoke hoods.
- Closure of all doors,
- Verification of Cargo and loose items,
- Verification of cockpit lights, including emergency panel.
- Verification of rain repellent level,
- Verification of hydraulic, and oxygen quantities,
- Verification of circuit breaker status,
- Verification of extinction of all “emergency panel” lights,
- Verification of tire pressure,
- Verification of no smoking and fasten seat belts signs,
- Verification of the accessibility of emergency handles for RAT and gear free fall extension,
- Verification of crew seat adjustment, rudder pedals and fastening of crew seat belts,
- Verification of CCD pilot and copilot, outer position must be checked after verification,
- Test of Fire Control Panel → ,
- Test of hydraulic Backup pump → ,
- Test of RAT → ,
- Test of emergency lights → ,
- Test of windshield heat → ,
- Test of cockpit oxygen masks → ,
- Test of conditioning system → ,
- Test of Anti Ice → ,
- Verification that flight controls move freely up to full deflection of the stick,

NOTE

Flight controls verification must be done without any other verification in progress and one axis after the other.

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- ▶ Test of Airbrakes → ,
- ▶ Test of **TRIM EMERG** pushbutton → ,
- ▶ Test of FCS → ,
- ▶ Setting of ELT in AUTO position,
- ▶ Activation of fasten seat belt sign.

MEL when applicable must be checked for all failures indicated by CAS messages in CAS window or status page, as well as for failures identified by the crew independently of CAS messages.

→ FIRE CONTROL PANEL TEST

This test must be performed before starting the APU or the first engine once status page has been checked.

Initial conditions:

- After LH and RH INIT performed, LH and UP DU available.

Test description:

- 1. Overhead panel: depress FIRE TEST, maintain, and check:
 - white CAS message **FIRE: TEST IN PROGRESS** is displayed.
 - illumination of all fire control panel and the throttles lights
- 2. If amber CAS message **FIRE: TEST FAIL** is displayed: it must be determined which item has failed before entering MEL.

→ HYDRAULIC BACKUP PUMP TEST

This test must be performed before each flight.

Initial conditions:

- 1. Airplane on ground,
- 2. Engine 1 running.

Test description:

- 1. Overhead panel: set BACKUP pump to ON ,
- 2. Check hydraulic # B pressure to 2900 PSI
- 3. If pressure does not increase it must be determined which item has failed before entering MEL,
- 4. Overhead panel: set BACKUP pump to AUTO.

→ RAT TEST

This test must be performed before each flight.

Initial conditions:

- 1. Electrical initialization completed.

Test description:

- 1. Synoptic / test page: select RAT soft key until white CAS message **RAT: TEST IN PROGRESS** is displayed.
- 2. If amber CAS message **RAT: TEST FAIL** is displayed: it must be determined which item has failed before entering MEL.

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➔ EMERGENCY LIGHTS TEST

This test must be performed before each flight.

Initial conditions:

- 1. Always available.

Test description:

- 1. Overhead panel: set EMERG LIGHTS on ON position.
- 2. Check correct illumination of the emergency lights in the cockpit and the cabin.

➔ WINDSHIELD HEAT TEST

This test must be performed before each flight.

Initial conditions:

- 1. Airplane on ground

Test description:

- 1. Synoptic / test page: select WSHIELD soft key until white CAS message **WSHIELD: TEST IN PROGRESS** is displayed
- 2. If amber CAS message **WSHIELD: TEST FAIL** is displayed: it must be determined which item has failed before entering MEL.

➔ COCKPIT OXYGEN MASK TEST

This test must be performed before each flight.

Initial conditions:

- 1. Crew stowage box switch must be ON
- 2. Essential buses must be connected.

Test description:

- 1. Crew stowage box rotary switch on Normal position then press to test
- 2. Yellow blinker is displayed within 4 sec.
- 3. Repeat sequence on EMERG and 100% position
- 4. If Yellow blinker is not displayed: it must be determined which item has failed before entering MEL.

➔ CONDITIONING SYSTEM TEST

This test must be performed before the first take-off of the day.

Initial conditions:

- 1. Airplane on ground
- 2. APU running, BLEED auto or ENG 1 running, N2 > 60% and ENG 2 running, N2 > 60%.
- 3. Air conditioning mode: NORMAL, or PAX OFF, or CREW OFF.

Test description:

- 1. Synoptic / test page : select COND soft key until white CAS message **COND: TEST IN PROGRESS** is displayed
- 2. After 15sec, when white CAS message **COND: TEST WAITING EMER** is displayed select EMERG mode.

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- 3. After 20sec, when white CAS message **COND: TEST WAITING NORM** is displayed select NORMAL mode.
- 4. If amber CAS message **COND: TEST FAILED** is displayed: it must be determined which item has failed before entering MEL.

→ TEST OF ANTI ICE

This test must be performed before each flight.

Initial conditions:

- 1. TLA at idle.

Test description:

- 1. ANTI-ICE: ENG1, ENG2 and ENG3 pushbuttons set to ON,
- 2. Wait for 20 seconds,
- 3. Check of absence of any **A/I: ENG .. XX PRESS** message in crew alerting system,
- 4. ANTI-ICE: ENG1, ENG2 and ENG3 pushbuttons set to off.

→ AIRBRAKES TEST

This test must be performed before each flight.

Initial conditions:

- 1. Airplane on ground and after verification of flight controls
- 2. Hydraulic pressure established.

Test description:

- 1. Extend airbrakes to AB 1 then AB 2 position then AB 0.
- 2. Check proper operation of airbrakes and absence of CAS message.

→ TRIM EMERG TEST

This test must be performed before each flight.

Initial conditions:

- 1. Airplane on ground, flaps SF0 position, before TRIM EMERG test
- 2. Park brake is ON
- 3. All engines running
- 4. Side stick released.

Test description:

- 1. Emergency panel: Set **TRIM EMERG** pushbutton to ON
- 2. Select manual pitch trim until amber **FCS: THS DEGRAD**, **FCS: NO DISPATCH**, **FCS: ALTN LAWS ACTIVE**, **AFCS: AP FAIL** CAS messages are displayed.
- 3. Check in FCS synoptic page that THS can be moved up and down by using manual pitch trim control
- 4. Set THS 0° nose, release the manual pitch trim and check the THS does not move in FCS synoptic page.
- 5. Emergency panel: Set **TRIM EMERG** pushbutton to OFF
- 6. Overhead Panel: Select **FCS ENGAGE** and check amber **FCS: THS DEGRAD**, **FCS: NO DISPATCH**, **FCS: ALTN LAWS ACTIVE**, **AFCS: AP FAIL** CAS messages disappear.

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➔ **FCS TEST**

This test must be performed before each flight.

Initial conditions:

- 1. Airplane on ground, THS at rest, slats not extended and after verification of flight controls and test of airbrakes
- 2. Park brake is On,
- 3. All engines running,
- 4. Sidestick released.

Test description:

- 1. Synoptic / test page: select FCS soft key until white CAS message **FCS: TEST IN PROGRESS** is displayed,
- 2. Test is completed when white CAS message **FCS: TEST IN PROGRESS** goes out,
- 3. If amber CAS message **FCS: TEST FAIL** is displayed: it must be determined which item has failed before entering MEL.

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