FALCON 2000

Airplane Flight Manual

AFM

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SECTION 0 – GENERAL

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DASSAULT AVIATION

AIRPLANE FLIGHT MANUAL

Approved by DIRECTION GENERALE DE L'AVIATION CIVILE

This document, DTM537, is the FALCON 2000 AIRPLANE FLIGHT MANUAL

Serial No:

Registration No:

Approved by: C. SOUFFLET (DGAC)

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DASSAULT AVIATION

AIRPLANE FLIGHT MANUAL

Approved by DIRECTION GENERALE DE L'AVIATION CIVILE
on behalf of the FEDERAL AVIATION ADMINISTRATION

This document, DTM537, is the FALCON 2000 AIRPLANE FLIGHT MANUAL

This Manual is approved in accordance with

FAR 21.29 for US registered airplanes.

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DASSAULT AVIATION

AIRPLANE FLIGHT MANUAL

Approved by DIRECTION GENERALE DE L'AVIATION CIVILE
on behalf of the CENTRO TECHNICO AEROSPACIAL

This document, DTM537, is the FALCON 2000 AIRPLANE FLIGHT MANUAL

This Airplane Flight Manual is approved by DGAC on behalf of Centro Técnico Aeroespacial for Brazilian registered Airplanes in accordance with the “Regulamentos Brasileiros de Homologação Aeronáutica” (RBHA) Part 21, Section 21.29.

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AIRPLANE FLIGHT MANUAL

Approved by DIRECTION GENERALE DE L'AVIATION CIVILE
on behalf of the UK CIVIL AVIATION AUTHORITY

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ORGANIZATION OF THE MANUAL

This Manual is divided into sections, sub-sections and sub-sub-sections. Each sub-sub-section is composed of an even number of pages.

Annexes introduce special operations of the airplane, and are considered as separated sections and possibly with sub-section numbers.

Supplements introduce optional equipment, and are considered as independent manuals, and can have sections, sub-sections and sub-sub-sections, specifically when this supplement must be incorporated in basic AFM as a variant of the basic airplane.

Numbering of sub-sections and sub-sub-sections is not continuous and numbers are reserved for future use.

Sections, sub-sections and sub-sub-sections may include variants. The manual of a specific airplane must only comprise sections, sub-sections and sub-sub-sections which are applicable to it, referring to the list of effective sub-sub-sections.

The constitution of the Manuals of new airplanes is ensured by the manufacturer upon airplane delivery.

After delivery of the airplane, updating following a revision or incorporation or deletion of an option or service bulletin will be ensured by the operator.

Modifications of texts, diagrams or drawings (correction, insertion, withdrawal or skipping of texts) are indicated by a vertical line in the left hand margin opposite to the part modified.

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DEFINITION OF NOTE, CAUTION AND WARNING

NOTE

Used with respect to matters not directly related to safety but which are particularly unusual or particularly important.

CAUTION

Used with respect to safety matters of a secondary order or not immediately imminent.

WARNING

USED WITH RESPECT TO SAFETY MATTERS OF A PRIMARY ORDER OR IMMEDIATELY IMMINENT.

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DEFINITION OF SYMBOLS

Following symbols are used to identify pushbuttons, lights and messages:

- Red lighted pushbuttons .... FIRE
- Green lighted pushbuttons .... APU
- Unlighted pushbuttons .... OIL

- Status lights .... ISOL
- Annunciations .... AP 1, TRANS, IGN, SLATS, DEPLOY

- Red "MASTER WARNING" light .... MASTER
- Amber "MASTER CAUTION" light.. MASTER
- Red lights on warning panel.. OIL 1
- Amber lights on warning panel .... GEN 1

- GEN .. ".." symbol is used to identify one of the following number : 1, 2 or 3.
- " - Checked" is used to signify the check of status or control.

- Actions:

1st level of action:	➨ Xxxxxxxxx
2nd level of action:	➨ Xxxxxxxxx
3rd level of action:	➨ Xxxxxxxxx
4th level of action:	➨ Xxxxxxxxx
5th level of action:	➨ Xxxxxxxxx
6th level of action:	➨ Xxxxxxxxx

- Conditions or events:

1st level of condition or event:	■ **If Xxxxxxxxx:** ➨ Xxxxxxxxx
2nd level of condition or event:	■ **If Xxxxxxxxx:** ➨ Xxxxxxxxx
3rd level of condition or event:	■ **If Xxxxxxxxx:** ➨ Xxxxxxxxx
4th level of condition or event:	■ **If Xxxxxxxxx:** ➨ Xxxxxxxxx
5th level of condition or event:	■ **If Xxxxxxxxx:** ➨ Xxxxxxxxx

- Black symbol "▶" is used to identify a phase of flight.
- Green arrow ➔ is used to indicate the referenced procedure has to be followed.
- Green symbol ☒ or

green line are used to inform that the AFM procedure is completed. Crew remains responsible and has to take into account operational consequences if necessary.

LIST OF AFM REVISIONS

Revision and Date	Title and Approval reference	Pages changes		
		Added	Revised	Cancelled
Original 30-Nov-1994.		First issue of all pages		
Revision 1 02-Feb-1995.	US certification	0-000A-1, 2; 0-015A-1,2; 1-120-1A, 2A; 1-150-3A, 4A; 4-145-1A, 2A; 5-650-1, 2.	0-003-1, 2; 0-010-1; 0-010-7; 0-010-10 0-020-1; 0-025-1.	
Revision 2 28-Apr-1995.	.	3−192−3, 4.	0−003−1, 2; 0−010−1, 2, 3, 4, 5, 6, 7, 8, 9, 10; 0−015A−1; 0−020−1; 1−110−1,2; 1−120−1, 2; 2−050−1; 2−130−2; 2−131−2; 2−140−2, 4; 3−100−1, 2; 3−102−1; 3−104−1, 2; 3−106−1; 3−115−1; 3−141−1; 3−143−2; 3−151−1, 2; 3−192−1, 2; 3−330−1; 4−105−3; 4−110−1, 2, 3; 4−111−2, 3, 4; 4−115−1; 4−116−1; 4−118−1, 2; 4−120−1, 2, 3, 4, 5, 6; 4−140−2; 4−145−1; 4−195−1; 5−300−4, 5.	0−015−1, 2; 1−120−1A, 2A; 4−145−1A, 2A.
Revision 3 22-Jun-1995.	CAT. II certification		0−003−1, 2; 0−010−1, 10; 0−020−1; 1−230−1, 2; List of supplements 1.	0−025−3, 4; List of annexes 1, 2 ; A1−1, 2, 3, 4, 5, 6, 7, 8, 9,10.

Revision and Date	Title and Approval reference	Pages changes		
		Added	Revised	Cancelled
Revision 4 23-Aug-1995.	Flaps + Slats 10° operation. Integration of T.C. 15 and 17. Minor corrections.	0−010−11, 12; 1−100−1A, 2A; 3−116−1, 2; 5−000−5, 6; 5-450-1A, 2A; 5-460-1A, 2A; 5−500−1, 2, 1A, 2A, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 ; 5−510−1, 2, 1A, 2A, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14; 5−520−1, 2, 3, 4, 5, 6, 7, 8; 5−610−1, 2; 5−620−1, 2, 3, 4. Annex: A1−11, 12.	Title page; 0−003−1, 2; 0−010−1, 3, 4, 5, 6, 7, 8, 9, 10; 0−020−2; 0−025−2; 1−000−1; 1−100−2; 1−150−1; 1−200−1; 3−000−1, 2, 3, 4; 4−000−1, 2; 4−110−1; 4−111−2; 4−115−1, 2; 4−120−1, 4, 7; 4-155−1; 5−000−1, 2, 3, 4; 5−150−1, 2, 3, 4; 5−200−1, 2. Annex: A1−9.	5−600−3, 4, 5, 6.
Revision 5 07-Mar-1996	Integration of TC 1 (Airspeed and Mach limitations). Integration of TC 14 (Thrust reversers). Annex 2: performance APU door open. MUH 70 ft (see annex 1). Minor corrections.	1−231−1, 2; 1−235−1, 2; 3−350−1, 2, 1A, 2A; 4−200−1, 2. Annex: A2−1, 2, 3, 4, 5, 6.	Title page; 0−003−1, 2; 0−010−1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12; 0−015A−1; 0−020−2; 0−025−1, 2; 0−030−1; 1−000−2; 1−120−1; 1−130−1; 1−150−2; 1−230−1, 2; 3−000−4; 3−151−1; 3−210−1; 3−240−1; 4−000−2; 4−105−3, 4; 4−111−1, 2; 4−120−1, 2, 3, 6, 7; 4−145−1; 4-155−1. List of annexes−1. Annex: A1−3, 4, 7. Supplement 1−2, 4, 5, 6; Supplement 2−1, 2, 3, 4, 5; Supplement 3−1, 2, 3, 4, 5; Supplement 4−1, 2, 3, 4; Supplement 5−2, 4, 10; Supplement 6−1, 2, 3, 4, 5.	Supplement 4 pages 5 and 6.

Revision and Date	Title and Approval reference	Pages changes Added	Pages changes Revised	Pages changes Cancelled
Revision 6 22-Jan-1998.	Integration of T.C. No 3, 10, 21, 22, 23, 24, 25, 26, 27, 28, 32, 33, 35, 36, 37, 38. Integration of Annex 3 (T.C. No 42). Performance: Take-off and Landing capability between 10,000 ft and 14,000 ft. Cancellation of "Engine failure during take-off" procedure in Section 2 (see Section 3). Minor corrections. Approved by DGAC J. ANDRE dated January 22, 1998	0−000C−1, 2; 0−010−13, 14; 0−015C−1, 2 ; 0−020−3, 4; 1−120−3, 4; 1−160B−1, 2; 1−190−1A, 2A; 1−231A−1, 2; 1−231B−1, 2; 1−231C−1, 2; 1−235A−1, 2; 1−235B−1, 2 ; 1−238−1, 2; 1−238A−1, 2; 3−143A−1, 2; 4−118A−1, 2; 4−200A−1, 2; 5−450−15, 16; 5−460−15, 16; 5−500−15, 16; 5−510−15, 16. Annex: A3−1, 2, 3, 4.	0−000−1; 0−000A−1; 0−002−1; 0−003−1, 2; 0−005−2; 0−010−1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12; 0−015A−1; 0−025−1, 2, 3, 4, 5, 6, 7, 8; 0−030−1; 1−000−1, 2; 1−110−1, 2; 1−120−1, 2; 1−130−1; 1−160−1; 1−220−1; 1−231−1, 2; 1−235−1, 2; 2−000−1; 2−111−1; 2−130−2; 2−131−1, 2; 2−140−1, 2, 4; 2−150−1, 2; 2−151−1; 3−100−1, 2; 3−102−1; 4−000−1, 2; 4−111−1, 4; 4−115−1, 2, 3; 4−118−2; 4−120−1, 2, 3, 4, 5, 6, 7, 8; 4−200−1; 5−000−3, 4, 5; 5−050−1, 7; 5−150−2; 5−200−1, 2; 5−250−3; 5−350−2; 5−400−2, 3, 6, 7; 5−450−1, 1A, 12, 13, 14; 5−460−1, 1A, 12, 13, 14; 5−470−3, 4, 5, 6, 7; 5−500−1, 1A, 12, 13, 14; 5−510−1, 1A, 12,13, 14; 5−520−3, 4, 5, 6, 7; 5−600−1, 2; 5−610−1, 2; 5−620−1, 2; 5−650−1. List of annexes−1. Annex: A1− 10, 11; Annex: A2−1, 2, 3, 4, 5, 6.	2−140−5, 6; 4−195−1, 2.

Revision and Date	Title and Approval reference	Pages changes		
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Revision 7 12-Oct-1998	Issue of Annex 6 : Supplementary performance information for operation on runways contaminated by standing water, slush, loose snow, compacted snow or ice. Integration of temporary change No 50 (Annex 5): Operations with braking system No 2 inoperative. Cancellation of specific US pages 1−190−1A and 2A. Approved by DGAC S. MORALES dated October 12, 1998	Annex 5 pages 1, 2, 3, 4, 5, 6; Annex 6 pages 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28.	Title page; 0−003−1, 2; 0−010−1, 9, 13, 14; 0−015A−1; 0−020−4; 0−025−9, 10, 11, 12; 0−030−1; 1−190−1; 5−000−1; 5−050−4; List of annexes page 1.	1−190−1A, 2A. Temporary change No 50: List of annexes pages 1, 2; Annex 5 pages 1, 2, 3, 4.

Revision and Date	Title and Approval reference	Pages changes: Added	Pages changes: Revised	Pages changes: Cancelled
Revision 8 24-Dec-1998	Integration of Temporary Changes No 20, 29, 31, 41, 45, 46, 47, 48, 52, 54, 59, 61, 62, 63, 64, 68, 69, 70, 71, 75, 77, 78, 79, 80, 81, 82, 83, 84, 86, 87 and 88. Integration of modification M298 (MASTER WARNING system). Integration of modification M1086 (GALLEY MASTER switch). Integration of modification M1141 (EGPWS) in Annex 3. Integration of modification M1614 (MASTER FMS switches). Cancellation of specific US pages 1−150−3A, 4A and Temporary Change No 20 (VFE limitations). Colored reissue of section 5, sub−section 400. Miscellaneous corrections. Approved by DGAC S. MORALES dated December 24, 1998	0−010−15, 16; 0−020−5, 6; 1−160−1B, 2B; 1−160−3, 4 ; 1−231D−1, 2; 1−235B−3, 4; 1−235C−1, 2, 3, 4; 1−235D−1, 2, 3, 4; 1−238A−3, 4; 1−238B−1, 2, 3, 4; 1−238C−1, 2, 3, 4; 1−240−1, 2; 2−130A−1, 2; 3−130A−1, 2; 3−210−3, 4; 4−110−1A, 2A; 4−155A−1, 2; 4−195−1, 2; 4−200C−1, 2; 4−200D−1, 2, 3, 4; 4−210−1, 2; 4−210A−1, 2; 4−210B−1, 2; 4−215−1, 2; Annex 3 pages 1A, 2A.	Title page; 0−003−1, 2; 0−005−2, 4; 0−010−1 thru 14; 0−015A−1; 0−015C−1; 0−025−1 thru 16; 0−030−1, 2; 1−000−1, 2; 1−100−1A, 2A, 3; 1−110−2; 1−160−1, 2; 1−220−1; 1−235−1, 2; 1−235A−1, 2; 1−235B−1, 2; 1−238−1, 2; 1−238A−1, 2; 2−101−1; 2−112−1; 2−113−1; 2−130−1, 2; 2−131−1; 2−140−3; 3−000−1, 3, 4; 3−102−1; 3−105−1; 3−106−1, 2; 3−110−1; 3−115−1; 3−116−1; 3−130−1, 2; 3−131−1, 3; 3−132−1; 3−140−1; 3−141−1, 2; 3−142−1; 3−143−1, 2; 3−143A−1, 2; 3−144−1; 3−145−1; 3−151−1, 2; 3−160−1, 2; 3−161−1, 2; 3−170−1; 3−171−1, 3; 3−180−1, 4, 5; 3−190−1, 2; 3−191−1; 3−192−1, 3; 3−200−1, 2; 3−210−1, 2; 3−215−1; 3−230−1, 2; 3−240−1; 3−340−1; 3−350−1, 1A, 2A; 4−000−2; 4−110−2, 4; 4−111−1, 2, 3, 4; 4−116−1; 4−118−1, 2; 4−118A−1, 2; 4−120−1, 2, 3, 7, 8; 4−140−2; 4−200−1; 4−200A−1, 2; 5−400−1, 2, 3, 4, 5, 6, 7, 8; 5−500−1, 1A; 5−510−1, 1A.	1−150−3A, 4A; 1−160B−1, 2.

Revision and Date	Title and Approval reference	Pages changes		
		Added	Revised	Cancelled
Revision 9 17-OCT-2000.	Integration of Temporary Changes No 34, 44, 74, 89, 90, 93, 95, 96, 98, 99, 100, 101, 102, 103, 107. Integration of modification M1578 (MEGGITT secondary flight display system). Cancellation of temporary change No 65. Miscellaneous corrections. Approved by DGAC S. MORALES dated October 17, 2000	1−120A−1, 2, 3, 4; 1−150−1A, 2A; 1−230A−1, 2; 2−131−3, 4; 3−132−1A, 2A; 3−160A−1, 2; 3−320−3A, 4A; 4−118−3, 4; 4−118A−3, 4; 5−300−3A, 4A, 5A, 6A; Supplements 21, 21A, 21B, 21C, 21D. Supplements 22, 22A, 22B, 22C, 22D, 22E. Supplements 23, 23A, 23B, 23C. Supplements 24, 24A, 24B.	Title page; 0−001−1; 0−003−1, 2; 0−010−1 thru 16; 0−015A−1; 0−015C−1; 0−020−6; 0−025−1 thru 20; 0−030−1, 2; 1−000−1, 2; 1−050−2; 1−120−1, 2, 3; 1−130−1; 1−150−4; 1−230−2; 2−100−1; 2−110−1; 2−111−1; 2−113−1; 2−130−1, 2; 2−130A−1, 2; 2−131−1, 2; 2−140−1, 2, 3, 4; 2−150−1; 2−151−1; 3−000−3; 3−110−1; 3−115−1; 3−116−1; 3−131−1, 2; 3−141−1; 3−142−1; 3−143−1; 3−143A−1; 3−150−1; 3−151−2; 3−160−1, 2; 3−161−1; 3−170−1; 3−171−3; 3−200−2; 3−210−2; 3−300−1, 2; 3−320−1, 2; 4−000−1, 2; 4−100−1; 4−105−1, 2, 3, 4; 4−110−1, 2; 4−110−1A, 2A; 4−111−1, 2, 4; 4−115−2; 4−118−2; 4−118A−2; 4−120−1, 3, 5, 8; 4−140−1; 4−190−1, 2; 5−300−3; Annex 3 page 2; Annex 6 page 19. List of supplements pages 1 thru 8; Supplement 3 pages 1, 2; Supplement 12 pages 1, 2; Supplement 15 pages 1, 2; Supplement 16 pages 1, 2.	1−231−1, 2; 1−231A−1, 2; 1−231B−1, 2; 1−231C−1, 2; 1−231D−1, 2; 1−235−1, 2; 1−235A−1, 2; 1−235B−1, 2, 3, 4; 1−235C−1, 2, 3, 4; 1−235D−1, 2, 3, 4; 1−238−1, 2; 1−238A−1, 2, 3, 4; 1−238B−1, 2, 3, 4; 1−238C−1, 2, 3, 4; 1−240−1, 2; 4−195−1, 2; 4−200−1, 2; 4−200A−1, 2; 4−200C−1, 2; 4−200D−1, 2, 3, 4; 4−210−1, 2; 4−210A−1, 2; 4−210B−1, 2; 4−215−1, 2.

Revision and Date	Title and Approval reference	Pages changes		
		Added	Revised	Cancelled
Revision 10 15-Feb-2008.	Integration of supplement No 14 (Brazilian registered A/C) in the basic Manual. Issuance of annex No 3A. Issuance of temporary change No 130. Integration of temporary changes No 105, 108, 109, 111, 112, 113, 116, 117, 118, 119, 121, 123, 124, 125, 126, 127 and 129. Miscellaneous corrections. Approved by EASA under EASA approval reference A.A.01357 on February 15, 2008	0−003−3, 4; 0−010−17, 18, 19, 20; 0−020−7, 8; 0−030−3, 4. 1−100−3A, 4A; 1−160−3A, 4A; 1−300−1, 2. 3−141−3, 4; 3−340A−1, 2; 3−350A−1, 2. 4−105−5, 6; 4−120−9, 10, 11, 12. 5−000−1A, 2A; 5−610−3, 4. Annex 3A : p. 1, 2, 3, 4. Annex 7 : p. 1, 2, 3, 4, 5, 6, 7, 8.	**Renumbered pages:** 0−000B−1, 2; 0−015B−1, 2. 5−000−5A, 6A; 5−590A−1, 2; 5−630A−1, 2, 3, 4, 5, 6, 7, 8. **Revised pages:** Cover page; 0−001−1; 0−002−1; 0−003−1, 2; 0−005−2, 3, 4; 0−010−1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16; 0−015A−1; 0−015C−1; 0−020−6; 0−025−1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26; 0−030−1, 2. 1−000−1, 2; 1−110−1, 2; 1−120−2; 1−150−1, 1A, 4; 1−160−1, 2, 3, 4; 1−200−2; 1−230−1; 1−230A−1, 2. 2−100−1; 2−101−1; 2−102−1; 2−111−1, 3; 2−112−1, 2; 2−113−1; 2−130−1, 2; 2−130A−1, 2; 2−131−2, 3; 2−140−1, 2, 3, 4; 2−150−1, 2; 2−151−1; 2−152−1. 3−000−1, 2, 3, 4; 3−100−1; 3−101−1; 3−102−1; 3−104−1, 2; 3−106−1, 2; 3−110−1; 3−115−1, 2; 3−131−1, 2, 3; 3−140−2; 3−141−1, 2; 3−142−1; 3−143−2; 3−144−1; 3−145−1; 3−150−1, 2; 3−151−1; 3−160−1; 3−160A−1, 2; 3−170−1; 3−171−1, 2, 3; 3−190−2; 3−191−1; 3−192−2, 3; 3−200−1; 3−215−1, 2; 3−230−1; 3−240−1; 3−280−1; 3−320−2; 3−340−2; 3−350−1.	1−160−1B, 2B. 3−116−1, 2; 3−143A−1, 2; 3−330−1, 2; 3−350−1A, 2A. 4−118A−1, 2, 3, 4; 4−155A−1, 2. 5−620−1, 2, 3, 4. Annex 1: p. 11, 12. Annex 3: p. 1A, 2A. Supplement 14: p. 1, 2; 3−106−1A, 2A; 3−150−1A, 2A; 3−210−1A, 2A; 3−350−1B, 2B; 5−050−5A, 6A (the other pages are renumbered).

Revision and Date	Title and Approval reference	Pages changes		
		Added	Revised	Cancelled
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Revision and Date	Title and Approval reference	Pages changes		
		Added	Revised	Cancelled
Revision 11 12-Dec-2008.	Integration of temporary changes No 122, 130, 131, 132, 133, 135, 136, 137, 138, 139, 140, 144, 145, 146, 147, 148, 150 and 152. For information: Temporary Change No 91 becomes Supplement No 34. Approved by EASA reference M3209 on December 12, 2008 under the Authority of EASA DOA 21J.051.	0−015D−1, 2; 0−020−9, 10; 0−025−27, 28. 1−160−5, 6, 5A, 6A, 7, 8; 1−250−1, 2. 2−131−3A, 4A. 3−000−3A, 4A; 3−100A−1, 2; 3−132A−1, 2; 3−141−1A, 2A; 3−161−3, 4; 3−191A−1, 2. 4−120−1A, 2A, 3A, 4A; 4−140A−1, 2, 3, 4. 5−000−5B, 6B.	Cover page; 0−002−1; 0−003−1, 2, 3, 4; 0−010−1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18; 0−025−1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26; 0−030−1, 2, 3, 4. 1−000−1, 2 ; 1−120−1; 1−120A−1; 1−160−1, 2, 3, 4; 1−220−1; 1−230−1, 2; 1−230A−1, 2. 2−000−1; 2−050−1; 2−110−2; 2−131−3; 2−140−1, 2, 3, 4; 2−150−1; 2−151−1; 2−152−1. 3−000−2; 3−050−1; 3−161−1, 2; 3−300−2. 4−050−1 ; 4−145−1. 5−630A−1, 2, 3, 4, 5, 6, 7, 8; 5−650−1, 2 ; 5−650A−1, 2. Annex 3: p. 1. Annex 6: p. 3.	0−010−19, 20. 1−160−3A, 4A. 3−132−1A, 2A.

<table>
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<tr><th>Added</th><th>Revised</th><th>Cancelled</th></tr>
<tr><td>Revision 12
24-Jul-2009.</td><td>Integration of Temporary Changes No 141, 151, 153, 155, 157, 158, 159 and 160.

For information : Temporary Changes No 141, 151, 155, 157, 158, 159 and 160 are approved, but not issued and integrated by revision No 12.

EASA reference DGT−DTC 338959 on July 24, 2009 under the Authority of EASA DOA 21J.051.</td><td>1−120−1A, 2A;
1−120A−1A, 2A.

4−147−1, 2.

5−590−1, 2;
5−630−1, 2, 3, 4, 5, 6, 7, 8.</td><td>Cover page;
0−003−1, 2, 3, 4;
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0−015B−1; 0−015D−1;
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0−025−23, 24, 25, 26, 27, 28; 0−030−4.

2−110−1, 2; 2−111− ;
2−112−1; 2−121−1.

3−000−1; 3−115−1, 2;
3−210−2; 3−220−1;
3−350A−2.

4−000−2.

5−000−6; 5−650−1, 2;
5−650A−1, 2.

Annex 6: p. 4.

Annex 7: p. 2, 3, 4.</td><td>5−000−5A, 6A;
5−000−5B, 6B;
5−590A−1, 2;
5−630A−1, 2, 3, 4, 5, 6, 7, 8.

Annex 7 : p. 7, 8.</td></tr>
<tr><td>Revision 13
12-Jul-2010.</td><td>New AFM layout.

For information:Temporary Change N° 161 is approved, but not issued and integrated by revision N° 13.

Approved under DOA EASA.21.J.051 authority under change reference M3346.</td><td colspan="3">Issue 1 of all sub-sub-sections.
Refer to 0-100-10 for a reference cross table between revision 12 pages and revision 13 sub-sub-sections.</td></tr>
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PREAMBLE TO THE LIST OF EFFECTIVE SUB-SUB-SECTIONS

PAGES IDENTIFICATION

The identification of the pages of the Manual consists of the following data printed at the top and the bottom of each page:

- Name of the Aircraft,
- Title of the document: Airplane Flight Manual,
- Page numbering system,
- Notation: ”EASA APPROVED”,
- Sub-sub-section issue number.

PAGE NUMBERING SYSTEM

The page numbering system consists of 4 elements:

- Number of the section, possibly followed by an alphabetical index corresponding to a variant,
- Number of the sub-section, possibly followed by an alphabetical index corresponding to a variant,
- Number of the sub-sub-section, possibly followed by an alphabetical index corresponding to a variant,
- Number of the page in the sub-sub-section always followed by total number of pages of the current sub-sub-section.

AMENDMENT SYSTEM

When a page is modified, the whole sub-sub-section is revised and its issue number is incremented. Revised parts are indicated with revision marks. This modified sub-sub-section is published through a new AFM revision. The following table of version of sub-sub-sections list all effective sub-sub-sections and give information about issue and applicability.

APPLICABILITY SYSTEM

- The applicability of a sub-sub-section is clearly indicated at the bottom:
  - When a specific content (text, diagram...) is not applicable to the basic airplane due to specific national regulation, specific airplane option or installed Service Bulletin, a variant of the sub-sub-section is inserted.
- The alphabetical index following the section, sub-section or sub-sub-section number identifies a variant material. The airplane **must only include** in its Manual the variant section, sub-section or sub-sub-section in accordance with its configuration and applicable regulations.

NOTE

Throughout the Manual, a reference to a sub-sub-section, sub-section or section does not indicate whether this sub-sub-section, sub-section or section is a variant.

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AFM - VERSIONS AND APPLICABILITY OF SUB-SUB-SECTIONS

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0	000	01	Issue 1	
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1	000	00	Issue 1	
1	000	01	Issue 1	
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1	250	15	Issue 1	
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2	000	01	Issue 1	
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3	000	01	Issue 1	
3	000	05	Issue 1	

Reference			Issue	Special applicability
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3	190	10A	Issue 1	A/C without M2500 or M3249 or SB F2000-376
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4	000	01	Issue 1	
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Reference			Issue	Special applicability
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5	800	10	Issue 1	
5	900	05	Issue 1	
5	900	05A	Issue 1	US registered A/C
List of annexes			Issue 1	
Annex 1			Issue 1	
Annex 2			Issue 1	
Annex 3			Issue 1	
Annex 3A			Issue 1	A/C with M955 and M1500 or SB F2000-314
Annex 5			Issue 1	A/C S/N > 11 or with SB F2000-64
Annex 6		Part 1	Issue 1	
Annex 6		Part 2	Issue 1	

Reference		Issue	Special applicability
Annex 6	Part 3	Issue 1	
Annex 6	Part 4	Issue 1	
Annex 6	Part 5	Issue 1	
Annex 6	Part 6	Issue 1	
Annex 6	Part 7	Issue 1	
Annex 6	Part 8	Issue 1	
Annex 6	Part 9	Issue 1	
Annex 6	Part 10	Issue 1	
Annex 6	Part 11	Issue 1	
Annex 6	Part 12	Issue 1	
Annex 7	Part 0	Issue 1	
Annex 7	Part 1	Issue 1	
Annex 7	Part 2	Issue 1	
Annex 7	Part 3	Issue 1	
Annex 7	Part 4	Issue 1	
Annex 7	Part 5	Issue 1	

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US CERTIFICATION

Sub-sub-sections listed herebelow are applicable only to US registered airplanes:

<u>Section 0</u>

0-000-01A, 0-250-05A.

<u>Section 3</u>

3-110-05A.

<u>Section 5</u>

5-900-05A.

<u>Supplements</u>

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

Sub-sub-sections listed herebelow are not applicable to US registered airplanes:

<u>Annexes</u>

Annexes 3A and 6.

<u>Supplements</u>

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

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BRAZILIAN CERTIFICATION

Sub-sub-sections listed herebelow are applicable only to BRAZILIAN registered airplanes:

Section 0

0-000-01B, 0-250-05B

Section 3

3-110-05A

Supplements

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

Sub-sub-sections listed herebelow are not applicable to BRAZILIAN registered airplanes:

Supplements

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

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UK CERTIFICATION

Sub-sub-sections listed herebelow are applicable only to UK registered airplanes:

<u>Section 0</u>

0-000-01C, 0-250-05C.

<u>Supplements</u>

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

Sub-sub-sections listed herebelow are not applicable to UK registered airplanes:

<u>Supplements</u>

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

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CANADIAN CERTIFICATION

Sub-sub-sections listed herebelow are applicable only to CANADIAN registered airplanes:

Section 0

0-250-05D

Section 3

3-130-10A

Supplements

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

Sub-sub-sections listed herebelow are not applicable to CANADIAN registered airplanes:

Supplements

See "List of Dassault Aviation supplements" and "Table of contents" of each supplement.

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SUMMARY OF THE SERVICE BULLETINS, OPTIONS AND MODIFICATIONS QUOTED IN THE MANUAL (FOR INFORMATION)

M	SB	DESCRIPTION
M3A	SB F2000-19	Thrust reversers
M34	SB F2000-108	Installation of a brake heating system.
M48		Pressurization : LOW RATE command.
M57		Increased maximum take-off weights (MRW 36,700 lb and MTOW 36,500 lb).
M200		Second radioaltimeter.
M298		MASTER warning system.
M375		Electrical pitch variable bellcrank.
M613	SB F2000-99	Installation of mach hold option.
M650		Glareshield mounted avionic control.
M694		Stick shaker installation.
M760	SB F2000-64	Braking and steering system separation of electrical grounds providing the ground / flight signal.
M912		HONEYWELL GPS.
M955		Steep approach landing with E-GPWS.
M972		Auxiliary power supply for VHF, ATC, ICS and RTU.
M1077		Digital battery temperature indicator.
M1080	SB F2000-63	Static Source Error Correction (SSEC).
M1086		GALLEY MASTER switch.
M1199	SB F2000-99	Capability of installation of mach hold option.
M1251	SB F2000-63	Reduced Vertical Separation Minimum (RVSM) capability.
M1378		Passenger door - Electrical lifting.
M1403	SB F2000-153	No 2 system main hydraulic power improved air bleeding of hydraulic pump suction line.
M1445	SB F2000-145	HONEYWELL HG2001GC03 IRS.
M1500	SB F2000-314	Full installation of EGPWS with Steep Approach function.
M1578		MEGGITT secondary flight display system.
M1600		FMS 6100.
M1614		Installation of two FMS MASTER switches (HONEYWELL).
M1667	SB F2000-192	Lead acid main battery.
M1716		Complete installation of AHS-3000 and wiring for 2 IRS.
M1758	SB F2000-193	New hydraulic accumulators.

M	SB	DESCRIPTION
M1776		Pilot's audio isolation from perturbations coming from options (ISOL pushbutton).
M1778		Stand-by horizon : battery power supply indicator.
M1903	SB F2000-202	Reinstatement of fuel types JET B and JP4.
M1960		IRS.
M2004	SB F2000-273	GPS / IRS hybrid data inhibit.
M2061	SB F2000-108	Installation of a brake heating system.
M2062	SB F2000-253	Full authority digital electronic control (FADEC). Upgrade FADEC software to version V6.5.
M2107		Mid cabin partition door.
M2144		IFE load shedding.
M2325		115 / 230 VAC light pushbutton.
M2468	SB F2000-327	Air Traffic Control reply inhibit on ground.
M2500	SB F2000-376	Wing anti-ice valve - Thrust bearing implementation.
M2624	SB F2000-312	Air Traffic Control with Enhanced Surveillance.
M2632	SB F2000-312	Air Traffic Control with Enhanced Surveillance.
M2974		Automatic dependant surveillance-broadcast out in non radar areas (ADS-B out in NRA).
M3072		Wing fuel tank improvement.
	SB F2000-285	Safety collar GPS deactivation.

SECTION 1 – LIMITATIONS

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TABLE OF CONTENTS

KINDS OF OPERATION

FLIGHT MANAGEMENT AND NAVIGATION SYSTEM

INTRODUCTION

THE AIRPLANE MUST BE OPERATED IN COMPLIANCE WITH

THE LIMITATIONS PRESENTED IN THIS SECTION

YEAR 2000 LIMITATIONS

After issuance of the following French DGAC Airworthiness directives to take into account consequences of Y2K on airborne systems:

- **French DGAC Airworthiness Directive 1999-514(AB)**
- **French DGAC Airworthiness Directive 1999-450(B) R1**
- **French DGAC Airworthiness Directive 1999-472(AB)**

The following limitations are added:

In order to avoid known or possible malfunctions which could affect airworthiness the following actions are rendered mandatory:

- The use of OMEGA/VLF navigation mode is prohibited definitively after December 31, 1999. The OMEGA/VLF RPU shall be deactivated (Reference AD 1999-472(AB)).
- Systems which are definitively prohibited from December 31, 1999 must be deactivated (Reference AD 1999-472(AB) and AD 1999-450(B) paragraph 3-1 Note 1 and paragraph 3-3).
- Without an other authorized source of navigation, it is prohibited to use the navigation system referenced in the following Airworthiness directive (see hereafter), or magnetic variation shall be entered manually, in oceanic and remote areas above north latitude N60 and below south latitude S50 according to the AD, from January 1st, 2000 (Reference AD 1999-514(AB)).
- Equipment which are prohibited as a precautionary measure from December 31, 1999: use will be authorized again after January 1st, 2000 and after function check of the involved equipment on ground, engines running as per applicable documentation (Reference AD 1999-450(B) paragraph 3-2).

WEIGHT

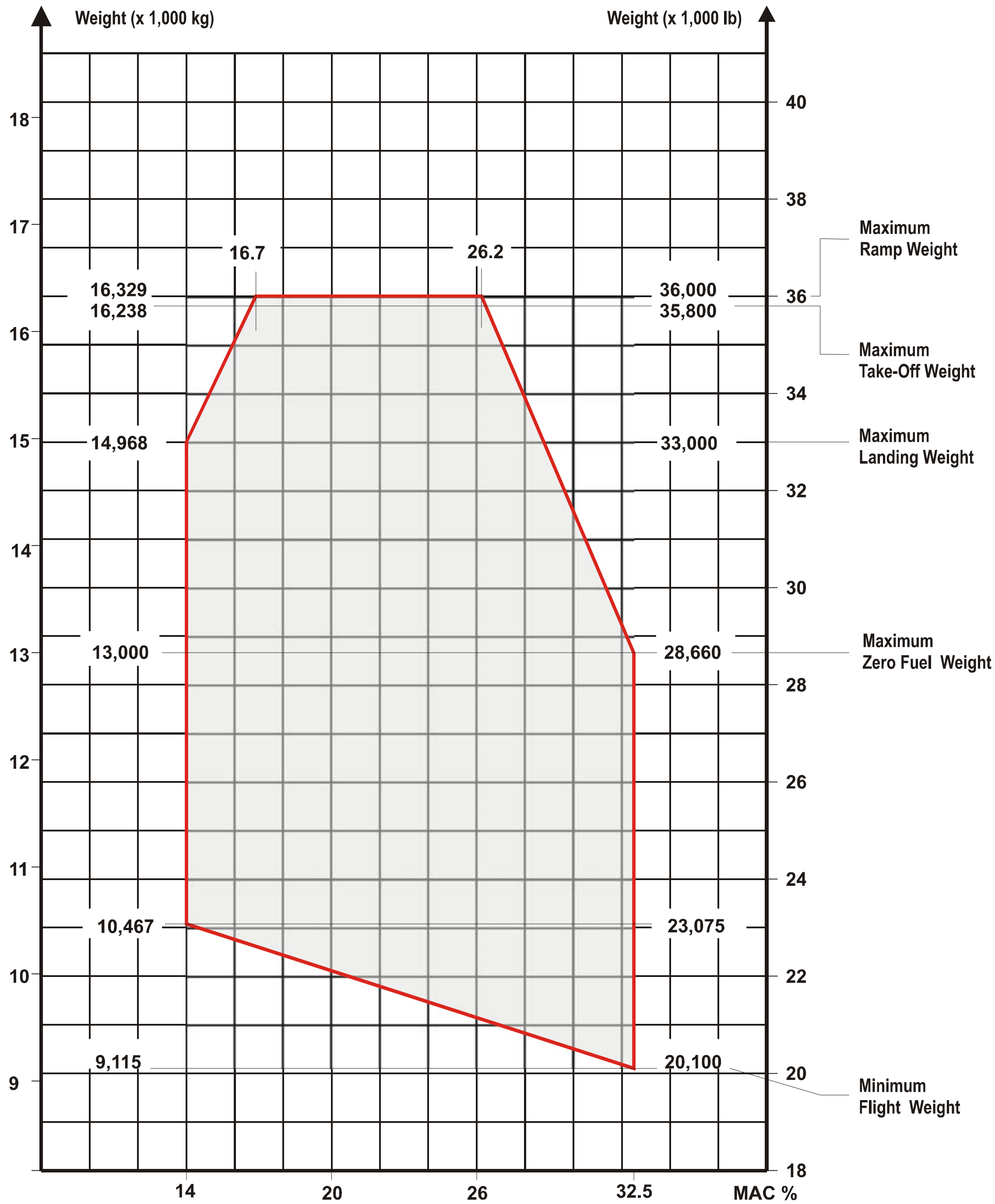
STRUCTURAL LIMITATIONS

- Maximum ramp weight .... 36,000 lb (16,329 kg)
- Maximum take-off weight .... 35,800 lb (16,238 kg)
- Maximum landing weight .... 33,000 lb (14,968 kg)
- Maximum zero fuel weight .... 28,660 lb (13,000 kg)
- Minimum flight weight .... Refer to Center of gravity limits chart.

LIMITATIONS DUE TO PERFORMANCE

The Maximum Take-Off Weight (MTOW) and the Maximum Landing Weight (MLW) given as structural limitations may have to be reduced to comply with performance and operating requirements.(see Maximum Allowable Weights, 5-150-10)

CENTER OF GRAVITY LIMITS



> **NOTE**
>
> Landing gear position has no effect on the CG location.

CG DATUM

Datum is 25 % of mean aerodynamic chord (MAC) which coincides with fuselage station (FS) 400.43 in (10,171 mm) (fuselage station + 0 is the forward end of the airplane nose cone).

MEAN AERODYNAMIC CHORD

- Length: 113.69 in (2,887.7 mm).
- Zero % MAC is at FS + 372.01 in (9,449 mm).

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WEIGHT

STRUCTURAL LIMITATIONS

- Maximum ramp weight .... 36,700 lb (16,647 kg)
- Maximum take-off weight .... 36,500 lb (16,556 kg)
- Maximum landing weight .... 33,000 lb (14,968 kg)
- Maximum zero fuel weight .... 28,660 lb (13,000 kg)
- Minimum flight weight .... Refer to Center of gravity limits chart.

LIMITATIONS DUE TO PERFORMANCE

The Maximum Take-Off Weight (MTOW) and the Maximum Landing Weight (MLW) given as structural limitations may have to be reduced to comply with performance and operating requirements.(see Maximum Allowable Weights, 5-150-10)

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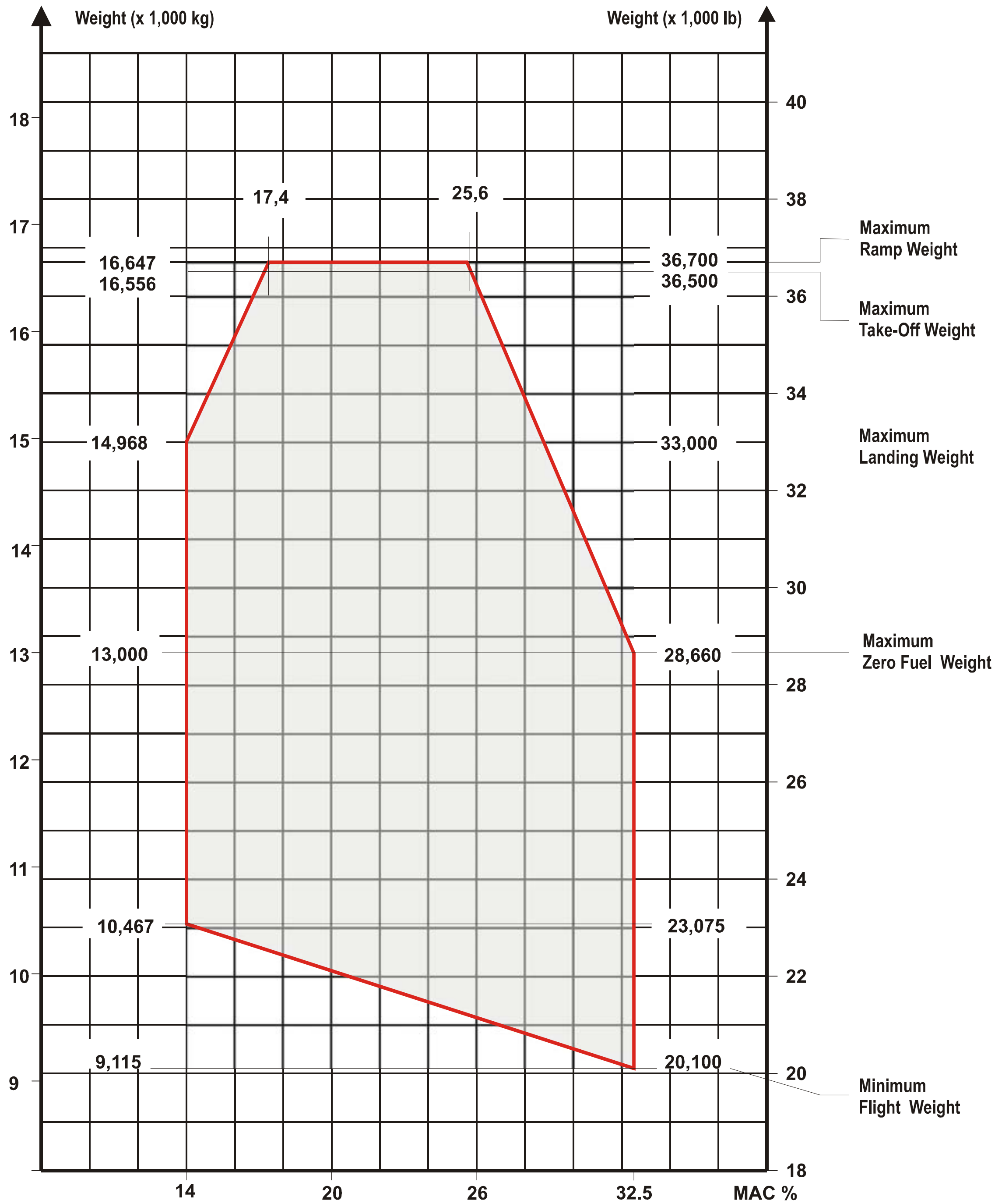

NOTE

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CG DATUM

Datum is 25 % of mean aerodynamic chord (MAC) which coincides with fuselage station (FS) 400.43 in (10,171 mm) (fuselage station + 0 is the forward end of the airplane nose cone).

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- Length: 113.69 in (2,887.7 mm).
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WEIGHT

STRUCTURAL LIMITATIONS

- Maximum ramp weight .... 36,700 lb (16,647 kg)
- Maximum take-off weight .... 36,500 lb (16,556 kg)
- Maximum landing weight .... 34,500 lb (15,649 kg)
- Maximum zero fuel weight .... 28,660 lb (13,000 kg)
- Minimum flight weight .... Refer to Center of gravity limits chart.

LIMITATIONS DUE TO PERFORMANCE

The Maximum Take-Off Weight (MTOW) and the Maximum Landing Weight (MLW) given as structural limitations may have to be reduced to comply with performance and operating requirements.(see Maximum Allowable Weights, 5-150-10)

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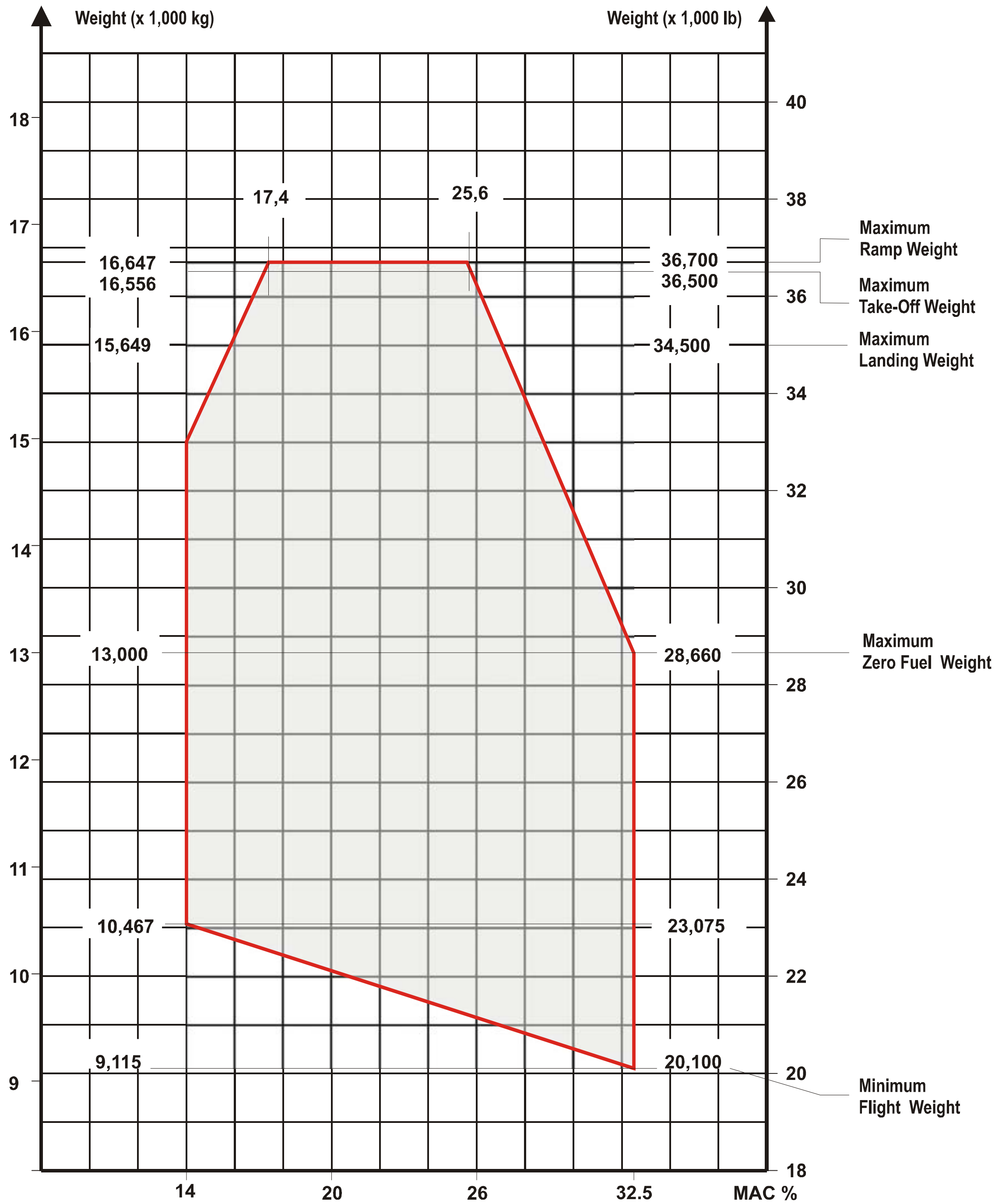

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MEAN AERODYNAMIC CHORD

- Length: 113.69 in (2,887.7 mm).
- Zero % MAC is at FS + 372.01 in (9,449 mm).

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LOADING

FOREWORD

The airplane must be loaded in compliance with the center of gravity location limits (See 1-050-05). Information for determination of airplane's weight and balance are included in the Loading Manual DTM541.
The weights indicated below must not be exceeded when loading the airplane:

	TOTAL WEIGHT		DISTRIBUTED LOAD	
	lb	kg	lb/sq.ft	kg/m²
Baggage compartment	1,600	725	61.4	300
LH and RH coat compartment	-	-	81.9	400
Payload	5,990	2,717	-	-

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LOADING

FOREWORD

The airplane must be loaded in compliance with the center of gravity location limits (See 1-050-05). Information for determination of airplane's weight and balance are included in the Loading Manual DTM541.
The weights indicated below must not be exceeded when loading the airplane:

	TOTAL WEIGHT		DISTRIBUTED LOAD	
	lb	kg	lb/sq.ft	kg/m²
Baggage compartment	1,000	453	61.4	300
LH and RH coat compartment	-	-	81.9	400
Payload	5,990	2,717	-	-

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THRUST RATINGS

CFE738-1-1B ENGINE (UNINSTALLED, SEA LEVEL, ISA)

- Take-off .... 5,888 lb (2,620 daN)
- Maximum continuous .... 5,613 lb (2,497 daN)

CAUTION

The take-off thrust rating is time limited to 5 minutes.

THRUST SETTINGS

The engine low pressure rotor speed N1 is used as the thrust setting parameter.

The take-off and maximum continuous thrust as defined in AFM section 5-050-20 must be based on the N1 values given in AFM sections 5-400 and 5-450.

ROTOR SPEED LIMITS

CONDITION OF USE	N1	N2
Maximum / Normal take-off (5 minutes max.)	96.7 %	106 %
Maximum continuous	96.7 %	104.9 %

100 % N1 = 9,725 RPM

100 % N2 = 26,415 RPM

ENGINE VIBRATION LIMITS

- N1 .... 1.0 in./sec.
- N2 .... 1.5 in./sec.

INTERSTAGE TURBINE TEMPERATURE (ITT) LIMITS

CONDITION OF USE	°C	
Ground start	815 °C	
Airstart	890 °C	
Restart max. temperature	150 °C	
Max. take-off (APR)	890 °C	5 minutes max.
Normal take-off	864 °C	5 minutes max.
Max. continuous	861 °C	
Windmilling max. temperature	970 °C	10 seconds max.
	1,000 °C	2 seconds max.

STARTING TIME

CONDITION OF USE	
Ground start:	
From start to light-off	10 seconds max. after reaching 22 % N2
From light-off to idle	60 seconds max.
Airstart (from light-off to idle):	
Assisted	90 seconds
Windmilling	180 seconds

STARTER RE-ENGAGEMENT LIMITS

- Maximum N2.. Starter cutout N2 (53.6 %)

THRUST REVERSER DHC TR 6000 (A/C WITH SB F2000-19)

The thrust reverser is approved only when on the ground.

FUEL TYPES

Fuel used must conform to the following specifications.

DESIGNATION	SPECIFICATION		FREEZING POINT (°C)	ADDITIVES		NATO CODE
	TRADE NAME	EQUIVALENCE (FOR INFO.)		ANTI-ICE	ANTI-STATIC	
KEROSENE	JET A	ASTM D 1655-82 Type A CAN 2-3.23 M.D.2494 Issue 9 AIR 3405 C	- 40	* * * *	* WITH * *	F-35
	JET A-1	ASTM D 1655-82 Type A CAN 2-3.23 DEF STAN 91-91 M.D 2494 Issue 9 AIR 3405 C	- 47	* * W/O * *	* * WITH WITH *	F-35
	JET A-1 Type JP-8	MIL-T-83133 M.D.2453 Issue 4-Amd 1 AIR 3405 C DEF STAN 91-87	- 50	WITH * WITH WITH	* * * WITH	F-34
	No 3 Jet Fuel	NTSB GB6537-94 Issue 2	- 47	*	*	*
	No 3A Jet Fuel	NTSB GB6537-05	- 47	*	*	*
	TS-1 (CIS) (**) RT (CIS) (**)	GOST10227-86	- 60 - 60	W/O W/O	W/O W/O	
	TS-1(Ukraine) (**) RT (Ukraine) (**)	GSTU 320.00149943.011-99 GSTU 320.00149943.007-97	- 55 - 55	* *	* *	
HIGH FLASH POINT TYPE FUEL	JP-5	AIR 3404 C DEF STAN 91-86 CAN 3GP24 M.D.2452 Issue 2-Amd 1 MIL-T-5624H	- 46	WITH WITH WITH * WITH	* W/O * * W/O	F-44

* Information to be checked with the fuel supplier.

** Refer to engine's maintenance manual.

USABLE QUANTITY

The total usable fuel quantity is distributed as follows:

For A/C without M3072 and SB F2000-171:

	Liter	Kg *	US gal	Lb **
LH wing + half center wing box	3,429	2,753	906	6,070
RH wing + half center wing box	3,437	2,760	908	6,085
Airplane total capacity	6,866	5,513	1,814	12,155

* d=0.803 kg/l
** d=6.706 lb/US gal

For A/C with M3072 or SB F2000-171:

	Liter	Kg *	US gal	Lb **
LH wing + half center wing box	3,413	2,740	902	6,042
RH wing + half center wing box	3,421	2,747	904	6,057
Airplane total capacity	6,834	5,487	1,806	12,099

* d=0.803 kg/l
** d=6.706 lb/US gal

NOTE

The amount of fuel left in the tanks when the fuel quantity indicators reach zero is not safely usable in all flight conditions.

WARNING

USE OF JP-4 OR JET B OR THEIR EQUIVALENT IS PROHIBITED.

FUEL TEMPERATURE

In flight, tank fuel temperature must be maintained at least 3 °C above the freezing point of fuel being used.

MAXIMUM FUEL UNBALANCED FOR FLIGHT

- Maximum fuel dissymmetry..2,200 lb

PRESSURE FUELING SYSTEM

- Maximum feed pressure .... 50 psi / 3.5 bars / 350 kPa

FUEL ADDITIVES

The following additives are authorized for use in the fuel:

- Anti-icing, conforming to AIR 3652 or MIL-I-27686 D specifications (JP8) or MIL-I-85470 (JP5) or equivalent at a concentration not in excess of 0.15 % by volume.
- SOHIO Biobor JF biocide, or equivalent, at a concentration not to exceed 270 ppm.
- Anti-static additive provided the quantity added does not exceed:
  - 1 ppm for SHELL ASA3,
  - 3 ppm for STADIS 450,
  - 5 ppm for SIGBOL TU 38-101741-78.

FUEL CONTROL COMPUTER

The Fuel Quantity Management Computer (FQMC) must be operative for take-off.

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FUEL TYPES

Fuel used must conform to the following specifications.

DESIGNATION	SPECIFICATION		FREEZING POINT (°C)	ADDITIVES		NATO CODE
	TRADE NAME	EQUIVALENCE (FOR INFO.)		ANTI-ICE	ANTI-STATIC	
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	JET A-1	ASTM D 1655-82 Type A CAN 2-3.23 DEF STAN 91-91 M.D 2494 Issue 9 AIR 3405 C	- 47	* * W/O * *	* * WITH WITH *	F-35
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	No 3 Jet Fuel	NTSB GB6537-94 Issue 2	- 47	*	*	*
	No 3A Jet Fuel	NTSB GB6537-05	- 47	*	*	*
	TS-1 (CIS) (**) RT (CIS) (**)	GOST10227-86	- 60 - 60	W/O W/O	W/O W/O	
	TS-1(Ukraine) (**) RT (Ukraine) (**)	GSTU 320.00149943.011-99 GSTU 320.00149943.007-97	- 55 - 55	* *	* *	
WIDE CUT TYPE FUEL	JET B	ASTM D 1655-85 Type B CAN 2-3.22 M.D.2486 Issue 9-Amd 1 AIR 3407 B	- 51	* * * *	* * WITH *	
		Rus. T2	- 60	*	*	
	JP-4	MIL-T-5624L AIR 3407 B DEF STAN 91-88 CAN 2-3.22 M.D.2454 Issue 4-Amd 1	- 58	WITH WITH WITH WITH *	WITH * W/O WITH *	F-40
HIGH FLASH POINT TYPE FUEL	JP-5	AIR 3404 C DEF STAN 91-86 CAN 3GP24 M.D.2452 Issue 2-Amd 1 MIL-T-5624H	- 46	WITH WITH WITH * WITH	* W/O * * W/O	F-44

* Information to be checked with the fuel supplier.
** Refer to engine's maintenance manual.

USABLE QUANTITY

The total usable fuel quantity is distributed as follows:

For A/C without M3072 and SB F2000-171:

	Liter	Kg *	US gal	Lb **
LH wing + half center wing box	3,429	2,753	906	6,070
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Airplane total capacity	6,834	5,487	1,806	12,099

* d=0.803 kg/l
** d=6.706 lb/US gal

NOTE

The amount of fuel left in the tanks when the fuel quantity indicators reach zero is not safely usable in all flight conditions.

FUEL TEMPERATURE

In flight, tank fuel temperature must be maintained at least 3 °C above the freezing point of fuel being used.

USE OF JP-4 OR JET B

Flight altitude is limited to 23,000 ft after low booster pump failure.

MAXIMUM FUEL UNBALANCED FOR FLIGHT

- Maximum fuel dissymmetry..2,200 lb

PRESSURE FUELING SYSTEM

- Maximum feed pressure .... 50 psi / 3.5 bars / 350 kPa

FUEL ADDITIVES

The following additives are authorized for use in the fuel:

- Anti-icing, conforming to AIR 3652 or MIL-I-27686 D specifications (JP4/JP8) or MIL-I-85470 (JP5) or equivalent at a concentration not in excess of 0.15 % by volume.
- SOHIO Biobor JF biocide, or equivalent, at a concentration not to exceed 270 ppm.
- Anti-static additive provided the quantity added does not exceed:
  - 1 ppm for SHELL ASA3,
  - 3 ppm for STADIS 450,
  - 5 ppm for SIGBOL TU 38-101741-78.

FUEL CONTROL COMPUTER

The Fuel Quantity Management Computer (FQMC) must be operative for take-off.

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APPROVED OILS

Approved oil conforming to General Electric Specifications D50TF1, or AlliedSignal oil specifications EMS 53110.

OIL PRESSURE LIMITS

Operating range	60 to 85 psi
Transient (3 min. max.)	85 to 100 psi
Minimum (at IDLE)	30 psi
Cold start: oil T° < 0 °C (2.5 min. max.)	135 psi

NOTE

The OIL 1 and OIL 2 lights in the warning panel illuminate for an oil pressure below 25 psi.

OIL TEMPERATURE LIMITS

Maximum	138 °C
Minimum for take-off	30 °C
Transient: for 3 min.	138 to 155 °C
Cold start	- 40 °C

NOTE

In case of take-off at very low temperature, TEMP OIL indication may drop in the lower yellow range during take-off run.

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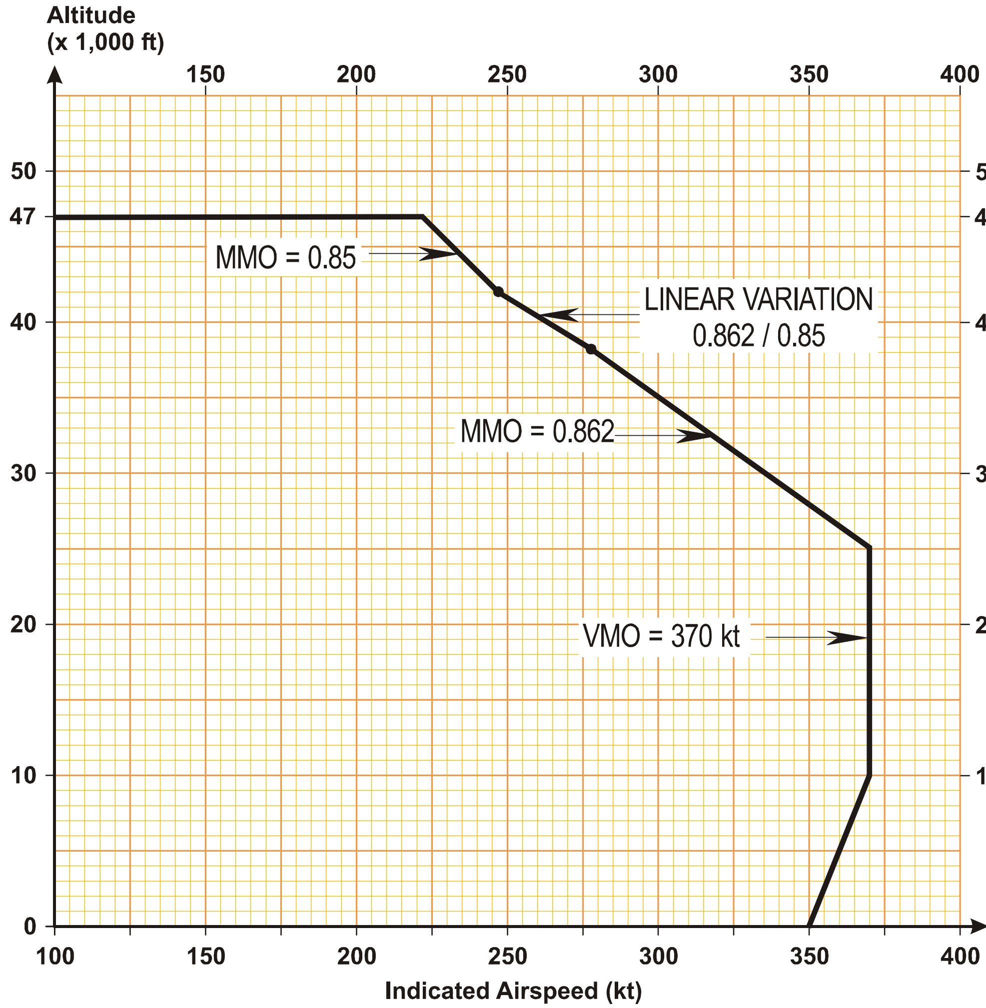
Unless otherwise specified, limits are expressed in terms of indicated values.
Instrument error is assumed to be zero.

MAXIMUM OPERATING LIMIT SPEED

VMO / MMO ENVELOPE



CAUTION

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

DESIGN MAXIMUM MANEUVERING SPEED

- VA.. 198 KIAS

CAUTION

Full application of rudder or aileron controls, as well as maneuvers that involve angles-of-attack near the stall must be confined to speeds below VA.
Rapidly alternating large rudder applications in combination with large sideslip angles may result in structural failure at any speed.

HIGH LIFT DEVICES OPERATING OR EXTENDED LIMIT SPEEDS : VFE

- VFE Slats extended + flaps 10° .... 200 KIAS
- VFE Slats extended + flaps 20° .... 160 KIAS
- VFE Slats extended + flaps 40° .... 160 KIAS

CAUTION

Above 20,000 ft do not establish or maintain a configuration with the flaps or the slats extended.

MAXIMUM LANDING GEAR OPERATING SPEED: VLO / MLO

- VLO .... 190 KIAS
- MLO.. MI 0.70

VLO / MLO is the maximum speed at which it is safe to extend or retract the landing gear.

MAXIMUM LANDING GEAR EXTENDED SPEED: VLE / MLE

- VLE.. 245 KIAS
- MLE .... MI 0.75

VLE / MLE is the maximum speed at which the airplane can be safely flown with the landing gear extended and locked and main doors closed.

MINIMUM CONTROL SPEED IN THE AIR: VMCA

- VMCA .... 90 KIAS

MINIMUM CONTROL SPEED DURING APPROACH AND LANDING: VMCL

- VMCL .... 90 KIAS

MINIMUM CONTROL SPEED ON THE GROUND: VMCG

- VMCG.. 98 KIAS

MISCELLANEOUS LIMIT SPEEDS

WINDSHIELD WIPER OPERATING SPEED

- V WWO.. 215 KIAS

PILOT WINDOW OPENING SPEED

- V Window .... 215 KIAS

TIRE MAXIMUM OPERATING SPEED

- V Tire..195 kt (ground speed)

STALL SPEED

CAUTION

Do not intentionally fly the airplane slower than initial stall warning onset.

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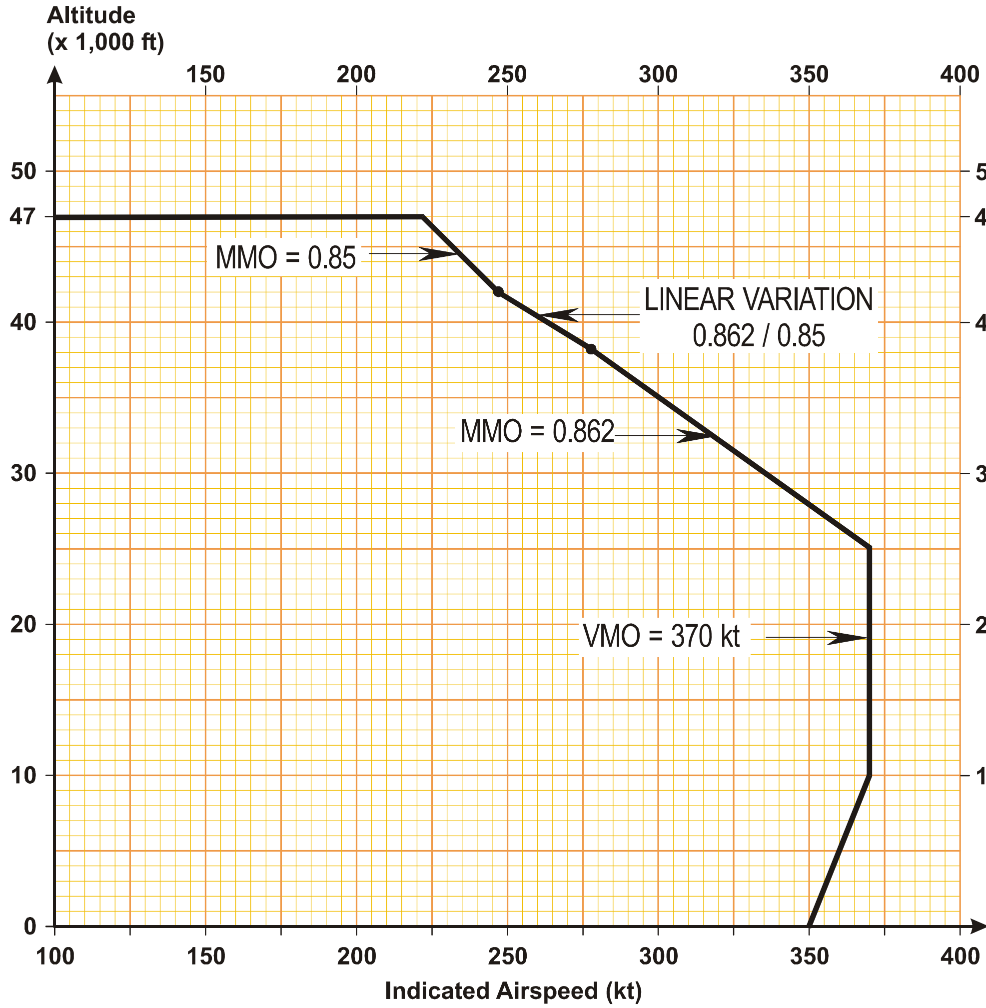
Unless otherwise specified, limits are expressed in terms of indicated values.
Instrument error is assumed to be zero.

MAXIMUM OPERATING LIMIT SPEED

VMO / MMO ENVELOPE



CAUTION

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

NOTE

The red warnings occur simultaneously on the standby instrument and on the pilot / copilot EFIS (or HUD if any).
However the VMO / MMO STAND-BY indicated value may be different from the pilot and the copilot values on the EFIS (or HUD if any) (see correction curves 5-300-15A pages 4 and 5).

DESIGN MAXIMUM MANEUVERING SPEED

- VA.. 198 KIAS

CAUTION

Full application of rudder or aileron controls, as well as maneuvers that involve angles-of-attack near the stall must be confined to speeds below VA.
Rapidly alternating large rudder applications in combination with large sideslip angles may result in structural failure at any speed.

HIGH LIFT DEVICES OPERATING OR EXTENDED LIMIT SPEEDS : VFE

- VFE Slats extended + flaps 10° .... 200 KIAS
- VFE Slats extended + flaps 20° .... 160 KIAS
- VFE Slats extended + flaps 40° .... 160 KIAS

CAUTION

Above 20,000 ft do not establish or maintain a configuration with the flaps or the slats extended.

MAXIMUM LANDING GEAR OPERATING SPEED: VLO / MLO

- VLO .... 190 KIAS
- MLO.. MI 0.70

VLO / MLO is the maximum speed at which it is safe to extend or retract the landing gear.

MAXIMUM LANDING GEAR EXTENDED SPEED: VLE / MLE

- VLE.. 245 KIAS
- MLE .... MI 0.75

VLE / MLE is the maximum speed at which the airplane can be safely flown with the landing gear extended and locked and main doors closed.

MINIMUM CONTROL SPEED IN THE AIR: VMCA

- VMCA .... 90 KIAS

MINIMUM CONTROL SPEED DURING APPROACH AND LANDING: VMCL

- VMCL .... 90 KIAS

MINIMUM CONTROL SPEED ON THE GROUND: VMCG

- VMCG .... 98 KIAS

MISCELLANEOUS LIMIT SPEEDS

WINDSHIELD WIPER OPERATING SPEED

- V WWO.. 215 KIAS

PILOT WINDOW OPENING SPEED

- V Window .... 215 KIAS

TIRE MAXIMUM OPERATING SPEED

- V Tire..195 kt (ground speed)

STALL SPEED

CAUTION

Do not intentionally fly the airplane slower than initial stall warning onset.

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MANEUVERING FLIGHT LOAD FACTORS LIMIT

- Flaps up .... +2.64 to -1.00
- Flaps down .... +2.00 to 0.00

These load factors limit the angle of bank permitted in turns and limit the severity of pull-up maneuvers.

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MINIMUM FLIGHT CREW

The minimum flight crew consists of 2 pilots (one pilot and one copilot).

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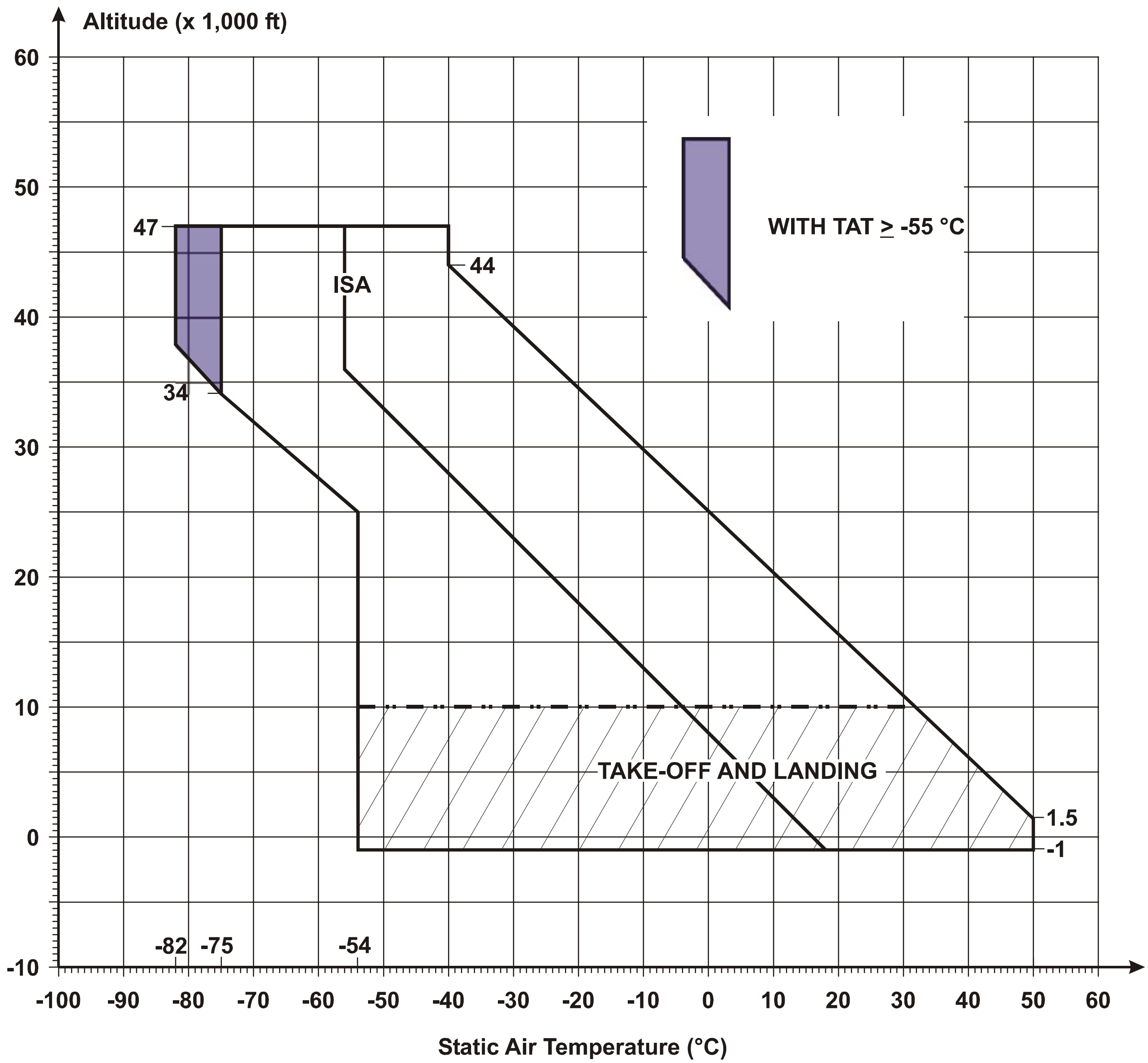
TAKE-OFF AND LANDING

- Weights..See 1-050-05
- Airport pressure altitude.................................... -1,000 ft / +10,000 ft
- Runway slope.. ±2.0 %
- Tailwind component.. 10 kt
- Ambient temperature...See 1-150-20 page 2
- Runway..Paved and hard-surfaced

EN ROUTE

- Maximum operating altitude.................................... 47,000 ft
- Maximum operating altitude with one engine inoperative........See 5-600-10 page 1
- Ambient temperature...See 1-150-20 page 2

TEMPERATURE AND ALTITUDE LIMITS



ICING CONDITIONS

Icing conditions exist when the OAT on the ground and for take-off, or TAT in flight is 10 °C or below, and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet and ice crystals).

Icing conditions also exist when the OAT on the ground and for take-off is 10 °C or below when operating on ramps, taxiways or runways where surface snow, ice, standing water, or slush may be ingested by the engines or freeze on engines, nacelles or engine sensor probes.

ENGINE ANTI-ICE

- The engine anti-ice system must be used on ground when icing conditions exist and in flight before entering icing conditions.
- The engine anti-ice system should not be used above 10 °C.

WING ANTI-ICE

- The wing anti-ice system should not be used above 10 °C.
- The wing anti-ice system must not be used on ground except for limited checks conducted in accordance with Airplane Flight Manual or Maintenance Manual instructions.

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CABIN PRESSURIZATION

- Maximum differential pressure ....9.3 psi
- Maximum negative differential pressure..-0.3 psi

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INSTRUMENT COLOR MARKINGS

- Maximum operating limit .... Red pointer, needle, band or line
- Precautionary range.. Yellow pointer, needle, band or line
- Normal operating range .... White or green pointer, needle, band or line

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APPROVED FLUIDS

Only hydraulic fluid conforming to AIR 3520 or MIL-H-5606 specification (NATO codes H515 or H520) must be used.

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DC VOLTAGE LIMITATION

- Maximum voltage of DC system .... 29.5 V

ENGINE GENERATOR

Maximum engine generator output in flight:

- Stabilized .... 400 A
- Transient (5 sec.) .... 800 A
- Transient (40 sec.) .... 600 A
- Transient (160 sec.) .... 500 A

Maximum engine generator output on ground:

- Basic generators .... 300 A

BATTERY LIMITATIONS

The following limitations are not applicable to A/C equipped with lead-acid Concord battery after application of modification M1667.

Battery temperature:

- Amber light (WARM) at or above .... 48.9 °C (120 °F)
- Red light (HOT) at or above .... 71.1 °C (160 °F)

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AUXILIARY POWER UNIT

APU ALLIEDSIGNAL GTCP 36-150 (F2M)

- Maximum operating altitude .... 35,000 ft
- Maximum starting altitude .... 35,000 ft

Operation of the APU with passengers in the cabin and no crew member monitoring is not authorized.

- Maximum N1 speed .... 110 %

EXHAUST GAS TEMPERATURE LIMITS (EGT / T5)	
Starting	974 °C
Stabilized	746 °C

- Maximum generator output:
  - Transient:
    - 40 seconds .... 450 A
    - 180 seconds .... 375 A
  - Stabilized:
    - 0 to 10,000 ft .... 300 A
    - 10,000 to 25,000 ft........ 250 A
    - 25,000 to 35,000 ft........ 200 A

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TIRES AND BRAKES

- Nose wheels must be equipped with chinned tires.
- Brake kinetic energy limit .... 15,000 kJ per brake

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TOWBARLESS TOWING

Only the towbarless towing vehicles approved by the Constructor, as listed in the Operating Manual Ground Servicing (DTM551), section TOWING, should be used.

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AUTOMATIC PILOT (APS 4000)

The autopilot must not be engaged for take–off or landing.

The autopilot is certified to the minimum height as follows:

- Coupled ILS approach:
  - Radioaltimeter operative .... 70 ft
  - Radioaltimeter inoperative .... 160 ft
- Cruise .... 1,000 ft
- Non precision approach .... 250 ft

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AUTOMATIC PILOT (APS 4000)

The autopilot must not be engaged for take–off or landing.

The autopilot is certified to the minimum height as follows:

- Coupled ILS approach:
  - Radioaltimeter operative .... 70 ft
  - Radioaltimeter inoperative .... 160 ft
- Cruise .... 1,000 ft
- Non precision approach .... 250 ft

■ **If GPS is not deactivated prior to flight:**

➨ Misleading GPS / IRS hybrid data may affect the parameters linked to the ground speed computation.

CAUTION

Do not use Flight Director or Autopilot in Track mode.

■ **If GPS is deactivated prior to flight:**
(C/B pulled and safety collar installed - SB F2000-285 applied)

➨ E−GPWS : the use of Terrain Awareness Alerting (and Display if installed) TAA(D) function is prohibited during QFE operations (see E-GPWS Supplement).

CAUTION

To avoid unwanted alerts from Terrain Clearance Field mode, when the amber TERR annunciation is displayed in the MFD corresponding to the automatic inhibition of terrain, select the TERR INHIB switch.

➨ See 1-300-05 for B-RNAV and RNP10 limitations.

➨ See affected FMS Supplement for MNPS limitations.

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IRS (HONEYWELL LASEREF III OR IV)

Alignment is functional between 78°15’ North and 78°15’ South latitude.

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IRS (HONEYWELL LASEREF III OR IV)

Alignment is functional between 78°15’ North and 78°15’ South latitude.

CAUTION

Use of IRS ATTITUDE mode is forbidden.

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AHRS (COLLINS CCU65)

The overflight of polar regions is limited to north and south latitudes less than the 6 micro Tesla zone for airplanes equipped with AHRS.

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HEAD UP GUIDANCE SYSTEM

- **If GPS is not deactivated prior to flight:**
  - ➨ Track, wind, Flight Path Vector and Flight Director related symbols may be affected by misleading GPS / IRS hybrid data parameters.

WARNING

DO NOT PERFORM CAT II AND CAT III APPROACHES WITH HGS (HUD2 AND HUD3 MODES ARE PROHIBITED).

- **If GPS is deactivated prior to flight:**
  (C/B pulled and safety collar installed - SB F2000-285 applied)
  - ➨ No limitations for HUD use.

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GENERAL

This airplane is certified in the transport category and is eligible for the following kinds of operations when the appropriate instruments and equipment required by the airworthiness and / or operating regulations are installed, approved and in operable condition:

- Day and night VFR if permitted by flight regulations of the country over which the airplane is flying,
- IFR and automatic approaches to Category I and II weather minimums,
- Extended overwater and uninhabited terrain overflight,
- Icing conditions.
- The airplane is allowed to fly on routes equipped with ground beacons working in RBS/S mode.
- For flights under thunderstorm conditions one of the displays should indicate WX information.

RVSM

Reduced Vertical Separation Minimum (RVSM) requirements are met provided airplane complies with SB F2000-63.

NOTE

Whatever the coupled side:
- If coupled side ADC is ADC1, select ATC1,
- If coupled side ADC is ADC2, select ATC2.

In addition to SB F2000-63, specific approval from the registration Authority is needed prior to RVSM operation.

NOTE

In normal operation, for RVSM areas select ATC on the coupled side.

Minimum Equipment List for RVSM operations is provided in FALCON 2000 MMEL.

- For DGAC or EASA registered airplanes:
  - REVISION 1 or later.
- Other registration:
  - Refer to appropriate Authorities.

RNP 10

In accordance with FAA Order 8400.12A, paragraph 12b, RNP10 airworthiness requirements are met provided airplane is equipped with dual operative.

- FMS HONEYWELL FMZ2000
  and either of the following navigation modes:
  - GPS,
  - IRS (6.2 hours after alignment or 5.7 hours after radio updating).

or

- FMS COLLINS 6000 series
  and either of the following navigation modes:
  - GPS,
  - IRS (6.2 hours after alignment or 5.7 hours after radio updating).

or

- FMS UNIVERSAL UNS-1C
  and either of the following navigation modes:
  - GPS,
  - IRS (6.2 hours after alignment or 5.7 hours after radio updating).

or

- FMS GLOBAL GNS X/ES P/N 17450-0305-0406 or later
  and either of the following navigation modes:
  - GPS,
  - IRS (6.2 hours after alignment or 5.7 hours after radio updating).

or

- FMS GLOBAL GNS X/ES MOD 1 or MOD 2 or MOD 3 or MOD 4
  and either of the following navigation modes:
  - IRS (6.2 hours after alignment or 5.7 hours after radio updating).

NOTE

DME / DME and VOR / DME FMS navigation modes are B-RNAV / RNP5 approved and therefore are RNP10 compliant under radio navaids coverage.

This does not constitute an operational approval.

B-RNAV

Basic RNAV (B-RNAV) airworthiness requirements are met provided airplane is equipped with:
- FMS HONEYWELL FMZ 2000,

or
- FMS UNIVERSAL UNS-1C,

or
- FMS GLOBAL GNS X/ES,

or
- FMS COLLINS 6000 series,
  and no DR, DGRAD, POS, FMS DR or CHK POS warning is present on FMS CDU.

And either of the following navigation modes:
- GPS (except when use with FMS GLOBAL GNS X/ES MOD 1, MOD 2, MOD 3 or MOD 4),
- DME / DME,
- VOR / DME,
- IRS (2 hours time limit after last IRS alignment).

NOTE

When GPS remains the unique means of B−RNAV navigation source (GPS stand-alone), use of GPS Integrity Monitoring (RAIM) Prediction program is mandatory before B−RNAV operation.
GPS stand-alone not authorized for FMS GNS-X/ES P/N 17450-0305-0406.
One VOR / DME must be at least available as NAV source (DCP) on PFD.

This does not constitute an operational approval.

P-RNAV

Precision RNAV (P-RNAV) airworthiness requirements are met according JAA TGL10 provided airplane is equipped with:
- FMS HONEYWELL FMZ 2000 operating with no DR, DGRAD, POS, FMS DR or CHK POS warning on FMS CDU
  and either of the following navigation mode:
  - GPS,
  - DME / DME,
  - VOR / DME,
  - IRS (30 minutes time limit after last IRS alignment).

  or
- FMS COLLINS without any FMS DR,CHK POS, IRS ONLY, GPS-FMS DISAGREE message displayed.

- FMS UNIVERSAL UNS-1C operating without any GPS ONLY or POSITION UNCERTAIN message displayed.

  System limitations:
  - TERMINAL mode must be manually selected.
  - Selected Cross Track mode is prohibited.
  - If equipped, LORAN-C must not be used for P-RNAV operations.

Compliance with TGL10 has been shown only for Dassault Aviation installations.

Associated GPS are TSO C129() compliant.

NOTE

Selected FMS approach procedure must not be manually modified.

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

AC 90-100A

US terminal and en route area navigation (RNAV) operations (AC 90-100A)

AC 90-100A airworthiness requirements are met provided airplane is equipped with:

- FMS HONEYWELL FMZ 2000 operating in either:
  - GPS,
  - DME / DME,

  navigation modes, without any DR or DGRAD warning and all NOTAM navaid entered in the FMS NOTAM page.
- FMS COLLINS 6100 provided:
  - GPS RAIM availability has been checked all along the intended RNAV route with the Rockwell-Collins P/N 832-3443-008 (or later approved) GPS satellite availability prediction program.
  - and no NO GPS RAIM, GPS NOT AVAILABLE, GPS−FMS DISAGREE, FMS DR, CHK POS, IRS ONLY message displayed.
- FMS UNIVERSAL UNS-1C provided GPS RAIM is determined to be available all along the intended RNAV route and no GPS INTEGRITY, GPS NOT NAV, GPS FAIL, GPS DESELECT or POSITION UNCERTAIN is displayed.

RNAV airworthiness approval has not accounted for database accuracy or compatibility.

This does not constitute an operational approval.

SSR MODE S ENHANCED SURVEILLANCE

For A/C with M2624 or M2632 or SB F2000-312:

1- The installed Mode S system satisfies the data requirements of ICAO Doc 7030/4, Regional Supplementary Procedures for SSR Mode S Enhanced Surveillance in designated European airspace.

The capability to transmit data parameters is shown in column 2:

PARAMETERS	AVAILABLE / NOT AVAILABLE
Magnetic Heading	Available
Indicated Airspeed	Available
Mach No	Available
Vertical Rate	Available
Roll Angle	Available
Track Angle Rate	Available
True Track Angle	Available
Groundspeed	Available
Selected Altitude	Available
Barometric Pressure Setting	Available

2- Extended squitter is DISABLED.

ADS-B OUT IN NRA

Automatic Dependant Surveillance-Broadcast Out in Non Radar Areas

For A/C with M2974:

ADS-B system complies with NPA 2007-05 AMC20-24.

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VSPEED DATABASE

CAUTION

FMS Vspeed database must be disregarded.
Vspeed must be determined using AFM Performance section and AFM Supplement of corresponding FMS.

OPERATION

FMS

For uncompensated temperature 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.

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SECTION 2 – EMERGENCY PROCEDURES

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TABLE OF CONTENTS

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INTRODUCTION

The operating procedures of this section have been developed with specific regard for the design features and operating characteristics of the airplane.

They have been approved by the DGAC or the EASA for guidance in identifying acceptable procedures for safe operation.

Observance of these procedures is not mandatory and DGAC or EASA approval of such procedures is not intended to prohibit or discourage development and use of improved or equivalent alternate procedures based on operational experience with the airplane. When alternate procedures are defined, it is the user's full responsibility to have them approved by the concerned Authority, as well as to be in compliance with applicable airworthiness safety standards.

When an electronic system is used to display all procedures of this Manual or adapted procedures, the operator remains responsible for the content, for use and updating of this system.

Compliance with the order prescribed for application of the procedure is recommended.

"**PHASE 1**" specifies immediate action to be accomplished from memory, without need for reference to the check-list.

"**PHASE 1**" shall be completed prior to starting with "**PHASE 2**".

Various steps in "**PHASE 3**" shall be accomplished as soon as time permits.

It is advisable to silence the aural warning to permit prescribed operations to be accomplished in the least possible distracting conditions.

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FIRE.. - ENGINE FIRE

FIRE.. light on.

Audio warning.

CAUTION

The following procedure must be applied, whether or not the FAULT light is on.

For the affected engine:

▶ **PHASE 1**

➨ Power lever .... IDLE
➨ ESS. BUS / RH BUS tie rotary switch .... Horizontal (Tied)
➨ FUEL ENG switch .... OFF
➨ FUEL SHUT-OFF switch .... Actuated
➨ Recommended airspeed .... Below 250 KIAS
➨ Engine fire extinguisher DISCH switch .... Position 1

■ **If fire warning persists after 30 seconds:**

➨ Fire extinguisher DISCH switch .... Position 2

▶ **PHASE 2**

➨ TRANS light .... Out - Checked
➨ BOOSTER switch .... Off
➨ GEN switch .... Off
➨ BLEED switch .... OFF
➨ Land as soon as possible.

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FIRE APU - APU FIRE

FIRE APU light on.

Audio warning.

CAUTION

The following procedure must be applied, whether or not the FAULT light is on.

▶ **PHASE 1**

- ➨ APU FUEL SHUT-OFF switch .... Actuated
- ➨ Recommended airspeed .... Below 250 KIAS
- ➨ APU fire extinguisher DISCH .... Position 1

▶ **PHASE 2**

- ➨ APU: MASTER light pushbutton........ Off
  - ☑ MASTER green light .... Out
- ➨ TRANS light .... Out - Checked
- ➨ APU BLEED switch........ OFF
- ➨ APU generator switch .... Off
- ➨ Land as soon as possible.

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FIRE BAG - FIRE IN BAGGAGE COMPARTMENT

FIRE BAG light on.

Audio warning.

- A crew member puts on the smoke hood before entering the baggage compartment.
- **If the fire is evident:**
  - Fight the fire with the hand extinguisher.
  - Land as soon as possible.
- **If the fire does not exist:**
  - A false warning is concerned.
  - Pull the BAG COMP C/B.
  - Continue the flight.

CAUTION

The lavatory door must be properly closed prior to opening the baggage compartment door to prevent smoke from entering the passenger cabin.

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AIR CONDITIONING SMOKE

Smoke at air conditioning outlets.

▶ PHASE 1

- ➨ Crew oxygen masks .... Donned - 100 % + EMERGENCY
- ➨ Smoke goggles .... Donned - Vent valve open
- ➨ Microphone selector .... MASK - Tested
- ➨ INTERIOR LIGHTS: No smoking light pushbutton .... On
- ➨ PASSENGER OXYGEN controller .... OVERRIDE
  - ☑ Passenger masks .... Donned - Checked

▶ PHASE 2

- ■ **Without APU conditioning:**
  - ➨ Crew air gaspers .... Open
  - ➨ BLEED 2 switch .... OFF
  - ■ **If smoke disappears:**
    - ➨ Continue the flight with the RH BLEED AIR system isolated.
  - ■ **If smoke persists:**
    - ➨ BLEED 2 switch .... AUTO
    - ➨ BLEED 1 switch .... OFF
    - ■ **If smoke disappears:**
      - ➨ Continue the flight with the LH BLEED AIR system isolated.
    - ■ **If smoke persists:**
      - ➨ BLEED 1 switch .... AUTO
      - ➨ COND'G EMERG switch .... On

CAUTION

If temperature controllers are set too low, slow depressurization may happen.

- ■ **With APU conditioning:**
  - ➨ Crew air gaspers .... Open
  - ➨ BLEED 1 and BLEED 2 switches .... AUTO
  - ➨ APU BLEED switch .... OFF
  - ■ **If smoke disappears:**
    - ➨ Continue the flight with the APU BLEED AIR system isolated.
  - ■ **If smoke persists:**
    - ➨ COND'G EMERG switch .... On

CAUTION

If temperature controllers are set too low, slow depressurization may happen.

▶ **PHASE 3**

■ **If necessary:**

➨ Apply **SMOKE REMOVAL** procedure starting at **PHASE 2** (section 2-050-30). ➔

ELECTRICAL SMOKE OR FIRE

Smoke and unusual odors.

▶ PHASE 1

- ➨ Crew oxygen masks.. Donned - 100 % + EMERGENCY
- ➨ Smoke goggles .... Donned - Vent valve open
- ➨ Microphone selector.. MASK - Tested
- ➨ INTERIOR LIGHTS: No smoking light pushbutton .... On

■ **ONLY IF NO FLAME IN CABIN:**

- ➨ PASSENGER OXYGEN controller .... OVERRIDE
  - ☑ Passenger masks .... Donned - Checked

▶ PHASE 2

- ➨ Crew air gaspers.. Open
- ➨ GALLEY MASTER light pushbutton (if installed) .... Pushed to set OFF
- ➨ CABIN MASTER light pushbutton (if installed) .... Pushed to set OFF

■ **If the origin of the fire or smoke is evident:**

- ➨ Suspected equipment.. Isolated

■ **If the origin of the fire or smoke is not evident:**

- ➨ GEN 1 and GEN 2 switches .... Off
- ➨ E BAT or AUX BAT light pushbutton (if installed) .... Pushed
  - ☑ Amber E BAT OFF light .... On - Checked
- ➨ ESS.BUS / RH BUS tie rotary switch.. FLIGHT NORM - Checked
- ➨ LH BUS / ESS.BUS tie rotary switch .... Vertical (Untied)

■ **If smoke persists:**

- ➨ GEN 1 and GEN 2 switches.. On
- ➨ BAT switch .... Off
- ➨ APU gen switch .... Off

■ **If smoke disappears:**

- ➨ GEN 1 switch.. On

■ **If smoke is not visible:**

- ➨ LH BUS / ESS.BUS tie rotary switch .... Horizontal (Tied)

■ **If smoke reappears:**

- ➨ GEN 1 switch .... Off
- ➨ GEN 2 switch .... On
- ➨ ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)

- **If fire is visibly verified to be out:**
  - ➨ Continue the flight.
- **If fire is not visibly verified to be out:**
  - ➨ Descent to below 14,000 ft or to the safe altitude.

CAUTION

If flames are present in cabin or cockpit, the following procedure must not be applied but PHASE 3.

- **At 14,000 ft or below:**
  - ➨ UP-DN control knob .... UP
  - ➨ MAN pressurization light pushbutton .... Pushed
    - ☑ ON light .... On
  - **If necessary:**
    - ➨ DUMP pressurization guarded light pushbutton .... Pushed
      - ☑ ON light .... On
    - ➨ Decrease airspeed .... Below 215 KIAS
    - ➨ LH direct vision window .... Open

▶ PHASE 3

➨ Descent to 10,000 ft or to the safe altitude.

➨ Land as soon as possible.

SMOKE REMOVAL

▶ PHASE 1

- Crew oxygen masks .... Donned - 100 % + EMERGENCY
- Smoke goggles .... Donned - Vent valve open
- Microphone selector .... MASK - Tested
- INTERIOR LIGHTS: No smoking light pushbutton .... On

ONLY IF NO FLAME IN CABIN:

- PASSENGER OXYGEN controller .... OVERRIDE
  - ☑ Passenger masks .... Donned - Checked

▶ PHASE 2

- Crew air gaspers .... Open
- CREW and PASSENGER temperature controllers .... MANUAL / COLD

If necessary:

- Descent to below 14,000 ft or to the safe altitude.

CAUTION

If flames are present in cabin or cockpit, the following procedure must not be applied but PHASE 3

At 14,000 ft or below:

- UP-DN control knob .... UP (as required)
- MAN pressurization light pushbutton .... Pushed
  - ☑ ON light .... On

If necessary:

- DUMP pressurization guarded light pushbutton .... Pushed
  - ☑ ON light .... On
- Decrease airspeed .... Below 215 KIAS
- LH direct vision window .... Open

▶ PHASE 3

- Descent to 10,000 ft or to the safe altitude.
- Land as soon as possible.

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LH WHEEL OVHT AND / OR RH WHEEL OVHT - MAIN WHEEL WELL OVERHEAT

LH WHEEL OVHT and / or RH WHEEL OVHT lights on.
Audio warning.

▶ PHASE 1

- ➨ Airspeed .... Below 190 KIAS (VLO) / MI 0.70 (MLO)
- ➨ Landing gear .... Extended
- ➨ Airspeed .... Below 245 KIAS (VLE) / MI 0.75 (MLE)
- ➨ Brake heating system (if installed) .... Off

▶ PHASE 2

■ **If warning light(s) goes out:**

- ➨ Keep the landing gear extended for 10 minutes.
- ➨ Airspeed .... Below 190 KIAS (VLO) / MI 0.70 (MLO)
- ➨ Landing gear .... Retracted
- ➨ Continue the flight. ☒

■ **If warning light(s) stays on:**

- ➨ Keep the landing gear extended.
- ➨ Land as soon as possible.

CAUTION

The overheat condition may have caused the tires to deflate.
Perform a soft landing.

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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 practical value,**
- **Avoid high maneuvering loads.**

▶ **PHASE 1**

➨ AP.. Disengaged
➨ Power levers.. IDLE
➨ AIRBRAKES handle..Position 2
➨ Descent airspeed: MMO / VMO, smooth air conditions.
➨ ATC transponder ....Mayday code (77 00)

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RAPID DEPRESSURIZATION

▶ PHASE 1

- Crew oxygen masks .... Donned - 100 %
- Microphone selector .... MASK - Tested
- INTERIOR LIGHTS: **FASTEN BELTS** and No smoking light pushbuttons .... On
- PASSENGER OXYGEN controller .... OVERRIDE
  - ☑ Passenger masks .... Donned - Checked
- Emergency descent .... Initiated (See 2-100-05) ➔

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PUMP 1 HYDR # 1, PUMP 2 HYDR # 1 AND PUMP HYDR # 2 - LOSS OF BOTH HYDRAULIC SYSTEMS

MASTER + GONG with PUMP 1 HYDR # 1, PUMP 2 HYDR # 1 and PUMP HYDR # 2 lights on.

Fluid quantity indicators read zero in both systems.

Both hydraulic displays show a pressure drop.

▶ PHASE 1

- HYDR 2 ISOL switch....................CLOSED
- AP and YD....................Disengaged
- Airspeed....................Below 260 KIAS / MI 0.76

▶ PHASE 2

- Avoid high pitch attitudes, bank angle above 30° and zones of turbulence.

CAUTION

Do not use emergency aileron trim to fly laterally the airplane.

- PITCH FEEL light possibly on.
- Execute landing in following conditions:
  - Slat-flap handle....................CLEAN
  - Landing gear handle....................Down - Checked
    - ☑ BRAKE light....................On
  - GEAR PULL handle....................Pulled
  - Perform a landing gear **FREE FALL EXTENSION** procedure (3-140-05). ➔
  - Approach speed (zero wind)....................VREF +20 kt

NOTE

LOSS OF NOSE WHEEL STEERING.
In this configuration, the maximum demonstrated cross-wind is 17 kt.

Differential engine thrust is not recommended for maneuvering, but it may be used to maintain directional trim.
Use rudder control to induce roll effect.

CAUTION

The landing distance is twice the nominal distance (normal configuration 40° FLAPS + SLATS).

- **After touch down:**

  For A/C with SB F2000-19:

  - Thrust reversers .... As required

  End

  - Apply brake pressure slowly with gentle pull of PARK BRAKE handle:
    - On PFD: deceleration on dry runway .... -0.25 g max - Monitored
    - Do not pull PARK BRAKE handle above first detent and avoid cycling applications.

PUMP 1 HYDR # 1, PUMP 2 HYDR # 1 AND PUMP HYDR # 2 - LOSS OF BOTH HYDRAULIC SYSTEMS

MASTER + GONG with PUMP 1 HYDR # 1, PUMP 2 HYDR # 1 and PUMP HYDR # 2 lights on.
Fluid quantity indicators read zero in both systems.
Both hydraulic displays show a pressure drop.

▶ PHASE 1

- ➨ HYDR 2 ISOL switch....................CLOSED
- ➨ AP and YD.................... Disengaged
- ➨ Airspeed ....Below 260 KIAS / MI 0.76

▶ PHASE 2

- ➨ Avoid high pitch attitudes, bank angle above 30° and zones of turbulence.

CAUTION

Do not use emergency aileron trim to fly laterally the airplane.

- ➨ Execute landing in following conditions:
  - ➨ Slat-flap handle .... CLEAN
  - ➨ Landing gear handle.................... Down - Checked
    - ☑ BRAKE light.................... On
  - ➨ GEAR PULL handle .... Pulled
  - ➨ Perform a landing gear **FREE FALL EXTENSION** procedure (3-140-05). ➔
  - ➨ Approach speed (zero wind).................... VREF +20 kt

NOTE

LOSS OF NOSE WHEEL STEERING.
In this configuration, the maximum demonstrated cross-wind is 17 kt.

Differential engine thrust is not recommended for maneuvering, but it may be used to maintain directional trim.
Use rudder control to induce roll effect.

CAUTION

The landing distance is twice the nominal distance (normal configuration 40° FLAPS + SLATS).

- **After touch down:**

  For A/C with SB F2000-19:

  ➨ Thrust reversers .... As required

  End

  ➨ Apply brake pressure slowly with gentle pull of PARK BRAKE handle:

  - ➨ On PFD: deceleration on dry runway ....-0.25 g max - Monitored
  - ➨ Do not pull PARK BRAKE handle above first detent and avoid cycling applications.

GEN 1 AND GEN 2 - TWO GENERATORS INOPERATIVE

MASTER + GONG with GEN 1 and GEN 2 lights on.

▶ PHASE 1

➨ ESS.BUS / RH BUS tie rotary switch .... FLIGHT NORM
➨ LH BUS / ESS.BUS tie rotary switch .... Vertical (Untied)

▶ PHASE 2

➨ INTERIOR LIGHTS: Emergency lights switch .... OFF

- **If the last generator which has failed is the GEN 1:**
  - ➨ GEN 1 switch .... 1 reset attempt
  - **If GEN 1 light stays on:**
    - ➨ GEN 1 switch .... Off
    - ➨ Continue the flight with ESS bus only.
    - ➨ Apply **PHASE 3**. ➔
  - **If GEN 1 light out:**
    - ➨ LH BUS / ESS.BUS tie rotary switch .... Horizontal (Tied)
    - ➨ Continue the flight without RH bus.
    - ➨ Monitor GEN 1 load.
    - **If necessary:**
      - ➨ Start the APU within the envelope (1 attempt max.).
- **If the last generator which has failed is the GEN 2:**
  - ➨ GEN 2 switch .... 1 reset attempt
  - **If GEN 2 light stays on:**
    - ➨ GEN 2 switch .... Off
    - ➨ Continue the flight with ESS bus only.
    - ➨ Apply **PHASE 3.** ➔
  - **If GEN 2 light out:**
    - ➨ ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
    - ➨ Continue the flight without LH bus.
    - ➨ Monitor GEN 2 load.
    - **If necessary:**
      - ➨ Start the APU within the envelope (1 attempt max.).

▶ PHASE 3

➨ Avoid icing conditions.
➨ All orange colored C/Bs .... Pulled
➨ LH BOOSTER pump switch, depending of the fuel envelope .... OFF
➨ ANTICOL .... OFF
➨ OVERHEAD rheostats .... Off
➨ Center EIED (RCONF pushbutton) .... Off
➨ DOME switch .... Off
➨ Copilot audio control panel .... EMG
➨ C/B PANEL pushbutton .... Out
➨ MAN pressurization light pushbutton .... Pushed
☑ ON light .... On
➨ UP - DN control knob .... Set as required
➨ Cabin pressure and altitude .... Monitored

■ **Before approach:**
➨ All orange colored C/Bs .... Pushed
➨ Perform a landing gear **EXTENSION MALFUNCTION** procedure (3-140-05). ➔
➨ INTERIOR LIGHTS: Emergency lights switch .... ON
☑ EMERG LIGHTS light .... On

NOTE

The battery in good conditions will provide 60 minutes of operation.

➨ Land as soon as possible.

GEN 1 AND GEN 2 - TWO GENERATORS INOPERATIVE

MASTER + GONG with GEN 1 and GEN 2 lights on.

▶ PHASE 1

- ESS.BUS / RH BUS tie rotary switch .... FLIGHT NORM
- LH BUS / ESS.BUS tie rotary switch .... Vertical (Untied)

▶ PHASE 2

- INTERIOR LIGHTS: Emergency lights switch .... OFF

■ **If the last generator which has failed is the GEN 1:**

- GEN 1 switch .... 1 reset attempt

  ■ **If GEN 1 light stays on:**

  - GEN 1 switch .... Off
  - Continue the flight with ESS bus only.
  - Apply **PHASE 3**. ➔

  ■ **If GEN 1 light out:**

  - LH BUS / ESS.BUS tie rotary switch .... Horizontal (Tied)
  - Continue the flight without RH bus.
  - Monitor GEN 1 load.

    ■ **If necessary:**

    - Start the APU within the envelope (1 attempt max.).

■ **If the last generator which has failed is the GEN 2:**

- GEN 2 switch .... 1 reset attempt

  ■ **If GEN 2 light stays on:**

  - GEN 2 switch .... Off
  - Continue the flight with ESS bus only.
  - Apply **PHASE 3.** ➔

  ■ **If GEN 2 light out:**

  - ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
  - Continue the flight without LH bus.
  - Monitor GEN 2 load.

    ■ **If necessary:**

    - Start the APU within the envelope (1 attempt max.).

▶ **PHASE 3**

➨ Avoid icing conditions.
➨ All orange colored C/Bs .... Pulled
➨ LH BOOSTER pump switch, depending of the fuel envelope .... OFF
➨ ANTICOL .... OFF
➨ OVERHEAD rheostats .... Off
➨ Center EIED (RCONF pushbutton) .... Off
➨ DOME switch .... Off
➨ Copilot audio control panel .... EMG
➨ C/B PANEL pushbutton .... Out
➨ MAN pressurization light pushbutton .... Pushed
☑ **ON** light .... On
➨ UP - DN control knob .... Set as required
➨ Cabin pressure and altitude .... Monitored

■ **Before approach:**
➨ All orange colored C/Bs .... Pushed
➨ Perform a landing gear **EXTENSION MALFUNCTION** procedure (3-140-05). ➔
➨ INTERIOR LIGHTS: Emergency lights switch .... ON
☑ EMERG LIGHTS light .... On

NOTE

The battery in good conditions will provide 60 minutes of operation.

Secondary Flight Display will operate for 160 minutes on its own battery after electrical failure.

➨ Land as soon as possible.

TWO ENGINE OUT CONDITION ABOVE 35,000 FT

▶ PHASE 1

- Airspeed .... Cruise Mach
- Start APU within the envelope (if not dispatched with APU inoperative) .... Below 35,000 ft
- Copilot AUDIO control panel .... EMG
- Communications .... VHF 1 / ATC 1

▶ PHASE 2

- INTERIOR LIGHTS: Emergency lights switch .... OFF
- FUEL ENG switches .... OFF
- Power levers .... IDLE
- Start selector switches .... IGNITION
- ANTI-ICE: WINGS (or WINGS BRK if installed) switch .... Off (or OFF)
- As soon as CABIN warnings appear:
  - Crew oxygen masks .... NORMAL - Donned
  - Microphone selector .... MASK

If APU not running:

- Set and maintain pitch .... -10° until reaching 340 KIAS / N2 ≥ 11 %
- Descent to below .... 26,000 ft
- Relight each engine within windmilling start envelope according to **WINDMILLING AIRSTART** procedure (see 3-100-25 ➔) as soon as:
  - N2 .... ≥ 11 %
  - ITT .... ≤ 150 °C
- FUEL ENG switch .... ON

NOTE

It is possible to restart both engines simultaneously within windmilling start envelope.

If APU running:

- APU BLEED switch .... ON or OVERRIDE
- Relight engines within APU assist envelope.

▶ PHASE 3

When engines are relighted:

- APU BLEED switch .... AUTO

If no engine can be relighted:

- Be prepared to execute a forced landing or a ditching with:
  - ST-BY PUMP switch .... AUTO
  - HYDR2 ISOL switch .... OPEN

- **If AUTO SLATS light on.**
  - RH and LH AUTO SLAT C/Bs .... Pulled
  - Airspeed .... No particular restriction
- **If a forced landing is anticipated:**
  - Extend slats at VFE (EMERG SLATS).
  - At VLO, perform a landing gear **FREE FALL EXTENSION** procedure (3-140-05) ➔
  - INTERIOR LIGHTS: Emergency lights switch .... ON
    - ☑ EMERG LIGHTS light .... On

WARNING

IF SLATS / FLAPS ARE REQUESTED, A LOSS OF HYDRAULIC POWER ON FLIGHT CONTROLS SHOULD BE EXPECTED DURING EXTENSION.

TWO ENGINE OUT CONDITION BELOW 35,000 FT

▶ PHASE 1

- Airspeed .... Best glide
- Start APU within the envelope (if not dispatched with APU inoperative)
- Copilot AUDIO control panel .... EMG
- Communications .... VHF 1 / ATC 1

NOTE

Best glide speed, clean configuration :see en route climb speed 5-600-05

▶ PHASE 2

- INTERIOR LIGHTS: Emergency lights switch .... OFF
- FUEL ENG switches .... OFF
- Power levers .... IDLE
- ANTI-ICE: WINGS (or WINGS BRK if installed) switch .... Off (or OFF)
- As soon as CABIN warnings appears:
  - Crew oxygen masks .... NORMAL - Donned
  - Microphone selector .... MASK

If APU running:

- APU BLEED switch .... ON or OVERRIDE
- If possible perform engine dry motoring on one engine to drop ITT ≤ 150 °C.
- Restart one engine as soon as:
  - Recommended ITT .... ≤ 150 °C
  - Start selector switch .... NORMAL
  - FUEL ENG switch .... ON
  - Start pushbutton .... Energized (2 seconds)
- Perform same procedure to relight the second engine.

If APU not running:

- Be prepared to execute a forced landing or a ditching.

▶ PHASE 3

When engines are relighted:

- APU BLEED switch .... AUTO

If no engine can be relighted:

- Be prepared to execute a forced landing or a ditching with:
  - ST-BY PUMP switch .... AUTO
  - HYDR 2 ISOL switch .... OPEN

- **If AUTO SLATS light on.**
  - RH and LH AUTO SLAT C/Bs .... Pulled
  - Airspeed .... No particular restriction
- **If a forced landing is anticipated:**
  - Extend slats at VFE (EMERG SLATS).
  - At VLO, perform a landing gear **FREE FALL EXTENSION** procedure (3-140-05) ➔
  - INTERIOR LIGHTS: Emergency lights switch .... ON
    - ☑ EMERG LIGHS light .... On

WARNING

IF SLATS / FLAPS ARE REQUESTED, A LOSS OF HYDRAULIC POWER ON FLIGHT CONTROLS SHOULD BE EXPECTED DURING EXTENSION.

FORCED LANDING

▶ PHASE 1

- Transmission of distress signal .... MAYDAY
- ATC transponder .... Mayday code
- INTERIOR LIGHTS: FASTEN BELTS and No smoking light pushbuttons .... On
- Mid cabin partition door: latched in open position (if installed) .... Checked
  - ☑ AFT CABIN ISOL light .... Off
- Passengers .... Instructed

▶ PHASE 2

- Third cockpit seat, if possible .... Unoccupied and stowed

APPROACH

- BLEED 1, BLEED 2 and APU BLEED switches .... OFF
- DUMP pressurization guarded light pushbutton .... Pushed
  - ☑ ON light .... On
- Landing gear .... Extended
- Slat-flap handle .... 40° FLAPS + SLATS
- Approach speed (zero wind) .... VREF

JUST BEFORE TOUCH DOWN

- Vertical speed .... Approximately 300 ft / minute
- FUEL SHUT-OFF guarded switches (all 3) .... Actuated
- GEN and BAT switches (all 4) .... Off

If Emergency lights switch OFF:

- INTERIOR LIGHTS: Emergency lights switch .... ON
  - ☑ EMERG LIGHTS light .... On

AFTER THE AIRPLANE HAS COME TO REST

- Engine fire extinguishers DISCH switches (all 2) .... Position 2
- APU fire extinguisher DISCH switch .... Position 1
- Third cockpit seat .... Stowed
- Use all available exits to evacuate airplane.

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DITCHING

▶ PHASE 1

- ➨ Transmission of distress signal .... MAYDAY
- ➨ ATC transponder .... Mayday code
- ➨ INTERIOR LIGHTS: **FASTEN BELTS** and No smoking light pushbuttons .... On
- ➨ Mid cabin partition door: latched in open position (if installed)........................ Checked
  - ☑ **AFT CABIN ISOL** light .... Off
- ➨ Passengers........................ Instructed
- ➨ Life jackets........................ Donned - Checked

▶ PHASE 2

- ➨ Third cockpit seat, if possible .... Unoccupied and stowed
- ➨ AUDIO WARN C/Bs........................ Pulled

APPROACH

- ➨ Approach parallel to the major swell.
- ➨ BLEED 1, BLEED 2 and APU BLEED switches .... OFF
- ➨ DUMP pressurization guarded light pushbutton .... Pushed
  - ☑ **ON** light .... On
- ➨ Landing gear........................ Retracted
- ➨ Slat-flap handle........................ 40° FLAPS + SLATS
- ➨ Approach speed (zero wind) .... VREF

JUST BEFORE TOUCH DOWN

- ➨ Vertical speed........................ Approximately 300 ft / minute
- ➨ FUEL SHUT-OFF guarded switches (all 3) .... Actuated
- ➨ GEN and BAT switches (all 4)........................ Off

■ **If Emergency lights switch OFF:**

- ➨ INTERIOR LIGHTS: Emergency lights switch .... ON
  - ☑ **EMERG LIGHTS** light........................ On
- ➨ Ditch the airplane on a crest parallel to the swell, at the slowest practical speed and with a nose up attitude of 7 to 10 degrees.

AFTER TOUCH DOWN

- ➨ Third cockpit seat........................ Stowed
- ➨ Use all available exits to evacuate airplane.

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EMERGENCY EVACUATION

▶ **PHASE 1**

➨ PARK BRAKE..Set
➨ ATC - Distress transmission..Notify
➨ Passengers..Instructed

▶ **PHASE 2**

➨ FUEL SHUT OFF switches (all 3) ....Actuated
➨ GEN and BAT switches (all 4)..Off
➨ INTERIOR LIGHTS: Emergency lights switch..ON
☑ EMERG LIGHTS light..On
➨ Engine fire extinguishers DISCH switches (all 2) ....Position 2
➨ APU fire extinguisher DISCH switch ....Position 1
➨ Third cockpit seat..Stowed
➨ Evacuation..Initiated

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SECTION 3 – ABNORMAL PROCEDURES

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INTRODUCTION

The operating procedures of this section have been developed with specific regard for the design features and operating characteristics of the airplane.

They have been approved by the DGAC or the EASA for guidance in identifying acceptable procedures for safe operation.

Observance of these procedures is not mandatory and DGAC or EASA approval of such procedures is not intended to prohibit or discourage development and use of improved or equivalent alternate procedures based on operational experience with the airplane. When alternate procedures are defined, it is the user's full responsibility to have them approved by the concerned Authority, as well as to be in compliance with applicable airworthiness safety standards.

When an electronic system is used to display all procedures of this Manual or adapted procedures, the operator remains responsible for the content, for use and updating of this system.

It is advisable to silence the aural warning to permit the prescribed operations to be accomplished in the least possible distracting conditions.

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ENGINE FAILURE DURING TAKE-OFF

Yawing tendency.

▶ BELOW V1: REJECT TAKE-OFF

- ➨ Brakes .... Max. pressure
- ➨ Power levers .... IDLE
- ➨ AIRBRAKES handle .... Position 2

▶ AT OR ABOVE V1: CONTINUE TAKE-OFF

- ➨ Rotate airplane at .... VR
- ➨ Establish and maintain V2

▶ WHEN A POSITIVE RATE OF CLIMB IS ESTABLISHED

- ➨ Landing gear handle .... Up
- ➨ ANTI-ICE: WINGS (or WINGS BRK if installed) switch .... As required
- ➨ Bank angle on available engine side .... Up to 5°

CAUTION

If the engine failure occurs at a speed above V2, maintain speed attained.

▶ AT NO LESS THAN 400 FT ABOVE RUNWAY

- ➨ Level flight acceleration.
- ➨ ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)

▶ AT V2 + 10 KT

- ➨ Slat-flap handle .... CLEAN
- ➨ Set and maintain en route climb speed .... As computed - See 5-600-05 ➔

▶ WHEN FLIGHT IS SECURED

- ➨ Power lever .... IDLE
- ➨ FUEL ENG switch .... OFF
- ➨ BOOSTER switch .... Off
- ➨ ANTI-ICE: ENG switch .... Off
- ➨ GEN switch .... Off

▶ 5 MINUTES MAX. AFTER TAKE-OFF THRUST POWER SETTING

- ➨ Power lever .... MAX CLIMB

NOTE

Maximum continuous thrust is obtained with the power lever in MAX CLIMB position.

ENGINE FAILURE DURING TAKE-OFF

Yawing tendency.

▶ BELOW V1: REJECT TAKE-OFF

- Brakes ..... Max. pressure
- Power levers ..... IDLE
- AIRBRAKES handle ..... Position 2

▶ AT OR ABOVE V1: CONTINUE TAKE-OFF

- Rotate airplane at ..... VR
- Establish and maintain V2

▶ WHEN A POSITIVE RATE OF CLIMB IS ESTABLISHED

- Landing gear handle ..... Up

■ If wings anti-icing is required:

- ANTI-ICE: WINGS (WINGS BRK if installed) switch ..... On

■ After 3 seconds:

- Isolation rotary switch ..... Open
  - ☑ ISOL light ..... Out
- BLEED 2 switch ..... AUTO

NOTE

During wings anti-ice activation, disregard possible and temporary indications as:
- ANTI-ICE light on,
- Amber WINGS or (WINGS+BRK if installed) ANTI-ICE light steady on.

■ If wings anti-icing is not required:

- Isolation rotary switch ..... Open - Checked
  - ☑ ISOL light ..... Out
- BLEED 2 switch ..... AUTO - Checked
- Bank angle on available engine side ..... Up to 5°

CAUTION

If the engine failure occurs at a speed above V2, maintain speed attained.

▶ AT NO LESS THAN 400 FT ABOVE RUNWAY

- Level flight acceleration.
- ESS.BUS / RH BUS tie rotary switch ..... Horizontal (Tied)

▶ AT V2 + 10 KT

➨ Slat-flap handle .... CLEAN
➨ Set and maintain en route climb speed .... As computed - See 5-600-05 ➔

▶ WHEN FLIGHT IS SECURED

➨ Power lever .... IDLE
➨ FUEL ENG switch .... OFF
➨ BOOSTER switch .... Off
➨ ANTI-ICE: ENG switch .... Off
➨ GEN switch .... Off

▶ 5 MINUTES MAX. AFTER TAKE-OFF THRUST POWER SETTING

➨ Power lever .... MAX CLIMB

NOTE

Maximum continuous thrust is obtained with the power lever in MAX CLIMB position.

ENGINE FAILURE IN FLIGHT

Yawing tendency.

➨ Determine which engine has failed.
➨ ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)

▶ **INOPERATIVE ENGINE SHUTDOWN:**

➨ Power lever.. Retarded and maintained 2 min. at IDLE (if possible)
➨ FUEL ENG switch .... OFF
➨ BOOSTER switch .... Off
➨ ANTI-ICE: ENG switch .... Off
➨ GEN switch .... Off

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START 1 - ENGINE SYSTEM FAILURE

MASTER + **GONG** with **START 1** light on.

- ➨ Isolation rotary switch .... ISOL
  - ☑ **ISOL** light .... On
- ➨ BLEED 1 switch .... OFF
- ➨ APU BLEED switch .... OFF
- ➨ PASSENGER air conditioning valve switch .... OFF
- ➨ Manual air conditioning interconnect valve (cabin) .... Open

NOTE

After completion of this procedure, **START 1** light stays on.

START 2 - ENGINE SYSTEM FAILURE

MASTER + **GONG** with **START 2** light on.

- ➨ Isolation rotary switch .... ISOL
  - ☑ **ISOL** light .... On
- ➨ BLEED 2 switch .... OFF
- ➨ CREW air conditioning valve switch .... OFF
- ➨ Manual air conditioning interconnect valve (cabin) .... Open
- ➨ Avoid icing conditions.

CAUTION

The wing anti-ice system is inoperative.

NOTE

After completion of this procedure, **START 2** light stays on.

APR - ENGINE SYSTEM FAILURE

MASTER + **GONG** with **APR** light on.

- ➨ **APR DISARM** guarded light pushbutton........ Verified out
  - ☑ **APR DISARM** light........ Out
- ■ **If necessary:**
  - ➨ **APR O'RIDE** light pushbutton........ On
    - ☑ **APR O'RIDE** light........ On
  - ➨ ITT: yellow arcs (861 °C - 890 °C)........ Checked

FADEC .. - ENGINE SYSTEM FAILURE

MASTER + **GONG** with **FADEC 1** or **FADEC 2** light on.

- ➨ Identify the faulty FADEC on EIED.
- ➨ No further pilot action required.

LOSS OF THRUST CONTROL

Uncommanded acceleration or deceleration of the engine with no response or slow response to power lever movement.

EIED: N1 split between No 1 and No 2 engine at same power lever setting.

EIED: Loss of N1 display (XX).

Possible Class 2 messages:

- THRUST LIMITATION.
- SLOW ENGINE RESPONSE.
- VG SOFT FAULT.

For concerned engine:

- ➨ Power lever........ IDLE
- ➨ Engines parameters (N1, ITT)........ Monitored
  - ➨ Engines parameters must be monitored to keep within operational limits.
- ➨ Power lever........ Move slowly
  - ➨ To check if engine behavior is stable and surge free.
- ■ **If no engine response:**
  - ➨ Power lever........ Maintain to IDLE

- **If parameters are stable:**
  - Keep engine running to provide conditioning, hydraulic and generator power.
- **If slow engine response:**
  - Anticipate the need for power adjustment and use slow throttle movement.
    - Quick power change may lead to surge.
    - Increasing engine bleed may assist stabilization.

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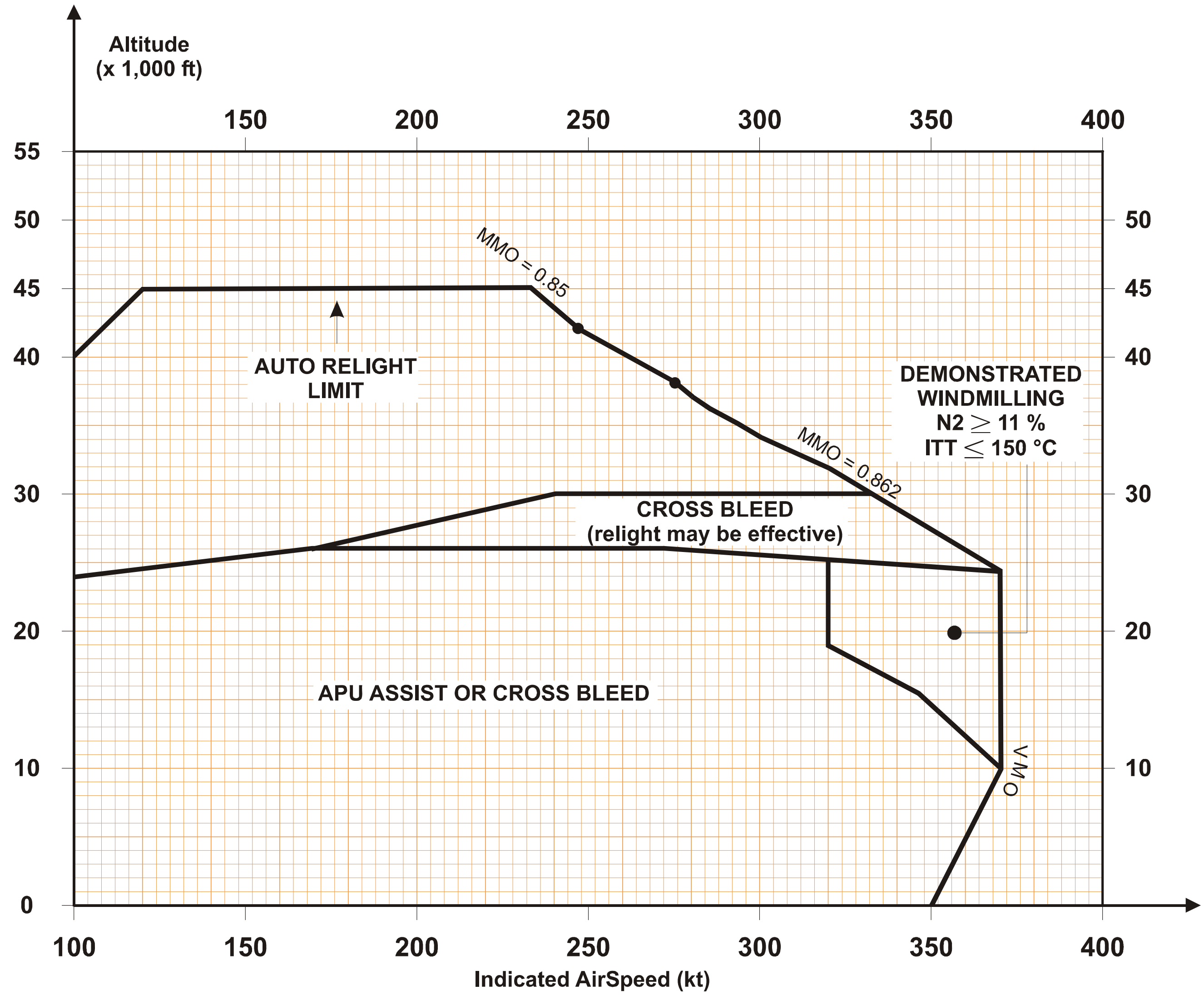
IN FLIGHT RELIGHT ENVELOPE



AIRSTART

WARNING

DO NOT ATTEMPT TO RELIGHT AN ENGINE AFTER AN ENGINE FIRE OR IF THE ENGINE INTEGRITY IS QUESTIONED.

CAUTION

Wait at least 30 seconds and ITT less than 150 °C between two consecutive airstart attempts. Do not make more than three successive airstart attempts.

ABNORMAL AIRSTART

ABORT AIRSTART WHENEVER:

- Oil pressure is not indicated by 20 % N2.
- Lightoff does not occur within 15 seconds maximum from start initiation.
- ITT is rising rapidly and approaching the 890 °C limit.
- Abnormal noise or vibration.
- Idle is not reached within 90 seconds after lightoff (assisted start).
- Idle is not reached within 180 seconds after lightoff (windmilling start).

➨ FUEL ENG switch .... OFF

WINDMILLING AIRSTART (N2 11 % OR ABOVE)

CAUTION

Do not attempt to relight as long as the ITT of engine concerned is above 150 °C.

NOTE

This immediate airstart may be attempted even above the maximum start envelope.

➨ Establish airplane within windmilling envelope.
➨ Power lever .... IDLE
➨ Start selector switch .... IGNITION
☑ EIED: **IGN** annunciation .... On
➨ Fuel engine switch .... ON
➨ ITT rises within 15 seconds.. Checked

▶ **WHEN N2 STABILIZED:**

➨ Start selector switch .... NORMAL
➨ EIED: **IGN** annunciation .... Out
➨ Engine parameters .... Checked

STARTER ASSISTED AIRSTART (CROSS BLEED OR APU ASSISTED)

CAUTION

Do not attempt to relight as long as the ITT of engine concerned is above 150 °C.

NOTE

If airstart with cross bleed assist is attempted, set 70 % ≤ N1 ≤ MAX. CLIMB on the other engine.

CAUTION

Leave icing conditions prior to attempting this airstart.

➨ Establish airplane within airstart envelope.
➨ BOOSTER switch .... ON
➨ BLEED 1, BLEED 2 and APU BLEED switches .... AUTO
➨ Isolation rotary switch .... Horizontal (open)
☑ **ISOL** light .... Out
➨ ANTI-ICE: ENG and WINGS (or WINGS BRK if installed) switches .... Off (or OFF)
➨ Start selector switch .... NORMAL
➨ Power lever .... IDLE detent
➨ FUEL ENG switch .... ON
➨ START pushbutton .... Energize 2 sec.
➨ Engine parameters .... Checked
➨ GEN switch .... On
☑ **GEN ..** light .... Out
➨ ESS BUS / RH BUS tie rotary switch .... FLIGHT NORM
➨ ANTI-ICE: ENG and WINGS (or WINGS BRK if installed) switches .... As required

CAUTION

Wait at least 30 seconds and ITT less than 150 °C between two consecutive airstart attempts.
Do not make more than three successive airstart attempts.

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OIL .. - LUBRICATION SYSTEM

MASTER + permanent **GONG** with OIL 1 or OIL 2 light on.

- Oil pressure .... Checked

If the oil pressure is less than 30 psi:

- Power lever .... Retarded and maintained 2 min. at IDLE (if possible)
- FUEL ENG switch .... OFF
- BOOSTER switch .... Off
- ANTI-ICE: ENG switch .... Off
- GEN switch .... Off

If the oil pressure is normal:

- Oil pressure and oil temperature .... Monitored

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APPROACH AND LANDING WITH ONE ENGINE INOPERATIVE 20° FLAPS + SLATS

CAUTION

If HYDR #2 system is powered by ST-BY pump:
Check hydraulic pressure before flap and landing gear maneuver or wait at least 30 seconds after each flap or landing gear maneuver.

➨ Anticipate the flap extension at least 2 minutes before final approach.
➨ Slat-flap handle .... 10° FLAPS + SLATS
➨ Landing gear handle .... Down
☑ LANDING GEAR green lights (all 3) .... On
➨ Hydraulic pressure .... Checked
➨ Slat-flap handle .... 20° FLAPS + SLATS
➨ Approach speed (zero wind) .... VREF + 5 kt
➨ Increase the landing distance by 6 %.

APPROACH AND LANDING WITH ONE ENGINE INOPERATIVE 40° FLAPS + SLATS

CAUTION

If HYDR #2 system is powered by ST-BY pump:
Check hydraulic pressure before flap and landing gear maneuver or wait at least 30 seconds after each flap or landing gear maneuver.

➨ Anticipate the flap extension at least 2 minutes before final approach.
➨ Slat-flap handle .... 10° FLAPS + SLATS
➨ Landing gear handle .... Down
☑ LANDING GEAR green lights (all 3) .... On
➨ Hydraulic pressure .... Checked
➨ Slat-flap handle .... 20° FLAPS + SLATS
➨ Slat-flap handle .... 40° FLAPS + SLATS
➨ Approach speed (zero wind) .... VREF

GO-AROUND WITH ONE ENGINE INOPERATIVE

➨ Go-around attitude .... Set
➨ Power levers .... TAKE-OFF
➨ AIRBRAKES handle .... Position 0
➨ Slat-flap handle .... 20° FLAPS + SLATS

▶ WHEN A POSITIVE RATE OF CLIMB IS ESTABLISHED:

➨ Landing gear handle .... Up
➨ Slat-flap handle .... 10° FLAPS + SLATS
➨ Airspeed .... VREF

▶ TRANSITION TO FINAL SEGMENT:

➨ At minimum speed of VREF + 10 kt: slat-flap handle .... CLEAN
➨ Set and maintain en route climb speed. .... See 5-600-05 ➔
➨ Power levers .... MAX CLIMB

NOTE

Maximum continuous thrust is obtained with the power lever in MAX CLIMB position.

THRUST REVERSER .. - THRUST REVERSER MALFUNCTION (A/C WITH SB F2000-19)

MASTER + **GONG** with THRUST REVERSER .. light on.

- DEPLOY C/B of affected engine .... Pulled
- **If the engine has automatically reduced:**
  - Power lever of affected engine .... IDLE
- **If the engine has not automatically reduced:**
  - Continue the flight.
  - Engine parameters .... Monitored

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THRUST REVERSER .. - THRUST REVERSER MALFUNCTION (A/C WITH SB F2000-19)

MASTER + **GONG** with **THRUST REVERSER ..** light on.
No buffeting perceptible.

- **If the engine has not automatically reduced:**
  - Engine parameters .... Monitored
  - Maintain the airspeed above 200 KIAS until approach.
- **If the engine has automatically reduced:**
  - Power lever of affected engine .... IDLE
  - **If the airspeed is above 200 KIAS:**
    - Do not reduce the airspeed below 200 KIAS until approach.
  - **If the airspeed is below 200 KIAS:**
    - Do not accelerate the airplane.

NOTE

DEPLOY C/B of the affected engine may be pulled.

THRUST REVERSER .. - THRUST REVERSER DEPLOYMENT IN FLIGHT (A/C WITH SB F2000-19)

MASTER + **GONG** with **THRUST REVERSER ..** light on.
Affected engine automatically reduced.
Buffeting and noise level.

- Power lever of affected engine .... IDLE
- Reduce airspeed .... Below 180 KIAS
- Approach and landing: SLATS + FLAPS 10° .... See 3-100-40

NOTE

The affected engine may be shut down to reduce the buffeting level and increase the climb capability.

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PUMP 1 HYDR #1 AND PUMP 2 HYDR #1 - LOSS OF #1 HYDRAULIC SYSTEM

MASTER + **GONG** with **PUMP 1 HYDR #1** and **PUMP 2 HYDR #1** lights on.
Pressure drop in #1 system.
Fluid quantity indicator may read zero in #1 system.

➨ Reduce airspeed..Below 260 KIAS or MI 0.76
➨ Increase the landing distance by 10 %.

EFFECTS

- **BRAKE** amber light on at gear extension.
- **PITCH FEEL** light possibly on.
- **HYDR # TK PRESS** light possibly on.

LOSS OF	REMARKS
Servo-actuators barrel #1.	
Normal slat control system.	Use EMERG SLATS switch and land with flaps extended to 40° at VREF.
Normal and emergency landing gear control systems.	ABNORMAL EXTENSION of landing gear.
Nose wheel steering system.	Use differential brake pressure.
Pitch Arthur unit.	If PITCH FEEL light on, disengage AP.
#1 braking system.	#2 braking system available.

PUMP HYDR #2 - LOSS OF #2 HYDRAULIC SYSTEM

MASTER + **GONG** with **PUMP HYDR #2** light on.

Pressure drop in #2 system.

ST BY PUMP light possibly on.

HYDR # TK PRESS light possibly on.

- **If #2 fluid quantity reading is normal:**
  - ST-BY PUMP switch .... AUTO - Checked
  - #2 system pressure .... Checked
  - #2 fluid quantity indicator .... Monitored
  - **If airbrakes are requested:**
    - HYDR 2 ISOL switch .... OPEN
- **If #2 fluid quantity reading is zero:**
  - Reduce airspeed down to 260 KIAS or MI 0.76.
  - HYDR 2 ISOL switch ....CLOSED

NOTE

Airbrakes are no longer available.

- **If #2 system pressure below 1,500 psi:**
  - Reduce airspeed down to 260 KIAS or MI 0.76.
  - ST-BY PUMP switch .... OFF

- **BRAKE** amber light on at gear extension.

EFFECTS

LOSS OF	REMARKS
Servo-actuators barrel #2	Not available if ST-BY PUMP OFF.
Emergency slat extension	Normal extension is available.
#2 braking system	#1 braking system available. Increase the landing distance by 10 %. The park brake system can still operate with accumulator pressure.
Flaps system: if hydraulic pressure below 1,500 psi and flap setting is:	CLEAN : land at VREF + 20 kt with slats extended. Increase the landing distance by 30 %.
	10°: land at VREF + 10 kt. Increase the landing distance by 15 %.
	20°: land at VREF + 5 kt. Increase the landing distance by 8 %.
	40°: land at VREF.
Airbrake system: if hydraulic pressure below 1,500 psi.	Increase the landing distance by 12 %.

NOTE

Each increase of landing distance of the above table is to be taken into account independently: the penalty due to different landing configuration, and the penalty due to the loss of airbrake system are to be added to the penalty due to loss of #2 braking system, as applicable.

PUMP 1 HYDR #1 OR PUMP 2 HYDR #1 - FAILURE OF A PUMP OF #1 HYDRAULIC SYSTEM

MASTER + **GONG** with PUMP 1 HYDR #1 or PUMP 2 HYDR #1 light on.

Longer operating times of #1 hydraulic system utilities should be expected.

➨ No pilot action required.

PUMP 1 HYDR #1 AND PUMP 2 HYDR #1 - LOSS OF #1 HYDRAULIC SYSTEM

MASTER + **GONG** with PUMP 1 HYDR #1 and PUMP 2 HYDR #1 lights on.
Pressure drop in #1 system.
Fluid quantity indicator may read zero in #1 system.

➨ Reduce airspeed...Below 260 KIAS or MI 0.76
➨ Increase the landing distance by 10 %.

EFFECTS

- BRAKE amber light on at gear extension.
- HYDR # TK PRESS light possibly on.

LOSS OF	REMARKS
Servo-actuators barrel #1.	
Normal slat control system.	Use EMERG SLATS switch and land with flaps extended to 40° at VREF.
Normal and emergency landing gear control systems.	ABNORMAL EXTENSION of landing gear.
Nose wheel steering system.	Use differential brake pressure.
#1 braking system.	#2 braking system available.

PUMP HYDR #2 - LOSS OF #2 HYDRAULIC SYSTEM

MASTER + **GONG** with PUMP HYDR #2 light on.

Pressure drop in #2 system.

ST BY PUMP light possibly on.

HYDR # TK PRESS light possibly on.

- **If #2 fluid quantity reading is normal:**
  - ST-BY PUMP switch .... AUTO - Checked
  - #2 system pressure .... Checked
  - #2 fluid quantity indicator .... Monitored
  - **If airbrakes are requested:**
    - HYDR 2 ISOL switch .... OPEN
- **If #2 fluid quantity reading is zero:**
  - Reduce airspeed down to 260 KIAS or MI 0.76.
  - HYDR 2 ISOL switch .... CLOSED

NOTE

Airbrakes are no longer available.

- **If #2 system pressure below 1,500 psi:**
  - Reduce airspeed down to 260 KIAS or MI 0.76.
  - ST-BY PUMP switch .... OFF

- BRAKE amber light on at gear extension.

EFFECTS

LOSS OF	REMARKS
Servo-actuators barrel #2	Not available if ST-BY PUMP OFF.
Emergency slat extension	Normal extension is available.
#2 braking system	#1 braking system available. Increase the landing distance by 10 %. The park brake system can still operate with accumulator pressure.
Flaps system: if hydraulic pressure below 1,500 psi and flap setting is:	CLEAN : land at VREF + 20 kt with slats extended. Increase the landing distance by 30 %.
	10°: land at VREF + 10 kt. Increase the landing distance by 15 %.
	20°: land at VREF + 5 kt. Increase the landing distance by 8 %.
	40°: land at VREF.
Airbrake system: if hydraulic pressure below 1,500 psi.	Increase the landing distance by 12 %.

NOTE

Each increase of landing distance of the above table is to be taken into account independently: the penalty due to different landing configuration, and the penalty due to the loss of airbrake system are to be added to the penalty due to loss of #2 braking system, as applicable.

PUMP 1 HYDR #1 OR PUMP 2 HYDR #1 - FAILURE OF A PUMP OF #1 HYDRAULIC SYSTEM

MASTER + **GONG** with PUMP 1 HYDR #1 or PUMP 2 HYDR #1 light on.

Longer operating times of #1 hydraulic system utilities should be expected.

➨ No pilot action required.

ST BY PUMP - UNWANTED OPERATION OF STAND-BY PUMP

MASTER + **GONG** with ST BY PUMP light on.

➨ ST-BY PUMP switch .... OFF

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HYDR # TK PRESS - DEPRESSURIZATION OF TANKS

MASTER + **GONG** with **HYDR # TK PRESS** light on.

- Closely monitor indicated fluid level and pressure.

If pressure starts fluctuating:

- Reduce airspeed .... Below 260 KIAS or MI 0.76
- As soon as conditions permit, descend below 20,000 ft.
- At or below 20,000 ft, no speed/Mach restrictions.

HYDR #2 ISOL - ISOLATION VALVE MALFUNCTION

MASTER + **GONG** with **HYDR #2 ISOL** light on.

If slats are extended:

- HYDR 2 ISOL switch .... OPEN

If slats are retracted:

- HYDR 2 ISOL switch .... CLOSED

NOTE

If emergency slats extension is required: Set HYDR 2 ISOL switch to OPEN.

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HYDR # TK PRESS - DEPRESSURIZATION OF TANKS

MASTER + **GONG** with **HYDR # TK PRESS** light on.

➨ Closely monitor indicated fluid level and pressure.

■ **If pressure starts fluctuating:**

- ➨ Reduce airspeed .... Below 260 KIAS or MI 0.76
- ➨ As soon as conditions permit, descend below 20,000 ft.
- ➨ At or below 20,000 ft, no speed/Mach restrictions.

CAUTION

Do not extend flaps above 16,000 ft.

HYDR #2 ISOL - ISOLATION VALVE MALFUNCTION

MASTER + **GONG** with **HYDR #2 ISOL** light on.

■ **If slats are extended:**

- ➨ HYDR 2 ISOL switch .... OPEN

■ **If slats are retracted:**

- ➨ HYDR 2 ISOL switch .... CLOSED

NOTE

If emergency slats extension is required: Set HYDR 2 ISOL switch to OPEN.

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LANDING WITH INOPERATIVE STABILIZER

➨ Autopilot.. Disengaged

NOTE

As slats are extended the Arthur variable bellcrank returns to the low speed position which results in a significant decrease in elevator feel force.

- **If the stabilizer is jammed in the +2° to -2.5° range:**
  - ➨ Slat-flap handle .... 20° FLAPS + SLATS
  - ➨ Approach speed (zero wind)... VREF + 15 kt
  - ➨ Increase the landing distance by 1,000 ft / 305 m.
- **If the stabilizer is jammed in the -2.5° to -10° range:**
  - ➨ Slat-flap handle .... 40° FLAPS + SLATS
  - ➨ Approach speed (zero wind)..VREF

LANDING WITH INOPERATIVE ELEVATOR

➨ Slat-flap handle... 40° FLAPS + SLATS
➨ Approach speed (zero wind) ....VREF
➨ Use very short inputs to set stabilizer to desired position.
➨ Increase the landing distance by 1,000 ft / 305 m.

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PITCH FEEL - PITCH ARTHUR UNIT INOPERATIVE

MASTER + **GONG** with **PITCH FEEL** light on.

➨ Reduce speed below 260 KIAS or MI 0.76.
➨ INTERIOR LIGHTS: **FASTEN BELTS** light pushbutton.. On

CAUTION

The control forces may be higher or lower than normal depending on whether the Arthur unit has failed in "high" or "low" speed position:
- Light forces: avoid large displacements and rapid movements of the control surfaces. Maintain speed below 260 KIAS or MI 0.76. Autopilot use is authorized within these limits.
- High forces: use normal or emergency trim systems.

➨ Approach speed (zero wind) ....VREF
➨ Increase the landing distance by 500 ft / 152 m.

AIL FEEL - AILERON ARTHUR UNIT INOPERATIVE

MASTER + **GONG** with **AIL FEEL** light on.

CAUTION

The control forces may be higher or lower than normal depending on whether the Arthur unit has failed in "high" or "low" speed position:
- Light forces: avoid large displacements and rapid movements of the control surfaces.
- High forces: use normal or emergency trim systems.

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PITCH FEEL - PITCH ARTHUR UNIT INOPERATIVE

MASTER + **GONG** with **PITCH FEEL** light on.

➨ Reduce speed below 260 KIAS or MI 0.76.
➨ INTERIOR LIGHTS: **FASTEN BELTS** light pushbutton... On

CAUTION

The control forces may be higher or lower than normal depending on whether the Arthur unit has failed in “high” or “low” speed position:
- Light forces: avoid large displacements and rapid movements of the control surfaces. Maintain speed below 260 KIAS or MI 0.76. Autopilot use is authorized within these limits.
- High forces: use normal or emergency trim systems.

➨ Approach speed (zero wind) ....VREF
➨ Increase the landing distance by 500 ft / 152 m.

AIL FEEL - AILERON ARTHUR UNIT INOPERATIVE

MASTER + **GONG** with **AIL FEEL** light on.

➨ Reduce speed below 260 KIAS or MI 0.76.

CAUTION

The control forces may be higher or lower than normal depending on whether the Arthur unit has failed in “high” or “low” speed position:
- Light forces: avoid large displacements and rapid movements of the control surfaces.
- High forces: use normal or emergency trim systems.

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HORIZONTAL STABILIZER TRIM RUNAWAY

Continuous clacker aural warning.

MISTRIM light possibly on.

➨ Counteract on stabilizer trim control.
➨ Hold the control wheel firmly.
➨ Use the EMERG TAILPLANE trim to cancel the runaway and to set the horizontal stabilizer to the desired position.

RUDDER TRIM FAIL OR RUNAWAY

➨ Counteract on pedals then on rudder trim control.
➨ The crew must apply a permanent effort on pedals if airplane cannot be trimmed.
➨ Engine differential thrust can be set to compensate a possible slipping tendency.

AIL ZERO - EMERGENCY AILERON TRIM

MASTER + **GONG** with **AIL ZERO** light on.

➨ Use the emergency aileron trim pushbuttons until the **AIL ZERO** light goes out.

■ **If AIL ZERO light stays on:**

➨ Use the normal trim to cancel the roll effect if any.

AILERON SYSTEM JAMMING OR TRIM RUNAWAY

➨ Use rudder control to stop roll effect.
➨ Rapidly reduce airspeed .... Between 1.3 and 1.25 VS
➨ Use emergency aileron trim to set ailerons to desired position.
➨ As soon as possible, select the CLEAN configuration.

NOTE

Rudder control and differential thrust can be used to compensate a possible rolling tendency or to induce roll effect.

▶ FOR LANDING

➨ Slat-flap handle .... CLEAN
➨ Approach speed (zero wind) .... VREF + 20 kt
➨ Increase the landing distance by 30 %.

FLAP SYSTEM JAMMING OR ASYMMETRY

MASTER + **GONG** if **FLAP ASYM** light on.

FLAP ASYM light possibly on.

WARNING

DO NOT CHANGE FLAPS + SLATS HANDLE POSITION.

- **With flaps extended between CLEAN and 10°:**
  - Approach speed (zero wind).. VREF + 20 kt
  - Increase the landing distance by 30 %.
- **With flaps extended between 10° and 20°:**
  - Approach speed (zero wind).. VREF + 10 kt
  - Increase the landing distance by 15 %.
- **With flaps extended between 20° and 40°:**
  - Approach speed (zero wind).. VREF + 5 kt
  - Increase the landing distance by 8 %.

CAUTION

The landing gear not extended aural warning may not sound.

SLAT SYSTEM ABNORMAL OPERATION OR ASYMMETRICAL POSITION

▶ AFTER SLAT RETRACTION

Amber slat “not in position selected” light on.
Possibly rolling tendency.

- ➨ Airspeed .... Below 200 KIAS
- ➨ Slat-flap handle .... 10° FLAPS + SLATS
- ➨ Autopilot .... Disengaged

▶ DURING SLAT RETRACTION

Green light not on.
Amber slat “not in position selected” light on.
Possibly rolling tendency.

- ➨ Slat-flap handle .... 10° FLAPS + SLATS
- ➨ EMERG SLATS switch .... On (Guard up)

■ **If the green light is on and steady: all slats are extended:**

- ➨ Slat-flap handle .... 40° FLAPS + SLATS
- ➨ Approach speed (zero wind) .... VREF

■ **If the amber slat “not in position selected” light stays on:**

- ➨ Slat-flap handle .... CLEAN
- ➨ Approach speed (zero wind) .... VREF + 20 kt
- ➨ Increase the landing distance by 30 %.

CAUTION

When the EMERG SLATS switch has been used, it must not be returned to the off position.

UNWANTED SLAT EXTENSION

MASTER + **GONG** with **AUTO SLATS** light possibly on.
EIED: **IGN** annunciation on.
Amber slat “not in position selected” light comes on then goes out and green light flashing.
Audio warning sound possibly on.
Stick shaker possibly on (if installed).

- Airspeed .... Below 270 KIAS
- **EIED: If RH IGN annunciation on:**
  - RH AUTO SLAT C/B (B1) .... Pulled
- **EIED: If LH IGN annunciation on:**
  - LH AUTO SLAT C/B (A2) .... Pulled

AUTO SLATS - SLAT MONITORING SYSTEM

MASTER + **GONG** with **AUTO-SLATS** light on.

- Airspeed .... Below 270 KIAS
- **If airspeed above 180 KIAS:**
  - CLEAN configuration.
- **If airspeed below 180 KIAS:**
  - Extend slats and flaps.

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AIRBRAKE - AIRBRAKES DO NOT RETRACT

AIRBRAKE light on.

- ➨ Set the AIRBRAKES handle to the detent corresponding to the airbrakes position.
- ➨ Perform approach with slat-flap handle .... 40° FLAPS + SLATS

If airbrakes extended to position 1:

- ➨ Approach speed (zero wind).. VREF + 10 kt

If airbrakes extended to position 2:

- ➨ Approach speed (zero wind).. VREF + 15 kt
- ➨ In both cases, increase the landing distance by 18 %.

AIRBRAKES DO NOT EXTEND IN FLIGHT

- ➨ Increase landing distance by 12 %.

AIRBRAKE - AIRBRAKE SYSTEM ASYMMETRY

AIRBRAKE light on.
Rolling tendency.

- ➨ Stop the roll effect with the aileron control.
- ➨ Set the AIRBRAKES handle to cancel roll tendency.

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T/O CONFIG - TAKE-OFF CONFIGURATION (AT POWER SETTING)

MASTER with T/O CONFIG light on.
NO TAKE OFF voice warning.

▶ BEFORE BRAKE RELEASE:

- Slat-flap handle .... 10° or 20° FLAPS + SLATS
  - ☑ Green SLATS light .... On
  - ☑ Flaps indicator .... 20° or less
- Airbrakes .... Retracted
- Stabilizer trim .... Green range
- Autopilot .... Disengaged
- BRAKE PRESS light .... Off

▶ AFTER BRAKE RELEASE:

If below V1:

- Reject take-off .... See 3-100-05

NOTE

The **NO TAKE OFF** voice warning cannot be silenced as long as T/O CONFIG light is on.

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EXTENSION MALFUNCTION

One or more green light out.
Landing gear handle light blinking.
Landing gear not extended **GEAR** voice warning may sound.

➨ Perform an **ABNORMAL EXTENSION** procedure.

ABNORMAL EXTENSION

➨ Landing gear handle .... Down - Checked
➨ GEAR PULL handle .... Pulled

■ **If three green gear lights come on and the landing gear handle light goes out:**
   ➨ The landing gear is down and locked.
   ➨ Do not actuate landing gear controls.

■ **If at least one green light does not come on and the landing gear handle light remains blinking:**
   ➨ Perform a **FREE FALL EXTENSION** procedure.

FREE FALL EXTENSION

> **NOTE**
>
> Free fall extension of the 3 landing gears can be achieved in approximately 2 minutes.

➨ Airspeed .... Not less than 160 KIAS
➨ Extend first the main gears, one after the other:
   ➨ LH MAIN GEAR EMERGENCY handle .... Pulled
   ➨ Gently apply full rudder to the left while accelerating to 190 KIAS (VLO) until illumination of the left gear green light is achieved.
   ➨ Gently come back to neutral rudder.
   ➨ RH MAIN GEAR EMERGENCY handle .... Pulled
   ➨ Gently apply full rudder to the right while accelerating to 190 KIAS (VLO) until display of the right gear green light is achieved.
   ➨ Gently come back to neutral rudder.

> **NOTE**
>
> Illumination of each green gear light takes more than 30 seconds.

➨ Then extend the nose gear:
   ➨ NOSE GEAR EMERGENCY handle .... Pulled
   ➨ Accelerate until illumination of green light is achieved (190 KIAS max).

CAUTION

At any time, as soon as the three landing gears are locked down:
- Do not actuate landing gear controls,
- Keep the landing gear down.

RETRACTION MALFUNCTION

At least one red light remains on.
Landing gear handle light flashing.

➨ Airspeed .... At or below 190 KIAS (VLO)

■ **If icing conditions or if take-off was made with snow or slush on the runway:**

- ➨ The red landing gear lights fail to go out upon retraction of the landing gear, ice may be preventing the main landing gear from locking in the UP position.
- ➨ Cycle the gear down and up (1 attempt) to get rid of the ice.

■ **If non-icing conditions or if take-off was made without snow or slush on the runway:**

- ➨ Extend and keep the landing gear down.

BRAKE - ONE BRAKING SYSTEM INOPERATIVE

MASTER + **GONG** with BRAKE light on.

➨ Increase the landing distance by 10 %.

BRAKE - BOTH BRAKE SYSTEM INOPERATIVE

MASTER + permanent **GONG** with BRAKE light on.

The airplane can be stopped by use of the parking brake.

➨ Thrust reversers (A/C with SB F2000-19) .... As required

➨ Apply brake pressure slowly with gentle pull of PARK BRAKE handle:

  ➨ On PFD: deceleration on dry runway.. -0.25 g - Monitored

  ➨ Do not pull PARK BRAKE handle above first detent and avoid cycling applications.

➨ Increase the landing distance by 50 %.

NOTE

Residual pressure will normally allow at least six brake applications to first detent after MASTER + **GONG** with BRAKE ACCU lighting.
BRAKE ACCU light on, park brake may be unavailable.

BRAKE PRESS - BRAKING RESIDUAL PRESSURE

MASTER + **GONG** with BRAKE PRESS light on.

- PARK BRAKE handle .... Pushed fully forward
- BRAKE and BRAKE lights possibly on.

- **If BRAKE PRESS light remains on:**
  - BRAKE CMPTR 1 C/B (ESS.BUS) .... Pulled
  - **If BRAKE PRESS light remains on:**
    - BRAKE CMPTR 1 C/B (ESS.BUS) .... Pushed
    - BRAKE CMPTR 2 C/B (B1 BUS - HYDR) .... Pulled
    - BRAKE 2 ST-BY C/B (A2 BUS - HYDR) .... Pulled
    - **If BRAKE PRESS light remains on:**
      - BRAKE CMPTR 2 C/B (B1 BUS - HYDR) .... Pushed
      - BRAKE 2 ST-BY C/B (A2 BUS - HYDR) .... Pushed
      - Increase the landing distance by 10 %.

BRAKE ACCU - PARK BRAKE SYSTEM

MASTER + **GONG** with BRAKE ACCU light on.

NOTE

Residual pressure will normally allow at least six brake applications to first detent after MASTER + **GONG** with BRAKE ACCU lighting.

- No further pilot action required.

NOSE WHEEL STEERING SYSTEM INOPERATIVE OR UNCONTROLLED

➨ Release or return steering control to neutral position.

➨ Directional control is possible using differential braking.

NOSE WHEEL SHIMMY

➨ Hold the nose wheel steering control depressed.

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FUEL .. - LOW BOOSTER PUMP PRESSURE

MASTER + **GONG** with **FUEL 1** or **FUEL 2** light on.

- X−BP rotary switch .... Horizontal (Open)
  - ☑ X-BP light .... On - Checked
- Associated BOOSTER switch .... Off

If FUEL .. light goes out:

- Continue the flight, maintaining balanced fuel levels in the wing tanks.
  - XTK switch .... Set to the low level side (as required)
    - ☑ XTK light .... On - Checked ☒

If MASTER + GONG with FUEL .. light remain on:

- X−BP rotary switch .... Closed
  - ☑ X-BP light .... Out - Checked
- Associated BOOSTER switch .... On
- Associated fuel quantity indicator .... Monitored

If a fuel leak is evidenced:

- ESS BUS / RH BUS tie rotary switch .... Horizontal (Tied)
- Associated engine power lever .... IDLE
- Associated engine FUEL ENG switch .... OFF
- Associated engine FUEL SHUT-OFF switch .... Actuated
- Associated BOOSTER switch .... Off
- Associated ENG ANTI-ICE switch .... Off
- Associated GEN switch .... Off

If engine 2 is shutdown, complete the above procedure with:

- HYDR2 ISOL switch .... OPEN

FUEL 1 AND FUEL 2 - BOTH BOOSTER PUMP FAILURE

MASTER + **GONG** with **FUEL 1** and **FUEL 2** lights on.

- XTK switch .... Neutral position
  - ☑ XTK light .... Out - Checked
- X-BP rotary switch .... Vertical (Closed)
  - ☑ X-BP light .... Out - Checked
- BOOSTER pump switches .... Off

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FUEL .. - LOW BOOSTER PUMP PRESSURE

MASTER + **GONG** with **FUEL 1** or **FUEL 2** light on.

➨ X−BP rotary switch .... Horizontal (Open)

☑ **X-BP** light .... On - Checked

➨ Associated BOOSTER switch .... Off

CAUTION

When using JP-4 or Jet B, flight altitude is limited to 23,000 ft.

- **If FUEL .. light goes out:**
  - ➨ Continue the flight, maintaining balanced fuel levels in the wing tanks.
    - ➨ XTK switch .... Set to the low level side (as required)

      ☑ **XTK** light .... On - Checked ☒

- **If MASTER + GONG with FUEL .. light remain on:**
  - ➨ X−BP rotary switch .... Closed

    ☑ **X-BP** light .... Out - Checked
  - ➨ Associated BOOSTER switch .... On
  - ➨ Associated fuel quantity indicator .... Monitored
  - **If a fuel leak is evidenced:**
    - ➨ ESS BUS / RH BUS tie rotary switch .... Horizontal (Tied)
    - ➨ Associated engine power lever .... IDLE
    - ➨ Associated engine FUEL ENG switch .... OFF
    - ➨ Associated engine FUEL SHUT-OFF switch .... Actuated
    - ➨ Associated BOOSTER switch .... Off
    - ➨ Associated ENG ANTI-ICE switch .... Off
    - ➨ Associated GEN switch .... Off
    - **If engine 2 is shutdown, complete the above procedure with:**
      - ➨ HYDR2 ISOL switch .... OPEN

FUEL 1 AND FUEL 2 - BOTH BOOSTER PUMP FAILURE

MASTER + **GONG** with **FUEL 1** and **FUEL 2** lights on.

➨ XTK switch...Neutral position

☑ **XTK** light .... Out - Checked

➨ X-BP rotary switch .... Vertical (Closed)

☑ **X-BP** light... Out - Checked

➨ BOOSTER pump switches... Off

CAUTION

When using JP-4 or Jet B, flight altitude is limited to 23,000 ft.

FUEL QUANTITY ASYMMETRY

EIED: Asymmetric fuel quantity indications.
Possible abnormal aileron trim.

➨ Compare evolution of fuel quantity and fuel used indications to identify a possible fuel leak.

■ **If a fuel leak is evidenced in a tank group:**

- ➨ ESS BUS / RH BUS tie rotary switch .... Horizontal (Tied)
- ➨ Associated engine power lever .... IDLE
- ➨ Associated engine FUEL ENG switch .... OFF
- ➨ Associated engine FUEL SHUT-OFF switch .... Actuated
- ➨ Associated BOOSTER switch .... Off
- ➨ Associated ENG ANTI-ICE switch .... Off
- ➨ Associated GEN switch .... Off

■ **If engine 2 is shut down, complete the above procedure with:**

- ➨ HYDR2 ISOL switch .... OPEN

➨ Take into account the reduction in range and discontinue the flight if necessary.

■ **If the fuel leak is evidenced in the tank group with the lowest fuel level:**

- ➨ No fuel transfer is allowed.

■ **If the fuel leak is evidenced in the tank group with the highest fuel level:**

- ➨ Maintain balanced fuel levels in the wing tanks:
  - ➨ X-BP rotary switch .... Horizontal (Open)
    - ☑ X-BP light .... On - Checked
  - ➨ XTK switch .... Set to the low level side
    - ☑ XTK light .... On - Checked
  - ➨ BOOSTER switch on high level side .... On
  - ➨ BOOSTER switch on low level side .... Off

CAUTION

Monitor carefully the fuel transfer so as not to transfer fuel towards the leaking tank.

Stop the fuel transfer if FUEL .. warning lights up on remaining engine side.

■ **If no fuel leak is evidenced:**

- ➨ X-BP rotary switch .... Horizontal (Open)
  - ☑ X-BP light .... On - Checked
- ➨ XTK switch .... Set to the low level side
  - ☑ XTK light .... On - Checked
- ➨ BOOSTER switch on low level side .... Off

- Engines indicators N1 .... Monitored

If any N1 drops or when fuel levels are balanced:

- BOOSTER switch .... On
- X-BP rotary switch .... Vertical (Closed)
  - ☑ X-BP light .... Out - Checked
- XTK switch .... Set to off
  - ☑ XTK light .... Out - Checked

LO FUEL .. - TANK LEVEL ABNORMALLY LOW

MASTER + **GONG** with LO FUEL 1 or LO FUEL 2 light on.

- Associated fuel quantity indicator .... Checked
- X-BP rotary switch .... Horizontal (Open)
  - ☑ X-BP light .... On - Checked
- BOOSTER switch of affected tank .... Off

FUELING - LIGHT ON

MASTER + **GONG** with FUELING light on.

- Reduce airspeed if possible.
- Avoid high nose up or nose down attitudes and rapid changes in pitch or roll.
- Monitor fuel quantity indicators to identify a possible fuel leak and discontinue the flight if necessary.

BAT - BATTERY FAILURE

MASTER + **GONG** with BAT light on.
BAT switch tripped.

➨ BAT switch..On (2 reset attempts maximum)

HOT BAT - BATTERY OVERHEAT

MASTER + permanent **GONG** with HOT BAT light on.
Temperature indicator in the red sector and red light on,
or,
Red light on.

> **NOTE**
>
> This procedure is not applicable to A/C equipped with lead-acid Concorde battery after application of modification M1667.

➨ BAT switch.. Off
➨ ESS bus voltage in the green range.. Checked

■ **If battery temperature keeps increasing:**
  ➨ Land as soon as possible.

> **NOTE**
>
> Without battery, the APU cannot be started.
> If necessary, the battery may be switched back on for landing, providing the HOT BAT and the red light have gone out and the temperature indication is decreasing.

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GEN 1 - ONE GENERATOR INOPERATIVE (GEN 1)

MASTER + **GONG** with **GEN 1** light on.

- **If the GEN 1 switch is on (has not tripped):**
  - ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
  - LH BUS / ESS.BUS tie rotary switch .... Checked - Horizontal (Tied)
  - GEN 1 switch .... Off
  - If necessary, start the APU within envelope.

  (Refer to Section 5-700 for performance correction with APU air intake door open).

- **If the GEN 1 switch is off (has tripped):**
  - LH BUS / ESS.BUS tie rotary switch .... Vertical (Untied)
  - ESS bus voltage .... Checked
  - **If BAT voltmeter 0 and ammeter maxi:**
    - BAT switch .... Off
    - APU GEN switch .... Off
    - GEN 1 switch .... 1 reset attempt
    - **If GEN 1 light out:**
      - Continue the flight without ESS bus.
    - **If GEN 1 light stays on:**
      - GEN 1 switch .... Off
      - Continue the flight without LH and ESS busses.
  - **If BAT voltmeter and ammeter normal indication:**
    - GEN 1 switch .... 1 reset attempt
    - During reset:
    - **If GEN 1 voltmeter indication below 28 V:**
      - ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
      - LH BUS / ESS.BUS tie rotary switch .... Horizontal (Tied)
      - GEN 1 switch .... Off
      - If necessary, start the APU within envelope. (Refer to Section 5-700 and Annex 2 for performance correction with APU air intake door open).
    - **If GEN 1 voltmeter 0 and ammeter maxi or 0:**
      - GEN 1 switch .... Off
      - ESS.BUS / RH BUS rotary switch .... Horizontal (Tied)
      - Continue the flight without LH bus.
      - If necessary, start the APU within envelope. (Refer to Section 5-700 and Annex 2 for performance correction with APU air intake door open).

NOTE

IN CASE OF FLIGHT WITHOUT LH BUS:
- DUMP is inoperative.
- Gear not extended is flashing.

GEN 2 - ONE GENERATOR INOPERATIVE (GEN 2)

MASTER + **GONG** with **GEN 2** light on.

Warnings due to RH bus loss.

- **If the GEN 2 switch is on (has not tripped):**
  - ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
  - LH BUS / ESS.BUS tie rotary switch .... Checked - Horizontal (Tied)
  - GEN 2 switch .... Off
  - If necessary, start the APU within envelope. (Refer to Section 5-700 and Annex 2 for performance correction with APU air intake door open).
- **If the GEN 2 switch is off (has tripped):**
  - ESS.BUS / RH BUS tie rotary switch .... Checked - FLIGHT NORM
  - GEN 2 switch .... 1 reset attempt
  - During reset:
  - **If GEN 2 voltmeter indication below 28V:**
    - ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
    - LH BUS / ESS.BUS tie rotary switch .... Checked - Horizontal (Tied)
    - GEN 2 switch .... Off
    - If necessary, start the APU within envelope. (Refer to Section 5-700 and Annex 2 for performance correction with APU air intake door open).
  - **If GEN 2 voltmeter 0 and ammeter maxi or 0:**
    - GEN 2 switch .... Off
    - Continue the flight without RH bus.

NOTE

IN CASE OF FLIGHT WITHOUT RH BUS:
- **FUELING** light illuminates without failure.
- **RECIR ISOL** illuminates below 15,000 ft without failure and has to be manually closed. With a failure above 15,000 ft, RECIRC ISOL is inoperative and remains closed.
- X-BP stays in the position it was before failure.

APU GEN - APU GENERATOR FAILURE

APU GEN light on (except during start / stop sequence).

➨ APU GEN switch.. On (1 reset attempt maximum)

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PITOT - STATIC SYSTEM - JAMMED OR ABNORMAL PILOT, COPILOT AND POSSIBLY STAND-BY IAS / MI INDICATION AT HIGH ALTITUDE

Pilot and copilot IAS / MI indications blocked or abnormal + possibility:
Illumination of one or more of the following lights:
MASTER + **GONG** with: AIL FEEL, AUTO SLATS,
MASTER + permanent **GONG** with AP.
VMO / MMO audio warning sounds.
IAS comparison flag on PFD.
AP disengagement.
Disagreement with standby IAS / MI indications.

➨ AP and YD .... Disengaged
➨ Avoid large displacements and rapid movements of control surfaces.

■ **If VMO / MMO audio warning sounds:**

➨ AUDIO WARN C/Bs (ESS / B) .... Pulled

	CIRCUIT BREAKER	C/B LOCATION
Audio warning	AUDIO WARN ESS	ESS BUS WARNINGS - FIRE
Audio warning	AUDIO WARN B	B1 BUS WARNINGS - FIRE

➨ Stabilize airplane altitude using, if necessary, the standby altimeter.
➨ Power levers .... MAX CRUISE
➨ Attitude .... 0° to 4° nose up
➨ After a positive identification of the fault, continue the flight whilst respecting following procedures for climb, level flight and descent phases.
➨ Pull the ADC corresponding C/B.

▶ **CLIMB**

➨ Power levers .... MAX CLIMB
➨ Attitude .... 4° to 8° nose up

▶ **LEVEL FLIGHT**

➨ Set N1 corresponding to mach = 0.75 for current flight altitude and airplane weight, using TAT as reference or standard atmosphere temperature if TAT is not usable.
➨ Limit attitude to less than 4° nose up.

▶ **DESCENT**

■ **Without anti-icing:**

➨ Power levers .... IDLE
➨ Attitude .... 0° to 2° nose down

■ **With engine and wing anti-icing:**

➨ N1 speed (see 1-150-20) .... Set (Above yellow range on N1 display)

➨ AIRBRAKES handle ....Position 1

➨ Attitude.. 0° to 2° nose down

NOTE

1. Check airplane altitude frequently on the standby altimeter.
2. If prior to the problems, flight was performed at a static temperature lower than the authorized minimum limit (see 1-150-20), descend as soon as possible until air-data indications become normal again.
3. Re-engage CB's AUDIO WARN (ESS) and AUDIO WARN (B) at intervals and leave them engaged if the audio warning has stopped sounding.
4. If the IAS / MI indications are doubtful, the indicated static temperature may be incorrect.

PITOT - STATIC SYSTEM - EITHER AIR DATA COMPUTER INOPERATIVE

➨ Inoperative ADC C/Bs (A2 / B2).. Pulled

FUNCTION	LOSS OF	INDICATIONS	REMARKS
"On-side" EFIS	- Airspeed scale - Altitude scale - Vertical speed scale - ASEL - SAT-TAT-TAS-ISA - Mach number	**IAS** flag on PFD **ALT** flag on PFD **VS** flag on PFD	Data from other ADC recovered using XFR ADC. Coupling to remaining source by "X-side" CPL.
"On-side" AP - FD CPLD	Vertical modes Mach trim	Reversion to basic mode **MT** displayed on PFDs	Data from other ADC recovered using XFR ADC. Coupling to remaining source by "X-side" CPL.
Both side ATC XPDR	Attitude coding if ADC failure is on coupled side		Coupling to remaining source by "X-side" CPL
Autoslats	Extension inhibition at high speed	**MASTER** + GONG with **AUTOSLATS** light	See slat system malfunctions (See AFM 3-130-20)
FCS		**MASTER** + GONG with **AIL FEEL** light	Control forces are lower than normal at high speed (See AFM 3-130-10)

NOTE

If ADC1 is inoperative, the automatic pressurization (LAND ELEV) is referenced to ADC2 baro setting.

PITOT - STATIC SYSTEM - BOTH AIR DATA COMPUTERS INOPERATIVE

➨ ADC C/Bs (A2 / B2) .... Pulled

FUNCTION	LOSS OF	INDICATIONS	REMARKS
EFIS	- Airspeed scale - Altitude scale - Vertical speed scale - ASEL - SAT-TAT-TAS-ISA - Mach number	**IAS** flag on PFD **ALT** flag on PFD **VS** flag on PFD	Use the stand-by Mach airspeed indicator Avoid or leave icing condition.
ATC - XPDR	- Altitude coding		
FMS	- VNAV		
AP - M.TRIM YD - FD	- Vertical mode - Mach trim	**MT** displayed on PFDs	Maintain M ≤ 0.80
Warnings	- VMO/MMO		
Pressurization	- Automatic mode		Use manual mode
Autoslats	Extension inhibition at high speed	**MASTER** + GONG with **AUTOSLATS** light	See slat system malfunctions. (See AFM 3-130-20)

LH PROBES OR RH PROBES OR STD BY PITOT - PROBE ANTI-ICING MALFUNCTION

MASTER + **GONG** with **LH PROBES** or **RH PROBES** or **STD BY PITOT** light on.

➨ Confirm PITOT switches (all 3) .... On
➨ Compare the readings (Vi, M…) with the other two.
➨ Avoid icing conditions, if possible.

ANTI-ICE - ENGINE ANTI-ICE SYSTEM INOPERATIVE

With associated ENG ANTI-ICE switch on.
MASTER + **GONG** with ANTI-ICE light on.
Amber ENG 1 or ENG 2 ANTI-ICE light steady on.

➨ Increase power of corresponding engine until the amber light goes out and the green light comes on.
➨ Maintain this power setting.

■ **If ENG amber light does not go out:**
- ➨ In icing conditions, do not reduce N1 below the specified value.
- ➨ Avoid or leave icing conditions as soon as possible.

ANTI-ICE - ENGINE ANTI-ICE SYSTEM OVERPRESSURE

With associated ENG ANTI-ICE switch on.
MASTER + **GONG** with ANTI-ICE light on.
Amber ENG 1 or ENG 2 ANTI-ICE light flashing.

■ **If TAT above 10 °C:**
- ➨ ENG 1 and ENG 2 ANTI-ICE switches .... Off

■ **If TAT at or below 10 °C:**
- ➨ Reduce the power of the affected engine until the amber light goes out and the green light comes on.
- ➨ Adjust other engine N1 not below one engine out setting, for wing anti-icing.

ANTI-ICE - ENGINE ANTI-ICE SYSTEM UNWANTED OPERATION

With associated ENG ANTI-ICE switch .off.
MASTER + **GONG** with ANTI-ICE light on.
Amber ENG 1 or ENG 2 ANTI-ICE light flashing.

➨ Associated engine power (if possible) .... Reduced

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LATE ACTIVATION

CAUTION

- Start selector switches (all 2) .... IGNITION
- ENG 1 ANTI-ICE switch .... On

60 seconds later:

- ENG 2 ANTI-ICE switch .... On

30 seconds later:

- WINGS ANTI-ICE switch .... On

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LATE ACTIVATION

CAUTION

➨ Start selector switches (all 2) .... IGNITION
➨ ENG 1 ANTI-ICE switch .... On

■ **60 seconds later:**
- ➨ ENG 2 ANTI-ICE switch .... On

■ **30 seconds later:**
- ➨ BLEED 2 switch .... OFF
- ➨ Isolation rotary switch .... Vertical (closed)
  - ☑ **ISOL** light .... On
- ■ **After 3 seconds:**
  - ➨ ANTI ICE: WINGS switch .... On
- ■ **After 3 seconds:**
  - ➨ Isolation rotary switch .... Open
    - ☑ **ISOL** light .... Out
- ➨ BLEED 2 switch .... AUTO

NOTE

During wings anti-ice activation, disregard possible and temporary indications as:
- **ANTI-ICE** light on,
- Amber WINGS ANTI-ICE light steady on.

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ANTI-ICE - WING ANTI-ICE SYSTEM INOPERATIVE

With WINGS ANTI-ICE switch on.
MASTER + **GONG** with ANTI-ICE light on.
Amber WINGS ANTI-ICE light steady on.

➨ N1 above the yellow range (N1 display) .... Set
➨ Maintain that N1.
➨ APU BLEED switch .... AUTO - Checked
➨ Isolation rotary switch .... Vertical (closed)
☑ ISOL light .... On

■ **If amber WINGS ANTI−ICE light goes out:**
➨ Apply N1 mini ONE ENGINE OPERATIVE (see 4-200-05). ➔
➨ BLEED 1 switch .... OFF

■ **If amber WINGS ANTI−ICE light does not go out:**
➨ Isolation rotary switch .... Horizontal (open)
☑ ISOL light .... Out
➨ In icing conditions, do not reduce N1 speed below the specified value.
➨ Avoid or leave icing conditions.

EFFECTS ON PERFORMANCE

- Ice accumulation on wings and unprotected surfaces has significant effects on performance.
- Stall speeds are increased by:
  - 5 % with FLAPS + SLATS extended,
  - 10 % CLEAN configuration.

FLIGHT PHASE	SPEED	PERFORMANCE
En route climb	Increase by 15 kt	Decrease gross climb gradient by 3 % (0.03).
Approach and landing climb	Increase by 5 kt	Decrease gross climb gradient by 1.7 % (0.017). Decrease maximum landing weight limited by climb requirements by 4,000 lb.
Landing	Increase by 5 kt	Increase landing distance by 6 %.

NOTE

The decrease in gross climb gradient takes into account the effect of ice accumulated on unprotected surfaces.

NOTE

The increase in VREF and landing distance is to be added to those given when airbrakes are extended (see 4-150-20).

ANTI-ICE - WING ANTI-ICE SYSTEM MALFUNCTION

With WINGS ANTI-ICE switch on.
MASTER + **GONG** with ANTI-ICE light on.
Amber WINGS ANTI-ICE light flashing.

■ **If TAT above 10 °C:**
➨ ANTI-ICE: WINGS (or WINGS BRK if installed) switch..Off (or OFF)

■ **If TAT at or below 10 °C:**
➨ Do not reduce N1 below the minimum required in icing conditions.

ANTI-ICE - WING ANTI-ICE SYSTEM UNWANTED OPERATION

With WINGS ANTI-ICE switch off.
MASTER + **GONG** with ANTI-ICE light on.
Amber WINGS ANTI-ICE light flashing.

➨ Isolation rotary switch ....Vertical (closed)
☑ ISOL light .... On
➨ BLEED 2 switch .... OFF
➨ Manual air conditioning interconnect valve.. Open

PAX OR CREW - AIR CONDITIONING MALFUNCTION

PAX or CREW amber light on.

- **If the cockpit or cabin temperature becomes too uncomfortable:**
  - Temperature controller switch concerned .... MANUAL
  - Temperature setting .... As required

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ECU OVHT - ECU OVERHEAT

MASTER + **GONG** with **ECU OVHT** light on.

➨ COND'G EMERG guarded switch .... On
➨ Temperature setting .... As required

CAUTION

If temperature controllers are set too low, slow depressurization may happen.

NOSE CONE OVHT - NOSE CONE OVERHEAT

MASTER + **GONG** with **NOSE CONE OVHT** light on.

➨ Switch off as much avionics as possible.

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AFT COMP OVHT - AFT COMPARTMENT OVERHEAT

MASTER + **GONG** with **AFT COMP OVHT** light on.

- BLEED 1, BLEED 2 and APU BLEED switches .... OFF
- Isolation rotary switch .... Vertical (closed)
  - ☑ **ISOL** light .... On

As soon as AFT COMP OVHT light is off:

- One at a time, BLEED switches .... AUTO
- Isolate the faulty BLEED.
- If necessary, manual air conditioning interconnect valve .... Open

RECIR ISOL - RECIRCULATION VALVE MALFUNCTION

MASTER + **GONG** with **RECIR ISOL** light on.

If altitude below 15,000 ft:

- RECIRC switch .... AUTO - Checked

If altitude above 15,000 ft:

- RECIRC switch .... ISOL

  If RECIR ISOL light stays on:

  - Close the valve through the manual control (toilet compartment).

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CABIN OVERPRESSURE

ΔP index too high.

- UP - DN control knob .... White range
- MAN pressurization light pushbutton .... Pushed
  - ☑ ON light .... On
- UP - DN control knob .... UP (as required)

If cabin pressure decrease:

- Continue the flight.

If cabin pressure does not decrease:

- CREW and PASSENGER air conditioning valves switches .... OFF
- Continue flight using CREW and PASSENGER switches to maintain a cabin altitude not higher than 8,000 ft and a cabin differential pressure lower than 9 psi.

IMPROPER CABIN VERTICAL SPEED DURING NORMAL OPERATION

Cabin rate of climb above +650 ft/min or
Cabin rate of descent below -400 ft/min.

- UP - DN control knob .... Down green range
- BLEED switches (all 3) .... AUTO - Checked
- CREW and PASSENGER air conditioning valve switches .... AUTO - Checked

If normal operation is not restored:

- UP - DN control knob .... White range
- MAN pressurization light pushbutton .... Pushed
  - ☑ ON light .... On
- UP - DN control knob .... As required

If inoperative:

- COND'G EMERG guarded switch .... On

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CABIN - TOO HIGH CABIN ALTITUDE

MASTER with CABIN light on.
CABIN voice warning.
Cabin altitude higher than 10,000 ft ±500 ft.
Oxygen mask fall.

- ➨ Crew oxygen masks....................NORMAL - Donned
- ➨ Microphone selector....................MASK
- ➨ RECIRC switch....................ISOL
- ■ **If cabin pressure cannot be restored:**
  - ➨ APU BLEED, BLEED 1 and BLEED 2 switches....................AUTO - Checked
  - ➨ CREW and PASSENGER air conditioning valve switches....................AUTO - Checked
  - ➨ UP-DN control knob....................DN (green range)
  - ➨ MAN pressurization light pushbutton....................Pushed
    - ☑ ON light....................On
  - ➨ UP-DN control knob....................DN (as required)
  - ■ **If cabin pressure cannot be restored:**
    - ➨ Isolation rotary switch....................Vertical (closed)
      - ☑ ISOL light....................On
    - ■ **If cabin pressure can be restored:**
      - ➨ BLEED 1 switch....................OFF
      - ➨ Manual air conditioning interconnect valve....................Open
      - ■ **If cabin altitude is increasing:**
        - ➨ BLEED 1 switch....................AUTO
        - ➨ BLEED 2 switch....................OFF
        - ➨ Manual air conditioning interconnect valve....................Open
    - ■ **If cabin pressure cannot be restored:**
      - ➨ Isolation rotary switch....................Horizontal (open)
        - ☑ ISOL light....................Out
      - ➨ COND'G EMERG switch....................On
      - ■ **If cabin pressure cannot be restored:**
        - ➨ INTERIOR LIGHTS: No smoking light pushbutton....................On
        - ➨ PASSENGER OXYGEN controller....................OVERRIDE
          - ☑ Passenger masks....................Donned - Checked
        - ➨ If necessary, perform an emergency descent to 10,000 ft or to the minimum safe altitude.

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DOORS - DOORS UNLOCKED INDICATION

MASTER + permanent **GONG** with DOORS light on.

WARNING

CREW AND PASSENGERS MUST IMPERATIVELY STAY ON THEIR SEATS, BELTS ADJUSTED AND FASTENED.

➨ INTERIOR LIGHTS: **FASTEN BELTS** light pushbutton... On
➨ Reduce cabin Differential Pressure (ΔP) if possible.
➨ Land as soon as possible.

DOOR LIFT - DOOR LIFT LIGHT ON ON GROUND

DOOR LIFT light on.

CAUTION

Check the passenger door opening time: from closed and locked position, the door must be fully open in less than 10 seconds. If not, the door lift system must be checked and repaired before next flight while carrying passengers.

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NO AUTOMATIC PRESENTATION OF PASSENGER MASKS

➨ INTERIOR LIGHTS: No smoking light pushbutton .... On
➨ PASSENGER OXYGEN controller..OVERRIDE
☑ Passenger masks ....Donned - Checked

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AP - AUTOPILOT FAILURE

MASTER with AP light on.
AUTO PILOT voice warning.
Autopilot has been automatically disengaged.
PFD: flashing red **AP** warning.

➨ Try to re-engage the autopilot (1 attempt).

LOSS OF ONE AXIS CONTROL

One axis is no more controlled by the autopilot.

➨ Autopilot.. Disengaged

YAW DAMPER FAILURE

PFD: Yellow YD warning.

➨ Try to re-engage the yaw damper (1 attempt).
➨ No further pilot action required.

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MACH TRIM FAILURE

PFD: Yellow MT warning.

➨ Keep and maintain indicated Mach number below 0.80.

AP TRIM FAIL - FAILURE OF AUTOMATIC PITCH TRIM

MASTER + **GONG** with AP TRIM FAIL light on.
PFD: E warning possibly on.

➨ Hold the control wheel firmly.
➨ Autopilot.. Disengaged
➨ Manually trim the airplane.
➨ Autopilot..Engaged (1 attempt)

MISTRIM - PITCH OUT OF TRIM CONDITION

MASTER + **GONG** with MISTRIM light on.
PFD: Yellow E or red E warning.

➨ Hold the control wheel firmly.
➨ Autopilot.. Disengaged
➨ Manually trim the airplane.
➨ Try to re-engage the autopilot (1 attempt).

ROLL MISTRIM

PFD: Yellow A or red A warning.

➨ Operate roll trim as needed by the arrow displayed on the PFD.

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APU FAULT - APU MALFUNCTION

MASTER + **GONG** with **APU FAULT** light on.

- EIED: APU page .... Called
- **If APU running:**
  - EIED: APU parameters .... Checked
  - APU BLEED switch .... OFF
  - **If APU FAULT light goes out:**
    - Continue the flight. ☒
  - **If APU FAULT light stays on:**
    - Shut down APU.
    - APU: MASTER light pushbutton .... Off
      - ☑ MASTER green light .... Out ☒
- **If APU has been automatically stopped:**
  - EIED: DOOR message........ Displayed
    - APU air intake door is not fully closed 45 seconds after APU MASTER off.
  - APU BLEED switch .... OFF
  - APU C/B (ESS) .... Pulled
  - After completion of these procedures, the **APU FAULT** light stays on.

NOTE

If APU air intake door remains open, the airplane performance have to be corrected (see 5-600 and Annex 2).

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CRACK OR BUBBLES

- ➨ Airspeed .... Below 230 KIAS
- ➨ Cabin Differential Pressure (ΔP) .... Below 7.5 psi
- ➨ Associated WINDSHIELD switch .... NORM

XFR - HEAT SYSTEM INOPERATIVE

XFR light on.

- ➨ WINDSHIELD switches (PILOT and COPILOT) .... Same position - Checked

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FAILURE OF ENGINE FIRE DETECTION SYSTEM

Amber FAULT light on (Fire Panel).

➨ Land as soon as possible.

FAILURE OF APU FIRE DETECTION SYSTEM

Amber FAULT light on (Fire Panel).

➨ Shut down APU.

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RADIO TUNING UNIT MALFUNCTION - 1

No tuning of COM, NAV, ADF or ATC.
No display on the RTU screen.

- RTU C/B (ESS / B1).. Checked
- VHF, VOR, ADF or ATC C/Bs (ESS / B1 / B2).. Checked
- RTU dimming knob.. Checked
- RTU switch.. ON - Checked

- **If the RTU concerned is still inoperative:**
  - RTU switch.. OFF
  - Control the COM, NAV, ADF or ATC with the cross side RTU by using the button 1/2.
- **If the COM, NAV, ADF or ATC cannot be controlled by the two RTUs and if the FMS is installed:**
  - RTU switches (2).. OFF
  - Tune the COM, NAV, ADF or ATC using the FMS keyboard.

NOTE

If the VHF does not receive a tuning command, the VHF stays in the latest frequency.

RADIO TUNING UNIT MALFUNCTION - 2

Active COM, NAV, ADF or ATC frequency displayed in cyan.

- VHF audio.. Verified
- CDI page on the RTU.. Selected
- Frequencies displayed in green.. Verified

- **If the COM, NAV, ADF or ATC is not operational:**
  - Concerned RTU switch.. OFF
  - VHF available by the cross side RTU.

VHF AUDIO INOPERATIVE

- Audio selection (control box) .... Verified
- VHF and ICS C/Bs (ESS / B2) .... Verified
- RTU volume knob .... Verified
- Audio level (audio control panel) .... Verified
- VHF frequency .... Verified

If VHF audio is not recovered and other audio signals cannot be heard:

- Select another audio output (headset or loudspeaker).

If VHF audio cannot be heard:

- EMG pushbutton .... Pressed
- Use headsets.

For A/C with M1776:

If VHF audio is disturbed by PA, SELCAL or other audios:

- ISOL pushbutton .... Pressed

PFD CRT FAILURE

Display goes blank or color is altered.

➨ PFD C/B (ESS / A1) .... Checked
➨ PFD dimming .... Checked
On associated EFIS reversion controller (RSP):
➨ PFD pushbutton .... Pushed

SUCCESSIVE FAILURE OF PFD AND MFD CRT ON BOTH SIDES

Both displays successively go blank.

➨ PFD and MFD C/Bs (ESS / A1 / B1) .... Checked
➨ PFD and MFD dimming .... Checked
➨ Use the stand-by instruments.

COMPR - LOSS OF COMPARISON FROM THE CROSS SIDE DISPLAY

COMPR flag on the on side PFD.

➨ Periodically crosscheck the consistency with the data from the both sides.

IAS / MACH DATA INVALID

IAS flag on PFD's and loss of IAS / MACH data.
ALT flag on PFD's and loss of Altitude data.
VS flag on PFD's and loss of Vertical speed data.

On associated EFIS reversion controller:
➨ ADC pushbutton .... Pushed
☑ ADC 2 annunciation on left PFD and / or ADC 1 annunciation on right PFD .... On

DISPLAY CONTROL PANEL (DCP) INOPERATIVE

FUNCTION	LOSS OF	INDICATIONS	REMARKS
On side DCP / FCP	- BRG selection - CRS selection - MFD selection	-	Recovered using XFR / DCP on RSP and check DCP annunciation on PFD.

ONE OR TWO INDICATORS FAILURE

EIED: “OUT OF ORDER” is displayed on the indicator(s)
or
Unreadable screen(s)
or
“XXX” is displayed instead of a parameter

EIED(s) concerned:

➨ RCONF pushbutton(s) .... Pushed

➨ Information is displayed on the remaining indicator(s).

■ **If “XXX” is still displayed:**

  ➨ Cancel the reconfiguration.

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ONE AHS INOPERATIVE

FUNCTION	LOSS OF	INDICATIONS	REMARKS
On side PFD	- Attitude. - Heading.	- FD. - ATT.	Recovered using XFR. AHS.
AP YD	- Autopilot. - Yaw damper.	- **AP** (Red) - **YD** (Amber)	Recovered using XFR. AHS if three sensors.

TWO AHS INOPERATIVE

FUNCTION	LOSS OF	INDICATIONS	REMARKS
On side / cross side PFD	- Attitude. - Heading.	- **FD** (Amber). - **ATT** (Red).	Recovered using XFR. AHS if three sensors.
AP YD	- Autopilot. - Yaw damper.	- **AP** (Red) - **YD** (Amber).	No AP / YD available
Brake system	- 2 BSCU	- Red and amber BRAKE	Check landing distance.

REVERSION LOGIC

CHOICE	AHS SELECTED ON PILOT SIDE	AHS SELECTED ON COPILOT SIDE	PILOT PFD ANNUNCIATION	COPILOT PFD ANNUNCIATION
NORMAL MODE	AHS 1	AHS 2		
AFTER PILOT AHS REVERSION	AHS 3	AHS 2	AHS 3 (White)	
AFTER COPILOT AHS REVERSION	AHS 1	AHS 3		AHS 3 (White)
AFTER PILOT AND COPILOT AHS REVERSION	AHS 3	AHS 3	AHS 3 (Yellow)	AHS 3 (Yellow)

ONE AHS INOPERATIVE

FUNCTION	LOSS OF	INDICATIONS	REMARKS
On side PFD	- Attitude. - Heading.	- FD. - ATT.	Recovered using XFR. AHS.
AP YD	- Autopilot. - Yaw damper.	- **AP** (Red) - **YD** (Amber)	Recovered using XFR. AHS if three sensors.

TWO AHS INOPERATIVE

FUNCTION	LOSS OF	INDICATIONS	REMARKS
On side / cross side PFD	- Attitude. - Heading.	- **FD** (Amber). - **ATT** (Red).	Recovered using XFR. AHS if three sensors.
AP YD	- Autopilot. - Yaw damper.	- **AP** (Red) - **YD** (Amber).	No AP / YD available
Brake system	- 2 BSCU	- Red and amber BRAKE	Check landing distance.

REVERSION LOGIC

CHOICE	AHS SELECTED ON PILOT SIDE	AHS SELECTED ON COPILOT SIDE	PILOT PFD ANNUNCIATION	COPILOT PFD ANNUNCIATION
NORMAL MODE	AHS 1	AHS 2		
AFTER PILOT AHS REVERSION	AHS 3	AHS 2	AHS 3 (White)	
AFTER COPILOT AHS REVERSION	AHS 1	AHS 3		AHS 3 (White)
AFTER PILOT AND COPILOT AHS REVERSION	AHS 3	AHS 3	AHS 3 (Yellow)	AHS 3 (Yellow)

NOTE

In case of pilot or copilot AHS reversion, the amber message SET IRS HDG will be displayed on all CDU's: disregard this message.

Applicable for airplane equipped with three HONEYWELL LASEREF III or IV IRS's, one HONEYWELL LASERTRACK, two GLOBAL GNS X/ES FMS's with two GPS.

FAILURE OF IRS 1

Amber **FAULT** light on MSU 1.
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on pilot PFD.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP pilot side .... Pushed
- ☑ **AHS 3** white annunciation on pilot PFD .... On - Checked
- ☑ Disappearance of failure warning.
- ☑ All functions are recovered.

➨ The autopilot can be re-engaged.

FAILURE OF IRS 2

Amber **FAULT** light on MSU 2.
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on copilot PFD.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP copilot side .... Pushed
- ☑ **AHS 3** white annunciation on copilot PFD .... On - Checked
- ☑ Disappearance of failure warning.
- ☑ All functions are recovered.

➨ The autopilot can be re-engaged.

FAILURE OF IRS 3

Amber **FAULT** light on MSU 3.
Amber **MSG** lights on FMS's.

NOTE

Do not perform AHS reversion.

FAILURE OF IRS 1 AND 2

Amber **FAULT** light on MSU's 1 and 2.
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on pilot and copilot PFD's.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on pilot and copilot RSP's.. Pushed
☑ **AHS 3** amber annunciation on pilot and copilot PFD's .... On - Checked
☑ Disappearance of failure warning except for autopilot.

NOTE

Autopilot cannot be re-engaged.

REVERSION LOGIC

CHOICE	AHS SELECTED ON PILOT SIDE	AHS SELECTED ON COPILOT SIDE	PILOT PFD ANNUNCIATION	COPILOT PFD ANNUNCIATION
NORMAL MODE	IRS 1	IRS 2		
AFTER PILOT AHS REVERSION	IRS 3	IRS 2	**AHS 3** (White)	
AFTER COPILOT AHS REVERSION	IRS 1	IRS 3		**AHS 3** (White)
AFTER PILOT AND COPILOT AHS REVERSION	IRS 3	IRS 3	**AHS 3** (Yellow)	**AHS 3** (Yellow)

Applicable for airplane equipped with two HONEYWELL LASEREF III or IV IRS's, one COLLINS AHRS.

FAILURE OF IRS 1

Amber FAULT light on MSU 1.
MSG annunciation on PFD's
and possibly
Amber MSG lights on FMS's.
ATT and HDG warning flags in view on pilot PFD.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP pilot side.. Pushed
- ☑ AHS 3 white annunciation on pilot PFD.. On - Checked
- ☑ Disappearance of failure warning.
- ☑ All functions are recovered.

➨ The autopilot can be re-engaged.

NOTE

In case of long duration shallow turns (less than 8° of bank angle for more than 2 minutes), heading information provided by the AHS may drift beyond 6 degrees from actual heading.

FAILURE OF IRS 2

Amber **FAULT** light on MSU 2.
MSG annunciation on PFD's
and possibly
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on copilot PFD.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP copilot side .... Pushed

☑ **AHS 3** white annunciation on copilot PFD .... On - Checked

☑ Disappearance of failure warning.

☑ All functions are recovered.

➨ The autopilot can be re-engaged.

NOTE

In case of long duration shallow turns (less than 8° of bank angle for more than 2 minutes), heading information provided by the AHS may drift beyond 6 degrees from actual heading.

FAILURE OF AHRS

Amber **MSG** lights on FMS's.

NOTE

Do not perform AHS reversion.

FAILURE OF IRS 1 AND 2

Amber **FAULT** light on MSU's 1 and 2.
MSG annunciation on PFD's
and possibly
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on pilot and copilot PFD's.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on pilot and copilot RSP's.. Pushed
☑ **AHS 3** amber annunciation on pilot and copilot PFD's .... On - Checked
☑ Disappearance of failure warning except for autopilot.

NOTE

Autopilot and Yaw Damper cannot be re-engaged.

In case of long duration shallow turns (less than 8° of bank angle for more than 2 minutes), heading information provided by the AHS may drift beyond 6 degrees from actual heading.

REVERSION LOGIC

CHOICE	AHS SELECTED ON PILOT SIDE	AHS SELECTED ON COPILOT SIDE	PILOT PFD ANNUNCIATION	COPILOT PFD ANNUNCIATION
NORMAL MODE	IRS 1	IRS 2		
AFTER PILOT AHS REVERSION	AHRS	IRS 2	AHS 3 (White)	
AFTER COPILOT AHS REVERSION	IRS 1	AHRS		AHS 3 (White)
AFTER PILOT AND COPILOT AHS REVERSION	AHRS	AHRS	AHS 3 (Yellow)	AHS 3 (Yellow)

DASSAULT AVIATION Proprietary Data

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Applicable for airplane equipped with two HONEYWELL LASEREF III or IV IRS's, two GLOBAL GNS X/ES FMS's.

FAILURE OF IRS 1

Amber **FAULT** light on MSU 1.
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on pilot PFD.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP pilot side .... Pushed
- ☑ **AHS 2** yellow annunciation on pilot PFD .... On - Checked
- ☑ Disappearance of failure warning.

NOTE

Autopilot and Yaw Damper cannot be re-engaged.

FAILURE OF IRS 2

Amber **FAULT** light on MSU 2.
Amber **MSG** lights on FMS's.
ATT and **HDG** warning flags in view on copilot PFD.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP copilot side .... Pushed
- ☑ **AHS 1** yellow annunciation on copilot PFD .... On - Checked
- ☑ Disappearance of failure warning.

NOTE

Autopilot and Yaw Damper cannot be re-engaged.

FAILURE OF IRS 1 AND 2

Amber **FAULT** light on MSU's 1 and 2.

Amber **MSG** lights on FMS's.

ATT and **HDG** warning flags in view on pilot and copilot PFD's.

Autopilot has been automatically disengaged.

➨ Use the stand-by horizon

NOTE

Autopilot and Yaw Damper cannot be re-engaged.

REVERSION LOGIC

CHOICE	AHS SELECTED ON PILOT SIDE	AHS SELECTED ON COPILOT SIDE	PILOT PFD ANNUNCIATION	COPILOT PFD ANNUNCIATION
NORMAL MODE	IRS 1	IRS 2		
AFTER PILOT AHS REVERSION	IRS 2	IRS 2	AHS 2 (Yellow)	AHS 2 (Yellow)
AFTER COPILOT AHS REVERSION	IRS 1	IRS 1	AHS 1 (Yellow)	AHS 1 (Yellow)

Applicable for airplane equipped with two HONEYWELL LASEREF III or IV IRS's, one COLLINS AHRS, two GLOBAL GNS X/ES FMS's with two GPS.

FAILURE OF IRS 1

Amber **FAULT** light on MSU 1.

Amber **MSG** lights on FMS's.

ATT and **HDG** warning flags in view on pilot PFD.

Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP pilot side .... Pushed

- ☑ **AHS 3** white annunciation on pilot PFD .... On - Checked
- ☑ Disappearance of failure warning.
- ☑ All functions are recovered.

➨ The autopilot can be re-engaged.

> **NOTE**
>
> In case of long duration shallow turns (less than 8° of bank angle for more than 2 minutes), heading information provided by the AHS may drift beyond 6 degrees from actual heading.

FAILURE OF IRS 2

Amber **FAULT** light on MSU 2.

Amber **MSG** lights on FMS's.

ATT and **HDG** warning flags in view on copilot PFD.

Autopilot has been automatically disengaged.

➨ AHS pushbutton on RSP copilot side .... Pushed

- ☑ **AHS 3** white annunciation on copilot PFD .... On - Checked
- ☑ Disappearance of failure warning.
- ☑ All functions are recovered.

➨ The autopilot can be re-engaged.

> **NOTE**
>
> In case of long duration shallow turns (less than 8° of bank angle for more than 2 minutes), heading information provided by the AHS may drift beyond 6 degrees from actual heading.

FAILURE OF AHRS

Amber MSG lights on FMS's.

NOTE

Do not perform AHS reversion.

FAILURE OF IRS 1 AND 2

Amber FAULT light on MSU's 1 and 2.
Amber MSG lights on FMS's.
ATT and **HDG** warning flags in view on pilot and copilot PFD's.
Autopilot has been automatically disengaged.

➨ AHS pushbutton on pilot and copilot RSP's... Pushed
- ☑ AHS 3 amber annunciation on pilot and copilot PFD's .... On - Checked
- ☑ Disappearance of failure warning except for autopilot.

NOTE

Autopilot and Yaw Damper cannot be re-engaged.

In case of long duration shallow turns (less than 8° of bank angle for more than 2 minutes), heading information provided by the AHS may drift beyond 6 degrees from actual heading.

REVERSION LOGIC

CHOICE	AHS SELECTED ON PILOT SIDE	AHS SELECTED ON COPILOT SIDE	PILOT PFD ANNUNCIATION	COPILOT PFD ANNUNCIATION
NORMAL MODE	IRS 1	IRS 2		
AFTER PILOT AHS REVERSION	AHRS	IRS 2	AHS 3 (White)	
AFTER COPILOT AHS REVERSION	IRS 1	AHRS		AHS 3 (White)
AFTER PILOT AND COPILOT AHS REVERSION	AHRS	AHRS	AHS 3 (Yellow)	AHS 3 (Yellow)

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RA - RADIOALTIMETER DATA INVALID

RA flag on PFD.
Loss of radioaltimeter.

➨ No further pilot action required

RA - RADIOALTIMETER DATA INVALID (A/C WITH TWO RADIO ALTIMETERS)

RA flag on PFD.

➨ Corresponding RA pushbutton .... Pushed
☑ **RA 1** or **RA 2** amber reversion annunciation .... Illuminated

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PITCH OR ROLL - AHS ATTITUDE MISCOMPARE ANNUNCIATION WITH OR WITHOUT HEADING COMPARATOR

PITCH or ROLL comparison annunciations on both PFD's.

➨ Crosscheck with stand-by horizon.
➨ Determine the faulty AHS.
On associated EFIS reversion controller:
➨ AHS pushbutton.. Pushed
☑ AHS 2 annunciation on left PFD or AHS 1 annunciation on right PFD .... On

HDG - AHS HEADING MISCOMPARE ANNUNCIATION WITHOUT ATTITUDE COMPARATOR

HDG comparison annunciation on both PFD's.

➨ Crosscheck with stand-by compass.
➨ Determine the faulty AHS.
On associated EFIS reversion controller:
➨ AHS pushbutton.. Pushed
☑ AHS 2 annunciation on left PFD or AHS 1 annunciation on right PFD .... On

IAS OR ALT - IAS OR ALT MISCOMPARE ANNUNCIATION

IAS or ALT comparison annunciations on the PFD's.

➨ Crosscheck with stand-by airspeed or stand-by altitude indicator.
➨ Determine the faulty ADC.
On associated EFIS reversion controller.
➨ ADC pushbutton .... Pushed
☑ ADC 2 annunciation on left PFD or ADC 1 annunciation on right PFD.................... On

LOC AND / OR G/S - LOC OR GS MISCOMPARE ANNUNCIATION

LOC and/or G/S comparison annunciations on the PFD’s.

➨ Determine the faulty ILS.

➨ Select the correct ILS source for both PFD's.

RA - MISCOMPARE ANNUNCIATION (A/C WITH TWO RADIO ALTIMETERS)

Illumination of RA comparison annunciation on PFD.

■ **If determination of the doubtful radioaltimeter is possible:**

➨ Corresponding RA pushbutton .... Pushed

☑ RA 1 or RA 2 amber reversion annunciation .... Illuminated

PITCH OR ROLL - AHS ATTITUDE MISCOMPARE ANNUNCIATION WITH OR WITHOUT HEADING COMPARATOR

PITCH or ROLL comparison annunciations on both PFD's.

➨ Crosscheck with stand-by horizon.
➨ Determine the faulty AHS.
On associated EFIS reversion controller:
➨ AHS pushbutton.. Pushed
☑ AHS 2 annunciation on left PFD or AHS 1 annunciation on right PFD .... On

HDG - AHS HEADING MISCOMPARE ANNUNCIATION WITHOUT ATTITUDE COMPARATOR

HDG comparison annunciation on both PFD's.

➨ Crosscheck with stand-by compass.
➨ Determine the faulty AHS.
On associated EFIS reversion controller:
➨ AHS pushbutton.. Pushed
☑ AHS 2 annunciation on left PFD or AHS 1 annunciation on right PFD .... On

IAS - IAS MISCOMPARE ANNUNCIATION

IAS comparison annunciation on the PFD's.

➨ Crosscheck with stand-by airspeed indicator.
➨ Determine the faulty ADC.
On associated EFIS reversion controller.
➨ ADC pushbutton .... Pushed
☑ ADC 2 annunciation on left PFD or ADC 1 annunciation on right PFD.................... On

ALT - ALT MISCOMPARE ANNUNCIATION

ALT comparison annunciation on the PFD's.

➨ Level off if in descent.
➨ Crosscheck with stand-altitude indicator.

■ **If the stand-by altitude correctly matches one PFD altitude and the faulty ADC can be determined without ambiguity:**
On associated EFIS reversion controller.
➨ ADC pushbutton.. Pushed
☑ ADC 2 annunciation on left PFD or ADC 1 annunciation on right PFD.................... On

■ **If not, use the altimeter giving the lowest altitude when below 10,000 ft AGL.**

LOC AND / OR G/S - LOC OR GS MISCOMPARE ANNUNCIATION

LOC and/or G/S comparison annunciations on the PFD's.

➨ Determine the faulty ILS.
➨ Select the correct ILS source for both PFD's.

RA - MISCOMPARE ANNUNCIATION (A/C WITH TWO RADIO ALTIMETERS)

Illumination of RA comparison annunciation on PFD.

■ **If determination of the doubtful radioaltimeter is possible:**

➨ Corresponding RA pushbutton .... Pushed

☑ RA 1 or RA 2 amber reversion annunciation .... Illuminated

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SECTION 4 – NORMAL PROCEDURES

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TABLE OF CONTENTS

GENERAL

PREFLIGHT INSPECTION

PREFLIGHT AND PRESTART CHECKS

FLIGHT PROCEDURES

ADVERSE WEATHER

SYSTEMS

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INTRODUCTION

The operating procedures of this section have been developed with specific regard for the design features and operating characteristics of the airplane.

They have been approved by the DGAC or the EASA for guidance in identifying acceptable procedures for safe operation.

Observance of the procedures is not mandatory and DGAC or EASA approval of such procedures is not intented to prohibit or discourage development and use of improved or equivalent alternate procedures based on operational experience with the airplane. When alternate procedures are defined, it is the user's full responsibility to have them approved by the concerned Authority, as well as to be in compliance with applicable airworthiness safety standards.

When an electronic system is used to display all procedures of this Manual or adapted procedures, the operator remains responsible for the content, for use and updating of this system.

The checks followed by (*) are to be performed at the first flight of the day.

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PREFLIGHT - INTERIOR INSPECTION

COCKPIT

- ➨ Oxygen pressure .... Checked / 1,500 psi mini
- ➨ Cockpit fire extinguishers .... Installed - Checked
- ➨ Crash axe .... Stowed
- ➨ Documents .... On board
- ➨ Smoke hoods .... Checked
- ➨ Smoke goggles .... Checked
- ➨ Torch .... Checked
- ➨ All circuit breakers .... Engaged
- ➨ PARK BRAKE handle .... Set - First detent

CABIN

- ➨ First aid kit .... Checked
- ➨ Emergency exit safety device .... Removed
- ➨ Cabin fire extinguishers .... Installed - Checked
- ➨ Survival equipment .... Stowed
- ➨ Manual air conditioning interconnect valve .... Closed
- ➨ Recirculation valve manual control (aft toilet compartment) .... Pushed

PREFLIGHT - EXTERIOR INSPECTION

FORWARD FUSELAGE

- Normal static ports (2): cover - condition .... Removed - Checked
- Normal pitot probe (1): cover - condition .... Removed - Checked
- Emergency pitot probe (1): cover - condition .... Removed - Checked
- Left angle-of-attack probe (1): cover - condition .... Removed - Checked
- Left emergency static port (1): cover - condition .... Removed - Checked
- Cockpit windows .... Clean - Checked
- Windshield wipers .... Stowed
- Nose landing gear:
  - No hydraulic leaks, wheels and tire condition .... Checked
  - Shock absorber height .... Checked
  - Torsion link pin .... Installed
  - Chock .... Removed
- Taxi light .... Checked
- Nose wheel well:
  - Maintenance access door .... Closed
- Nose cone closed and latched (5) .... Checked
- Temperature probe (1): cover - condition .... Removed - Checked
- Right angle-of-attack sensor: cover - condition .... Removed - Checked
- Normal pitot probe: cover - condition .... Removed - Checked
- Normal static ports: cover - condition .... Removed - Checked
- Antennas - Drains .... Checked
- Ice detection light .... Checked
- Belly anti-collision light (if installed) .... Checked
- Landing light .... Checked
- Right main wheel well .... Checked
- Fuel vent valve: no leaks .... Checked
- Overwing emergency light .... Checked
- Emergency exit .... Checked
- Windows: condition .... Checked

RIGHT WING

- Right engine air inlet .... Cover removed - Checked
- Ground emergency light .... Checked
- Leading edge condition .... Checked
- Gravity fueling plug .... Checked
- No fuel leaks .... Checked
- Navigation and strobe lights – Wing tip fairing .... Undamaged - Checked
- Static dischargers (4) .... Checked
- Aileron - Flaps - Airbrakes .... Checked
- Right landing gear:
  - No hydraulic leaks, wheels and tire condition .... Checked
  - Shock absorber height .... Checked
  - Brake condition .... Checked
  - Chock .... Removed

REAR FUSELAGE - REAR CONE - TAIL SURFACES

- Nacelle ventilation - Drains .... Checked
- Right engine tail pipe .... Checked
- Cowl latches (all 3) .... Locked and flush
- Thrust reverser (A/C with SB F2000-19): stowed position .... Checked
- Engine pylon static discharger .... Checked
- Pressure fueling access door .... Closed
- Pressure fueling control door .... Closed
- Heat exchanger air inlet (top fuselage) .... Checked
- Lavatory drain access door .... Closed
- External power connector access door .... Closed
- Coupling ground starter access door .... Closed
- Fire extinguisher pressures .... Checked
- Lower rear compartment door .... Closed
- APU air inlet and exhaust gas outlet .... Checked
- Right tailplane:
  - Leading edge and elevator condition .... Checked
  - Static dischargers (3) .... In place
- Vertical stabilizer:
  - Leading edge and rudder condition .... Checked
  - White navigation light .... Checked
  - Strobe light .... Checked
  - Static dischargers (2) .... In place
- Left tailplane:
  - Leading edge and elevator condition .... Checked
  - Static dischargers (3) .... In place
- Left engine tail pipe .... Checked

- Cowl latches (all 3) .... Locked and flush
- APU servicing door (if installed) .... Closed
- Thrust reverser (A/C with SB F2000-19): stowed position .... Checked

- Engine pylon static discharger .... Checked
- FWD service compartment door .... Closed
- Baggage compartment door .... Closed
  - Door control latch panel .... Closed
  - Door lock handle .... Closed
- Water tank filling panel .... Closed
- Nacelle ventilation - Drains .... Checked

LEFT WING

- Left landing gear:
  - No hydraulic leaks, wheels and tire condition .... Checked
  - Shock absorber height .... Checked
  - Brake condition .... Checked
  - Chock .... Removed
- Aileron - Flaps - Airbrakes .... Checked
- Static dischargers (4) .... Checked
- Navigation and strobe lights - Wing tip fairing .... Undamaged - Checked
- No fuel leaks .... Checked
- Gravity fueling plug .... Checked
- Leading edge condition .... Checked
- Left engine air inlet .... Cover removed - Checked

LEFT FORWARD FUSELAGE

- Fuel vent valve: no leaks .... Checked
- Ice detection light .... Checked
- Landing light .... Checked
- Cabin access door .... Checked

PREFLIGHT - COCKPIT CHECK (ELECTRICAL POWER OFF CONDITION)

➨ Passenger door .... Closed - Checked

☑ DOOR LIFT light (if installed) .... Out

LH SIDE CONSOLE

➨ Oxygen mask .... Checked

➨ AHRS 1 controller DG switch .... OFF

For A/C without M1960:

➨ IRS 1 .... OFF

End

➨ HF (if installed) .... OFF

➨ Audio control panel .... Set

PILOT INSTRUMENT PANEL

➨ DCP:

➨ EFIS DIM control .... Full bright

➨ RSP: XFR pushbuttons (all 5) .... Out

➨ Radar control .... OFF

CENTER INSTRUMENT PANEL

➨ FUEL SHUT OFF guarded switches (all 3) .... Guarded

➨ Fire extinguisher switches .... Position 0

➨ Normal L/G control .... Down

➨ GEAR PULL handle .... Pushed in

➨ APR pushbuttons .... Out

➨ Manual pressurization knob .... Green range

➨ LOW RATE pushbutton (if installed) .... Off

➨ DUMP pressurization guarded light pushbutton .... Off - Guarded

➨ MAN pressurization light pushbutton .... Out

➨ COND'G EMERG switch .... Off - Guarded

➨ RECIRC switch .... AUTO

COPILOT INSTRUMENT PANEL

➨ DCP:

➨ EFIS DIM control .... Full bright

➨ RSP-XFR pushbuttons (all 5) .... Out

➨ ELT switch (if installed) .... Guarded

RH SIDE CONSOLE

- ➨ Oxygen pressure .... Appropriate
- ➨ Passenger oxygen .... NORMAL
- ➨ Audio control panel .... Set
- ➨ AHRS 2 controller DG switch (if installed) .... OFF

For A/C without M1960:

- ➨ IRS 2 .... OFF

End

- ➨ HF (if installed) .... OFF
- ➨ Oxygen mask .... Checked
- ➨ GALLEY MASTER light pushbutton (if installed) .... Pushed to set OFF
- ➨ CABIN MASTER light pushbutton (if installed) .... Pushed to set OFF
- ➨ GALLEY MASTER switch (if installed) .... Off

CENTER PEDESTAL

For A/C with M1960:

- ➨ IRS .... OFF

End

- ➨ Power levers .... IDLE
- ➨ FUEL ENG switches .... OFF
- ➨ RTU switches .... ON
- ➨ ATC switch .... ST BY
- ➨ HDG-TRK selector .... HDG
- ➨ AP / YD DISC .... Normal
- ➨ AIRBRAKES handle .... Position 0
- ➨ Slat-flap handle .... CLEAN
- ➨ EMERG SLATS switch .... Guarded
- ➨ GPWS FLAPS O'RIDE (if installed) .... Guarded
- ➨ L/G extension gravity control handles .... Checked
- ➨ Stabilizer trim - C/B .... In

OVERHEAD PANEL

- ➨ Circuit breakers .... In
- ➨ Avionics masters .... Off
- ➨ LH BUS / ESS.BUS tie rotary switch .... Horizontal (Tied)
- ➨ ESS.BUS / RH BUS tie rotary switch .... FLIGHT NORM
- ➨ EXT PWR pushbutton .... Out
- ➨ GEN 1 - APU - BAT selector .... BAT
- ➨ GEN 1 - APU gen - GEN 2 switches .... On
- ➨ BAT switch .... Off
- ➨ AHS voltage .... Checked
- ➨ APU MASTER light pushbutton .... Out

- ➨ HYDR 2 ISOL switch.. AUTO
- ➨ ST BY PUMP switch .... OFF
- ➨ START selector switches .... NORMAL
- ➨ SYNC switch.. OFF
- ➨ BOOSTER switches.. Off
- ➨ XTK switch.. Neutral
- ➨ X-BP rotary switch .... Vertical (Closed)
- ➨ BLEED switches (all 3) .... AUTO
- ➨ CREW and PASSENGER air conditioning valve switches .... AUTO
- ➨ Isolation rotary switch .... Horizontal (open)
- ➨ CREW and PAX air conditioning switches .... AUTO
- ➨ Temperature controllers.. As required
- ➨ PITOT switches (all 3).. Off
- ➨ ANTI-ICE switches (all 3) .... Off
- ➨ WINDSHIELD switches (all 3).. OFF
- ➨ WIPER switches (all 2) .... OFF
- ➨ EXTERIOR LIGHTS switches (all 6) .... OFF
- ➨ INTERIOR LIGHTS switches and pushbuttons (all 5) .... OFF
- ➨ Lighting rheostats .... Off
- ➨ FMS MASTER (LH and RH) switches (if installed).. Off

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PREFLIGHT - COCKPIT CHECK (ELECTRICAL POWER OFF CONDITION)

➨ Passenger door .... Closed - Checked

☑ DOOR LIFT light (if installed) .... Out

LH SIDE CONSOLE

➨ Oxygen mask .... Checked

➨ AHRS 1 controller DG switch .... OFF

For A/C without M1960:

➨ IRS 1 .... OFF

End

➨ HF (if installed) .... OFF

➨ Audio control panel .... Set

PILOT INSTRUMENT PANEL

➨ DCP:

- ➨ EFIS DIM control .... Full bright
- ➨ RSP: XFR pushbuttons (all 5) .... Out
- ➨ Radar control .... OFF

CENTER INSTRUMENT PANEL

➨ HDG-TRK selector .... HDG

➨ AP / YD DISC .... Normal

➨ FUEL SHUT OFF guarded switches (all 3) .... Guarded

➨ Fire extinguisher switches .... Position 0

➨ Normal L/G control .... Down

➨ GEAR PULL handle .... Pushed in

➨ APR pushbuttons .... Out

➨ Manual pressurization knob .... Green range

➨ LOW RATE pushbutton (if installed) .... Off

➨ DUMP pressurization guarded light pushbutton .... Off - Guarded

➨ MAN pressurization light pushbutton .... Out

➨ COND'G EMERG switch .... Off - Guarded

➨ RECIRC switch .... AUTO

COPILOT INSTRUMENT PANEL

➨ DCP:

- ➨ EFIS DIM control .... Full bright
- ➨ RSP-XFR pushbuttons (all 5) .... Out

➨ ELT switch (if installed) .... Guarded

RH SIDE CONSOLE

➨ Oxygen pressure .... Appropriate
➨ Passenger oxygen .... NORMAL
➨ Audio control panel .... Set
➨ AHRS 2 controller DG switch (if installed) .... OFF

For A/C without M1960:

➨ IRS 2 .... OFF

End

➨ HF (if installed) .... OFF
➨ Oxygen mask .... Checked
➨ GALLEY MASTER light pushbutton (if installed) .... Pushed to set OFF
➨ CABIN MASTER light pushbutton (if installed) .... Pushed to set OFF
➨ GALLEY MASTER switch (if installed) .... Off

CENTER PEDESTAL

For A/C with M1960:

➨ IRS .... OFF

End

➨ Power levers .... IDLE
➨ FUEL ENG switches .... OFF
➨ RTU switches .... ON
➨ ATC switch .... ST BY
➨ AIRBRAKES handle .... Position 0
➨ Slat-flap handle .... CLEAN
➨ EMERG SLATS switch .... Guarded
➨ GPWS FLAPS O'RIDE (if installed) .... Guarded
➨ L/G extension gravity control handles .... Checked
➨ Stabilizer trim - C/B .... In

OVERHEAD PANEL

➨ Circuit breakers .... In
➨ Avionics masters .... Off
➨ LH BUS / ESS.BUS tie rotary switch .... Horizontal (Tied)
➨ ESS.BUS / RH BUS tie rotary switch .... FLIGHT NORM
➨ EXT PWR pushbutton .... Out
➨ GEN 1 - APU - BAT selector .... BAT
➨ GEN 1 - APU gen - GEN 2 switches .... On
➨ BAT switch .... Off
➨ AHS voltage .... Checked
➨ APU MASTER light pushbutton .... Out
➨ HYDR 2 ISOL switch .... AUTO
➨ ST BY PUMP switch .... OFF

- ➨ START selector switches .... NORMAL
- ➨ SYNC switch .... OFF
- ➨ BOOSTER switches .... Off
- ➨ XTK switch .... Neutral
- ➨ X-BP rotary switch .... Vertical (Closed)
- ➨ BLEED switches (all 3) .... AUTO
- ➨ CREW and PASSENGER air conditioning valve switches .... AUTO
- ➨ Isolation rotary switch .... Horizontal (open)
- ➨ CREW and PAX air conditioning switches .... AUTO
- ➨ Temperature controllers .... As required
- ➨ PITOT switches (all 3) .... Off
- ➨ ANTI-ICE switches (all 3) .... Off
- ➨ WINDSHIELD switches (all 3) .... OFF
- ➨ WIPER switches (all 2) .... OFF
- ➨ EXTERIOR LIGHTS switches (all 6) .... OFF
- ➨ INTERIOR LIGHTS switches and pushbuttons (all 5) .... OFF
- ➨ Lighting rheostats .... Off
- ➨ FMS MASTER (LH and RH) switches (if installed) .... Off

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PREFLIGHT - COCKPIT CHECK (ELECTRICAL POWER ON CONDITION)

➨ BAT switch .... On
☑ **BAT** light .... Out - Checked
☑ Voltage .... Checked
➨ Stand-by horizon .... Initialized
➨ ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)
☑ **RH BUS TIED** light .... On - Checked
➨ **BRAKE ACCU** light out .... Checked
➨ PARK BRAKE handle .... Set - First detent
☑ **BRAKE PRESS** light .... On - Checked
➨ HRZN voltage .... BAT green range - Checked
☑ HORIZON EMERG PWR light (if installed) .... On - Checked
➨ ON BAT yellow message on the SFD (if installed) .... Out - Checked
➨ Fire detection .... Tested
➨ Warning panel .... Tested
☑ Thrust reversers annunciations (A/C with SB F2000-19) .... Checked
➨ EIED: Maintenance page .... Checked
➨ INTERIOR LIGHTS: No smoking light pushbutton .... On
➨ Mid cabin partition door (if installed): latched in open position .... Checked
☑ **AFT CABIN ISOL** light .... Out

■ **If engine start is made with APU assistance:**

➨ EXTERIOR LIGHTS: NAV switch .... NAV
➨ LH BOOSTER switch .... On
☑ **FUEL 1** light .... Out
➨ APU BLEED switch .... AUTO
➨ APU: MASTER light pushbutton .... Pushed
☑ MASTER green light .... On (flashing then steady)
➨ APU: START/STOP light pushbutton .... Pushed 1 sec.
☑ START/STOP green light .... On

CAUTION

Starting attempts should be made as follows:
- Wait at least 30 seconds between three successive attempts and,
- Wait at least 15 minutes between each series of 3 attempts.

➨ EIED: APU parameters .... Checked
➨ APU ammeter .... Checked
➨ **APU GEN** light .... Out

If GPU assistance (electrical) is used:

- Ground power unit .... Plugged
- DC SUPPLY: EXT PWR light pushbutton .... Pushed
  - ☑ EXT PWR white light .... On
  - ☑ **RH BUS TIED** light .... On

AFTER APU START OR IF A GPU (ELECTRICAL) IS USED

- FMS MASTER (LH and RH) switches (if installed) .... On
  - ☑ **FMS MASTER** lights .... Out
- Seats and rudder pedals .... Adjusted - Locked
- Cabin and cockpit lighting .... As required
- INTERIOR LIGHTS: Emergency lights switch .... ON - ARM
- Avionics masters .... On
- IRS (all 3) (if installed) .... NAV
- FMS (after IRS autotest (if installed)) .... On
- RTU .... Set
- Clocks .... Checked - Set
- Warning panel and lights .... Tested
  - Thrust reversers annunciations (A/C with SB F2000-19) .... Checked
  - DIM-BRIGHT switch .... As appropriate
- Configuration panel .... Tested
- Stand-by altimeter .... Set

EIED:

- Fuel quantity .... Checked
- Fuel used .... Reset to 0
- Hydraulic quantities .... Green range - Checked

- LOW RATE light (if installed) .... Tested
- Cabin pressure controller .... Set
- Altimeters and ASEL .... Set
- Take-off data - Bugs .... Computed - Set
- Stabilizer trim:
  - Emergency trim .... Checked
  - Normal trim .... Checked - Set
- **ST BY PUMP** light .... Verify out
- ST BY PUMP switch .... AUTO
  - EIED Hydraulic page:
    - ☑ Hyd #2 pressure cycling time .... Greater than 2 sec. - Checked
- AIRBRAKES handle .... Position 2
  - ☑ **AIRBRAKE** light .... On
- **T/O CONFIG** light and **NO TAKE-OFF** voice warning .... Checked

- STALL 2 .... Tested *
  - Audio warning .... Checked
  - EIED's: RH **IGN** annunciation .... On
  - Airbrakes retraction .... Verified
    - ☑ **AIRBRAKE** light flashing .... Checked
  - Slats extension .... Verified
    - ☑ Green SLATS light flashing .... Checked
- AIRBRAKES handle .... Position 0
    - ☑ **AIRBRAKE** light .... Out
- Emergency AILERON trim .... Checked *
- AILERON trim .... Checked - Set *
- RUDDER trim .... Checked - Set *
- ST BY PUMP switch .... OFF
- ADC 1 then ADC 2 .... Tested *
    - ☑ VMO / MMO audio warnings .... Tested
- E BAT or AUX BAT TEST pushbutton (if installed) .... Pushed
    - ☑ Voltage .... Checked
- GPWS / EGPWS .... Tested
- Battery temperature monitor .... Tested
- Cockpit voice recorder (CVR) (if installed) .... Tested *
- Digital flight data recorder (DFDR) (if installed) .... Initiated
- Maintenance test panel .... Checked

* To be performed at the first flight of the day.

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STARTING ENGINES

NOTE

If the crosswind or tailwind component exceeds 20 knots, it is recommended to reposition the airplane into the wind.

➨ EXTERIOR LIGHTS: ANTICOL switch........................RED
➨ Power levers........................Verified IDLE
➨ FADEC: fault messages........................Checked - Reset

EIED:

➨ Class 2 MSG........................Out - Checked
➨ Class 3 MSG........................Checked

▶ ENGINE 2 START

■ Start with APU assistance:

CAUTION

To reduce the possibility of hot or hung starts, it is recommended that residual ITT be at or below 150° C

➨ RH BOOSTER switch........................On
  ☑ **FUEL 2** light........................Out
➨ FUEL ENG 2 switch........................ON
➨ RH START pushbutton........................Pushed 2 seconds
➨ At 7 to 13 % N2:
  EIED:
  ➨ RH **IGN** annunciation........................On
➨ ITT, OIL pressure, N1........................Rise - Checked
➨ When N2 reaches 53.6 %:
  EIED:
  ➨ RH **IGN** annunciation........................Out
➨ With N2 stabilized at 55 %:
  ➨ **START 2** light........................Out
  ➨ **PUMP 2 HYDR #1** and **PUMP HYDR #2** lights........................Out
  ➨ Hydraulic 2 pressure........................Green range
  ➨ Hydraulic 1 pressure........................Yellow range
  ➨ **OIL 2** light........................Out
  ➨ **GEN 2** light........................Out
    ☑ GEN 2 voltage-load........................Checked

- Idle parameters .... Checked
- EIEDs: Class 2 messages .... Out - Checked

▶ ENGINE 1 START

- FUEL ENG 1 switch .... On
- LH START pushbutton .... Pushed 2 seconds

If APU assisted start:

- Use same starting procedures as for engine 2.
- With N2 stabilized at 55 %:
  - **START 1** light .... Out
  - **PUMP 1 HYDR #1** light .... Out
  - Hydraulic 1 pressure .... Green range
  - **OIL 1** light .... Out
  - **GEN 1** light .... Out
    - ☑ GEN 1 voltage-load .... Checked
  - Idle parameters .... Checked
  - EIEDs: Class 2 messages .... Out - Checked

If GPU (air) assisted start:

- Use same starting procedures as with APU assistance.
- GPU (air) .... Disconnected

▶ ENGINE 1 CROSSBLEED START

- LH BOOSTER switch .... On
  - ☑ **FUEL 1** light .... Out
- FUEL ENG 1 switch .... ON
- Engine 2 N1 .... 60 % - Checked
- Use same starting procedure as for engine 2.
- Engine 2 N1 .... IDLE

NOTE

In case of engine 1 crossbleed start, APU running, set APU BLEED switch OFF, verify BLEED 2 switch AUTO and isolation rotary switch open.

STARTING PROBLEMS

DISCONTINUE START WHENEVER

- Light off does not occur within 10 seconds after reaching 22 % N2.
- Oil pressure is not indicated by 20 % N2.
- N1 does not increase smoothly and rapidly to idle after light-off.
- Idle parameters are not reached within 60 seconds after light-off.

➨ FUEL ENG switch .... OFF
➨ BOOSTER switch .... Off

> **NOTE**
>
> With APU running, keep the LH BOOSTER switch on.

■ **If no light-off and IGN annunciation on (EIED):**

➨ Perform a dry motoring (30 seconds max.).

- ➨ Start selector switch .... MOTORING
- ➨ Start pushbutton .... Pushed
- ➨ ITT .... Monitor
- ➨ Start selector switch .... NORMAL

> **CAUTION**
>
> **Do not attempt another start as long as the ITT is above 150°C.**
> **If necessary, motor the engine to cool it down.**
> **If a new start is expected, the start selector switch should be selected on IGNITION.**

AFTER START

- ➨ DC SUPPLY: EXT PWR light pushbutton .... Pushed
  - ☑ EXT PWR white light .... Out
- ➨ GPU (electrical) .... Unplugged
- ➨ ESS.BUS / RH BUS tie rotary switch .... FLIGHT NORM
  - ☑ **RH BUS TIED** light .... Out - Checked
- ➨ Battery voltage - load .... Checked
- ➨ Generator voltages - loads .... Checked
- ➨ ST BY PUMP switch .... AUTO
- ➨ Compass heading .... Checked

WINDSHIELD:

- ➨ PILOT and COPILOT switches .... NORM
- ➨ SIDE switch .... On
- ➨ INTERIOR LIGHTS: **FASTEN BELTS** light pushbutton .... On
- ➨ All warning panel lights out except:
  - ➨ **LH PROBES**, **RH PROBES**, **STD BY PITOT** .... On
  - ➨ **BRAKE PRESS** .... On
- ➨ Hydraulic pressures .... Checked
- ➨ Hydraulic quantity .... Green range
- ➨ STALL 1 .... Tested *
  - ➨ Stick shaker (if installed) .... Activation
  - ➨ Audio warning .... Checked
  - ➨ EIED's: LH **IGN** annunciation .... On
  - ➨ Slats extension .... Verified
    - ☑ Green SLATS light flashing .... Checked
- ➨ Slat-flap handle .... Take-off position
- ➨ COM - NAV - ADF .... Set
- ➨ E BAT or AUX BAT light pushbutton (if installed) .... Pushed
  - ☑ Amber E BAT ON / OFF lights .... Out - Checked
- ➨ Flight ID (if installed) .... Set

For A/C without M2468 or SB F2000-327:

- ➨ Transponder .... Set

For A/C with M2468 or SB F2000-327:

- ➨ Transponder .... On

End

- ➨ Radar .... TEST
- ➨ PFD / MFD .... Set
- ➨ Autopilot .... Off

➨ Yaw damper (FCP) .... On
☑ PFD's: YD annunciation .... Out - Checked
➨ Yaw damper .... Off
☑ PFD's: yellow R flag .... Out - Checked
➨ Autopilot (FCP) .... On
➨ Autopilot (pilot control wheel AP pushbutton) .... Off
☑ PFD's: flashing red **AP** annunciation .... On - Checked
☑ Audio warning .... Checked
➨ Autopilot (FCP) .... On
➨ Autopilot (copilot control wheel AP pushbutton) .... Off
☑ PFD's: flashing red **AP** annunciation .... On - Checked
☑ Audio warning .... Checked
➨ 115 / 230 VAC light pushbutton (if installed) .... OFF

ANTI-ICE tests:

➨ Power levers .... IDLE - Checked

NOTE

Power levers must stay at IDLE detent during all ANTI-ICE tests.

➨ APU BLEED switch .... OFF

ANTI-ICE:

➨ WINGS (or WINGS BRK if installed) switch .... On *
☑ Observe N2's and ITTs (all 2) .... Rising
☑ WINGS light .... On
➨ WINGS (or WINGS BRK if installed) switch .... Off (or OFF)
☑ WINGS light .... Out
➨ Wait for 5 sec.
➨ APU BLEED switch .... AUTO
➨ ENGINES: SYNC (if installed) .... ON

ANTI-ICE:

➨ ENG 1 - ENG 2 switches (12 seconds mini.) .... On *
☑ Observe N2's and ITTs (all 2) .... Rising
☑ ENG lights .... On
☑ EIED: T2 HEATER FAULT message .... Not displayed
➨ ENG 1 - ENG 2 switches .... Off - As required
☑ ENG lights .... Out
➨ ENGINES: SYNC (if installed) .... OFF
➨ DOORS light .... Out - Checked
➨ Passenger door curtain .... Open - Checked

* To be performed at the first flight of the day.

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TAXIING

- Pilot sliding window .... Closed - Checked
- TAXI lights switch .... On
- PARK BRAKE handle .... Released
  - ☑ BRAKE PRESS light .... Out
- PARK BRAKE .... Tested

For A/C with SB F2000-19:

- Thrust reversers .... Tested
  - Power levers .... IDLE
  - Power levers .... T / R IDLE
  - TRANS white lights .... On then out - Checked
  - DEPLOY green lights .... On - Checked
  - Power levers .... IDLE
  - DEPLOY green lights .... Out - Checked
  - TRANS white lights .... On then out - Checked
  - THRUST REVERSER warning lights .... Out - Checked

End

- Take-off briefing .... Completed

LINE UP

EXTERIOR LIGHTS:

➨ LANDING light switches .... On

☑ **LDG** light .... On

➨ ANTICOL switch .... ALL

➨ NAV lights switch .... NAV - Checked

➨ Radar .... On

For A/C without M2468 or SB F2000-327:

➨ Transponder .... On

End

➨ APU - START / STOP light pushbutton .... Off

☑ START/STOP green light .... Out

➨ APU MASTER light pushbutton .... Off

☑ MASTER green light .... Out

➨ PITOT switches (all 3) .... On

☑ **LH PROBE**, **STD BY PITOT** and **RH PROBE** lights .... Out

➨ All warning lights .... Out

➨ Flight controls .... Free

TAXIING

- ➨ Pilot sliding window .... Closed - Checked
- ➨ TAXI lights switch .... On
- ➨ PARK BRAKE handle .... Released
  - ☑ **BRAKE PRESS** light .... Out
- ➨ PARK BRAKE .... Tested

For A/C with SB F2000-19:

- ➨ Thrust reversers .... Tested
  - ➨ Power levers .... IDLE
  - ➨ Power levers .... T / R IDLE
  - ➨ **TRANS** white lights .... On then out - Checked
  - ➨ **DEPLOY** green lights .... On - Checked
  - ➨ Power levers .... IDLE
  - ➨ **DEPLOY** green lights .... Out - Checked
  - ➨ **TRANS** white lights .... On then out - Checked
  - ➨ **THRUST REVERSER** warning lights .... Out - Checked

End

- ➨ Take-off briefing .... Completed

LINE UP

EXTERIOR LIGHTS:

➨ LANDING light switches .... On

☑ **LDG** light .... On

➨ ANTICOL switch .... ALL

➨ NAV lights switch .... NAV - Checked

➨ Radar .... On

For A/C without M2468 or SB F2000-327:

➨ Transponder .... On

End

➨ APU - START / STOP light pushbutton .... Off

☑ START/STOP green light .... Out

➨ APU MASTER light pushbutton .... Off

☑ MASTER green light .... Out

➨ PITOT switches (all 3) .... On

☑ **LH PROBE**, **STD BY PITOT** and **RH PROBE** lights .... Out

➨ All warning lights .... Out

➨ Flight controls .... Free

■ **If wings anti-icing is required and anticipated:**

➨ BLEED 2 switch .... OFF

➨ Isolation rotary switch .... ISOL

☑ **ISOL** light .... On

TAKE-OFF

▶ PRIOR TO BRAKE RELEASE:

➨ Power levers .... TAKE−OFF
- ☑ N1 .... According to Performance Charts - Checked
- ☑ ITT's .... Checked

➨ Brakes .... Release

➨ Acceleration .... Checked

➨ Use steering system .... As necessary

➨ Airspeed at computed time .... Checked
- ☑ Airspeed indicators .... Cross - Checked

▶ WHEN A POSITIVE RATE OF CLIMB IS ESTABLISHED:

➨ Landing gear handle .... Up
- ☑ LANDING GEAR lights .... Out

➨ ANTI-ICE: WINGS (or WINGS BRK if installed) switch .... As required

▶ AT V2 + 10 KT AND TAKE−OFF SAFETY HEIGHT REACHING:

➨ Slat-flap handle .... CLEAN
- ☑ FLAPS indicator .... UP
- ☑ SLATS light .... Out

CAUTION

To minimize possible flaps asymmetry during take-off, retract the flaps one notch at a time.

AFTER TAKE-OFF

- ➨ LANDING and TAXI switches .... Off
  - ☑ **LDG** light .... Out
- ➨ INTERIOR LIGHTS: **FASTEN BELTS** and No smoking light pushbuttons .... As required
- ➨ Mid cabin partition door (if installed).. As required
- ➨ Climb power.. Set
- ➨ Engine parameters .... Checked
- ➨ Yaw Damper.. Verified on
- ➨ Cabin pressure and temperature controllers .... Checked
- ➨ Altimeters.. Set
- ➨ 115 / 230 VAC light pushbutton (if installed) .... As required

TAKE-OFF

▶ PRIOR TO BRAKE RELEASE:

➨ Power levers .... TAKE−OFF
☑ N1 .... According to Performance Charts - Checked
☑ ITT's .... Checked
➨ Brakes .... Release
➨ Acceleration .... Checked
➨ Use steering system .... As necessary
➨ Airspeed at computed time .... Checked
☑ Airspeed indicators .... Cross - Checked

▶ WHEN A POSITIVE RATE OF CLIMB IS ESTABLISHED:

➨ Landing gear handle .... Up
☑ LANDING GEAR lights .... Out

■ **If wings anti-icing is required:**
➨ ANTI−ICE: WINGS (or WINGS BRK if installed) switch .... On
➨ After 3 seconds:
➨ Isolation rotary switch .... Horizontal (open) - Checked
☑ **ISOL** light .... Out
➨ BLEED 2 switch .... AUTO

NOTE

During wings anti-ice activation, disregard possible and temporary indications as:
- **ANTI-ICE** light on,
- Amber WINGS or (WINGS + BRK if installed) ANTI-ICE light steady on.

■ **If wings anti-icing is not required:**
➨ Isolation rotary switch .... Horizontal (open) - Checked
☑ **ISOL** light .... Out - Checked
➨ BLEED 2 switch .... AUTO - Checked

▶ AT V2 + 10 KT AND TAKE−OFF SAFETY HEIGHT REACHING:

➨ Slat-flap handle .... CLEAN
☑ FLAPS indicator .... UP
☑ SLATS light .... Out

CAUTION

To minimize possible flaps asymmetry during take-off, retract the flaps one notch at a time.

AFTER TAKE-OFF

- ➨ LANDING and TAXI switches .... Off
  - ☑ **LDG** light .... Out
- ➨ INTERIOR LIGHTS: **FASTEN BELTS** and No smoking light pushbuttons .... As required
- ➨ Mid cabin partition door (if installed).. As required
- ➨ Climb power.. Set
- ➨ Engine parameters .... Checked
- ➨ Yaw Damper.. Verified on
- ➨ Cabin pressure and temperature controllers .... Checked
- ➨ Altimeters.. Set
- ➨ 115 / 230 VAC light pushbutton (if installed) .... As required

CRUISE

- ➨ Engine parameters .... Checked
- ➨ SYNC switch (if installed).. As required
- ➨ If necessary, fuel quantities..Equalized
- ➨ Station check .... Periodically checked

DESCENT

- ➨ Pressure controller.. Checked
- ➨ LOW RATE light pushbutton (if installed) .... As required
- ➨ Landing parameters .... Called out
  - ☑ Computations - Bugs..Set
- ➨ INTERIOR LIGHTS: **FASTEN BELTS** light pushbutton.. On
- ➨ ANTI-ICE switches.. As required
- ➨ ANTI-ICE: WINGS BRK switch (if installed) .... As required

CAUTION

When the brake heating system is used, the minimum required N1 speed:
- With all engines operating: MUST BE INCREASED BY 1 %.
- With one engine out: MUST BE INCREASED BY 2 %.

- ➨ Altimeters..Set

CAUTION

To minimize possible flaps asymmetry during approach, extend the flaps one notch at a time.

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APPROACH

NOTE

Airbrakes may be used during landing approach provided airspeed is at least:
- Position 1: VREF + 10 kt.
- Position 2: VREF + 15 kt.

In both cases, increase the landing distance by 18 %.

➨ Passenger door curtain .... Open
➨ 115 / 230 VAC light pushbutton (if installed) .... OFF
➨ SYNC switch (if installed) .... OFF
➨ X-BP rotary switch .... Vertical (closed)
☑ **X-BP** light .... Out
➨ ANTI-ICE switches .... As required
➨ ANTI-ICE: WINGS BRK switch (if installed) .... WINGS or OFF as required
➨ EXTERIOR LIGHTS: LANDING switches .... As required
☑ **LDG** light (if used) .... On
➨ INTERIOR LIGHTS: No smoking light pushbutton .... On
➨ Mid cabin partition door: latched in open position (if installed) .... Checked
☑ **AFT CABIN ISOL** light .... Off
➨ Altimeters .... Checked
➨ MDA / DH .... Set

BEFORE LANDING

➨ Slat-flap handle .... 10° FLAPS + SLATS
➨ Landing gear .... Down - Checked
☑ LANDING GEAR green lights (all 3) .... On
➨ Hydraulic pressure .... Checked
➨ Slat-flap handle .... 20° FLAPS + SLATS
➨ Slat-flap handle .... 40° FLAPS + SLATS
➨ Autopilot .... Disengaged
➨ Approach speed (zero wind) .... VREF

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GO AROUND (TWO ENGINES)

- Go-around attitude .... Set
- Power levers .... TAKE OFF
- AIRBRAKES handle .... Position 0
- Slat-flap handle .... 20° FLAPS + SLATS

▶ WHEN A POSITIVE RATE-OF-CLIMB IS ESTABLISHED

- Landing gear handle .... Up
- Slat-flap handle .... 10° FLAPS + SLATS
- Airspeed .... VREF

▶ TRANSITION TO FINAL SEGMENT

- At minimum speed of VREF + 10 kt: slat-flap handle .... CLEAN
- Set and maintain en route climb speed
- Power levers .... MAX CLIMB - Checked

LANDING

- At touch down: AIRBRAKES handle .... Position 2
- Brakes .... As necessary

  For A/C with SB F2000-19:
- Thrust reversers .... As required
  - Nose wheel firmly maintained on ground.
  - Steering wheel .... Pushed
  - Power levers .... T / R IDLE
  - **TRANS** white lights .... On then out - Checked
  - **DEPLOY** green lights .... On - Checked
  - Power .... As required

▶ AT 20 KIAS

- Power levers .... T / R IDLE

  End

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AFTER LANDING

ANTI-ICE:

➨ WINGS (or WINGS BRK if installed) switch .... Off (or OFF)

➨ ENG switches .... As required

➨ PITOT switches (all 3) .... Off

WINDSHIELD:

➨ PILOT and COPILOT switches .... OFF

➨ SIDE switch .... Off

EXTERIOR LIGHTS:

➨ TAXI switch .... On

➨ LANDING switches .... Off

☑ **LDG** light .... Out

➨ ANTICOL switch .... RED

➨ NAV switch .... OFF

For A/C with SB F2000-19:

➨ Thrust reversers (A/C with SB F2000-19) .... Stowed

☑ **DEPLOY** green lights .... Out - Checked

☑ **TRANS** white lights .... On then out - Checked

End

➨ Radar .... Off

For A/C without M2468 or SB F2000-327:

➨ Transponder .... STBY

End

➨ AIRBRAKES handle .... Position 0

➨ Slat-flap handle .... CLEAN

➨ All trims .... Take-off position

➨ ESS.BUS / RH BUS tie rotary switch .... Horizontal (Tied)

☑ **RH BUS TIED** light .... On

➨ APU .... As required

AT RAMP

- PARK BRAKE handle .... First detent
- ST BY PUMP switch .... OFF

For A/C with M2468 or SB F2000-327

- Transponder .... Off

End

- ANTI-ICE: ENG switches .... Off
- EXTERIOR LIGHTS: TAXI switch .... Off
- FMS MASTER (LH and RH)switches .... Off
    - ☑ **FMS MASTER** lights (if installed) .... Illuminated
- IRS (if installed) .... OFF
- EIED: Class 2 / Class 3 MSG .... Checked
- Radar .... Off
- RTU .... Off

▶ AFTER 3 MINUTES OF ENGINE OPERATION AT IDLE SPEED

- FUEL ENG switches .... OFF
- RH BOOSTER switch .... Off

- Avionics masters .... Off
- Shut down APU.

For A/C S/N 142 and above or with SB F2000-193:

- Park Brake accumulator test: *
    - Chocks .... In place
    - PARK BRAKE .... Operate to the first detent position and fully release three times
    - **BRAKE ACCU** .... Out - Checked
    - PARK BRAKE .... As required

End

- LH BOOSTER switch .... Off
- ANTICOL switch .... OFF
- INTERIOR LIGHTS switches .... OFF
- INTERIOR LIGHTS: **FASTEN BELTS** and No smoking light pushbuttons .... Off
- E BAT or AUX BAT light pushbutton (if installed) .... Pushed
    - ☑ Amber E BAT OFF light .... On - Checked
- EIED: Maintenance page .... Checked
- BAT switch .... Off
- Chocks .... In place
    - PARK BRAKE .... Released - As required

* To be performed at the first flight of the day.

ICING CONDITION OPERATION

- Engine anti-ice systems (ENG ANTI-ICE) should be switched on in flight or on ground prior to entering visible moisture whenever the TAT is +10 °C or below.
- Wing anti-ice system (WING ANTI-ICE) should be switched on in flight prior to entering visible moisture whenever the TAT is +10 °C or below.
- Encounter with icing conditions is evidenced by the formation of ice on the non anti-iced area around the windshield panes. In night flight operation, lights switches on by WING (EXTERIOR LIGHTS) switch will illuminate the wing leading edges to allow the detection of ice.
- Comply with engine and wing anti-ice system operational limits and with minimum N1 speed values.
- If necessary during the approach, extend the airbrakes to help keep N1 speed to no less than the specified value, and increase the approach speeds (see 4-150-15).
- The N1 speed of the operative engines must not be less than the minimum values as shown in table below.

CAUTION

When the brake heating system is used, the minimum required N1 speed:
- With all engines operating: MUST BE INCREASED BY 1 %.
- With one engine out: MUST BE INCREASED BY 2 %.

Two engine operative:

Z \ TAT	-30 °C	-20 °C	-10 °C	0 °C	+10 °C
30,000 ft	73	69	63	58	58
20,000 ft	69	66	58	54	54
10,000 ft	63	58	55	51	51
0 ft	57	55	53	51	51

One engine operative:

Z \ TAT	-30 °C	-20 °C	-10 °C	0 °C	+10 °C
30,000 ft	84	80	71	58	58
20,000 ft	85	82	71	58	54
10,000 ft	76	70	60	55	51
0 ft	69	65	56	51	51

NOTE

Between those values, N1 have to be interpolated.

NOTE

Ensure ENG ANTI-ICE selection prior to WINGS (or WINGS BRK if installed) ANTI-ICE. With WINGS ANTI-ICE system on, ensure that the BLEED switches (all 3) are in the AUTO position and the isolation rotary switch open.

LANDING GEAR OPERATION

In icing conditions, the failure of the red landing gear lights to go out when landing gear retraction is accomplished may be due to ice preventing locking of the main gear in up position.

- Maintain indicated airspeed lower than or equal to VLO (190 KIAS).
- Cycle the gear down and up (1 attempt) to get rid of the ice.

SLAT SYSTEM OPERATION

Should the slats fail to fully retract when retraction is initiated in icing conditions (amber transit light on):

- Maintain airspeed at VFE (200 KIAS) or below.
- Leave wing anti-ice system on and maintain engine power settings at or above minimum values.

WINDSHIELD ANTI-ICING

CAUTION

Selection of the WINDSHIELD PILOT and COPILOT switches to the MAX position should be limited to those icing conditions encountered in flight such that the ice protection afforded in the NORM position is inadequate.

ICING CONDITION OPERATION

- Engine anti-ice systems (ENG ANTI-ICE) should be switched on in flight or on ground prior to entering visible moisture whenever the TAT is +10 °C or below.
- Wing anti-ice system (WING ANTI-ICE) should be switched on in flight prior to entering visible moisture whenever the TAT is +10 °C or below. In that case, the following procedure must be applied:

➨ BLEED 2 switch .... OFF

➨ Isolation rotary switch .... Vertical (closed)

☑ ISOL light .... On

■ **After 3 seconds:**

➨ ANTI-ICE: WINGS (or WINGS BRK if installed) switch .... On

■ **After 3 seconds:**

➨ Isolation rotary switch .... Horizontal (open)

☑ ISOL light .... Out

➨ BLEED 2 switch .... AUTO

NOTE

During wings anti-ice activation, disregard possible and temporary indications as:
- ANTI-ICE light on.
- Amber WINGS or (WINGS + BRK if installed) ANTI-ICE light steady on.

- Encounter with icing conditions is evidenced by the formation of ice on the non anti-iced area around the windshield panes. In night flight operation, lights switches on by WING (EXTERIOR LIGHTS) switch will illuminate the wing leading edges to allow the detection of ice.
- Comply with engine and wing anti-ice system operational limits and with minimum N1 speed values.
- If necessary during the approach, extend the airbrakes to help keep N1 speed to no less than the specified value, and increase the approach speeds (see 4-150-15).
- The N1 speed of the operative engines must not be less than the minimum values as shown in table below.

CAUTION

When the brake heating system is used, the minimum required N1 speed:
- With all engines operating: MUST BE INCREASED BY 1 %.
- With one engine out: MUST BE INCREASED BY 2 %.

Two engine operative:

Z \ TAT	-30 °C	-20 °C	-10 °C	0 °C	+10 °C
30,000 ft	73	69	63	58	58
20,000 ft	69	66	58	54	54
10,000 ft	63	58	55	51	51
0 ft	57	55	53	51	51

One engine operative:

Z \ TAT	-30 °C	-20 °C	-10 °C	0 °C	+10 °C
30,000 ft	84	80	71	58	58
20,000 ft	85	82	71	58	54
10,000 ft	76	70	60	55	51
0 ft	69	65	56	51	51

NOTE

Between those values, N1 have to be interpolated.

NOTE

Ensure ENG ANTI-ICE selection prior to WINGS (or WINGS BRK if installed) ANTI-ICE. With WINGS ANTI-ICE system on, ensure that the BLEED switches (all 3) are in the AUTO position and the isolation rotary switch open.

LANDING GEAR OPERATION

In icing conditions, the failure of the red landing gear lights to go out when landing gear retraction is accomplished may be due to ice preventing locking of the main gear in up position.

- Maintain indicated airspeed lower than or equal to VLO (190 KIAS).
- Cycle the gear down and up (1 attempt) to get rid of the ice.

SLAT SYSTEM OPERATION

Should the slats fail to fully retract when retraction is initiated in icing conditions (amber transit light on):

- Maintain airspeed at VFE (200 KIAS) or below.
- Leave wing anti-ice system on and maintain engine power settings at or above minimum values.

WINDSHIELD ANTI-ICING

CAUTION

Selection of the WINDSHIELD PILOT and COPILOT switches to the MAX position should be limited to those icing conditions encountered in flight such that the ice protection afforded in the NORM position is inadequate.

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COLD WEATHER OPERATION

FUEL SELECTION

Prior to prolonged parking in very low temperature conditions ensure (by replacement if necessary) that the freezing point of the fuel used is lower than the anticipated minimum ambient temperature.

Inflight tank fuel temperature must be maintained at least 3 °C above the freezing point of fuel being used. If necessary, increase Mach number or decrease altitude to raise the total air temperature.

GROUND OPERATION

WARNING

DO NOT OPERATE APU WHILE AIRPLANE DE-ICING IS IN PROGRESS.

INGESTION OF COMBUSTIBLE DE-ICING FLUID MAY RESULT IN AN UNCONTROLLED OVERSPEED.

Under specific weather conditions, a fan ice accumulation is possible. This may cause excessive fan vibrations.

➨ Therefore, the following procedure can be applied:

- ➨ START selector switch .... IGNITION
- ➨ Power lever (one at a time) .... 54 % N1 mini. (10 to 30 seconds)
- ➨ N1 vibrations (EIED)........ Monitored
- ➨ START selector switch .... NORMAL

When the GNS-XES has been stored at temperature lower than -20 °C, the system will require 15 minutes at least before it is operative after it is turned on.

Move control surfaces in order to heat hydraulic fluid.

Oxygen mask testing must wait for a sufficient cockpit temperature.

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SEVERE TURBULENCE PENETRATION

Flights in severe turbulence should be avoided whenever conditions permit.

- **If necessary:**
  - ➨ Reduce airspeed to .... 280 KIAS max / MI 0.76 max
  - ➨ INTERIOR LIGHTS: **FASTEN BELTS** light pushbutton .... On
- **If necessary:**
  - ➨ Decrease altitude to increase buffet boundary margin.

NOTE

Autopilot or yaw damper operation is permitted.
With the autopilot disengaged:
- Fly attitude,
- Avoid using the stabilizer trim,
- Do not chase altitude and speed.

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REPORTED BRAKING ACTION

RECOMMENDED MAXIMUM CROSSWIND

The recommended crosswind components here below are not demonstrated; proposed values are issued from in service experience on same airplane type or class.

Reported braking action	Recommended maximum crosswind
Medium	15 kt
Poor	10 kt
Unreliable	5 kt

Use of here above reported braking action shall be restricted to the maximum recommended crosswind determination.

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CABIN RATE OF DESCENT (IF LOW RATE IS INSTALLED)

As the cabin altitude changes very slowly (- 250 ft / minute), the crew must take care, if LOW RATE mode is used, to adopt a low rate of descent in order to ensure that the cabin altitude remains lower than the airplane altitude.

USE OF STAND-BY COMPASS

For reliable stand-by compass indication:

➨ WINDSHIELD PILOT and COPILOT.. OFF

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X-BP CROSSFEED VALVE

This valve must be closed for take-off, approach and landing (i.e. in a vertical position).

FUELING

Pressure fueling

NOTE

Illumination of the STOP FUELING light calls for immediate interruption of the fueling operation.

Overwing fueling

NOTE

Do not pour non-diluted additives into an empty tank.

BAGGAGE COMPARTMENT DOOR IN CABIN

When access to the baggage compartment is not required, the baggage door must be kept closed and latched.

FLAP OPERATION

In flight, extend flaps to the next detent only after cessation of movement to the previous detent position.

AIRBRAKE OPERATION

- The pilot should keep his hand on the control handle until proper extension or retraction of the airbrakes is ascertained.
- If the maximum operating speed limit VMO/MMO is unintentionally exceeded, do not hesitate to use the airbrakes.

THRUST REVERSER OPERATION (A/C WITH SB F2000-19)

Full reverse thrust is usable until the airplane comes to 20 KIAS.

On landing, do not attempt a go-around after the thrust reversers have been deployed.

After touchdown upon landing or during a rejected take-off, before using the thrust reversers, ensure that the airplane IS FIRMLY ON GROUND ON ALL 3 LANDING GEARS and that the airbrakes (if available) are extended and that the steering wheel is pushed.

AUTOPILOT OPERATION (APS-4000)

AUTOPILOT ENGAGEMENT

The airplane should be trimmed prior to engaging the autopilot.

If the autopilot is used with one engine inoperative, lateral / directional trims should be adjusted according to speed change.

The autopilot shall be engaged by pushing the AP pushbutton on the FCP provided the AP / YD DISC in the FCP is in the up position.

WARNING

DO NOT MANUALLY APPLY CONTROL YOKE FORCES IN AN ATTEMPT TO CONTROL THE AIRPLANE

AUTOPILOT DISENGAGEMENT

The pilot should be holding the control wheel when he disengages the autopilot.

The autopilot shall be disengaged by use of the following mean:

- AP disconnect pushbutton on either control wheel - PUSH (disconnects pitch and roll axes).
- AP pushbutton on the FCP,

The autopilot can be disengaged by one or other of the following means:

- Stabilizer trim switches on either control wheel - ACTUATE momentarily (disconnects pitch and roll axes).
- Emergency stabilizer trim - ACTUATE momentarily (disconnects pitch and roll axes).
- GA go-around pushbutton on either control wheel - PUSH (disconnects pitch and roll axes).
- AP / YD DISC pushbutton bar - SELECT DOWN (disconnects all axes).
- FCS / SVO circuit breaker for IAPS 1 or 2 - OPEN (disconnects all axes).

Ascertain disengagement is effective by checking that **AP** red light on the warning panel, flashing red **AP** on the PFD's are on, and audio warning sounds (**AUTOPILOT**).

Warning lights and audio warning can be deleted by pressing AP disconnect pushbutton on the outboard side of the control wheels.

YAW DAMPER DISENGAGEMENT

The yaw damper shall be disengaged by either one or other of the following means:

- YD pushbutton on the FCP,
- AP / YD disconnect pushbutton bar on the FCP,
- Circuit breakers FCS / SVO.

MACH HOLD OPERATION (A/C WITH SB F2000-99)

➨ Stabilize airplane in straight and level flight at desired cruise indicated Mach (0.5 < M < 0.85 and Z > 20,000 ft).

MACH HOLD ENGAGEMENT

➨ MACH HOLD pushbutton..Pushed 1 second

☑ MACH HOLD lights .... On - Checked

➨ Once engaged, adjust periodically the power levers.

MACH HOLD DISENGAGEMENT

➨ MACH HOLD pushbutton..Pushed 1 second

☑ MACH HOLD lights .... Out - Checked

> **NOTE**
>
> If the pushbutton is partially lit when Mach Hold has been engaged:
> - Set quickly power levers beyond Max Cruise detent,
> - Reposition the two power levers,
> - Re-engage Mach Hold.

SECTION 5 – PERFORMANCE

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TABLE OF CONTENTS

ENGINE POWER SETTING - WITHOUT ICE PROTECTION

ENGINE POWER SETTING - WITH ICE PROTECTION

TAKE-OFF 20° FLAPS+SLATS

TAKE-OFF 10° FLAPS+SLATS

EN ROUTE CLIMB

APPROACH AND LANDING

MINIMUM TURN-AROUND TIME

NOISE

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INSTRUMENT ERROR AND ERROR RESULTING FROM THE LOCATION

Instrument error

Difference between reading and true, assumed to be zero in this Manual.

Position error

The errors resulting from the location of static ports and pitot pressure probes are to be compensated by corrections ΔMI, ΔIAS, ΔHi.

Since the pilot and copilot pressure sources are installed symmetrically, the position error is the same. The position error for the independent stand-by system is different.

At low speeds, for pilot and copilot pitot–static systems, the tolerance on airspeed correction is ±1.5 kt, and the tolerance on altitude correction is ±50 ft.

In cruise and climb conditions, the tolerance on altitude correction required by RVSM regulations is met after compliance with SB F2000-63.

AIRSPEEDS

IAS – Indicated airspeed

Airspeed indicator reading, as installed in the airplane.

KIAS – Indicated airspeed

IAS expressed in knots.

CAS – Calibrated airspeed

Airspeed indicator reading, corrected for static and pitot pressure source position error.

KCAS – Calibrated airspeed

CAS expressed in knots.

MI – Indicated mach number

Mach indicator reading, as installed in the airplane.

M – True mach number

Mach indicator reading, corrected for static and pitot pressure source position error.

VMCG – Minimum control speed on the ground

Minimum ground speed at which the airplane is controllable, using flight controls only, when one engine is made suddenly inoperative, and the other is operating at the maximum take-off thrust.

VMCA – Minimum control speed in the air

Minimum flight speed at which the airplane is controllable, with a maximum bank angle of 5°, when one engine is made suddenly inoperative and the other is operating at the maximum take-off thrust.

VMCL – Minimum control speed during approach and landing

Minimum flight speed at which the airplane is controllable during approach and landing, with a maximum bank angle of 5°, when one engine is made suddenly inoperative and the other is operating at the maximum take-off thrust.

VSR – Reference stall speed

Reference calibrated airspeed determined during the stall maneuver in the specific configuration.

VEF – Engine failure speed

Speed at which one engine is assumed to fail during take-off. VEF must be equal to or greater than VMCG.

V1 – Decision speed

Speed at and above which the take–off must be continued. V1 is equal to VEF plus the speed gained during the time necessary to recognize the engine failure and react.

V1 mini

Minimum decision speed V1 corresponding to an engine failure speed equal to VMCG. V1 mini is equal to VMCG plus the speed gained during the time necessary to recognize the engine failure and react.

VMBE – Maximum brake energy speed

Maximum decision speed V1 from which the maximum demonstrated brake energy is not exceeded.

VR – Rotation speed

Speed at which rotation is initiated.

VLOF – Lift-off speed

Speed at which the airplane first becomes airborne.

V2 – Take-off safety speed

Initial climb speed reached by the airplane before it is 35 ft (10.7 m) above the take–off surface with one engine inoperative.

VREF – Reference speed

Minimum speed at the height of 50 ft (15.2 m) during a normal landing.

VREF should not be less than :

- 1.23 VSR in the 40° FLAPS + SLATS landing configuration, and
- VMCL.

ALTITUDES AND HEIGHTS

QFE – Field pressure

Actual atmospheric pressure at the elevation of the airport.

Hp – Pressure altitude

Vertical distance from a standard level reference corresponding to 29.92 in.Hg / 1,013.2 mbar (1,013.2 hPa).

Height

Vertical distance from the lowest point of the airplane to the airport surface.

- Gross height: height reached using the gross climb gradient during a given time.
  Gross height is used to determine the level-off pressure altitude.
- Net height: height reached using the net climb gradient during a given time.
  Net height is used to determine a net flight path permitting any obstacle to be cleared by at least 35 ft (10.7 m) for an airplane taking off from a dry runway and 15 ft (4.57 m) from a wet runway.

Screen height

Height of an imaginary screen which the airplane would just clear when taking off or landing in an unbanked attitude with landing gear extended.

Take-off safety height

Not less than 400 ft.

Minimum engagement height

The height below which the autopilot must be disengaged.

WIND

Wind components

Velocity and direction recorded at the height of 10 m (33 ft) above the runway surface.

- Headwind or tailwind : component parallel to the flight path.
- Crosswind : component perpendicular to the flight path.

Demonstrated crosswind

Satisfactory controllability during take–offs and landings has been demonstrated with 90 degree crosswind component up to 35 kt.

Operation of the airplane in crosswinds greater than the specified value is not necessarily a hazard.

Therefore, operation in crosswinds of greater values is entirely at the operator discretion.

Operation in strong gusty crosswinds is not recommended.

TEMPERATURES

ISA

International Standard Atmosphere, as accepted by the International Civil Aviation Organization.

Temperature deviation

Deviation from standard temperature (ISA).

OAT – Outside air temperature

Free air static (ambient) temperature.

SAT – Static air temperature

Outside air temperature computed from TAT as indicated on the SAT indicator.

TAT – Total air temperature

Outside air temperature, plus adiabatic compression rise as indicated on the TAT indicator.

RUNWAY CONDITIONS

Wet runway

A runway is considered as wet when it is well soaked but without significant areas of standing water.

A runway is considered well soaked when there is sufficient moisture on the runway surface to cause it to appear reflective.

TAKE-OFF

Take-off distance on dry runway

Greater horizontal distance along the take-off path from start of take-off roll to the point at which the airplane reaches a screen height of 35 ft (10.7 m) with either:

- One engine failure at VEF, or
- All engines operating (factored by 115 %).

Take-off distance on wet runway

Greater horizontal distance along the take–off path from start of take-off roll to the point at which the airplane reaches a screen height of either:

- 15 ft (4.57 m) with one engine failing at VEF, or
- 35 ft (10.7 m) with all engines operating (distance factored by 115 %).

Accelerate-stop distance

The greater of the following distances :

- Distance necessary to accelerate the airplane from a standing start to the engine failure speed VEF with all engines operating, then from VEF to V1, assuming critical engine fails at VEF, and then come to a full stop.
- Distance necessary to accelerate the airplane from a standing start to V1 with all engines operating, and then come to a full stop.

In addition, accelerate-stop distance includes a distance margin equivalent to 2 seconds at constant V1.

Balanced field length and associated decision speed

Distance obtained by determining the decision speed V1 at which the take-off distance and accelerate-stop distance are the same. V1 must be greater than V1 min and less than VMBE and VR.

If the determination of V1 gives a value outside one of these limits, V1 must be selected equal to the limit value. The field length found in the chart is the higher of either the take-off distance or the accelerate-stop distance associated with this limit value of V1.

The balanced field length on a wet runway is the greater of the values as found in the charts for the balanced field length on a wet runway and the balanced field length on a dry runway.

NOTE

Engine failure speed associated with balanced field length on a wet runway is different from engine failure speed associated with balanced field length on a dry runway.

TAKE-OFF FLIGHT PATH

The take-off flight path is considered to begin 35 ft above the take-off surface at the end of the take-off distance and extends to a point where the airplane's gross height is at least 1,500 ft above the take-off surface and has achieved the en route configuration and final take-off climb speed.

Reference zero

A point on the runway at the end of the take-off distance to which the height and distance coordinates of other points in the take-off flight path are referred for the obstacle clearance analysis.

Gross climb gradient

Demonstrated ratio expressed in percent of change in height to horizontal distance traveled.

Net climb gradient

Gross climb gradient reduced by :

- 0.8 % for take–off flight path.
- 1.1 % for en route flight path with one engine inoperative.

First segment

Segment extending from the point at which the airplane becomes airborne to the point at which gear is retracted.

The climb gradient without ground effect must be positive.

The speed increases from VLOF to V2, to be attained at a height not greater than 35 ft (10.7 m).

Second segment

Segment extending from the end of the first segment to a height of at least 400 ft.

The gradient of climb may not be less than 2.4 %.

Airplane speed is stabilized at V2.

Transition segment (third segment)

Part of the take-off flight path during which the airplane accelerates while the high lift devices are retracted.

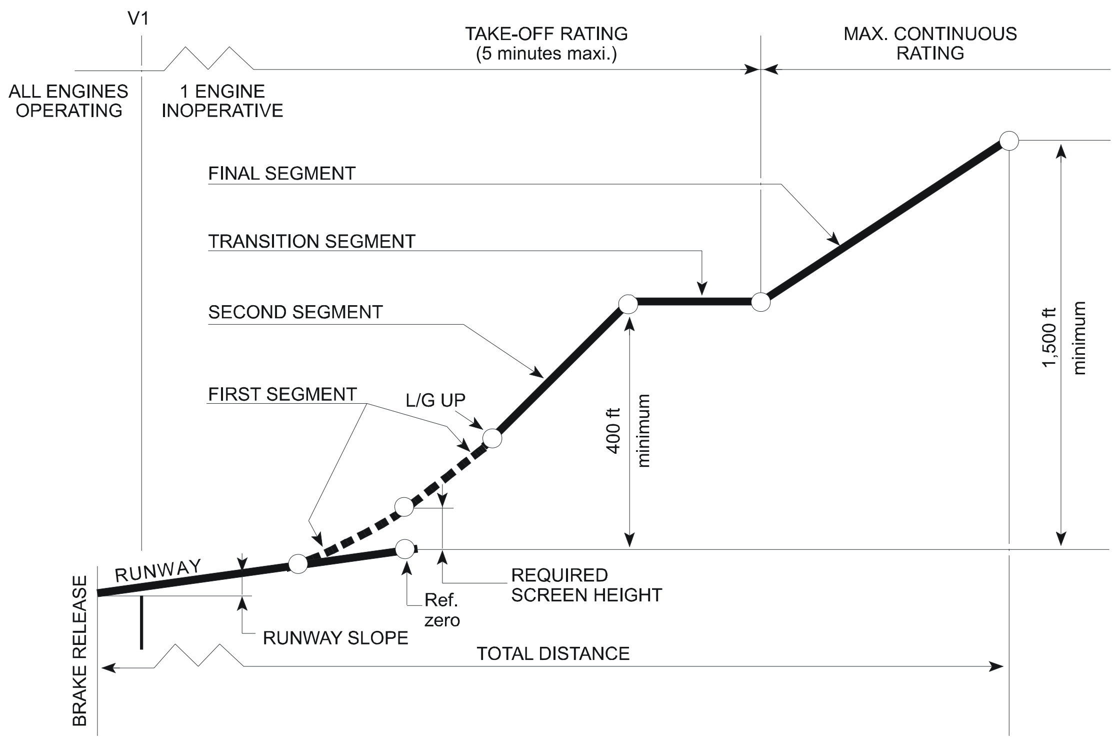
The available gradient of climb may not be less than 1.2 %.

Final segment

Segment extending from the end of the transition segment to a height not less than 1,500 ft.

The gradient of climb may not be less than 1.2 %.

Engine power is reduced from take–off to max. continuous.



V1
TAKE-OFF RATING
(5 minutes maxi.)
MAX. CONTINUOUS
RATING
ALL ENGINES
OPERATING
1 ENGINE
INOPERATIVE
FINAL SEGMENT
TRANSITION SEGMENT
SECOND SEGMENT
FIRST SEGMENT
L/G UP
400 ft
minimum
1,500 ft
minimum
RUNWAY
BRAKE RELEASE
REQUIRED
SCREEN HEIGHT
Ref.
zero
RUNWAY SLOPE
TOTAL DISTANCE

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LANDING

Approach climb

The steady gradient of climb with one engine inoperative may not be less than 2.1 %.

Engine rating is take-off thrust.

Configuration is 10° FLAPS + SLATS, and stabilized airspeed is VREF.

Landing climb

The steady gradient of climb in landing configuration with all engines operative may not be less than 3.2 %.

Engine rating is take-off thrust.

Configuration is 40° FLAPS + SLATS and stabilized airspeed is VREF.

Landing distance

Horizontal distance required to land and come to a complete stop from a point at a screen height of 50 ft (15.2 m) above the landing surface.

Landing field length

The demonstrated landing distance multiplied by a factor of 1.67 (1 / 0.60) or 1.92 (1.15 / 0.60). Factors have to be applied in accordance with the relevant operating regulations.

PERFORMANCE RATINGS

Take-off

Take-off thrust rating used for normal, all engines operating take-off and go-around, with power levers in TAKE-OFF position.

Use of take-off rating is time limited to 5 minutes.

APR - Automatic performance reserve

Certified maximum take-off thrust available, obtained automatically (without pilot action) in the event of an engine failure, with power levers in TAKE-OFF position.

Use of APR rating is time limited to 5 minutes.

Maximum continuous

Maximum continuous thrust obtained automatically (without pilot action) in the event of an engine failure, with power levers in MAX CLIMB position.

Use of maximum continuous rating is available for an unlimited time period.

NOTE

Take-off and APR ratings are limited to 15,000 ft; above that altitude, thrust with power levers in TAKE-OFF position is limited to maximum climb rating when all engines are operating, and to maximum continuous rating in the event of an engine failure.

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All performance data of this section are based upon flight test and the following conditions:

ENGINE POWER SETTINGS

See sub-section 5-400 and 5-450.

Tables 5-400-05 pages 2 and 3 (anti-icing OFF), 5-450-05 pages 2 and 3 (engines anti-icing ON) provide both initial take-off N1 obtained when the APR system has not operated and maximum take-off N1 obtained when the APR system has operated after an engine failure during take-off.

Tables 5-400-10 page 2 (anti-icing OFF) and 5-450-10 page 2 (engines and wing anti-icing ON) provide maximum continuous N1.

TEMPERATURES

See charts 5-250-10 page 1 and 5-250-15 page 1.

Airfield temperatures between -40 °C and -54 °C are taken as equal to -40 °C when reading performance charts.

Landing distances are established based on standard temperatures.

ALTITUDES

Airfield altitudes between 0 and -1,000 ft are taken as equal to 0 ft when reading performance charts.

HUMIDITY

Effect taken into account in performance data in compliance with para. 25.101.

WIND

Take–off and landing distances include correction factors for :

- 50 % of reported headwind component.
- 150 % of reported tailwind component.

ICE PROTECTION

The effect of anti-icing operation is shown on applicable charts for the following conditions :

- Engine anti-icing system operating from brake release to landing gear retraction.
- Engine and wing anti-icing systems operating after landing gear retraction and for en route, approach and landing climbs.

The effect of ice accumulation on unprotected surfaces is shown on applicable charts when considered to affect the performance significantly. The correction applies when encounter with icing conditions is evidenced in any phase of the flight (see NORMAL PROCEDURES, 4-200-05).

This performance information has been prepared by the manufacturer and approved by the authority to assist operators in developing suitable guidance, recommendations or instructions for use by their flight crews when operating in icing conditions.

RUNWAY CONDITION

All the performance data are established based on a smooth, hard surfaced runway, dry or wet as applicable.

PERCENTAGE OF STALL SPEED

All percentages of stall speeds are calculated from speeds expressed in terms of CAS. Position correction must be applied to the factored speed to obtain the indicated safety speed.

ADDITIONAL LANDING DISTANCES

Overspeed at threshold

Each 10 kt overspeed at the threshold increases the landing distance by 12 %.

In flight failures

Effect of loss of normal services is given in each case sections 2 and 3, EMERGENCY and ABNORMAL PROCEDURES, with the associated recommended procedure.

CONFIGURATIONS

FLIGHT CONDITION	CONFIGURATION				REQUIREMENT		EFFECTIVE SPEED
	ENGINES		HIGHT LIFT DEVICES	GEAR	GROSS CLIMB GRADIENT	SPEED	
	POWER SETTING	No					
Take-off	T.O.	2	20° FLAPS + SLATS or 10° FLAPS + SLATS	Down	-	0 to V1	0 to V1
Take-off	T.O. with APR operating	1	20° FLAPS + SLATS or 10° FLAPS + SLATS	Down	-	V1 to VLOF	V1 to VLOF
First segment	T.O. with APR operating	1	20° FLAPS + SLATS or 10° FLAPS + SLATS	Down	0 %	VLOF to V2	VLOF to V2
Second segment	T.O. with APR operating	1	20° FLAPS + SLATS or 10° FLAPS + SLATS	Up	2.4 %	≥ V2 min	V2
Transition segment	T.O. with APR operating	1	Retracting to CLEAN	Up	Available 1.2 %	From V2 to en route climb speed	
Final take-off	Maximum continuous	1	CLEAN	Up	1.2 %	≥ 1.18 VSR	1.345 VSR
En route climb	Maximum continuous	1	CLEAN	Up	-	-	1.345 VSR
Approach climb	T.O. with APR operating	1	10° FLAPS + SLATS	Up	2.1 %	≤ 1.4 VSR	VREF
Landing climb	T.O.	2	40° FLAPS + SLATS	Down	3.2 %	≤ 1.23 VSR	VREF
Landing	-	2	40° FLAPS + SLATS	Down	-	≥ 1.23 VSR	VREF

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MAXIMUM ALLOWABLE WEIGHTS

Take-off - Field length limits

A field length limited take-off weight is reached when the field length determined from the charts is equal to the field length available.

Maximum take-off weight on wet runway must never be higher than maximum take-off weight on the same runway in dry conditions. Then, in case of take-off weight limited by balanced field length on wet runway, this weight has to be compared to the maximum take-off weight on dry runway.

Take-off - Climb performance

A climb requirement limited take-off weight is reached when the available climb gradient equals the minimum gradient required by the regulations for each take-off segment.

The second segment limited take-off weight is always less than the take-off weight limited by the other segments.

Take-off - Obstacle clearance

An obstacle clearance limited take-off weight is reached when the net take-off flight path clears all obstacles by the minimum required margins.

Take-off - Maximum brake energy

Brake energy limited take-off weight is reached when the runway length determined for a speed V1 = VMBE is equal to the field length available. Such limitation is accounted for in the balanced field length take-off charts.

Take-off and landing tire speed

Assuming tailwind components limited as per section 1, the tire speed is neither limiting for take-off in 20° FLAPS + SLATS or 10° FLAPS + SLATS configuration, nor for landing in 40° FLAPS + SLATS configuration.

En route - Climb performance

An en route climb limited weight is reached when the available climb gradient equals the minimum gradient required and all obstacles are cleared by the minimum height specified by the relevant operating regulations.

Approach and landing climb gradients – Maximum brake energy

The weight limit is reached when the approach or landing climb gradient is equal to the minimum climb gradient required by operating regulations in the approach and landing climb configurations or when maximum brake energy is reached.

The most restrictive condition is either the one engine inoperative approach climb gradient or the maximum brake energy.

Landing – Field length limit

A field length limited landing weight is reached when the field length or the landing distance, as required by operating regulations is equal to the runway length actually available.

The landing weight normally anticipated at the destination or alternate airport must not be greater than the maximum landing weight.

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PROCEDURES

The performance information of this section is based on the following procedures:

Take-off

- Full take-off thrust is set prior to brake release.

With all engines operating, or if an engine failure occurs at or after the scheduled V1 speed:

- Rotation of the airplane is initiated at VR.
- Recommended nose-up attitude is set.
- Gear retraction is initiated less than 3 seconds after lift-off with all engines operating, and less than 4.5 seconds after lift-off with one engine inoperative.

Selection of flap setting at take-off

The 10° FLAPS + SLATS position is selected when the 20° FLAPS + SLATS take-off weight is limited by climb gradient:

- At high ambient temperatures,
- At high altitudes.

Accelerate-stop

If an engine failure is recognized before the scheduled V1 speed, the rejected take-off procedure is applied.

Landing

- The antiskid system is operative.
- Automatic airbrake extension is operative.
- Brake application is initiated as the nose wheel touches the ground.

Reverse thrust

The effect of reverse thrust is not taken into account in establishing accelerate-stop and landing distances.

Selection of flaps setting for missed approach and balked landing

Whatever the flap setting selection:

- Approach: 20° FLAPS + SLATS or 10° FLAPS + SLATS
- Landing: 40° FLAPS + SLATS,

10° FLAPS + SLATS is the final go-around configuration for the execution of balked landings and missed approaches.

BLEED AIR CONDITIONS

Take-off **First segment**	Air conditioning bleeds 1 and 2 APU bleed Engine anti-ice Wing anti-ice	**AUTO** **OFF** **On or Off** **Off**
Second segment **Transition segment**	Air conditioning bleeds 1 and 2 APU bleed Engine anti-ice Wing anti-ice	**AUTO** **OFF** **On or Off** **On or Off**
Final take-off **En route climb**	Air conditioning bleeds 1 and 2 APU bleed Engine anti-ice Wing anti-ice	**AUTO** **OFF** **On or Off** **On or Off**
Approach climb **Landing climb**	Air conditioning bleeds 1 and 2 APU bleed Engine anti-ice Wing anti-ice	**AUTO** **AUTO or OFF** **On or Off** **On or Off**

USE OF CHARTS

Performance charts are provided to determine the maximum take-off weight as limited by available field length, obstacle clearance and climb performance requirements.

Conversely, these same charts can be used to determine, for a given weight, second segment, final segment, en route, approach and landing climb gradients, required runway lengths and close or distant obstacle clearances.

- Using maximum take-off weight limited by climb requirements chart (5-500-40 page 1 or 5-550-40 page 1), determine weight W1.

- Using balanced field length charts (5-500-05 or 5-550-05 on dry runway, or 5-500-20 or 5-550-20 on wet runway), determine weight W2 for the actual available runway length. Since V1 speed limitations (V1 mini, VMBE, VR) are all accounted for in the balanced field length charts, W2 need not be corrected.
  On wet runway, W2 is the lower of W2 on wet runway and W2 on dry runway.

- Weight W3 is the lower of W1, W2 and Max Take-off Weight as specified in STRUCTURAL LIMITATIONS, sub-section 1-050.

- Check that the complete take-off – balanced field length, first, second, transition and final segments – is not obstacle limited at weight W3 (refer to para. ”Obstacle clearance”).
  If obstacle clearance is achieved, the maximum take-off weight is W3.

- If all obstacles are not cleared, the weight must be reduced by iteration until all obstacles are cleared.
  This new weight W4 is the final maximum take-off weight.

- For this maximum take-off weight, refer to :
  - Chart 5-500-35 page 1 or 5-550-35 page 1 to determine take-off speeds VR and V2 and recommended attitude (as a function of second segment climb gradient given on chart 5-500-40 page 2 or 5-550-40 page 2).
  - Chart 5-500-15 page 1 or 5-550-15 page 1 on dry runway or 5-500-30 page 1 or 5-550-30 page 1 on wet runway to determine maximum brake energy speed (VMBE).
  - Charts 5-500-10 pages 2 and 3 or 5-550-10 pages 2 and 3 on dry runway, or 5-500-25 pages 2 and 3 or 5-550-25 pages 2 and 3 on wet runway to determine decision speed V1 associated with balanced field length. V1 must be higher than V1 mini and lower than VMBE and VR. If V1 thus determined does not meet one of these limits, the limit value must be selected as V1.

Obstacle clearance

Charts 5-500-45 pages 1 and 2 or 5-550-45 pages 1 and 2 are used to determine the end of the first segment with reference zero as origin, then the second segment flight path. These charts show the net take-off flight path (results account for 0.8 % climb gradient reduction) for a take-off from a dry runway reduced in height by 35 ft : they have to be entered with the second segment gross climb gradient, corrected (as applicable) for wind and bank angle, in accordance with the instructions on page 5-200-10 page 1.

For take-off from a wet runway, use same charts.

The transition segment (third segment) is flown in level flight. Its origin (horizontal distance and gross height from reference zero) is given in chart 5-500-45 page 2 or 5-550-45 page 2 and its length in chart 5-500-45 or 5-550-45 page 3, based on the second segment gross climb gradient (results account for a reduction in acceleration equivalent to 0.8 % climb gradient reduction). The selection of the origin allows the end of the transition segment to be reached at the same time the 5 minute time period at take-off thrust is completed.

The final segment starts from the end of the transition segment ; its slope is assumed to be constant and equal to the final take-off climb gradient available at the greater of either the obstacle height or 1,500 ft above reference zero. Enter chart 5-600-10 page 1 with weight W3 and a pressure altitude equal to the take-off field pressure altitude incremented by the obstacle height or 1,500 ft (refer to following para. Height – Pressure altitude conversion).

The gross climb gradient is then corrected (as applicable) for wind and bank angle, and decreased by 0.8 % to obtain the net final take-off climb gradient.

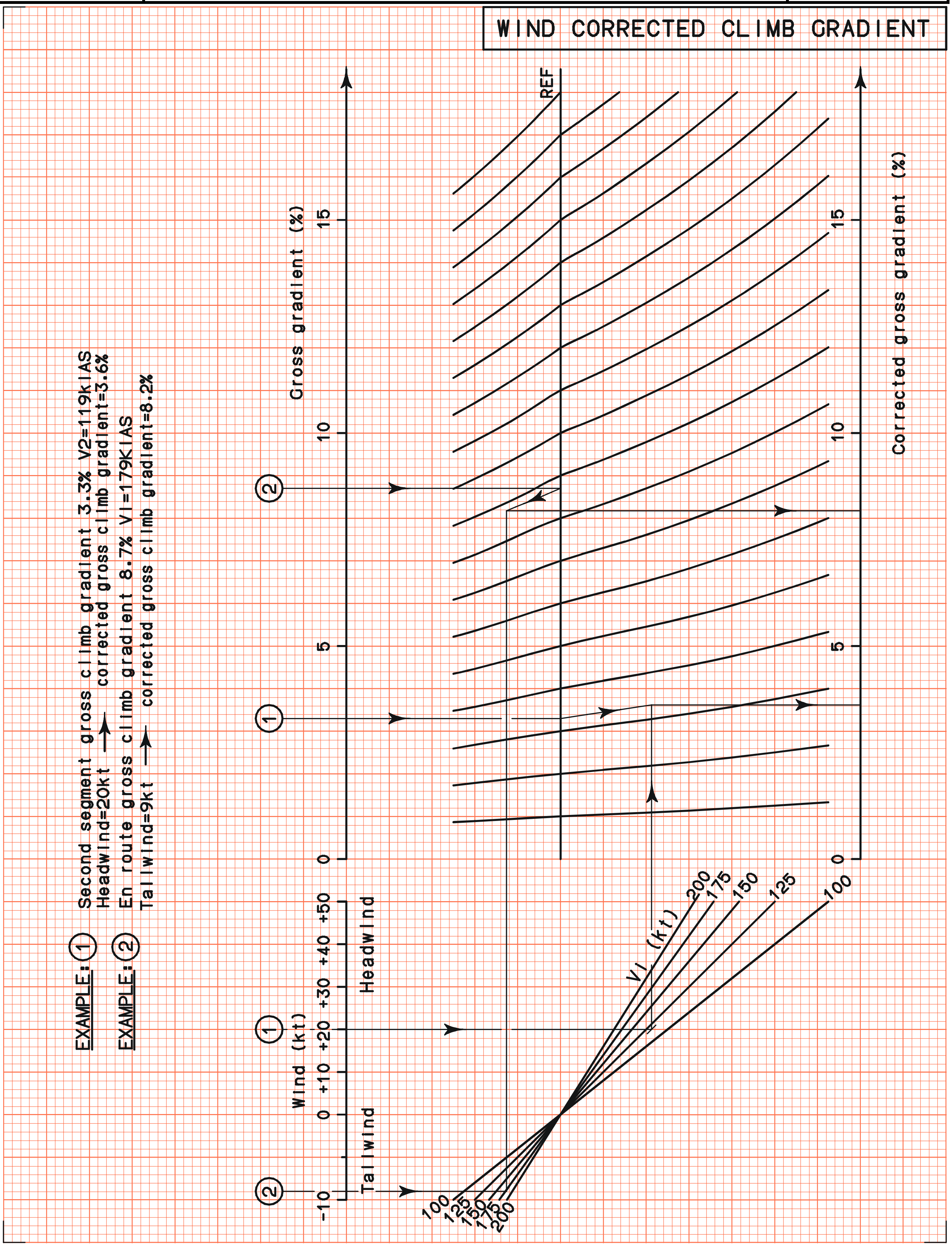
Height – Pressure altitude conversion

Chart 5-250-30 page 1 is used to determine the pressure altitude change associated with geometric height when ambient temperature is different from ISA.

The characteristic heights of the take-off flight path can thus be maintained using a pressure altimeter.

GRADIENT LOSS IN TURN (%)

BANK ANGLE (°)	CONFIGURATION			
	Landing gear up One engine inoperative			**Landing gear down All engines operating**
	CLEAN	10° FLAPS+ SLATS	20° FLAPS + SLATS	40° FLAPS + SLATS
5	0.03	0.06	0.05	0.05
10	0.13	0.20	0.19	0.18
15	0.29	0.46	0.44	0.41



WIND CORRECTED CLIMB GRADIENT
EXAMPLE: ① Second segment gross climb gradient 3.3% V2=119kIAS
Headwind=20kt → corrected gross climb gradient=3.6%
EXAMPLE: ② En route gross climb gradient 8.7% V1=179KIAS
Tailwind=9kt → corrected gross climb gradient=8.2%
Gross gradient (%)
Corrected gross gradient (%)
REF
Wind (kt)
Headwind
Tailwind
V1 (kt)
200
175
150
125
100
0
5
10
15
-10
+10
+20
+30
+40
+50

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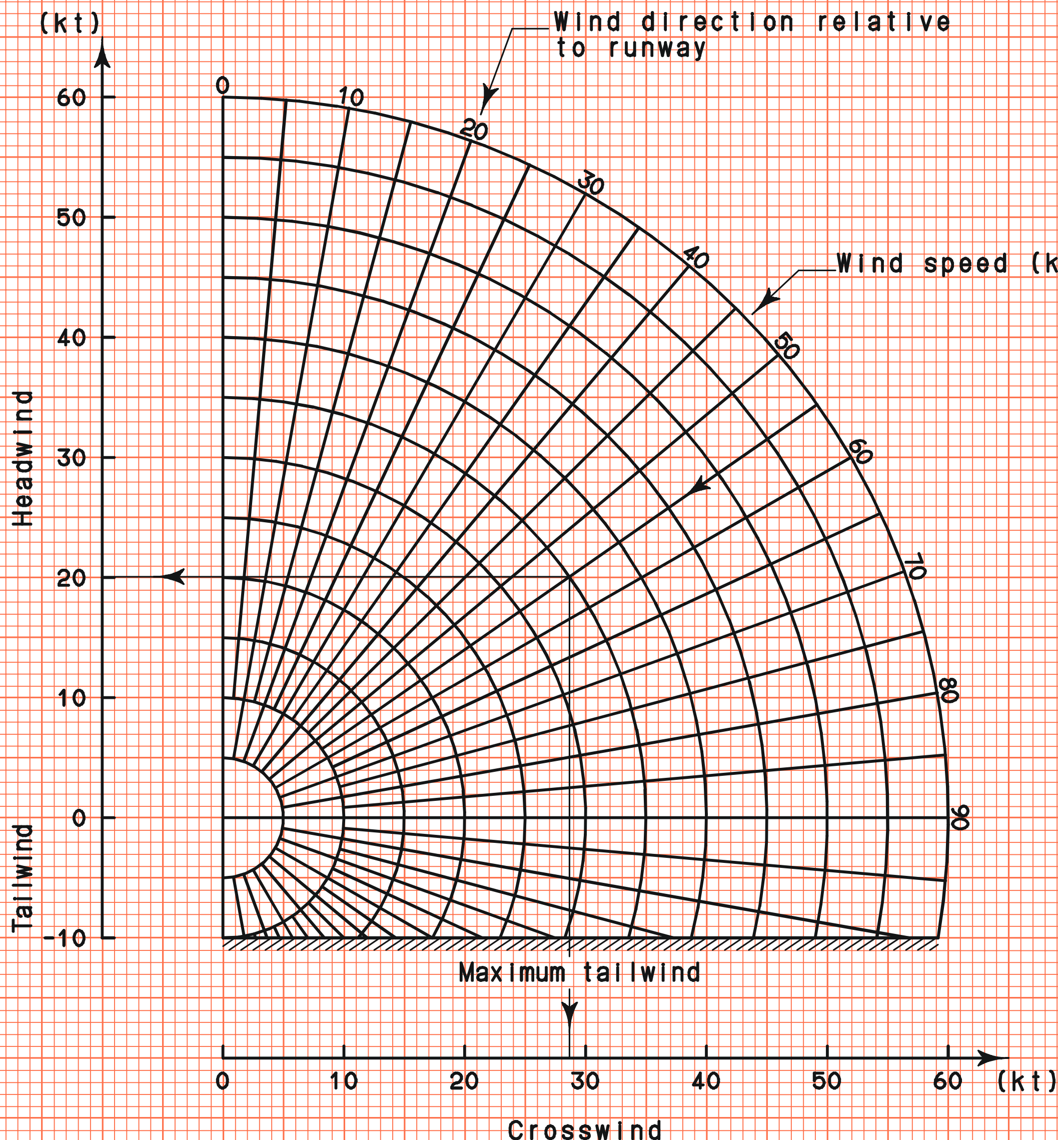
WIND COMPONENTS

EXAMPLE:

- Wind velocity 35 kt and direction relative to runway 55°
- Crosswind component: 28.5 kt
- Headwind component : 20 kt



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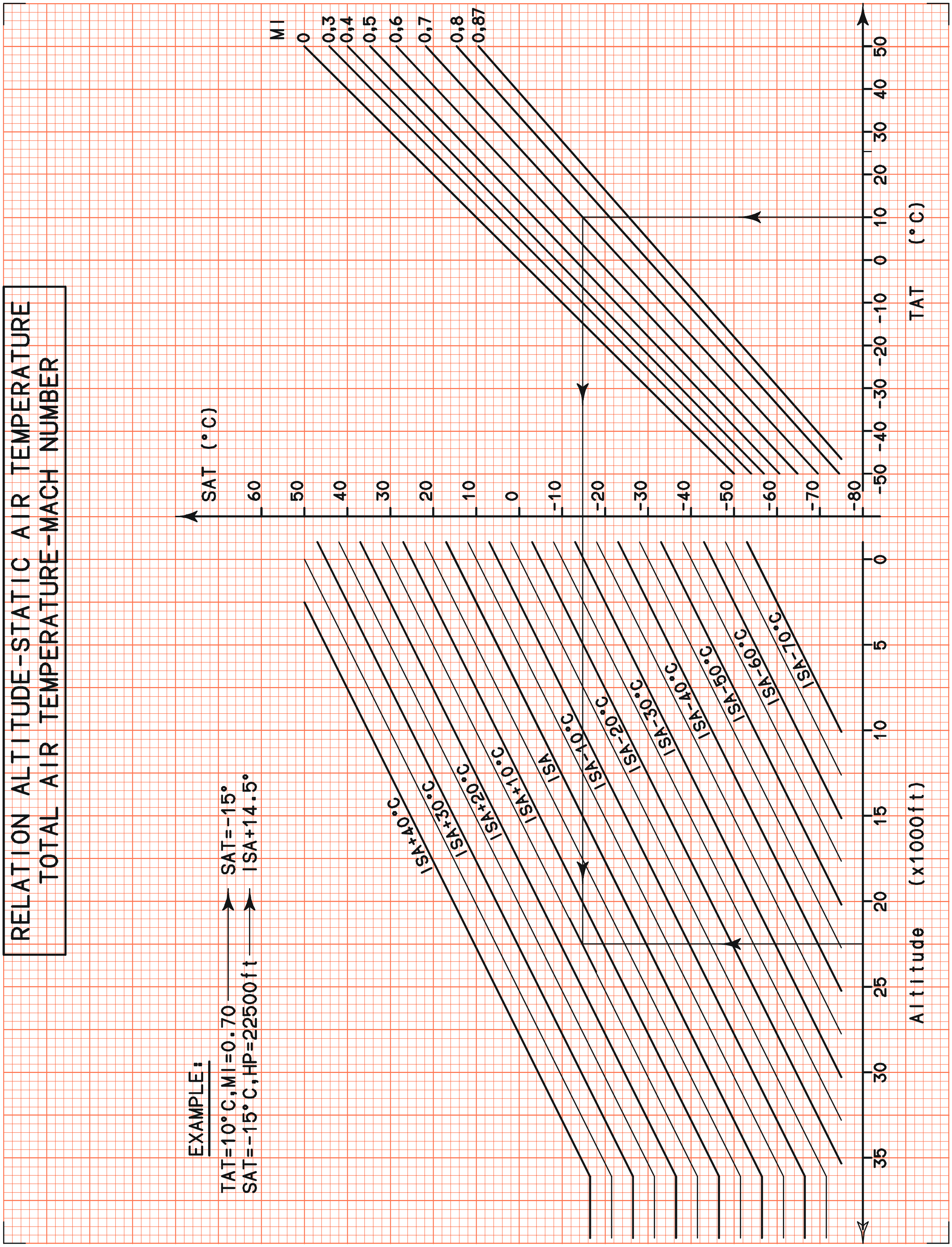

RELATION ALTITUDE-STATIC AIR TEMPERATURE
TOTAL AIR TEMPERATURE-MACH NUMBER
EXAMPLE:
TAT=10°C,MI=0.70 → SAT=-15°
SAT=-15°C,HP=22500ft → ISA+14.5°
MI
0
0,3
0,4
0,5
0,6
0,7
0,8
0,87
TAT (°C)
SAT (°C)
Altitude (x1000ft)
ISA+40°C
ISA+30°C
ISA+20°C
ISA+10°C
ISA
ISA-10°C
ISA-20°C
ISA-30°C
ISA-40°C
ISA-50°C
ISA-60°C
ISA-70°C

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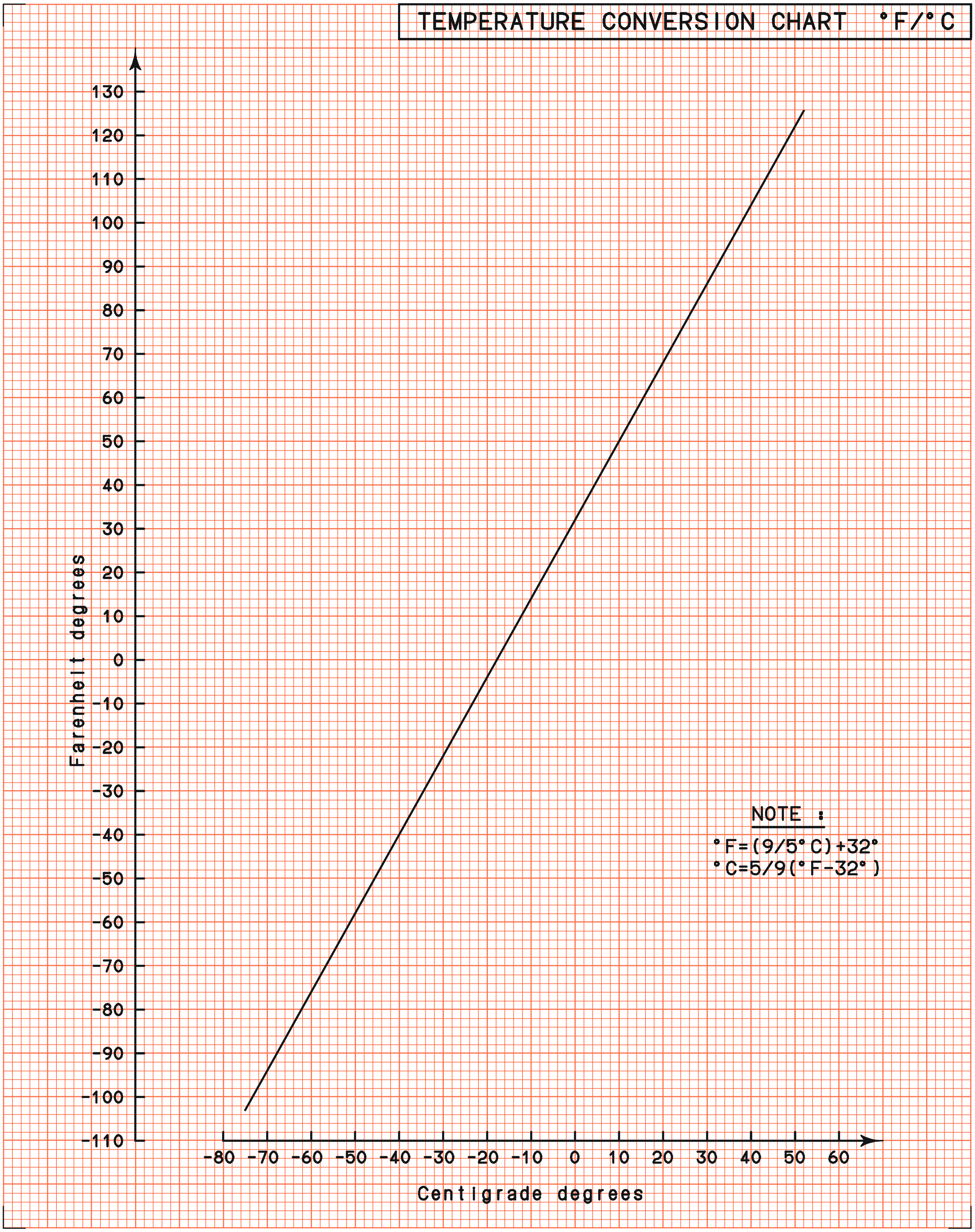
TEMPERATURE CONVERSION CHART °F/°C
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
Farenheit degrees
-80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60
Centigrade degrees
NOTE :
°F=(9/5°C)+32°
°C=5/9(°F-32°)

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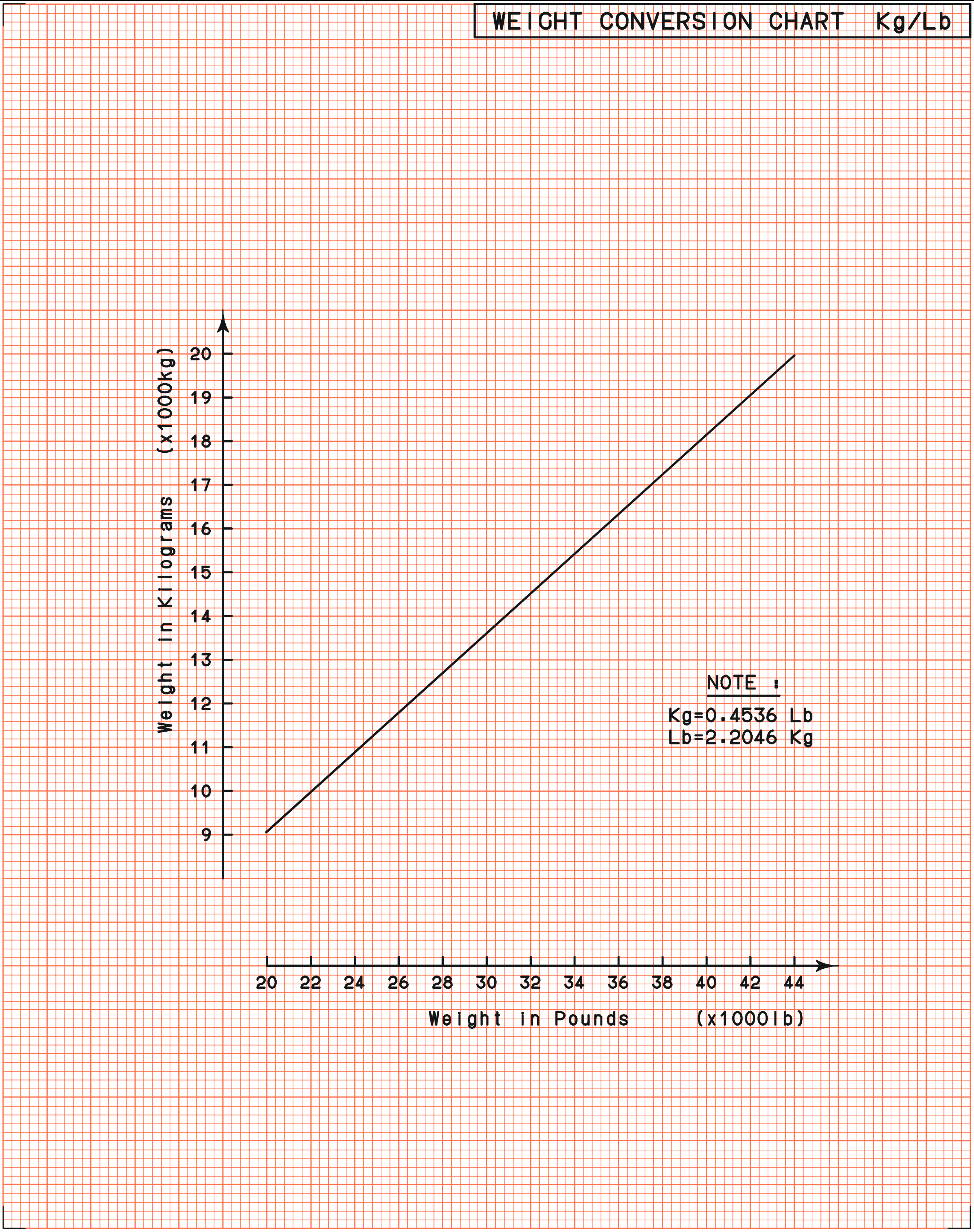
WEIGHT CONVERSION CHART Kg/Lb
Weight in Kilograms (x1000kg)
20
19
18
17
16
15
14
13
12
11
10
9
NOTE :
Kg=0.4536 Lb
Lb=2.2046 Kg
20 22 24 26 28 30 32 34 36 38 40 42 44
Weight in Pounds (x1000lb)

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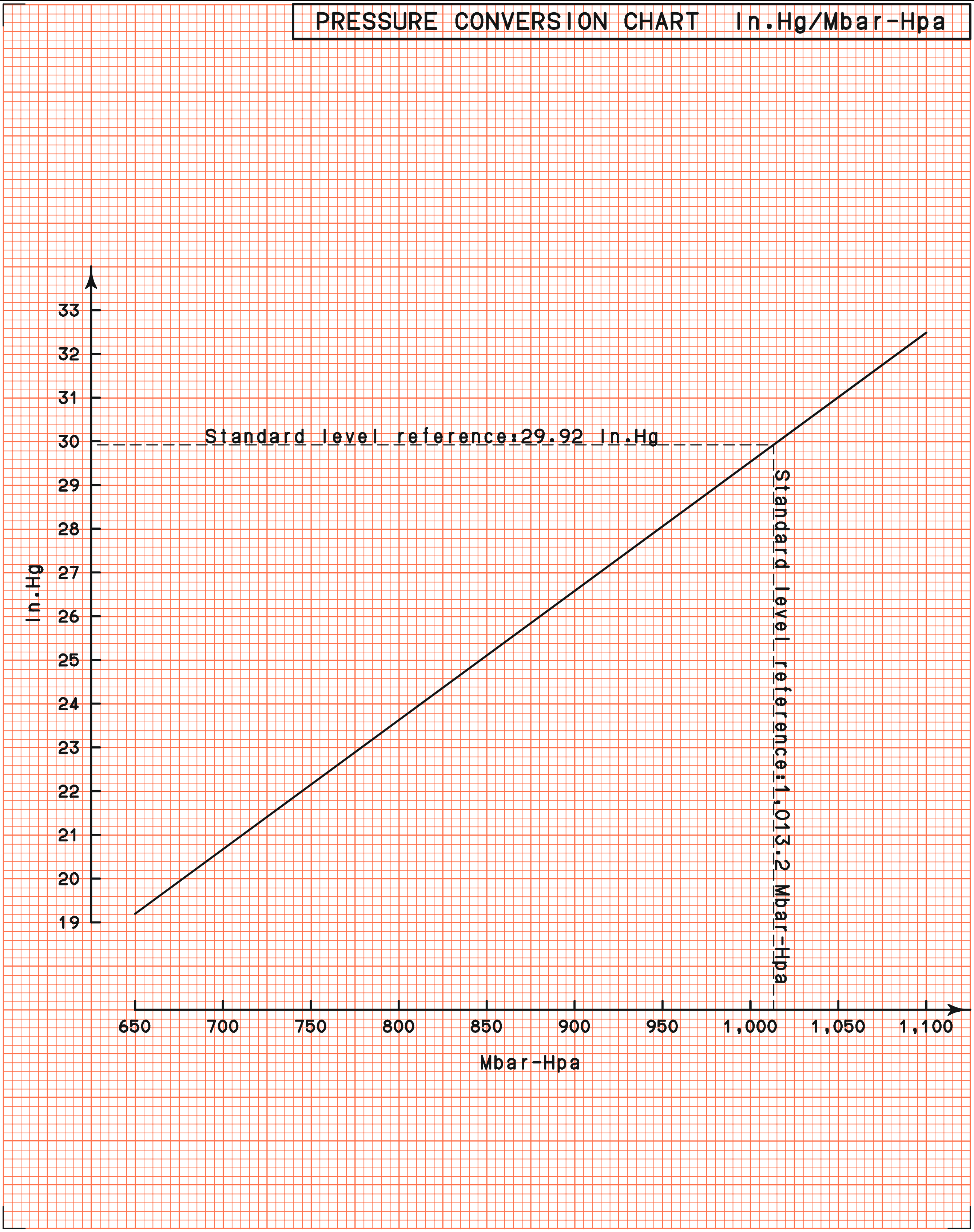
PRESSURE CONVERSION CHART In.Hg/Mbar-Hpa
Standard level reference:29.92 In.Hg
Standard level reference:1,013.2 Mbar-Hpa
In.Hg
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
650
700
750
800
850
900
950
1,000
1,050
1,100
Mbar-Hpa

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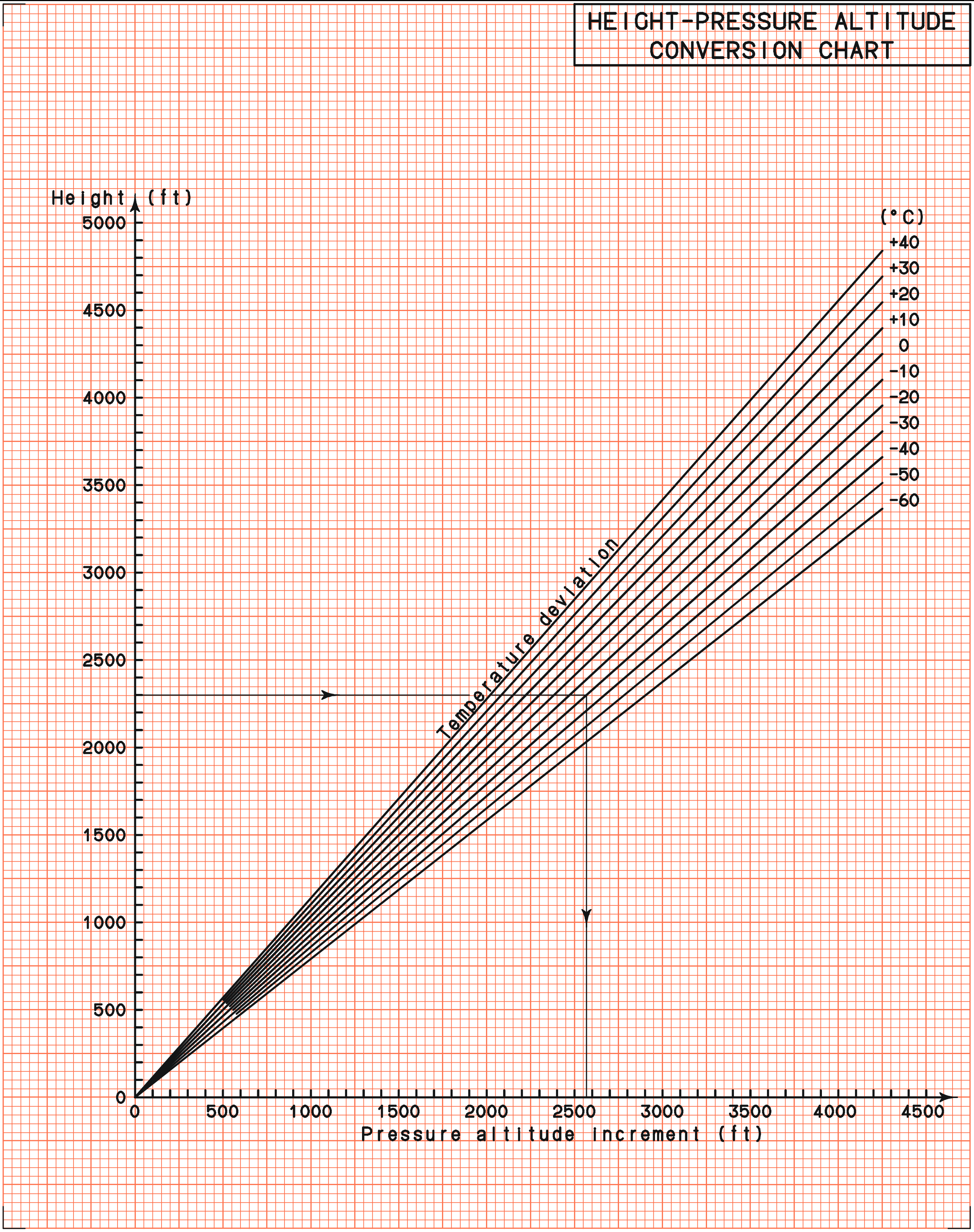
HEIGHT-PRESSURE ALTITUDE
CONVERSION CHART
Height (ft)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
(°C)
+40
+30
+20
+10
0
-10
-20
-30
-40
-50
-60
Temperature deviation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
Pressure altitude increment (ft)

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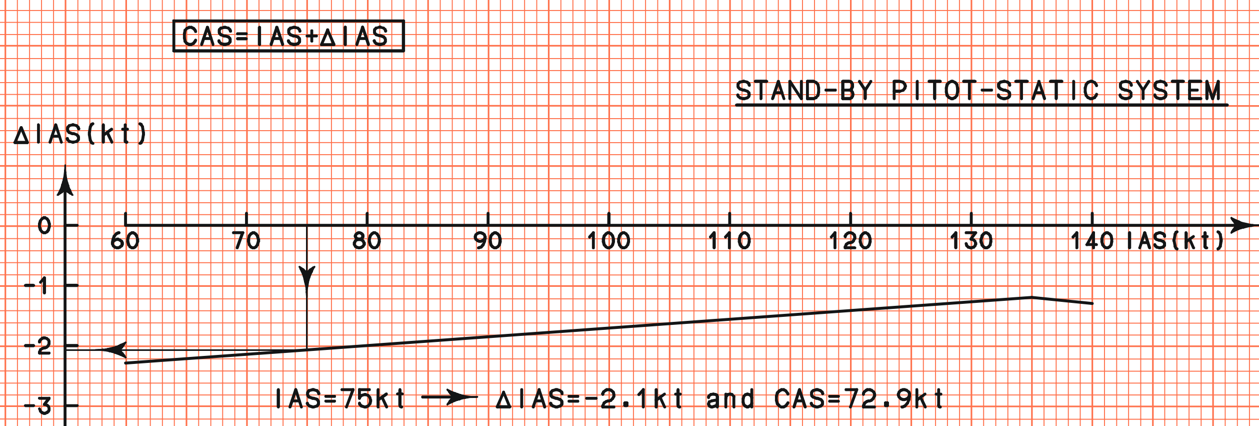
PITOT-STATIC SYSTEM CALIBRATION GROUND RUN-ALL WHEELS ON GROUND

PILOT AND COPILOT PITOT-STATIC SYSTEMS

During ground roll, airspeed correction is zero.



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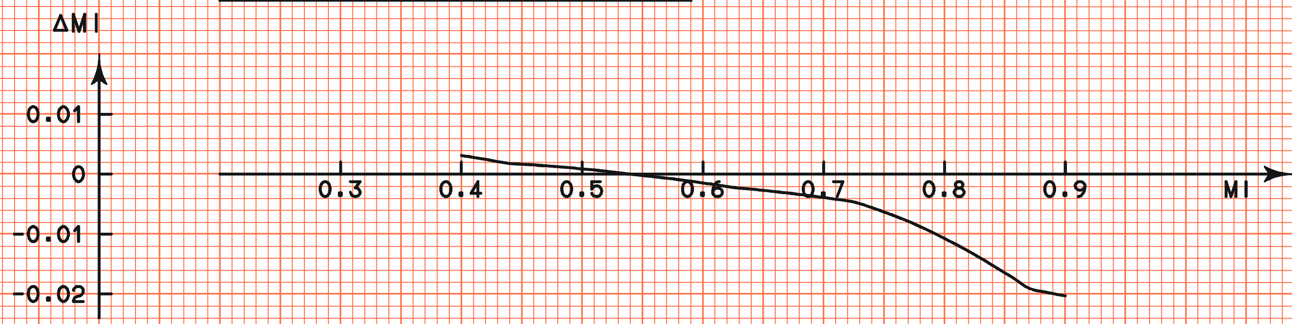
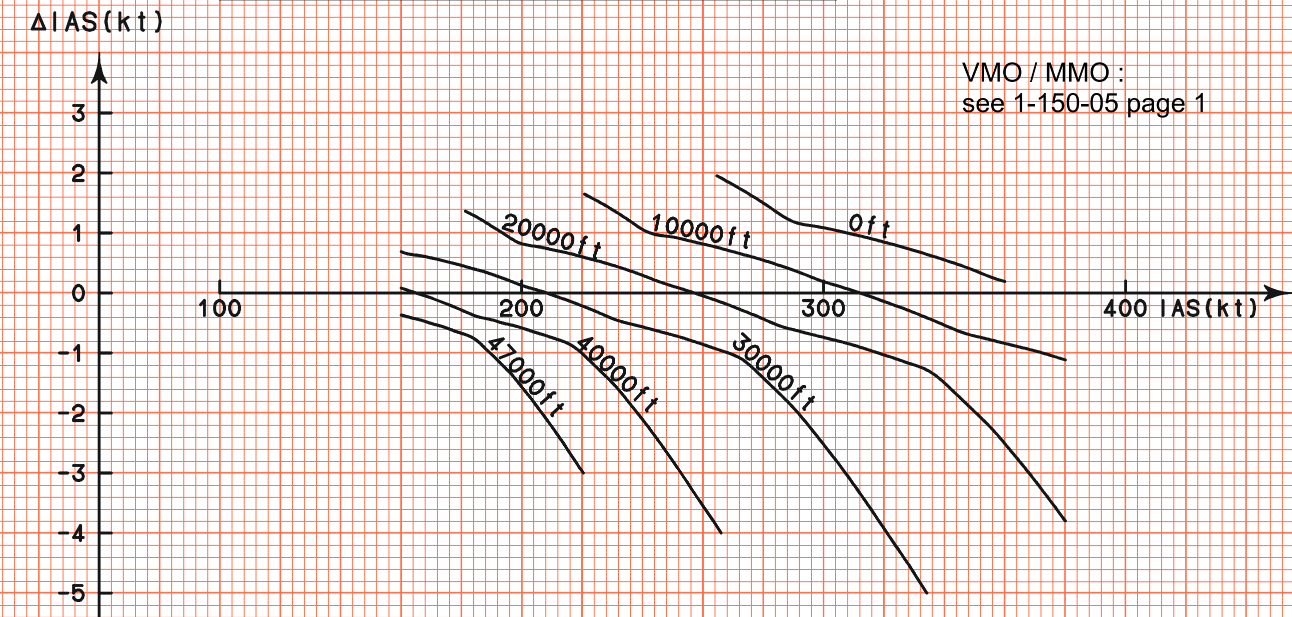
PILOT AND COPILOT PITOT-STATIC SYSTEMS

MACH CORRECTION (M=MI+ΔMI)



AIRSPEED CORRECTION (CAS=IAS+ΔIAS)



At low speeds,airspeed correction is zero with L/G up and -1.5 kt with L/G down.

ALTITUDE CORRECTION (HP=HI+ΔHI)

Altitude correction is zero with L/G up and -30 ft with L/G down.

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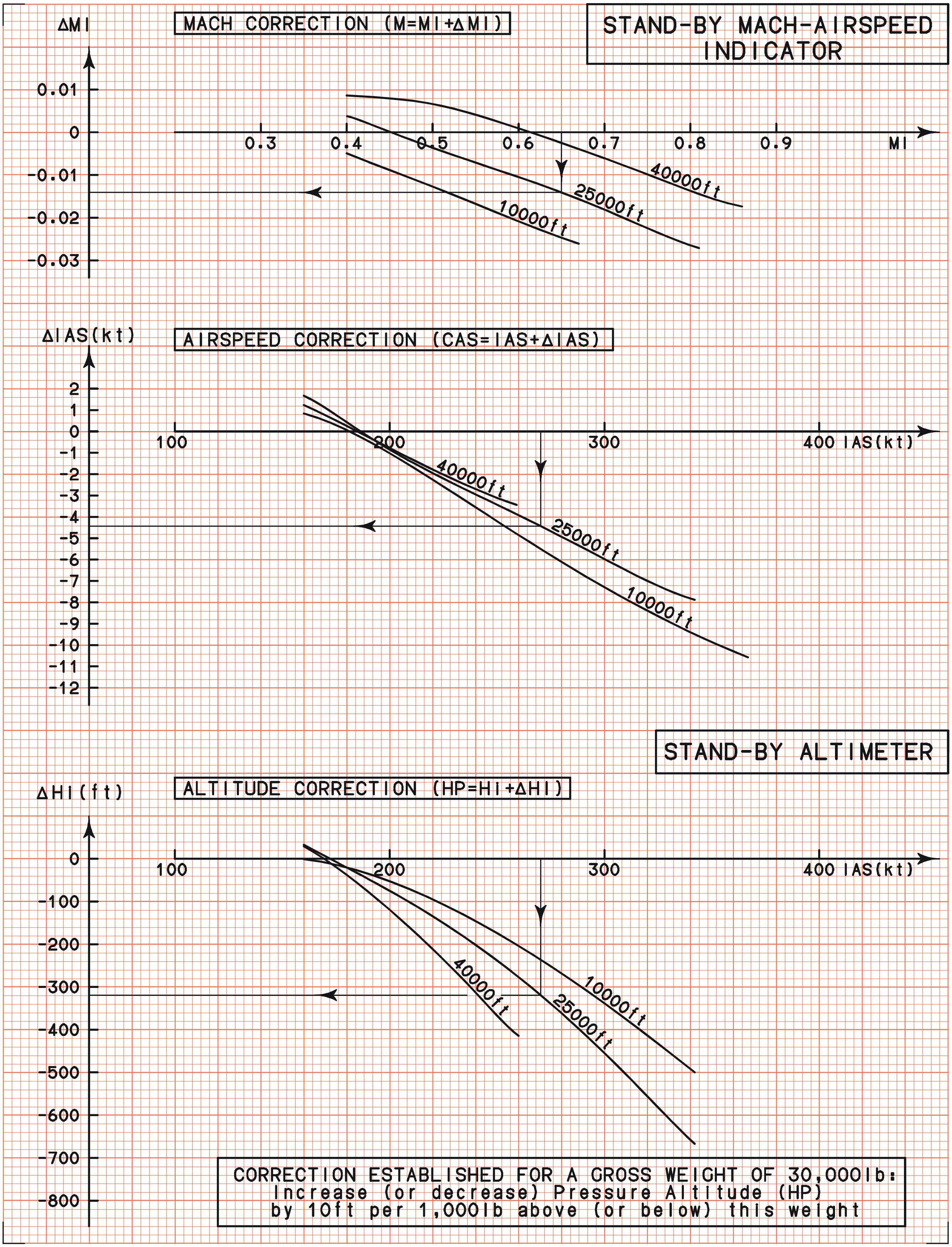
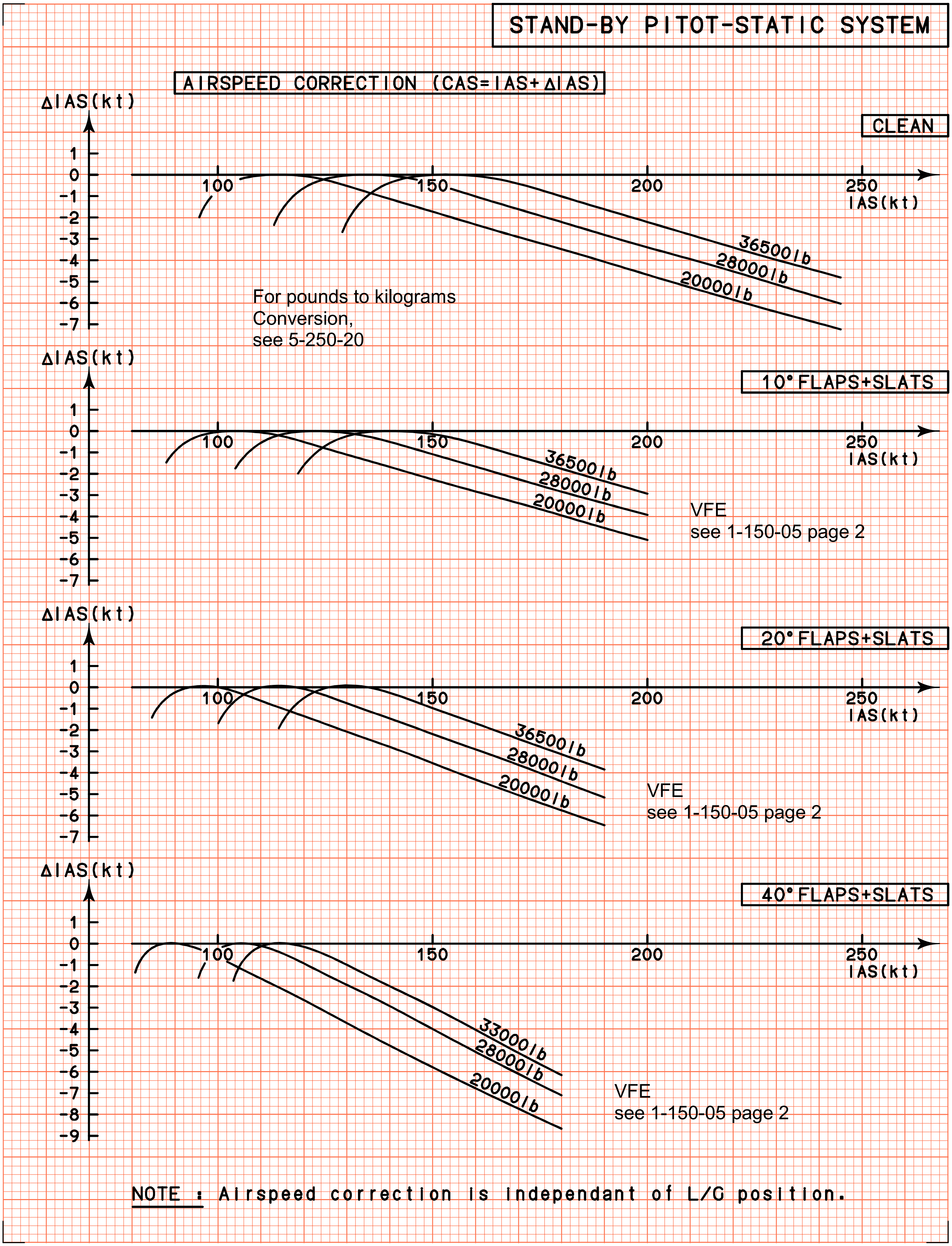
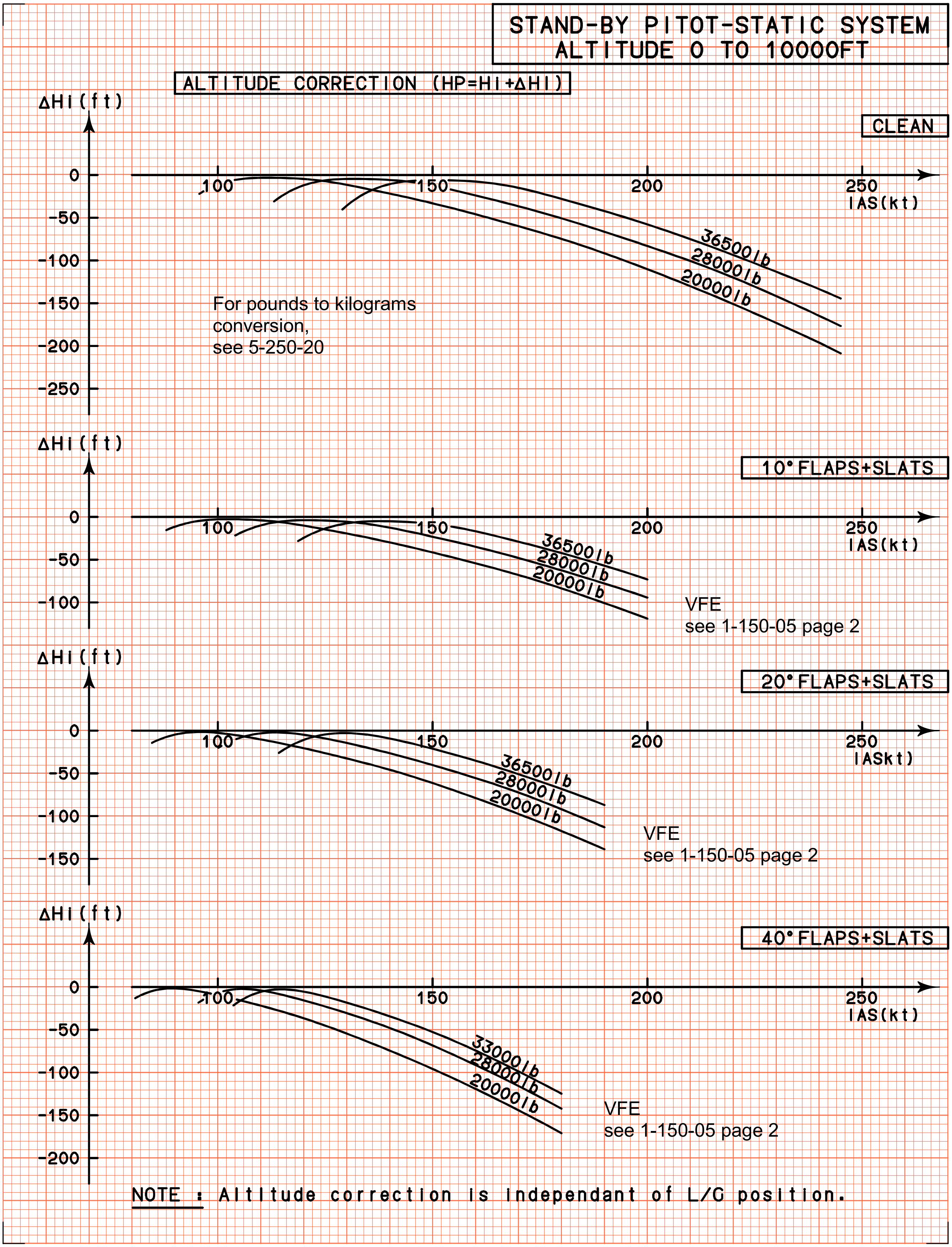


STAND-BY MACH-AIRSPEED INDICATOR
MACH CORRECTION (M=MI+ΔMI)
ΔMI
0.01
0
-0.01
-0.02
-0.03
0.3
0.4
0.5
0.6
0.7
0.8
0.9
MI
40000ft
25000ft
10000ft
AIRSPEED CORRECTION (CAS=IAS+ΔIAS)
ΔIAS(kt)
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
100
200
300
400 IAS(kt)
40000ft
25000ft
10000ft
STAND-BY ALTIMETER
ALTITUDE CORRECTION (HP=HI+ΔHI)
ΔHI(ft)
0
-100
-200
-300
-400
-500
-600
-700
-800
100
200
300
400 IAS(kt)
40000ft
10000ft
25000ft
CORRECTION ESTABLISHED FOR A GROSS WEIGHT OF 30,000lb:
Increase (or decrease) Pressure Altitude (HP)
by 10ft per 1,000lb above (or below) this weight


STAND-BY PITOT-STATIC SYSTEM
AIRSPEED CORRECTION (CAS=IAS+ΔIAS)
ΔIAS(kt)
CLEAN
IAS(kt)
36500lb
28000lb
20000lb
For pounds to kilograms
Conversion,
see 5-250-20
10° FLAPS+SLATS
VFE
see 1-150-05 page 2
20° FLAPS+SLATS
40° FLAPS+SLATS
33000lb
NOTE : Airspeed correction is independant of L/G position.


STAND-BY PITOT-STATIC SYSTEM
ALTITUDE 0 TO 10000FT
ALTITUDE CORRECTION (HP=Hi+ΔHi)
ΔHi (ft)
CLEAN
0
-50
-100
-150
-200
-250
100
150
200
250
IAS(kt)
36500lb
28000lb
20000lb
For pounds to kilograms conversion, see 5-250-20
10° FLAPS+SLATS
VFE see 1-150-05 page 2
20° FLAPS+SLATS
40° FLAPS+SLATS
33000lb
NOTE : Altitude correction is independant of L/G position.

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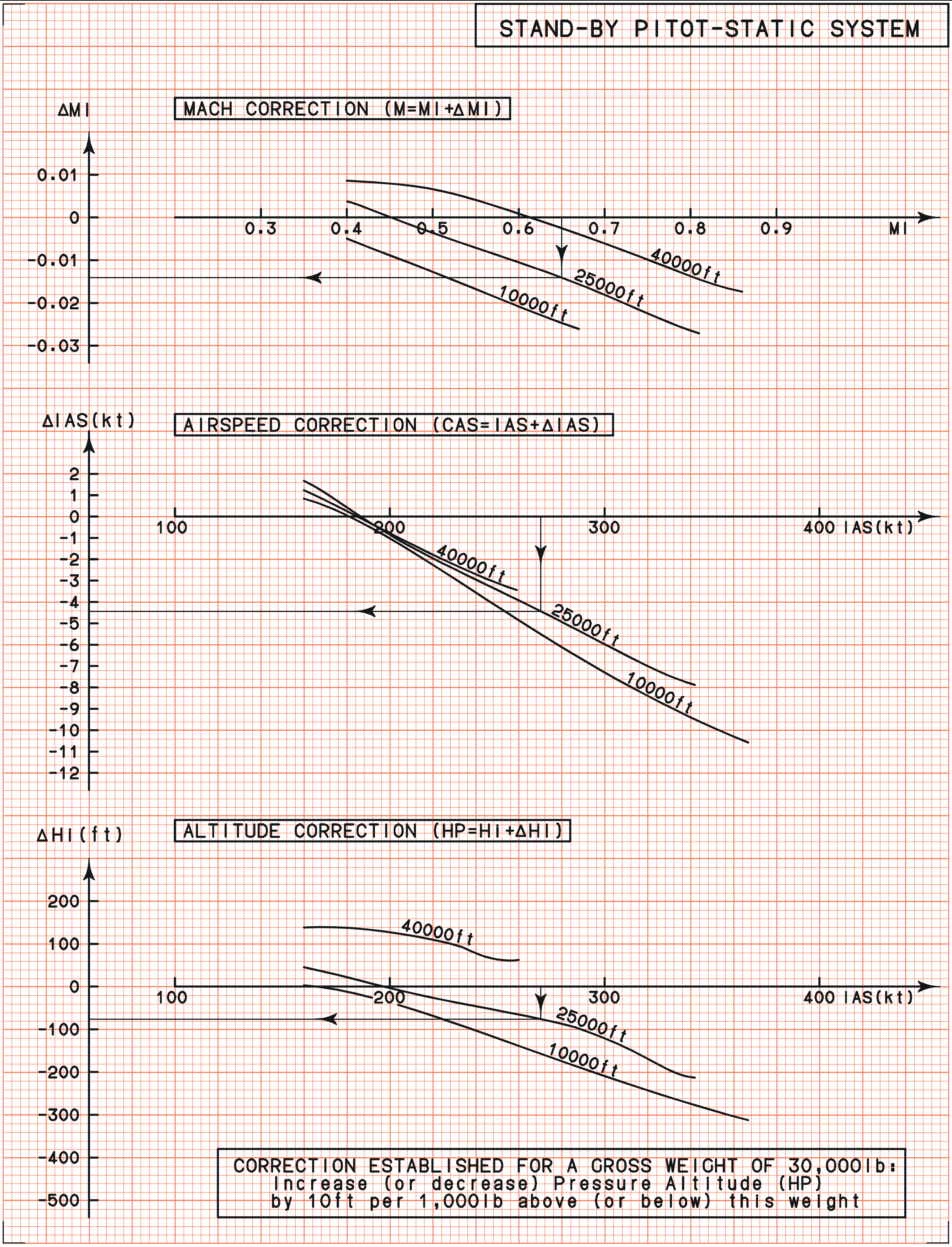
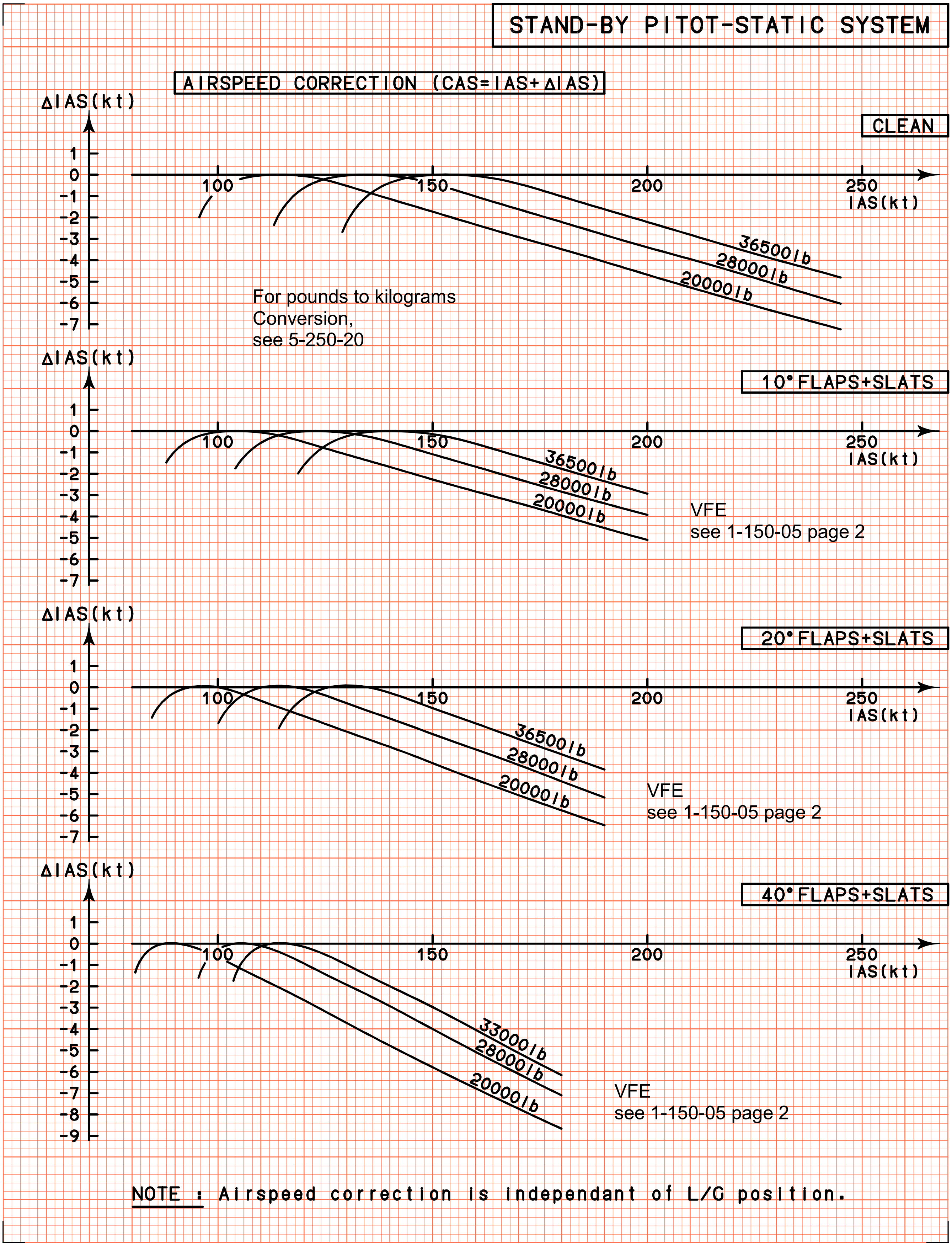
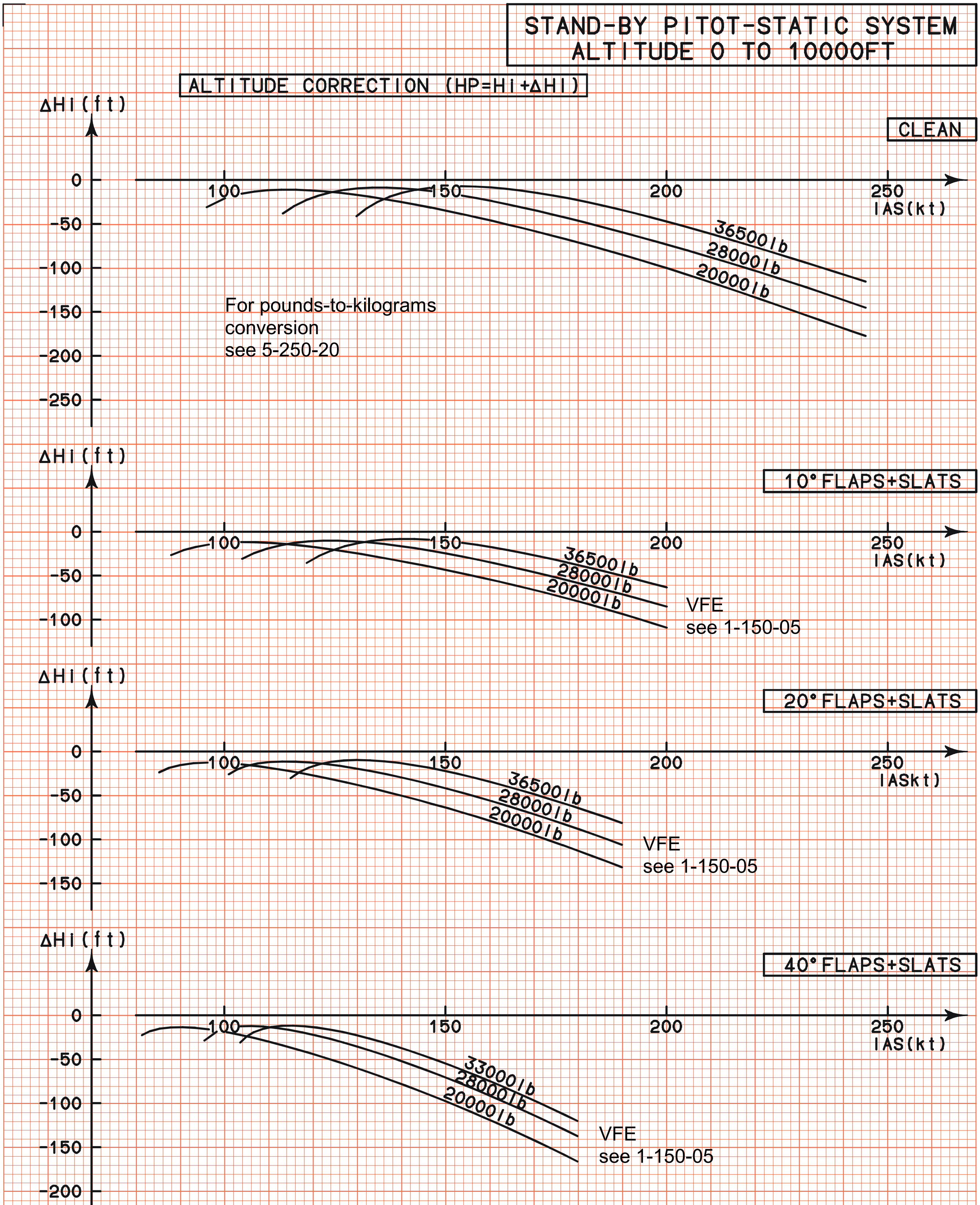

STAND-BY PITOT-STATIC SYSTEM
MACH CORRECTION (M=MI+ΔMI)
ΔMI
0.01
0
-0.01
-0.02
-0.03
0.3
0.4
0.5
0.6
0.7
0.8
0.9
MI
40000ft
25000ft
10000ft
AIRSPEED CORRECTION (CAS=IAS+ΔIAS)
ΔIAS(kt)
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
-12
100
200
300
400 IAS(kt)
40000ft
25000ft
10000ft
ALTITUDE CORRECTION (HP=HI+ΔHI)
ΔHi(ft)
200
100
0
-100
-200
-300
-400
-500
100
200
300
400 IAS(kt)
40000ft
25000ft
10000ft
CORRECTION ESTABLISHED FOR A GROSS WEIGHT OF 30,000lb:
Increase (or decrease) Pressure Altitude (HP)
by 10ft per 1,000lb above (or below) this weight


STAND-BY PITOT-STATIC SYSTEM
AIRSPEED CORRECTION (CAS=IAS+ΔIAS)
ΔIAS(kt)
CLEAN
IAS(kt)
36500lb
28000lb
20000lb
For pounds to kilograms
Conversion,
see 5-250-20
10° FLAPS+SLATS
VFE
see 1-150-05 page 2
20° FLAPS+SLATS
40° FLAPS+SLATS
33000lb
NOTE : Airspeed correction is independant of L/G position.



NOTE : Altitude correction is independant of L/G position.

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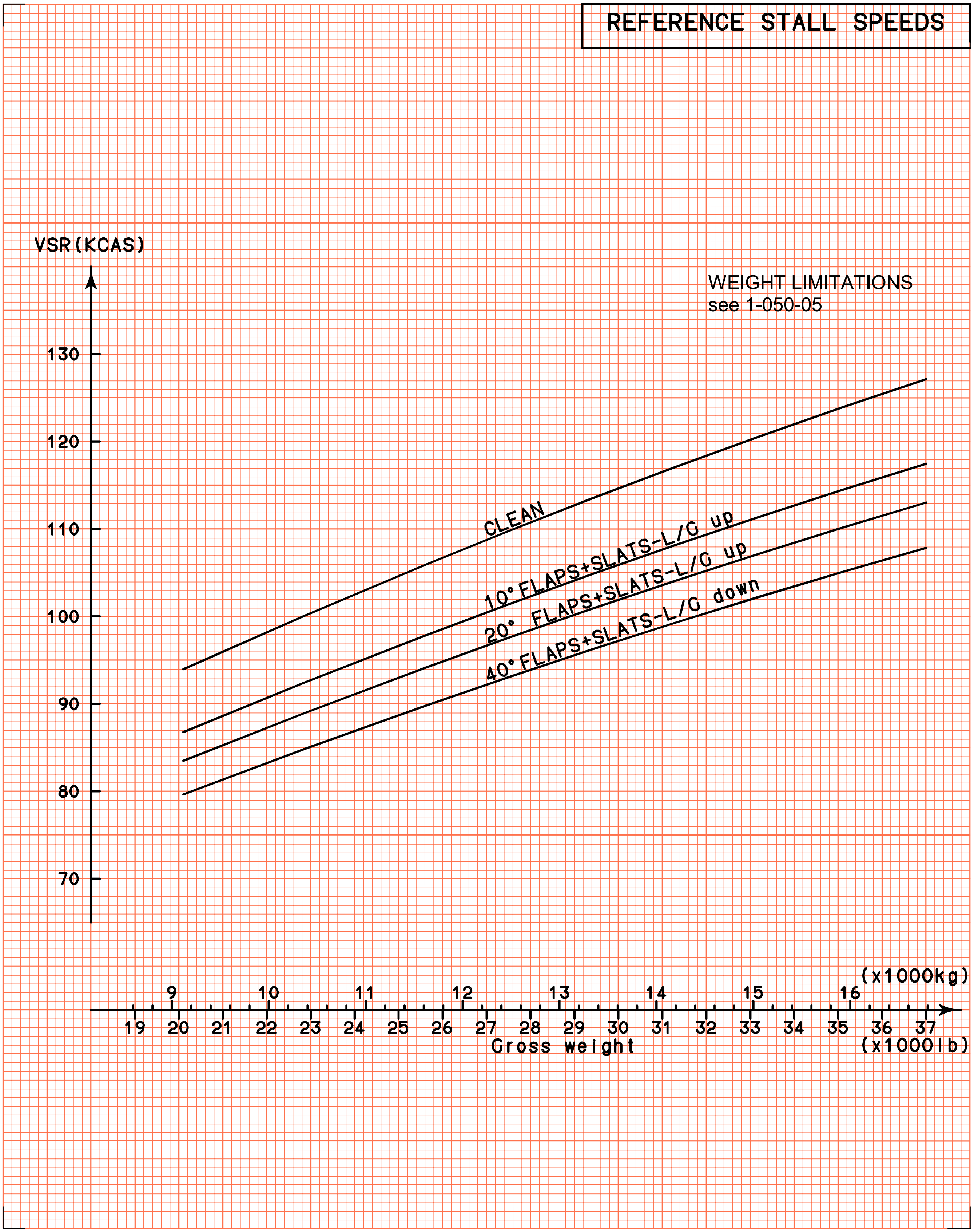
REFERENCE STALL SPEEDS
VSR (KCAS)
130
120
110
100
90
80
70
WEIGHT LIMITATIONS
see 1-050-05
CLEAN
10° FLAPS+SLATS-L/G up
20° FLAPS+SLATS-L/G up
40° FLAPS+SLATS-L/G down
9 10 11 12 13 14 15 16 (x1000kg)
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37
Gross weight
(x1000lb)

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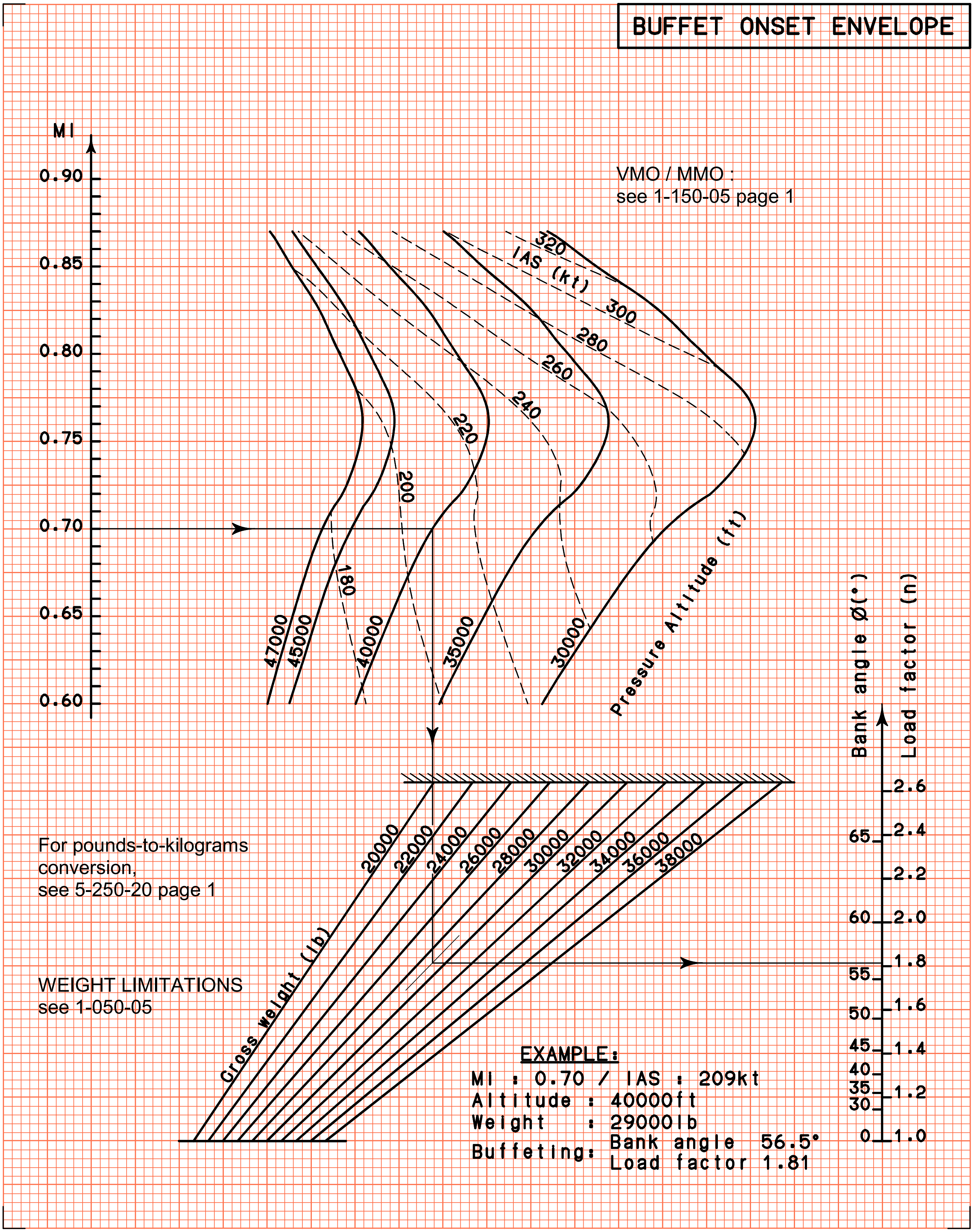

BUFFET ONSET ENVELOPE
MI
0.90
0.85
0.80
0.75
0.70
0.65
0.60
VMO / MMO :
see 1-150-05 page 1
320
IAS (kt)
300
280
260
240
220
200
180
47000
45000
40000
35000
30000
Pressure Altitude (ft)
Bank angle Ø(°)
Load factor (n)
2.6
65
2.4
2.2
60
2.0
1.8
55
50
1.6
45
1.4
40
35
30
1.2
0
1.0
20000
22000
24000
26000
28000
30000
32000
34000
36000
38000
Gross weight (lb)
For pounds-to-kilograms conversion,
see 5-250-20 page 1
WEIGHT LIMITATIONS
see 1-050-05
EXAMPLE:
MI : 0.70 / IAS : 209kt
Altitude : 40000ft
Weight : 29000lb
Buffeting: Bank angle 56.5°
Load factor 1.81

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ENGINE POWER SETTING – WITHOUT ICE PROTECTION

Take-off N1, Take-off run and first segment climb

Initial take-off N1 (APR not operating) ↓	APR operating Take-off N1 ↓
93.7	95.8
93.9	96.1
94.2	96.4

MAXIMUM ITT: 864 °C (890 °C WHEN APR OPERATING) **ALTITUDE -1,000 ft / 5,000 ft**

SAT	Pressure altitude (ft)														SAT
°C	-1,000		0		1,000		2,000		3,000		4,000		5,000		°C
50	79.9	82.4	79.8	82.5	79.9	82.4	80.1	82.4							50
48	80.3	82.9	80.2	82.9	80.3	82.8	80.5	82.8	80.6	82.9					48
46	80.7	83.3	80.7	83.4	80.8	83.2	80.9	83.2	80.9	83.3	81.1	83.5			46
44	81.2	83.7	81.1	83.8	81.2	83.7	81.2	83.5	81.3	83.7	81.4	83.8	81.5	83.9	44
42	81.6	84.2	81.5	84.3	81.6	84.1	81.6	83.9	81.7	84.1	81.8	84.2	81.8	84.3	42
40	82.0	84.3	82.0	84.8	82.0	84.5	82.0	84.3	82.1	84.4	82.1	84.6	82.2	84.7	40
38	82.4	84.0	82.4	85.2	82.4	84.9	82.4	84.7	82.4	84.8	82.5	84.9	82.6	85.1	38
36	82.9	83.7	82.8	85.0	82.8	85.4	82.8	85.1	82.8	85.2	82.8	85.3	82.9	85.4	36
34	83.3	83.4	83.3	84.7	83.2	85.8	83.2	85.5	83.2	85.6	83.2	85.7	83.3	85.8	34
32	83.1	83.1	83.7	84.4	83.6	85.6	83.6	85.9	83.6	86.0	83.5	86.0	83.6	86.2	32
30	82.8	82.8	84.1	84.1	84.1	85.2	84.0	86.3	83.9	86.4	83.9	86.4	84.0	86.6	30
28	82.5	82.5	83.8	83.8	84.5	84.9	84.4	86.1	84.3	86.7	84.3	86.8	84.4	87.0	28
26	82.2	82.2	83.5	83.5	84.6	84.6	84.8	85.8	84.7	87.1	84.6	87.1	84.7	87.4	26
24	81.9	81.9	83.2	83.2	84.3	84.3	85.2	85.5	85.1	86.9	85.0	87.5	85.1	87.8	24
22	81.6	81.6	82.9	82.9	84.0	84.0	85.2	85.2	85.4	86.6	85.3	87.9	85.5	88.2	22
20	81.3	81.3	82.6	82.6	83.7	83.7	84.9	84.9	85.8	86.3	85.7	87.7	85.8	88.6	20
18	81.0	81.0	82.3	82.3	83.4	83.4	84.6	84.6	86.0	86.0	86.0	87.3	86.2	88.7	18
16	80.7	80.7	82.0	82.0	83.1	83.1	84.3	84.3	85.7	85.7	86.4	87.0	86.6	88.4	16
14	80.4	80.4	81.7	81.7	82.8	82.8	84.0	84.0	85.3	85.3	86.7	86.7	86.9	88.0	14
12	80.1	80.1	81.4	81.4	82.5	82.5	83.7	83.7	85.0	85.0	86.4	86.4	87.3	87.7	12
10	79.8	79.8	81.1	81.1	82.2	82.2	83.4	83.4	84.7	84.7	86.1	86.1	87.4	87.4	10
8	79.6	79.6	80.8	80.8	81.9	81.9	83.1	83.1	84.4	84.4	85.7	85.7	87.1	87.1	8
6	79.3	79.3	80.5	80.5	81.6	81.6	82.7	82.7	84.1	84.1	85.4	85.4	86.8	86.8	6
4	79.0	79.0	80.2	80.2	81.3	81.3	82.4	82.4	83.8	83.8	85.1	85.1	86.4	86.4	4
2	78.7	78.7	79.9	79.9	81.0	81.0	82.1	82.1	83.5	83.5	84.8	84.8	86.1	86.1	2
0	78.4	78.4	79.6	79.6	80.7	80.7	81.8	81.8	83.1	83.1	84.4	84.4	85.8	85.8	0
-2	78.1	78.1	79.3	79.3	80.4	80.4	81.5	81.5	82.8	82.8	84.1	84.1	85.5	85.5	-2
-4	77.8	77.8	79.0	79.0	80.1	80.1	81.2	81.2	82.5	82.5	83.8	83.8	85.2	85.2	-4
-6	77.5	77.5	78.7	78.7	79.8	79.8	80.9	80.9	82.2	82.2	83.5	83.5	84.8	84.8	-6
-8	77.2	77.2	78.4	78.4	79.5	79.5	80.6	80.6	81.9	81.9	83.2	83.2	84.5	84.5	-8
-10	76.9	76.9	78.1	78.1	79.2	79.2	80.3	80.3	81.6	81.6	82.8	82.8	84.2	84.2	-10
-12	76.6	76.6	77.8	77.8	78.9	78.9	80.0	80.0	81.3	81.3	82.5	82.5	83.9	83.9	-12
-14	76.3	76.3	77.5	77.5	78.6	78.6	79.7	79.7	80.9	80.9	82.2	82.2	83.6	83.6	-14
-16	76.0	76.0	77.2	77.2	78.3	78.3	79.4	79.4	80.6	80.6	81.9	81.9	83.2	83.2	-16
-18	75.7	75.7	76.9	76.9	78.0	78.0	79.1	79.1	80.3	80.3	81.5	81.5	82.9	82.9	-18
-20	75.4	75.4	76.6	76.6	77.7	77.7	78.8	78.8	80.0	80.0	81.2	81.2	82.6	82.6	-20
-22	75.1	75.1	76.3	76.3	77.4	77.4	78.5	78.5	79.7	79.7	80.9	80.9	82.3	82.3	-22
-24	74.8	74.8	76.0	76.0	77.1	77.1	78.2	78.2	79.4	79.4	80.6	80.6	82.0	82.0	-24
-26	74.5	74.5	75.7	75.7	76.8	76.8	77.9	77.9	79.1	79.1	80.3	80.3	81.6	81.6	-26
-28	74.2	74.2	75.4	75.4	76.5	76.5	77.5	77.5	78.7	78.7	79.9	79.9	81.3	81.3	-28
-30	73.9	73.9	75.1	75.1	76.2	76.2	77.2	77.2	78.4	78.4	79.6	79.6	81.0	81.0	-30
-32	73.6	73.6	74.8	74.8	75.9	75.9	76.9	76.9	78.1	78.1	79.3	79.3	80.7	80.7	-32
-34	73.3	73.3	74.5	74.5	75.6	75.6	76.6	76.6	77.8	77.8	79.0	79.0	80.3	80.3	-34
-36	73.0	73.0	74.2	74.2	75.2	75.2	76.3	76.3	77.5	77.5	78.6	78.6	80.0	80.0	-36
-38	72.7	72.7	73.9	73.9	74.9	74.9	76.0	76.0	77.2	77.2	78.3	78.3	79.7	79.7	-38
-40	72.5	72.5	73.6	73.6	74.6	74.6	75.7	75.7	76.9	76.9	78.0	78.0	79.4	79.4	-40
-42	72.2	72.2	73.3	73.3	74.3	74.3	75.4	75.4	76.5	76.5	77.7	77.7	79.1	79.1	-42
-44	71.9	71.9	73.0	73.0	74.0	74.0	75.1	75.1	76.2	76.2	77.3	77.3	78.7	78.7	-44
-46	71.6	71.6	72.7	72.7	73.7	73.7	74.8	74.8	75.9	75.9	77.0	77.0	78.4	78.4	-46
-48	71.3	71.3	72.4	72.4	73.4	73.4	74.5	74.5	75.6	75.6	76.7	76.7	78.1	78.1	-48
-50	71.0	71.0	72.1	72.1	73.1	73.1	74.2	74.2	75.3	75.3	76.4	76.4	77.8	77.8	-50
-52	70.7	70.7	71.8	71.8	72.8	72.8	73.9	73.9	75.0	75.0	76.1	76.1	77.5	77.5	-52
-54	70.6	70.6	71.5	71.5	72.5	72.5	73.6	73.6	74.7	74.7	75.7	75.7	77.1	77.1	-54
°C	-1,000		0		1,000		2,000		3,000		4,000		5,000		°C
SAT	Pressure altitude (ft)														SAT

MAXIMUM ITT: 864 °C (890 °C WHEN APR OPERATING) ALTITUDE 6,000 ft / 14,000 ft

SAT	Pressure altitude (ft)														SAT
°C	6,000		7,000		8,000		9,000		10,000		12,000		14,000		°C
50															50
48															48
46															46
44															44
42	82.0	84.5													42
40	82.3	84.9	82.4	85.1											40
38	82.7	85.2	82.8	85.5	82.9	85.7									38
36	83.0	85.6	83.1	85.8	83.2	86.0	83.4	86.0							36
34	83.4	86.0	83.5	86.2	83.6	86.4	83.7	86.3	83.9	86.3					34
32	83.7	86.4	83.8	86.5	83.9	86.7	84.1	86.6	84.2	86.6					32
30	84.1	86.8	84.2	86.9	84.3	87.1	84.4	86.9	84.6	86.8					30
28	84.4	87.1	84.5	87.3	84.6	87.4	84.8	87.3	85.0	87.1	85.0	87.1			28
26	84.8	87.5	84.9	87.6	84.9	87.8	85.1	87.6	85.3	87.4	85.3	87.4			26
24	85.2	87.9	85.2	88.0	85.3	88.1	85.5	87.9	85.7	87.7	85.7	87.7	85.7	87.6	24
22	85.5	88.3	85.6	88.4	85.6	88.5	85.8	88.2	86.0	88.0	86.0	88.1	86.0	87.9	22
20	85.9	88.7	85.9	88.7	86.0	88.8	86.2	88.5	86.4	88.3	86.4	88.4	86.4	88.3	20
18	86.2	89.0	86.3	89.1	86.3	89.2	86.6	88.8	86.7	88.6	86.7	88.8	86.7	88.7	18
16	86.6	89.4	86.6	89.5	86.7	89.5	86.9	89.2	87.1	88.9	87.1	89.1	87.1	89.1	16
14	86.9	89.3	87.0	89.8	87.0	89.9	87.3	89.5	87.5	89.1	87.4	89.4	87.4	89.5	14
12	87.3	89.0	87.3	90.2	87.4	90.2	87.6	89.9	87.8	89.4	87.8	89.8	87.8	89.9	12
10	87.7	88.7	87.7	89.9	87.7	90.6	88.0	90.2	88.2	89.8	88.1	90.1	88.1	90.2	10
8	88.0	88.3	88.0	89.6	88.1	90.8	88.3	90.6	88.5	90.3	88.5	90.4	88.4	90.6	8
6	88.0	88.0	88.4	89.2	88.4	90.5	88.7	91.0	88.9	90.7	88.8	90.8	88.8	91.0	6
4	87.7	87.7	88.7	88.9	88.7	90.1	89.0	91.4	89.3	91.1	89.2	91.1	89.1	91.4	4
2	87.4	87.4	88.6	88.6	89.1	89.8	89.4	91.2	89.6	91.6	89.5	91.5	89.5	91.7	2
0	87.0	87.0	88.2	88.2	89.4	89.4	89.7	90.9	90.0	92.0	89.9	91.9	89.8	92.0	0
-2	86.7	86.7	87.9	87.9	89.1	89.1	90.1	90.6	90.3	92.0	90.3	92.2	90.2	92.3	-2
-4	86.4	86.4	87.6	87.6	88.8	88.8	89.8	90.2	90.7	91.6	90.6	92.6	90.5	92.5	-4
-6	86.0	86.0	87.2	87.2	88.4	88.4	89.4	89.9	90.5	91.3	91.0	92.9	90.8	92.8	-6
-8	85.7	85.7	86.9	86.9	88.1	88.1	89.1	89.5	90.1	90.9	91.3	92.6	91.2	93.1	-8
-10	85.4	85.4	86.6	86.6	87.7	87.7	88.8	89.2	89.8	90.6	91.0	92.3	91.5	93.4	-10
-12	85.1	85.1	86.2	86.2	87.4	87.4	88.4	88.8	89.4	90.2	90.6	91.9	91.8	93.6	-12
-14	84.7	84.7	85.9	85.9	87.0	87.0	88.1	88.5	89.1	89.9	90.3	91.6	91.4	93.2	-14
-16	84.4	84.4	85.6	85.6	86.7	86.7	87.7	88.1	88.7	89.5	89.9	91.2	91.1	92.9	-16
-18	84.1	84.1	85.2	85.2	86.4	86.4	87.4	87.8	88.4	89.2	89.6	90.8	90.7	92.5	-18
-20	83.7	83.7	84.9	84.9	86.0	86.0	87.0	87.4	88.0	88.8	89.2	90.5	90.4	92.1	-20
-22	83.4	83.4	84.5	84.5	85.7	85.7	86.7	87.1	87.7	88.5	88.9	90.1	90.0	91.8	-22
-24	83.1	83.1	84.2	84.2	85.3	85.3	86.3	86.7	87.3	88.1	88.5	89.8	89.7	91.4	-24
-26	82.8	82.8	83.9	83.9	85.0	85.0	86.0	86.4	87.0	87.8	88.2	89.4	89.3	91.0	-26
-28	82.4	82.4	83.5	83.5	84.6	84.6	85.6	86.0	86.6	87.4	87.8	89.1	89.0	90.7	-28
-30	82.1	82.1	83.2	83.2	84.3	84.3	85.3	85.7	86.3	87.1	87.5	88.7	88.6	90.3	-30
-32	81.8	81.8	82.9	82.9	84.0	84.0	84.9	85.3	85.9	86.7	87.1	88.4	88.3	90.0	-32
-34	81.4	81.4	82.5	82.5	83.6	83.6	84.6	85.0	85.6	86.4	86.8	88.0	88.0	89.6	-34
-36	81.1	81.1	82.2	82.2	83.3	83.3	84.2	84.6	85.2	86.0	86.4	87.6	87.6	89.2	-36
-38	80.8	80.8	81.9	81.9	82.9	82.9	83.9	84.3	84.8	85.6	86.1	87.3	87.3	88.9	-38
-40	80.5	80.5	81.5	81.5	82.6	82.6	83.5	84.0	84.5	85.3	85.7	86.9	86.9	88.5	-40
-42	80.1	80.1	81.2	81.2	82.2	82.2	83.2	83.6	84.1	84.9	85.4	86.6	86.6	88.2	-42
-44	79.8	79.8	80.9	80.9	81.9	81.9	82.8	83.3	83.8	84.6	85.0	86.2	86.2	87.8	-44
-46	79.5	79.5	80.5	80.5	81.5	81.6	82.5	82.9	83.4	84.2	84.7	85.9	85.9	87.4	-46
-48	79.1	79.1	80.2	80.2	81.2	81.2	82.2	82.6	83.1	83.9	84.3	85.5	85.5	87.1	-48
-50	78.8	78.8	79.8	79.8	80.9	80.9	81.8	82.2	82.7	83.5	84.0	85.1	85.2	86.7	-50
-52	78.5	78.5	79.5	79.5	80.5	80.5	81.5	81.9	82.4	83.2	83.6	84.8	84.8	86.3	-52
-54	78.2	78.2	79.2	79.2	80.2	80.2	81.1	81.5	82.0	82.8	83.3	84.4	84.5	86.0	-54
°C	6,000		7,000		8,000		9,000		10,000		12,000		14,000		°C
SAT	Pressure altitude (ft)														SAT

INTENTIONALLY LEFT BLANK

ENGINE POWER SETTING – WITHOUT ICE PROTECTION

Maximum continuous N1, Final take-off and en-route climbs

MAXIMUM ITT: 861 °C

TAT	Pressure altitude (ft)													TAT
°C	0	2,000	4,000	6,000	8,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	°C
56	78.6													56
54	78.9	78.7												54
52	79.2	79.0												52
50	79.5	79.4	79.1											50
48	79.8	79.7	79.5											48
46	80.1	80.0	79.8	79.6										46
44	80.3	80.3	80.2	80.0										44
42	80.6	80.6	80.5	80.3	80.1									42
40	80.9	80.9	80.8	80.7	80.5									40
38	81.2	81.2	81.2	81.1	80.8	80.6								38
36	81.4	81.5	81.5	81.4	81.2	81.0								36
34	81.7	81.8	81.8	81.7	81.6	81.4								34
32	81.6	82.1	82.1	82.1	82.0	81.8								32
30	81.3	82.4	82.4	82.4	82.3	82.1								30
28	81.1	82.6	82.7	82.7	82.7	82.5	80.1							28
26	80.8	82.9	83.0	83.1	83.0	82.9	80.5							26
24	80.5	82.7	83.3	83.4	83.4	83.2	80.9							24
22	80.2	82.4	83.6	83.7	83.7	83.6	81.4							22
20	80.0	82.1	83.9	84.0	84.1	83.9	81.8							20
18	79.7	81.8	84.0	84.3	84.4	84.3	82.2	82.0						18
16	79.4	81.6	83.7	84.6	84.7	84.6	82.6	82.4						16
14	79.1	81.3	83.4	84.9	85.0	84.9	83.0	82.8						14
12	78.9	81.0	83.1	85.2	85.3	85.2	83.4	83.2						12
10	78.6	80.7	82.8	85.4	85.6	85.6	83.8	83.6						10
8	78.3	80.4	82.5	85.1	86.0	85.9	84.2	83.9	83.4					8
6	78.0	80.1	82.2	84.8	86.3	86.2	84.6	84.3	83.8					6
4	77.8	79.8	81.9	84.5	86.5	86.5	84.9	84.7	84.1					4
2	77.5	79.6	81.6	84.1	86.6	86.8	85.3	85.0	84.5					2
0	77.2	79.3	81.3	83.8	86.3	87.1	85.7	85.4	84.9	83.7				0
-2	76.9	79.0	81.0	83.5	85.9	87.0	86.0	85.8	85.3	84.1				-2
-4	76.6	78.7	80.7	83.2	85.6	86.7	86.4	86.1	85.6	84.6				-4
-6	76.3	78.4	80.4	82.9	85.3	86.4	86.7	86.4	86.0	85.0				-6
-8	76.1	78.1	80.1	82.6	85.0	86.1	87.0	86.8	86.3	85.4	85.4			-8
-10	75.8	77.8	79.8	82.3	84.7	85.7	86.9	87.1	86.7	85.8	85.7			-10
-12	75.5	77.5	79.5	82.0	84.3	85.4	86.6	87.4	87.0	86.2	86.0			-12
-14	75.2	77.2	79.2	81.7	84.0	85.1	86.3	87.7	87.3	86.6	86.3			-14
-16	74.9	76.9	78.9	81.4	83.7	84.7	85.9	88.0	87.6	87.0	86.6	87.5		-16
-18	74.6	76.6	78.6	81.0	83.4	84.4	85.6	88.3	88.0	87.4	86.9	87.9		-18
-20	74.3	76.3	78.3	80.7	83.0	84.1	85.3	88.1	88.3	87.8	87.2	88.3		-20
-22	74.0	76.0	78.0	80.4	82.7	83.8	84.9	87.8	88.6	88.2	87.5	88.7	88.0	-22
-24	73.7	75.7	77.7	80.1	82.4	83.4	84.6	87.4	88.9	88.5	87.8	89.1	88.4	-24
-26	73.4	75.4	77.4	79.8	82.1	83.1	84.3	87.1	89.2	88.9	88.1	89.5	88.8	-26
-28	73.1	75.1	77.0	79.4	81.7	82.7	83.9	86.7	89.1	89.2	88.4	89.9	89.2	-28
-30	72.8	74.8	76.7	79.1	81.4	82.4	83.6	86.4	88.8	89.6	88.6	90.3	89.7	-30
-32	72.5	74.5	76.4	78.8	81.1	82.1	83.2	86.0	88.4	89.9	88.9	90.6	90.1	-32
-34	72.2	74.2	76.1	78.5	80.7	81.7	82.9	85.7	88.0	90.3	89.1	91.0	90.5	-34
-36	71.9	73.9	75.8	78.1	80.4	81.4	82.5	85.3	87.7	90.6	89.4	91.3	90.8	-36
-38	71.6	73.5	75.5	77.8	80.0	81.0	82.2	84.9	87.3	90.2	89.6	91.6	91.2	-38
-40	71.3	73.2	75.1	77.5	79.7	80.7	81.8	84.6	86.9	89.9	89.8	92.0	91.6	-40
-42	71.0	72.9	74.8	77.1	79.4	80.3	81.5	84.2	86.6	89.5	90.1	92.3	91.9	-42
-44	70.7	72.6	74.5	76.8	79.0	80.0	81.1	83.9	86.2	89.1	90.3	92.5	91.7	-44
-46	70.4	72.3	74.2	76.5	78.7	79.6	80.8	83.5	85.8	88.7	90.1	90.2	91.3	-46
-48	70.1	72.0	73.8	76.1	78.3	79.3	80.4	83.1	85.4	88.3	89.7	89.8	90.9	-48
-50	69.8	71.6	73.5	75.8	78.0	78.9	80.1	82.7	85.0	87.9	89.3	89.4	90.5	-50
°C	0	2,000	4,000	6,000	8,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	°C
TAT	Pressure altitude (ft)													TAT

ENGINE POWER SETTING – WITH ICE PROTECTION

Take-off N1, Take-off run and first segment climb

Initial take-off N1 (APR not operating) ↓	APR operating Take-off N1 ↓
96.8	92.4
92.0	92.0
91.7	91.7

MAXIMUM ITT: 864 °C (890 °C WHEN APR OPERATING) **ALTITUDE -1,000 ft / 5,000 ft**

SAT	Pressure altitude (ft)														SAT
°C	-1,000		0		1,000		2,000		3,000		4,000		5,000		°C
10	78.6	78.6	79.8	79.8	81.0	81.0	82.1	82.1	83.5	83.5	84.8	84.8	86.1	86.1	10
8	78.3	78.3	79.5	79.5	80.7	80.7	81.8	81.8	83.2	83.2	84.5	84.5	85.8	85.8	8
6	78.0	78.0	79.2	79.2	80.4	80.4	81.5	81.5	82.8	82.8	84.2	84.2	85.5	85.5	6
4	77.7	77.7	78.9	78.9	80.1	80.1	81.2	81.2	82.5	82.5	83.8	83.8	85.2	85.2	4
2	77.4	77.4	78.6	78.6	79.8	79.8	80.9	80.9	82.2	82.2	83.5	83.5	84.9	84.9	2
0	77.1	77.1	78.3	78.3	79.5	79.5	80.6	80.6	81.9	81.9	83.2	83.2	84.5	84.5	0
-2	76.8	76.8	78.0	78.0	79.2	79.2	80.3	80.3	81.6	81.6	82.9	82.9	84.2	84.2	-2
-4	76.5	76.5	77.7	77.7	78.8	78.8	80.0	80.0	81.3	81.3	82.5	82.5	83.9	83.9	-4
-6	76.2	76.2	77.4	77.4	78.5	78.5	79.7	79.7	81.0	81.0	82.2	82.2	83.6	83.6	-6
-8	75.9	75.9	77.1	77.1	78.2	78.2	79.4	79.4	80.6	80.6	81.9	81.9	83.3	83.3	-8
-10	75.6	75.6	76.8	76.8	77.9	77.9	79.0	79.0	80.3	80.3	81.6	81.6	82.9	82.9	-10
-12	75.3	75.3	76.5	76.5	77.6	77.6	78.7	78.7	80.0	80.0	81.3	81.3	82.6	82.6	-12
-14	75.0	75.0	76.2	76.2	77.3	77.3	78.4	78.4	79.7	79.7	80.9	80.9	82.3	82.3	-14
-16	74.8	74.8	75.9	75.9	77.0	77.0	78.1	78.1	79.4	79.4	80.6	80.6	82.0	82.0	-16
-18	74.5	74.5	75.6	75.6	76.7	76.7	77.8	77.8	79.1	79.1	80.3	80.3	81.7	81.7	-18
-20	74.2	74.2	75.3	75.3	76.4	76.4	77.5	77.5	78.7	78.7	80.0	80.0	81.3	81.3	-20
-22	73.9	73.9	75.0	75.0	76.1	76.1	77.2	77.2	78.4	78.4	79.6	79.6	81.0	81.0	-22
-24	73.6	73.6	74.7	74.7	75.8	75.8	76.9	76.9	78.1	78.1	79.3	79.3	80.7	80.7	-24
-26	73.3	73.3	74.4	74.4	75.5	75.5	76.6	76.6	77.8	77.8	79.0	79.0	80.4	80.4	-26
-28	73.0	73.0	74.1	74.1	75.2	75.2	76.3	76.3	77.5	77.5	78.7	78.7	80.1	80.1	-28
-30	72.7	72.7	73.8	73.8	74.9	74.9	76.0	76.0	77.2	77.2	78.4	78.4	79.7	79.7	-30
-32	72.4	72.4	73.5	73.5	74.6	74.6	75.7	75.7	76.9	76.9	78.0	78.0	79.4	79.4	-32
-34	72.1	72.1	73.2	73.2	74.3	74.3	75.4	75.4	76.5	76.5	77.7	77.7	79.1	79.1	-34
-36	71.8	71.8	72.9	72.9	74.0	74.0	75.1	75.1	76.2	76.2	77.4	77.4	78.8	78.8	-36
-38	71.5	71.5	72.6	72.6	73.7	73.7	74.8	74.8	75.9	75.9	77.1	77.1	78.5	78.5	-38
-40	71.2	71.2	72.3	72.3	73.4	73.4	74.5	74.5	75.6	75.6	76.7	76.7	78.1	78.1	-40
-42	70.9	70.9	72.0	72.0	73.1	73.1	74.2	74.2	75.3	75.3	76.4	76.4	77.8	77.8	-42
-44	70.6	70.6	71.7	71.7	72.8	72.8	73.8	73.8	75.0	75.0	76.1	76.1	77.5	77.5	-44
-46	70.3	70.3	71.4	71.4	72.5	72.5	73.5	73.5	74.7	74.7	75.8	75.8	77.2	77.2	-46
-48	70.0	70.0	71.1	71.1	72.2	72.2	73.2	73.2	74.3	74.3	75.5	75.5	76.9	76.9	-48
-50	69.7	69.7	70.8	70.8	71.9	71.9	72.9	72.9	74.0	74.0	75.1	75.1	76.5	76.5	-50
-52	69.4	69.4	70.5	70.5	71.6	71.6	72.6	72.6	73.7	73.7	74.8	74.8	76.2	76.2	-52
-54	69.4	69.4	70.2	70.2	71.3	71.3	72.3	72.3	73.4	73.4	74.5	74.5	75.9	75.9	-54
°C	-1,000		0		1,000		2,000		3,000		4,000		5,000		°C
SAT	Pressure altitude (ft)														SAT

MAXIMUM ITT: 864 °C (890 °C WHEN APR OPERATING) ALTITUDE 6,000 ft / 14,000 ft

SAT °C	Pressure altitude (ft) 6,000		7,000		8,000		9,000		10,000		12,000		14,000		SAT °C
10,00	86.4	87.4	86.3	88.6	86.3	89.2	86.5	88.8	86.7	88.4	86.6	88.5	86.4	88.6	10,00
8,00	86.7	87.0	86.7	88.2	86.7	89.4	86.9	89.2	87.1	88.8	86.9	88.9	86.8	89.0	8,00
6,00	86.7	86.7	87.0	87.9	87.0	89.1	87.2	89.6	87.4	89.2	87.3	89.2	87.1	89.3	6,00
4,00	86.4	86.4	87.4	87.6	87.4	88.7	87.6	90.0	87.8	89.7	87.6	89.6	87.5	89.7	4,00
2,00	86.1	86.1	87.2	87.2	87.7	88.4	87.9	89.8	88.1	90.1	88.0	89.9	87.8	90.0	2,00
0,00	85.7	85.7	86.9	86.9	88.0	88.1	88.3	89.5	88.5	90.5	88.3	90.3	88.2	90.3	0,00
-2,00	85.4	85.4	86.6	86.6	87.7	87.7	88.6	89.1	88.9	90.5	88.7	90.7	88.5	90.6	-2,00
-4,00	85.1	85.1	86.2	86.2	87.4	87.4	88.4	88.8	89.2	90.1	89.0	91.0	88.8	90.9	-4,00
-6,00	84.7	84.7	85.9	85.9	87.0	87.0	88.0	88.4	89.0	89.8	89.4	91.4	89.2	91.2	-6,00
-8,00	84.4	84.4	85.6	85.6	86.7	86.7	87.7	88.1	88.6	89.4	89.7	91.1	89.5	91.5	-8,00
-10,00	84.1	84.1	85.2	85.2	86.3	86.3	87.3	87.7	88.3	89.1	89.4	90.7	89.9	91.8	-10,00
-12,00	83.8	83.8	84.9	84.9	86.0	86.0	87.0	87.4	87.9	88.7	89.0	90.3	90.1	91.9	-12,00
-14,00	83.4	83.4	84.5	84.5	85.7	85.7	86.6	87.0	87.6	88.4	88.7	90.0	89.8	91.6	-14,00
-16,00	83.1	83.1	84.2	84.2	85.3	85.3	86.3	86.7	87.2	88.0	88.3	89.6	89.4	91.2	-16,00
-18,00	82.8	82.8	83.9	83.9	85.0	85.0	85.9	86.3	86.9	87.7	88.0	89.3	89.1	90.8	-18,00
-20,00	82.4	82.4	83.5	83.5	84.6	84.6	85.6	86.0	86.5	87.3	87.6	88.9	88.7	90.5	-20,00
-22,00	82.1	82.1	83.2	83.2	84.3	84.3	85.2	85.6	86.2	87.0	87.3	88.6	88.4	90.1	-22,00
-24,00	81.8	81.8	82.9	82.9	83.9	83.9	84.9	85.3	85.8	86.6	86.9	88.2	88.0	89.8	-24,00
-26,00	81.5	81.5	82.5	82.5	83.6	83.6	84.5	85.0	85.5	86.3	86.6	87.9	87.7	89.4	-26,00
-28,00	81.1	81.1	82.2	82.2	83.3	83.3	84.2	84.6	85.1	85.9	86.2	87.5	87.3	89.0	-28,00
-30,00	80.8	80.8	81.9	81.9	82.9	82.9	83.8	84.3	84.8	85.6	85.9	87.1	87.0	88.7	-30,00
-32,00	80.5	80.5	81.5	81.5	82.6	82.6	83.5	83.9	84.4	85.2	85.6	86.8	86.6	88.3	-32,00
-34,00	80.1	80.1	81.2	81.2	82.2	82.2	83.2	83.6	84.1	84.9	85.2	86.4	86.3	87.9	-34,00
-36,00	79.8	79.8	80.9	80.9	81.9	81.9	82.8	83.2	83.7	84.5	84.9	86.1	85.9	87.6	-36,00
-38,00	79.5	79.5	80.5	80.5	81.5	81.5	82.5	82.9	83.4	84.2	84.5	85.7	85.6	87.2	-38,00
-40,00	79.2	79.2	80.2	80.2	81.2	81.2	82.1	82.5	83.0	83.8	84.2	85.4	85.3	86.9	-40,00
-42,00	78.8	78.8	79.8	79.8	80.9	80.9	81.8	82.2	82.7	83.5	83.8	85.0	84.9	86.5	-42,00
-44,00	78.5	78.5	79.5	79.5	80.5	80.5	81.4	81.8	82.3	83.1	83.5	84.6	84.6	86.1	-44,00
-46,00	78.2	78.2	79.2	79.2	80.2	80.2	81.1	81.5	82.0	82.8	83.1	84.3	84.2	85.8	-46,00
-48,00	77.8	77.8	78.8	78.8	79.8	79.8	80.7	81.1	81.6	82.4	82.8	83.9	83.9	85.4	-48,00
-50,00	77.5	77.5	78.5	78.5	79.5	79.5	80.4	80.8	81.3	82.1	82.4	83.6	83.5	85.1	-50,00
-52,00	77.2	77.2	78.2	78.2	79.1	79.1	80.0	80.4	80.9	81.7	82.1	83.2	83.2	84.7	-52,00
-54,00	76.9	76.9	77.8	77.8	78.8	78.8	79.7	80.1	80.6	81.4	81.7	82.9	82.8	84.3	-54,00
°C	6,000		7,000		8,000		9,000		10,000		12,000		14,000		°C
SAT	Pressure altitude (ft)														SAT

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ENGINE POWER SETTING – WITH ICE PROTECTION

Maximum continuous N1, Final take-off and en-route climbs

MAXIMUM ITT: 861 °C

TAT	Pressure altitude (ft)													TAT
°C	0	2,000	4,000	6,000	8,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	°C
10	77.1	79.3	79.7	80.0	79.9	79.8	79.9	80.0						10
8	76.9	79.0	80.0	80.3	80.2	80.1	80.3	80.4	79.3					8
6	76.6	78.7	80.4	80.7	80.6	80.4	80.7	80.8	79.7					6
4	76.3	78.4	80.5	81.0	81.1	80.7	81.1	81.2	80.1					4
2	76.0	78.2	80.3	81.4	81.8	81.1	81.5	81.5	80.5					2
0	75.8	77.9	80.0	81.7	82.2	81.4	81.9	81.9	80.9	79.0				0
-2	75.5	77.6	79.7	82.0	82.5	81.5	82.2	82.3	81.3	79.4				-2
-4	75.2	77.3	79.4	81.9	82.8	81.9	82.6	82.6	81.6	79.9				-4
-6	74.9	77.0	79.1	81.6	83.1	82.2	82.9	83.0	82.0	80.3				-6
-8	74.6	76.7	78.8	81.3	83.5	82.5	83.3	83.3	82.4	80.8	80.0			-8
-10	74.4	76.4	78.5	81.0	83.3	82.9	83.2	83.7	82.7	81.2	80.3			-10
-12	74.1	76.1	78.2	80.6	83.0	83.2	83.2	84.0	83.1	81.6	80.7			-12
-14	73.8	75.8	77.9	80.3	82.6	83.5	83.4	84.3	83.4	82.1	81.0			-14
-16	73.5	75.6	77.6	80.0	82.3	83.3	83.6	84.7	83.8	82.5	81.3	78.8		-16
-18	73.2	75.3	77.3	79.7	82.0	83.0	83.8	85.0	84.1	82.9	81.7	79.3		-18
-20	72.9	75.0	77.0	79.4	81.7	82.7	84.0	84.8	84.4	83.3	82.0	79.7		-20
-22	72.6	74.7	76.7	79.1	81.4	82.3	84.1	85.0	84.7	83.7	82.3	80.1	78.2	-22
-24	72.4	74.4	76.4	78.8	81.0	82.0	84.2	85.1	85.1	84.1	82.6	80.6	78.7	-24
-26	72.1	74.1	76.1	78.5	80.7	81.7	83.9	85.2	85.4	84.4	82.9	81.0	79.1	-26
-28	71.8	73.8	75.8	78.1	80.4	81.4	83.5	85.3	85.4	84.8	83.2	81.4	79.6	-28
-30	71.5	73.5	75.4	77.8	80.1	81.0	83.2	85.4	85.3	85.2	83.5	81.8	80.0	-30
-32	71.2	73.2	75.1	77.5	79.7	80.7	82.9	85.5	85.4	85.5	83.7	82.2	80.5	-32
-34	70.9	72.9	74.8	77.2	79.4	80.4	82.5	85.4	85.6	85.9	84.0	82.6	80.9	-34
-36	70.6	72.6	74.5	76.8	79.1	80.0	82.2	85.0	85.7	86.2	84.3	82.9	81.3	-36
-38	70.3	72.3	74.2	76.5	78.7	79.7	81.8	84.6	85.8	86.1	84.5	83.3	81.7	-38
-40	70.0	71.9	73.9	76.2	78.4	79.3	81.5	84.3	85.9	86.3	84.8	83.7	82.2	-40
-42	69.7	71.6	73.6	75.9	78.1	79.0	81.1	83.9	86.0	86.5	85.0	84.0	82.6	-42
-44	69.4	71.3	73.2	75.5	77.7	78.7	80.8	83.5	85.6	86.7	85.3	84.2	82.7	-44
-46	69.1	71.0	72.9	75.2	77.4	78.3	80.4	83.2	85.2	87.0	85.1	83.9	83.0	-46
-48	68.8	70.7	72.6	74.9	77.0	78.0	80.1	82.8	84.9	87.2	85.3	84.3	83.3	-48
-50	68.5	70.4	72.3	74.5	76.7	77.6	79.7	82.4	84.5	87.4	85.4	84.7	83.6	-50
°C	0	2,000	4,000	6,000	8,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	°C
TAT	Pressure altitude (ft)													TAT

TAKE-OFF EXAMPLE - DRY RUNWAY 20° FLAPS + SLATS

Field pressure altitude: 3,500 ft
Runway length: 6,770 ft

Ambient temperature: 35 °C
Runway slope: +1 % up hill
Headwind: +20 kt

5-500-40 page 1 : Maximum take-off weight
limited by climb requirements .... W1 = 34,200 lb

Maximum take-off weight limited by field length:
5-500-05 page 4 : For 3,000 ft field pressure altitude : 32,600 lb
5-500-05 page 5 : For 4,000 ft field pressure altitude : 31,400 lb
For 3,500 ft field pressure altitude, interpolate linearly:

$$31{,}400 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (32{,}600 - 31{,}400) = 32{,}000 \text{ lb}$$

.... W2 = 32,000 lb

1-050-05 page 1 : Maximum take-off weight limited by structural limitation: ....35,800 lb

The maximum take-off weight is therefore the
field length limited take-off weight .... W3 = 32,000 lb

5-500-40 page 2 : Second segment gross climb gradient.. 3.3 %

5-500-35 page 1 : Take-off speeds ....VR = 116 kt; V2 = 118.5 kt
Recommended take-off attitude .... 10.0°

5-500-15 page 1 : Maximum brake energy speed (VMBE)....................... Higher than 160 kt

5-500-10 pages 2 and 3 : Decision speed associated with balanced field length: 121 kt.
V1 mini = 100.5 kt.
As V1 is higher than V1 mini and lower
than VMBE and VR, use V1 = VR .... V1 = 116 kt

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TAKE-OFF EXAMPLE - DRY RUNWAY 20° FLAPS + SLATS

Field pressure altitude: 3,500 ft
Runway length: 6,770 ft

Ambient temperature: 35 °C
Runway slope: +1 % up hill
Headwind: +20 kt

5-500-40 page 1 : Maximum take-off weight limited by climb requirements.. W1 = 34,200 lb

Maximum take-off weight limited by field length:

5-500-05 page 4 : For 3,000 ft field pressure altitude : 32,600 lb

5-500-05 page 5 : For 4,000 ft field pressure altitude : 31,400 lb

For 3,500 ft field pressure altitude, interpolate linearly:

$$31{,}400 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (32{,}600 - 31{,}400) = 32{,}000 \text{ lb}$$

.... W2 = 32,000 lb

1-050-05A page 1 : Maximum take-off weight limited by structural limitation: ....36,500 lb

The maximum take-off weight is therefore the field length limited take-off weight .... W3 = 32,000 lb

5-500-40 page 2 : Second segment gross climb gradient.. 3.3 %

5-500-35 page 1 : Take-off speeds ....VR = 116 kt; V2 = 118.5 kt
Recommended take-off attitude ....10.0°

5-500-15 page 1 : Maximum brake energy speed (VMBE)....................... Higher than 160 kt

5-500-10 pages 2 and 3 : Decision speed associated with balanced field length: 121 kt.
V1 mini = 100.5 kt.
As V1 is higher than V1 mini and lower than VMBE and VR, use V1 = VR .... V1 = 116 kt

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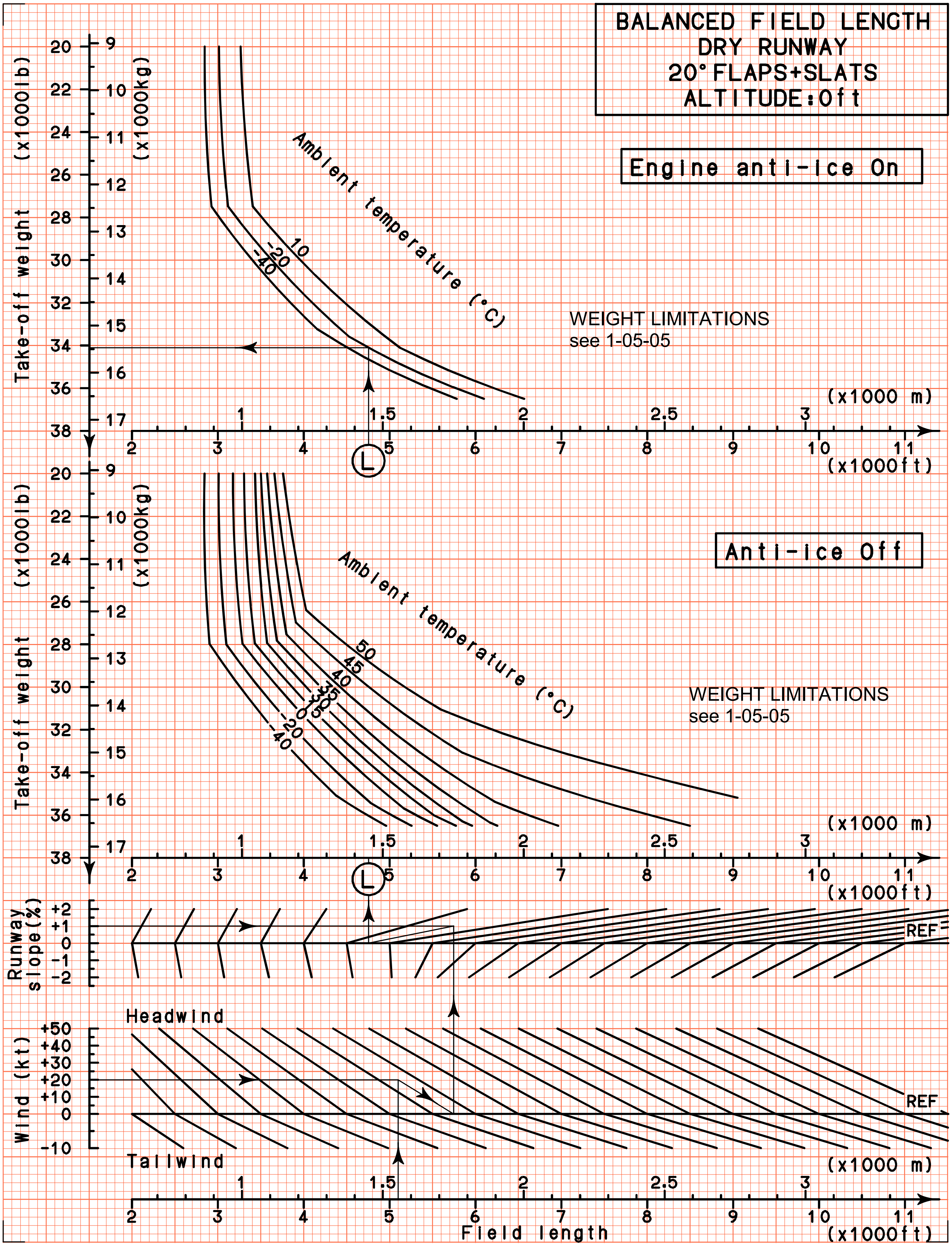
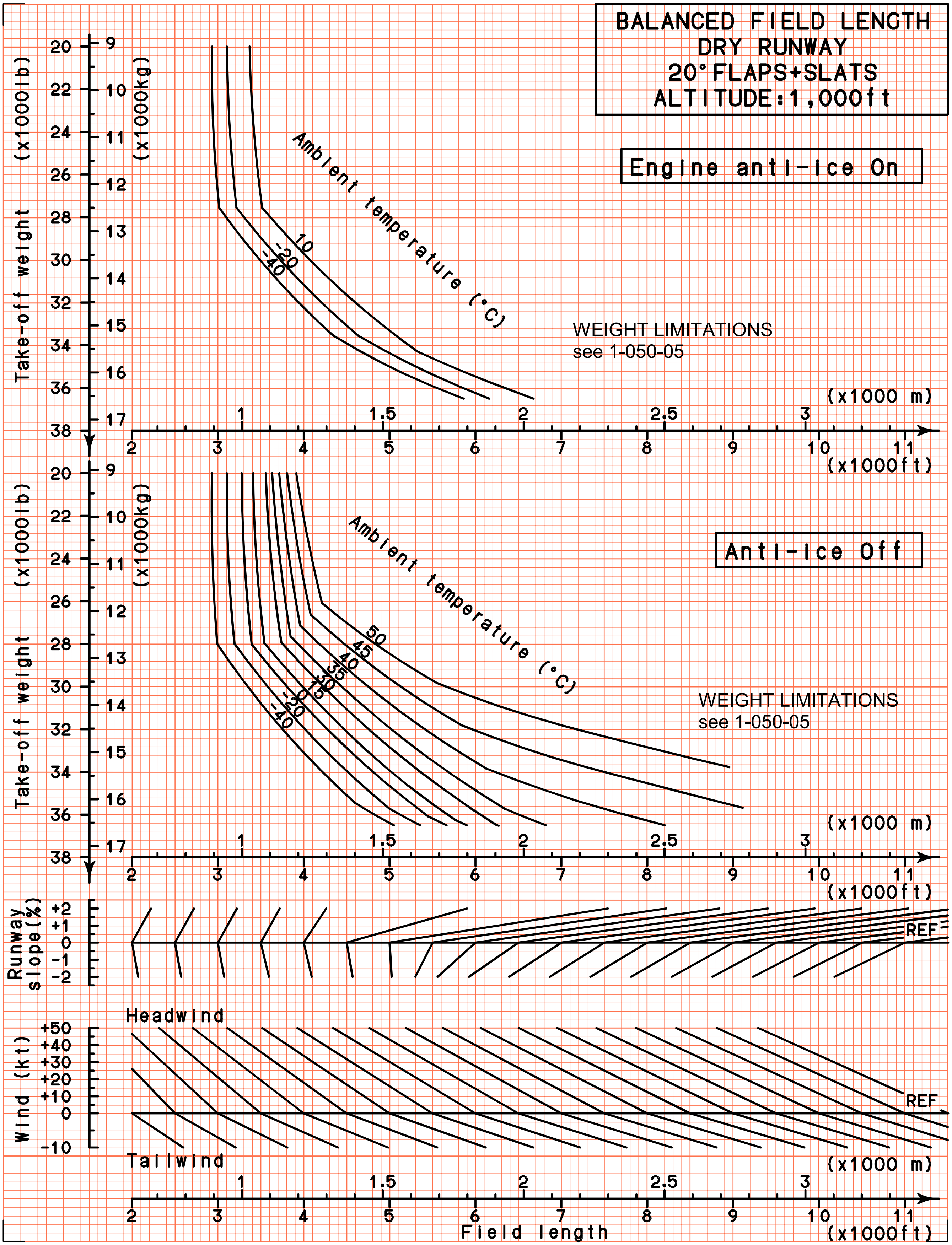
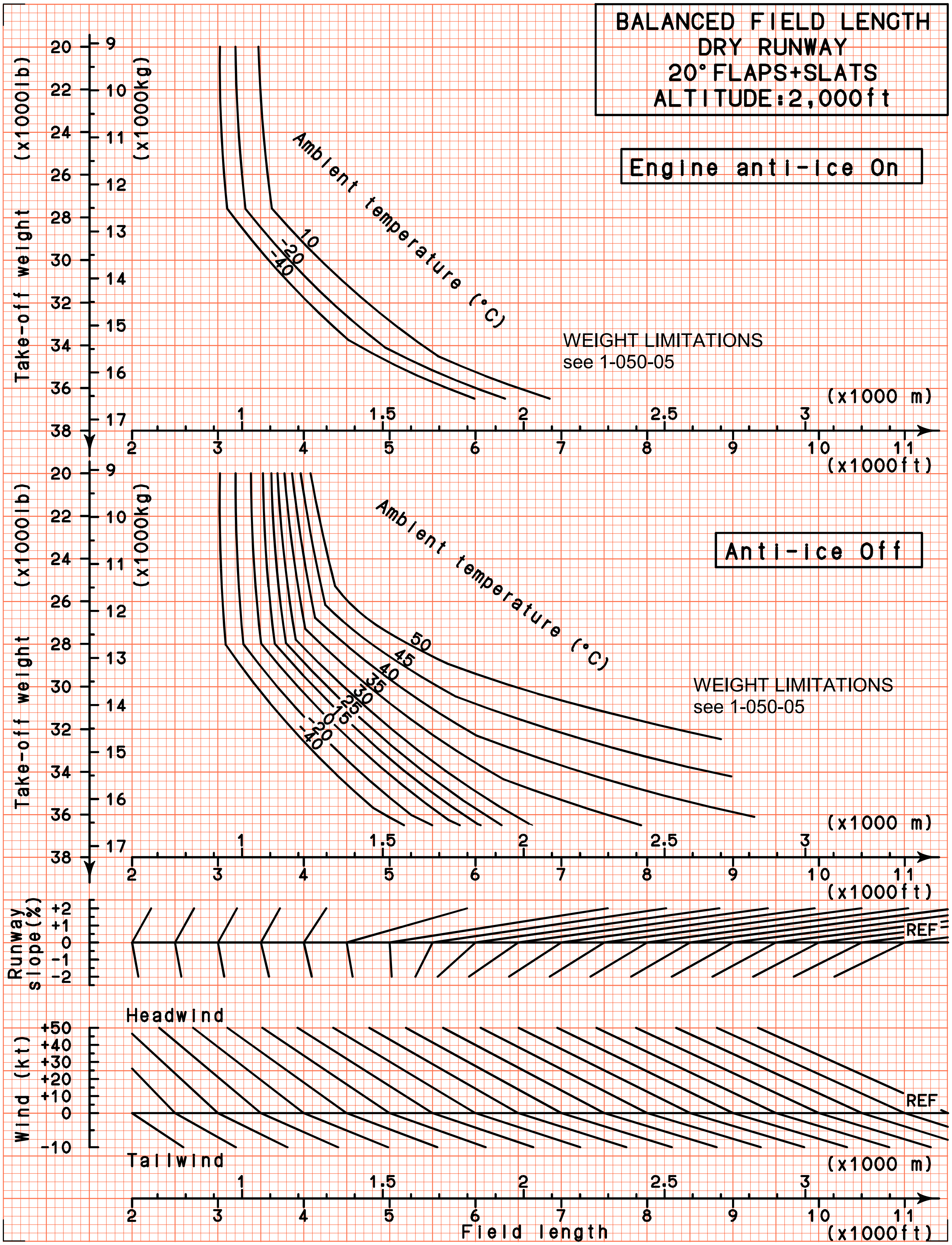
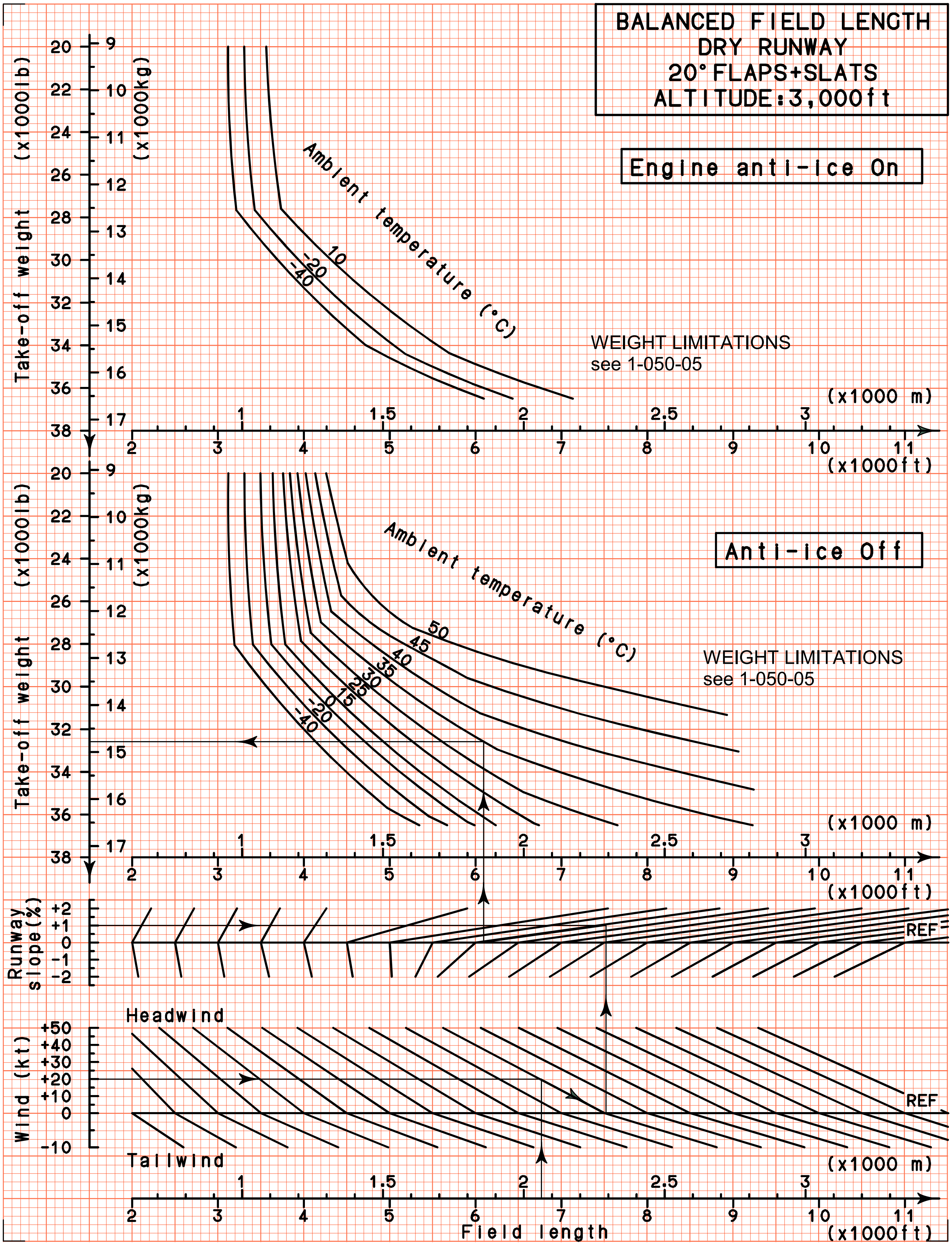
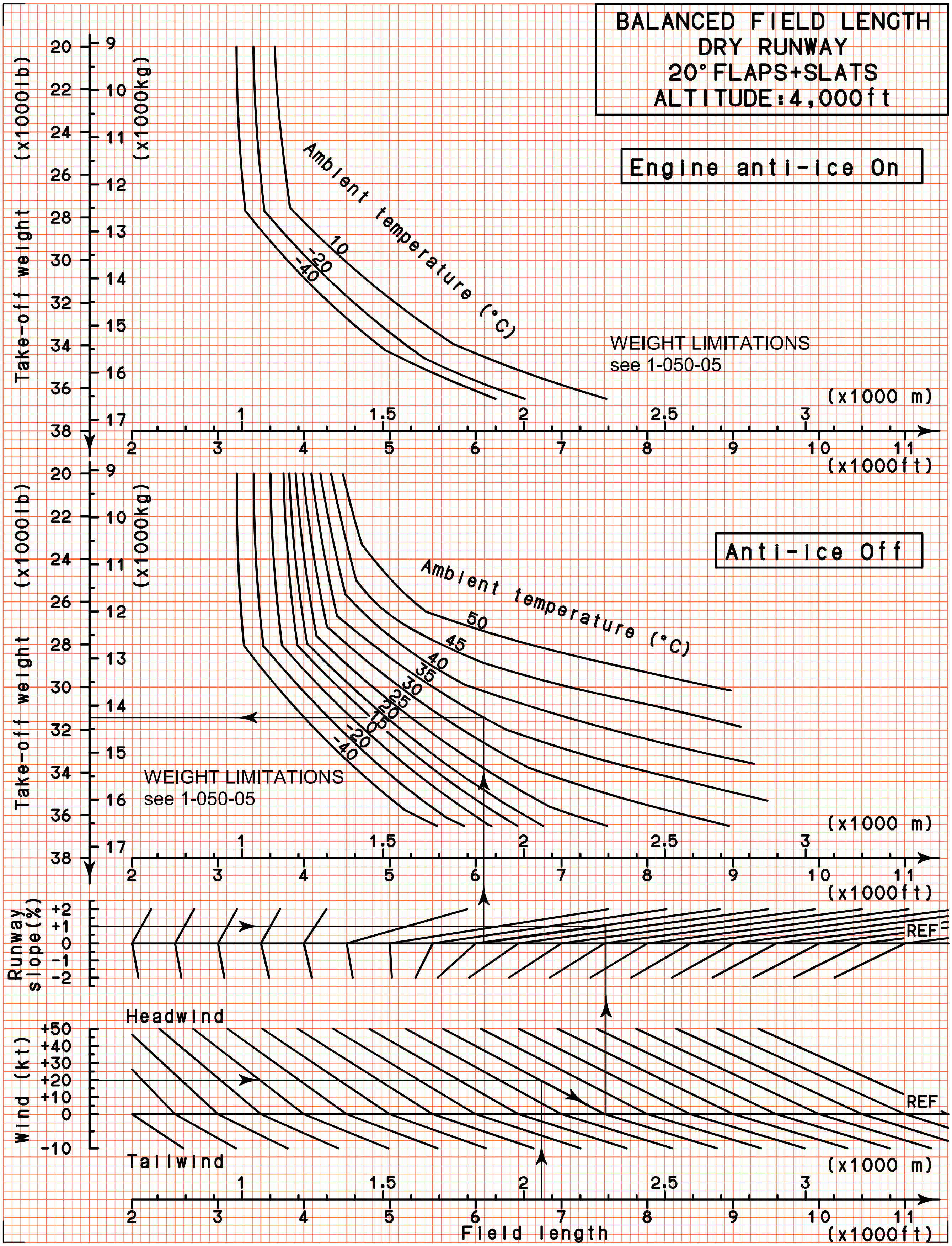
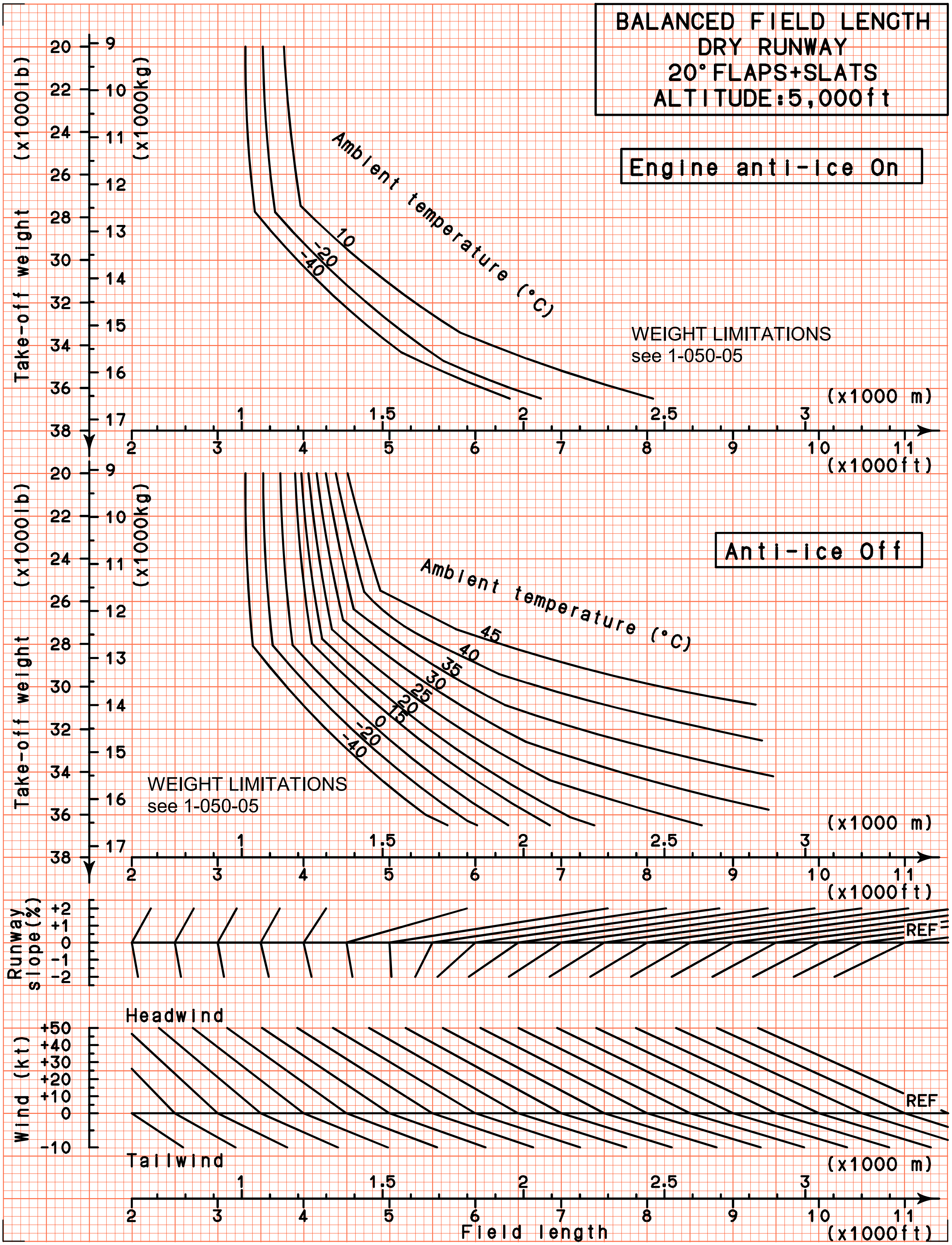

BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:0ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-05-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
50
45
40
35
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-05-05
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
REF
Field length

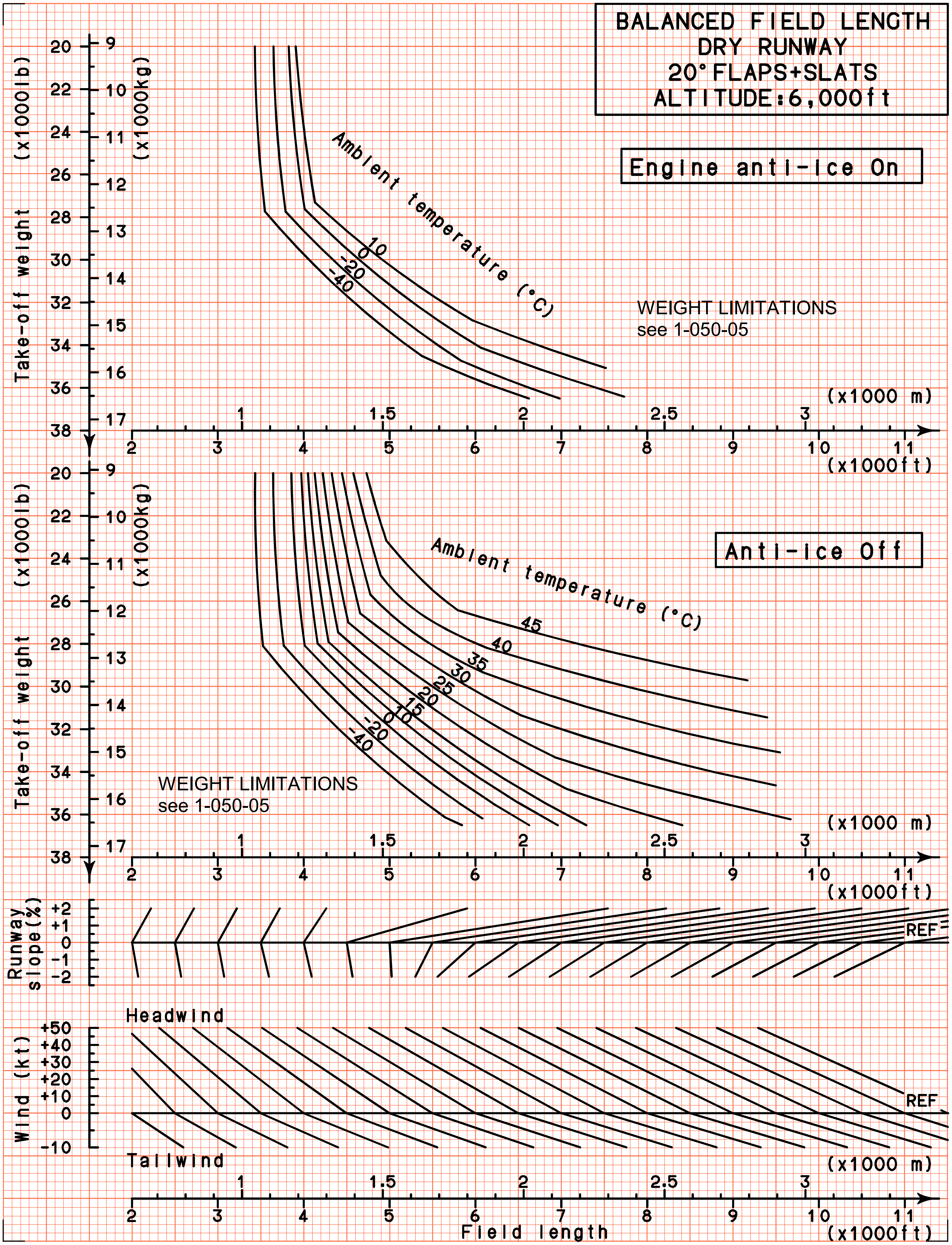

BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:1,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
50
45
40
35
30
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Wind (kt)
REF
Tailwind
Field length

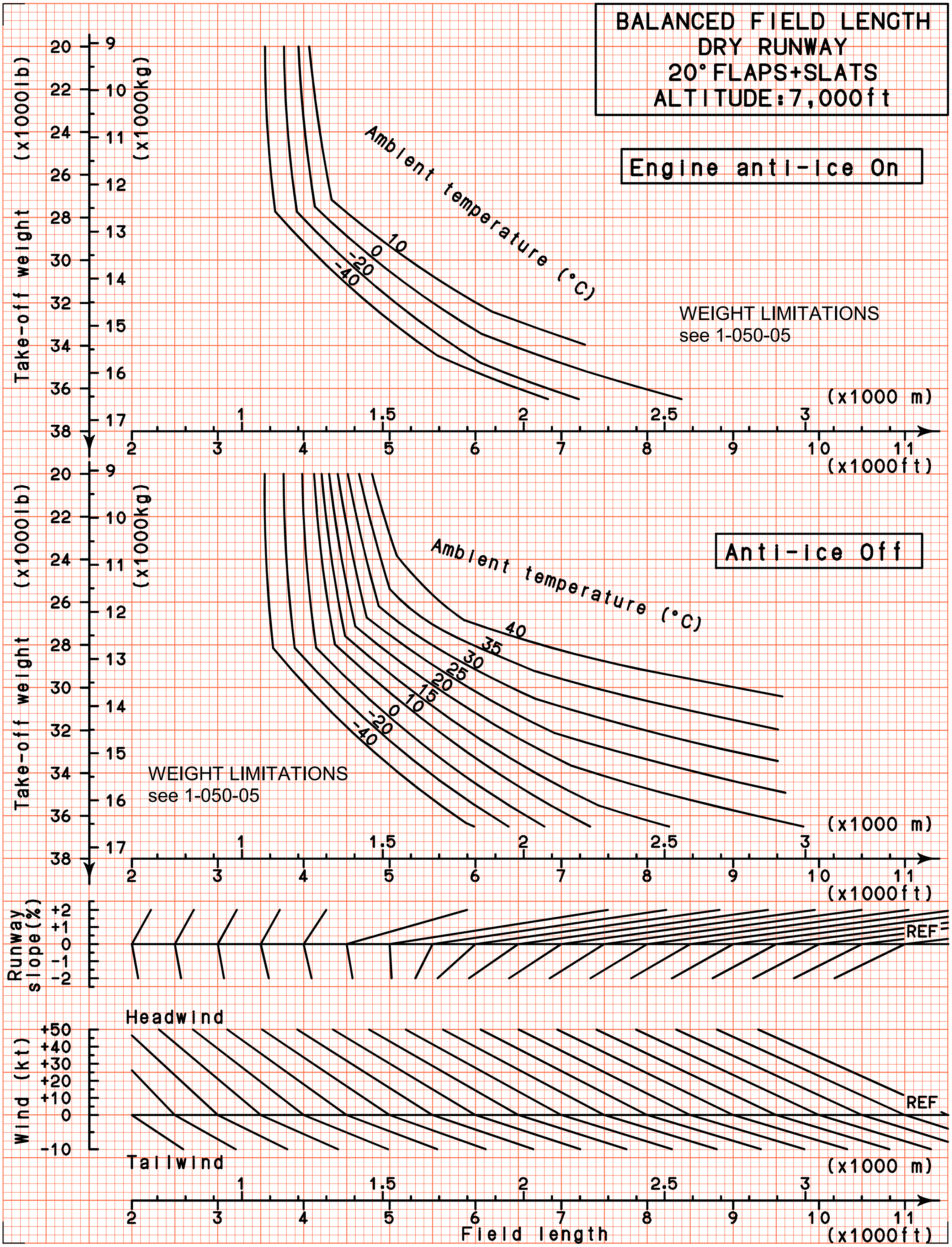

BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:2,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
50
45
40
35
30
25
15
0
-20
-40
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:3,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
50
45
40
35
30
25
15
0
-20
-40
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length

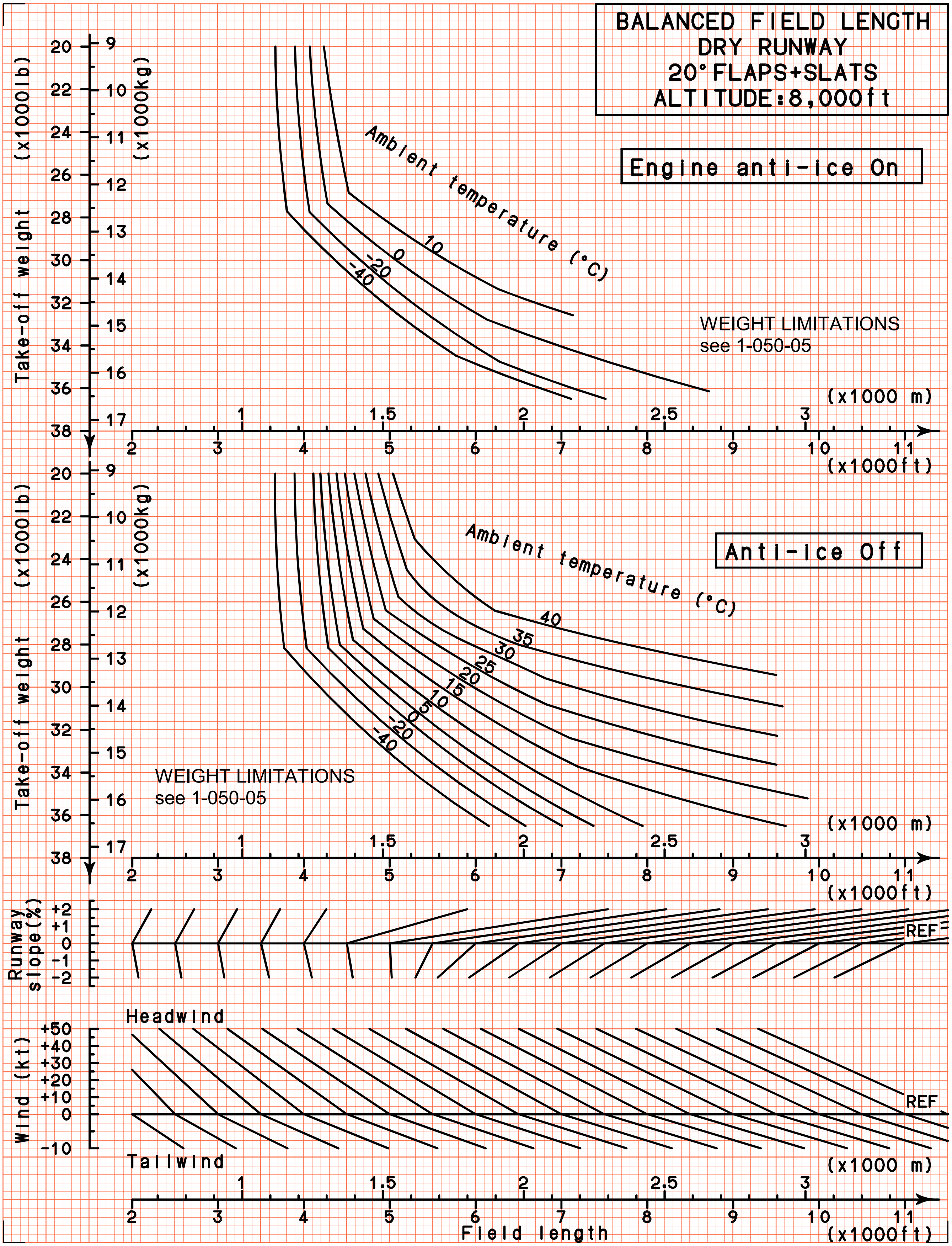

BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:4,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
50
45
40
35
30
25
20
15
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
REF
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:5,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
45
40
35
30
25
20
15
0
-20
-40
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:6,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Anti-ice Off
45
40
35
30
25
20
15
10
0
-20
-40
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
(x1000 m)
(x1000ft)
Field length



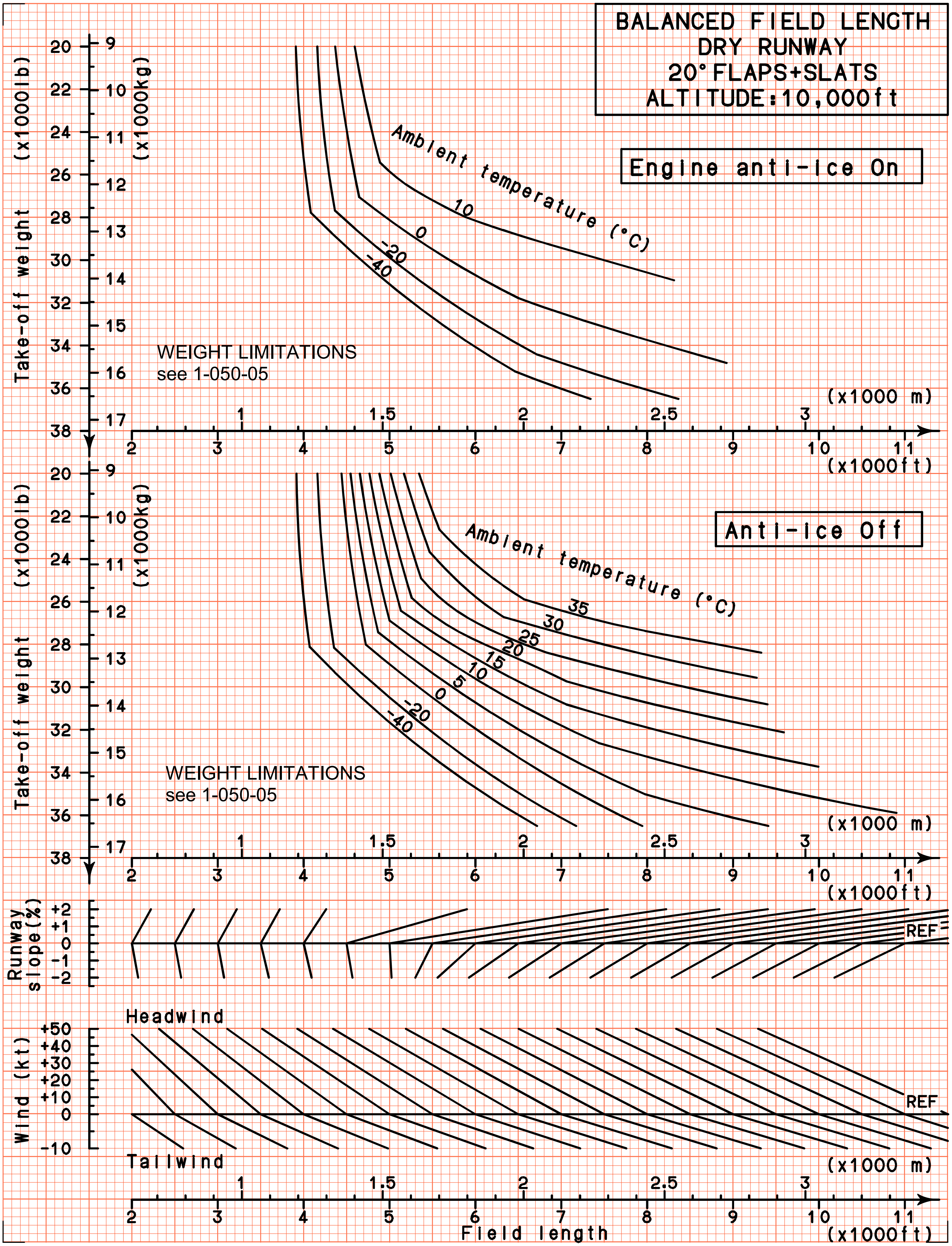
BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:7,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
10
0
-20
-40
40
35
30
25
20
15
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Runway slope(%)
+2
+1
-1
-2
REF
Headwind
Tailwind
Wind (kt)
+50
+40
+30
+20
+10
-10
Field length

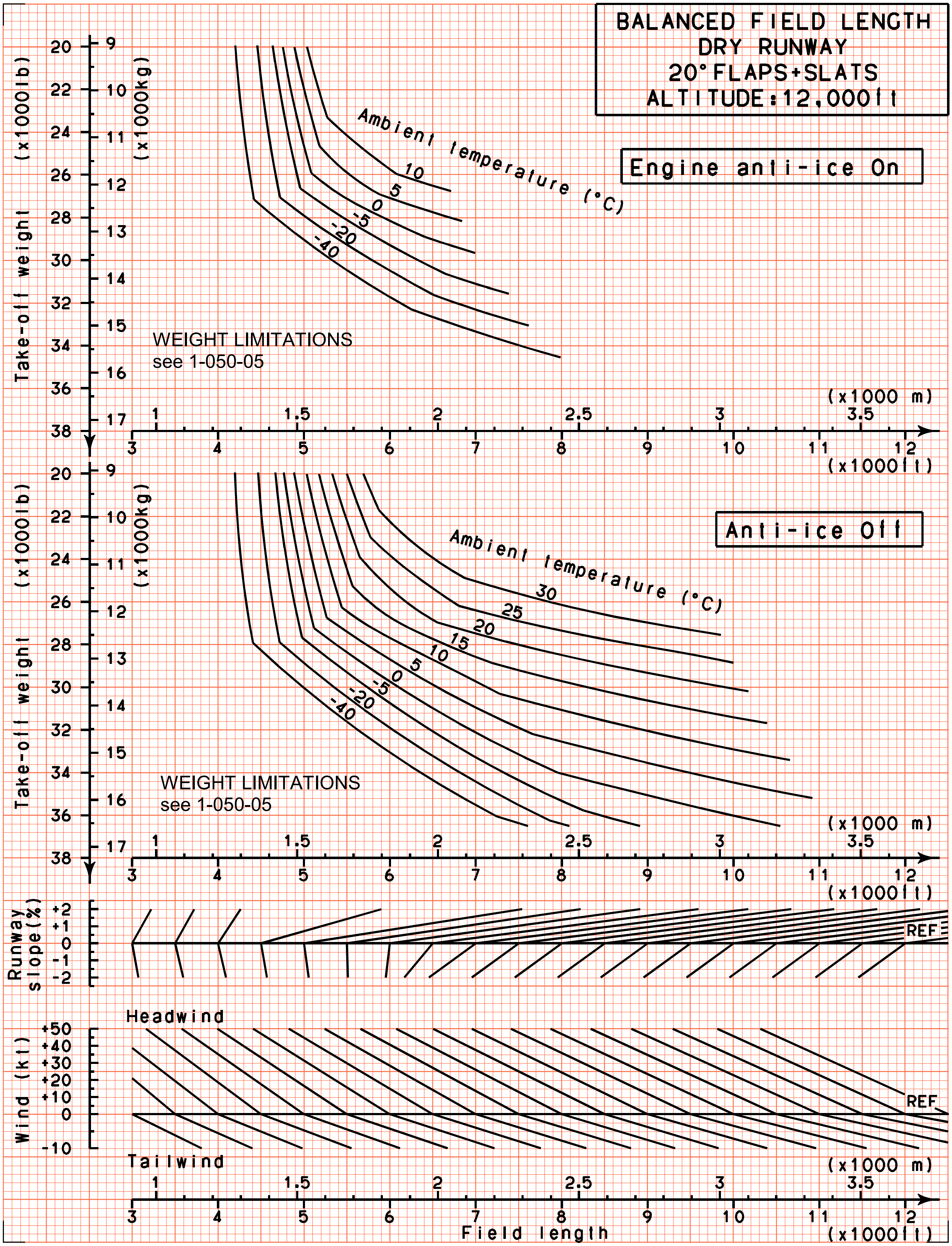

BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:8,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Anti-ice Off
40
35
30
25
20
15
10
5
0
-20
-40
(x1000 m)
(x1000ft)
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length

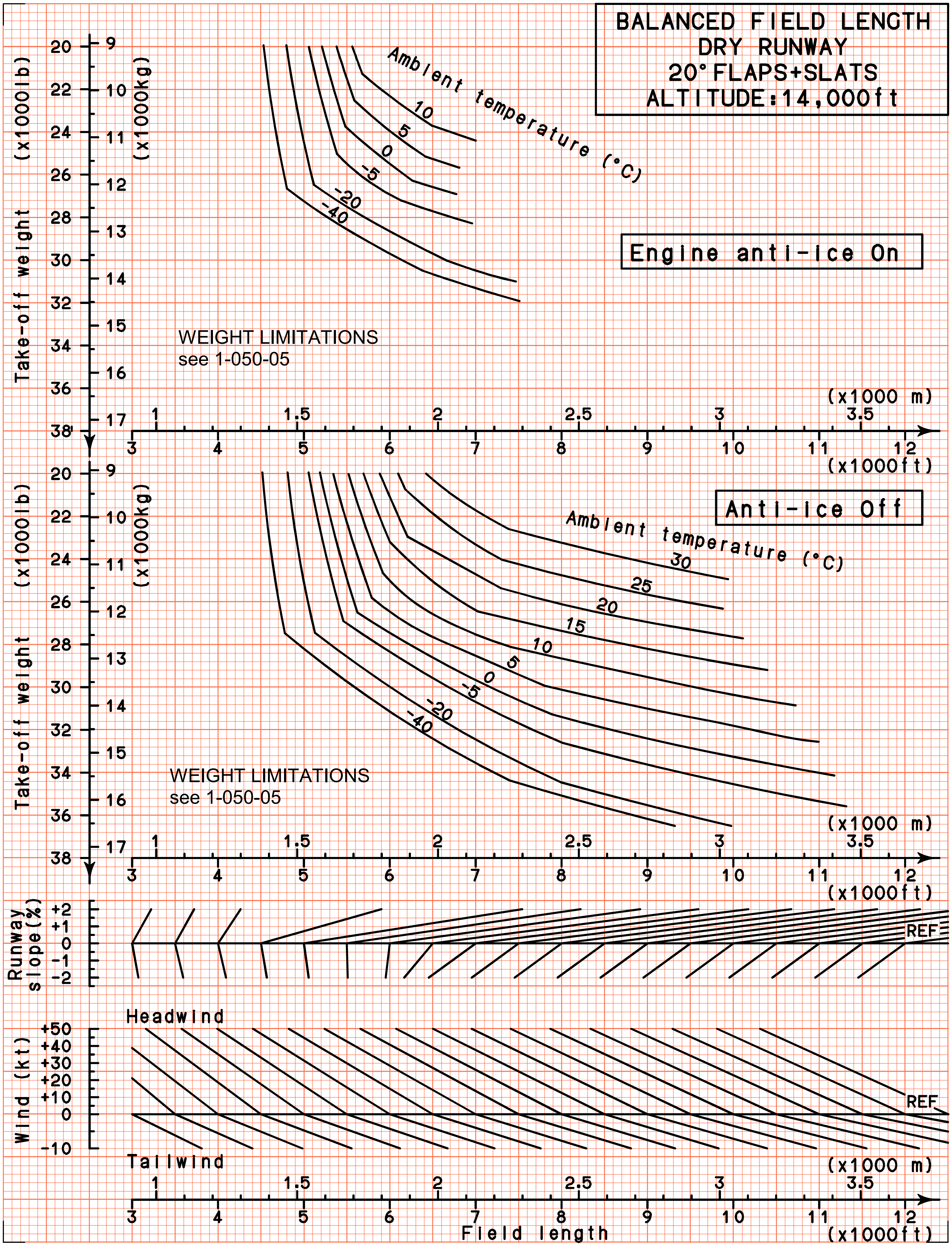
PERFORMANCE

TAKE-OFF 20° FLAPS+SLATS

Balanced field length - Dry runway




BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE: 12,000ft
Engine anti-ice On
Ambient temperature (°C)
10
5
0
-5
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
30
25
20
15
10
5
0
-5
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Wind (kt)
REF
Tailwind
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
20° FLAPS+SLATS
ALTITUDE:14,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
30
25
20
15
10
5
0
-5
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length

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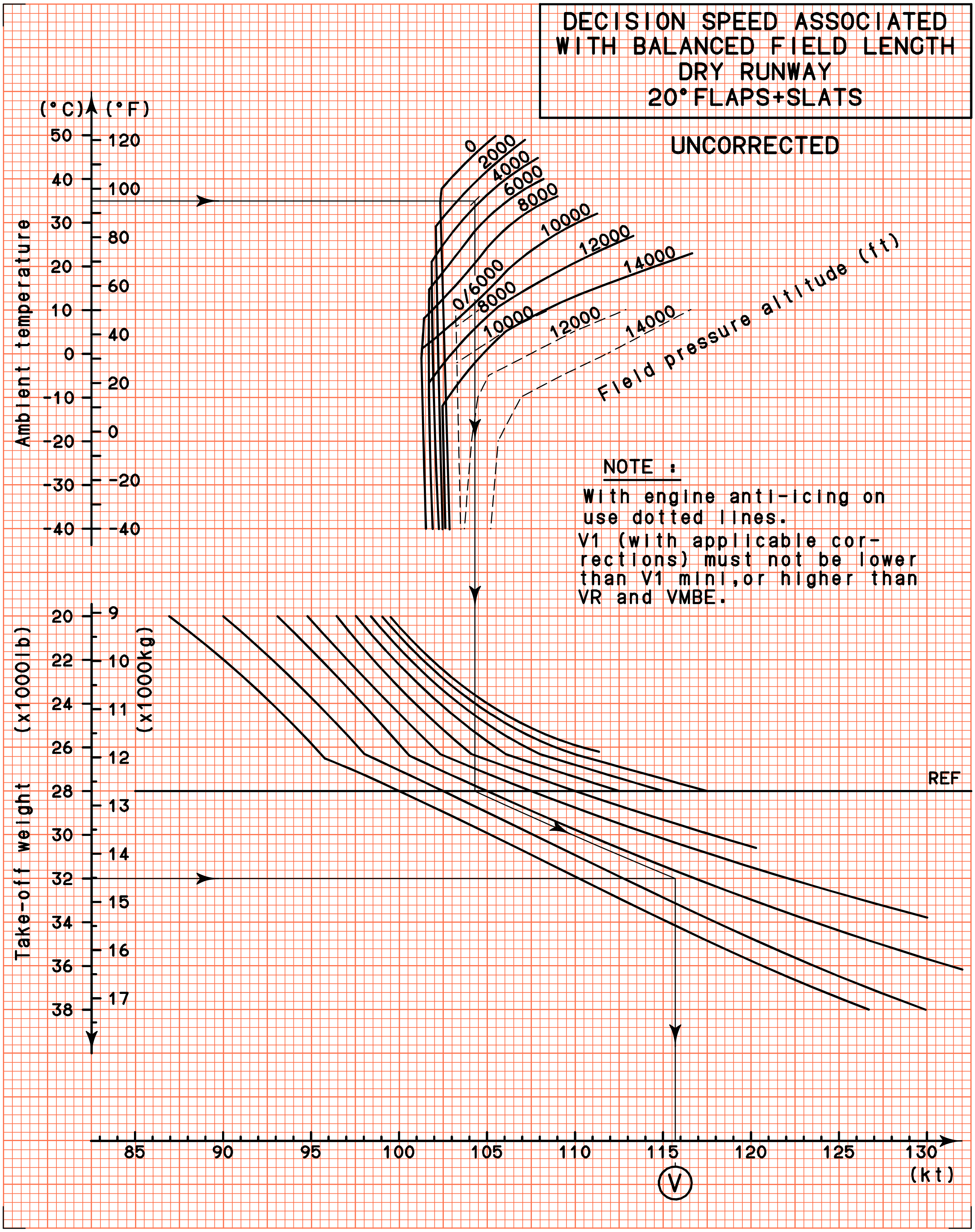
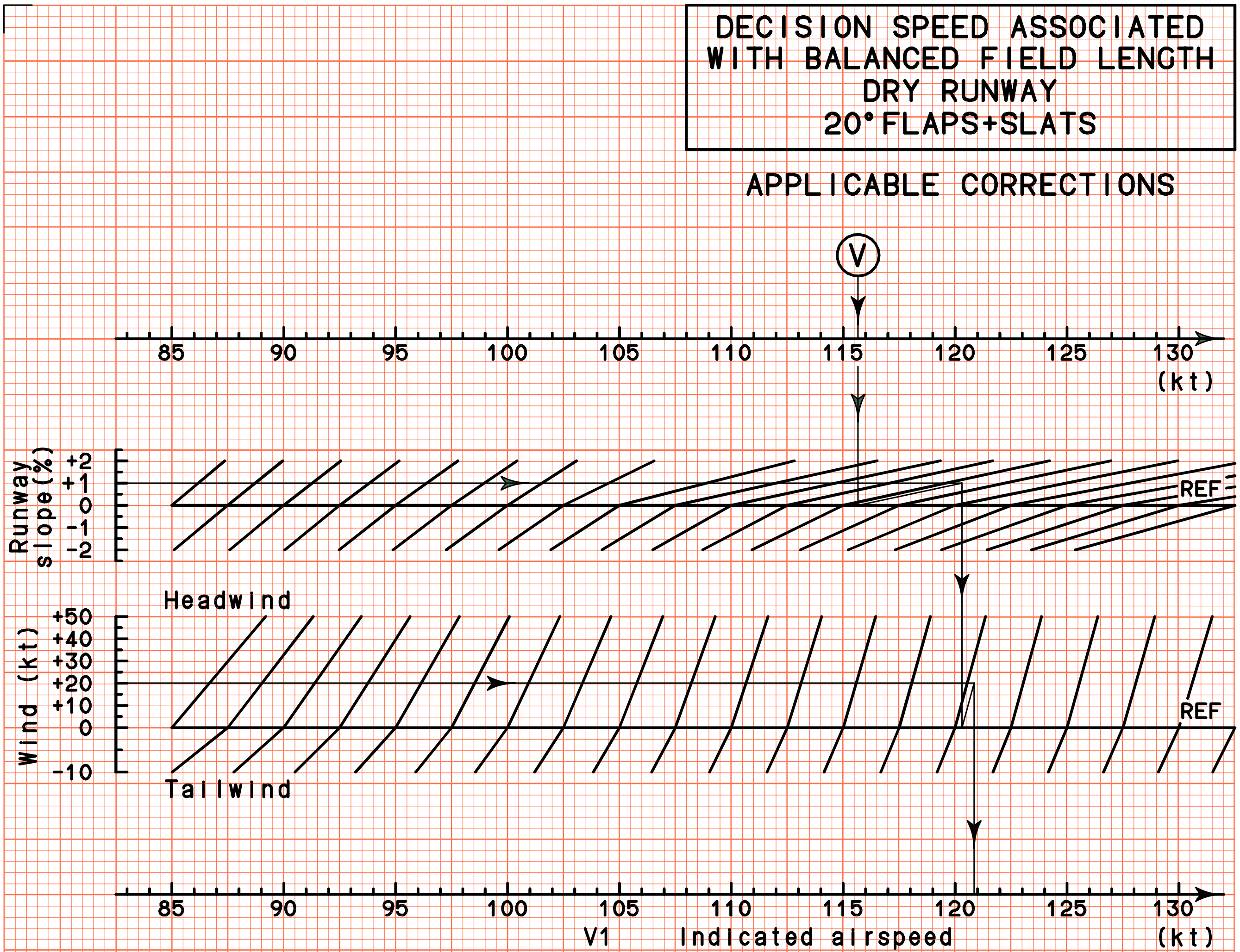
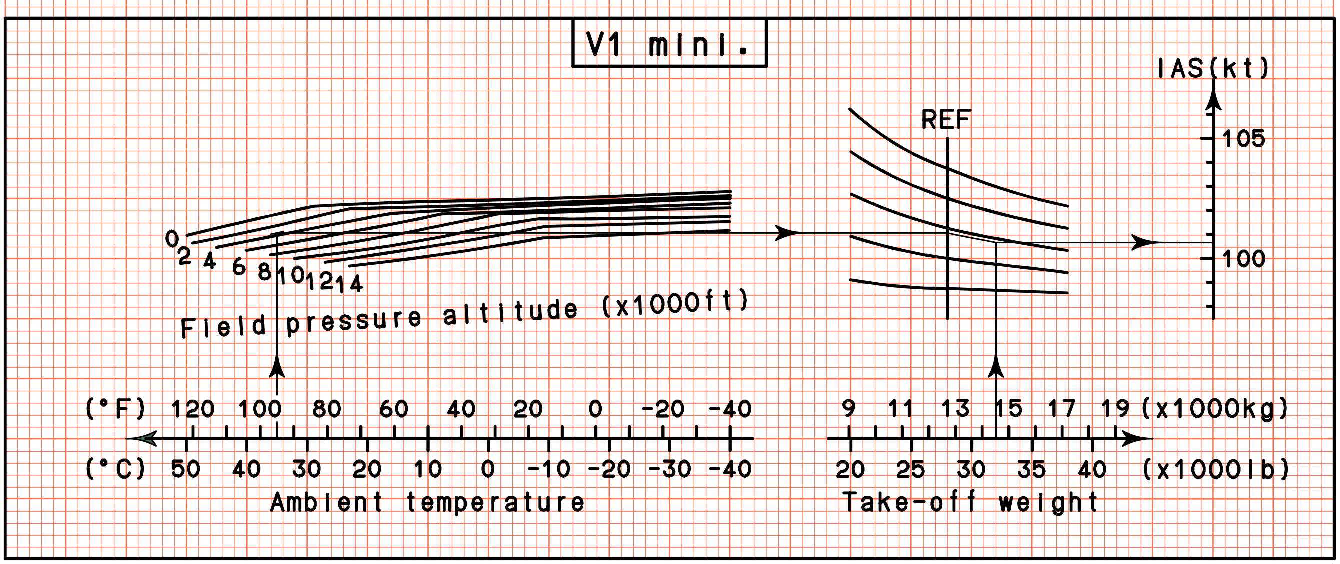


DECISION SPEED ASSOCIATED WITH BALANCED FIELD LENGTH DRY RUNWAY 20° FLAPS+SLATS
UNCORRECTED
(°C) (°F)
Ambient temperature
Field pressure altitude (ft)
0
2000
4000
6000
8000
10000
12000
14000
0/6000
8000
10000
12000
14000
NOTE :
With engine anti-icing on use dotted lines.
V1 (with applicable corrections) must not be lower than V1 mini, or higher than VR and VMBE.
Take-off weight (x1000lb) (x1000kg)
REF
(kt)
V



NOTE : V1 must not be lower than V1 mini,or higher than VR and VMBE.



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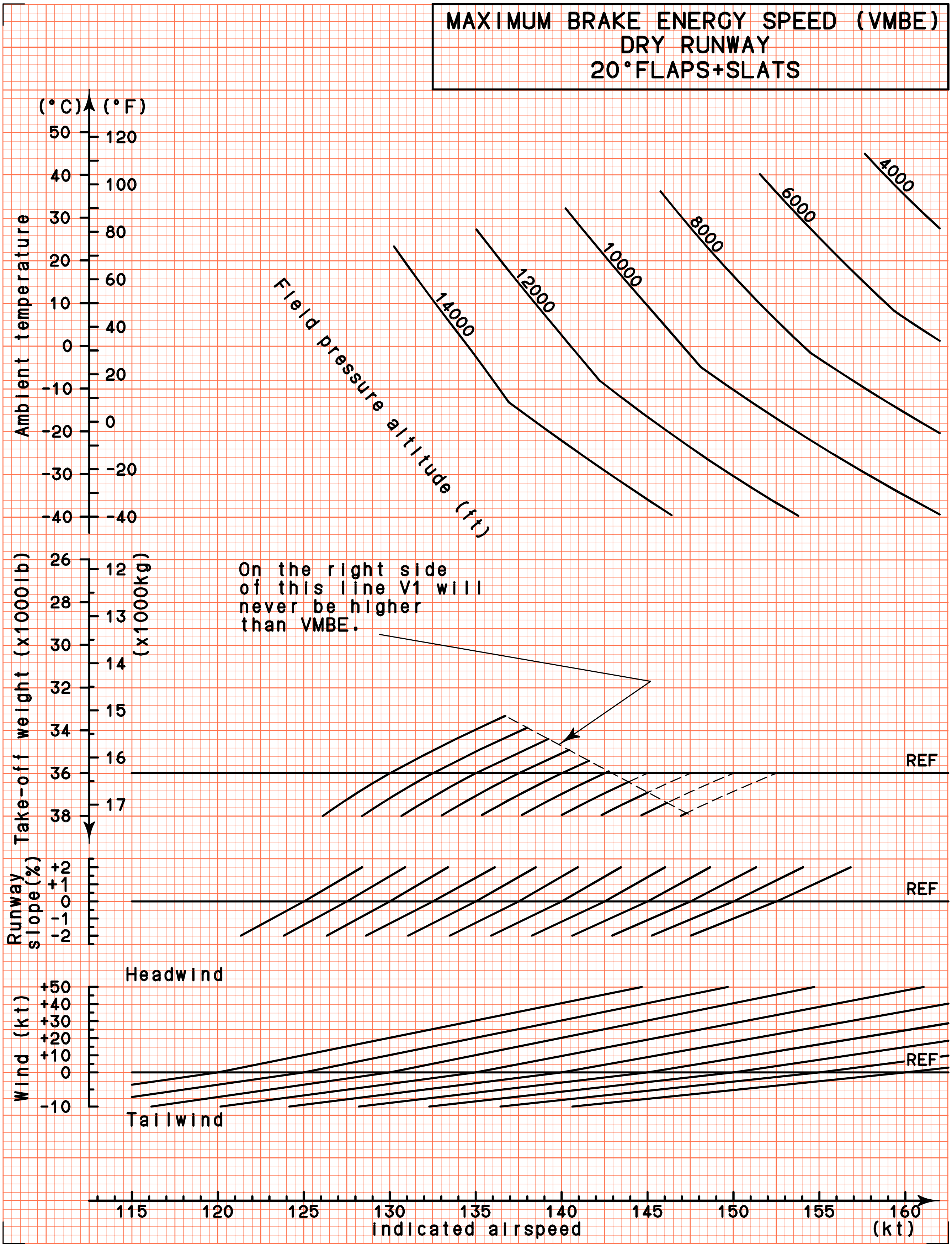

MAXIMUM BRAKE ENERGY SPEED (VMBE)
DRY RUNWAY
20°FLAPS+SLATS
Ambient temperature
(°C)
(°F)
50
40
30
20
10
0
-10
-20
-30
-40
120
100
80
60
40
20
0
-20
-40
Field pressure altitude (ft)
14000
12000
10000
8000
6000
4000
Take-off weight (x1000lb)
(x1000kg)
26
28
30
32
34
36
38
12
13
14
15
16
17
On the right side of this line V1 will never be higher than VMBE.
REF
Runway slope(%)
+2
+1
0
-1
-2
REF
Headwind
Tailwind
Wind (kt)
+50
+40
+30
+20
+10
0
-10
REF
115
120
125
130
135
140
145
150
155
160
Indicated airspeed
(kt)

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TAKE-OFF EXAMPLE - WET RUNWAY 20° FLAPS + SLATS

Field pressure altitude: 3,500 ft
Runway length: 6,770 ft

Ambient temperature: 35 °C
Runway slope: +1 % up hill
Headwind: +20 kt

5-500-40 page 1 : Maximum take-off weight
limited by climb requirements.. W1 = 34,200 lb

Maximum take-off weight limited by field length on wet runway:
5-500-20 page 4 : For 3,000 ft field pressure altitude : 34,000 lb
5-500-20 page 5 : For 4,000 ft field pressure altitude : 32,800 lb
For 3,500 ft field pressure altitude, interpolate linearly:

$$32{,}800 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (34{,}000 - 32{,}800) = 33{,}400 \text{ lb}$$

.... $W2_{WET}$ = 33,400 lb

Maximum take-off weight limited by field length on dry runway:
5-500-05 page 4 : For 3,000 ft field pressure altitude : 32,600 lb
5-500-05 page 5 : For 4,000 ft field pressure altitude : 31,400 lb
For 3,500 ft field pressure altitude, interpolate linearly:

$$31{,}400 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (32{,}600 - 31{,}400) = 32{,}000 \text{ lb}$$

....$W2_{DRY}$ = 32,000 lb

1-050-05 page 1 : Maximum take-off weight limited by structural limitation: 35,800 lb

The maximum take-off weight is therefore the
field length limited take-off weight .... W3 = 32,000 lb

5-500-40 page 2 : Second segment gross climb gradient.. 3.3 %

5-500-35 page 1 : Take-off speeds ....VR = 116 kt; V2 = 118.5 kt
Recommended take-off attitude .... 10.0°

5-500-30 page 1 : Maximum brake energy speed (VMBE) is never a limitation
for take-off on wet runway in 20° FLAPS + SLATS configuration.

5-500-25 pages 2 and 3 : Decision speed associated with balanced field length: 109.5 kt.
V1 mini = 100.5 kt.
As V1 is higher than V1 mini and lower
than VMBE and VR... V1 = 109.5 kt

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TAKE-OFF EXAMPLE - WET RUNWAY 20° FLAPS + SLATS

Field pressure altitude: 3,500 ft
Runway length: 6,770 ft

Ambient temperature: 35 °C
Runway slope: +1 % up hill
Headwind: +20 kt

5-500-40 page 1 : Maximum take-off weight
limited by climb requirements .... W1 = 34,200 lb

Maximum take-off weight limited by field length on wet runway:
5-500-20 page 4 : For 3,000 ft field pressure altitude : 34,000 lb
5-500-20 page 5 : For 4,000 ft field pressure altitude : 32,800 lb
For 3,500 ft field pressure altitude, interpolate linearly:

$$32{,}800 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (34{,}000 - 32{,}800) = 33{,}400 \text{ lb}$$

.... $W2_{WET}$ = 33,400 lb

Maximum take-off weight limited by field length on dry runway:
5-500-05 page 4 : For 3,000 ft field pressure altitude : 32,600 lb
5-500-05 page 5 : For 4,000 ft field pressure altitude : 31,400 lb
For 3,500 ft field pressure altitude, interpolate linearly:

$$31{,}400 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (32{,}600 - 31{,}400) = 32{,}000 \text{ lb}$$

.... $W2_{DRY}$ = 32,000 lb

1-050-05A page 1 : Maximum take-off weight limited by structural limitation: 36,500 lb

The maximum take-off weight is therefore the
field length limited take-off weight .... W3 = 32,000 lb

5-500-40 page 2 : Second segment gross climb gradient .... 3.3 %

5-500-35 page 1 : Take-off speeds .... VR = 116 kt; V2 = 118.5 kt
Recommended take-off attitude .... 10.0°

5-500-30 page 1 : Maximum brake energy speed (VMBE) is never a limitation
for take-off on wet runway in 20° FLAPS + SLATS configuration.

5-500-25 pages 2 and 3 : Decision speed associated with balanced field length: 109.5 kt.
V1 mini = 100.5 kt.
As V1 is higher than V1 mini and lower
than VMBE and VR .... V1 = 109.5 kt

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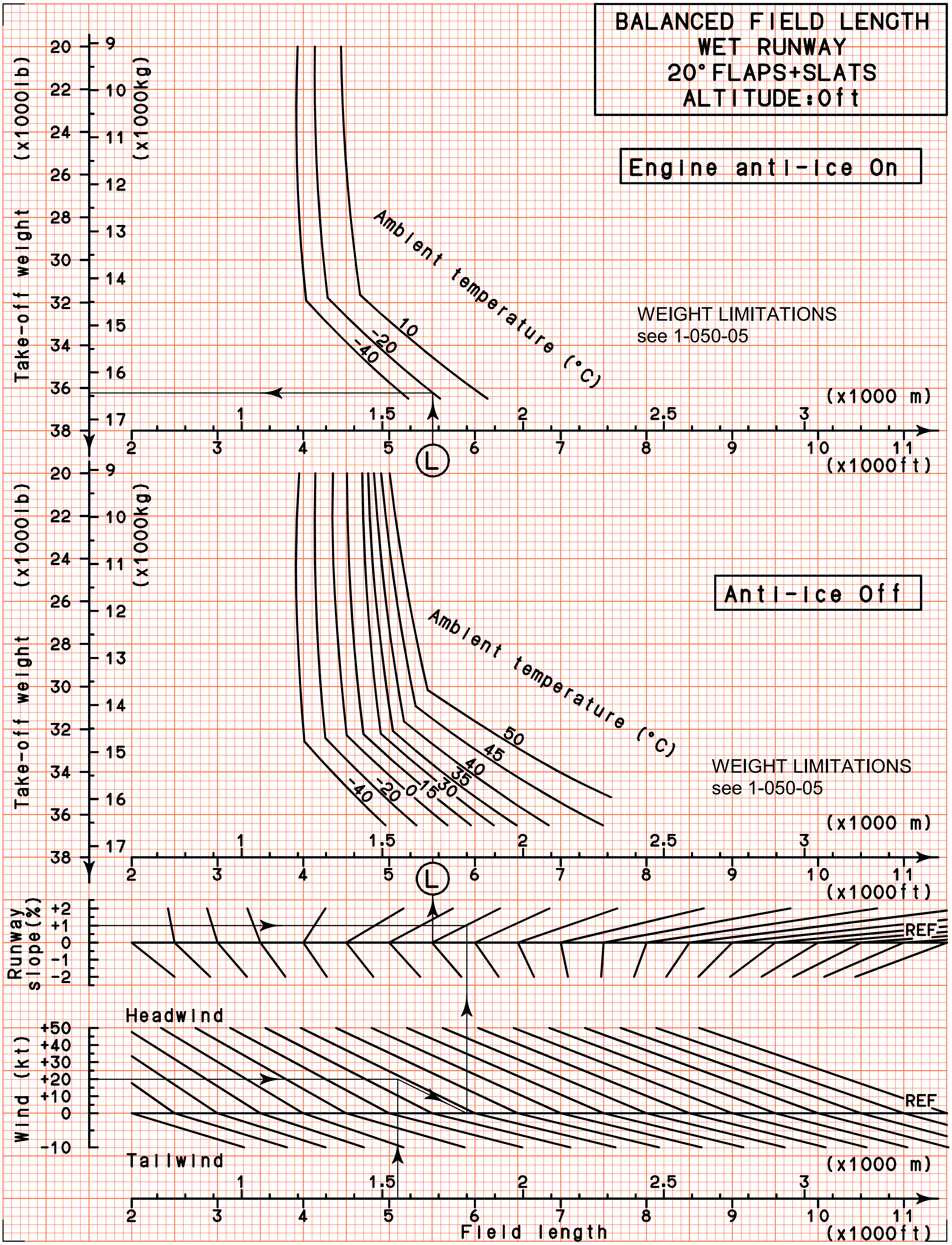
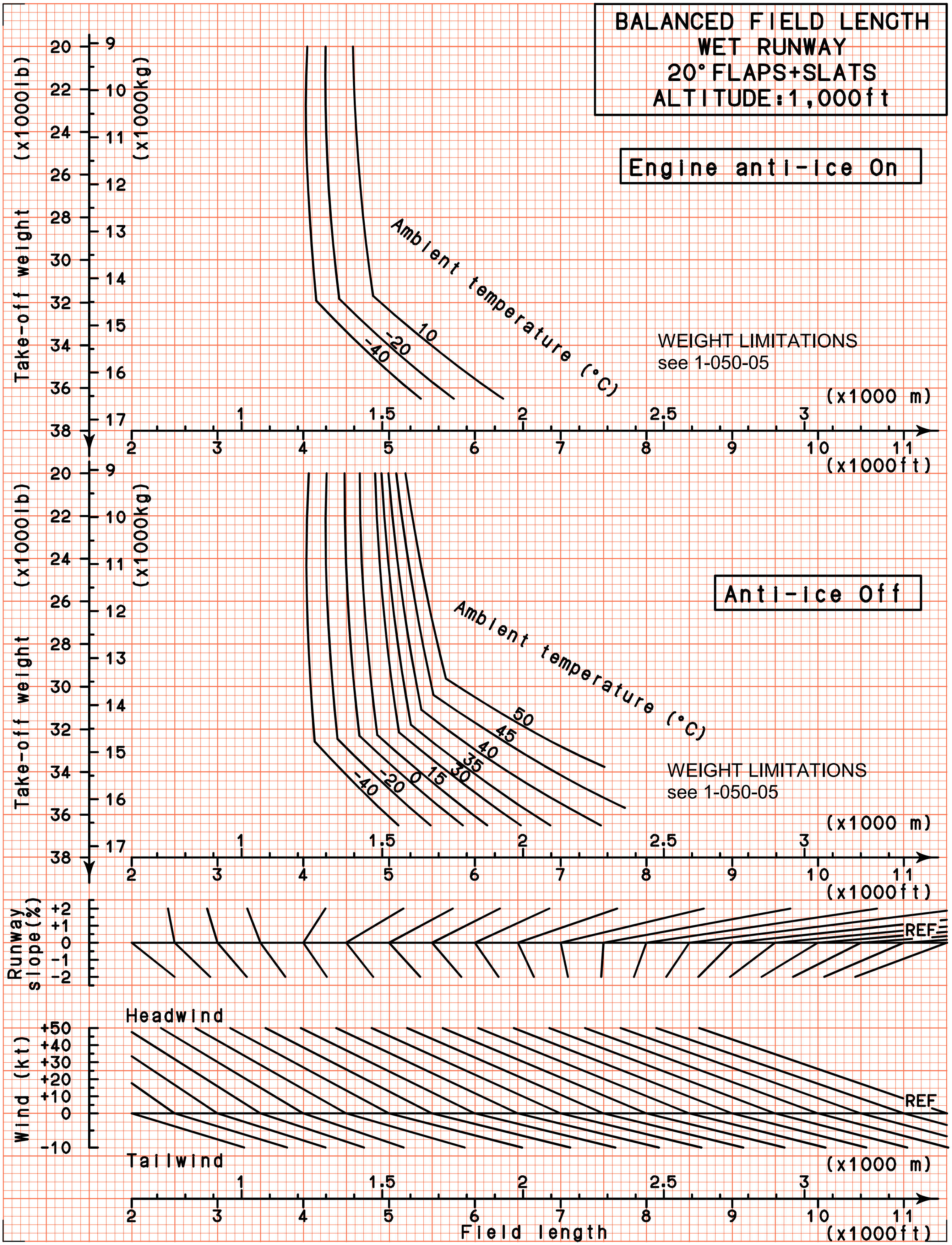
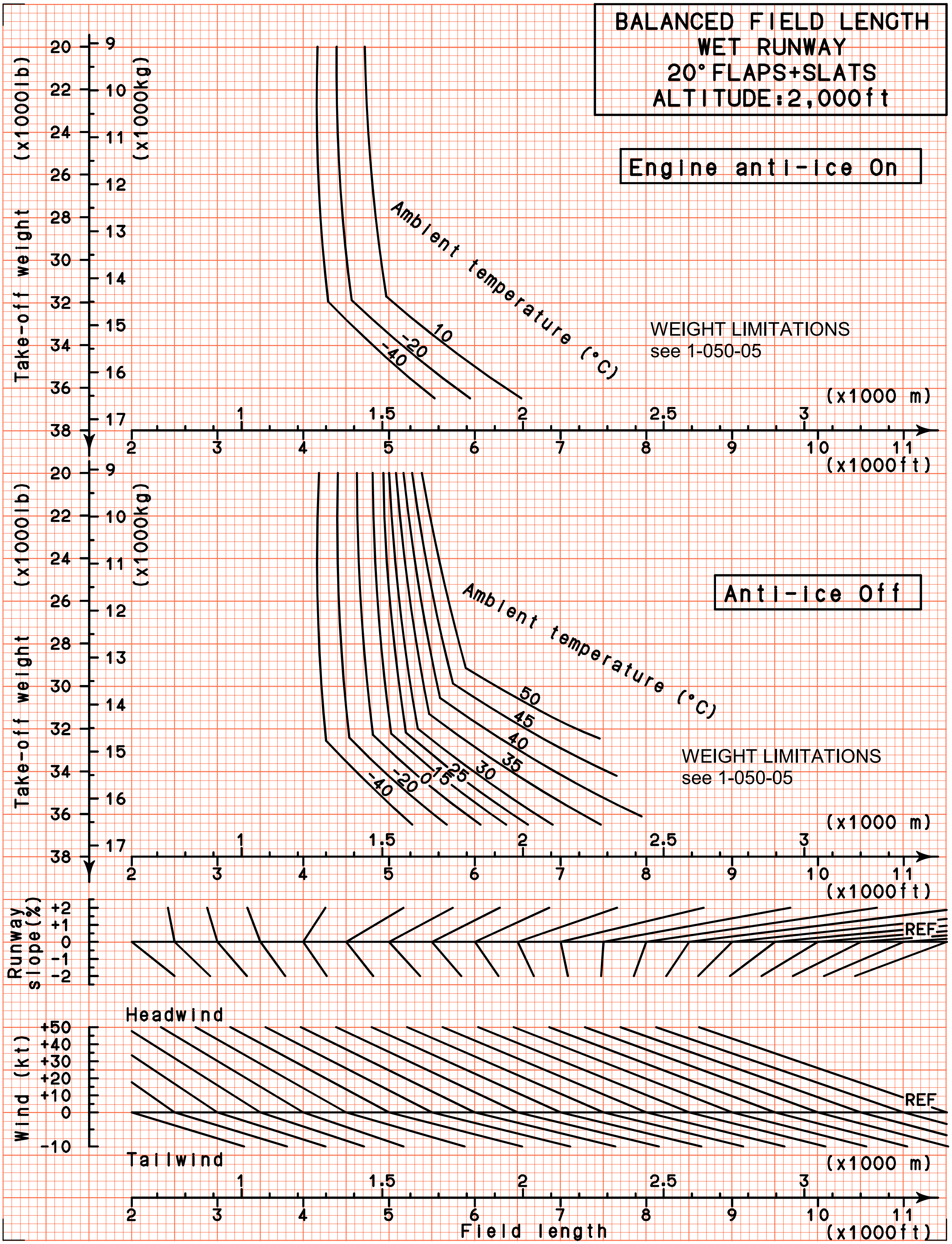
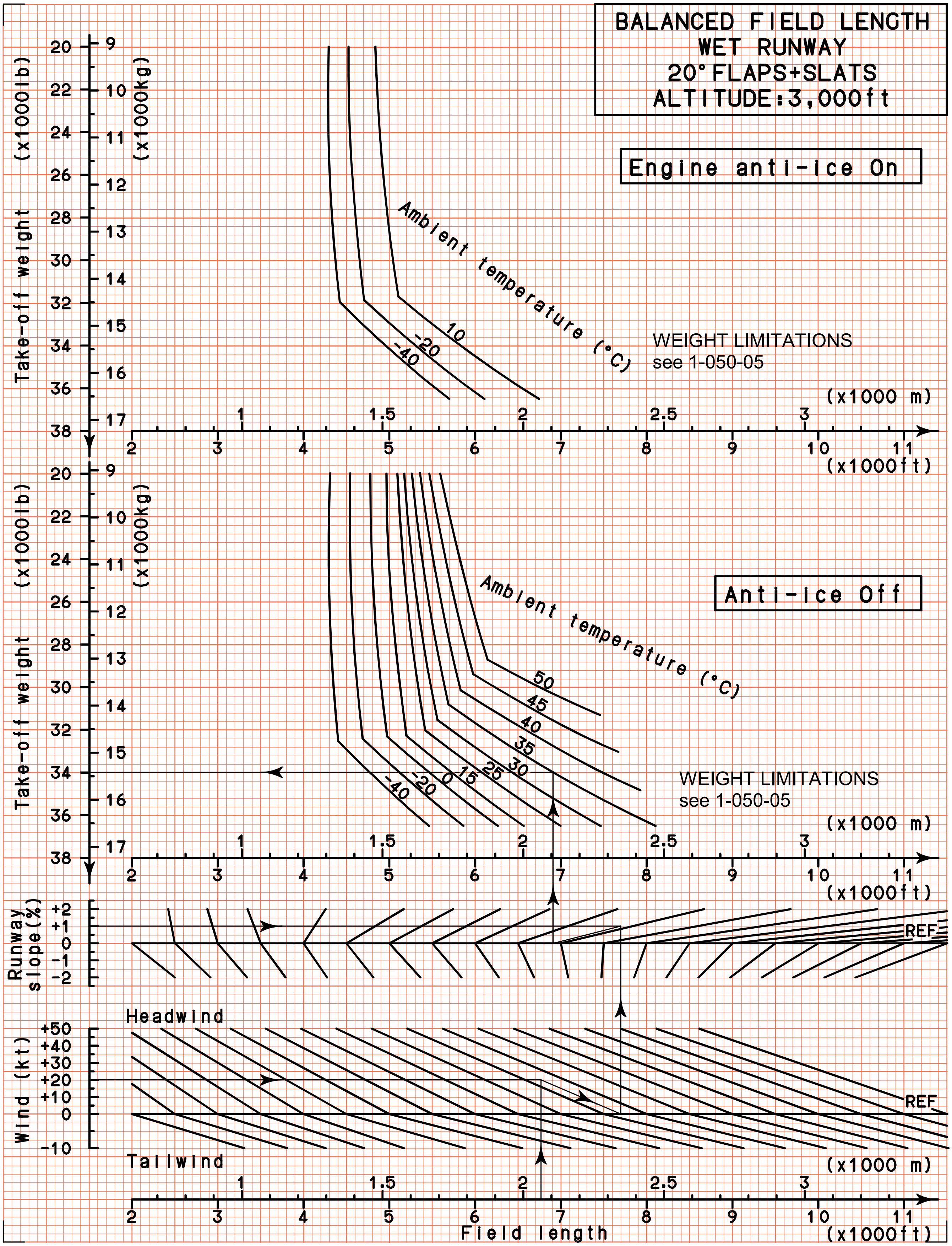


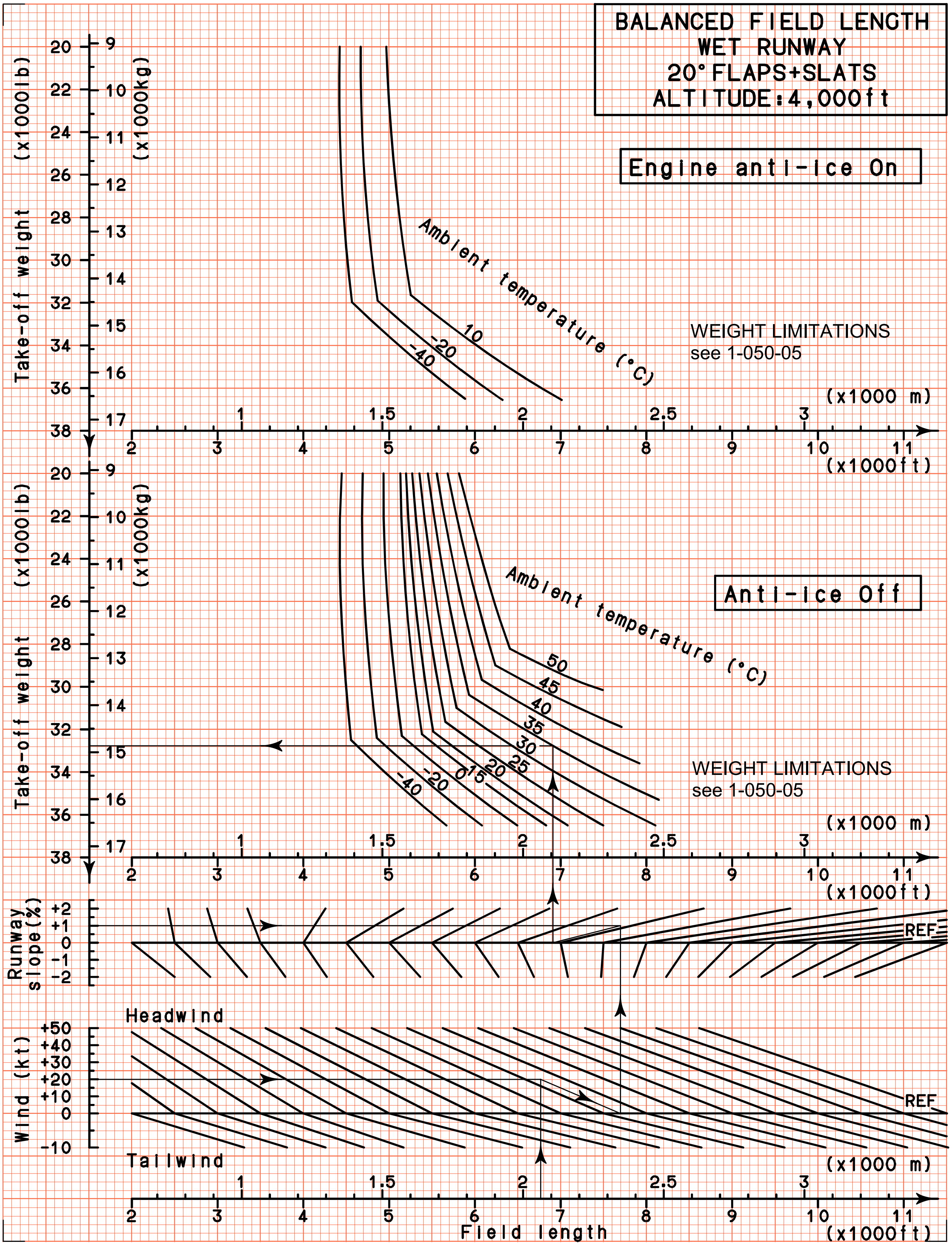
BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:0ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
Field length



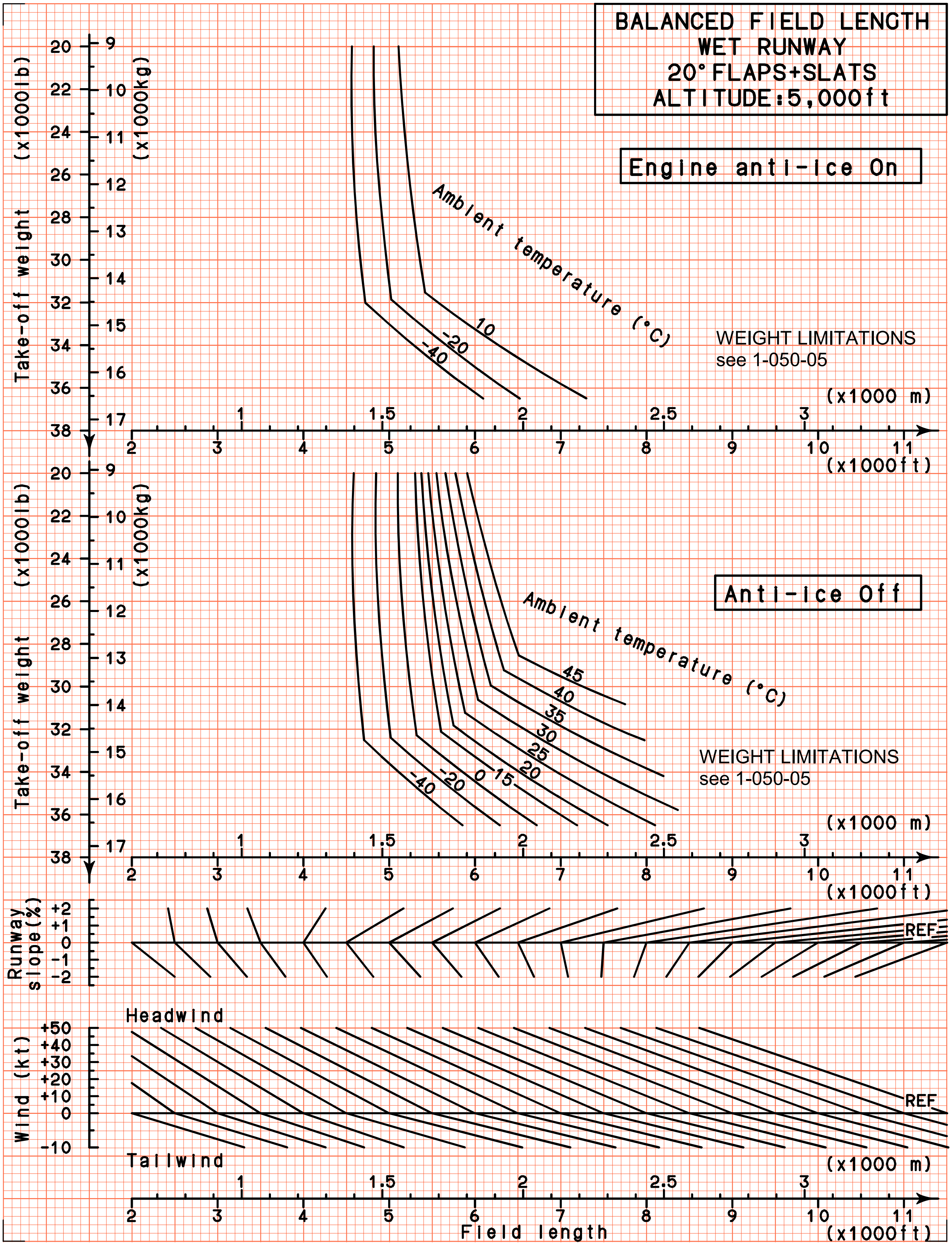
BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:1,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
Field length


BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:2,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000ft)
Field length

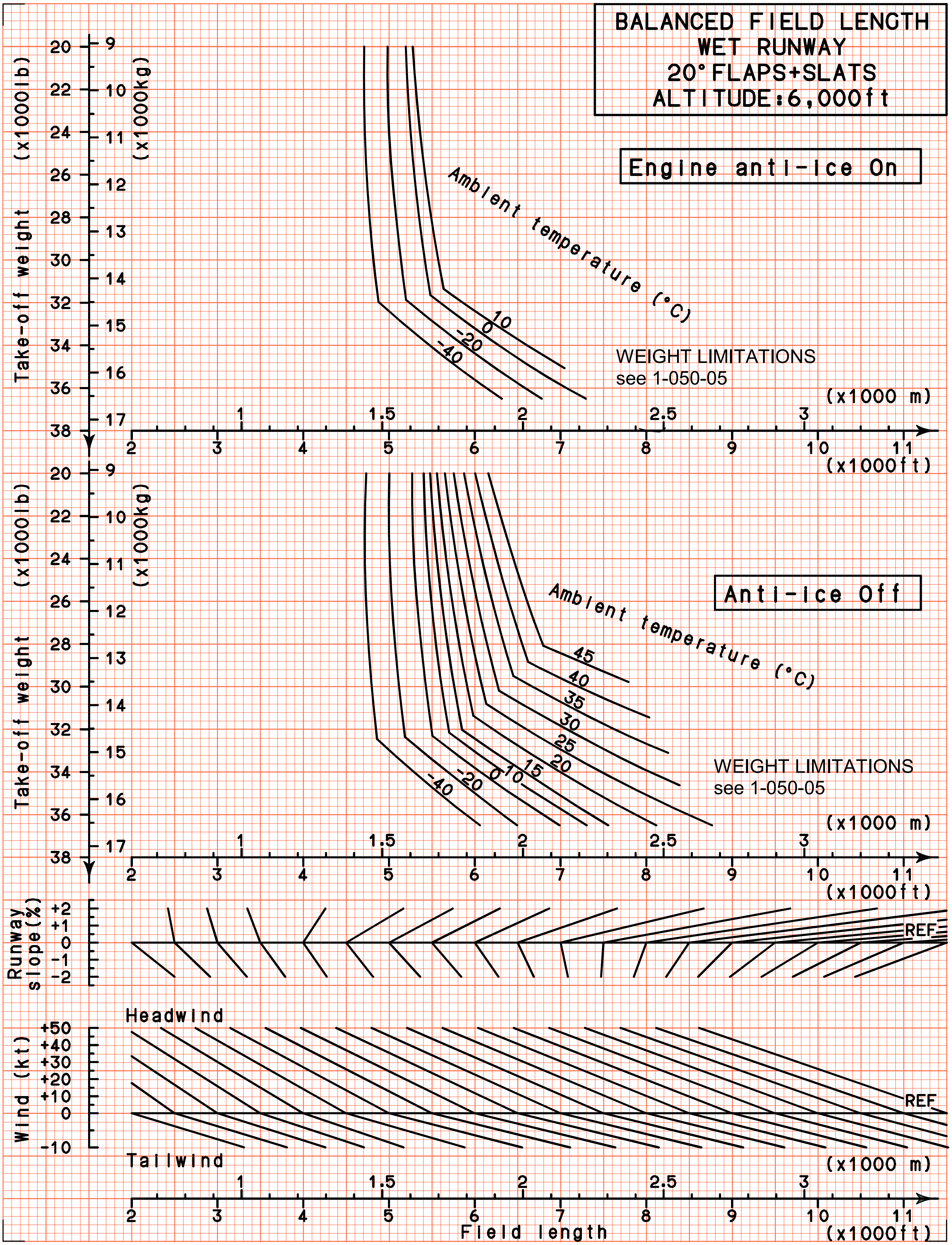

BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:3,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
50
45
40
35
30
25
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Wind (kt)
Tailwind
REF
Field length

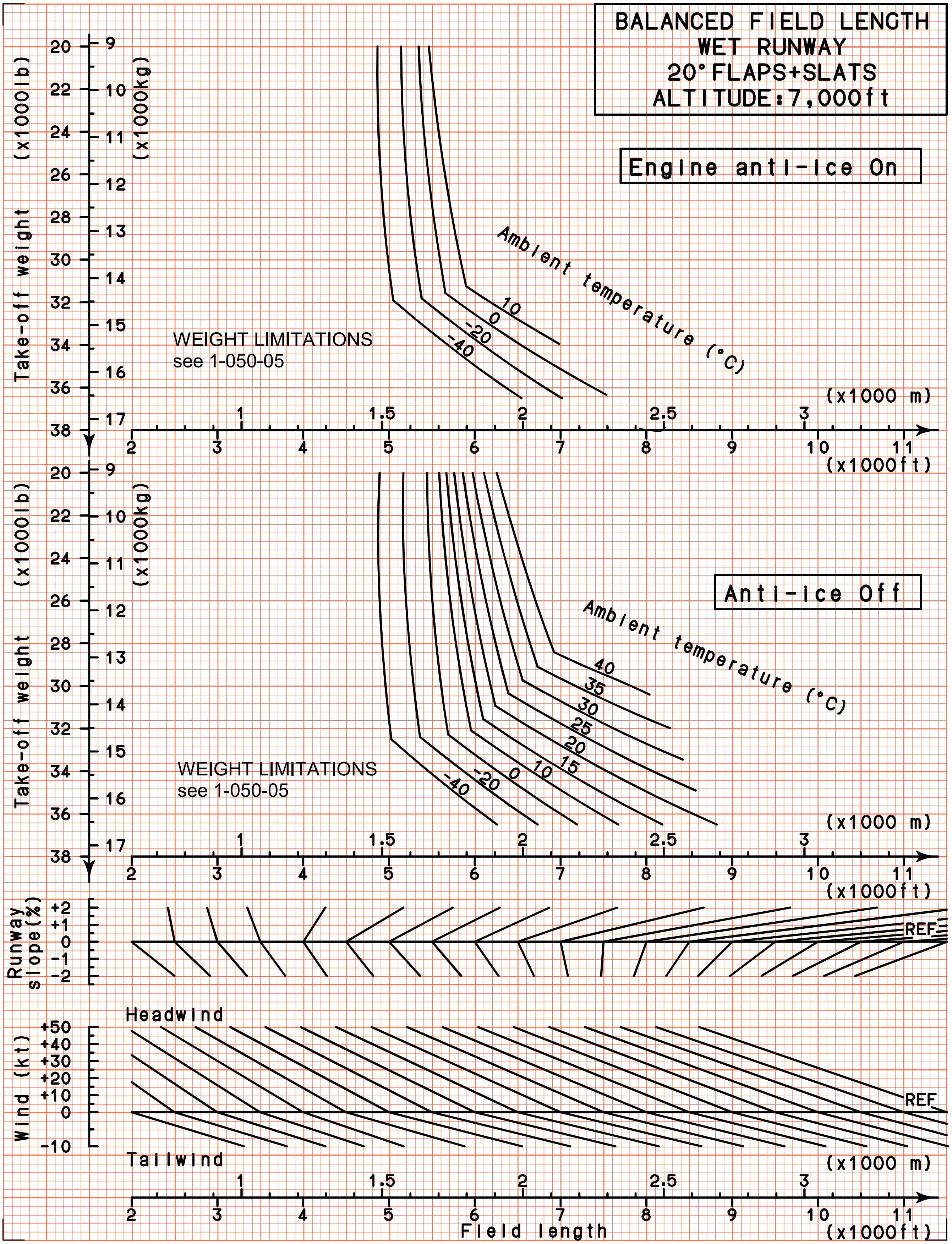


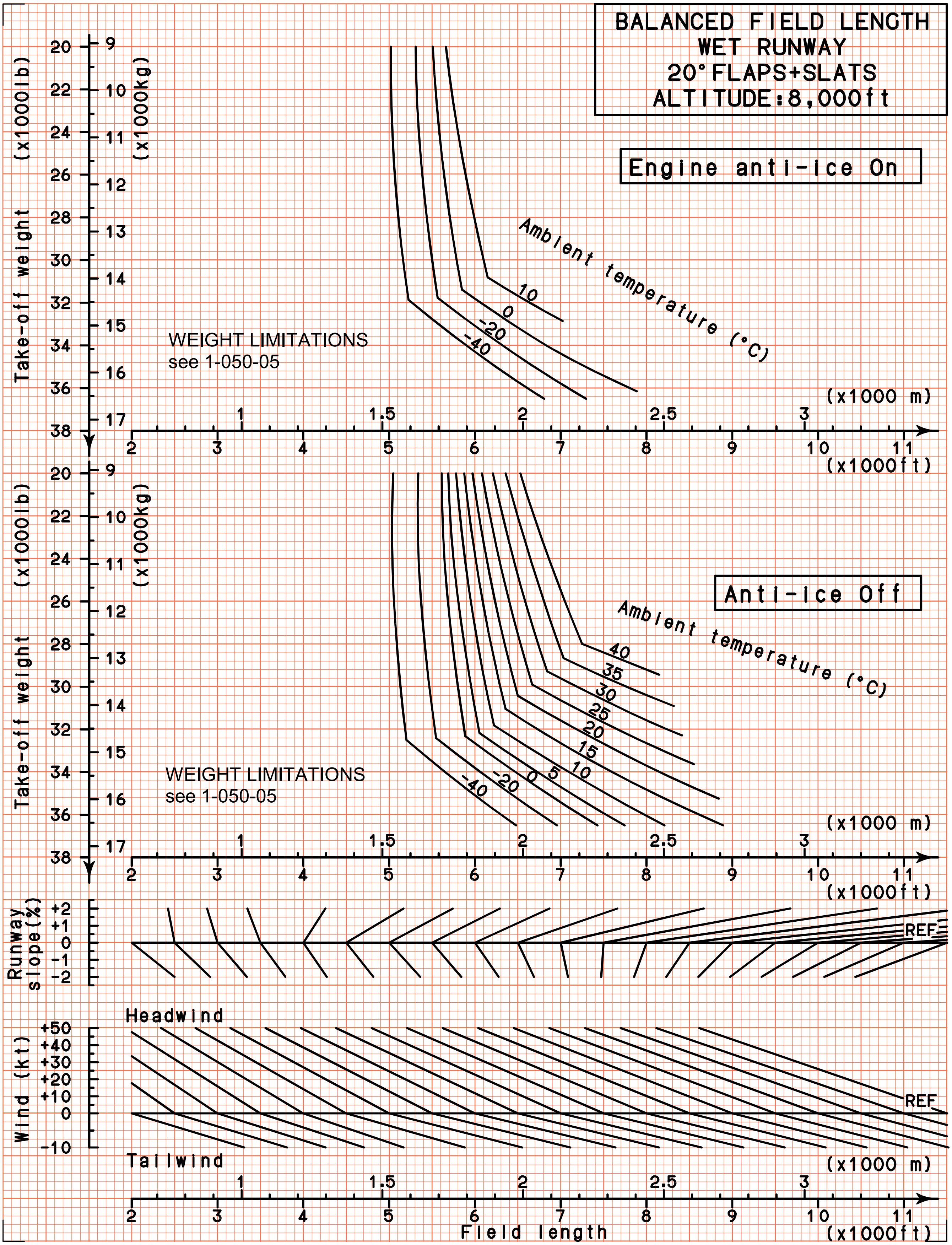
BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:4,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
Field length
(x1000 m)
(x1000ft)



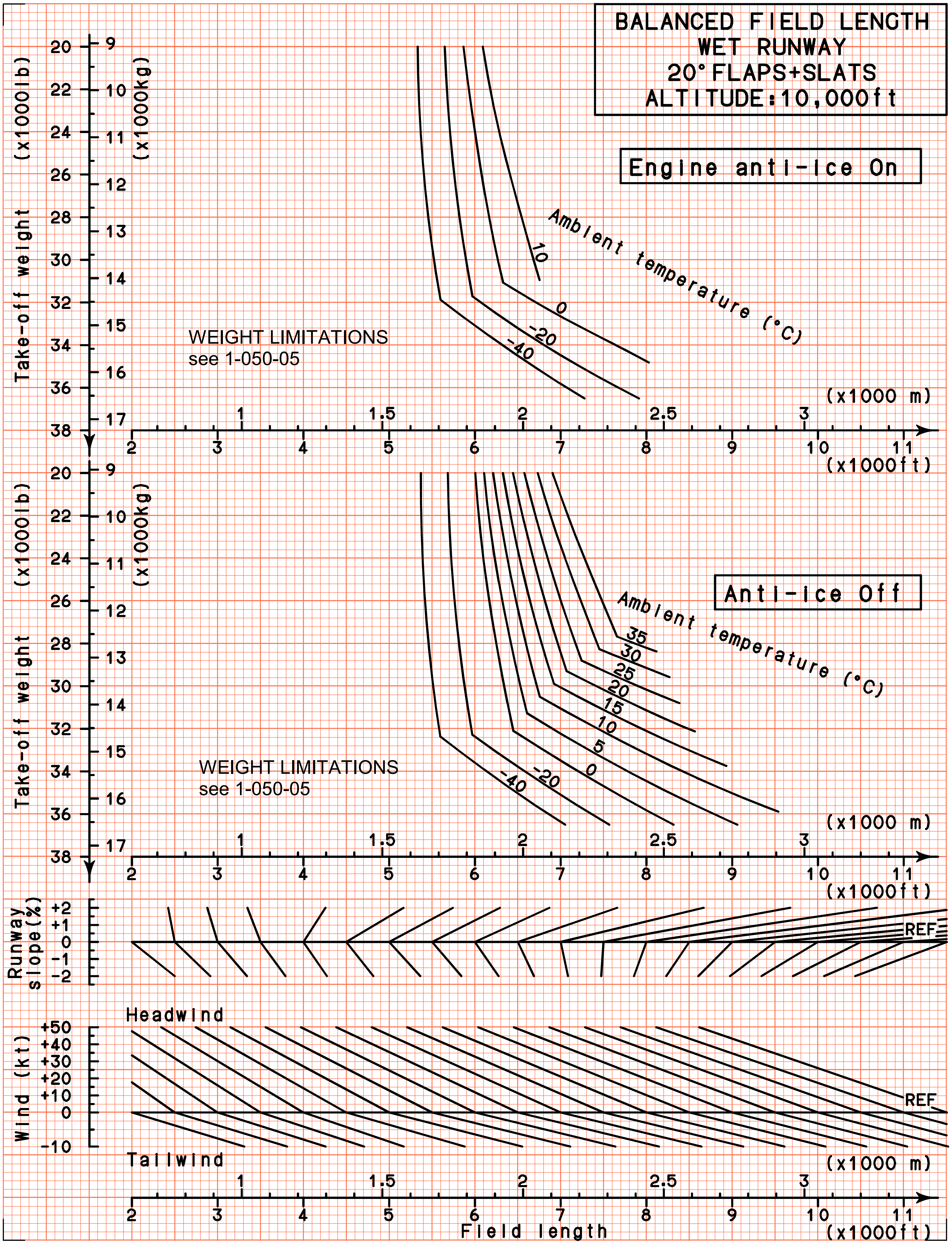
BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:5,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
45
40
35
30
25
20
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
REF
Field length

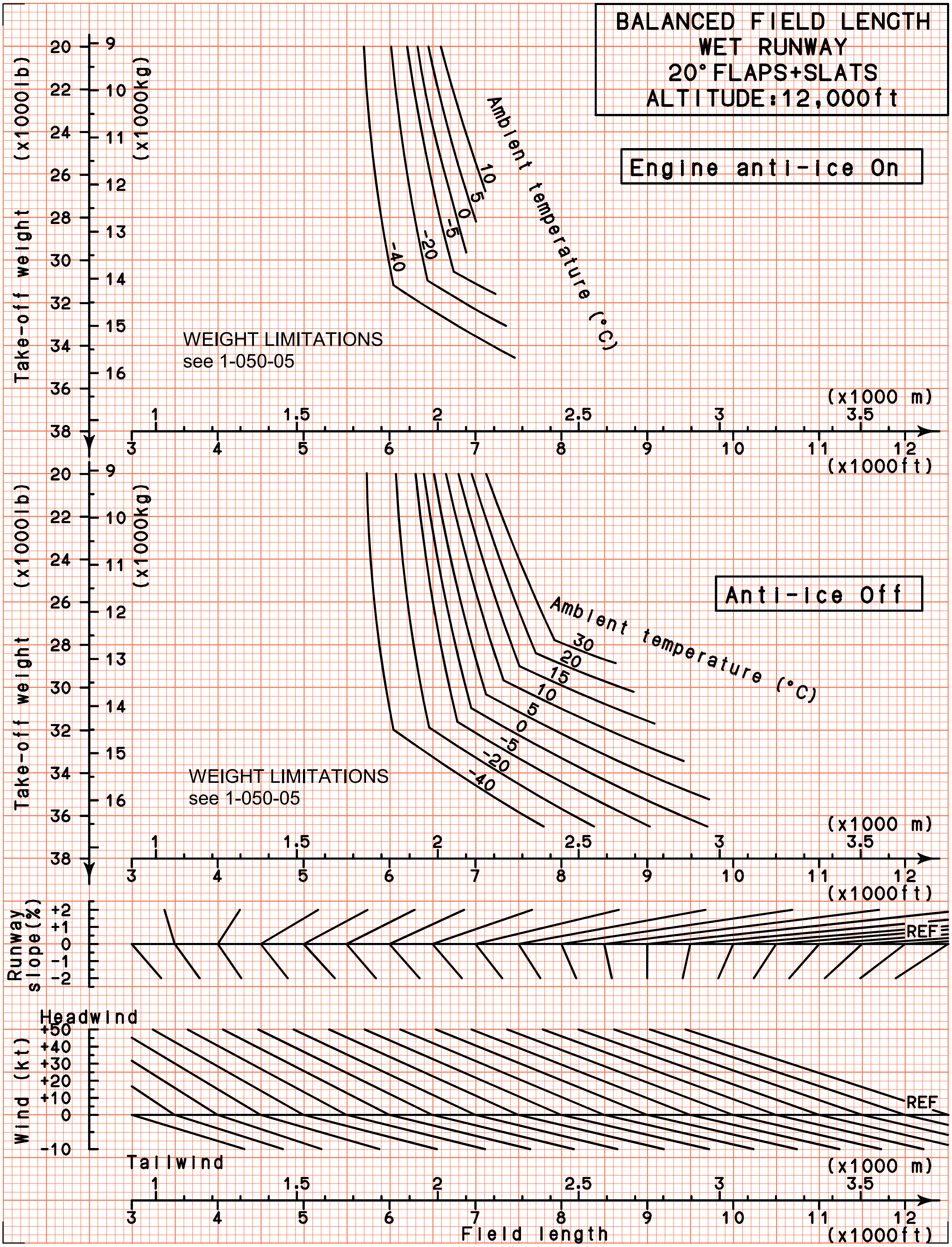

BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:6,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Anti-ice Off
Ambient temperature (°C)
45
40
35
30
25
20
15
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000ft)
Field length

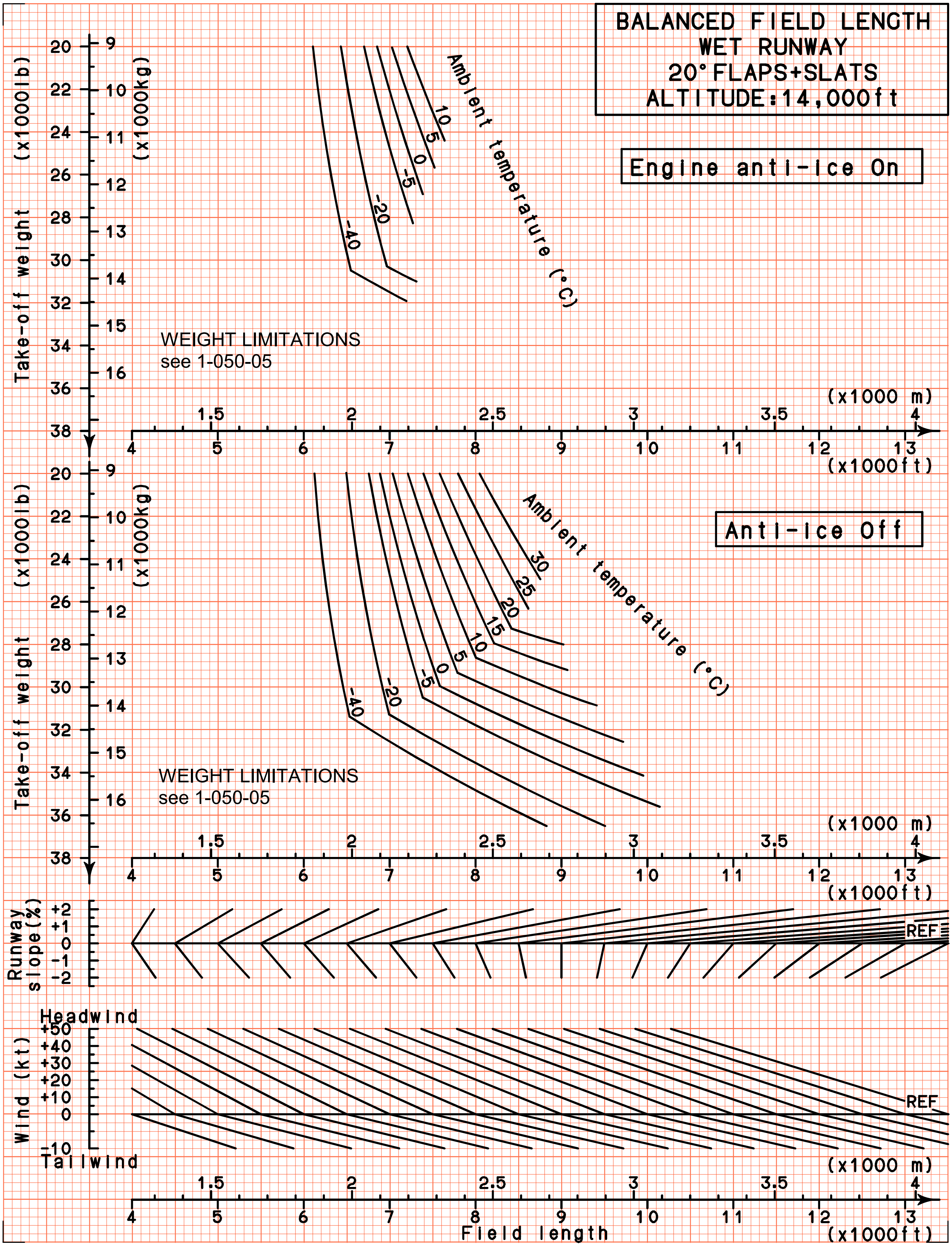

BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE: 7,000 ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000 lb)
(x1000 kg)
Runway slope (%)
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000 ft)
Field length



BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:8,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
40
35
30
25
20
15
10
5
Runway slope(%)
REF
Headwind
Wind (kt)
Tailwind
Field length


BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:10,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Anti-ice Off
35
30
25
20
15
10
5
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
(x1000 m)
(x1000ft)
Field length


BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:12,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
Take-off weight (x1000lb)
(x1000kg)
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000ft)
Field length


BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
ALTITUDE:14,000ft
Engine anti-ice On
Ambient temperature (°C)
10
5
0
-5
-20
-40
Take-off weight (x1000lb)
(x1000kg)
WEIGHT LIMITATIONS
see 1-050-05
(x1000 m)
(x1000ft)
Anti-ice Off
30
25
20
15
Runway slope(%)
REF
Headwind
Wind (kt)
Tailwind
Field length

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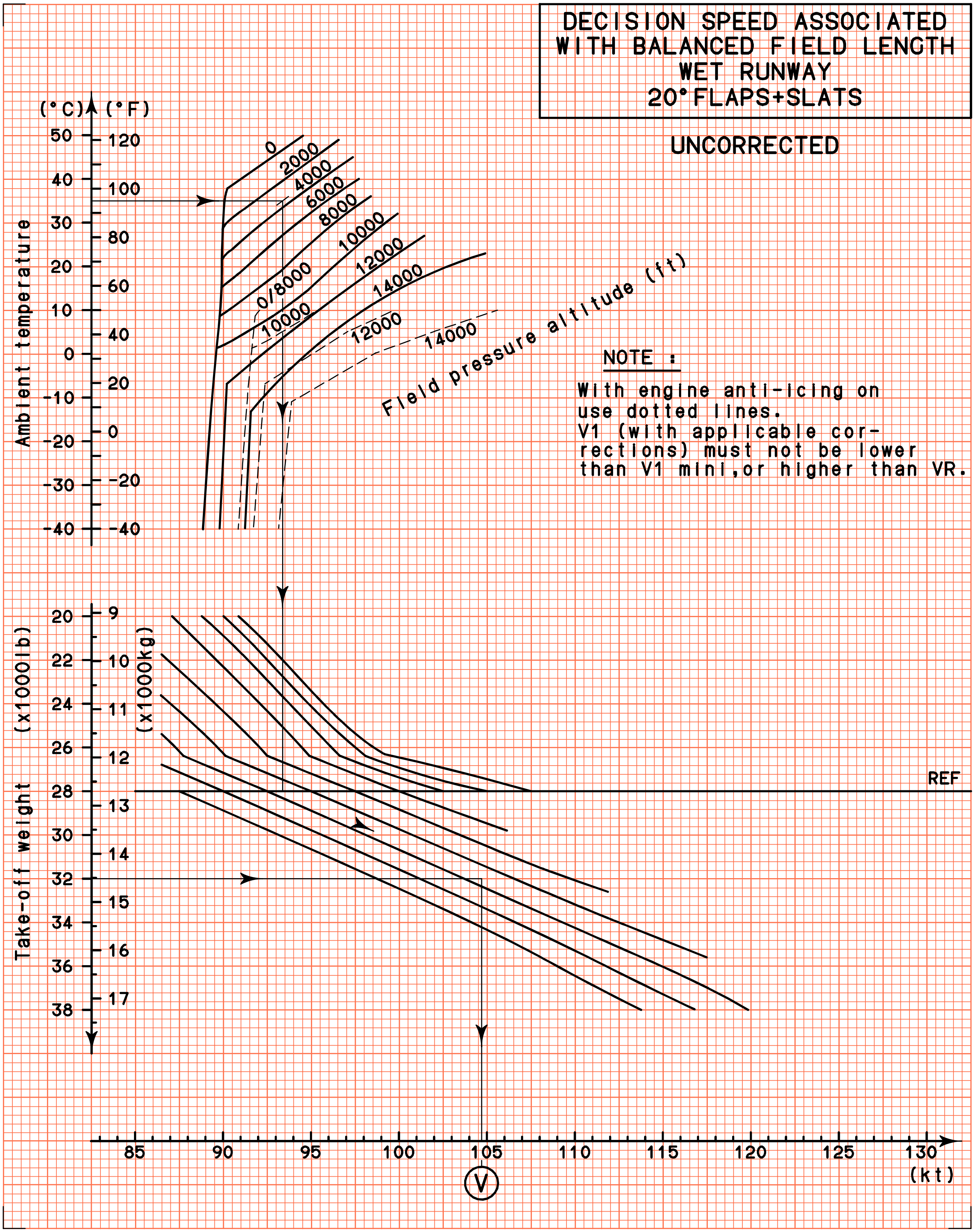
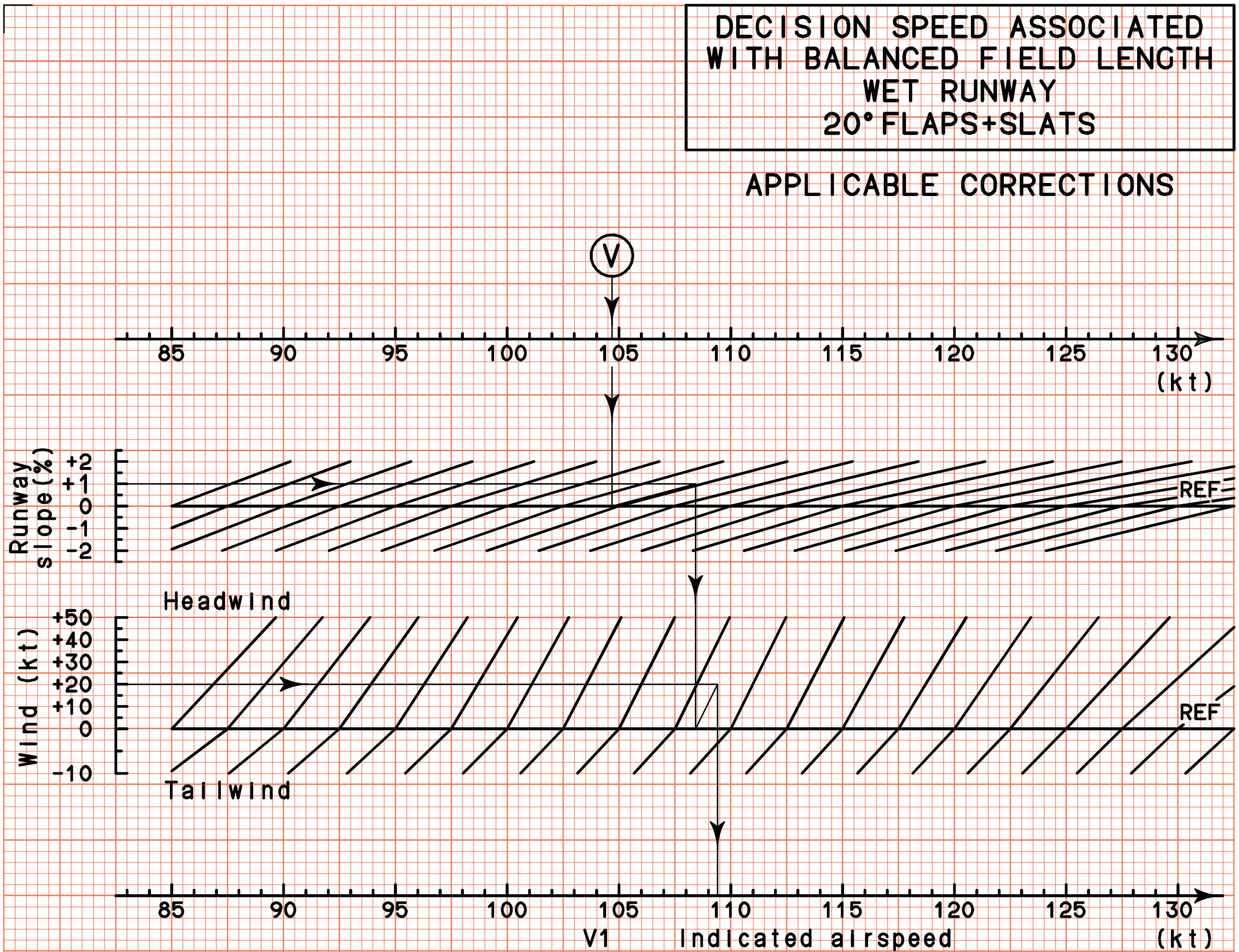
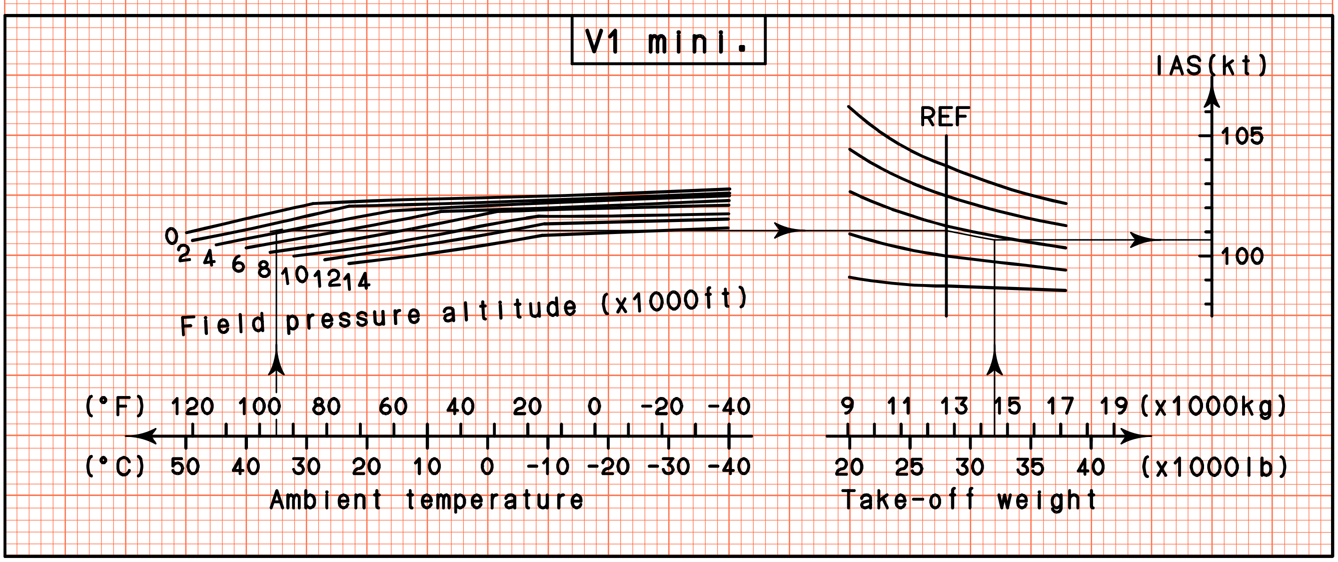

DECISION SPEED ASSOCIATED
WITH BALANCED FIELD LENGTH
WET RUNWAY
20° FLAPS+SLATS
UNCORRECTED
(°C) (°F)
Ambient temperature
50 40 30 20 10 0 -10 -20 -30 -40
120 100 80 60 40 20 0 -20 -40
0
2000
4000
6000
8000
10000
12000
14000
0/8000
10000
12000
14000
Field pressure altitude (ft)
NOTE :
With engine anti-icing on
use dotted lines.
V1 (with applicable corrections) must not be lower
than V1 mini,or higher than VR.
Take-off weight (x1000lb)
(x1000kg)
20 22 24 26 28 30 32 34 36 38
9 10 11 12 13 14 15 16 17
REF
85 90 95 100 105 110 115 120 125 130
(kt)
V



NOTE : V1 must not be lower than V1 mini, or higher than VR.



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MAXIMUM BRAKE ENERGY SPEED (VMBE)
WET RUNWAY
20° FLAPS + SLATS

THE MAXIMUM BRAKE ENERGY IS NOT LIMITING FOR TAKE-OFF ON WET RUNWAY IN 20° FLAPS + SLATS CONFIGURATION.

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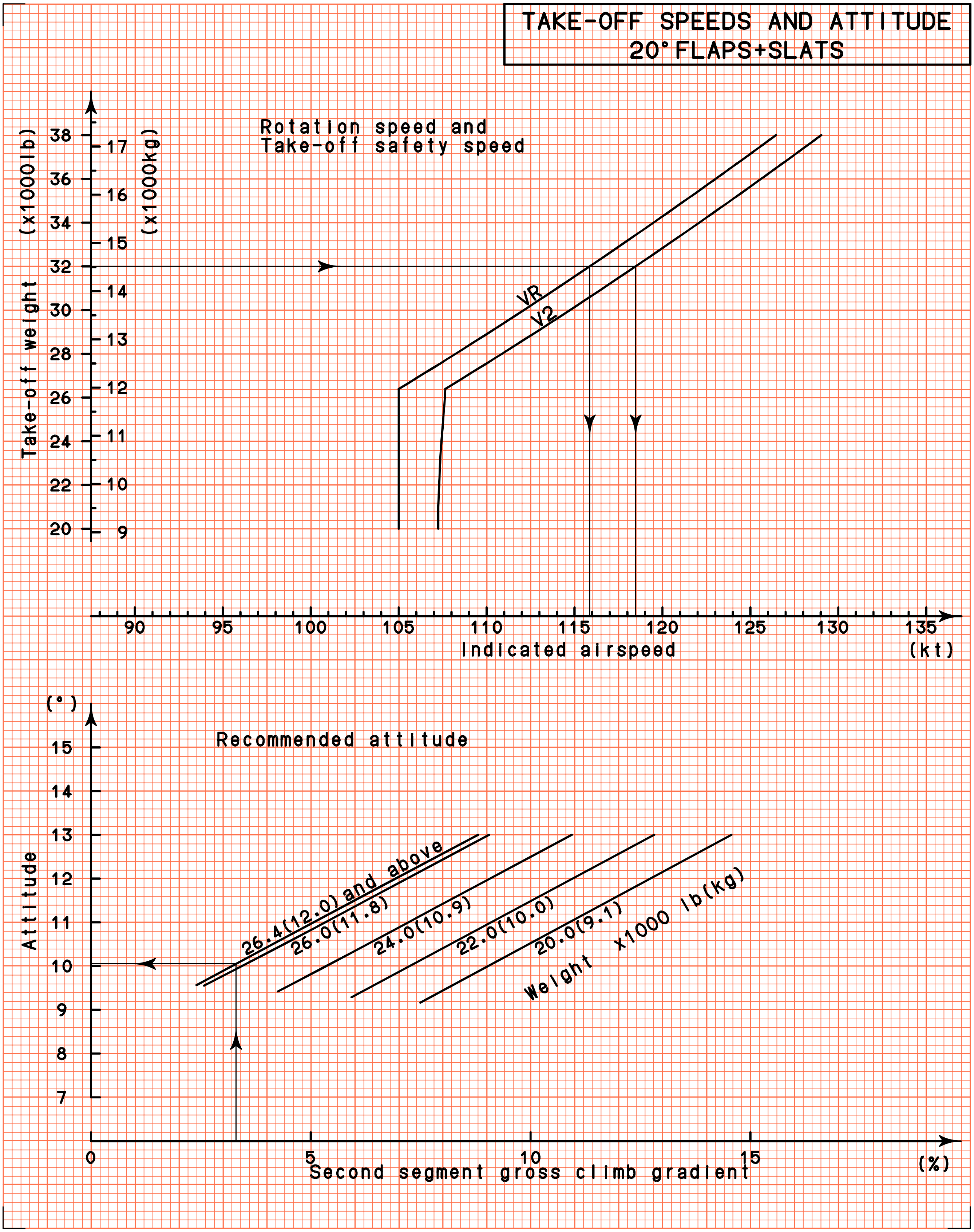
TAKE-OFF SPEEDS AND ATTITUDE
20° FLAPS+SLATS
Rotation speed and
Take-off safety speed
Take-off weight (x1000lb)
(x1000kg)
38
36
34
32
30
28
26
24
22
20
17
16
15
14
13
12
11
10
9
VR
V2
90
95
100
105
110
115
120
125
130
135
Indicated airspeed
(kt)
Recommended attitude
Attitude
(°)
15
14
13
12
11
10
9
8
7
26.4(12.0) and above
26.0(11.8)
24.0(10.9)
22.0(10.0)
20.0(9.1)
Weight x1000 lb(kg)
0
5
10
15
Second segment gross climb gradient
(%)

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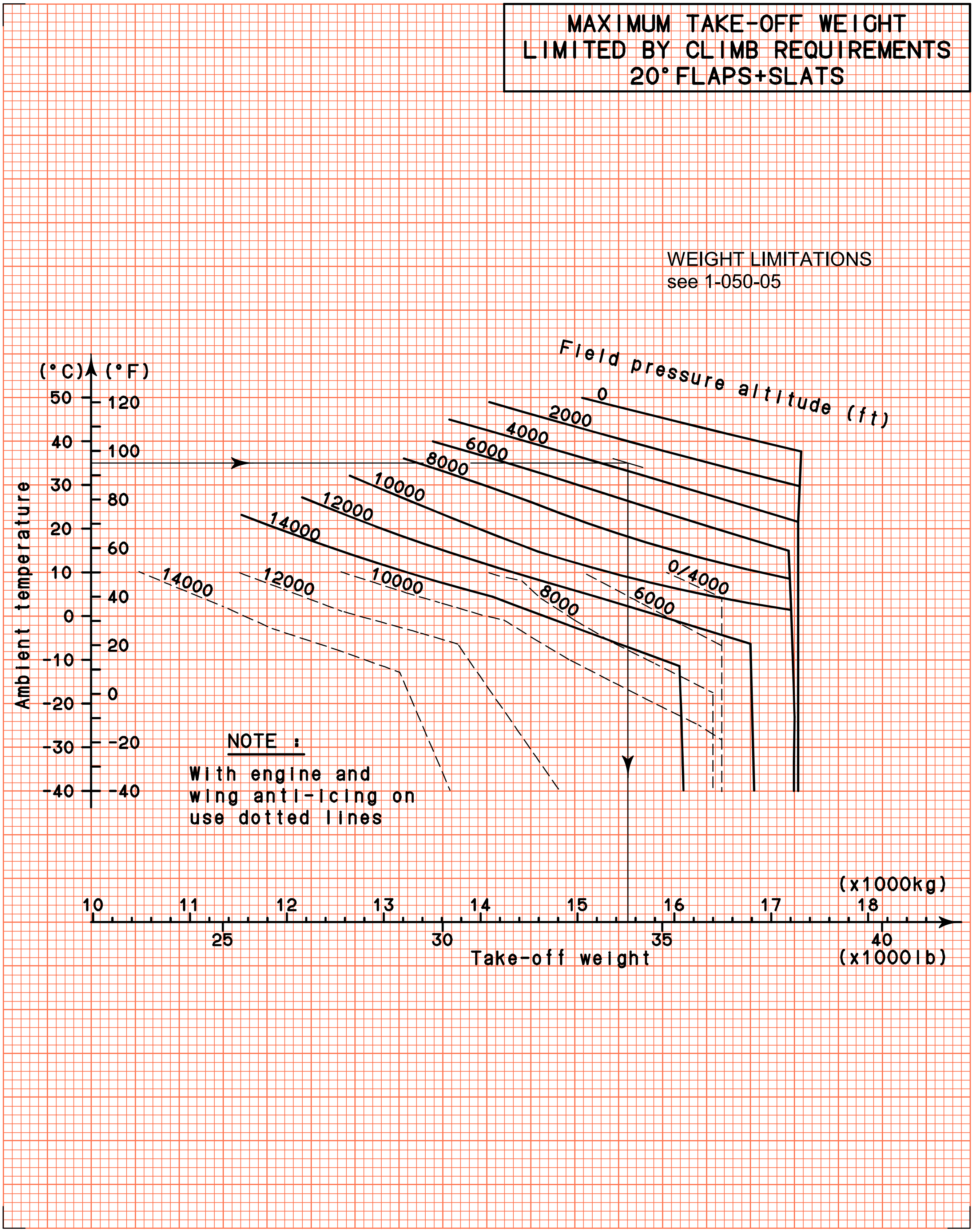
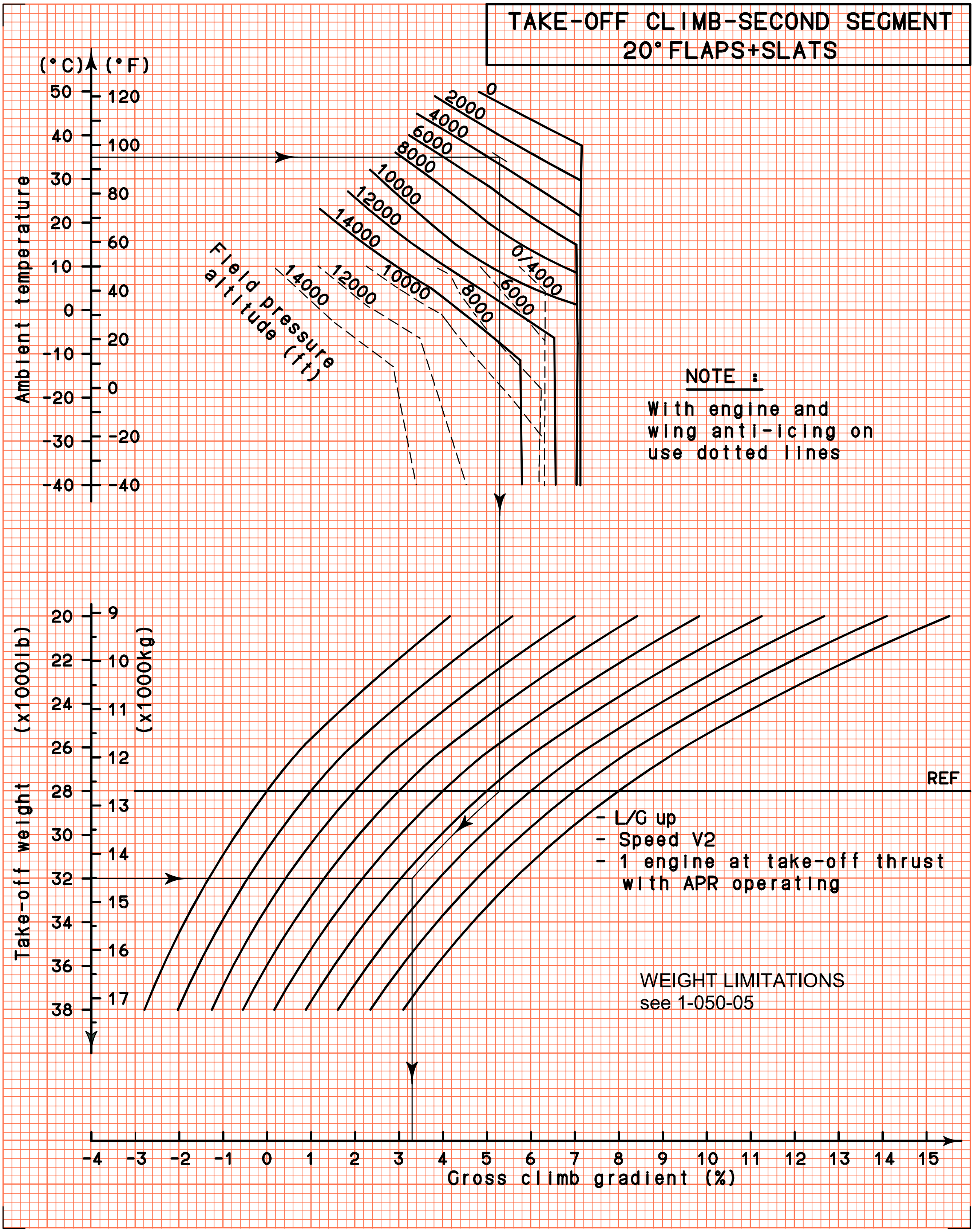
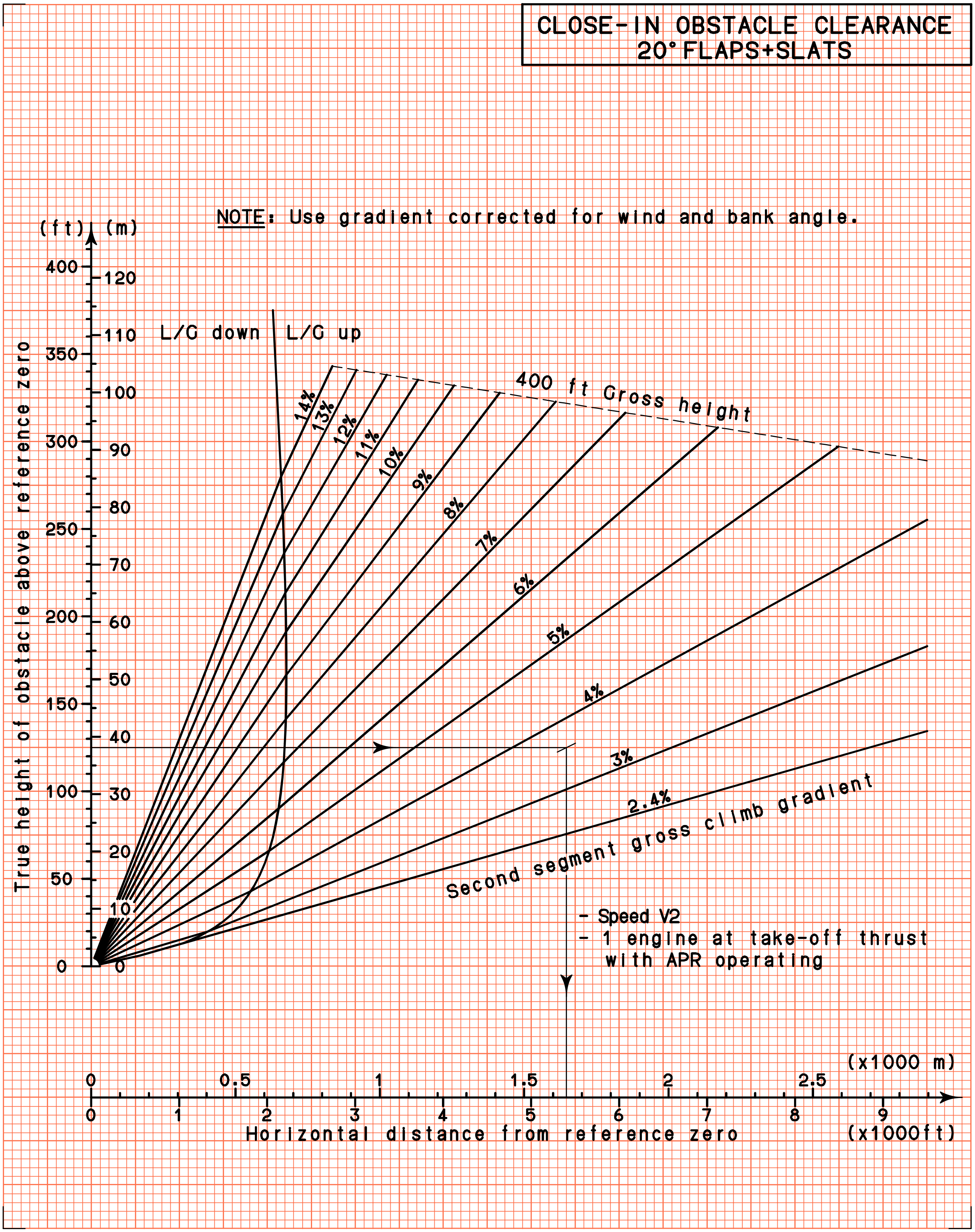
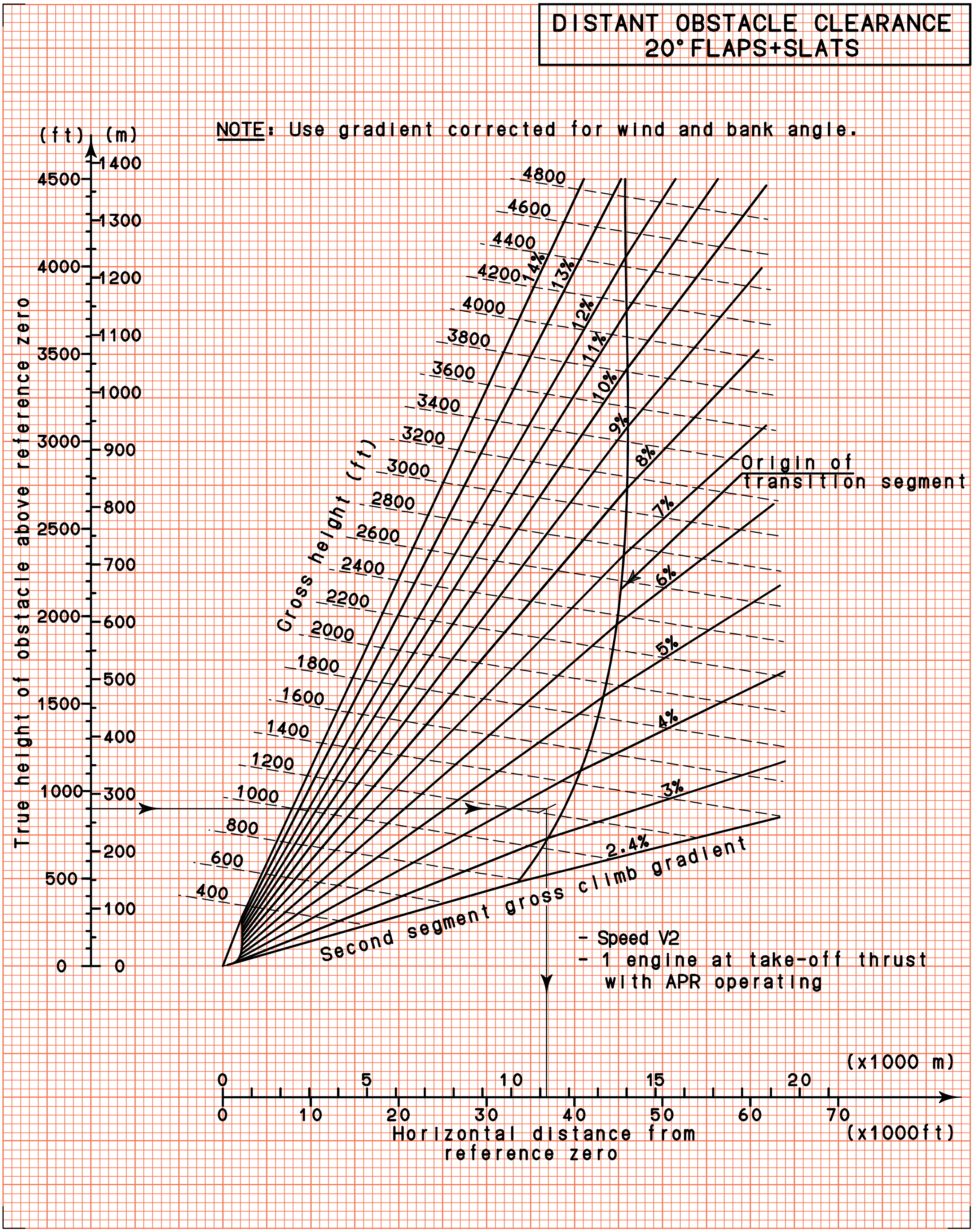

MAXIMUM TAKE-OFF WEIGHT
LIMITED BY CLIMB REQUIREMENTS
20° FLAPS+SLATS
WEIGHT LIMITATIONS
see 1-050-05
Field pressure altitude (ft)
0
2000
4000
6000
8000
10000
12000
14000
0/4000
6000
8000
10000
12000
14000
(°C)
(°F)
Ambient temperature
NOTE :
With engine and
wing anti-icing on
use dotted lines
(x1000kg)
Take-off weight
(x1000lb)

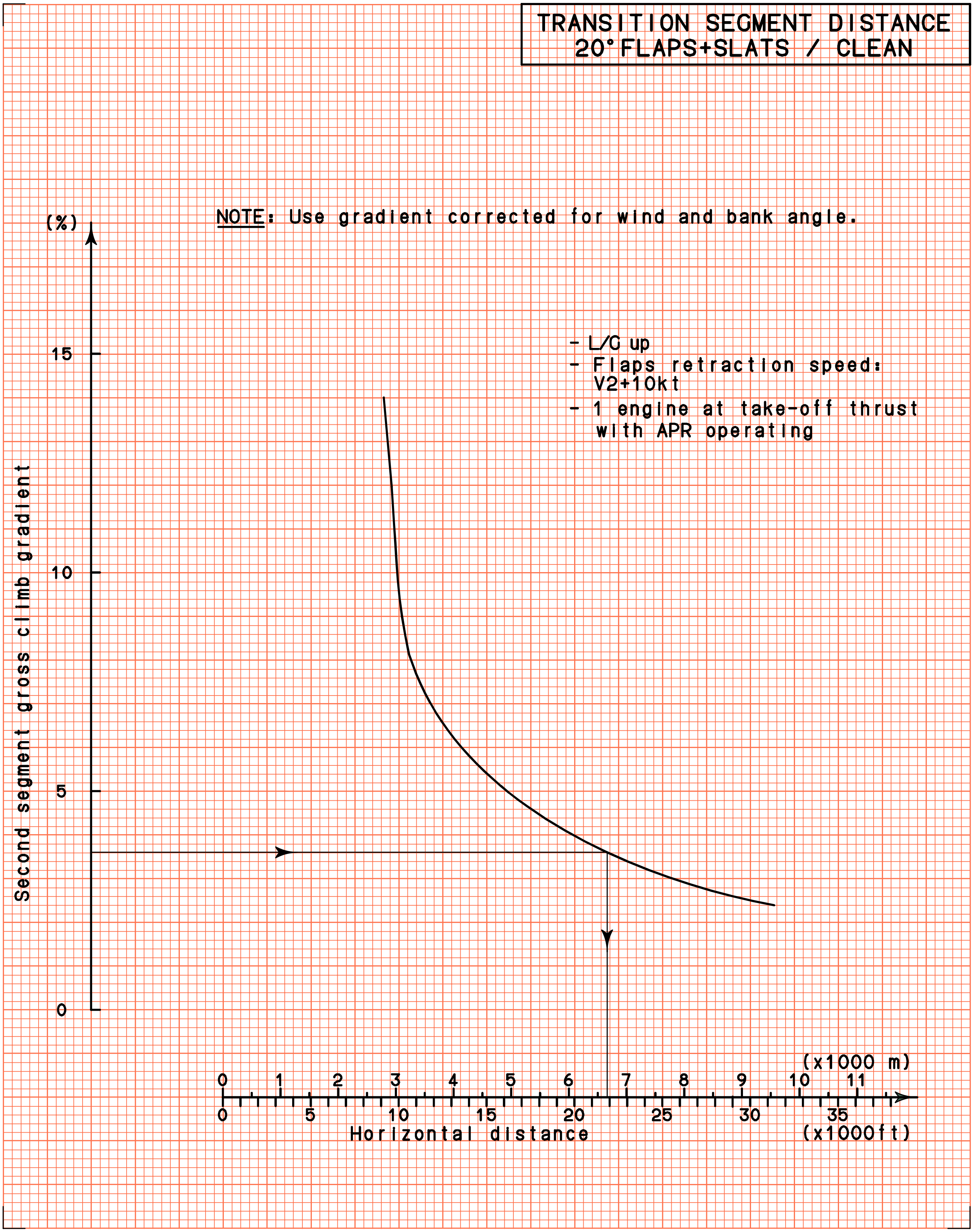

TAKE-OFF CLIMB-SECOND SEGMENT
20° FLAPS+SLATS
Ambient temperature
(°C)
(°F)
Field pressure altitude (ft)
0
2000
4000
6000
8000
10000
12000
14000
0/4000
6000
8000
10000
12000
14000
NOTE :
With engine and wing anti-icing on use dotted lines
Take-off weight (x1000lb)
(x1000kg)
REF
- L/G up
- Speed V2
- 1 engine at take-off thrust with APR operating
WEIGHT LIMITATIONS
see 1-050-05
Gross climb gradient (%)



CLOSE-IN OBSTACLE CLEARANCE
20° FLAPS+SLATS
NOTE: Use gradient corrected for wind and bank angle.
(ft)
(m)
True height of obstacle above reference zero
L/G down
L/G up
400 ft Gross height
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2.4%
Second segment gross climb gradient
- Speed V2
- 1 engine at take-off thrust with APR operating
(x1000 m)
Horizontal distance from reference zero
(x1000ft)



DISTANT OBSTACLE CLEARANCE
20° FLAPS+SLATS
NOTE: Use gradient corrected for wind and bank angle.
(ft) (m)
True height of obstacle above reference zero
Gross height (ft)
Origin of transition segment
Second segment gross climb gradient
2.4% 3% 4% 5% 6% 7% 8% 9% 10% 11% 12% 13% 14%
- Speed V2
- 1 engine at take-off thrust with APR operating
Horizontal distance from reference zero
(x1000 m)
(x1000ft)


TRANSITION SEGMENT DISTANCE
20° FLAPS+SLATS / CLEAN
NOTE: Use gradient corrected for wind and bank angle.
(%)
15
10
5
0
Second segment gross climb gradient
- L/G up
- Flaps retraction speed: V2+10kt
- 1 engine at take-off thrust with APR operating
(x1000 m)
0 1 2 3 4 5 6 7 8 9 10 11
0 5 10 15 20 25 30 35
Horizontal distance
(x1000ft)

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TAKE-OFF EXAMPLE - DRY RUNWAY 10° FLAPS + SLATS

Field pressure altitude: 10,000 ft
Runway length: 7,320 ft

Ambient temperature: 20 °C
Runway slope: -1 % down hill
Headwind: +15 kt

5-550-40 page 1 : Maximum take-off weight
limited by climb requirements.. W1 = 33,000 lb

5-550-05 page 10 : Maximum take-off weight
limited by field length:.. W2 = 31,300 lb

1-050-05 page 1 : Maximum take-off weight limited by structural limitation: ....35,800 lb

The maximum take-off weight is therefore the
field length limited take-off weight .... W3 = 31,300 lb

5-550-40 page 2 : Second segment gross climb gradient
(enter thru ① for this example) .... 3.0 %

5-550-35 page 1 : Take-off speeds
(enter thru ① for this example) ....VR = 119 kt; V2 = 122 kt
Recommended take-off attitude
(enter thru ① for this example) .... 10.8°

5-550-15 page 1 : Maximum brake energy speed (VMBE):
when the guide line is over to the right side of the dashed line, VMBE is always higher than VR and therefore higher than V1.

5-550-10 pages 2 and 3 : Decision speed associated with balanced field length: 119 kt.
V1 mini = 100 kt.
As V1 is higher than V1 mini and lower
than VR and VMBE .... V1 = 119 kt

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TAKE-OFF EXAMPLE - DRY RUNWAY 10° FLAPS + SLATS

Field pressure altitude: 10,000 ft
Runway length: 7,320 ft

Ambient temperature: 20 °C
Runway slope: -1 % down hill
Headwind: +15 kt

5-550-40 page 1	:	Maximum take-off weight limited by climb requirements.. W1 = 33,000 lb
5-550-05 page 10	:	Maximum take-off weight limited by field length:.. W2 = 31,300 lb
1-050-05A page 1	:	Maximum take-off weight limited by structural limitation: ....36,500 lb
		The maximum take-off weight is therefore the field length limited take-off weight .... W3 = 31,300 lb
5-550-40 page 2	:	Second segment gross climb gradient (enter thru ① for this example) .... 3.0 %
5-550-35 page 1	:	Take-off speeds (enter thru ① for this example) ....VR = 119 kt; V2 = 122 kt Recommended take-off attitude (enter thru ① for this example) .... 10.8°
5-550-15 page 1	:	Maximum brake energy speed (VMBE): when the guide line is over to the right side of the dashed line, VMBE is always higher than VR and therefore higher than V1.
5-550-10 pages 2 and 3	:	Decision speed associated with balanced field length: 119 kt. V1 mini = 100 kt. As V1 is higher than V1 mini and lower than VR and VMBE .... V1 = 119 kt

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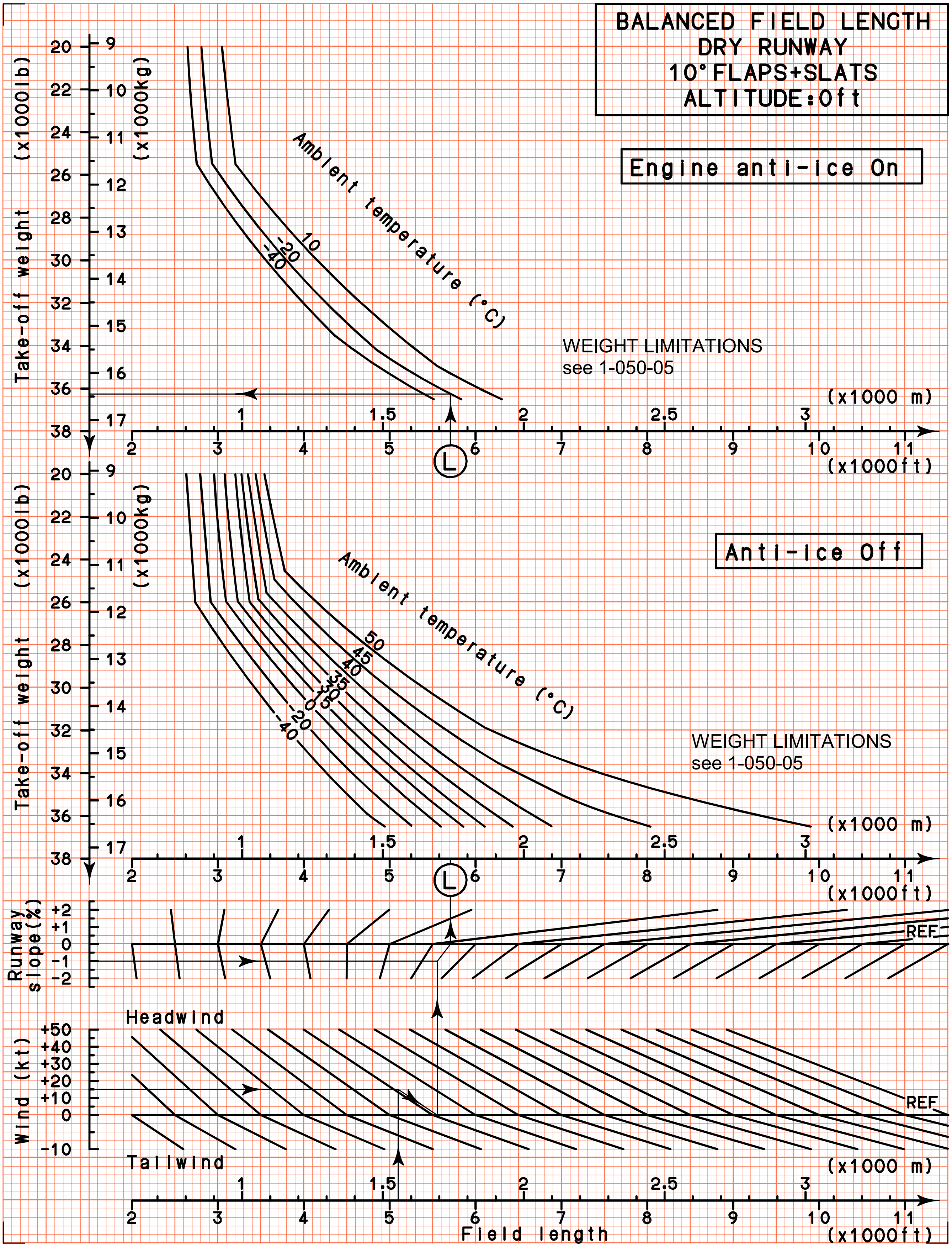
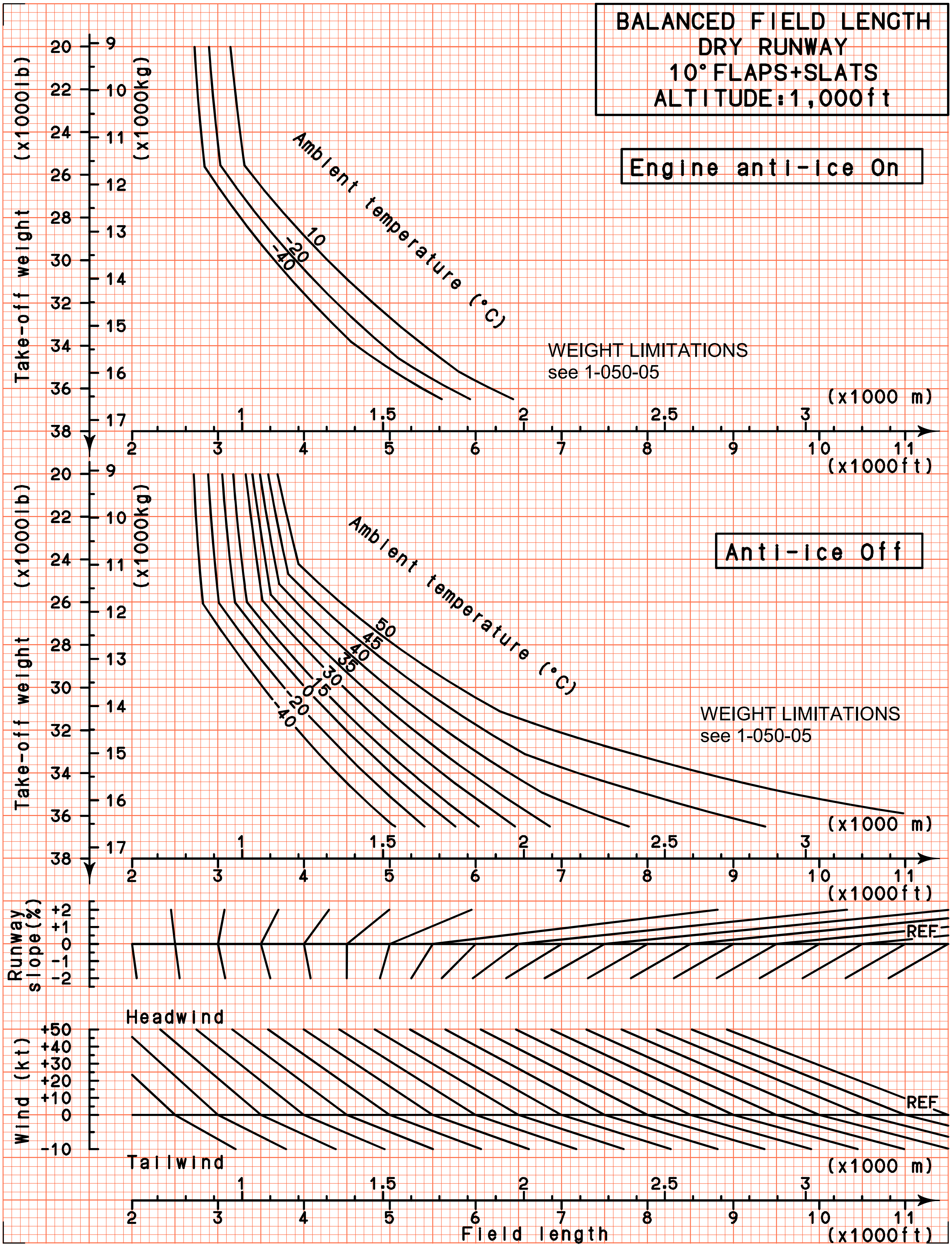
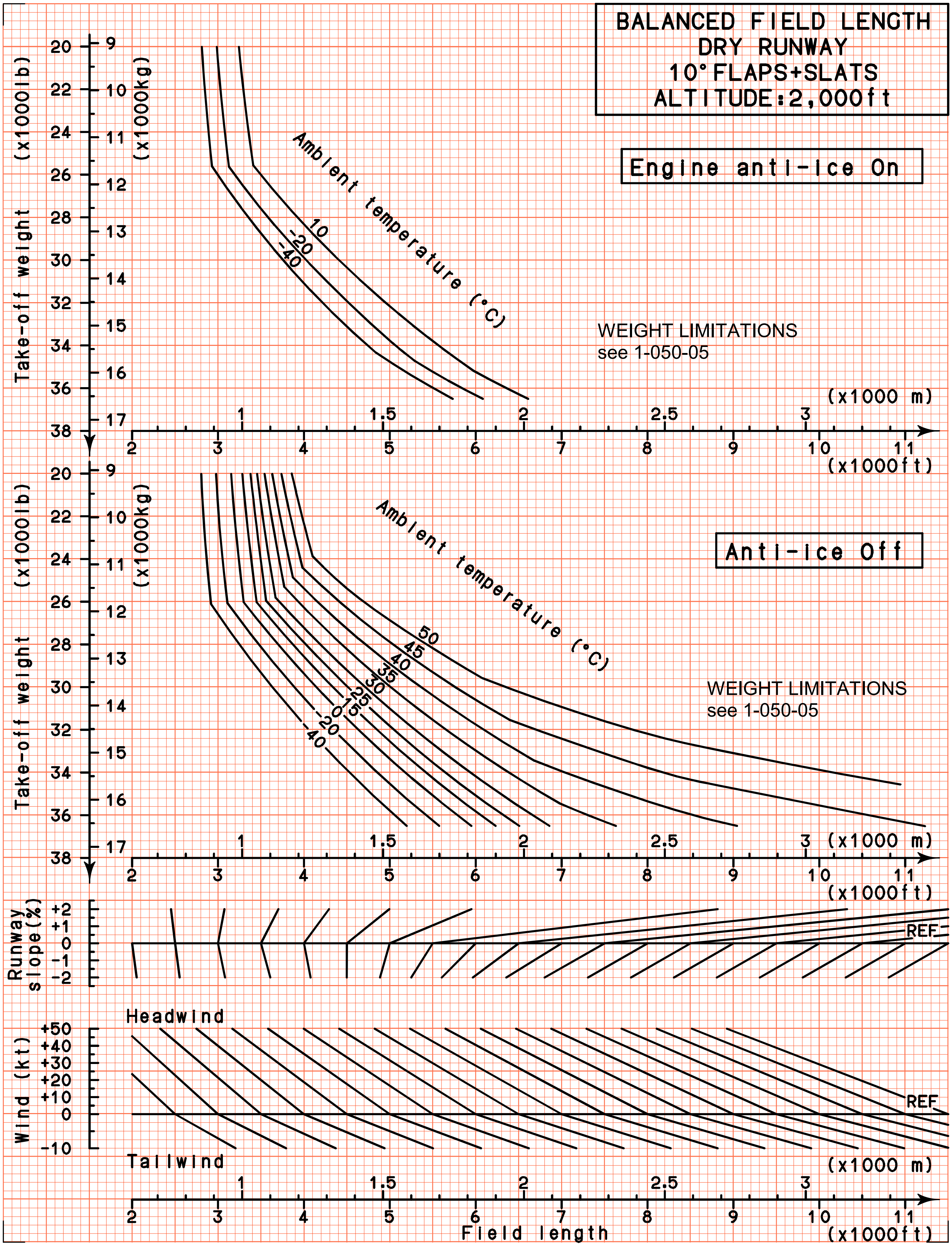

BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:0ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
50
45
40
35
30
15
0
-20
-40
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
Field length

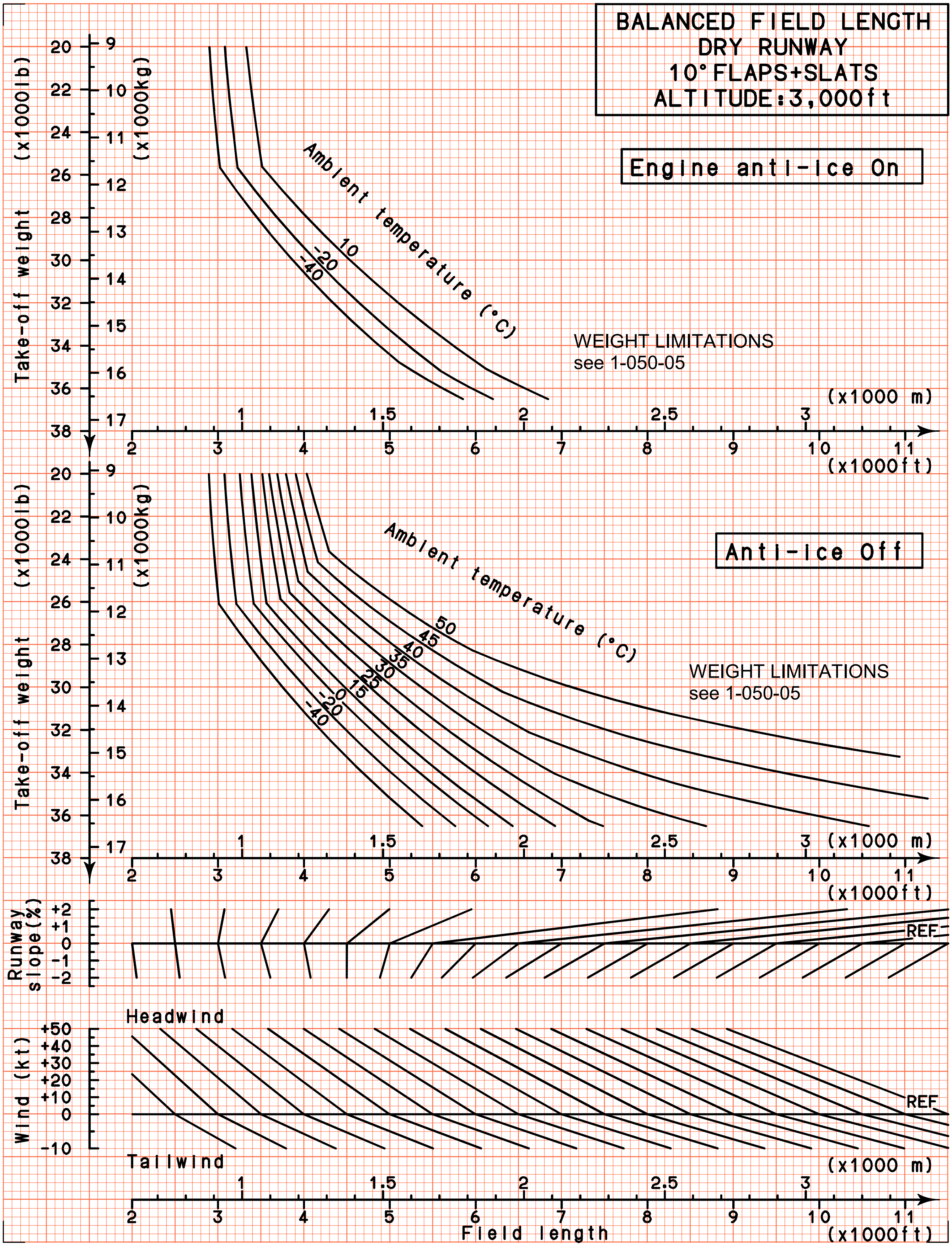

BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:1,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000ft)
Field length

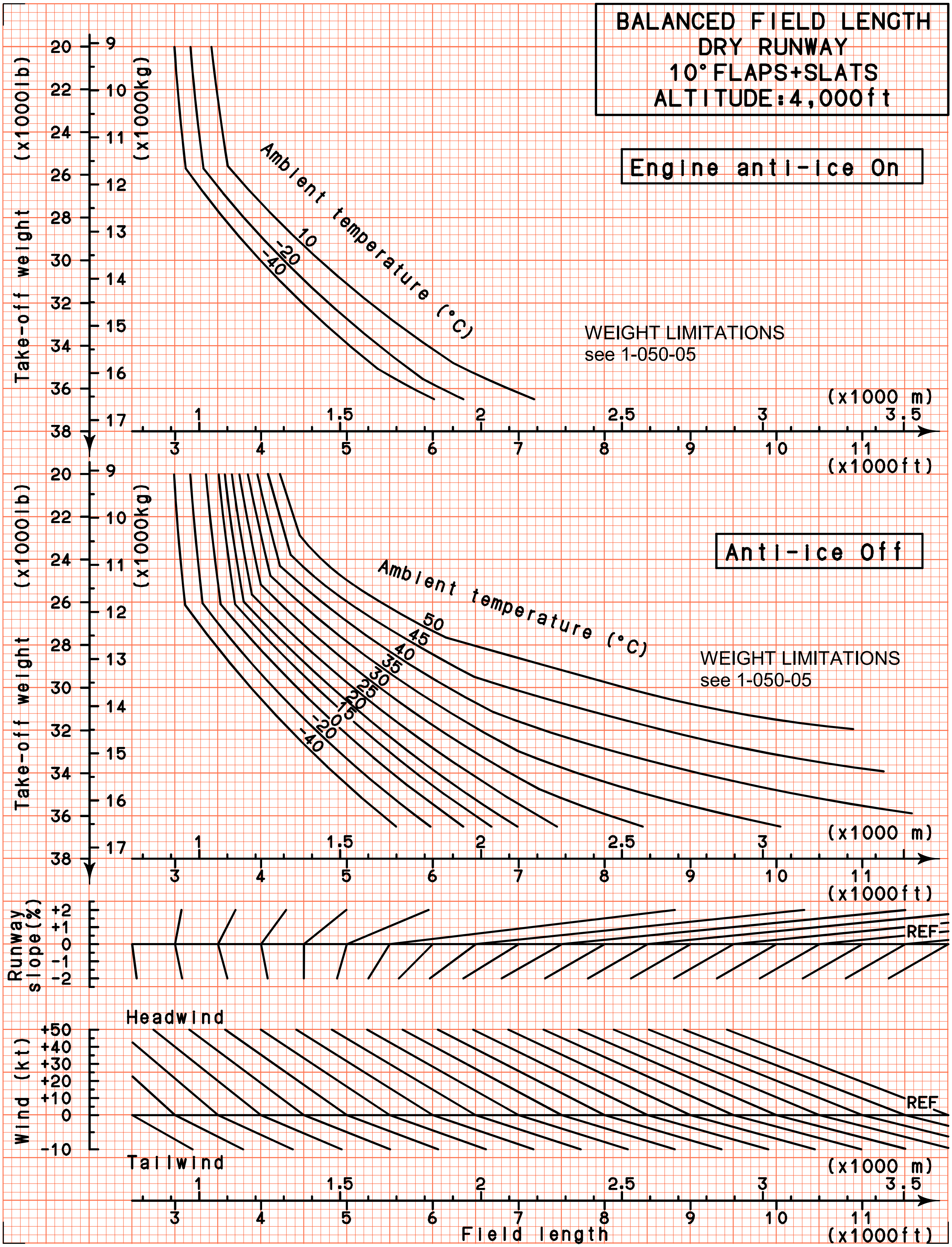

BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:2,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb) (x1000kg)
Anti-ice Off
Ambient temperature (°C)
50
45
40
35
30
25
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000ft)
Field length

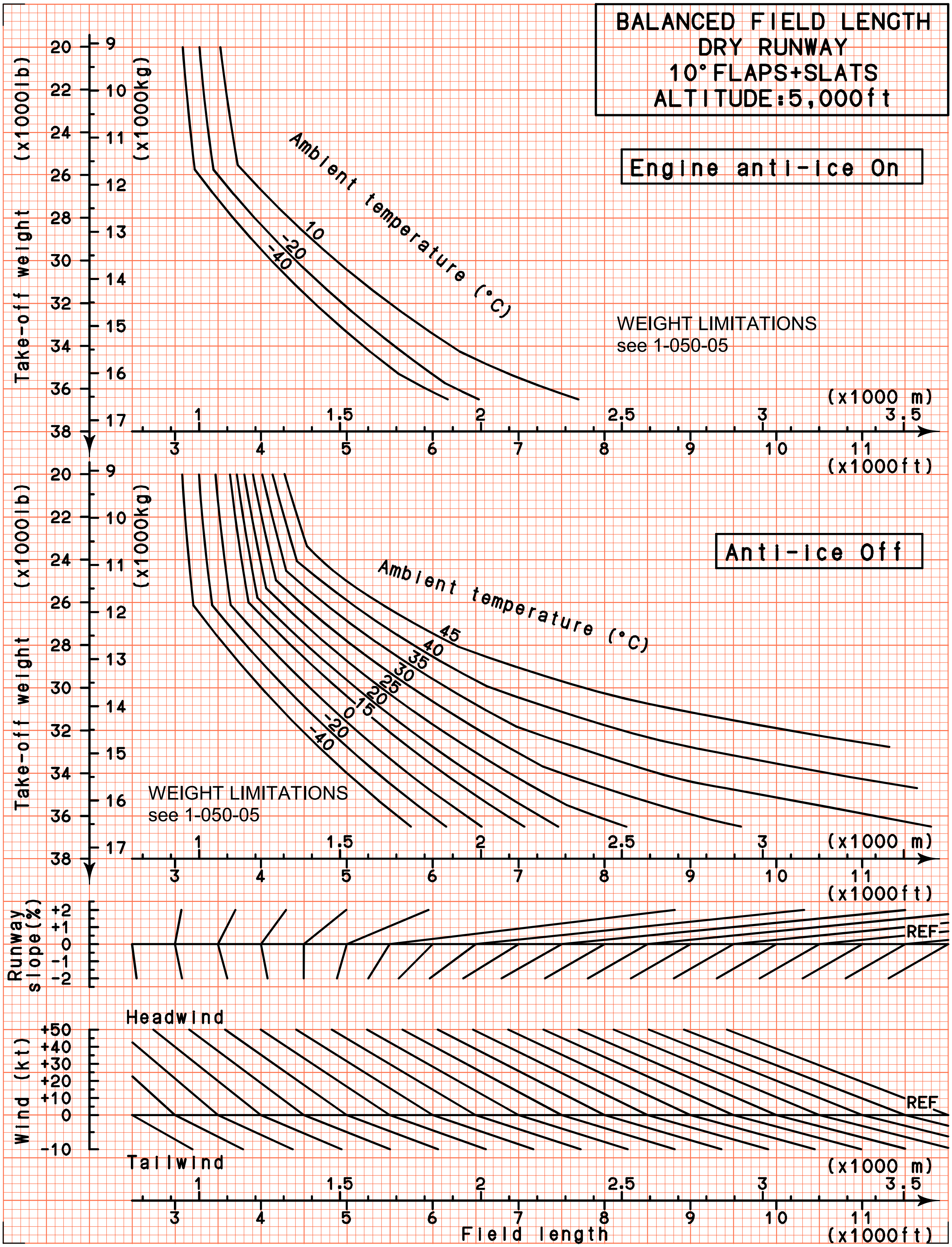
PERFORMANCE

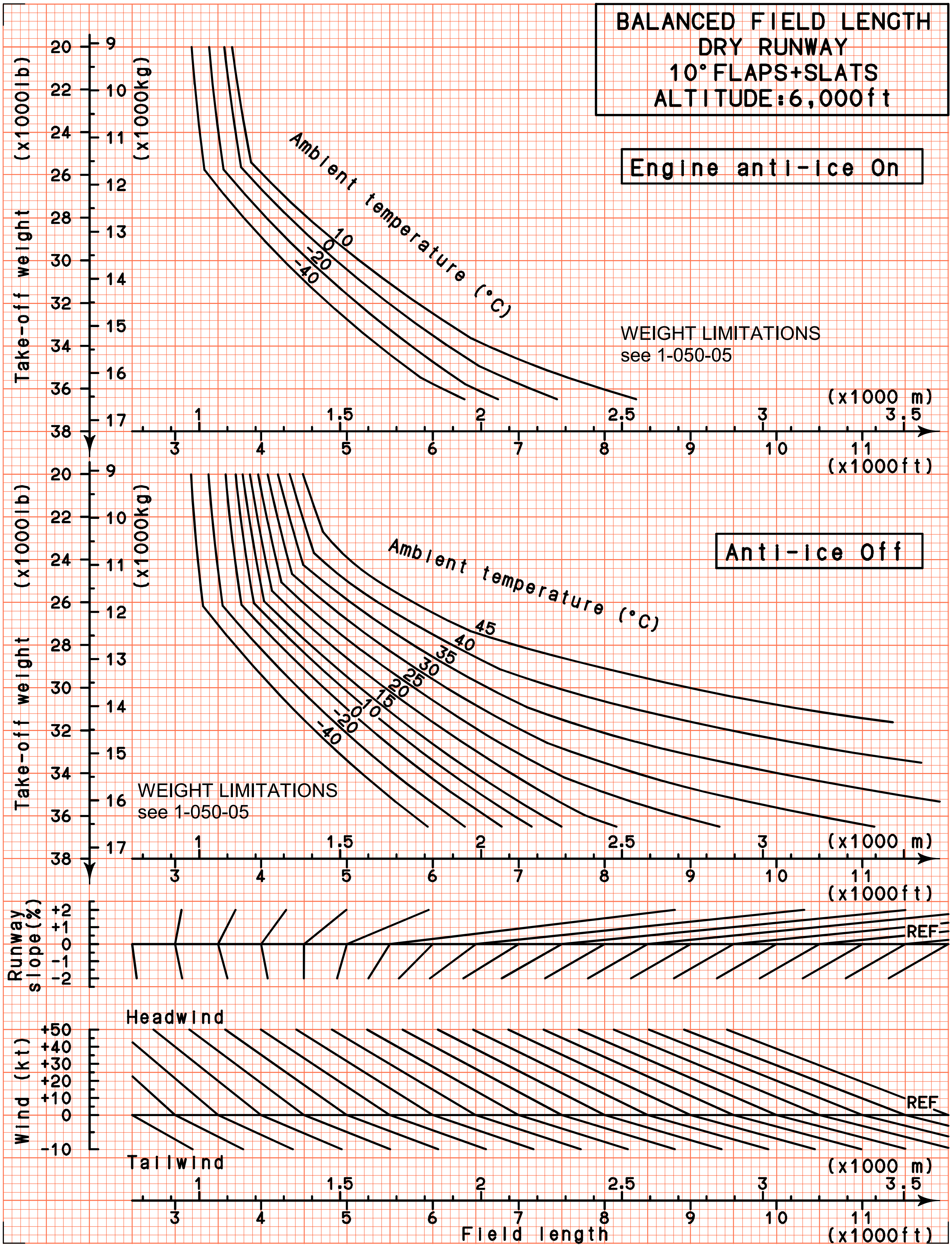
TAKE-OFF 10° FLAPS+SLATS

Balanced field length - Dry runway

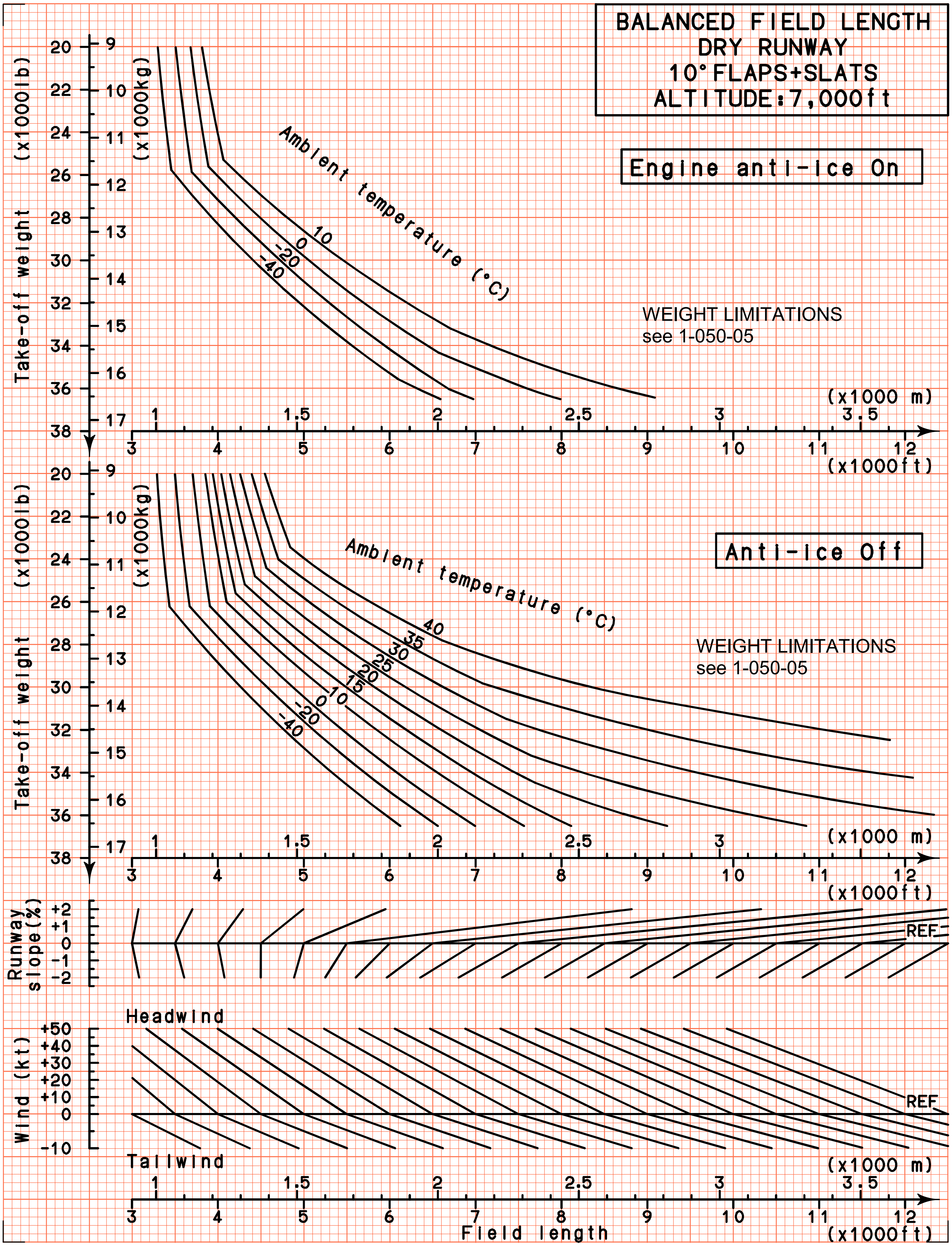


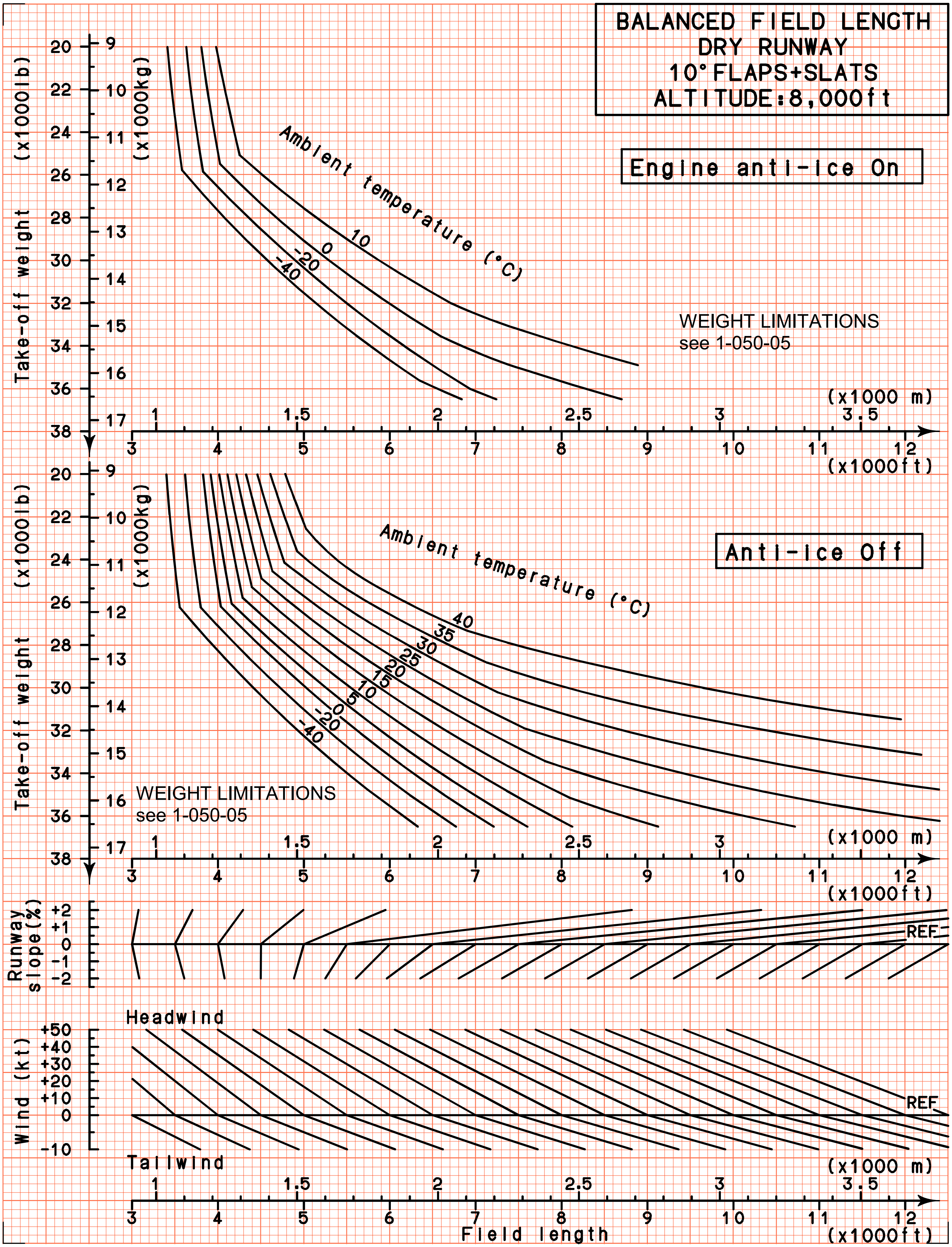

BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:4,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Anti-ice Off
Ambient temperature (°C)
50
45
40
35
30
25
20
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
20 22 24 26 28 30 32 34 36 38
9 10 11 12 13 14 15 16 17
(x1000 m)
1 1.5 2 2.5 3 3.5
3 4 5 6 7 8 9 10 11
(x1000ft)
Runway slope(%)
+2 +1 0 -1 -2
REF
Wind (kt)
+50 +40 +30 +20 +10 0 -10
Headwind
Tailwind
REF
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:5,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
45
40
35
30
25
20
15
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Wind (kt)
REF
Tailwind
Field length

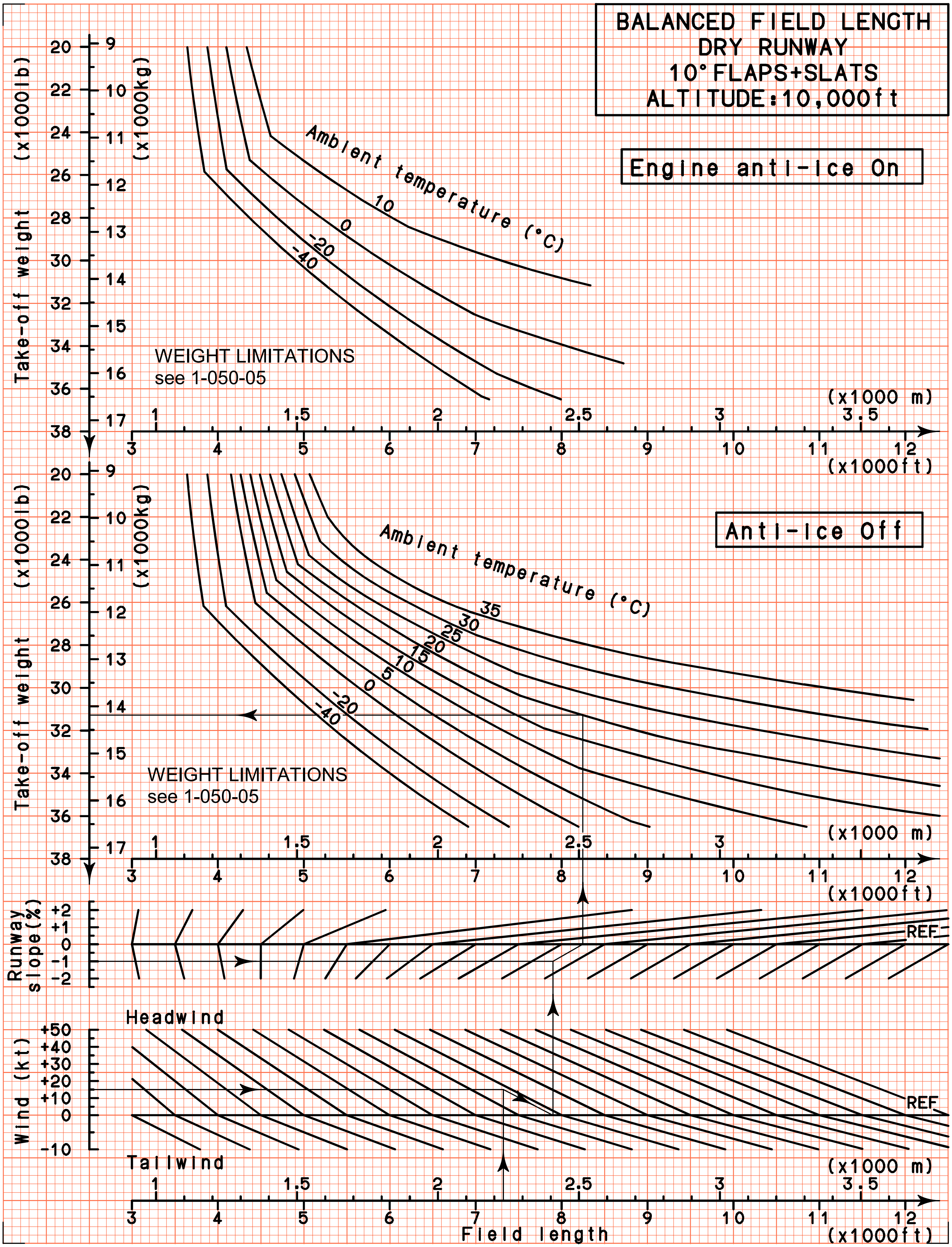


BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:6,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Anti-ice Off
45
40
35
30
25
20
15
10
0
-20
-40
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
(x1000 m)
(x1000ft)
Field length

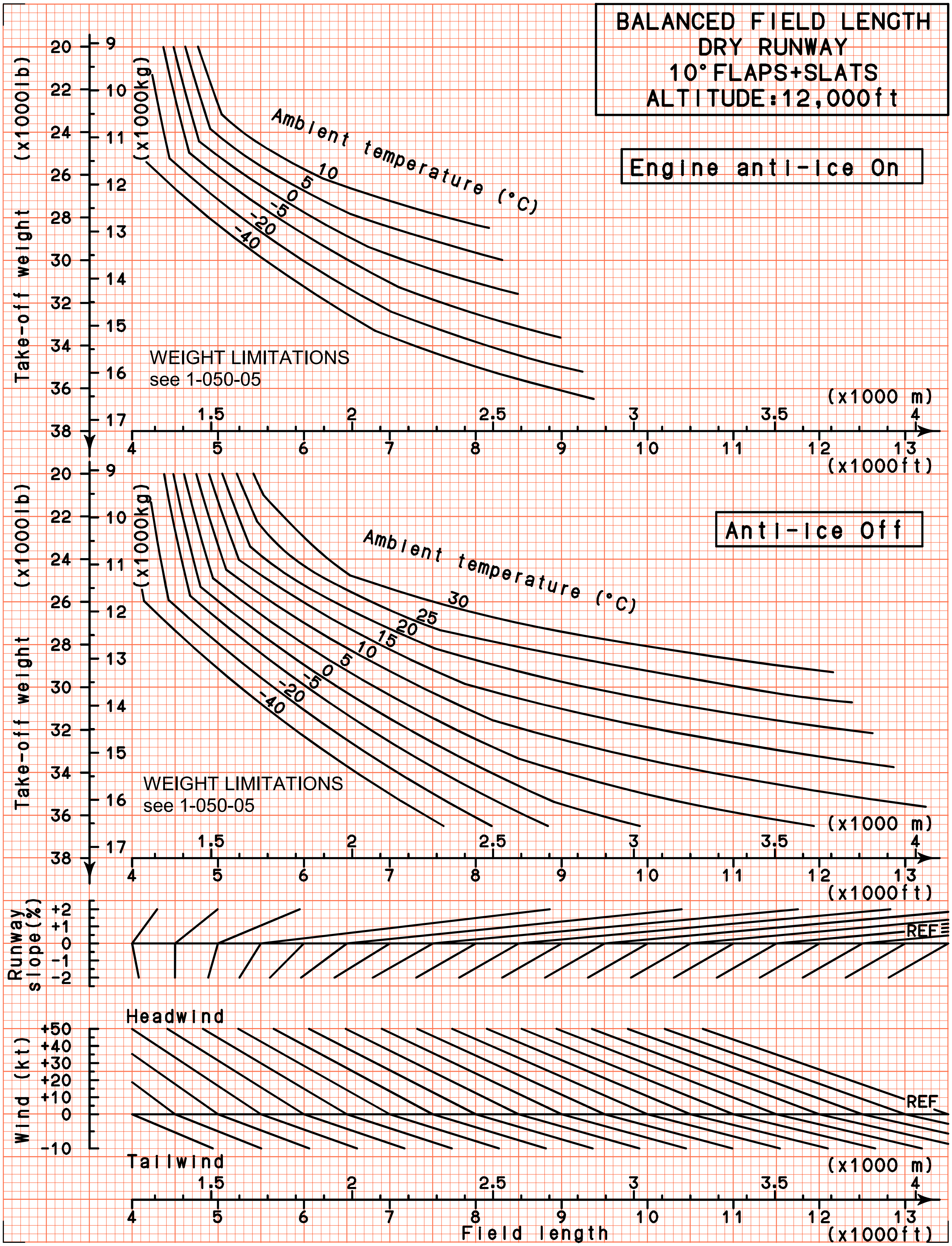

BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE: 7,000 ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000 lb)
(x1000 kg)
(x1000 m)
(x1000 ft)
Anti-ice Off
Ambient temperature (°C)
40
35
30
25
20
15
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope (%)
REF
Wind (kt)
Headwind
Tailwind
REF
Field length

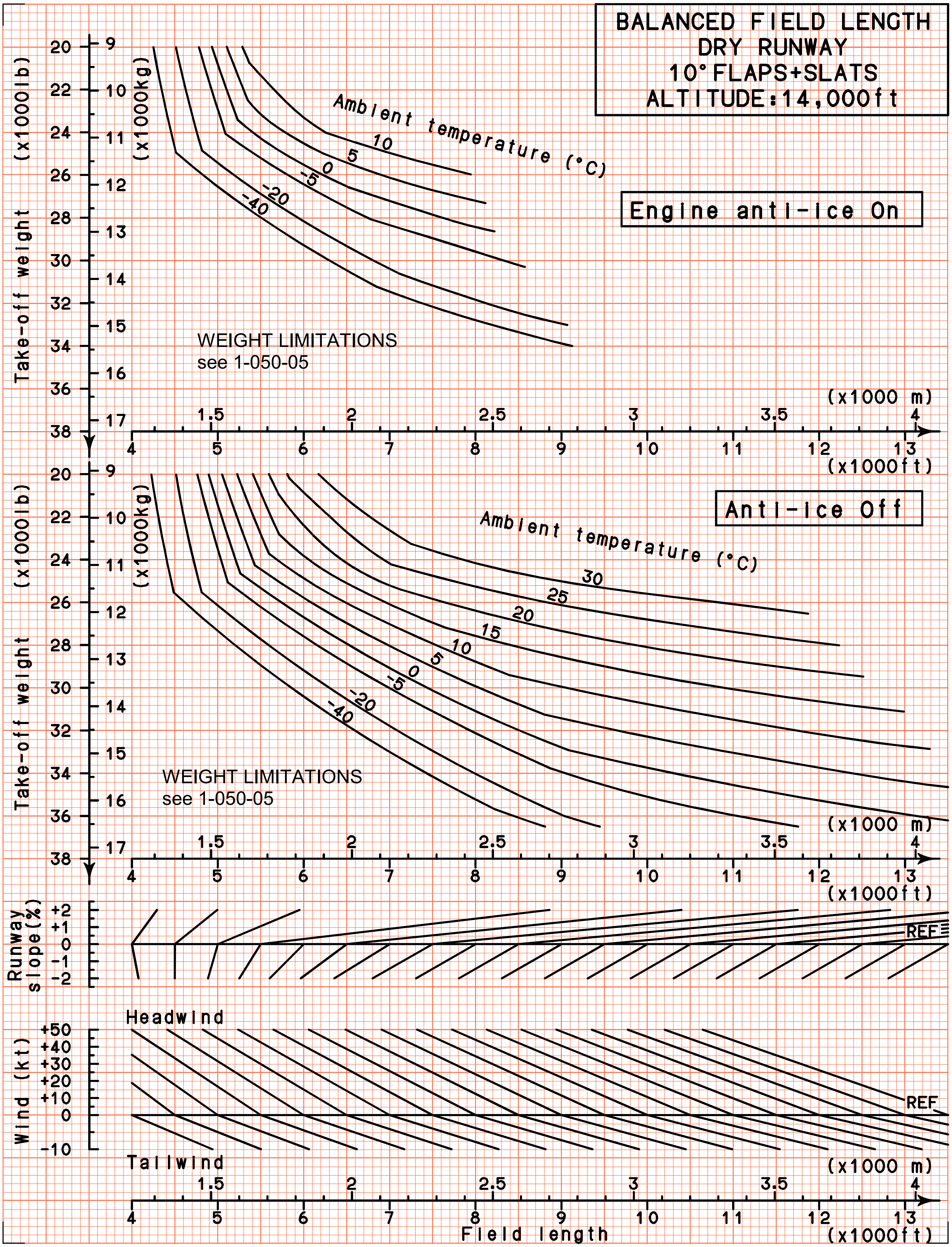


BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:8,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
40
35
30
25
20
15
10
5
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
REF
Field length



BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:10,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
35
30
25
20
15
10
5
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:12,000ft
Engine anti-ice On
Ambient temperature (°C)
10
5
0
-5
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Anti-ice Off
30
25
20
15
Take-off weight (x1000lb)
(x1000kg)
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
(x1000 m)
(x1000ft)
Field length


BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
ALTITUDE:14,000ft
Engine anti-ice On
Ambient temperature (°C)
10
5
0
-5
-20
-40
Take-off weight (x1000lb)
(x1000kg)
WEIGHT LIMITATIONS
see 1-050-05
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
30
25
20
15
10
5
0
-5
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Wind (kt)
REF
Tailwind
Field length

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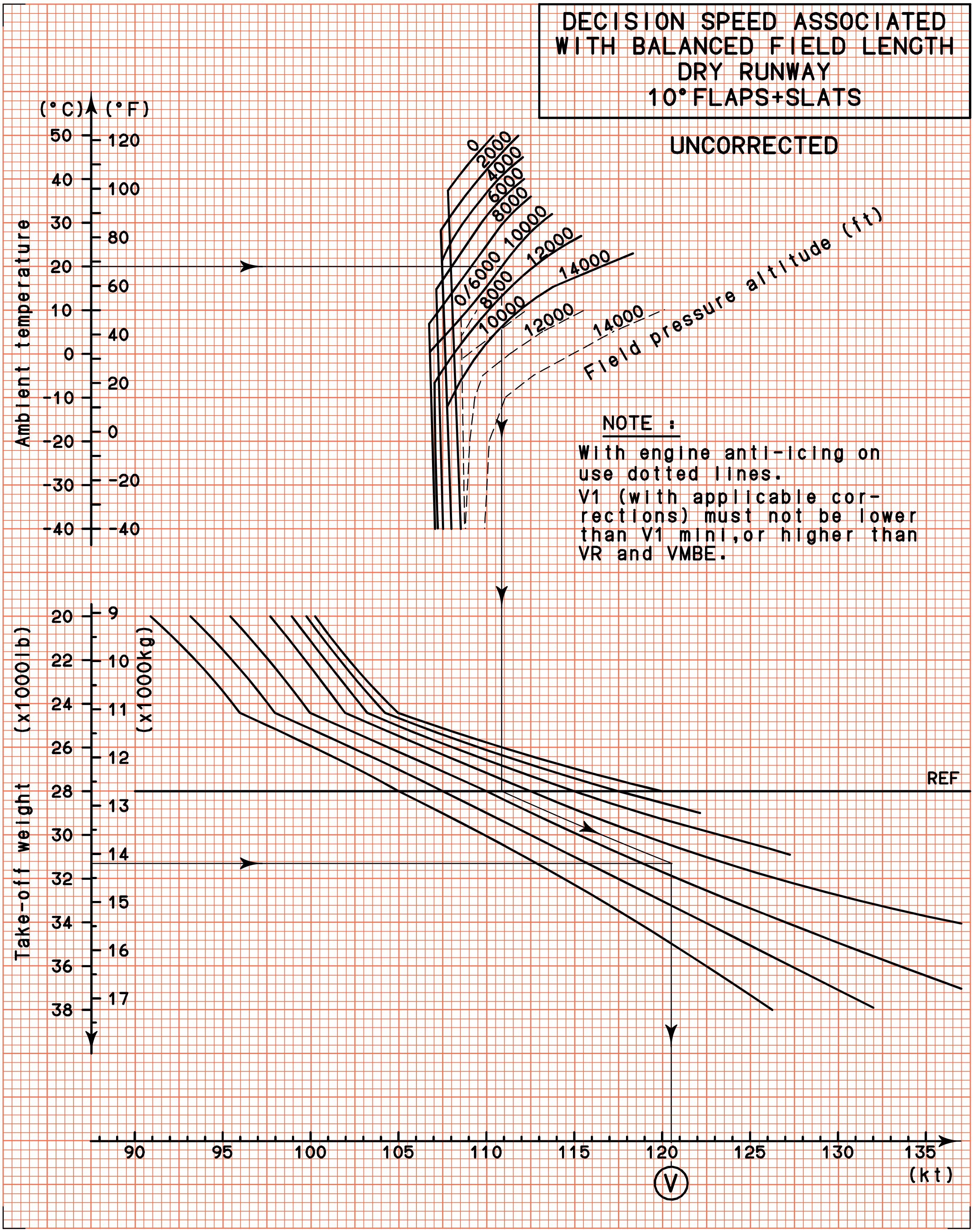
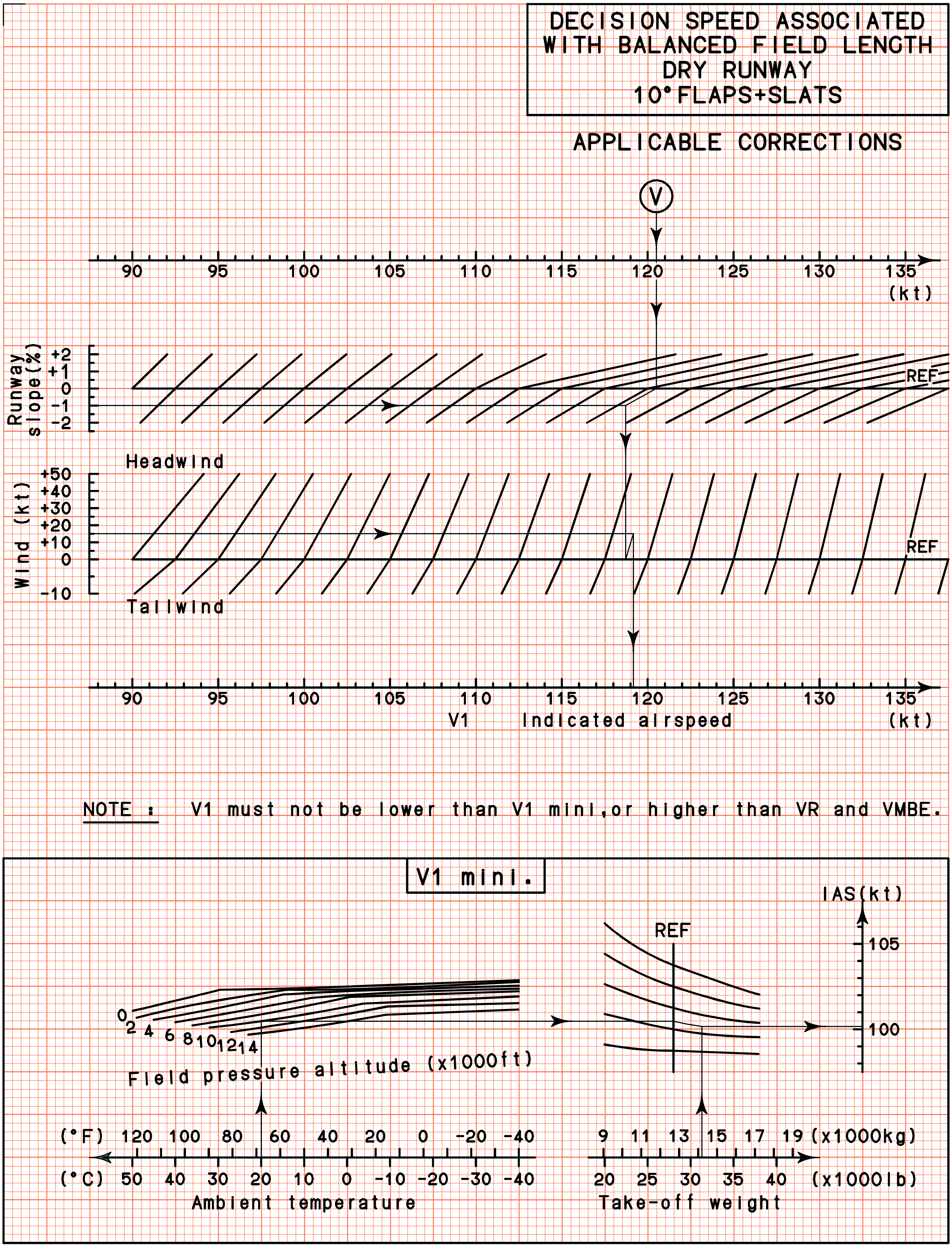
PERFORMANCE

TAKE-OFF 10° FLAPS+SLATS

Decision speed associated with balanced field length - Dry runway




DECISION SPEED ASSOCIATED WITH BALANCED FIELD LENGTH
DRY RUNWAY
10° FLAPS+SLATS
APPLICABLE CORRECTIONS
V
90 95 100 105 110 115 120 125 130 135 (kt)
Runway slope(%)
+2 +1 0 -1 -2
REF
Headwind
Wind (kt)
+50 +40 +30 +20 +10 0 -10
REF
Tailwind
V1 Indicated airspeed
NOTE : V1 must not be lower than V1 mini,or higher than VR and VMBE.
V1 mini.
IAS(kt)
105
100
REF
0 2 4 6 8 10 12 14
Field pressure altitude (x1000ft)
(°F) 120 100 80 60 40 20 0 -20 -40
(°C) 50 40 30 20 10 0 -10 -20 -30 -40
Ambient temperature
9 11 13 15 17 19 (x1000kg)
20 25 30 35 40 (x1000lb)
Take-off weight

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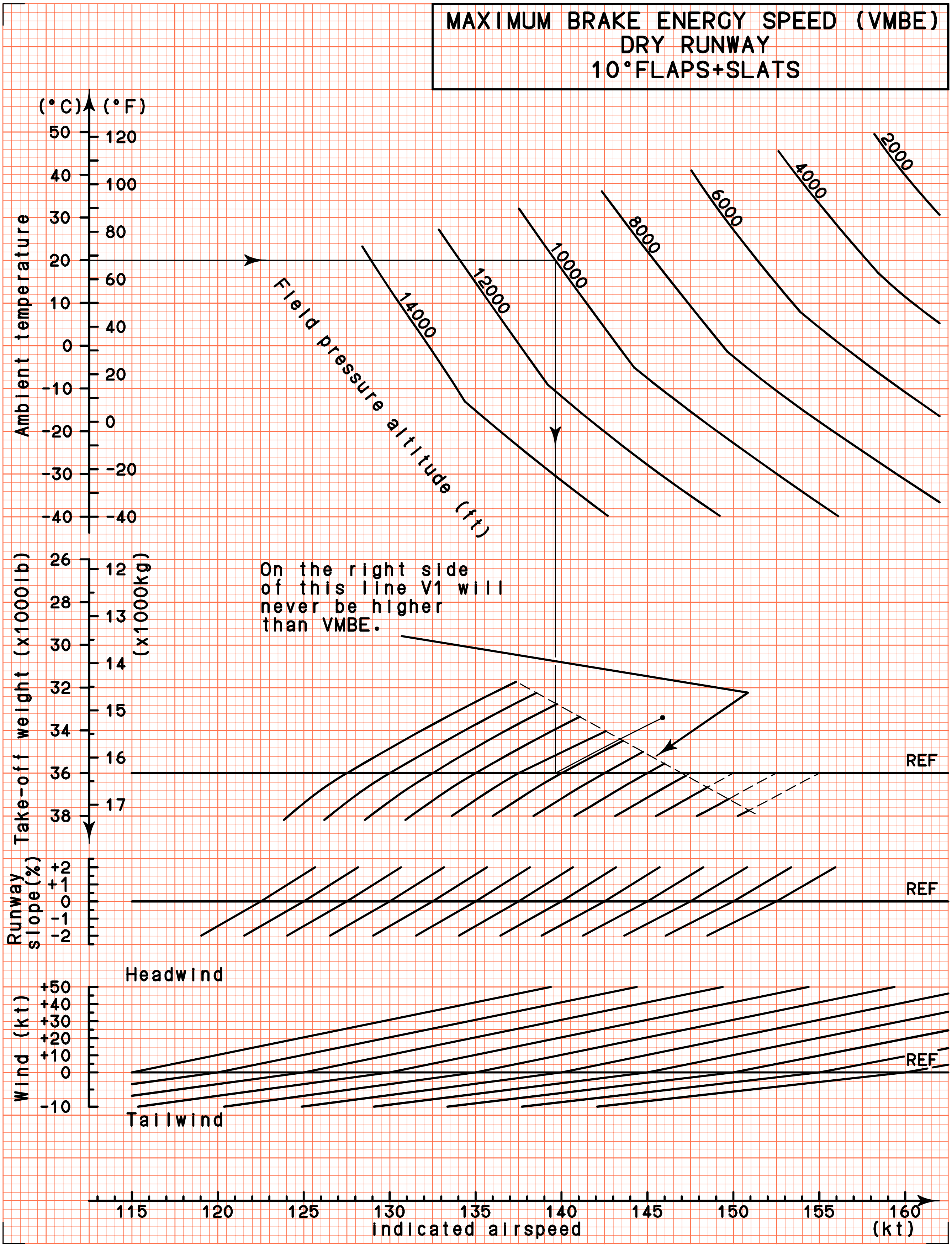

MAXIMUM BRAKE ENERGY SPEED (VMBE)
DRY RUNWAY
10°FLAPS+SLATS
Ambient temperature
(°C) (°F)
Field pressure altitude (ft)
14000
12000
10000
8000
6000
4000
2000
Take-off weight (x1000lb) (x1000kg)
On the right side of this line V1 will never be higher than VMBE.
REF
Runway slope(%)
Wind (kt)
Headwind
Tailwind
Indicated airspeed (kt)

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TAKE-OFF EXAMPLE - WET RUNWAY 10° FLAPS + SLATS

Field pressure altitude: 10,000 ft
Runway length: 7,320 ft

Ambient temperature: 20 °C
Runway slope: -1 % down hill
Headwind: +15 kt

5-550-40 page 1 : Maximum take-off weight
limited by climb requirements .... W1 = 33,000 lb

5-550-20 page 10 : Maximum take-off weight
limited by field length on wet runway .... $W2_{WET}$ = 30,800 lb

5-550-05 page 10 : Maximum take-off weight
limited by field length on dry runway .... $W2_{DRY}$ = 31,300 lb

1-050-05 page 1 : Maximum take-off weight limited by structural limitation: ....35,800 lb

The maximum take-off weight is therefore the
field length limited take-off weight .... W3 = 30,800 lb

5-550-40 page 2 : Second segment gross climb gradient
(enter thru ② for this example) .... 3.2 %

5-550-35 page 1 : Take-off speeds
(enter thru ② for this example) .... VR = 118 kt; V2 = 121 kt
Recommended take-off attitude
(enter thru ② for this example) .... 10.9°

5-550-30 page 1 : Maximum brake energy speed (VMBE):
when the guide line is over to the right side of the dashed line, VMBE is always higher than VR and therefore higher than V1.

5-550-25 pages 2 and 3 : Decision speed associated with balanced field length: 108 kt.
V1 mini = 100 kt.
As V1 is higher than V1 mini and lower
than VR and VMBE .... V1 = 108 kt

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TAKE-OFF EXAMPLE - WET RUNWAY 10° FLAPS + SLATS

Field pressure altitude: 10,000 ft
Runway length: 7,320 ft

Ambient temperature: 20 °C
Runway slope: -1 % down hill
Headwind: +15 kt

5-550-40 page 1 : Maximum take-off weight
limited by climb requirements .... W1 = 33,000 lb

5-550-20 page 10 : Maximum take-off weight
limited by field length on wet runway .... $W2_{WET}$ = 30,800 lb

5-550-05 page 10 : Maximum take-off weight
limited by field length on dry runway .... $W2_{DRY}$ = 31,300 lb

1-050-05A page 1 : Maximum take-off weight limited by structural limitation: ....36,500 lb

The maximum take-off weight is therefore the
field length limited take-off weight .... W3 = 30,800 lb

5-550-40 page 2 : Second segment gross climb gradient
(enter thru ② for this example) .... 3.2 %

5-550-35 page 1 : Take-off speeds
(enter thru ② for this example) ....VR = 118 kt; V2 = 121 kt
Recommended take-off attitude
(enter thru ② for this example) ....10.9°

5-550-30 page 1 : Maximum brake energy speed (VMBE):
when the guide line is over to the right side of the dashed line, VMBE is always higher than VR and therefore higher than V1.

5-550-25 pages 2 and 3 : Decision speed associated with balanced field length: 108 kt.
V1 mini = 100 kt.
As V1 is higher than V1 mini and lower
than VR and VMBE .... V1 = 108 kt

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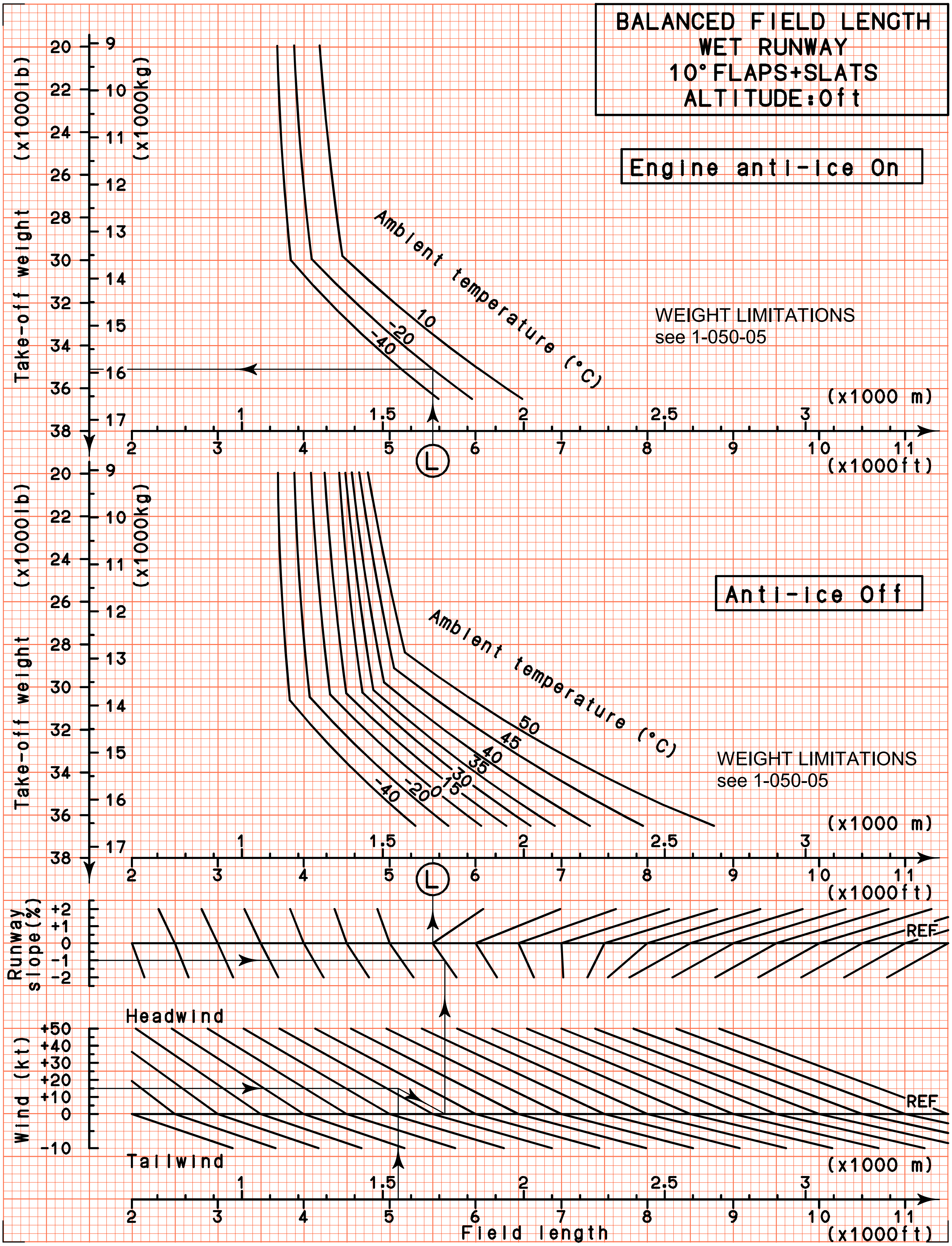
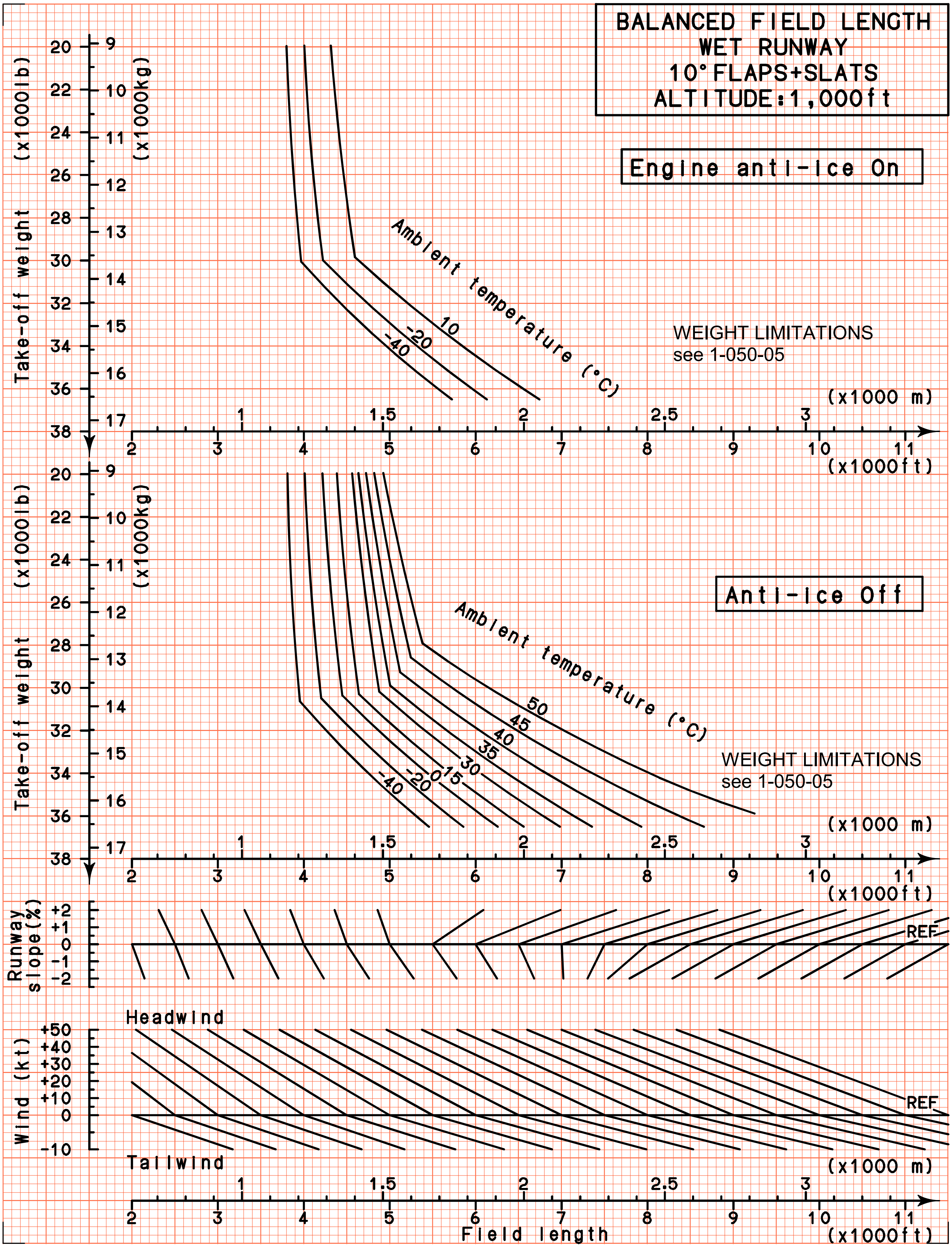
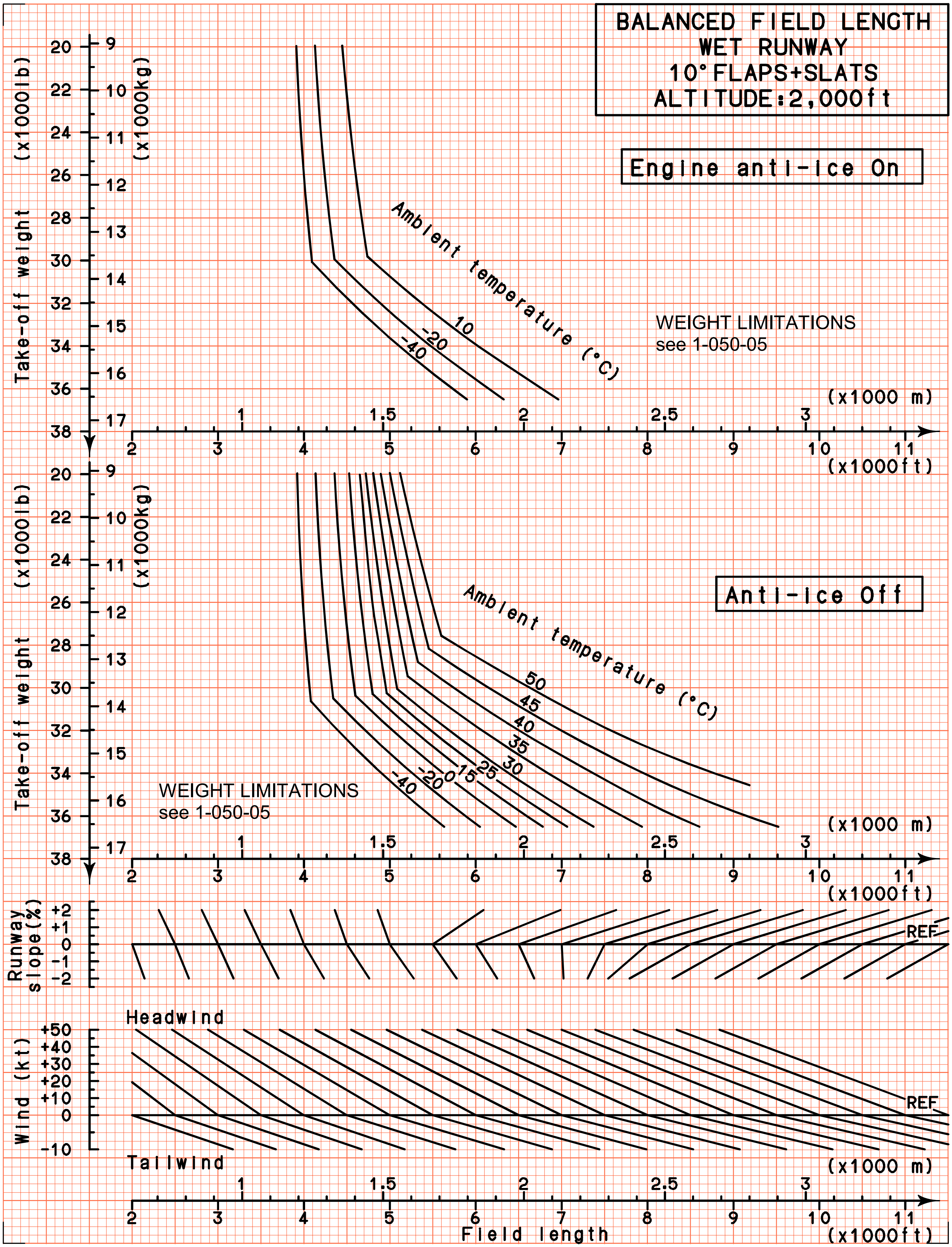
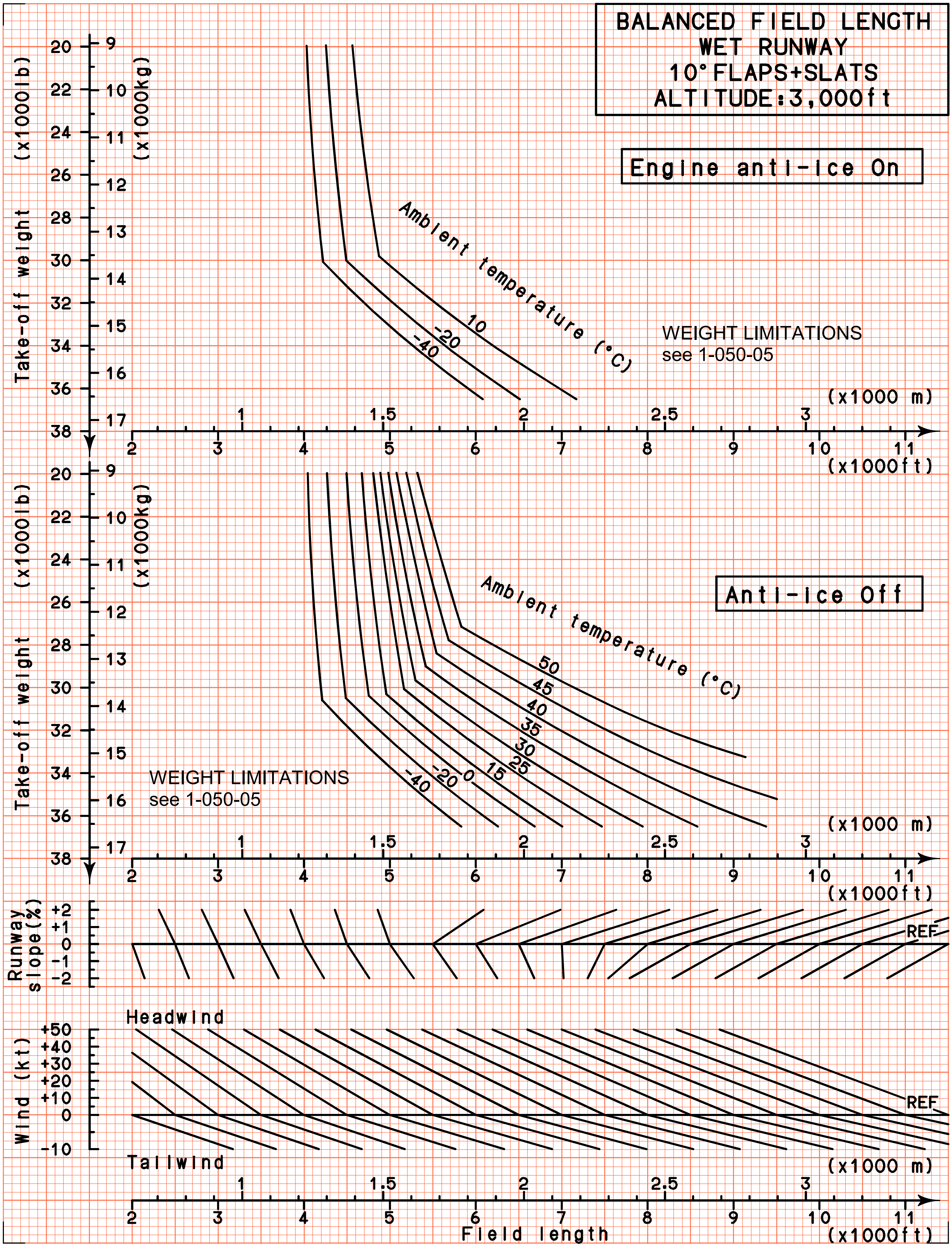

BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:0ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
50
45
40
35
30
15
0
-20
-40
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length

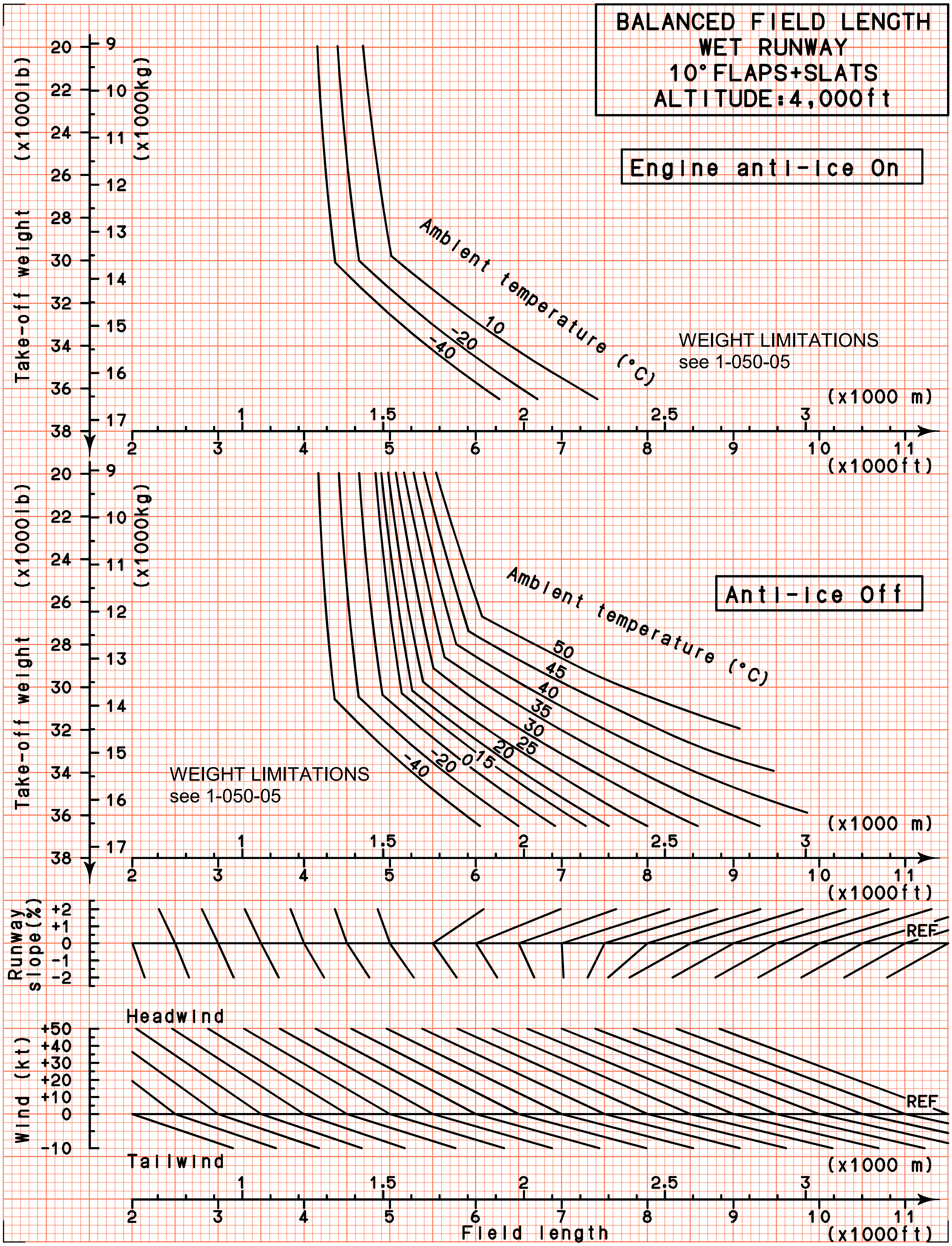


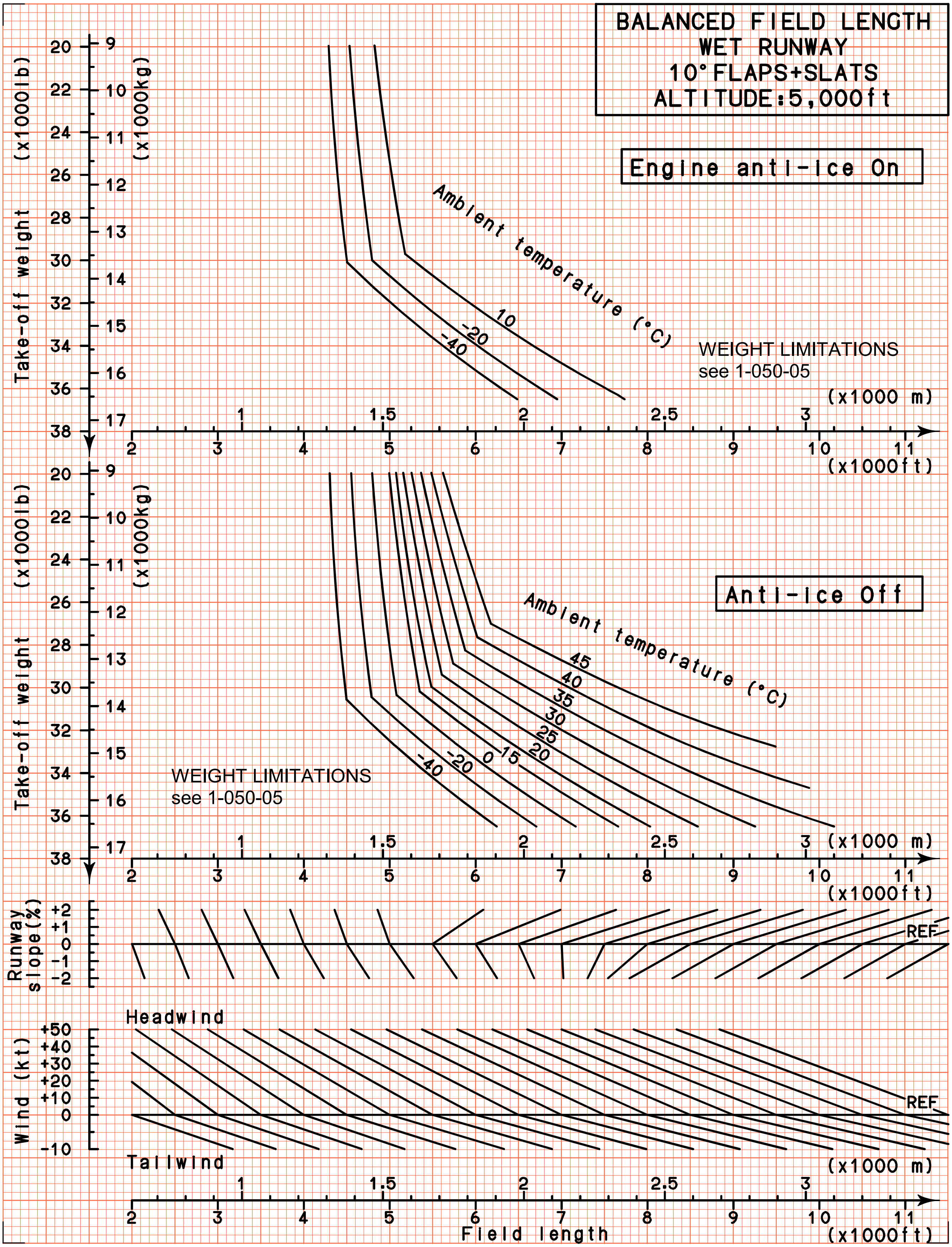
BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:1,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Anti-ice Off
50
45
40
35
30
15
0
-20
-40
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
(x1000 m)
(x1000ft)
Field length

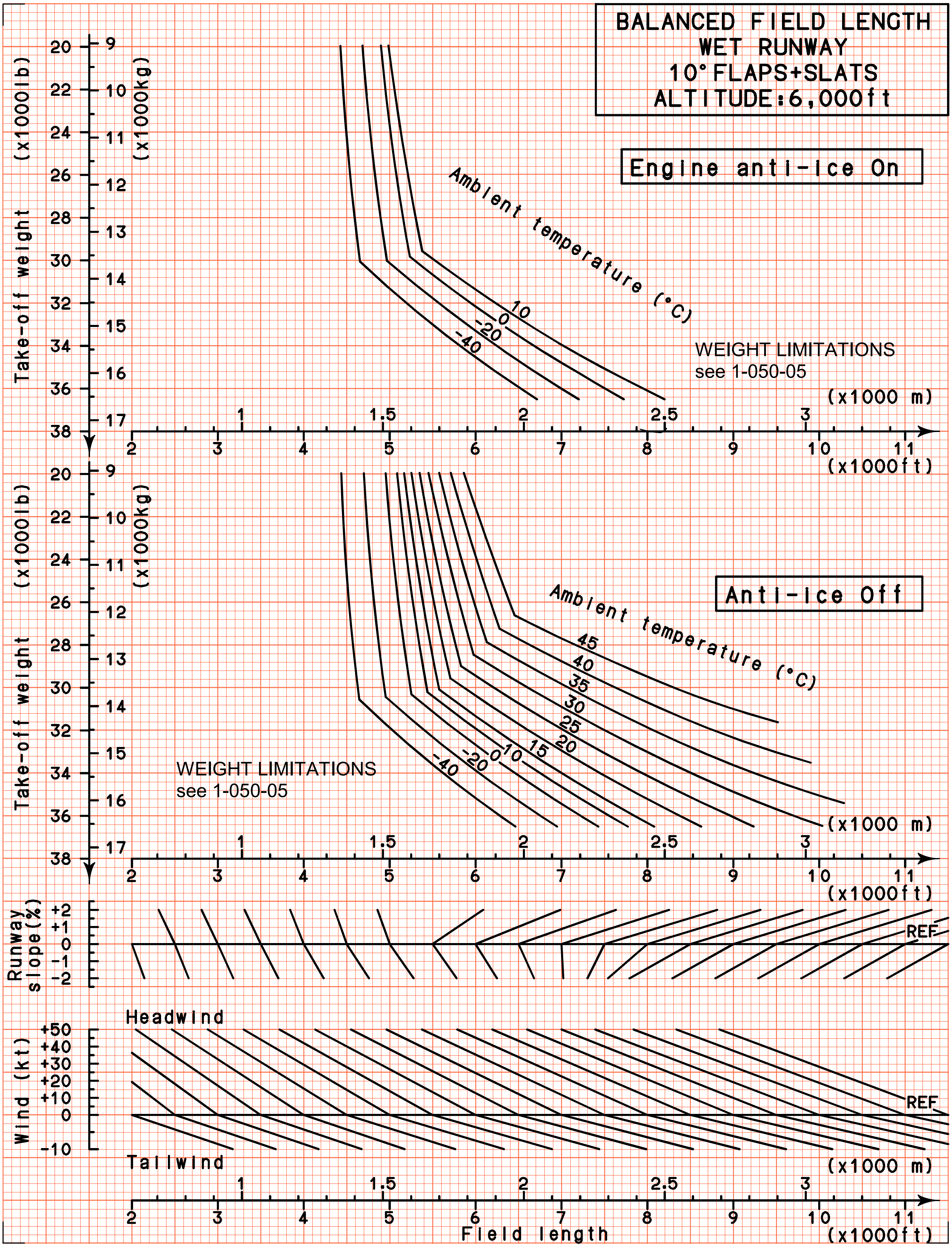


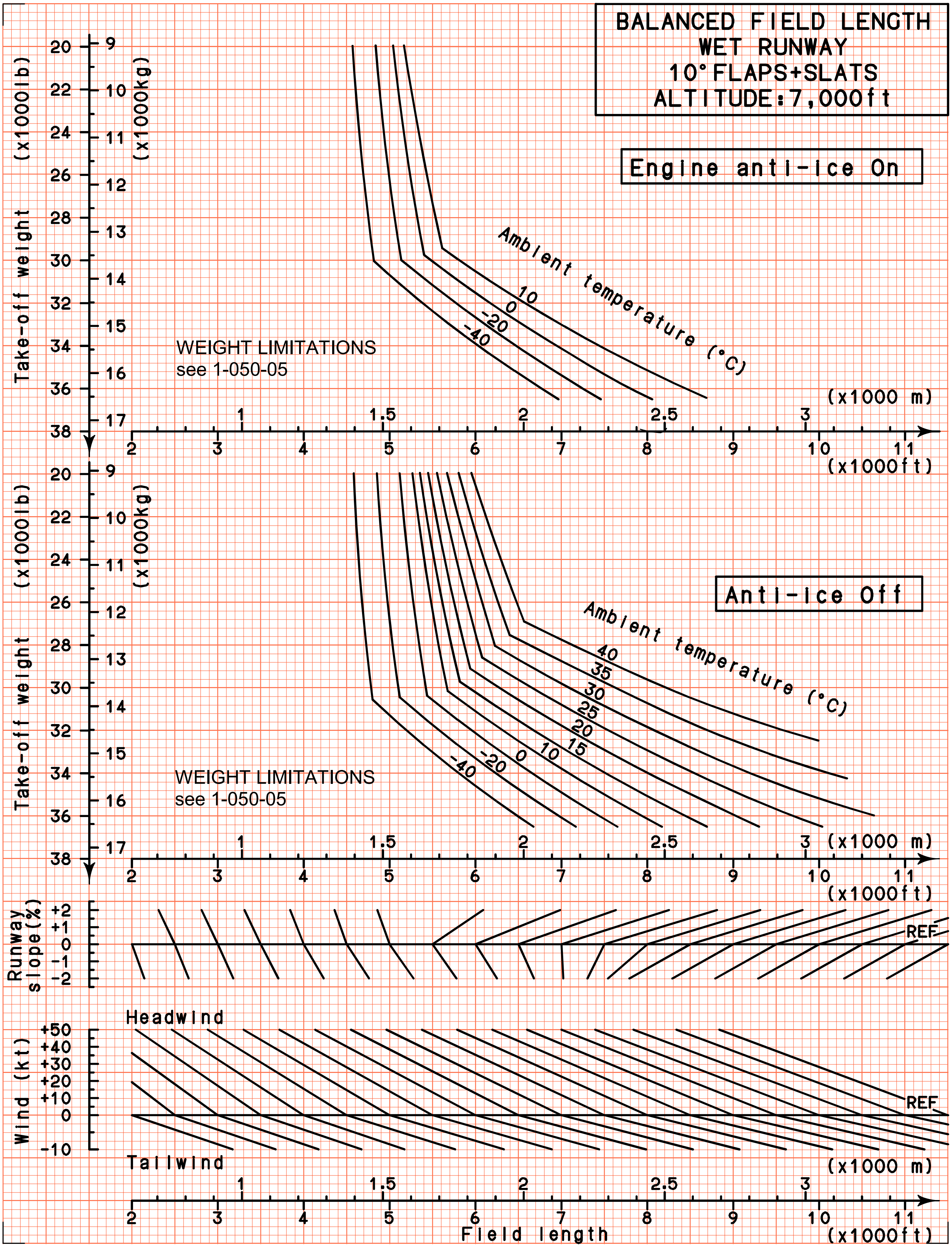
BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:2,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
Field length

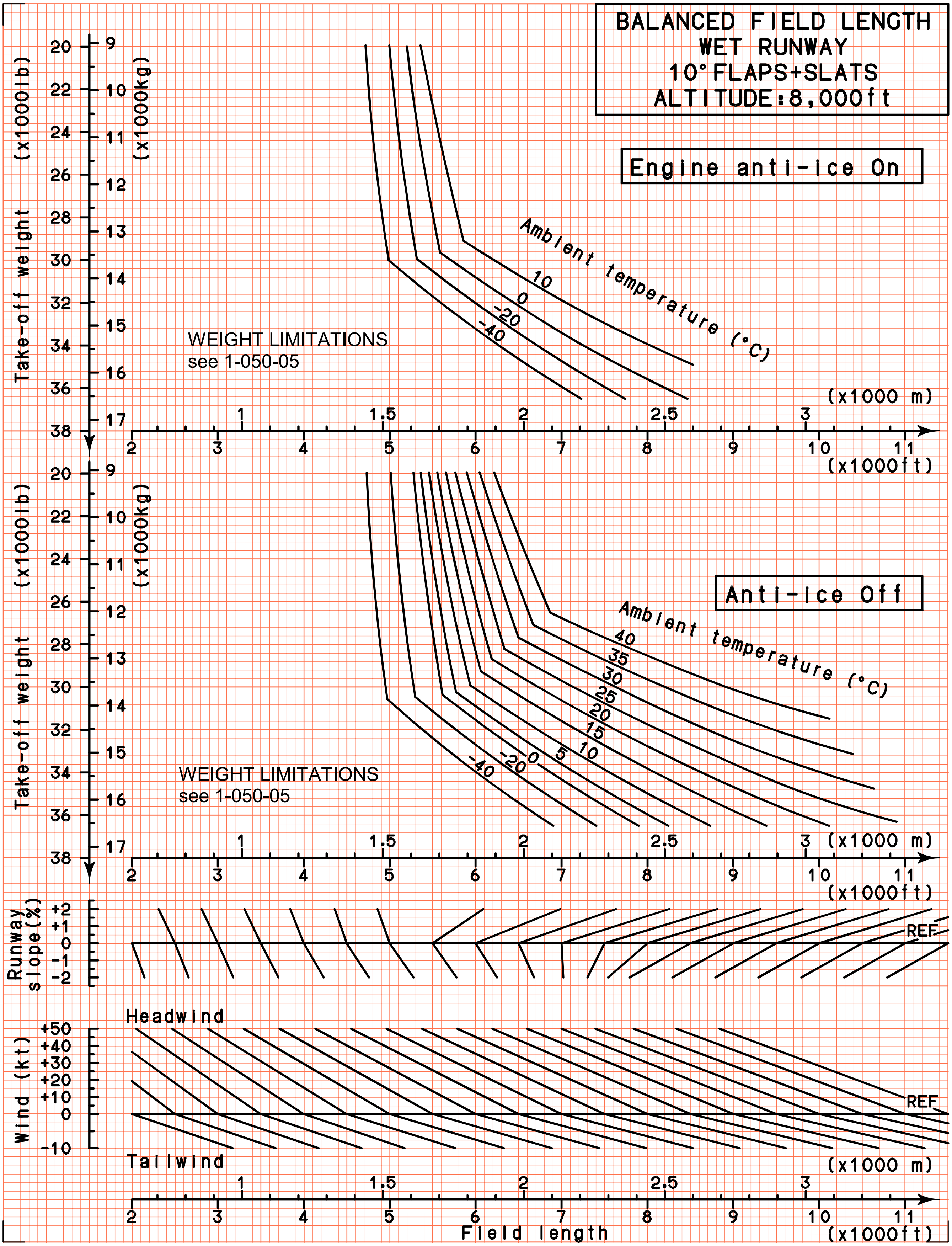

BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:3,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
50
45
40
35
30
25
15
0
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length

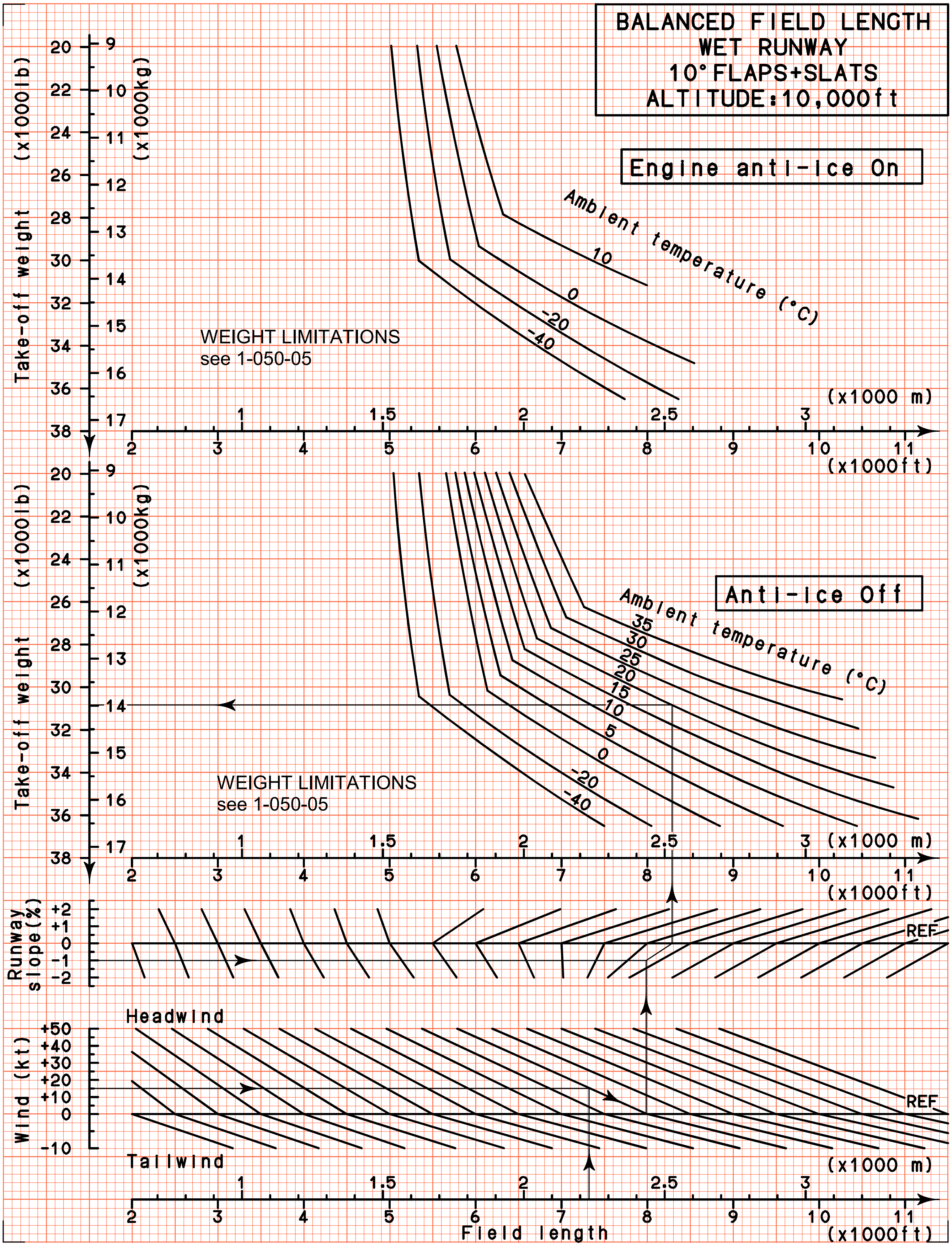

BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:4,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
50
45
40
35
30
25
20
15
0
-20
-40
Runway slope(%)
REF
Headwind
Wind (kt)
Tailwind
Field length


BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:5,000ft
Engine anti-ice On
Ambient temperature (°C)
10
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
45
40
35
30
25
20
15
0
-20
-40
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length

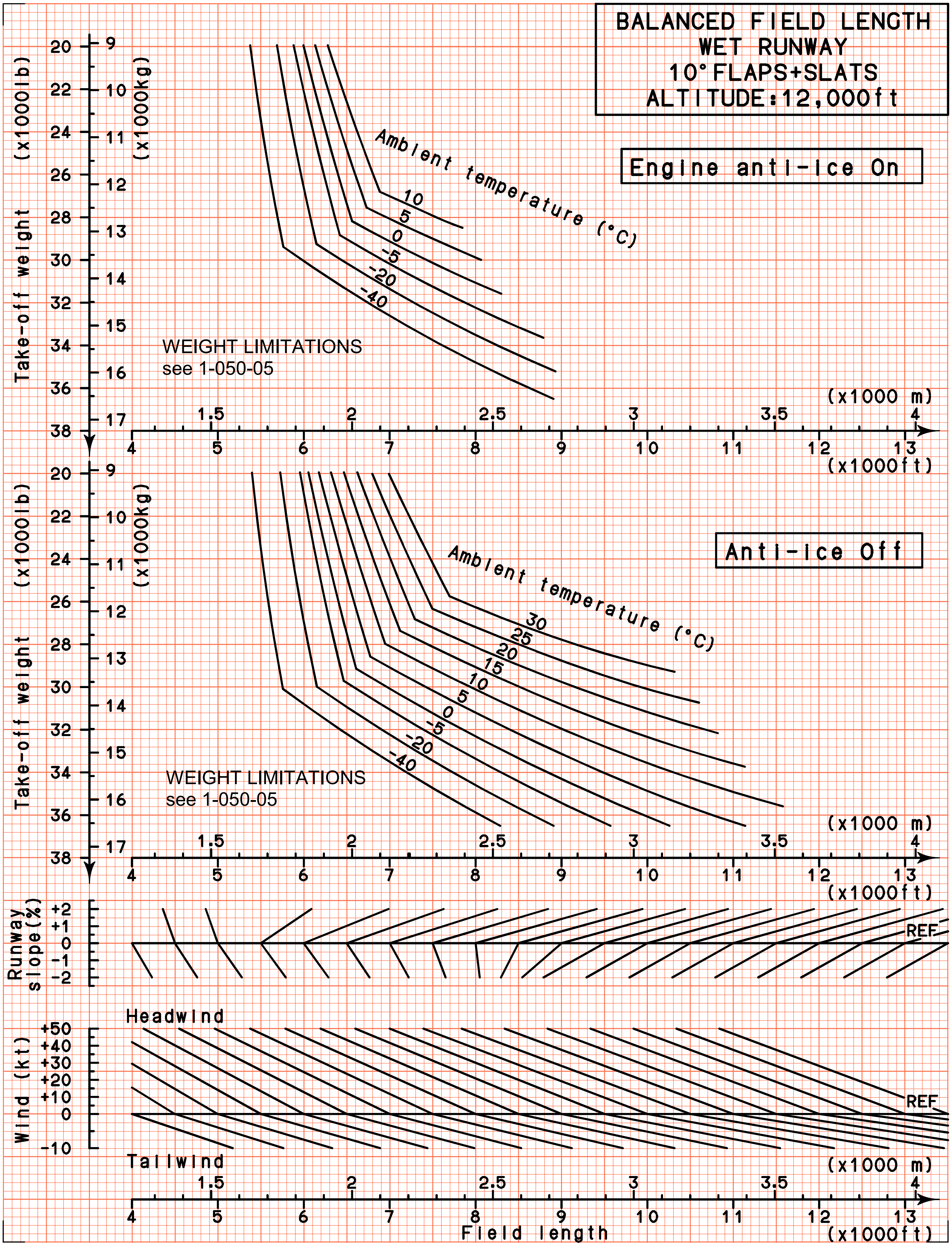

BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:6,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Anti-ice Off
45
40
35
30
25
20
15
10
0
-20
-40
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length
(x1000 m)
(x1000ft)

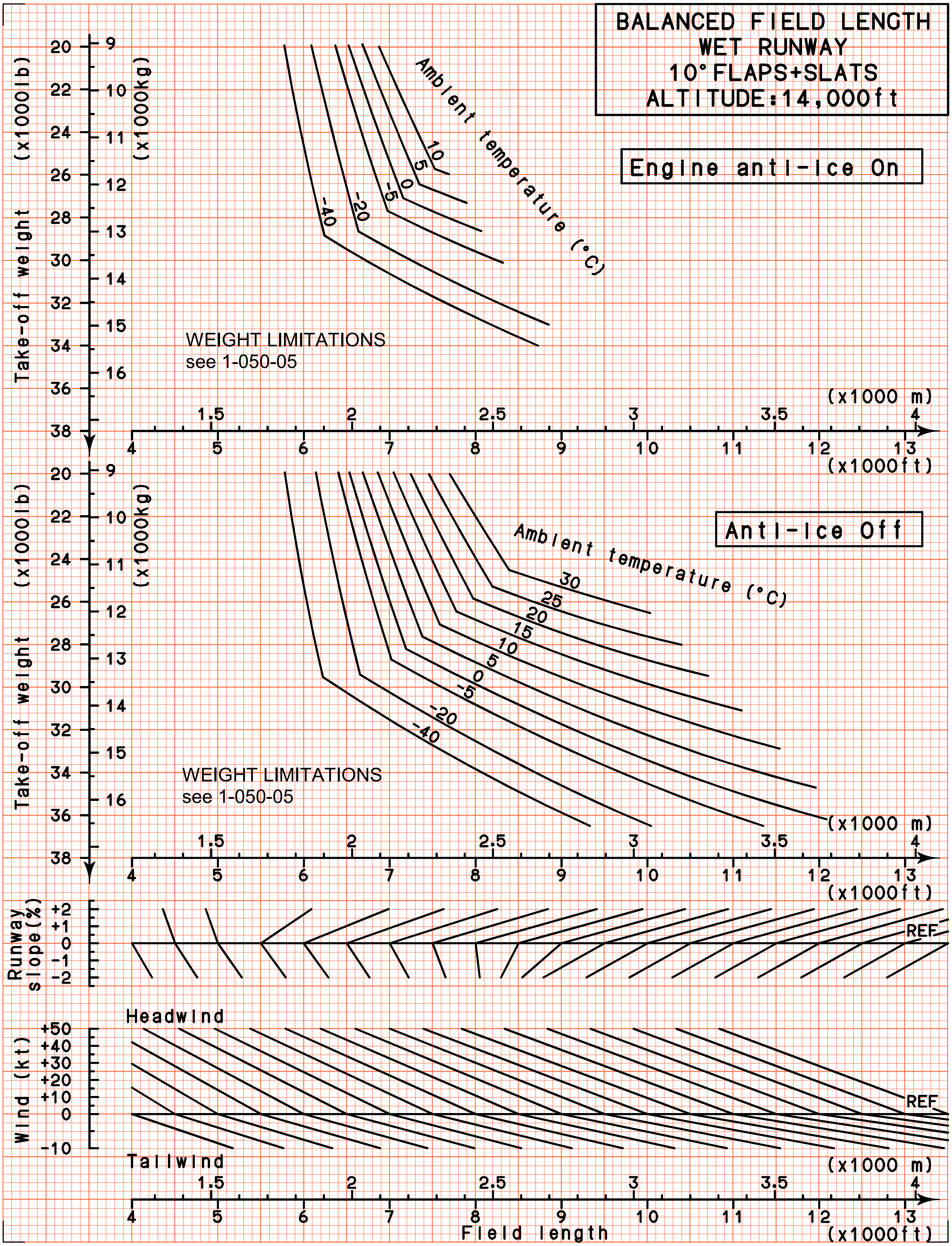

BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:7,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
40
35
30
25
20
15
10
Runway slope(%)
REF
Headwind
Tailwind
Wind (kt)
Field length


BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:8,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
(x1000 m)
(x1000ft)
Anti-ice Off
Ambient temperature (°C)
40
35
30
25
20
15
10
5
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Headwind
Wind (kt)
REF
Tailwind
Field length



BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:10,000ft
Engine anti-ice On
Ambient temperature (°C)
10
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Anti-ice Off
Ambient temperature (°C)
35
30
25
20
15
10
5
0
-20
-40
WEIGHT LIMITATIONS
see 1-050-05
Take-off weight (x1000lb)
(x1000kg)
Runway slope(%)
REF
Headwind
Wind (kt)
Tailwind
REF
(x1000 m)
(x1000ft)
Field length


BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE: 12,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
Take-off weight (x1000lb)
(x1000kg)
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
REF
Wind (kt)
Headwind
Tailwind
Field length
(x1000 m)
(x1000ft)


BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
ALTITUDE:14,000ft
Engine anti-ice On
Anti-ice Off
Ambient temperature (°C)
Take-off weight (x1000lb)
(x1000kg)
WEIGHT LIMITATIONS
see 1-050-05
Runway slope(%)
Wind (kt)
Headwind
Tailwind
REF
(x1000 m)
(x1000ft)
Field length

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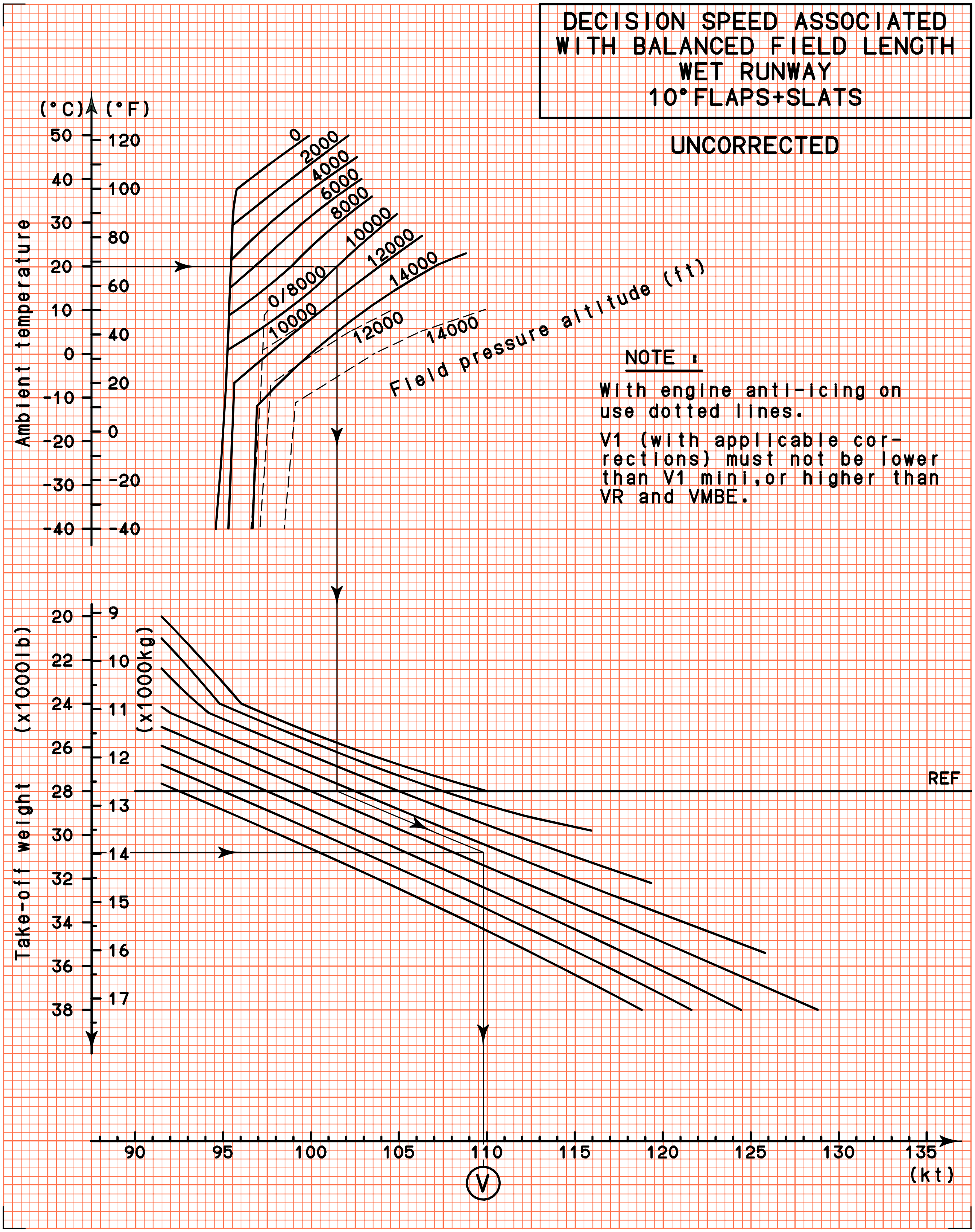
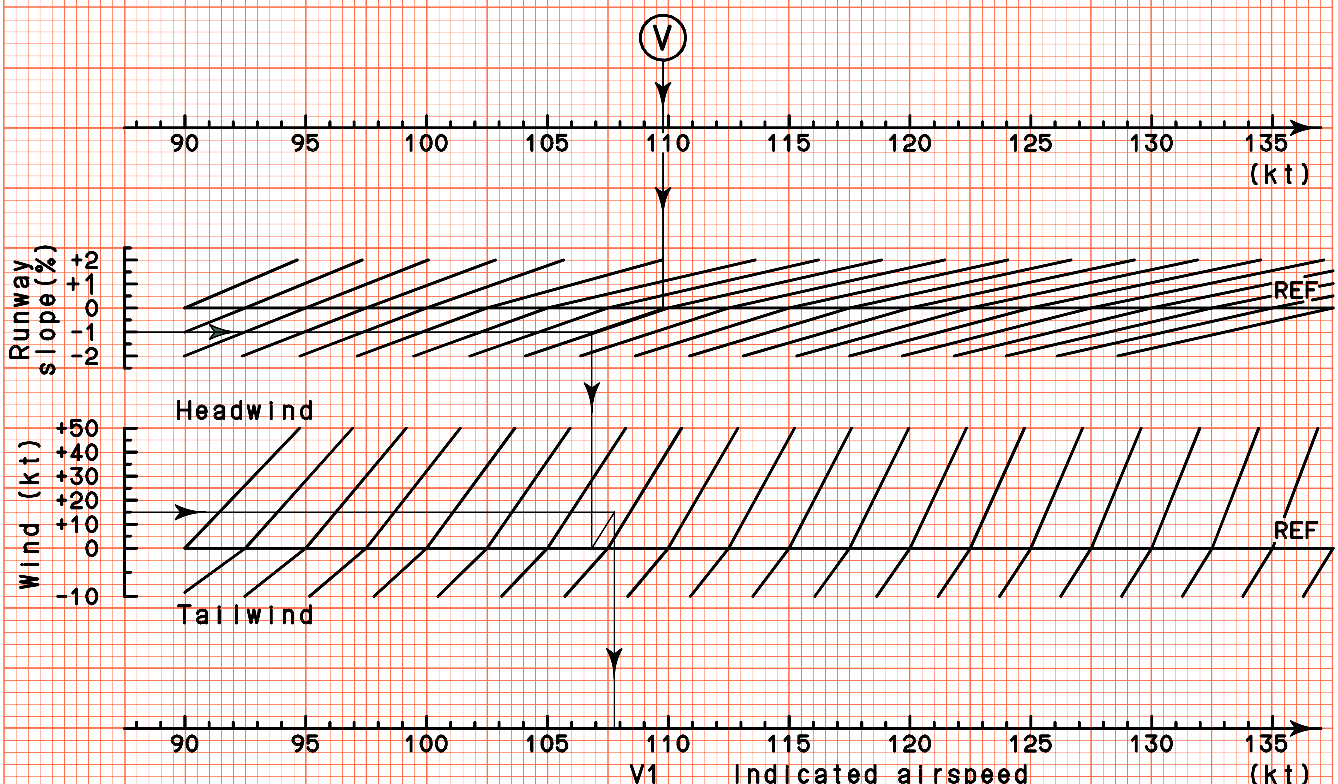

DECISION SPEED ASSOCIATED
WITH BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS
UNCORRECTED
(°C)
(°F)
Ambient temperature
0
2000
4000
6000
8000
10000
12000
14000
0/8000
10000
12000
14000
Field pressure altitude (ft)
NOTE :
With engine anti-icing on use dotted lines.
V1 (with applicable corrections) must not be lower than V1 mini, or higher than VR and VMBE.
Take-off weight (x1000lb)
(x1000kg)
REF
(kt)
V

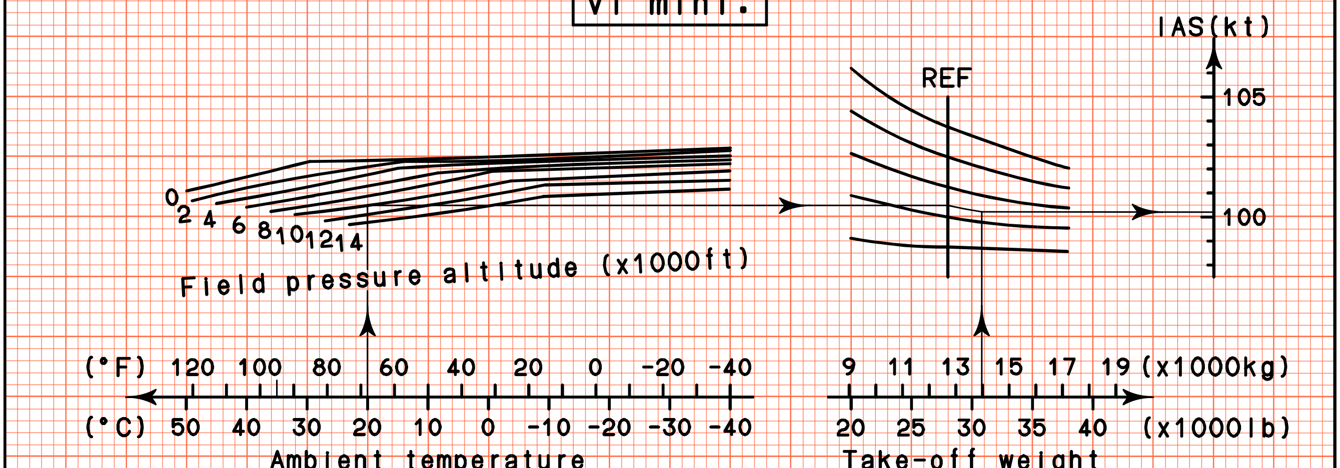
DECISION SPEED ASSOCIATED WITH BALANCED FIELD LENGTH
WET RUNWAY
10° FLAPS+SLATS

APPLICABLE CORRECTIONS



NOTE : V1 must not be lower than V1 mini,or higher than VR and VMBE.

V1 mini.



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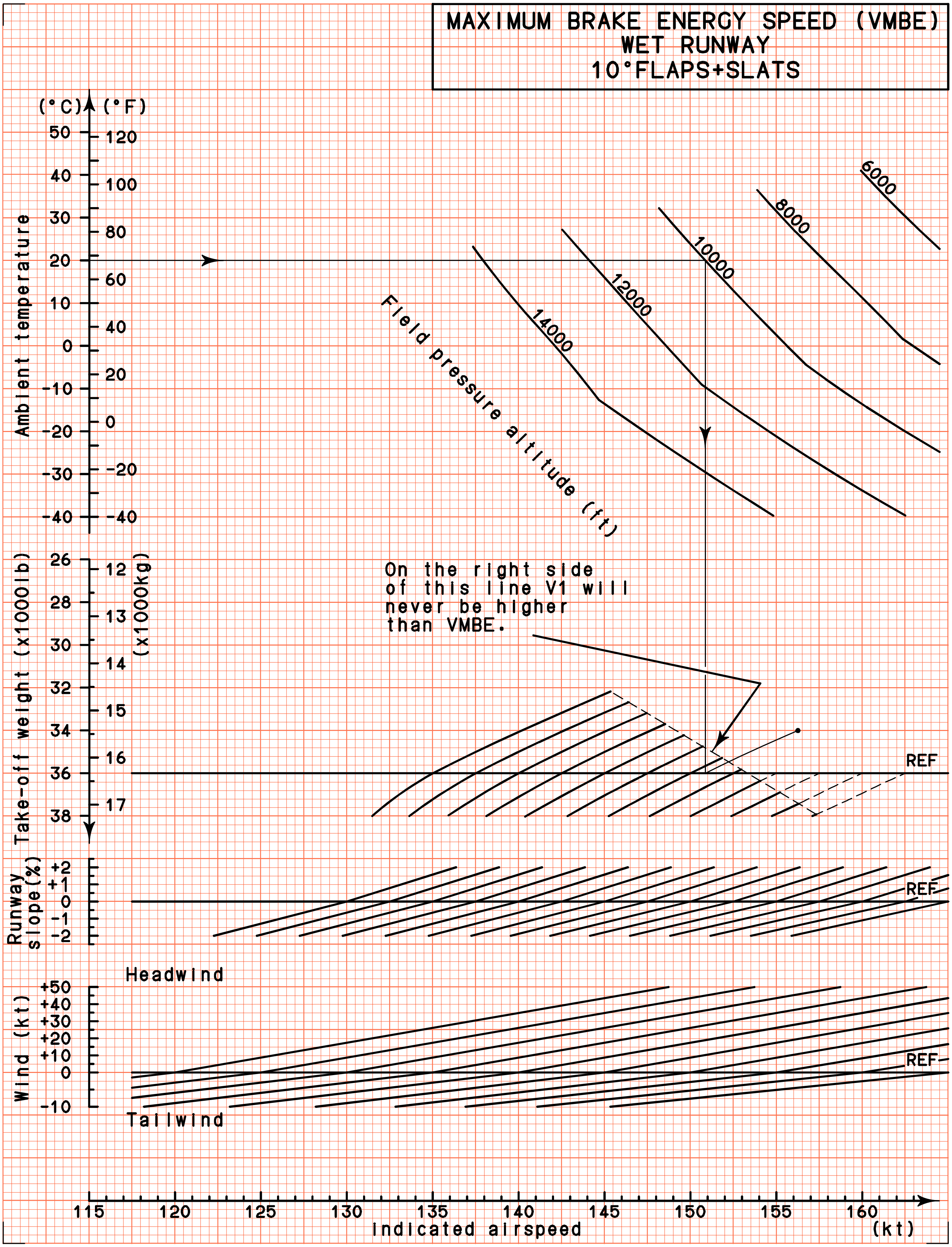
MAXIMUM BRAKE ENERGY SPEED (VMBE)
WET RUNWAY
10°FLAPS+SLATS
(°C) (°F)
Ambient temperature
50 40 30 20 10 0 -10 -20 -30 -40
120 100 80 60 40 20 0 -20 -40
Field pressure altitude (ft)
14000
12000
10000
8000
6000
Take-off weight (x1000lb)
26 28 30 32 34 36 38
(x1000kg)
12 13 14 15 16 17
On the right side
of this line V1 will
never be higher
than VMBE.
REF
Runway slope(%)
+2 +1 0 -1 -2
REF
Headwind
Wind (kt)
+50 +40 +30 +20 +10 0 -10
REF
Tailwind
115 120 125 130 135 140 145 150 155 160
indicated airspeed (kt)

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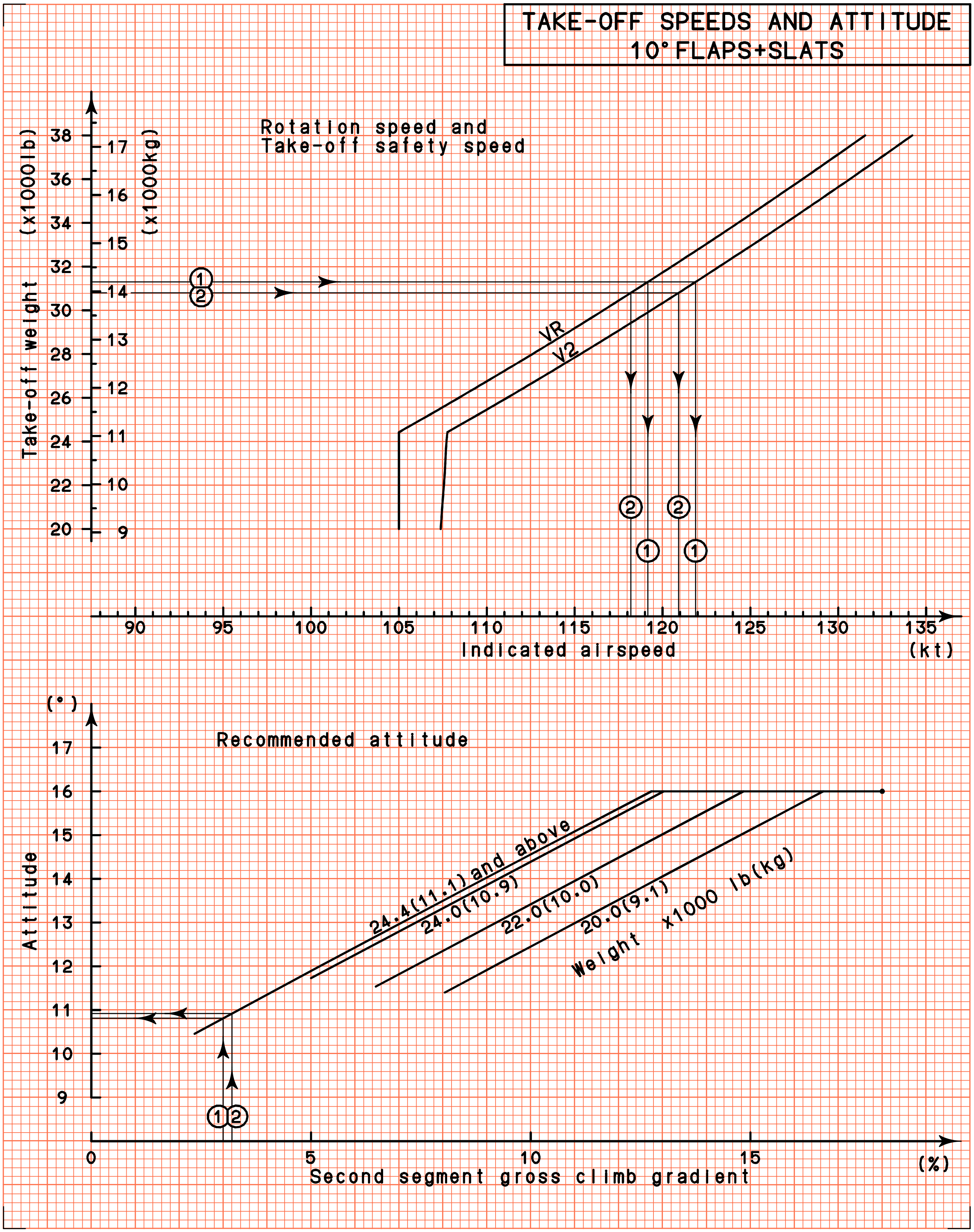

TAKE-OFF SPEEDS AND ATTITUDE
10° FLAPS+SLATS
Rotation speed and
Take-off safety speed
Take-off weight (x1000lb)
(x1000kg)
38
36
34
32
30
28
26
24
22
20
17
16
15
14
13
12
11
10
9
VR
V2
1
2
90
95
100
105
110
115
120
125
130
135
Indicated airspeed
(kt)
(°)
Recommended attitude
Attitude
17
16
15
14
13
12
11
10
9
24.4(11.1) and above
24.0(10.9)
22.0(10.0)
20.0(9.1)
Weight x1000 lb(kg)
0
5
10
15
(%)
Second segment gross climb gradient

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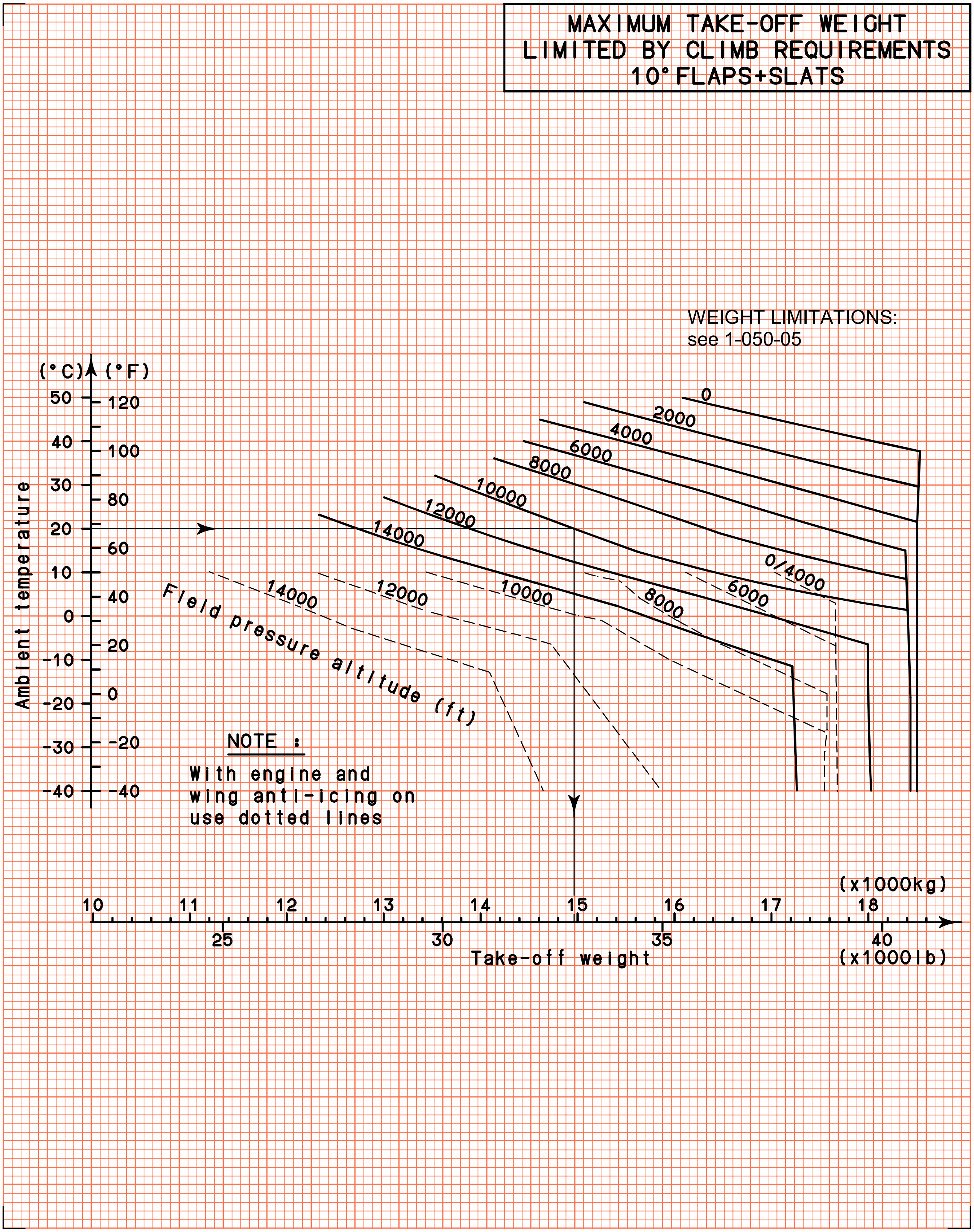
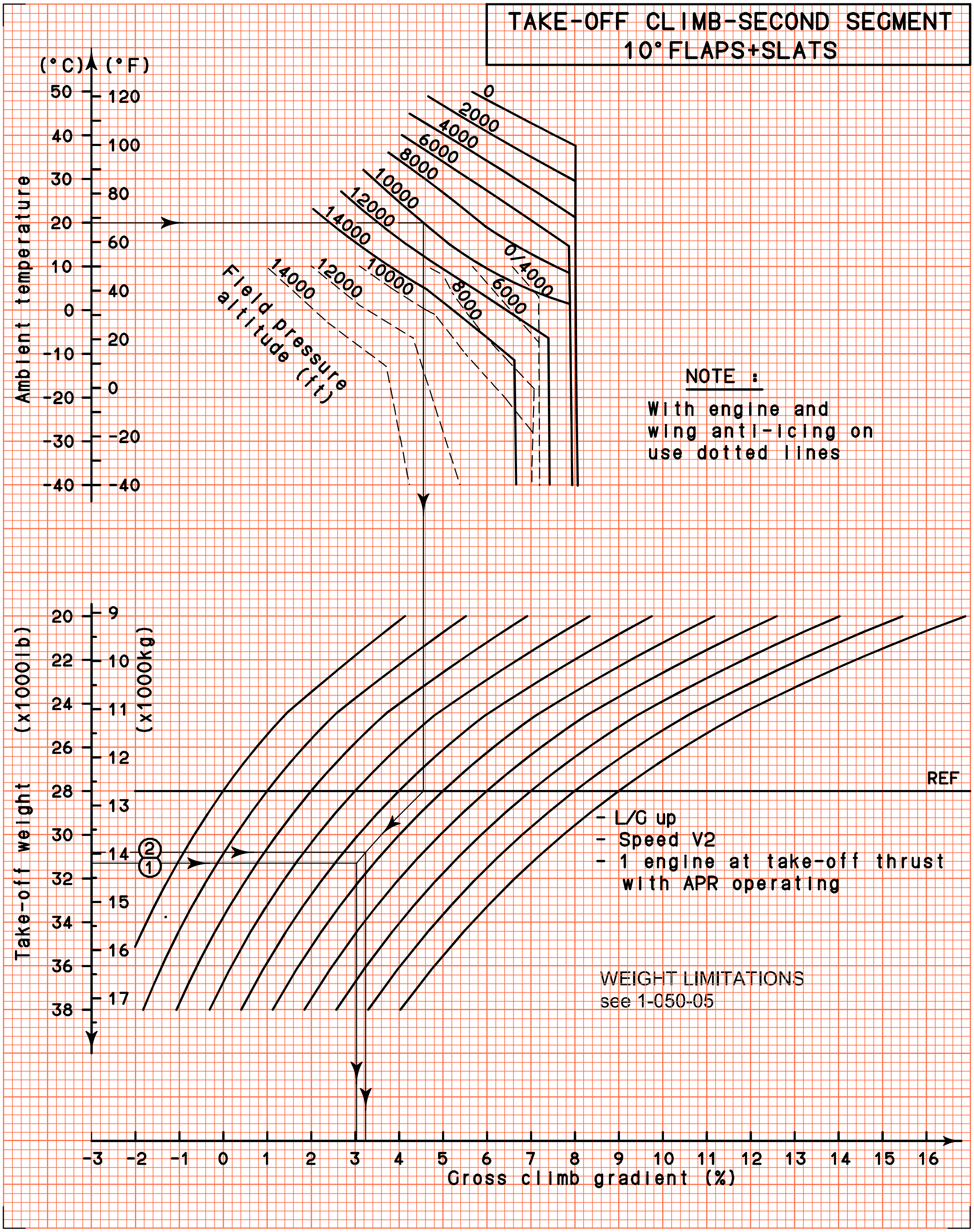
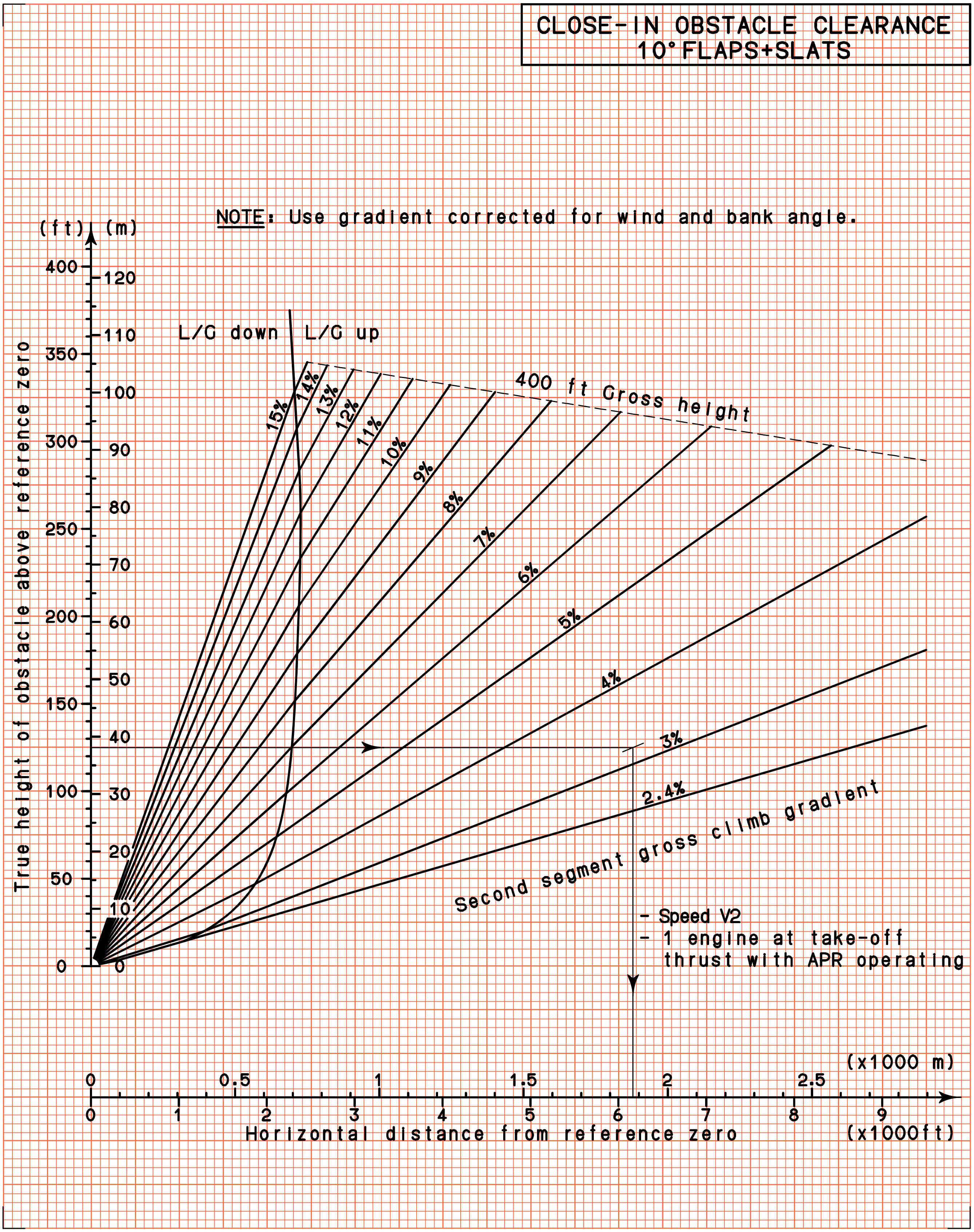

MAXIMUM TAKE-OFF WEIGHT
LIMITED BY CLIMB REQUIREMENTS
10° FLAPS+SLATS
WEIGHT LIMITATIONS:
see 1-050-05
(°C)
(°F)
Ambient temperature
0
2000
4000
6000
8000
10000
12000
14000
0/4000
6000
8000
10000
12000
14000
Field pressure altitude (ft)
NOTE :
With engine and
wing anti-icing on
use dotted lines
(x1000kg)
(x1000lb)
Take-off weight

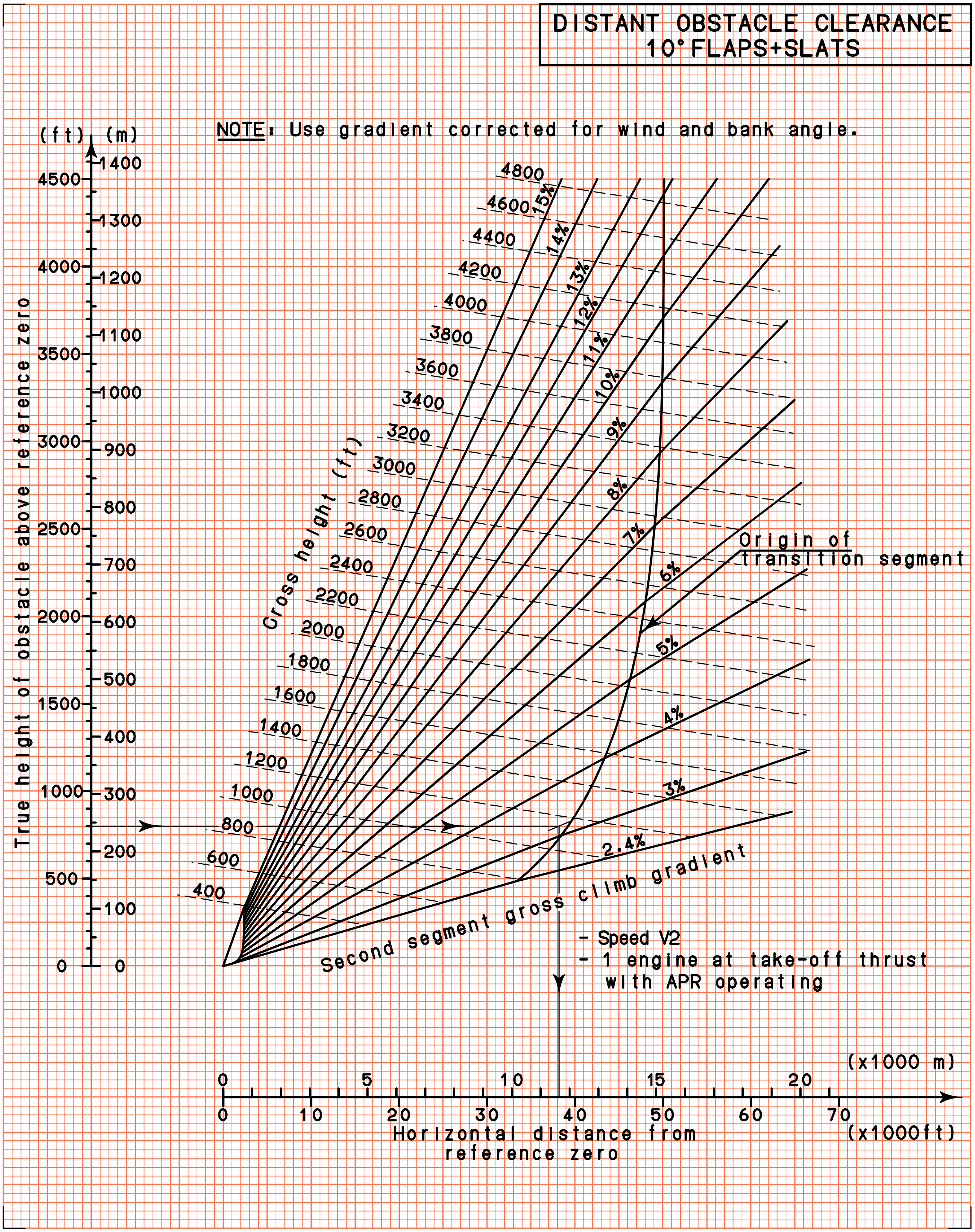


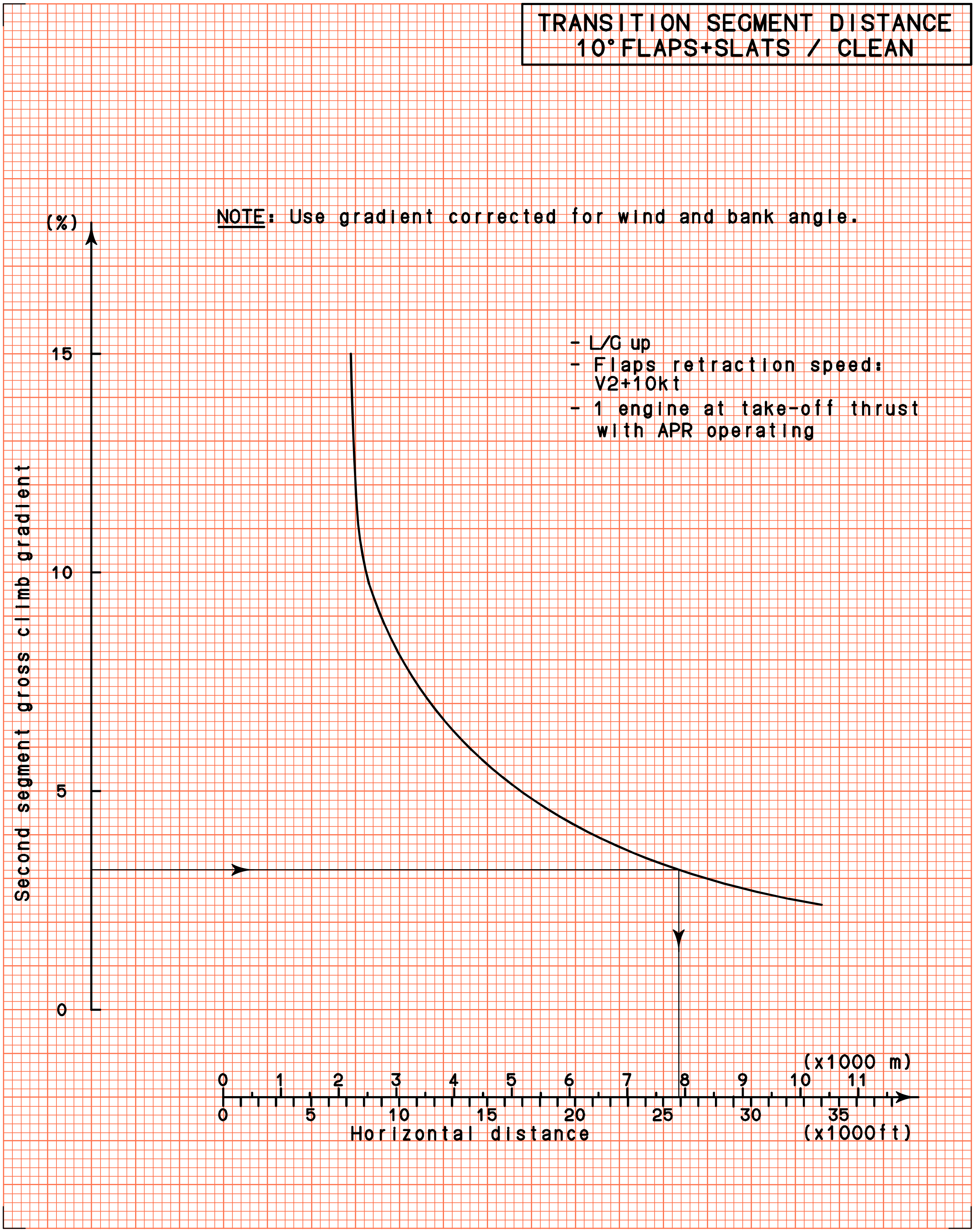
TAKE-OFF CLIMB-SECOND SEGMENT
10° FLAPS+SLATS
(°C) (°F)
Ambient temperature
Field pressure altitude (ft)
0
2000
4000
6000
8000
10000
12000
14000
0/4000
6000
8000
10000
12000
14000
NOTE :
With engine and wing anti-icing on use dotted lines
Take-off weight (x1000lb) (x1000kg)
REF
- L/G up
- Speed V2
- 1 engine at take-off thrust with APR operating
WEIGHT LIMITATIONS
see 1-050-05
Gross climb gradient (%)



CLOSE-IN OBSTACLE CLEARANCE
10° FLAPS+SLATS
NOTE: Use gradient corrected for wind and bank angle.
(ft)
(m)
400
350
300
250
200
150
100
50
0
120
110
100
90
80
70
60
50
40
30
20
10
0
True height of obstacle above reference zero
L/G down
L/G up
400 ft Gross height
15%
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2.4%
Second segment gross climb gradient
- Speed V2
- 1 engine at take-off thrust with APR operating
0
0.5
1
1.5
2
2.5
(x1000 m)
0
1
2
3
4
5
6
7
8
9
Horizontal distance from reference zero
(x1000ft)

DISTANT OBSTACLE CLEARANCE 10° FLAPS+SLATS




TRANSITION SEGMENT DISTANCE
10° FLAPS+SLATS / CLEAN
NOTE: Use gradient corrected for wind and bank angle.
(%)
Second segment gross climb gradient
15
10
5
0
- L/G up
- Flaps retraction speed: V2+10kt
- 1 engine at take-off thrust with APR operating
(x1000 m)
0 1 2 3 4 5 6 7 8 9 10 11
0 5 10 15 20 25 30 35
Horizontal distance
(x1000ft)

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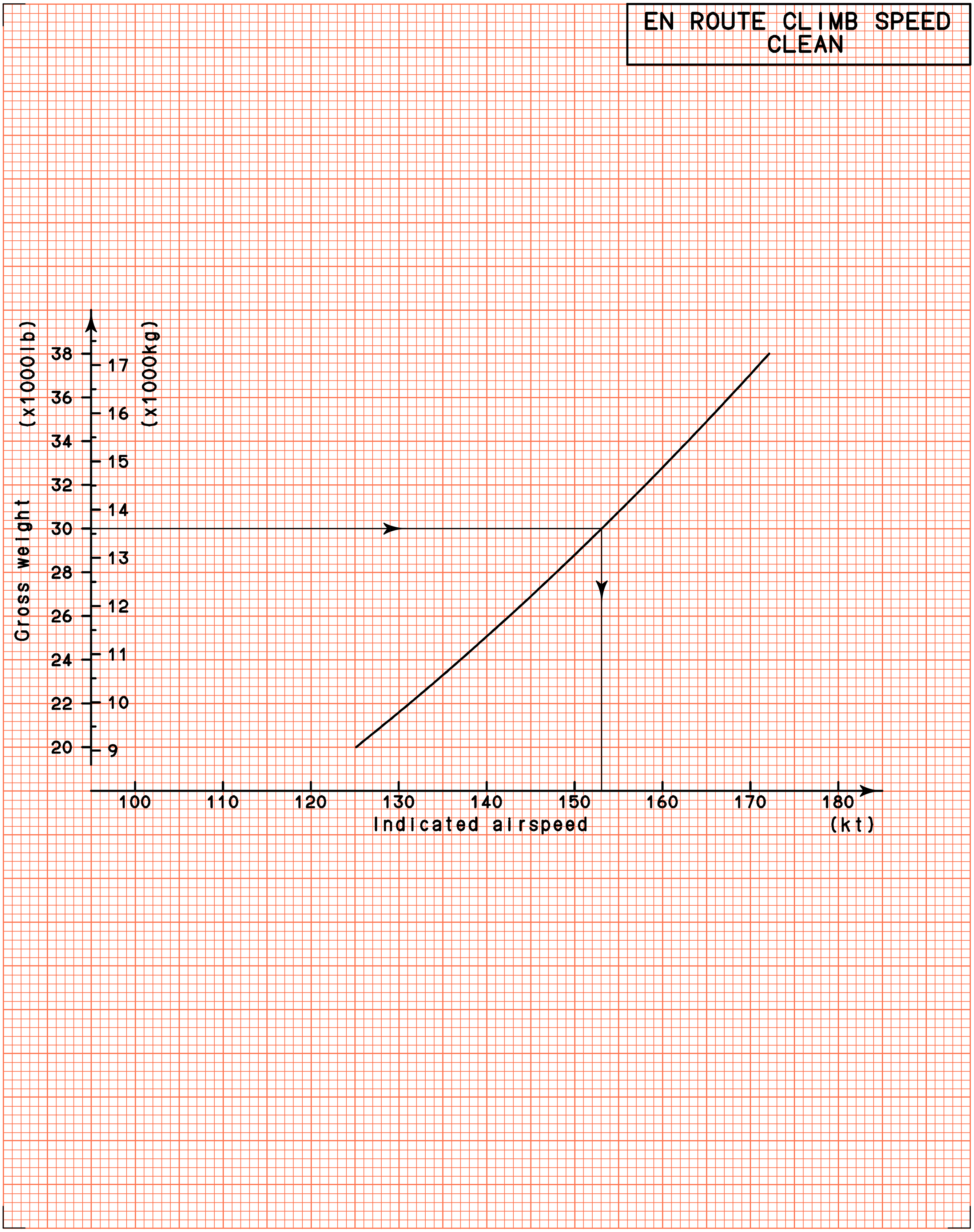
EN ROUTE CLIMB SPEED CLEAN
Gross weight (x1000lb)
(x1000kg)
38
36
34
32
30
28
26
24
22
20
17
16
15
14
13
12
11
10
9
100
110
120
130
140
150
160
170
180
Indicated airspeed
(kt)

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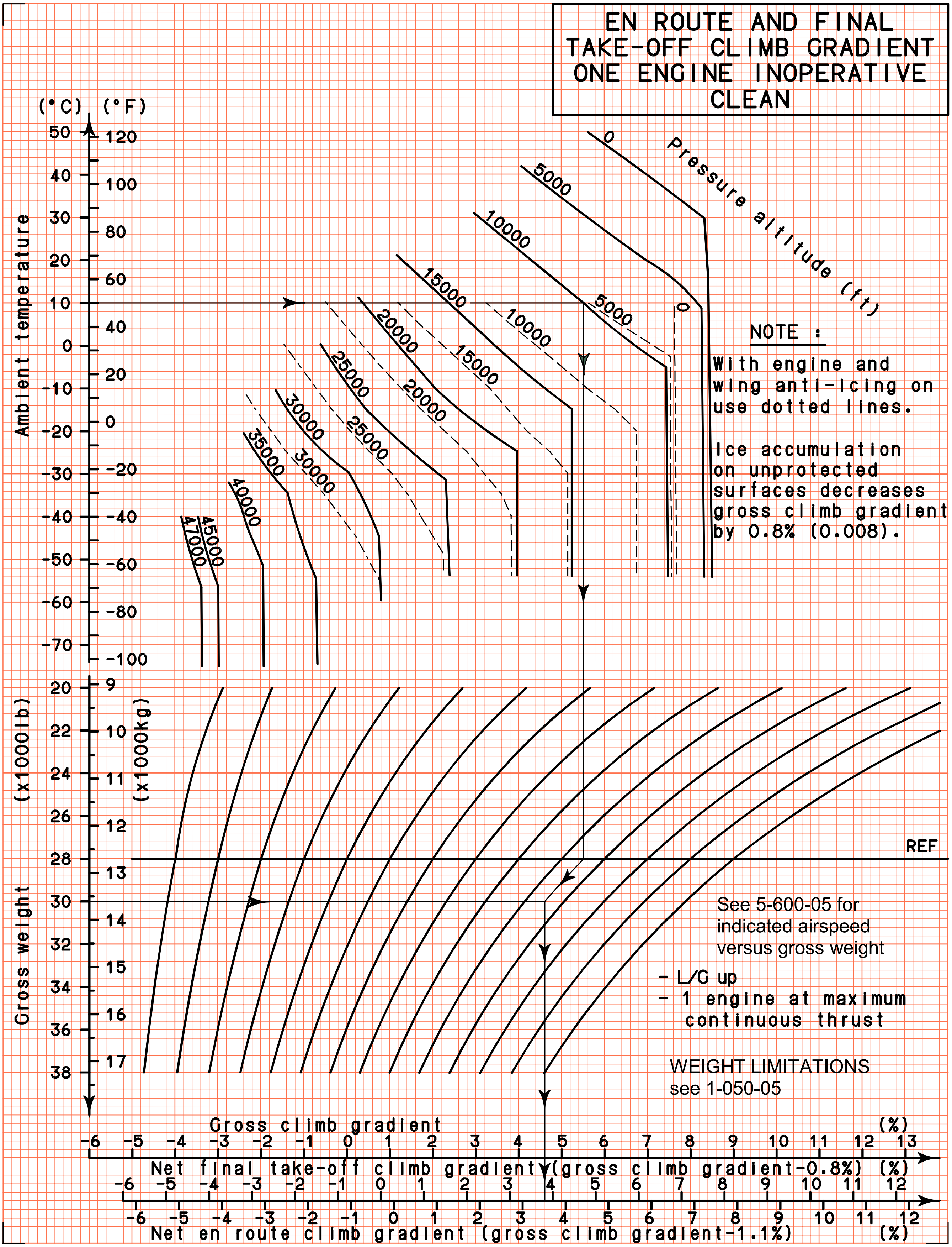

EN ROUTE AND FINAL TAKE-OFF CLIMB GRADIENT ONE ENGINE INOPERATIVE CLEAN
(°C) (°F)
Ambient temperature
Pressure altitude (ft)
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
47000
NOTE :
With engine and wing anti-icing on use dotted lines.
Ice accumulation on unprotected surfaces decreases gross climb gradient by 0.8% (0.008).
Gross weight
(x1000lb)
(x1000kg)
REF
See 5-600-05 for indicated airspeed versus gross weight
- L/G up
- 1 engine at maximum continuous thrust
WEIGHT LIMITATIONS see 1-050-05
Gross climb gradient (%)
Net final take-off climb gradient (gross climb gradient-0.8%) (%)
Net en route climb gradient (gross climb gradient-1.1%) (%)

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APPROACH AND LANDING EXAMPLE

Field pressure altitude: 4,000 ft
Runway length: 5,760 ft
Gross weight at destination: 25,000 lb

Ambient temperature: 37 °C
Headwind: +30 kt

5-700-10 page 1 : Maximum landing weight limited by approach and landing climb gradient requirements - Approach 10° FLAPS + SLATS / Landing 40° FLAPS + SLATS ....36,100 lb

5-700-25 page 1 : In accordance with the relevant operating regulations:
Maximum landing weight limited by landing distance .... Higher than 38,000 lb
Maximum landing weight limited by landing field length (assuming 1.67 factor) .... Higher than 38,000 lb
Maximum landing weight limited by landing field length (assuming 1.92 factor) ....33,850 lb

1-050-05 page 1 : Maximum landing weight limited by structural limitation ....33.000 lb

The maximum landing weight is the lowest of maximum landing weights limited by maximum brake energy, climb gradient requirements, available runway length and structural limitations.......................33,000 lb

So, anticipated landing weight of 25,000 lb is lower than maximum allowable landing weight of 33,000 lb. For this weight (25,000 lb):

5-700-15 page 1 : One engine inoperative approach climb gradient 10° FLAPS+SLATS.................... 7.4 %

5-700-20 page 1 : All engines operating landing climb gradient 40° FLAPS+SLATS.................... 14.3 %

5-700-25 page 2 : Landing speed 40° FLAPS+SLATS.................... VREF = 109.5 kt

5-700-25 page 1 : Landing distance 40° FLAPS+SLATS .... 2,350 ft
Landing field length assuming 1.67 factor .... 3,900 ft
Landing field length assuming 1.92 factor .... 4,500 ft

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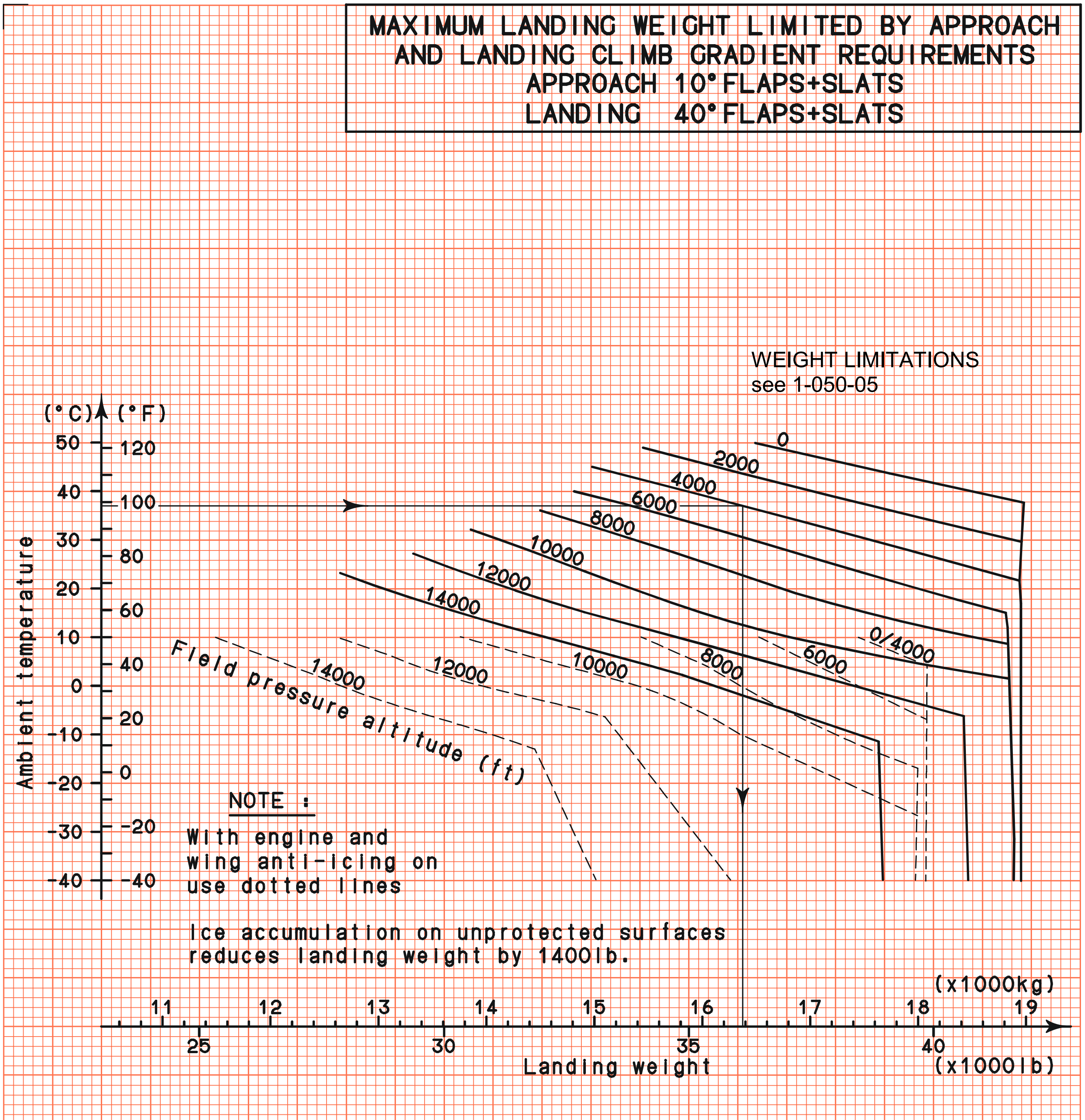

NOTE : APU door closed - For APU door open reduce landing weight 500lb

DASSAULT AVIATION Proprietary Data

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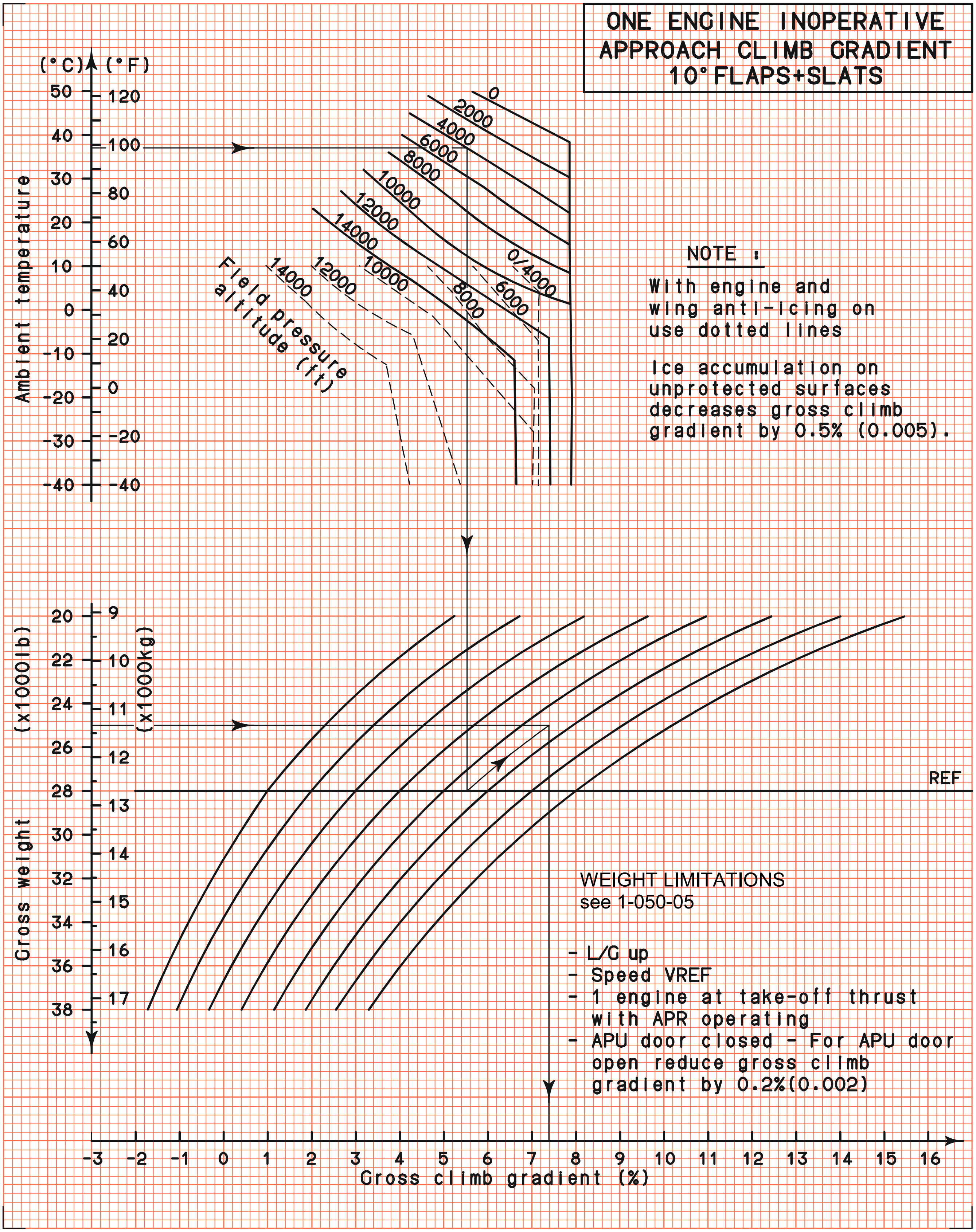

DASSAULT AVIATION Proprietary Data

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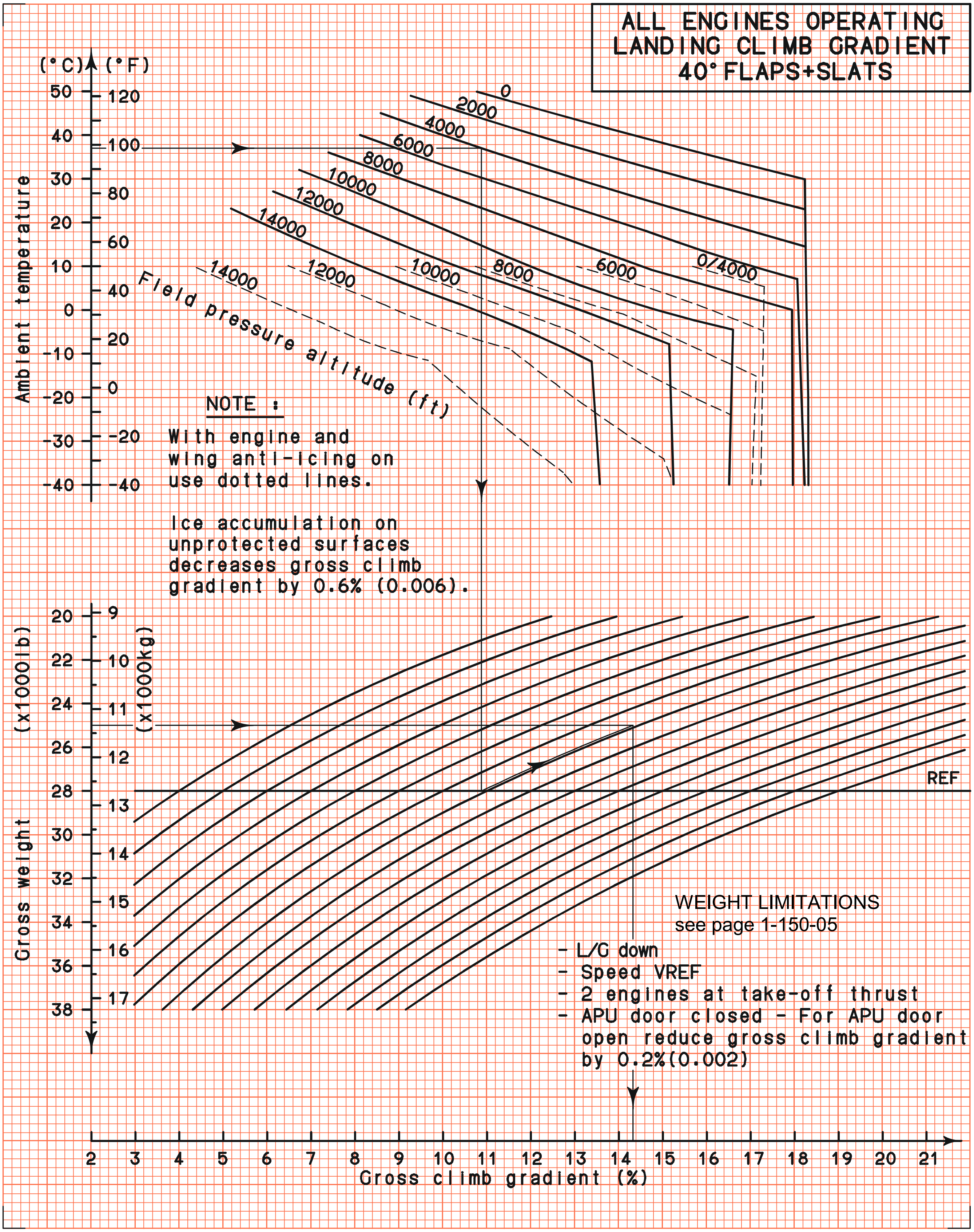
ALL ENGINES OPERATING
LANDING CLIMB GRADIENT
40° FLAPS+SLATS
Ambient temperature
(°C) (°F)
Field pressure altitude (ft)
0
2000
4000
6000
8000
10000
12000
14000
0/4000
NOTE :
With engine and wing anti-icing on use dotted lines.
Ice accumulation on unprotected surfaces decreases gross climb gradient by 0.6% (0.006).
Gross weight (x1000lb) (x1000kg)
REF
WEIGHT LIMITATIONS
see page 1-150-05
- L/G down
- Speed VREF
- 2 engines at take-off thrust
- APU door closed - For APU door open reduce gross climb gradient by 0.2%(0.002)
Gross climb gradient (%)

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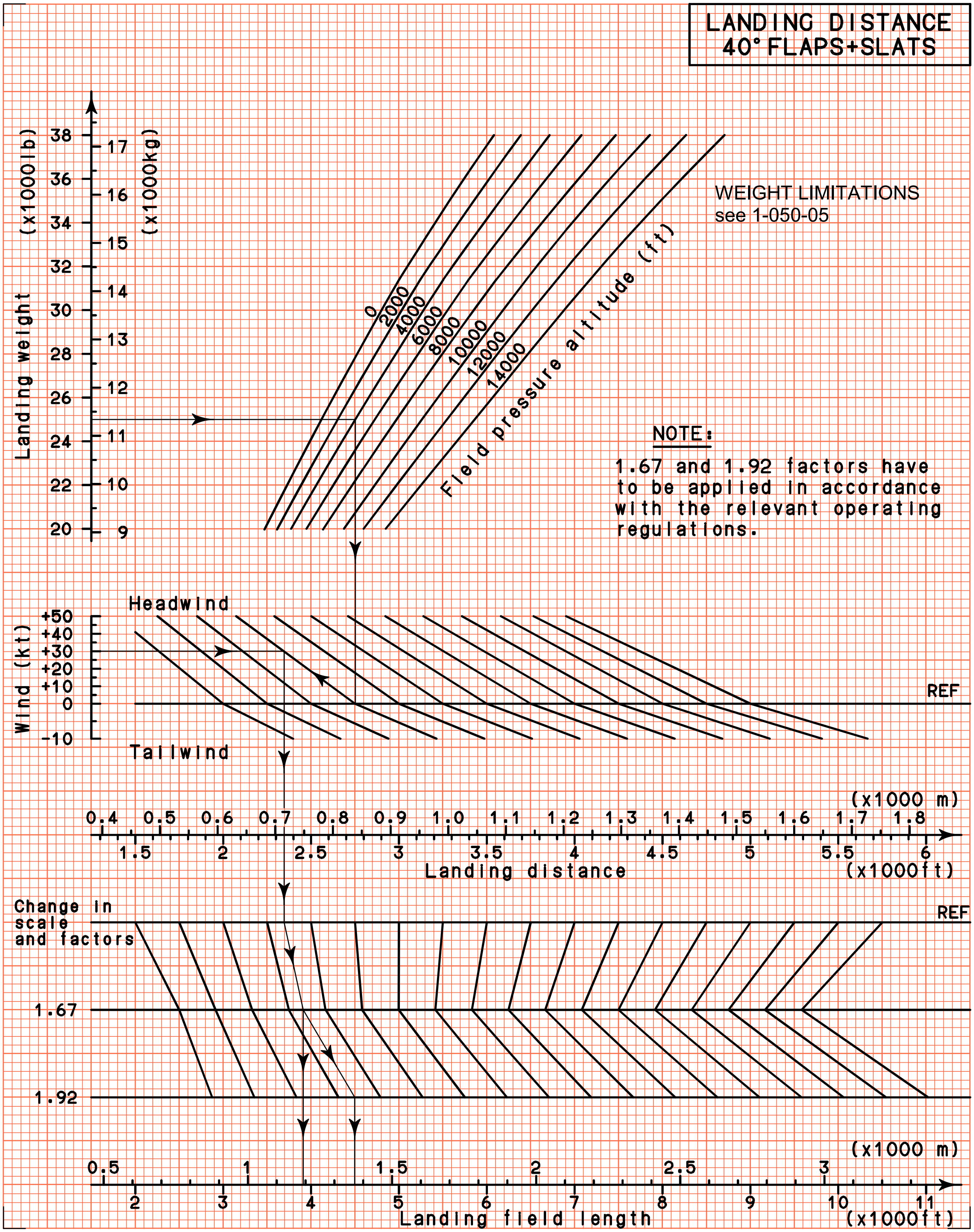
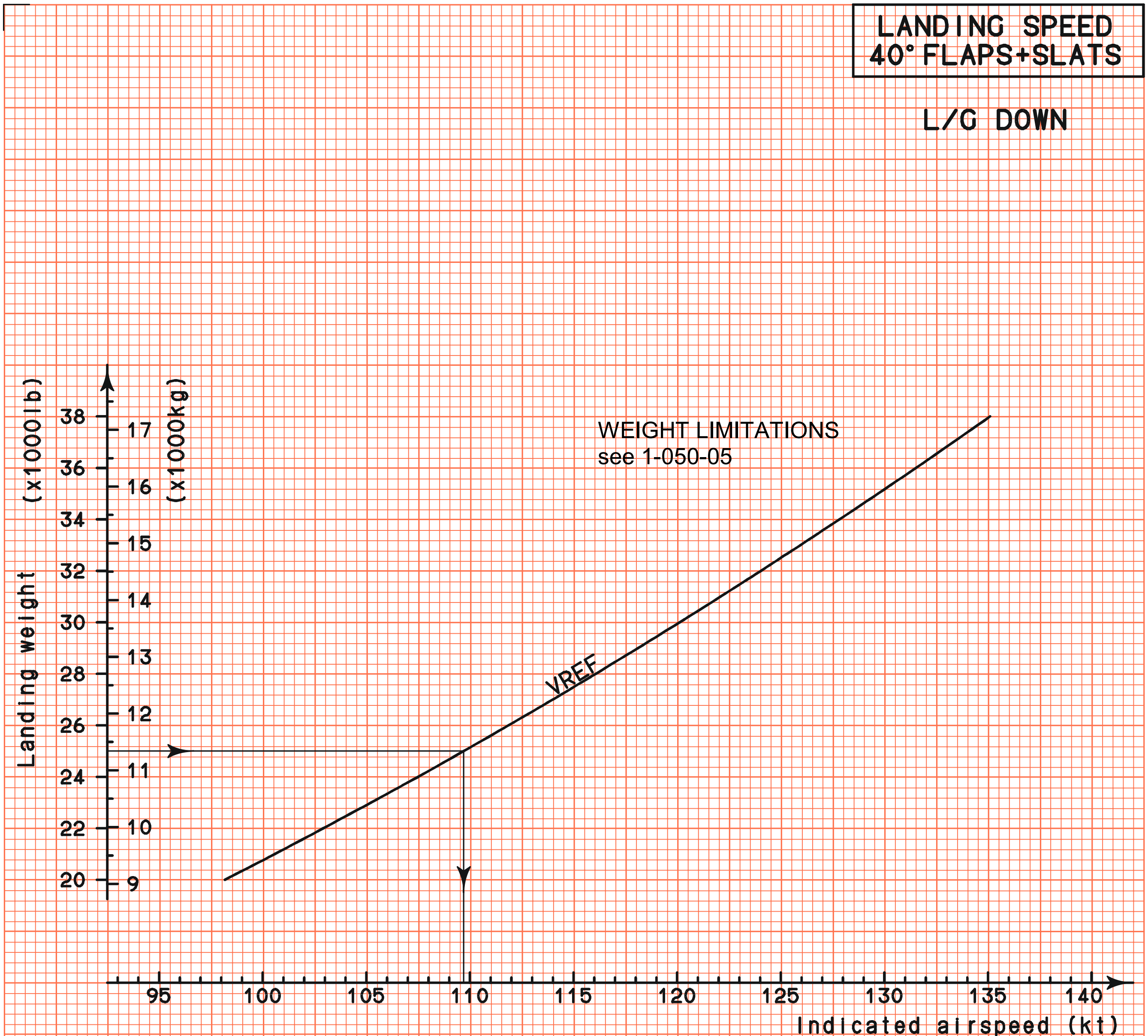

LANDING DISTANCE
40° FLAPS+SLATS
Landing weight (x1000lb)
(x1000kg)
38
36
34
32
30
28
26
24
22
20
17
16
15
14
13
12
11
10
9
0
2000
4000
6000
8000
10000
12000
14000
Field pressure altitude (ft)
WEIGHT LIMITATIONS
see 1-050-05
NOTE:
1.67 and 1.92 factors have to be applied in accordance with the relevant operating regulations.
Wind (kt)
Headwind
Tailwind
+50
+40
+30
+20
+10
0
-10
REF
(x1000 m)
0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8
1.5 2 2.5 3 3.5 4 4.5 5 5.5 6
Landing distance
(x1000ft)
Change in scale and factors
REF
1.67
1.92
(x1000 m)
0.5 1 1.5 2 2.5 3
2 3 4 5 6 7 8 9 10 11
Landing field length
(x1000ft)



CLIMB SPEED SCHEDULE

1 engine inoperative approach climb speed (L/G up)	VREF with 10° FLAPS+SLATS
All engines operating landing climb speed (L/G down)	VREF with 40° FLAPS+SLATS

USE OF CHARTS

After a minimum turn-around time, the airplane is capable of safely rejecting a take-off at V1 within the maximum demonstrated brake energy.

Taking into account the energy absorbed by brakes during taxiing, landing or a previous rejected take-off, brakes must cool down until they are able to absorb, if necessary, taxiing and rejected take-off energy relative to next take-off.

Taking into account the energy absorbed by brakes during taxiing, landing or a previous rejected take-off, brakes must cool down until they are able to absorb, if necessary, taxiing and rejected take-off energy relative to next take-off.

Taxiing energy is 0.15 x 10^6 ft.lb (0.2 MJ) per brake and per full stop from a taxiing speed of 20 kt.

Refer to charts 5-800-10 pages 2 and 3 to determine landing brake energy or to charts 5-800-10 pages 4 and 5 to determine previous rejected take-off brake energy. Then add taxiing energy to the landing or previous rejected take-off energy.

Refer to charts 5-500-10 pages 2 and 3 or 5-500-25 pages 2 and 3 for 20° FLAPS + SLATS or 5-550-10 pages 2 and 3 or 5-550-25 pages 2 and 3 for 10° FLAPS + SLATS to determine decision speed V1 and to charts 5-800-10 pages 4 and 5 to determine next rejected take-off energy at V1. Then add taxiing energy to the next rejected take-off energy.

If the sum of the energies absorbed per brake is below 12.09 x 10^6 ft.lb (16.4 MJ), no cooling time is required. If cooling time is required, enter chart 5-800-10 page 6:

- On LH scale with the sum of landing or previous rejected take-off energy and taxi,
- On RH scale with the sum of taxi and next RTO brake energy.

EXAMPLES

EXAMPLE 1: COOLING TIME AFTER LANDING

Field pressure altitude: 8,000 ft
Landing weight: 28,000 lb
Take-off weight: 34,500 lb (10° FLAPS + SLATS)

Ambient temperature: +25 °C
Runway slope: -1 % down hill
Tailwind: -5 kt

5-800-10 pages 2 and 3 : Landing brake energy: 5.0 x 10^6 ft.lb per brake for a landing with no overspeed at threshold.
Taxiing energy to the parking: 0.30 x 10^6 ft.lb per brake (two full stops).

5-550-10 pages 2 and 3 : Engine failure speed associated with balanced field length: V1 = 124.5 kt.

5-800-10 pages 4 and 5 : RTO brake energy: 9.5 x 10^6 ft.lb per brake.
Taxiing energy to the holding point: 0.45 x 10^6 ft.lb per brake (three full stops).

5-800-10 page 6 : Entering the brake cooling time chart with landing brake energy of 5.30 on LH scale and RTO brake energy of 9.95 on RH scale yields to cooling time equal to 16 minutes.

EXAMPLE 2: COOLING TIME AFTER REJECTED TAKE-OFF

Same airport and same conditions as example 1.

A first take-off at 33,000 lb is rejected at 100 kt.

5-800-10 pages 4 and 5 : 1st RTO brake energy: 6.5 x 10^6 ft.lb per brake for the braking speed of 100 kt.
Taxiing energy to the parking: 0.30 x 10^6 ft.lb per brake (two full stops).
2nd RTO brake energy: 9.5 x 10^6 ft.lb per brake (see example 1 above).
Taxiing energy to the holding point: 0.45 x 10^6 ft.lb per brake (three full stops).

5-800-10 page 6 : Entering the brake cooling time chart with previous RTO brake energy of 6.80 on LH scale and next RTO brake energy of 9.95 on RH scale yields to cooling time equal to 21 minutes.

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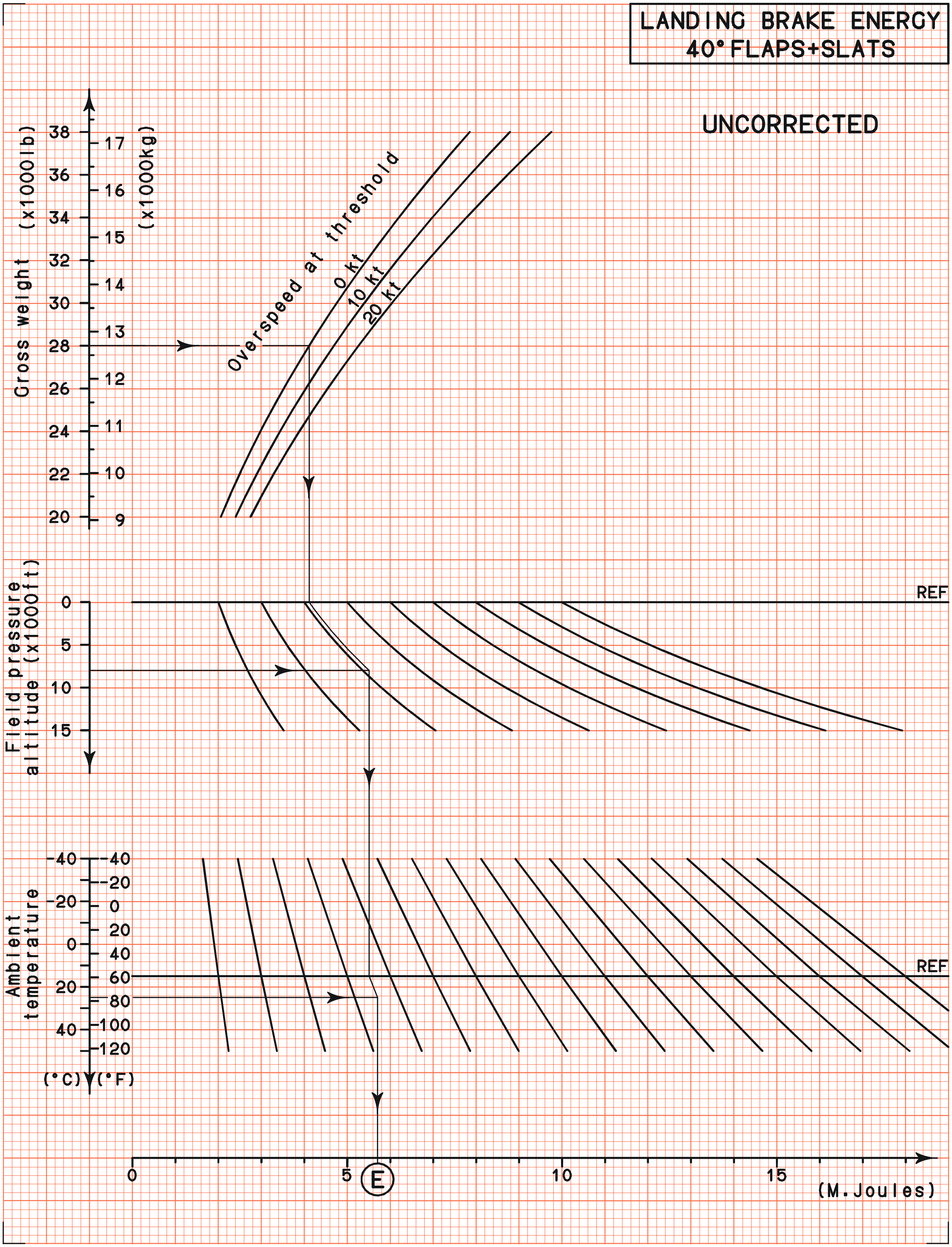
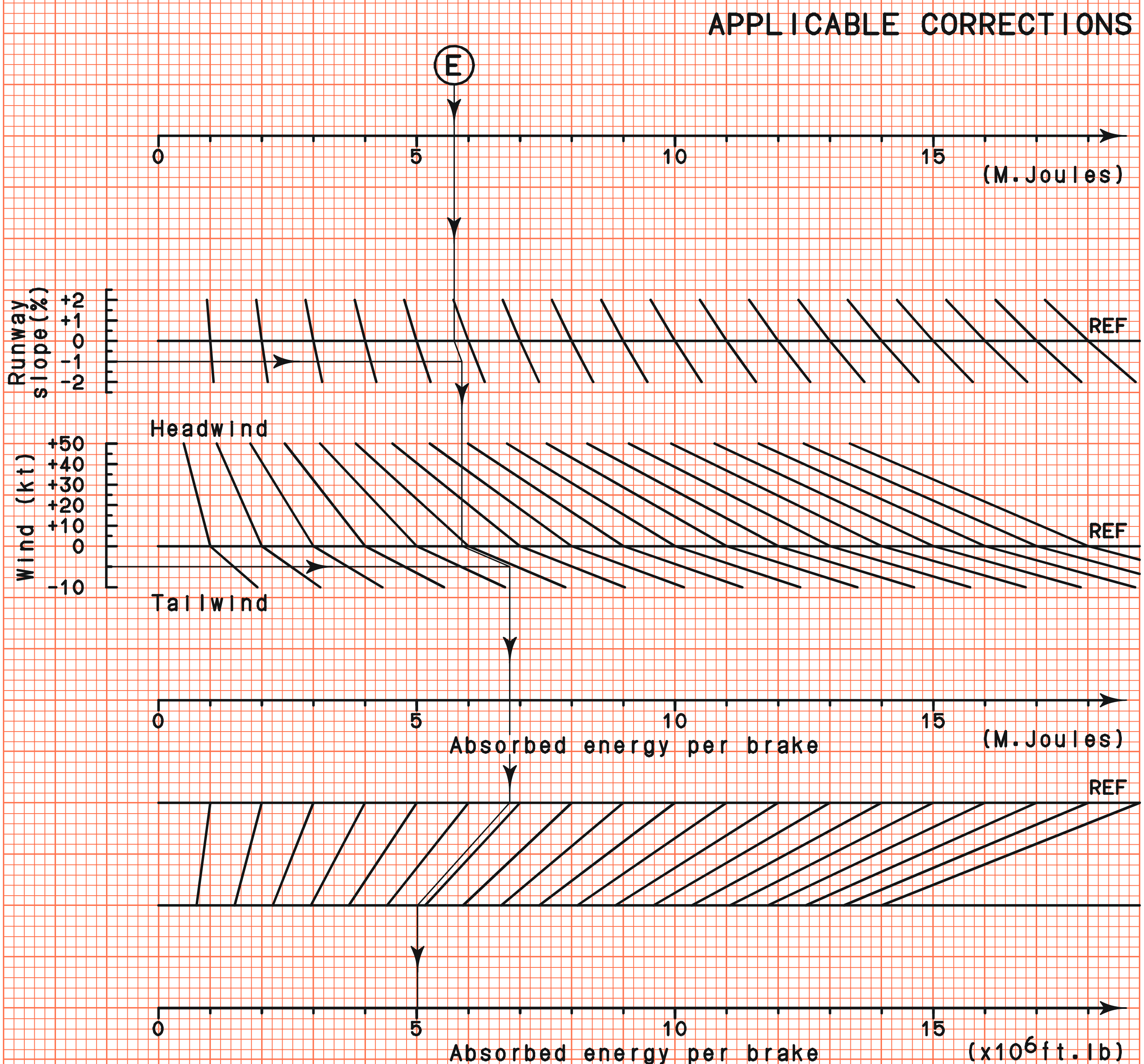
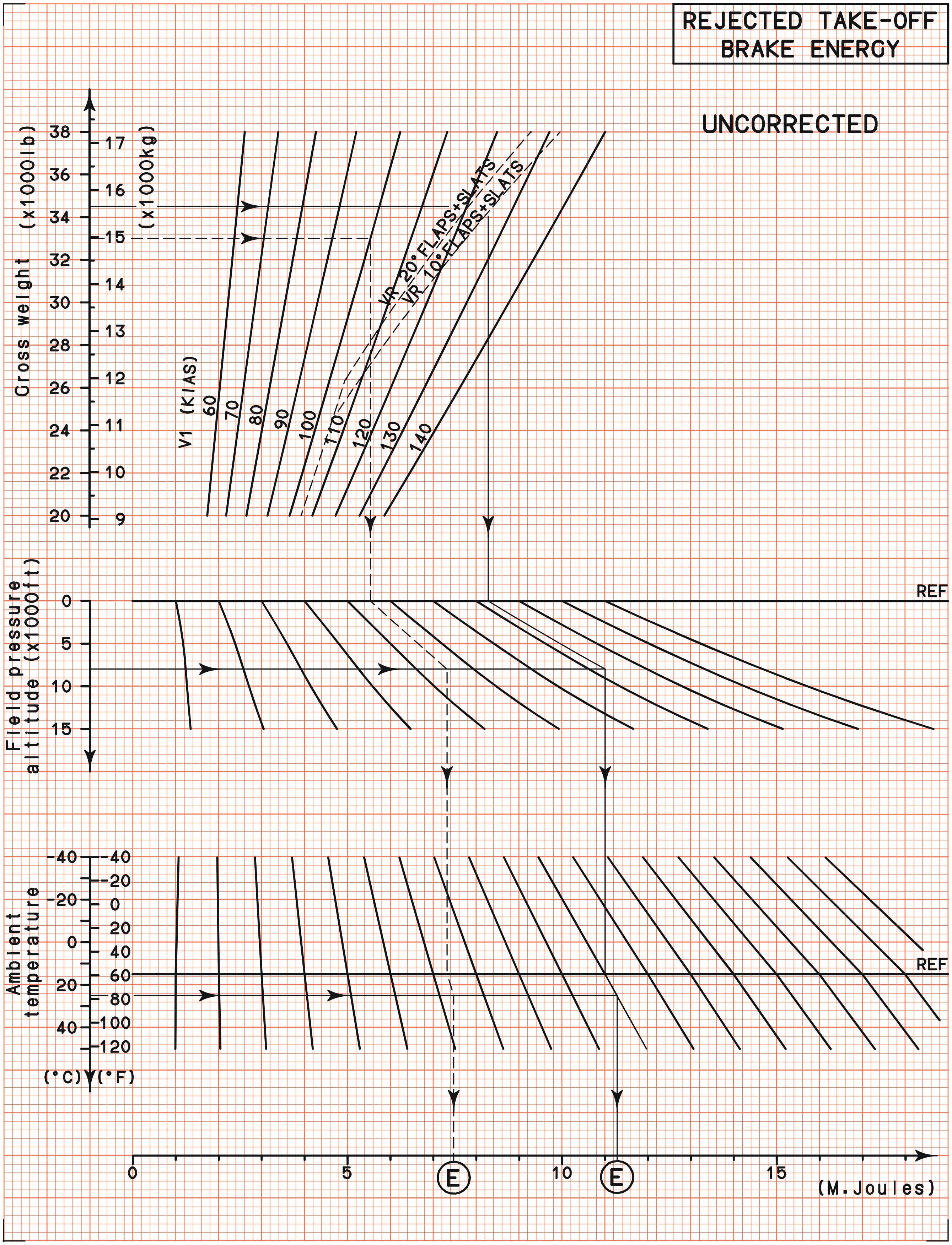

LANDING BRAKE ENERGY
40° FLAPS+SLATS
UNCORRECTED
Gross weight (x1000lb)
(x1000kg)
38
36
34
32
30
28
26
24
22
20
17
16
15
14
13
12
11
10
9
Overspeed at threshold
0 kt
10 kt
20 kt
Field pressure altitude (x1000ft)
0
5
10
15
REF
Ambient temperature
-40
-20
0
20
40
-40
-20
0
20
40
60
80
100
120
(°C)
(°F)
REF
0
5
10
15
E
(M.Joules)

LANDING BRAKE ENERGY
40° FLAPS+SLATS

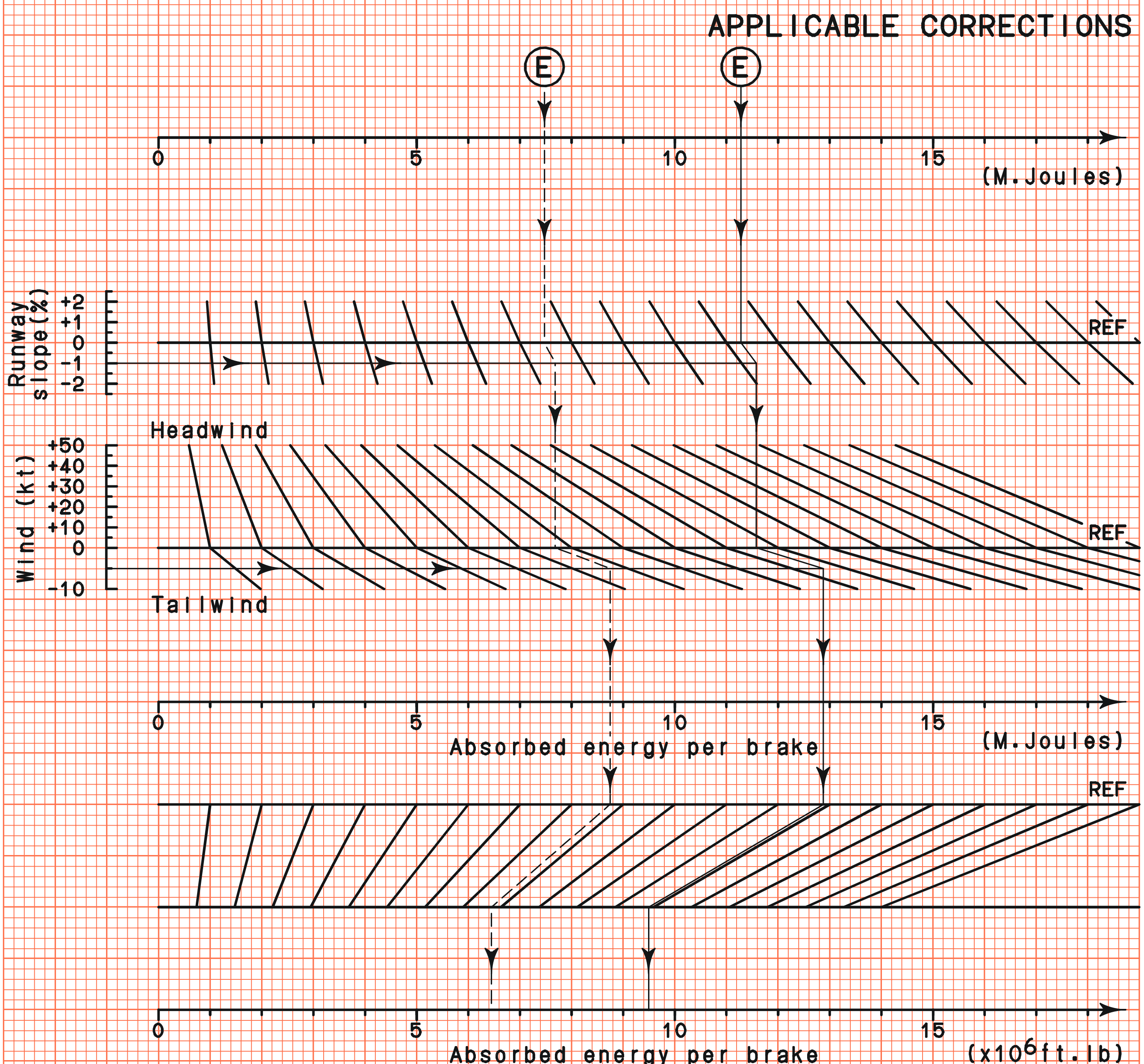


NOTE :

Heat sink	Energy at which wheels fuses blow
New	7.8 10^6ft.lb (10.6 M.Joules)
Worn	7.0 10^6ft.lb (9.5 M.Joules)

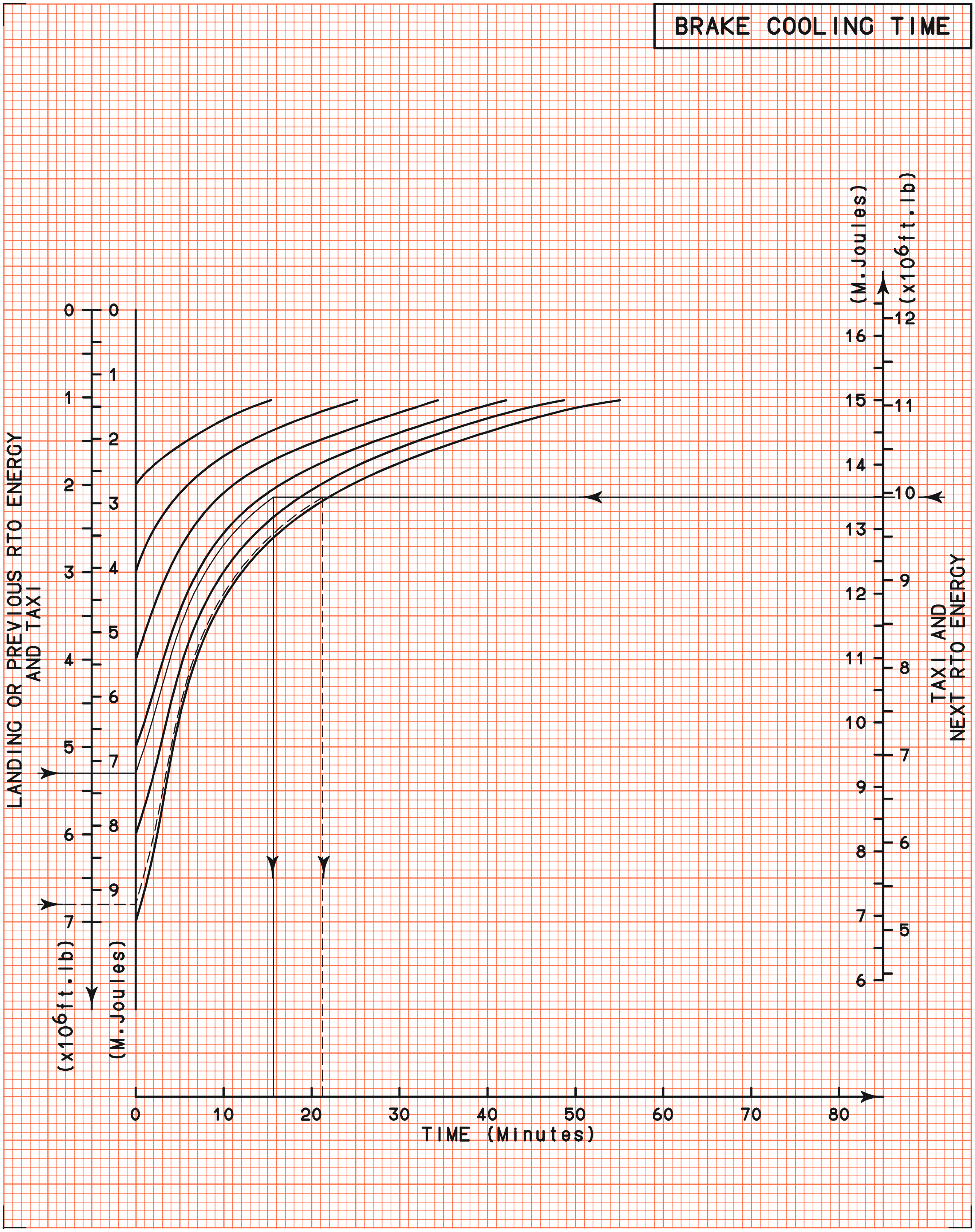

REJECTED TAKE-OFF BRAKE ENERGY
UNCORRECTED
Gross weight (x1000lb)
(x1000kg)
V1 (KIAS)
60
70
80
90
100
110
120
130
140
VR 20° FLAPS+SLATS
VR 10° FLAPS+SLATS
Field pressure altitude (x1000ft)
REF
Ambient temperature
(°C)
(°F)
REF
E
E
(M.Joules)

REJECTED TAKE-OFF BRAKE ENERGY



NOTE :

Heat sink	Energy at which wheels fuses blow
New	7.8 10^6ft.lb (10.6 M.Joules)
Worn	7.0 10^6ft.lb (9.5 M.Joules)

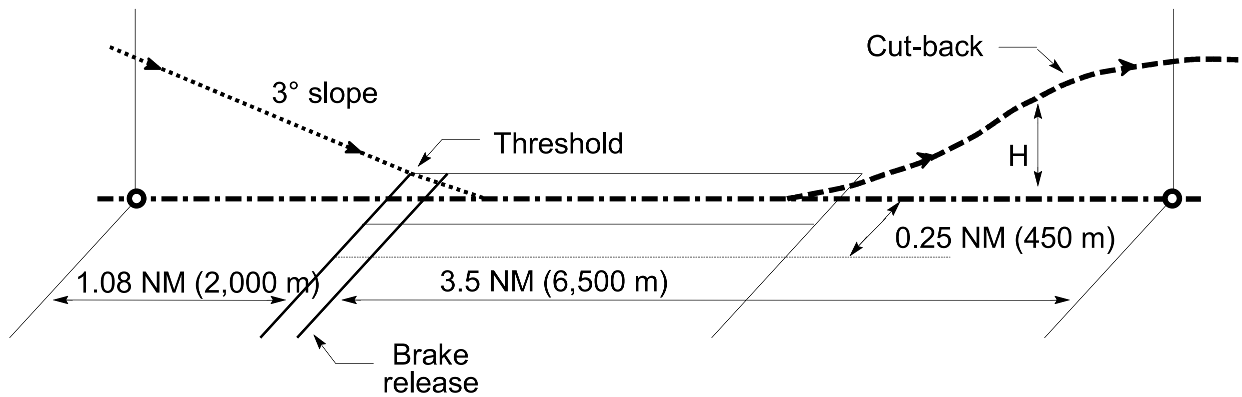

BRAKE COOLING TIME
LANDING OR PREVIOUS RTO ENERGY AND TAXI
(x10⁶ft.lb)
(M.Joules)
0
1
2
3
4
5
6
7
8
9
TAXI AND NEXT RTO ENERGY
(M.Joules)
(x10⁶ft.lb)
16
15
14
13
12
11
10
9
8
7
6
12
11
10
9
8
7
6
5
0
10
20
30
40
50
60
70
80
TIME (Minutes)

ICAO ANNEX 16, VOL 1, REQUIREMENTS

The noise levels of the airplane are no greater than the noise limits prescribed in ICAO, Annex 16, Volume 1, Part 2, Chapter 4 noise limits.

The following noise levels are measured and demonstrated in accordance with the ICAO, Annex 16, Volume 1, Appendix 2, Amendment 8 (4th edition, July 2005).

Reference point	Noise levels (EPNdB)		Chapter 4 noise limits (EPNdB)	
			Chapter 3	Cumulative
Flyover	79.4	258.9	*89.0*	271.0
Lateral (with full power)	86.4		*94.0*	
Approach	93.1		*98.0*	



PERFORMANCE CONDITIONS FOR NOISE LEVELS

Compliance with ICAO Annex 16 Volume 1, Amendment 8 and Chapter 4 was demonstrated with the following procedures:

Take-off configuration: 20° FLAPS + SLATS at the weight of 36,500 lb (16,556 kg).

Specific cut-back conditions for reference point on flyover:

- Height H = 2,100 ft.
- N1 reduction: 8 %.

Approach configuration: 40° FLAPS + SLATS at the weight of 33,000 lb (14,978 kg).

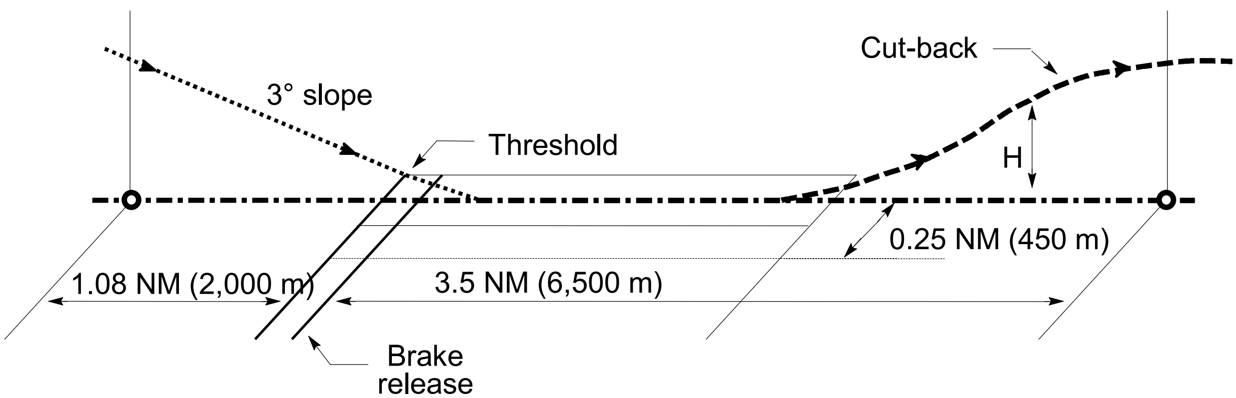
NOTE

The above noise levels are also in compliance with FAR Part 36, Stage 4 noise limits.

FAR PART 36 REQUIREMENTS

The following noise levels comply with part 36, Appendix B, Stage 4 maximum noise level requirements and were obtained by analysis of approved data from noise tests conducted under the provisions of part 36 Amendment 26. The noise measurement and evaluation procedures used to obtain these noise levels are considered to be equivalent to the Chapter 4 noise level required by the International Civil Aviation Organization (ICAO) Annex 16, Volume 1, Appendix 2, Amendment 7, effective March 21, 2002.

Reference point	Noise levels (EPNdB)
Flyover	79.4
Lateral	86.4
Approach	93.1



PERFORMANCE CONDITIONS FOR NOISE LEVELS

Compliance with FAR, Part 36 (Amendment 26) Stage 4 noise levels and ICAO, Annex 16, Volume 1, (Amendment 7) Chapter 4 was demonstrated with the following procedures:

Take-off configuration: 20° FLAPS + SLATS at the weight of 36,500 lb (16,556 kg).

Specific cut-back conditions for reference point on flyover:

- Height H = 2,100 ft.
- N1 reduction: 8 %.

Approach configuration: 40° FLAPS + SLATS at the weight of 33,000 lb (14,978 kg).

NOTE

The above noise levels are also in compliance with ICAO Annex 16, Volume 1 Chapter 4 noise limits.

No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of any airport.

LIST OF DASSAULT AVIATION ANNEXES

ANNEX 1: Autopilot coupled approach to category II (commercial operation) performance requirements.
Applicable to: All A/C.

ANNEX 2: APU door open.
Applicable to: All A/C.

ANNEX 3: Steep approach landing without E-GPWS.
Not applicable to : US registered A/C.

ANNEX 3A: Steep approach landing with E-GPWS.
Applicable to : A/C with modification M955 and M1500 or SB F2000-314.
Not applicable to : US registered A/C.

ANNEX 4: Reserved.

ANNEX 5: Operations with braking system No 2 inoperative.
Applicable to : A/C S/N > 11 or with SB F2000-64.

ANNEX 6: Supplementary performance information for operation on runways contaminated by standing water, slush, loose snow, compacted snow or ice.
Not applicable to : US registered A/C.

ANNEX 7: Operations with landing gear down.
Applicable to : All A/C.

CAUTION

For possible special applicability of the annexes, refer to the list of effective sub-sub-section (0-200-10) and foreign certifications sub-section (0-250).

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AUTOPILOT CAT II INTRODUCTION

The information contained herein supplements the information contained in sections 1 to 5; for limitations, procedures and performance information not contained in this annex, consult sections 1 to 5.

The presence of this ANNEX in the Flight Manual signifies that the Joint Airworthiness Authorities have found that the airplane and its equipment comply with JAR AWO, Subparts 1 and 2, change 1 modified by NPA's AWO 3 and 4.

Category II approach is generally subject to special operating rules.

AUTOPILOT CAT II LIMITATIONS

CONDITIONS OF OPERATION

The performance of Category II approaches requires that the following instruments or equipment be in proper operating condition:

- 2 ILS receivers,
- 2 EFIS (Electronic Flight Instrument System),
- 1 radio altimeter,
- 2 AHS (Attitude Heading System),
- 2 ADC (Air Data Computer),
- AP system including:
  - 2 FCC (Flight Control Computer),
  - Automatic Pitch trim,
  - AP disengage systems.
- 1 stand–by horizon.

The autopilot will provide its performance with or without the Yaw Damper engaged.

The airplane is not approved for use in automatic approaches to category II landing minimums with one engine inoperative. However, the airplane is capable of such operations and for safety reasons, it may be preferable to initiate or continue the approach down to category II minimums rather than diverting to an other airport.

MINIMUM CREW

- 2 pilots with qualifications according to operational rules.

COLLINS APS 4000 AUTOMATIC PILOT SYSTEM

- The Autopilot is certificated for use in Category II approaches on a Category II ILS system installation within the following limits:
  - Decision Height (DH) .... 100 ft
  - Minimum Use Height (MUH) .... 70 ft
  - Headwind .... 30 kt
  - Crosswind .... 20 kt
  - Tailwind .... 10 kt

NOTE

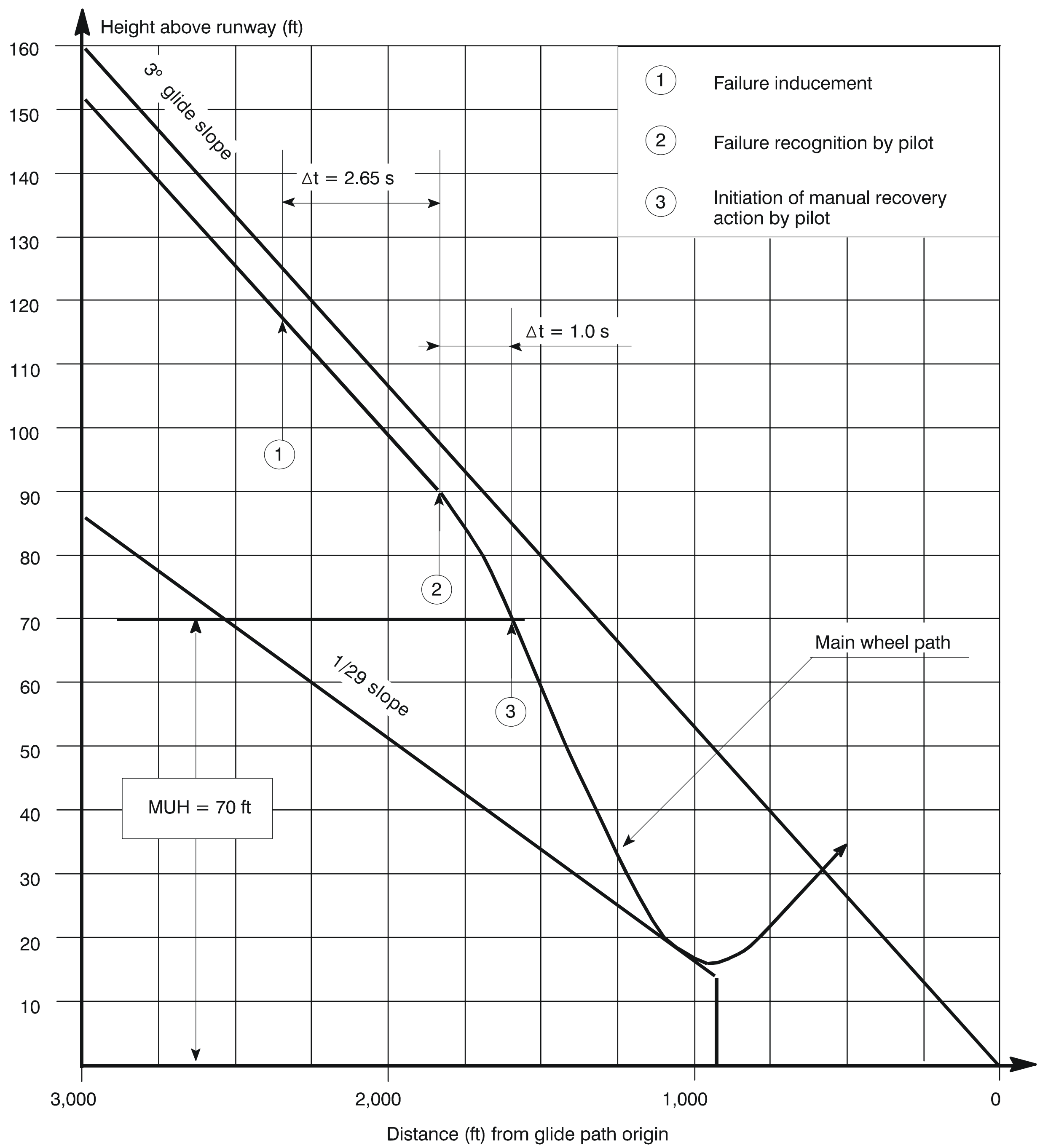
Manual approaches monitored with Flight Director are restricted to Category I landing minimums.

AUTOPILOT CAT II EMERGENCY

COLLINS APS 4000 AUTOPILOT – NOSE DOWN SLOWOVER OR HARDOVER

The maximum altitude loss due to a demonstrated nose down slowover or hardover during flight test is as follows:

- Approach APP Mode (ILS approach)
  - Recovery initiated 1 second after recognition.



AUTOPILOT CAT II ABNORMAL

MALFUNCTION DURING APPROACH

In the absence of reliable visual references and below a height of 200 ft, perform a missed approach procedure whenever one of the following malfunctions is observed:

- The Autopilot disengages,
- The radio-altimeter flag comes in view,
- CAT II red following a CAT II green.

AUTOPILOT CAT II NORMAL

AUTOPILOT COUPLED APPROACH TO CATEGORY II LANDING MINIMUMS

The flight crew must permanently monitor the approach.

A successful and safe approach to category II landing minimums depends essentially on a careful monitoring of primary deviations and on the ability to maintain the proper airspeed.

APPROACH PROCEDURE

➨ Autopilot.. Engaged
➨ No Roll Mistrim .... Checked
➨ Stand-by horizon.. Checked
➨ Radio-altimeter .... Tested
➨ DH .... Set on both sides
➨ Speed Approach Bug.. Fixed and set
➨ Altimeters.. Checked
➨ ILS frequency.. Set on both sides
➨ Course .... Selected on both sides
➨ APP mode .... Selected

■ **At 1,000 ft:**

➨ Approach speed .... Stabilized
➨ Altimeters and radio-altimeter.. Cross-checked
➨ CAT II green.. Checked and called out

■ **From 300 ft and down:**

➨ Pilot monitors outboard and must be prepared to initiate a go-around procedure
➨ Copilot monitors instrument panel and calls out of any deficiencies or excessive deviations plus radio-altimeter reads-out as follows:

➨ **300 – 100 ABOVE – MINIMUM (At DH)**

■ **At DH:**

➨ Landing or go-around according to visual references: .... Called out by the pilot

■ **At no less than 70 ft (MUH):**

➨ Autopilot disengagement.. Called out by the pilot

LANDING

➨ Performed by the pilot.

GO–AROUND

➨ GA pushbutton .... Pushed

➨ Apply normal go-around procedure and establish go-around attitude using the PFD cross-checked with stand-by horizon.

DEFICIENCIES

The following are excessive deviations from normal and must be called out by the copilot:

➨ Airspeed 10 kt higher or 5 kt lower than reference / scheduled approach speed.

➨ Angle of bank in excess of 10°.

➨ Pitch attitude below -2.5° or above +7.5°.

➨ Rate of descent in excess of 1,000 ft / mn.

➨ Flag in view.

➨ Excessive deviations in view.

➨ Comparator in view.

➨ CAT II red in view.

➨ Warning in the warning panel.

AUTOPILOT CAT II PERFORMANCE

LANDING

Approach climb

For CAT II operations, the steady gradient of climb with one engine inoperative may not be less than 2.5 %.

Engine rating is take-off thrust, APR operating.

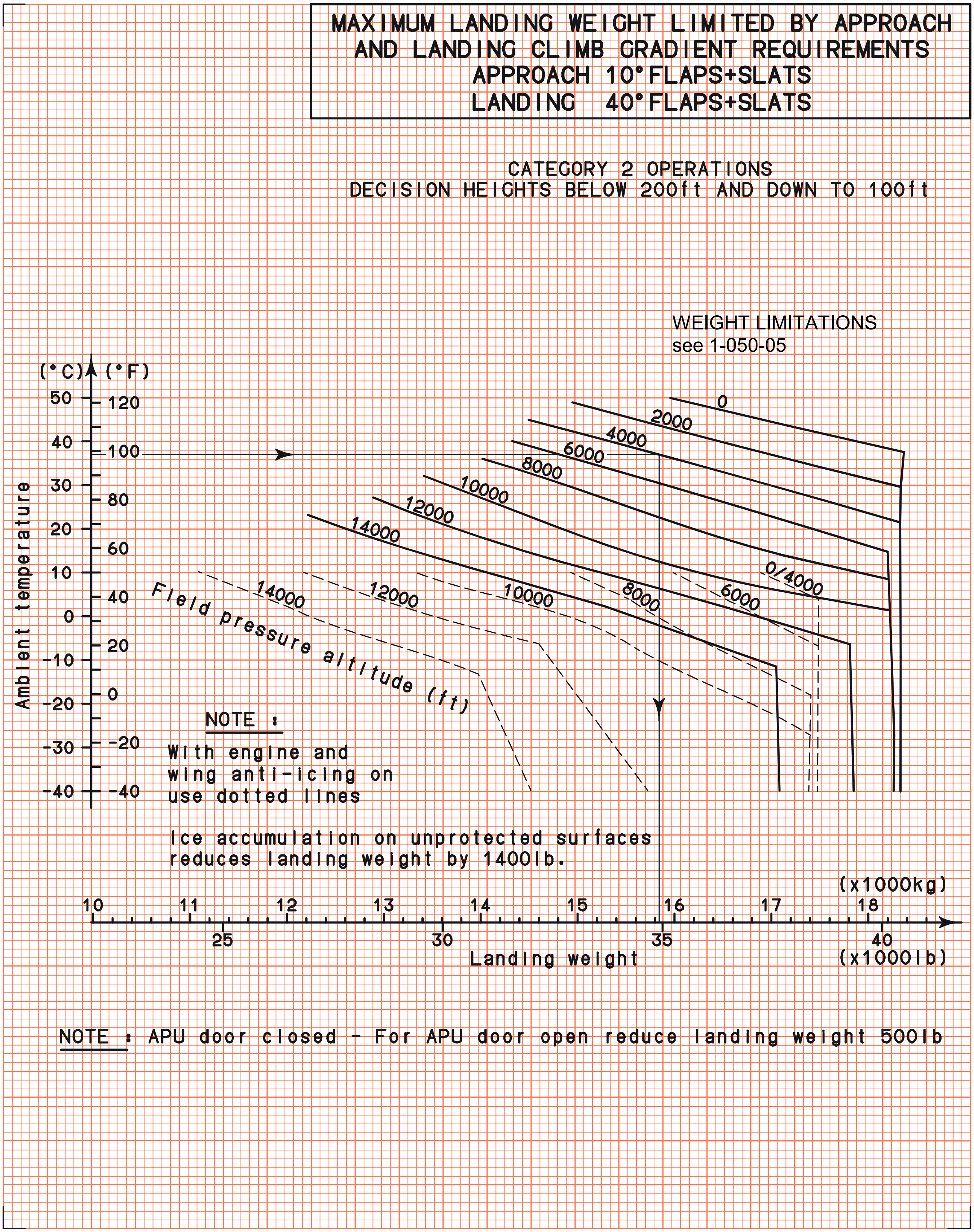
Configuration is 10° FLAPS + SLATS, and stabilized airspeed is VREF.

MAXIMUM ALLOWED WEIGHTS

Approach and landing climb gradients − Maximum brake energy

The most restrictive condition is always the one engine inoperative approach climb gradient of 2.5 %.

Refer to next page for maximum landing weight limited by climb requirements.


MAXIMUM LANDING WEIGHT LIMITED BY APPROACH
AND LANDING CLIMB GRADIENT REQUIREMENTS
APPROACH 10° FLAPS+SLATS
LANDING 40° FLAPS+SLATS
CATEGORY 2 OPERATIONS
DECISION HEIGHTS BELOW 200ft AND DOWN TO 100ft
WEIGHT LIMITATIONS
see 1-050-05
(°C)
(°F)
Ambient temperature
Field pressure altitude (ft)
0
2000
4000
6000
8000
10000
12000
14000
0/4000
NOTE :
With engine and
wing anti-icing on
use dotted lines
Ice accumulation on unprotected surfaces
reduces landing weight by 1400lb.
(x1000kg)
Landing weight
(x1000lb)
NOTE : APU door closed - For APU door open reduce landing weight 500lb

APU DOOR OPEN

The information contained herein supplements the information contained in sections 1 to 5 ; for limitations, procedures and performance information not contained in this annex, consult sections 1 to 5.

INTRODUCTION

Normally, take-off can only be operated with the APU door closed.

The purpose of this annex is to provide the information necessary for a take-off with the APU door open.

When APU door is open, the airplane drag and the minimum control speeds are increased.

Consequently, maximum take-off weight limited by climb requirements, second segment gross climb gradient, runway length, take-off speeds V1 mini, V1, VR and V2 are modified.

Information for approach and landing is already provided in section 5 of Airplane Flight Manual.

LIMITATIONS

AIRSPEED AND MACH

Minimum control speed in the air: VMCA

- VMCA .... 93 KIAS

Minimum control speed during approach and landing: VMCL

- VMCL .... 93 KIAS

Minimum control speed on the ground: VMCG

- VMCG .... 101 KIAS

PERFORMANCE

USE OF CHARTS

Take-off

With APU door open:

➨ **Decrease** maximum take-off weight W1 limited by climb requirements by:

Configuration	Adjustment	Chart
20° FLAPS + SLATS	400 lb	5-500-40 page 1
10° FLAPS + SLATS	500 lb	5-550-40 page 1

➨ Determine an assumed field length by **subtracting** the following values from the available runway length,

Configuration	Runway condition	Adjustment	Chart
20° FLAPS + SLATS or 10° FLAPS + SLATS	DRY	350 ft	5-500-05 or 5-550-05
	WET	450 ft	5-500-20 or 5-550-20

and, using balanced field length charts, determine weight W2, the assumed field length corresponding to the runway available.

➨ **Reduce** second segment gross climb gradient by 0.2 % (0.002) (chart 5-500-40 page 2 or 5-550-40 page 2).

➨ Increase take-off speeds VR and V2 according to take-off weight by:

Configuration	Adjustment			Chart
20° FLAPS + SLATS	below 26,400 lb	above 26,400 lb and below 27,900 lb	above 27,900 lb	5-500-35
	+ 3 kt	linear interpolation	0 kt	
10° FLAPS + SLATS	below 24,400 lb	above 24,400 lb and below 25,800 lb	above 25,800 lb	5-550-35
	+ 3 kt	linear interpolation	0 kt	

➨ Recommended attitude chart is unchanged (chart 5-500-35 or 5-550-35).

➨ Maximum brake energy speed (VMBE) is unchanged (chart 5-500-15 or 5-550-15 on dry runway or 5-500-30 or 5-550-30 on wet runway).

➨ **Increase** decision speed V1 as read on charts by:

Configuration	Runway condition	Adjustment	Chart
20° FLAPS + SLATS or 10° FLAPS + SLATS	DRY	+ 1 kt	5-500-10 pages 2 and 3 or 5-550-10 pages 2 and 3
	WET	+ 0.5 kt	5-500-25 pages 2 and 3 or 5-550-25 pages 2 and 3

➨ **Increase** V1 mini by 3 kt. V1 must be higher than V1 mini and lower than VMBE and VR.
If V1 thus determined does not meet one of these limits, the limit value must be selected as V1.

Obstacle clearance

Charts 5-500-45 or 5-550-45 have to be entered with second segment gross climb gradient, corrected for APU door open, in accordance with the instructions on page 2 of this annex.

En route and final take-off

With APU door open, reduce climb gradient by 0.3 % (0.003) (chart 5-600-10).

Fuel consumption

With APU door open, cruise Fuel Flow is increased approximately by 6 %.

TAKE-OFF EXAMPLE DRY RUNWAY 20° FLAPS + SLATS

Field pressure altitude: 3,500 ft
Runway length: 6,770 ft

Ambient temperature: 35 °C
Runway slope: +1 % up hill
Headwind: +20 kt

5-500-40 page 1	:	Maximum take-off weight limited by climb requirements.................. W1 = 34,200 - 400 = 33,800 lb Maximum take-off weight limited by field length: Assumed field length 6,770 - 350 = 6,420 ft
5-500-05 page 4 5-500-05 page 5	:	For 3,000 ft field pressure altitude : 31,800 lb For 4,000 ft field pressure altitude : 30,600 lb For 3,500 ft field pressure altitude, interpolate linearly: $30{,}600 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (31{,}800 - 30{,}600) = 31{,}200$ lb W2 = 31,200 lb
1-050-05	:	Maximum take-off weight limited by structural limitation ....35,800 lb The maximum take-off weight is therefore the field length limited take-off weight .... W3 = 31,200 lb
5-500-40 page 2	:	Second segment gross climb gradient............................ 3.7 - 0.2 = 3.5 %
5-500-35 page 1	:	Take-off speeds ....VR = 114.5 kt ; V2 = 117 kt Recommended take-off attitude ....10.2°
5-500-15 page 1	:	Maximum brake energy speed (VMBE) is never a limitation in 20° FLAPS + SLATS configuration.
5-500-10 pages 2 and 3	:	Decision speed associated with balanced field length: ...119 + 1 = 120 kt V1 mini = 101 + 3 = 104 kt. As V1 must be higher than V1 mini and lower than VMBE and VR, use V1 = VR .... V1 = 114.5 kt

STEEP APPROACH LANDING WITHOUT E-GPWS

The information contained herein supplements the information contained in sections 1 to 5.

For limitations, procedures and performance information not contained in this Annex, consult sections 1 to 5.

The capability to perform steep approaches as defined in this Annex does not constitute an authorization to perform steep approaches.

Such authorization must be obtained by the operator from the appropriate authority.

LIMITATIONS

PERFORMANCE LIMITATIONS

The landing weight is limited by the most restrictive condition:

- Climb requirements (see 5-700-10).
- Landing distance (page 3 of this Annex).

OPERATIONAL LIMITATIONS

- Maximum approach path angle .... 6.65 degrees (11.6 %)
- Maximum tail wind component .... 5 kt
- Minimum Decision Height (DH) .... 200 ft
- Use of Autopilot or Flight Director:
  - Approach mode only.
  - Minimum Use Height (MUH) .... 160 ft
- Manual approach : ILS nav. data or external visual vertical guidance system.

Steep approaches are not permitted in the following cases:

- One engine inoperative.
- Slats, flaps or airbrakes failure.
- Horizontal stabilizer jammed.
- Abnormal feel force (ARTHUR failure).
- GPWS or GCAS fitted.

EMERGENCY PROCEDURES

Unchanged.

ABNORMAL PROCEDURES

PROCEDURES IN CASE OF ONE ENGINE FAILURE

- Before beginning of final approach.. Diversion
- After beginning of final approach and before 500 ft.. Go around
- At or below 500 ft.. Go around or landing: as required

ONE ENGINE GO AROUND

- Go around attitude ....Set
- Power levers ....TAKE-OFF
- AIRBRAKES handle ....Position 0
- Slat-flap handle .... 20° FLAPS + SLATS
- When a positive rate of climb is established:
  - Landing gear handle ....Up

NOTE

The maximum altitude loss is less than 100 ft.

NORMAL PROCEDURES

STEEP APPROACH

- Before glide slope interception:
  - Landing gear handle... Down - Checked
  - Slat-flap handle .... 40° FLAPS + SLATS
  - Steep approach speed .... VREF + 10 kt
- At glide slope interception:
  - AIRBRAKES handle ....Position 1

PERFORMANCE

DEFINITIONS

Steep approach speed = VREF + 10 kt
Minimum speed for a steep approach, maintained down to the screen height.

VREF – Reference speed
Minimum speed at the screen height during a normal landing.

Approach climb
The steady gradient of climb with one engine inoperative may not be less than 2.1 %.
Engine rating is take-off thrust, APR operating.
The stabilized airspeed is VREF +10 kt.

Landing distance
Horizontal distance required to land and come to a complete stop from the screen height.

MAXIMUM ALLOWABLE LANDING WEIGHT (FIELD LENGTH LIMIT)

The use of an approach speed of VREF +10 kt results in an increased landing distance (and landing field length), per 5-700-25 page 1 by 12 %.

Conversely the field length limited landing weight occurs when the available runway length multiplied by 0.89 is equal to the landing distance (or landing field length as applicable) given in 5-700-25 page 1.

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STEEP APPROACH LANDING WITH E-GPWS

The information contained herein supplements the information contained in sections 1 to 5.

For limitations, procedures and performance information not contained in this Annex, consult sections 1 to 5.

The capability to perform steep approaches as defined in this Annex does not constitute an authorization to perform steep approaches.

Such authorization must be obtained by the operator from the appropriate authority.

LIMITATIONS

PERFORMANCE LIMITATIONS

The landing weight is limited by the most restrictive condition:

- Climb requirements (see 5-700-10).
- Landing distance (page 3 of this Annex).

OPERATIONAL LIMITATIONS

- Maximum approach path angle .... 6.65 degrees (11.6 %)
- Maximum tail wind component .... 5 kt
- Minimum Decision Height (DH) .... 200 ft
- Use of Autopilot or Flight Director:
  - Approach mode only.
  - Minimum Use Height (MUH) .... 160 ft
- Manual approach : ILS nav. data or external visual vertical guidance system.

Steep approaches are not permitted in the following cases:

  - One engine inoperative.
  - Slats, flaps or airbrakes failure.
  - Horizontal stabilizer jammed.
  - Abnormal feel force (ARTHUR failure).

EMERGENCY PROCEDURES

Unchanged.

ABNORMAL PROCEDURES

PROCEDURES IN CASE OF ONE ENGINE FAILURE

- Before beginning of final approach .... Diversion
- After beginning of final approach and before 500 ft .... Go around
- At or below 500 ft .... Go around or landing: as required

ONE ENGINE GO AROUND

- Go around attitude .... Set
- Power levers .... TAKE-OFF
- AIRBRAKES handle .... Position 0
- Slat-flap handle .... 20° FLAPS + SLATS
- When a positive rate of climb is established:
  - Landing gear handle .... Up

NOTE

The maximum altitude loss is less than 100 ft.

NORMAL PROCEDURES

STEEP APPROACH

- Before glide slope interception:
  - MFD: with E-GPWS operative:
    - Steep approach function .... Selected
  - Landing gear handle .... Down - Checked
  - Slat-flap handle .... 40° FLAPS + SLATS
  - Steep approach speed .... VREF + 10 kt
- At glide slope interception:
  - AIRBRAKES handle .... Position 1
- After landing:
  - MFD:
    - Steep approach function .... Deselected

PERFORMANCE

DEFINITIONS

Steep approach speed = VREF + 10 kt

Minimum speed for a steep approach, maintained down to the screen height.

VREF – Reference speed

Minimum speed at the screen height during a normal landing.

Approach climb

The steady gradient of climb with one engine inoperative may not be less than 2.1 %.

Engine rating is take-off thrust, APR operating.

The stabilized airspeed is VREF +10 kt.

Landing distance

Horizontal distance required to land and come to a complete stop from the screen height.

MAXIMUM ALLOWABLE LANDING WEIGHT (FIELD LENGTH LIMIT)

The use of an approach speed of VREF +10 kt results in an increased landing distance (and landing field length), per 5-700-25 page 1 by 12 %.

Conversely the field length limited landing weight occurs when the available runway length multiplied by 0.89 is equal to the landing distance (or landing field length as applicable) given in 5-700-25 page 1.

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OPERATIONS WITH BRAKING SYSTEM NO 2 INOPERATIVE

The information contained herein supplements the information contained in sections 1 to 5 ; for limitations, procedures and performance information not contained in this annex, consult sections 1 to 5.

The presence of this annex in the Airplane Flight Manual does not in itself constitute a dispatch permit.

INTRODUCTION

The purpose of this annex is to provide the procedures to be complied with and the related performance requirements for dispatch with braking system No 2 inoperative.

LIMITATIONS

Take-off on runways contaminated by standing water, slush, wet snow, dry snow, compacted snow or ice is not permitted.

PERFORMANCE

PROCEDURES

List of Equipment required to be operative prior to dispatch

- Refer to F2000 MMEL:
  - For DGAC or EASA registered airplanes: REVISION 2 or later.
  - Other registration: refer to the appropriate Authorities.

USE OF CHARTS

Take-off

Maximum take-off weight limited by field length is reduced compared to that obtained with braking system No 2 operative: this reduced maximum take-off weight is determined entering balanced field length charts with an assumed field length **shorter** than available runway length.

- Determine an assumed field length by entering the chart page 4 of this Annex with the available runway length. Using balanced field length charts (5-500-05 page 1 through page 12 or 5-550-05 page 1 through page 12 on dry runway, or 5-500-20 page 1 through page 12 or 5-550-20 page 1 through page 12 on wet runway), determine weight W2 for the assumed field length.
  On wet runway, W2 is the lower of W2 on wet runway and W2 on dry runway.

- **Decrease** decision speed V1 as read on charts by:

Configuration	Runway condition	Adjustment	Chart
20° FLAPS + SLATS or 10° FLAPS + SLATS	DRY	- 6 kt	5-500-10 pages 2 and 3 or 5-550-10 pages 2 and 3
	WET	- 10 kt	5-500-25 pages 2 and 3 or 5-550-25 pages 2 and 3

- V1 must be higher than V1 mini. and lower than VMBE and VR. If V1 thus determined does not meet one of these limits, the limit value must be selected as V1.

Landing

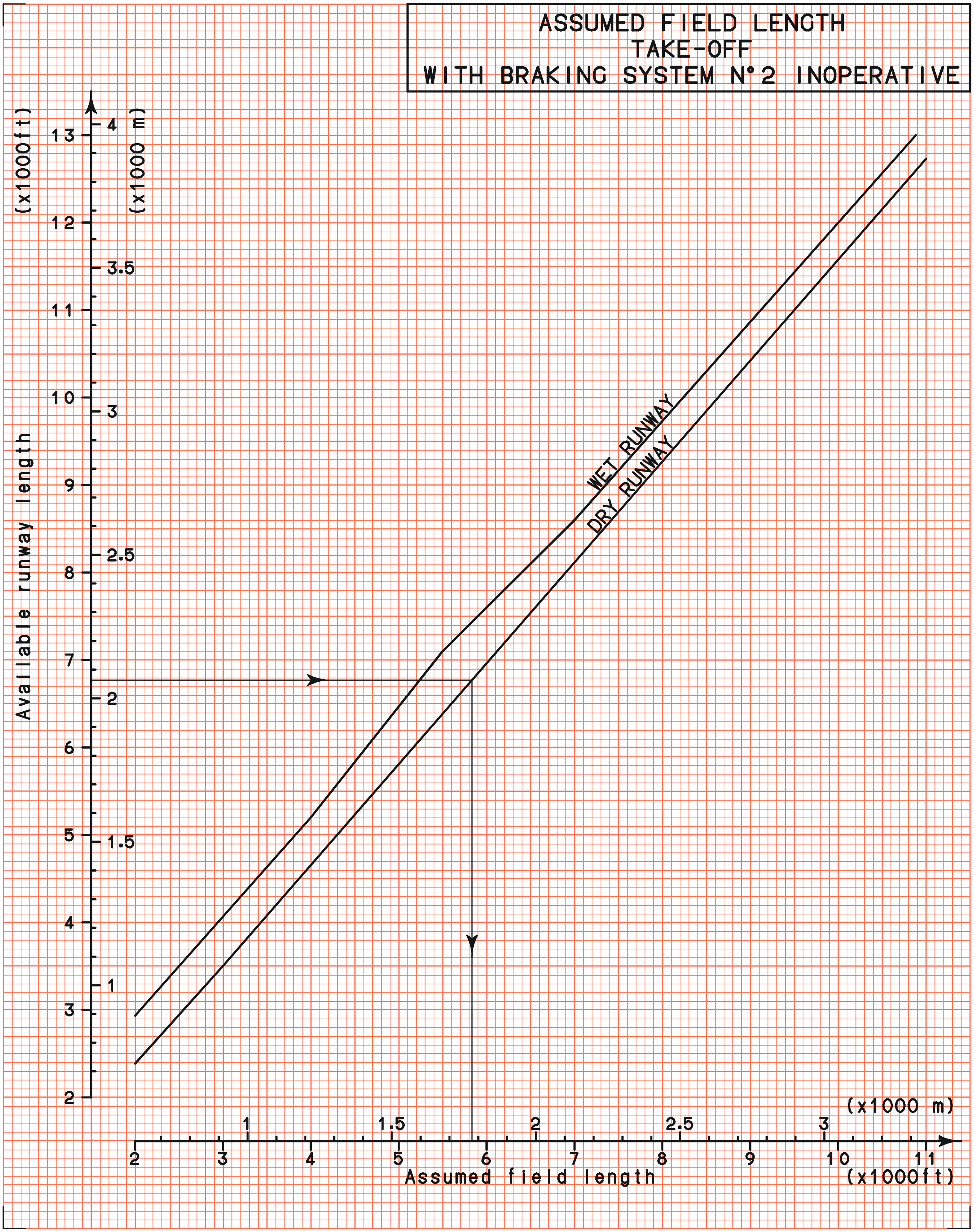
- Apply landing distance penalty as provided by AFM sub-sub-section 3-140-10 page 1 "BOTH BRAKE SYSTEM INOPERATIVE”.
- In that dispatch permit, satisfactory controllability at landing has been demonstrated with 90 degrees crosswind component up to 17 kt.

TAKE-OFF EXAMPLE DRY RUNWAY 20° FLAPS + SLATS

Field pressure altitude: 3,500 ft
Runway length: 6,770 ft

Ambient temperature: 35 °C
Runway slope: +1 % up hill
Headwind: +20 kt

5-500-40 page 1	:	Maximum take-off weight limited by climb requirements .... W1 = 34,200 lb
Annex 5 page 4	:	Maximum take-off weight limited by field length: Assumed field length: 5,830 ft
5-500-05 page 4 5-500-05 page 5	:	For 3,000 ft field pressure altitude : 30,350 lb For 4,000 ft field pressure altitude : 29,250 lb For 3,500 ft field pressure altitude, interpolate linearly: $29{,}250 + \frac{3{,}500 - 3{,}000}{4{,}000 - 3{,}000} \times (30{,}350 - 29{,}250) = 29{,}800$ lb W2 = 29,800 lb
1-050-05	:	Maximum take-off weight limited by structural limitation ....35,800 lb The maximum take-off weight is therefore the field length limited take-off weight .... W3 = 29,800 lb
5-500-40 page 2	:	Second segment gross climb gradient... 4.3 %
5-500-35 page 1	:	Take-off speeds ....VR = 111.5 kt ; V2 = 114.5 kt Recommended take-off attitude .... 10.6°
5-500-15 page 1	:	Maximum brake energy speed (VMBE) is never a limitation in 20° FLAPS + SLATS configuration.
5-500-10 pages 2 and 3	:	Decision speed associated with balanced field length: 114.5 - 6 = 108.5 kt V1 mini = 101 kt. As V1 must be higher than V1 mini and lower than VMBE and VR, use .... V1 = 108.5 kt


ASSUMED FIELD LENGTH
TAKE-OFF
WITH BRAKING SYSTEM N°2 INOPERATIVE
Available runway length
(x1000ft)
(x1000 m)
13
12
11
10
9
8
7
6
5
4
3
2
4
3.5
3
2.5
2
1.5
1
WET RUNWAY
DRY RUNWAY
(x1000 m)
1
1.5
2
2.5
3
2
3
4
5
6
7
8
9
10
11
Assumed field length
(x1000ft)

SUPPLEMENTARY PERFORMANCE INFORMATION FOR OPERATION ON RUNWAYS CONTAMINATED BY STANDING WATER, SLUSH, LOOSE SNOW, COMPACTED SNOW OR ICE

The information contained herein supplements the information contained in sections 1 to 5; for limitations, procedures and performance information not contained in this annex, consult sections 1 to 5.

This information has been prepared by the manufacturer and approved by the Authority in the form of guidance material, to assist operators in developing suitable guidance, recommendations or instructions for use by their flight crews when operating on contaminated runway surface conditions.

LIST OF PARTS

INTRODUCTION

The purpose of this annex is to give performance information about take-off and landing on hard surfaced runways contaminated by standing water, slush, loose snow, compacted snow or ice.

Operations conducted on contaminated runways result in reduced performance, as airplane acceleration and deceleration are affected:

- During the acceleration, the effect of landing gear displacement drag (compression or displacement of the contaminant) and spray impingement drag (spray thrown-up by the wheels striking the airframe) have to be taken into account.
- Braking effectiveness is reduced due to tire-to-runway friction, and is further reduced above aquaplaning speed.

The level of safety is decreased when operating on contaminated runways and therefore every effort should be made to ensure that the runway surface is cleared of any significant precipitation.

The provision of performance information for contaminated runways should not be taken as implying that ground handling characteristics on these surfaces will be as good as can be achieved on dry or wet runways, in particular, in crosswinds and when using reverse thrust.

The drag of the contaminant has been determined by tests conducted in water depths of up to 20 mm (0.75 in.). During the same tests, the aquaplaning speed was estimated and drag was found to decrease above this speed.

On the other hand, braking performance were not tested: for the calculation of this supplement, assumptions made are in accordance with advisory material as detailed in JAA AMJ 25X1591 and FAA AC91-6B.

LIMITATIONS

OPERATIONAL LIMITATIONS

Take-off and landing

- Maximum equivalent water depth : 12.7 mm (0.5 in.).
- Maximum safe crosswind on icy runway : 5 kt.

CAUTION

For operations on contaminated runways, FMS TOLD information must be disregarded and performance must be determined using Contaminated Runway Charts performance.

RECOMMENDED OPERATIONAL LIMITATIONS

Take-off and landing

Take-off and landing with tailwind are not recommended.

Take-off and landing on runways with downhill slope are not recommended.

RUNWAY SURFACE CONDITION

Operation on runways contaminated with water, slush, snow or ice implies uncertainties with regard to runway friction and contaminant drag and therefore to the achievable performance and control of the aeroplane during take-off, since the actual conditions may not completely match the assumptions on which the performance information is based. In the case of a contaminated runway, the first option for the commander is to wait until the runway is cleared. If this is impracticable, he may consider a take-off, provided that he has applied the applicable performance adjustments, and any further safety measures he considers justified under the prevailing conditions.

An adequate overall level of safety will only be maintained if operations in accordance with this annex are limited to rare occasions. Where the frequency of such operations on contaminated runways is not limited to rare occasions, operators should provide additional measures ensuring an equivalent level safety. Such measures could include special crew training, additional distance factoring and more restrictive wind limitations.

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NORMAL PROCEDURES

RECOMMENDED MAXIMUM CROSSWIND

The recommended crosswind components here below are not demonstrated; proposed values are issued from in service experience on same airplane type or class.

Reported Braking Action	Recommended Maximum Crosswind
Medium	15 kt
Poor	10 kt
Unreliable	5 kt

Reported Runway Condition	Recommended Maximum Crosswind
Compacted snow or Wet snow (Cd* < 5 mm) or Dry snow (Cd* < 20 mm)	15 kt
Wet snow (Cd* ≥ 5 mm) or Dry snow (Cd* ≥ 20 mm) or Standing water, Slush	10 kt
Runway with high risk of hydroplaning	5 kt

* Cd = Contaminant depth in millimeters.

Use of here above reported braking action or reported runway condition shall be restricted to the maximum recommended crosswind determination.

TAKE-OFF

Acceleration check:

Acceleration at brake release and acceleration time to 100 KIAS remains valid on wet, compacted-snow-covered or icy runways as acceleration is assumed not to be affected. On runways covered with standing water, slush or snow, check the acceleration at 90 KIAS : if it falls below 0.07 g (standing water / slush) or 0.16 g (snow), this may prevent VR from being reached.

Aborted take-off : use of engine thrust reversers is strongly recommended.

AFTER LANDING

On ice covered runways, it is strongly recommended to use reverse thrust.

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PERFORMANCE DEFINITIONS

AIRSPEEDS

Vp - Aquaplaning speed

Speed above which the tire is borne only by a liquid film and no longer in contact with the runway.
This speed depends on tire pressure and contaminant specific gravity.
Vp is estimated to be 88 kt in standing water and slush (assumed specific gravity of 1.) and up to 124.5 kt in snow (assumed specific gravity of 0.5).

VSTOP - Stop decision speed

The highest speed from which the airplane can stop within the accelerate-stop distance available.

VGO - Go decision speed

The lowest speed from which a continued take-off is possible with one engine inoperative within the take-off distance available.

NOTE

VSTOP = VGO for balanced field length.
The use of VSTOP lower than VGO creates a high risk speed zone: engine failure in between VSTOP and VGO leads to an overrun.

TAKE-OFF

Take-off distance on contaminated runway

Greatest horizontal distance along the takeoff path from start of take-off roll to the point at which the airplane reaches an height of either:

- 15 ft (4.57 m) with one engine failing at VEF corresponding to VGO.
- 35 ft (10.67 m) with all engines operating (distance factored by 115 %).

Accelerate-stop distance

The greater of the following distances:

- Distance necessary to accelerate the airplane from a standing start to the engine failure speed VEF with all engines operating, then from VEF to VSTOP, assuming critical engine fails at VEF, and then come to a full stop.
- Distance necessary to accelerate the airplane from a standing start to VSTOP with all engines operating, and then come to a full stop.

In addition, accelerate-stop distance includes a distance margin equivalent to 2 seconds at constant VSTOP.

LANDING

Landing field length

The calculated landing distance on contaminated runway multiplied by a factor of 1.15 to be applied in accordance with the relevant operating regulations.

RUNWAY CONDITIONS

Equivalent water depth

Contaminant depth multiplied by specific gravity.

Runways contaminated by standing water, slush or loose snow

A runway is considered to be contaminated when more than 25 % of the runway surface area within the required length and width being used, is covered by surface water more than 3 mm (0.12 in) deep, or by slush or loose snow, equivalent to more than 3 mm (0.12 in) of water.
The calculations of this annex are made assuming constant contaminant depth all along the runway. The estimation of the condition of the runway should be made mainly in the area where the airplane is supposed to be above 100 kt.

Slush is a mixture of melting snow and water, with a specific gravity between 0.8 and 1.

Heavy wet snow has started to melt: the specific gravity is between 0.36 and 0.5.

Loose dry snow: the snow crystals are separated, and the specific gravity is between 0.20 and 0.36.

A wheel-braking coefficient of friction of one-fourth of the wheel-braking coefficient demonstrated on a dry runway is assumed at speeds equal to and below 0.9 times the aquaplaning speed and 0.05 is assumed above this speed.

Runways contaminated by compacted snow

A runway is considered contaminated by compacted snow when covered by snow which has been compressed into a solid mass which resists further compression. Wheels will not sink into this snow.

A wheel-braking coefficient of friction of 0.2 is assumed.

Runways contaminated by ice

A runway surface condition where braking action is expected to be very low, due to the presence of wet or dry ice.

A wheel-braking coefficient of friction of 0.05 is assumed.

PERFORMANCE INFORMATION

RUNWAY CONDITIONS

All the performance data are established based on runways contaminated by standing water, slush, loose snow, compacted snow or ice, as applicable.
The performance information assumes any standing water, slush or loose snow to be of uniform depth and density.

PERFORMANCE CONDITIONS

MAXIMUM ALLOWABLE WEIGHTS

Take-off - Field length limits

A field length limited take-off weight is reached when the field length determined from the charts is equal to the field length available.

Maximum take-off weight on contaminated runway must never be higher than maximum take-off weight on the same runway in dry conditions. Then, in case of take-off weight limited by take-off distance on contaminated runway, this weight has to be compared to the maximum take-off weight on dry runway.

Take-off - Acceleration limits

On runway contaminated by snow, as aquaplaning speed increases when the specific gravity decreases, the maximum drag produced by the contaminant occurs at a speed close to VR: therefore, take-off should not be attempted if the airplane acceleration all engines operating, predicted at VR is too low.

Then an acceleration limited take-off weight is reached when the available acceleration equals the minimum acceleration required to reach VLOF.

Landing - Field length limits

Maximum landing weight on contaminated runway must never be higher than maximum landing weight on the same runway in dry or wet conditions. Then, in case of landing weight limited by landing distance on contaminated runway, this weight has to be compared to the maximum landing weight on dry or wet runway.

PROCEDURES

Selection of flap setting at take-off

Select 20° FLAPS + SLATS position.

Landing

Brakes are not applied until the airplane has decelerated below aquaplaning speed.

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PERFORMANCE - USE OF CHARTS

TAKE-OFF

Runways contaminated by standing water, slush or snow

Performance charts are provided to determine the maximum take-off weight as limited by available field length, obstacle clearance and climb performance requirements.

Conversely, these same charts can be used to determine, for a given weight, second segment, final segment, en route, approach and landing climb gradients, required runway lengths and close or distant obstacle clearances.

- Using maximum take-off weight limited by climb requirements chart (5-500-40 page 1) for runways contaminated by standing water or slush or maximum take-off weight limited by climb requirements and by acceleration chart (Annex 6 Part 10 page 1 for runways contaminated by snow, determine weight W1.

- Using assumed field length for runways contaminated by standing water or slush chart (Annex 6 Part 8 pages 2 and 3 with no reverse thrust or Annex 6 Part 8 pages 4 and 5 with reverse thrust) or contaminated by snow (Annex 6 Part 10 pages 2 and 3 with no reverse thrust or Annex 6 Part 10 pages 4 and 5 with reverse thrust), determine an assumed field length corresponding to the available runway length and selected VSTOP.
  First select VSTOP=VR.
  Determine weight W2 on contaminated runway using balanced field length on wet runway charts (5-500-20 page 1 through page 12) for the assumed field length.
  On contaminated runway, W2 is the lower of W2 on contaminated runway and W2 on dry runway (5-500-05 page 1 through page 12).
  If weight W2 is not sufficient for the planned flight, decreasing VSTOP may yield a higher take-off weight. The magnitude of the high risk speed zone (VGO-VSTOP) so created is a pilot decision.

- Weight W3 is the lower of W1, W2 and Max Take-off Weight as specified in STRUCTURAL LIMITATIONS, sub-section 1-050.
- Check that the complete take-off - balanced field length, first, second, transition and final segments - is not obstacle limited at weight W3 (refer to para. ”Obstacle clearance”).
  If obstacle clearance is achieved, the maximum take-off weight is W3.

- If all obstacles are not cleared, the weight must be reduced by iteration until all obstacles are cleared.
  This new weight W4 is the final maximum take-off weight.

- For this maximum take-off weight:
  - Refer to chart 5-500-35 page 1 to determine take-off speeds VR and V2 and recommended attitude (as a function of second segment climb gradient given on chart 5-500-40 page 2).
  - Use VGO = VR

Runways contaminated by compacted snow or ice

Refer to USE OF CHARTS sub-sub section 5-200-05 page 1 with the following changes:

- Determine weight W2 using the assumed field length on wet runway corresponding to the available runway length (chart Annex 6 Part 12 page 1 and 5-500-20).
- Adjust V1 on wet runways as read on charts 5-500-25 pages 2 and 3 by following values:

Runway condition	Reverse thrust	V1 adjustment
Compacted snow	NO	- 5 kt
	YES	+ 2 kt
Ice	YES	-10 kt

V1 must be higher than V1 mini and lower than VR. If V1 thus determined does not meet one of these limits, the limit value must be selected as V1.

NOTE

Take-off on runways contaminated by ice without the use of reverse thrust is not recommended as braking effectiveness is very poor and deceleration is significantly decreased.

LANDING

Runways contaminated by standing water, slush, snow, compacted snow or ice

Actual landing distance on contaminated runways is calculated by applying the adjustment factors shown in the following table to the dry runway actual landing distance obtained from chart 5-700-25 page 1.

Factors with reverse thrust assume that both thrust reversers are operated at maximum reverse thrust.

Landing distances on contaminated runways − Adjustment factors								
Runway conditions	**STANDING WATER OR SLUSH**			**SNOW**			**COMPACTED SNOW**	**ICE**
Equivalent water depth	0.12 in.* (3 mm)	0.25 in. (6.3 mm)	0.50 in. (12.7 mm)	0.12 in.* (3 mm)	0.25 in. (6.3 mm)	0.50 in. (12.7 mm)	-	-
Without reverse thrust	2.6	2.3	2.1	1.9	1.6	1.4	1.7	3.4
With reverse thrust	1.6	1.6	1.5	1.4	1.3	1.2	1.3	1.8

* Below 0.12 in. (3 mm) of equivalent water depth, use wet runways information.

TAKE-OFF EXAMPLES RUNWAYS CONTAMINATED BY STANDING WATER OR SLUSH 20° FLAPS + SLATS

EXAMPLE 1

Field pressure altitude: sea level.
Available runway length: 8,400 ft

SAT: 40 °C
Runway slope: +1 % up hill
Headwind: +30 kt

Runway covered by 6 mm (0.24 in.) of water.

5-500-40 page 1	: Maximum take-off weight limited by climb requirements .... W1 = 37,000 lb
Annex 6 Part 8 page 2	: Maximum take-off weight limited by field length on contaminated runway: VSTOP = VR selected. Assumed field length: .... 4,400 ft
5-500-20 page 1	: For this assumed field length, maximum take-weight limited by field length on wet runway: .... W2CONT = 31,800 lb
5-500-05 page 1	: Maximum take-off weight limited by field length on dry runway: .... W2DRY = no limitation
	If weight W2, the lower of W2CONT and W2DRY, is not sufficient for the planned flight, decreasing VSTOP may yield a higher take-off weight (see example 2).
1-050-05	: Maximum take-off weight limited by structural limitation .... 35,800 lb
	The maximum take-off weight on contaminated runway is therefore the field length limited take-off weight .... W3 = 31,800 lb
5-500-40 page 2	: Second segment gross climb gradient .... 4.6 %
5-500-35 page 1	: Take-off speeds .... VR = 115.5 kt ; V2 = 118 kt Recommended attitude: .... 10.8°
	Decision speed: .... VSTOP = VGO = VR = 115.5 kt

EXAMPLE 2

Same conditions as example 1.
The maximum take-off weight (W2=31,800 lb) as found in example 1 is not sufficient for the planned flight.
Decreasing VSTOP may yield a higher take-off weight.

Annex 6 Part 8 page 2	:	Maximum take-off weight limited by field length on contaminated runway: VSTOP = VR - 9 kt selected. Assumed field length: .... 5,100 ft
5-500-20 page 1	:	For this assumed field length, maximum take-weight limited by field length on wet runway: .... W2CONT = 34,000 lb
5-500-05 page 1	:	Maximum take-off weight limited by field length on dry runway: ....W2DRY = no limitation
1-050-05	:	Maximum take-off weight limited by structural limitation ....35,800 lb
		The maximum take-off weight on contaminated runway is therefore the field length limited take-off weight .... W3 = 34,000 lb
5-500-40 page 2	:	Second segment gross climb gradient... 3.6 %
5-500-35 page 1	:	Take-off speeds ....VR = 119.5 kt ; V2 = 122 kt Recommended attitude: ....10.2°
		Decision speed: .... VSTOP = 110.5 kt; VGO = VR = 119.5 kt

Failure of one engine between VSTOP and VGO leads to an overrun: decreasing the magnitude of this high risk speed zone yields a lower maximum take-off weight.

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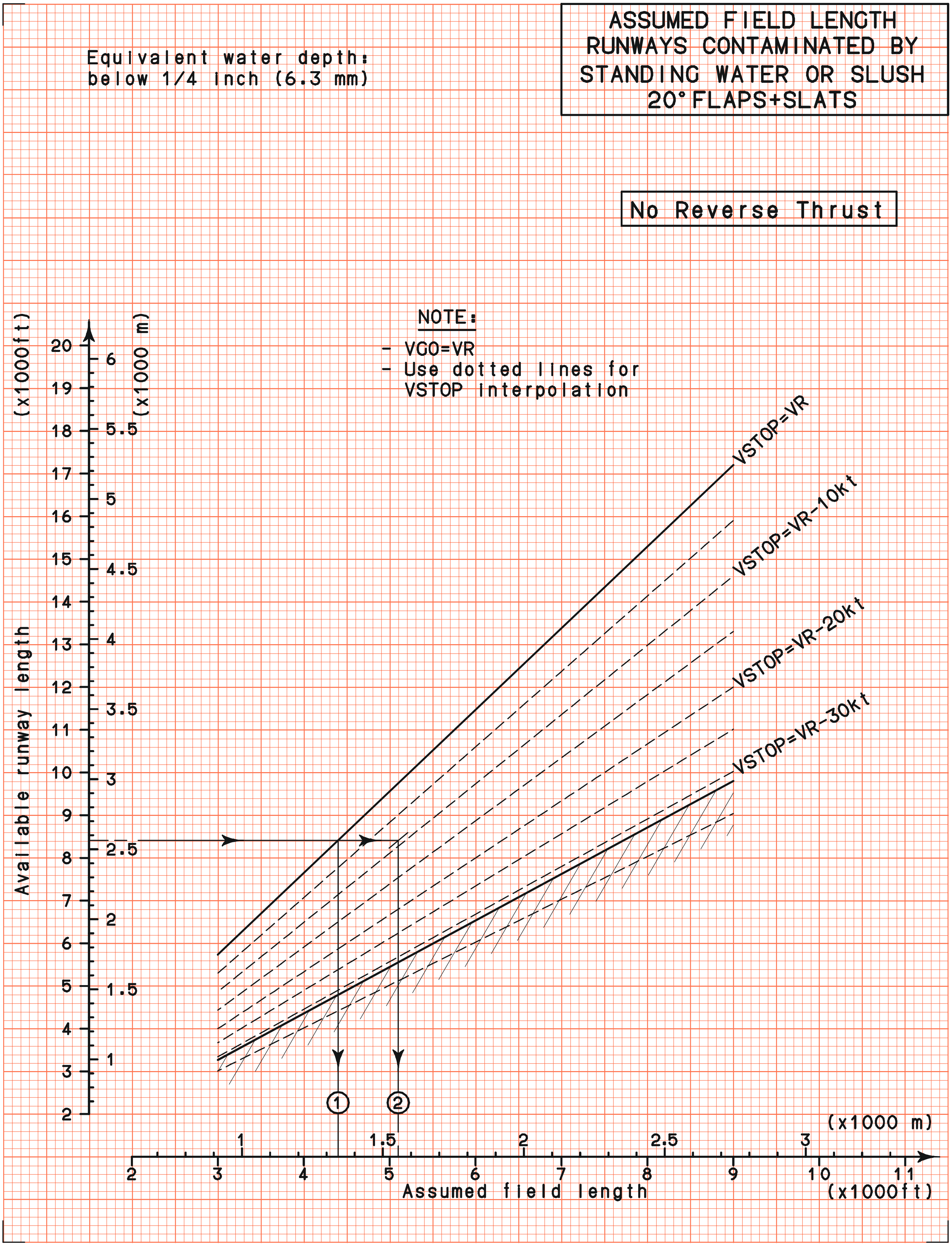
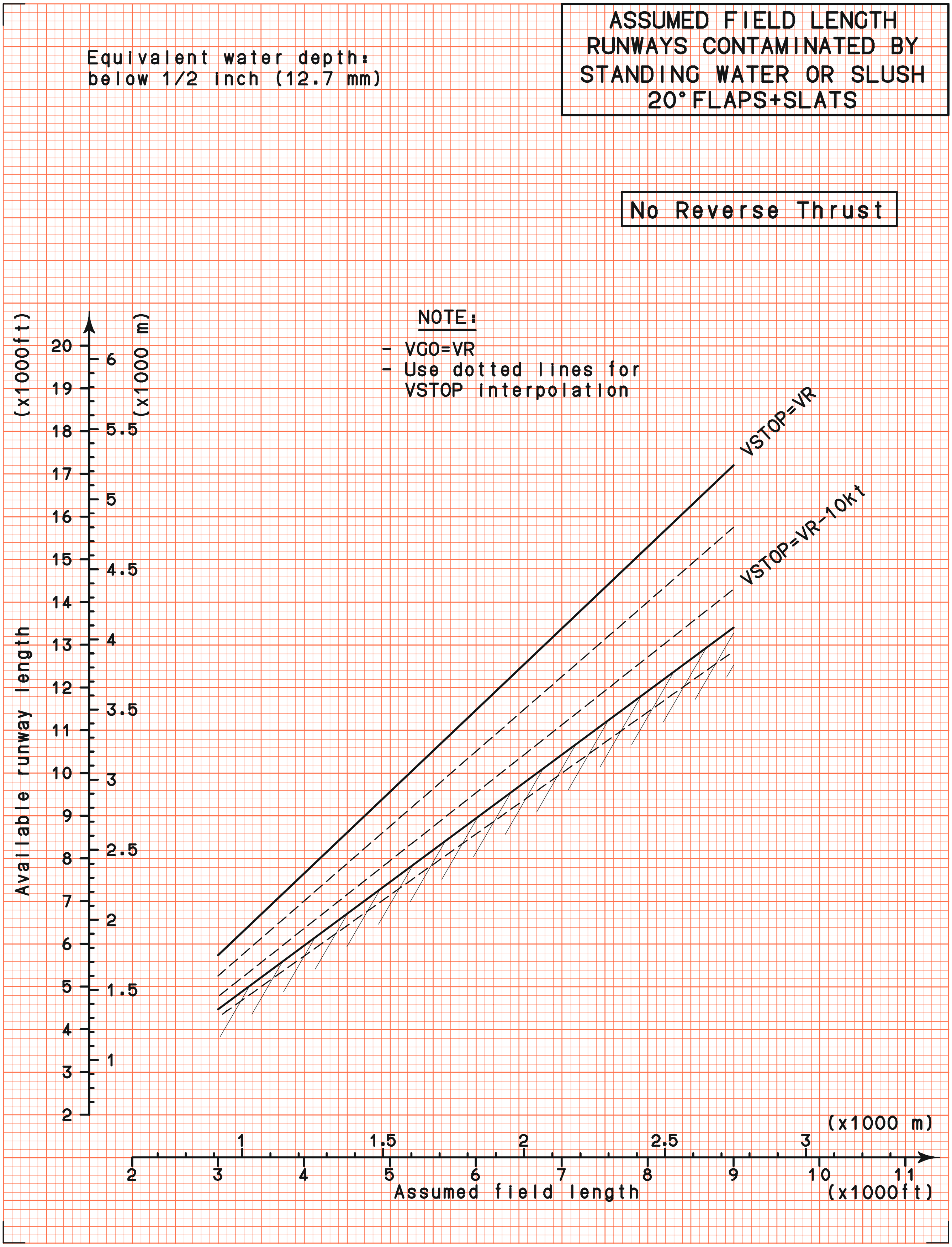
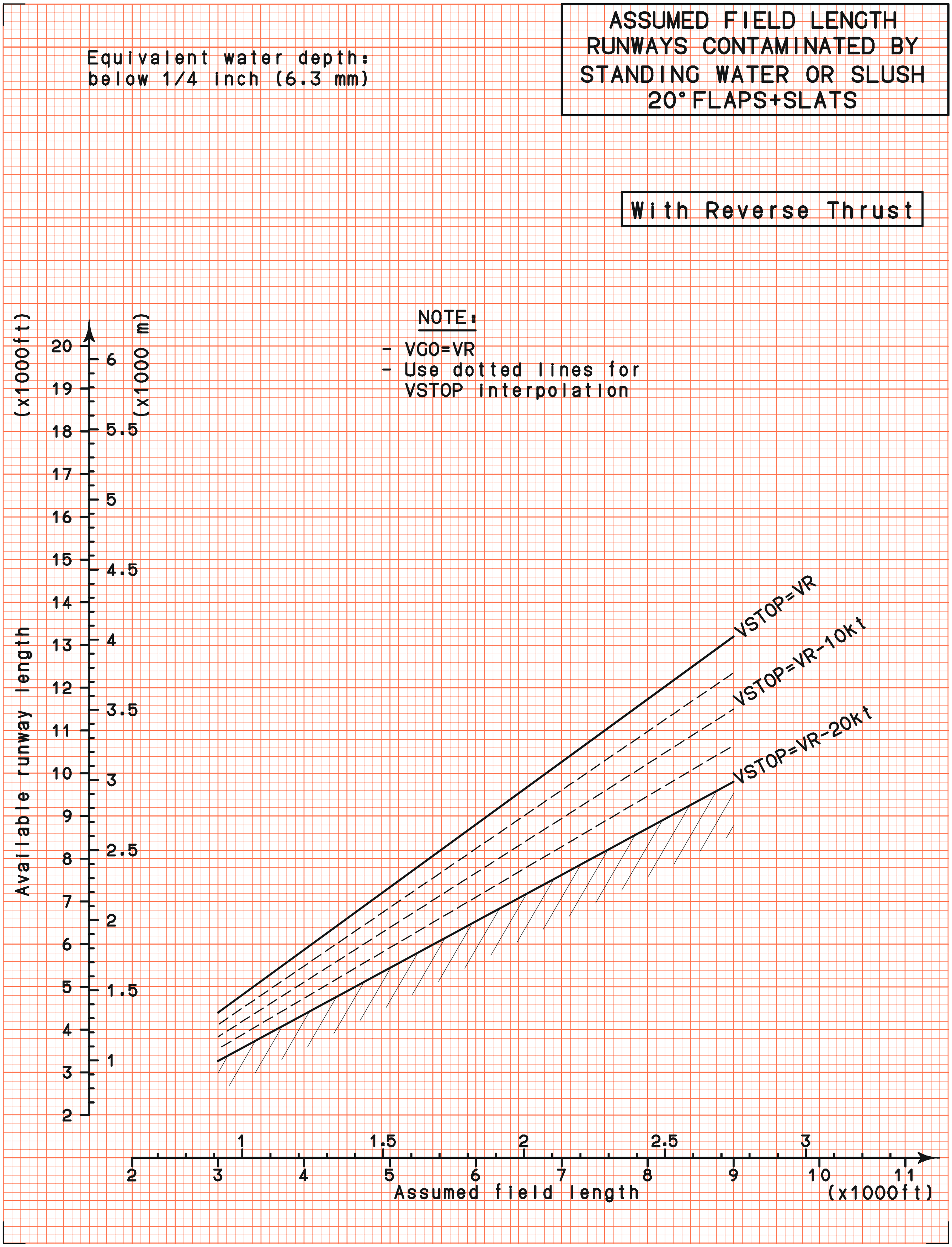
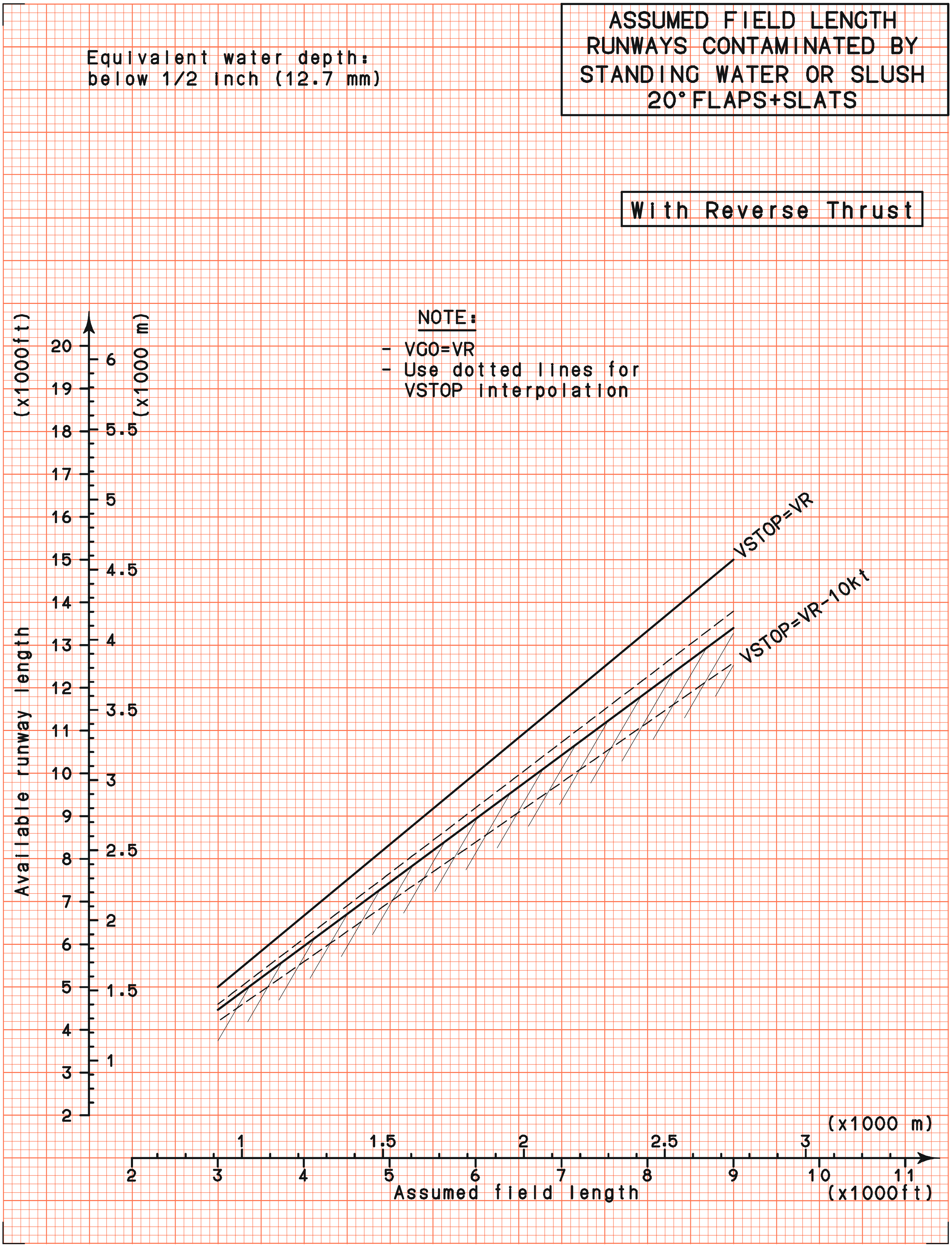

ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY
STANDING WATER OR SLUSH
20° FLAPS+SLATS
Equivalent water depth:
below 1/4 inch (6.3 mm)
No Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
VSTOP=VR-20kt
VSTOP=VR-30kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000ft)
(x1000 m)
1
2



ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY
STANDING WATER OR SLUSH
20° FLAPS+SLATS
Equivalent water depth:
below 1/2 inch (12.7 mm)
No Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for
VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000ft)
(x1000 m)


ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY
STANDING WATER OR SLUSH
20° FLAPS+SLATS
Equivalent water depth:
below 1/4 inch (6.3 mm)
With Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for
VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
VSTOP=VR-20kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000ft)



ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY
STANDING WATER OR SLUSH
20° FLAPS+SLATS
Equivalent water depth:
below 1/2 inch (12.7 mm)
With Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for
VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
Available runway length
(x1000ft)
(x1000 m)
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
Assumed field length
(x1000 m)
1
1.5
2
2.5
3
(x1000ft)
2
3
4
5
6
7
8
9
10
11

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TAKE-OFF EXAMPLES RUNWAYS CONTAMINATED BY SNOW 20° FLAPS + SLATS

EXAMPLE 1

Field pressure altitude: 2,000 ft.
Runway length: 9,100 ft
Anti-ice OFF (no visible moisture).

SAT: -5 °C
Runway slope: +1 % up hill
Headwind: +15 kt

The runway is covered by 10 mm (0.4 in.) of wet snow, corresponding to an equivalent water depth of 10 x 0.5 = 5 mm (0.2 in.).

Annex 6 Part 10 page 1	:	Maximum take-off weight limited by climb requirements and by acceleration: .... no limitation
Annex 6 Part 10 page 2	:	Maximum take-off weight limited by field length on contaminated runway: VSTOP = VR selected. Assumed field length: .... 5,500 ft
5-500-20 page 3	:	For this assumed field length, maximum take-off weight limited by field length on wet runway: .... W2CONT = 35,700 lb
5-500-05 page 3	:	Maximum take-off weight limited by field length on dry runway: ....W2DRY = no limitation If weight W2, the lower of W2CONT and W2DRY, is not sufficient for the planned flight, decreasing VSTOP may yield a higher take-off weight (see example 2).
1-050-05	:	Maximum take-off weight limited by structural limitation ....35,800 lb The maximum take-off weight on contaminated runway is therefore the field length limited take-off weight .... W3 = 35,700 lb
5-500-40 page 2	:	Second segment gross climb gradient.. 3.3 %
5-500-35 page 1	:	Take-off speeds: ....VR = 122.5 kt ; V2 = 125 kt Recommended attitude: .... 10.0° Decision speeds:....................................VSTOP = VGO = VR = 122.5 kt

EXAMPLE 2

Field pressure altitude: 4,000 ft.
Runway length: 6,390 ft
Anti-ice ON.

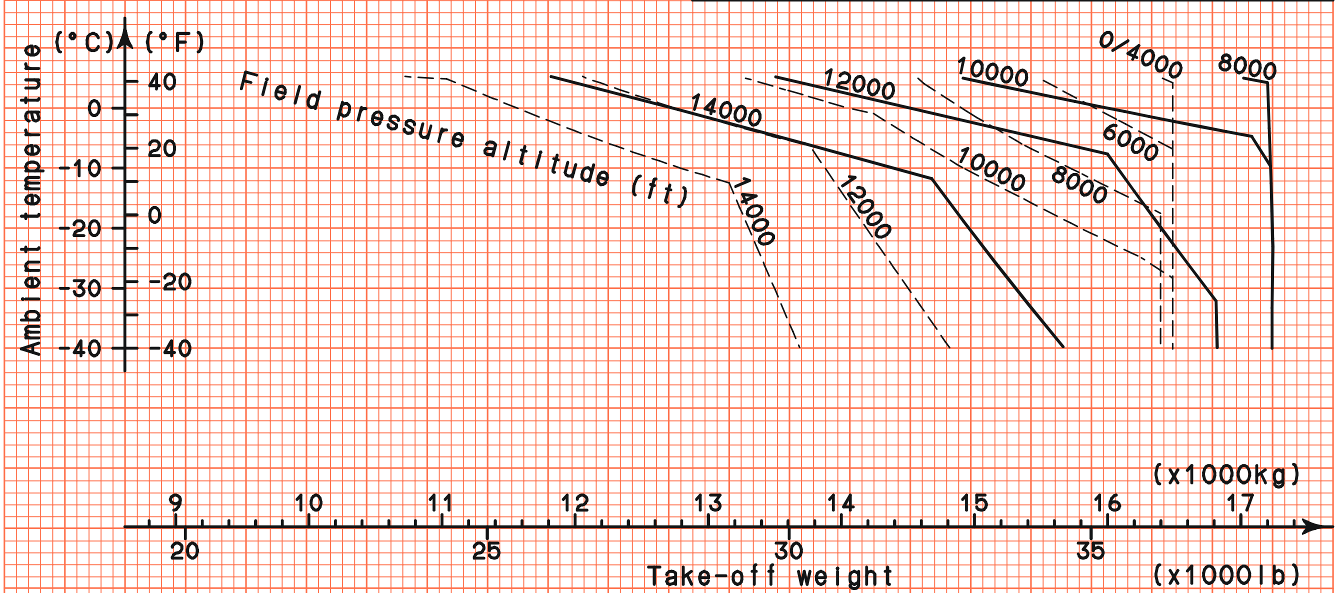
SAT: -20 °C
Runway slope: +1 % up hill
Headwind: +15 kt

The runway is covered by 30 mm (1.18 in.) of dry snow, corresponding to an equivalent water depth of 30 x 0.36 = 11 mm (0.44 in.).

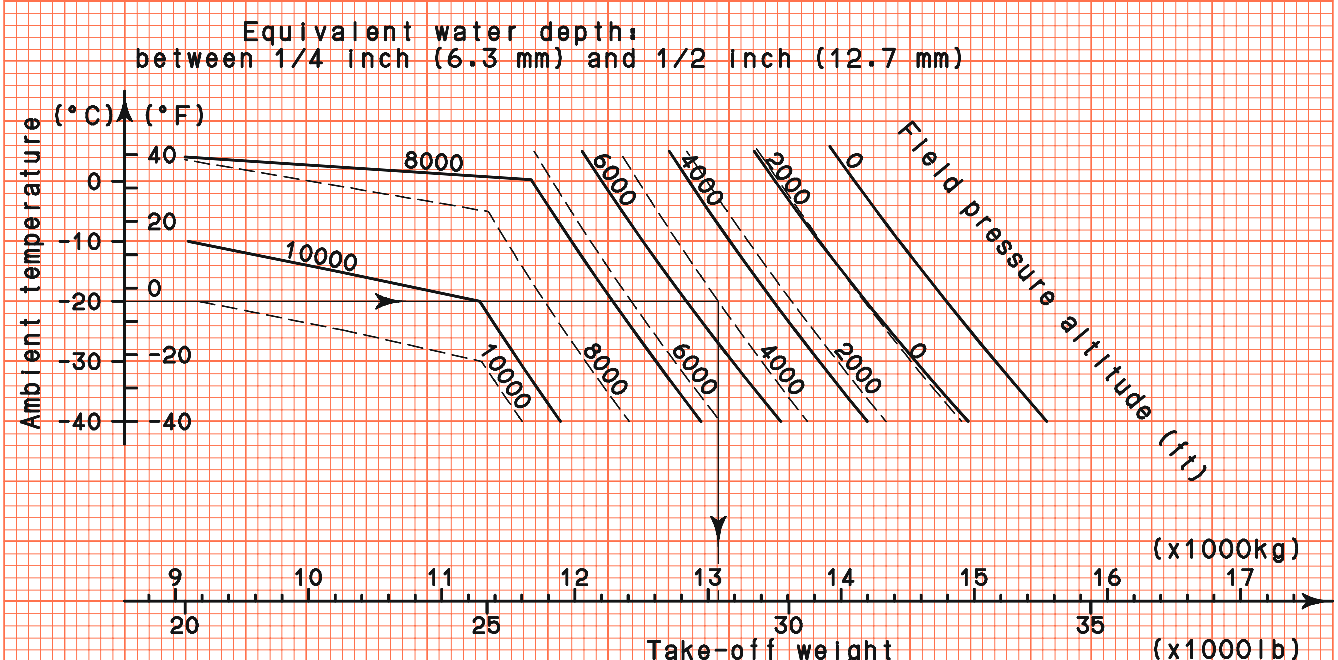
Annex 6 Part 10 page 1	:	Maximum take-off weight limited by climb requirements and by acceleration: .... W1 = 28,800 lb
Annex 6 Part 10 page 3	:	Maximum take-off weight limited by field length on contaminated runway: VSTOP = VR -10 kt selected. Assumed field length:.. 4,500 ft
5-500-20 page 5	:	For this assumed field length, maximum take-off weight limited by field length on wet runway:..................... W2CONT = 27,000 lb
5-500-05 page 5	:	Maximum take-off weight limited by field length on dry runway: ....W2DRY = 34,900 lb
1-050-05	:	Maximum take-off weight limited by structural limitation ....35,800 lb
		The maximum take-off weight on contaminated runway is therefore the field length limited take-off weight .... W3 = 27,000 lb
5-500-40 page 2	:	Second segment gross climb gradient.. 7.8 %
5-500-35 page 1	:	Take-off speeds: ....VR = 106 kt ; V2 = 109 kt Recommended attitude: ....12.5°
		Decision speeds:............................. VSTOP = 96 kt; VGO = VR = 106 kt

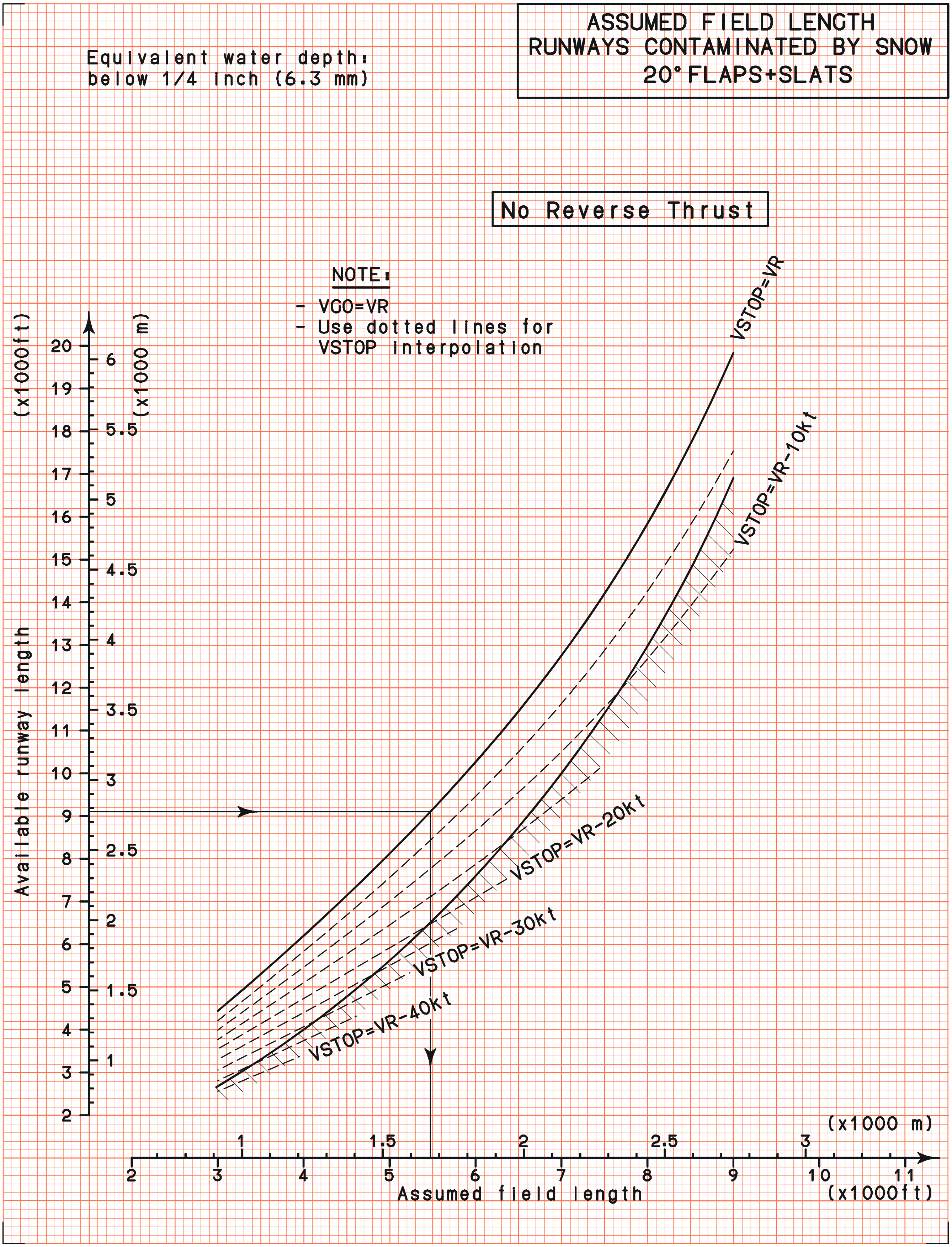
Failure of one engine between VSTOP and VGO leads to an overrun: decreasing the magnitude of this high risk speed zone yields a lower maximum take-off weight.

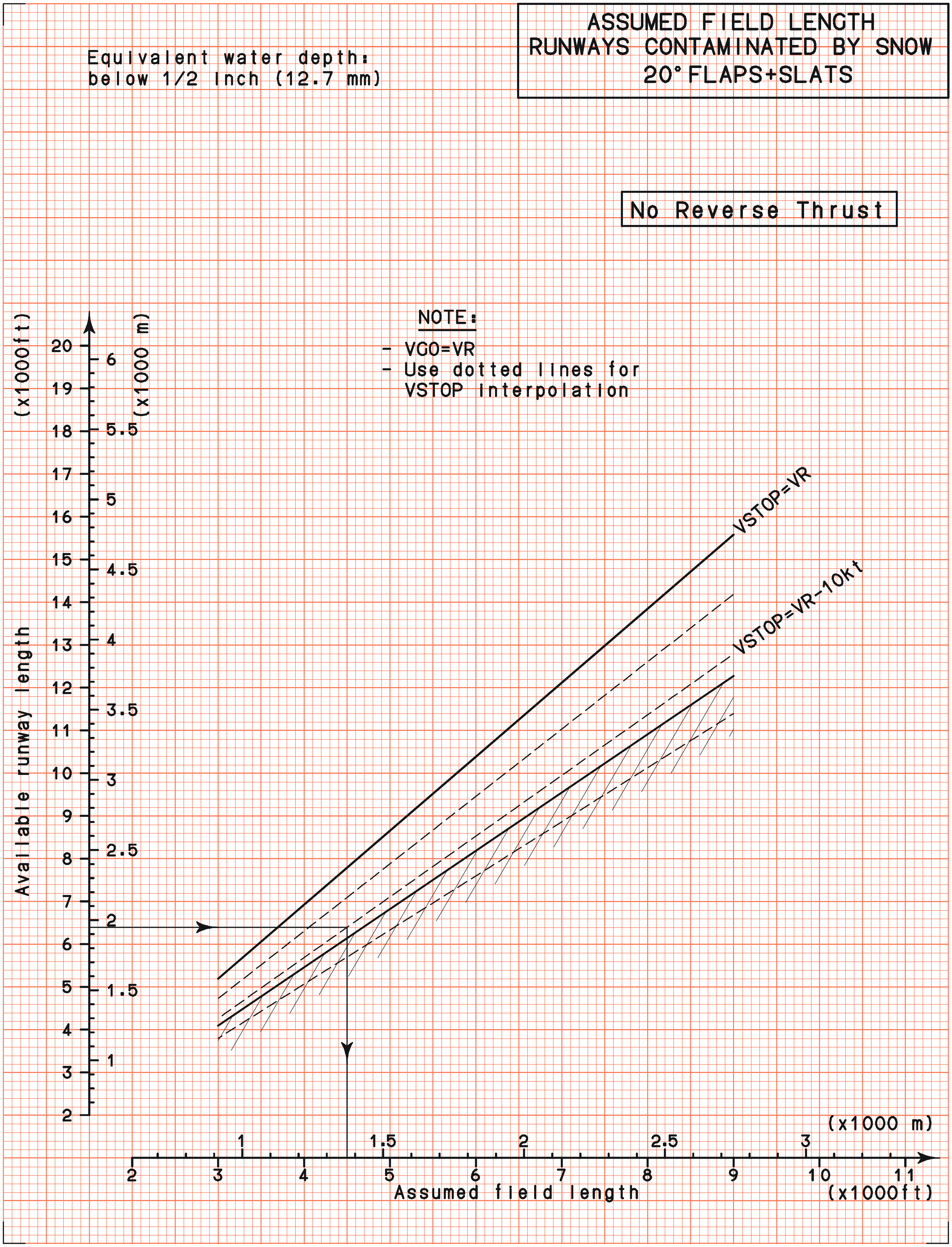
MAXIMUM TAKE-OFF WEIGHT LIMITED BY CLIMB REQUIREMENTS AND BY ACCELERATION ON RUNWAYS CONTAMINATED BY SNOW
20° FLAPS+SLATS



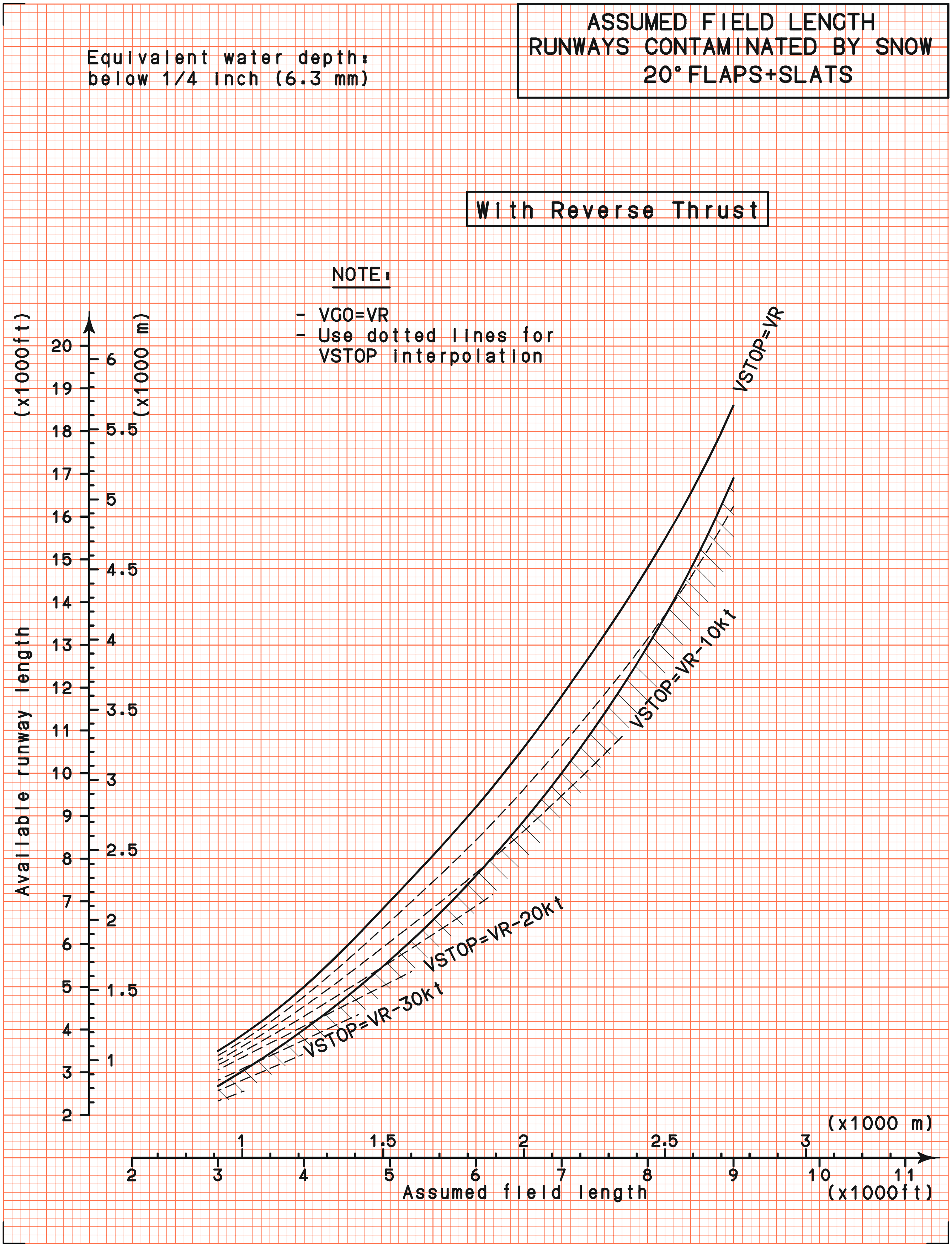
NOTE :
With engine anti-icing on use dotted lines



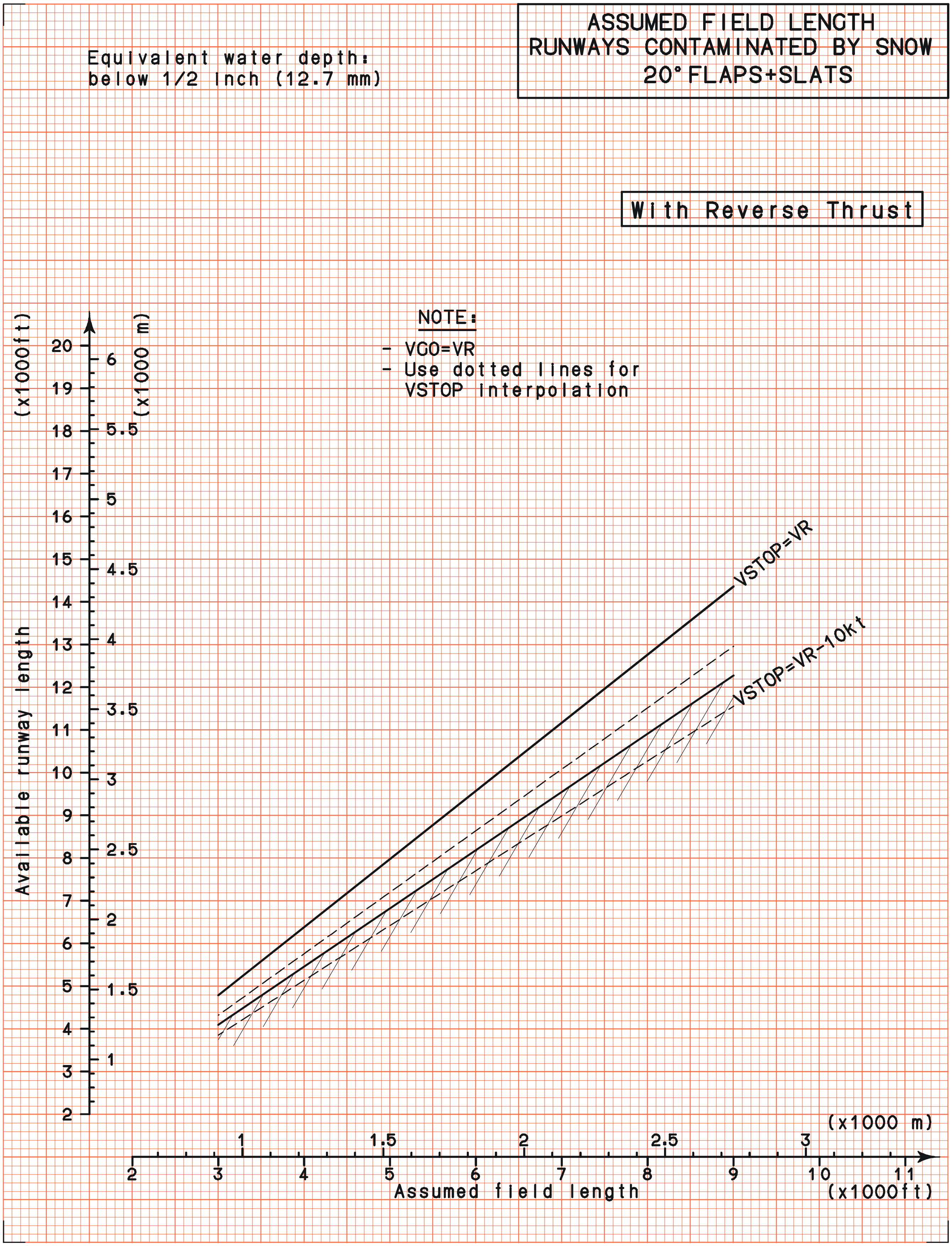

ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY SNOW
20° FLAPS+SLATS
Equivalent water depth:
below 1/4 inch (6.3 mm)
No Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for
VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
VSTOP=VR-20kt
VSTOP=VR-30kt
VSTOP=VR-40kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000ft)
(x1000 m)



ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY SNOW
20° FLAPS+SLATS
Equivalent water depth:
below 1/2 inch (12.7 mm)
No Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000 m)
(x1000ft)



ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY SNOW
20° FLAPS+SLATS
Equivalent water depth:
below 1/4 inch (6.3 mm)
With Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for
VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
VSTOP=VR-20kt
VSTOP=VR-30kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000 m)
(x1000ft)


ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY SNOW
20° FLAPS+SLATS
Equivalent water depth:
below 1/2 inch (12.7 mm)
With Reverse Thrust
NOTE:
- VGO=VR
- Use dotted lines for VSTOP interpolation
VSTOP=VR
VSTOP=VR-10kt
Available runway length
(x1000ft)
(x1000 m)
Assumed field length
(x1000ft)
(x1000 m)

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TAKE-OFF EXAMPLE RUNWAYS CONTAMINATED BY COMPACTED SNOW OR ICE 20° FLAPS + SLATS

Field pressure altitude: 2,000 ft.
Runway length: 6,630 ft
Anti-ice ON.

SAT: -20 °C
Runway slope: +1 % up hill
Headwind: +15 kt

The airplane is fitted with thrust reversers and the runway is covered by ice.

5-500-40 page 1	:	Maximum take-off weight limited by climb requirements .... W1 = 36,350 lb
		Maximum take-off weight limited by field length on contaminated runway:
Annex 6 Part 12 page 1	:	Assumed field length: .... 5,000 ft
5-500-20 page 3	:	For this assumed field length, maximum take-off weight limited by field length on wet runway: .... W2CONT = 34,200 lb
5-500-05 page 3	:	Maximum take-off weight limited by field length on dry runway: .... W2DRY = 35,700 lb
1-050-05	:	Maximum take-off weight limited by structural limitation ....35,800 lb
		The maximum take-off weight on contaminated runway is therefore the field length limited take-off weight: .... W3 = 34,200 lb
5-500-40 page 2	:	Second segment gross climb gradient .... 3.2 %
5-500-35 page 1	:	Take-off speeds: ....VR = 120 kt ; V2 = 122.5 kt Recommended attitude: .... 10.0°
5-500-25 pages 2 and 3	:	Decision speeds associated with balanced field length: 113.5 - 10 = 103.5 kt V1 mini = 101.5 kt As V1 is higher than V1 mini and lower than VR, use.......... V1 = 103.5 kt VMBE is never a limitation in 20° FLAPS + SLATS configuration.

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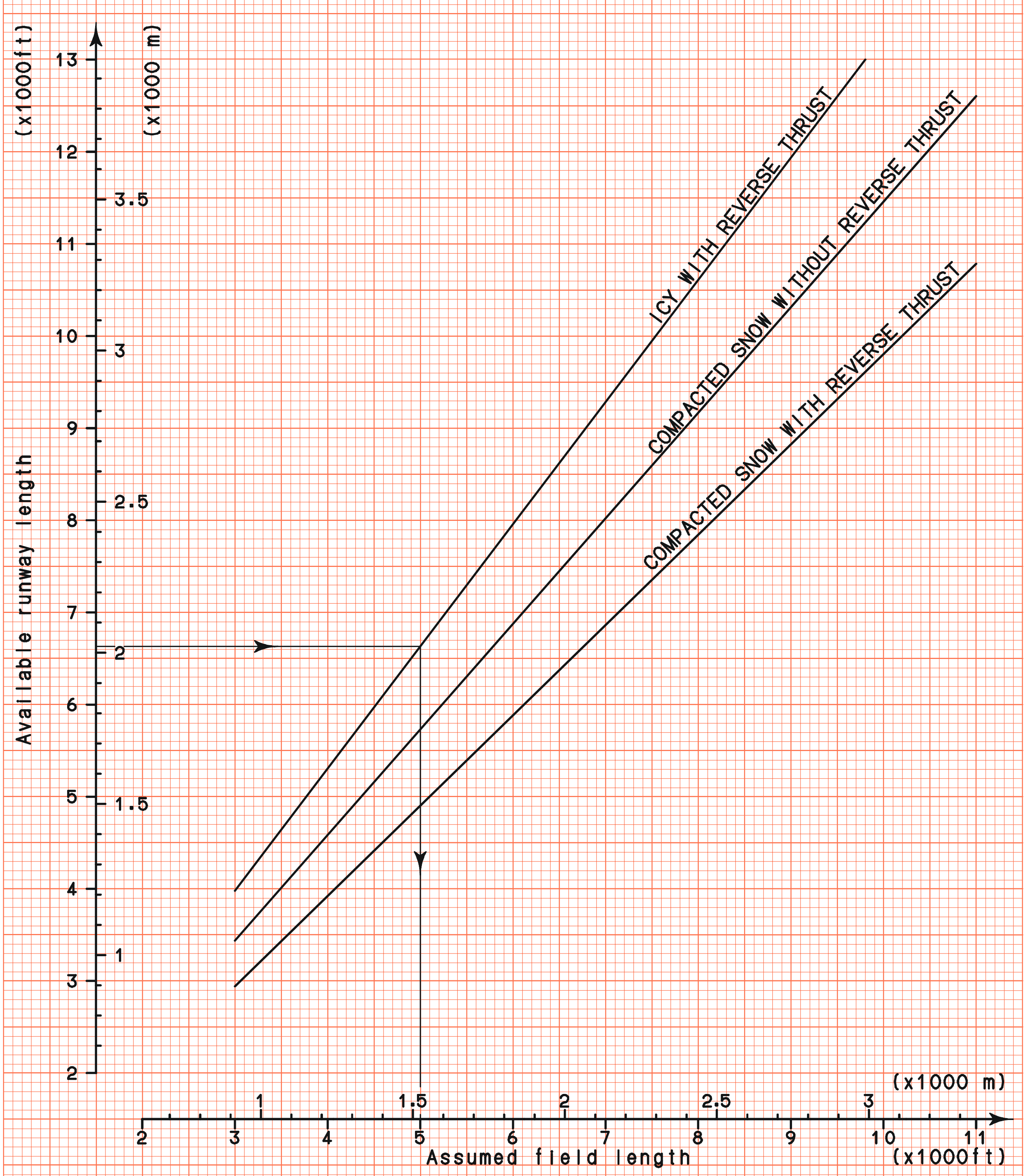
ASSUMED FIELD LENGTH
RUNWAYS CONTAMINATED BY
COMPACTED SNOW OR ICE
20° FLAPS+SLATS



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INTRODUCTION

The information contained herein supplements the information contained in sections 1 to 5; for limitations, procedures and performance information not contained in this annex, consult sections 1 to 5.

The purpose of this annex is to provide the information necessary for flight under MMEL dispatch with the landing gear down and main doors closed.

When the landing gear is down, airplane drag is increased and airspeed corrections are modified. Consequently, maximum take-off weight limited by climb requirements, second segment, en route and final take-off climb gradients, maximum landing weight, approach climb gradient and V2 are modified.

In case of main doors remained open, instruction to manually close them is given in the Maintenance Manual, Procedure 32-125 titled “Manual opening and closing of main landing gear doors”.

LIST OF PARTS

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LIMITATIONS

WEIGHTS

The maximum take-off weight and the maximum landing weight given as structural limitations may have to be reduced to comply with performance and operating requirements (refer to Max. Allowable weights, 5-150-10 and Annex 7 Part 3).

AIRSPEED AND MACH

Do not exceed the maximum landing gear extended speed (VLE / MLE) :

- VLE = 245 KIAS
- MLE = M 0.75

KINDS OF OPERATION

- Take-off on contaminated runway is not permitted.
- Take-off and landing are prohibited at an aerodrome where there would be a likelihood of a ditching in the event of a mishap along the take-off or approach path.
- Flying en route over water, beyond gliding distance from the shore is prohibited.
- Flight in actual or anticipated icing conditions is prohibited.
- RVSM operation is not permitted.
- APU must be available.

MAXIMUM NUMBER OF PASSENGERS

- Zero

PERFORMANCE LIMITATIONS

- The FMS fuel predictions must be disregarded.

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EMERGENCY PROCEDURES

EMERGENCY DESCENT

➨ Descent airspeed: M 0.75 (MLE) / 245 KIAS (VLE).

ABNORMAL PROCEDURES

WINDMILLING AIRSTART

➨ Windmilling airstart is not possible.

NORMAL PROCEDURES

PREFLIGHT - COCKPIT CHECK

➨ Normal L/G control .... Down
- ➨ **DO NOT ACTUATE** red placard .... Installed - Checked

PRETAXI CHECK

➨ Slat-flap handle .... 10° FLAPS + SLATS

TAKE-OFF

■ **When a positive rate of climb is established:**
- ➨ Landing gear handle .... Down - Checked
  - ☑ LANDING GEAR green lights (all 3) .... On

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PERFORMANCE DEFINITIONS

Gliding distance

Assuming failure of all both engines, the gliding distance is defined as the horizontal distance covered at the best glide speed (see en route climb speed 5-600-05) in CLEAN configuration with landing gear down: 15 NM per 10,000 ft of descent.

PERFORMANCE CONDITIONS

PROCEDURES

Selection of flap setting at take-off

Select 10° FLAPS + SLATS position

MAXIMUM ALLOWABLE WEIGHTS

Take-off - Climb performance

The most restrictive condition is either second segment climb gradient or final take-off climb gradient.

USE OF CHARTS

TAKE-OFF

- Using maximum take-off weight limited by climb requirements chart (Annex 7 Part 5 page 1), determine weight W1.
- Reduce second segment gross climb gradient by 1.6 % (0.016) (chart 5-550-40 page 2).
- Increase take-off speed V2 by 1.5 kt (chart 5-550-35 page 1).
- Determine recommended attitude (chart 5-550-35 page 1) as a function of unreduced (L/G up) second segment gross climb gradient.

OBSTACLE CLEARANCE

Charts 5-550-45 page 1 through page 3 have to be entered with second segment gross climb gradient, corrected for landing gear down, in accordance with the instructions above.

EN ROUTE AND FINAL TAKE-OFF

- Reduce climb gradient by 3.0 % (0.030) (charts 5-600-10 page 1).

APPROACH AND LANDING

- Decrease maximum landing weight limited by approach and landing climb requirements by 5,500 lb (chart 5-700-10 page 1).
- Reduce one engine inoperative approach climb gradient by 1.7 % (0.017) (chart 5-700-15 page 1).

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TAKE-OFF EXAMPLE DRY RUNWAY 10° FLAPS + SLATS

Field pressure altitude: 10,000 ft
Runway length: 7,320 ft

Ambient temperature: 20 °C
Runway slope: -1 % down hill
Headwind: +15 kt

Annex 7 Part 5 page 1	:	Maximum take-off weight limited by climb requirements.. W1 = 27,900 lb
5-550-05 page 10	:	Maximum take-off weight limited by field length .... W2 = 31,300 lb
1-050-05 page 1	:	Maximum take-off weight limited by structural limitation: ....35,800 lb
		The maximum take-off weight is therefore the climb requirements limited take-off weight....................... W3 = 27,900 lb
5-550-40 page 2	:	Second segment gross climb gradient - L/G up .... 4.6 % - L/G down .... 4.6 - 1.6 = 3.0 %
5-550-35 page 1	:	Take-off speeds ....VR = 112.5 kt ; V2 = 115 + 1.5 = 116.5 kt Recommended take-off attitude associated with L/G up second segment gross climb gradient ....11.7°
5-550-15 page 1	:	Maximum brake energy speed (VMBE): When the guide line is over to the right side of the dashed line, VMBE is always higher than VR and therefore higher than V1.
5-550-10 pages 2 and 3	:	Decision speed associated with balanced field length: 110.5 kt V1 mini = 100.5 kt. As V1 is higher than V1 mini and lower than VR and VMBE.. V1 = 110.5 kt

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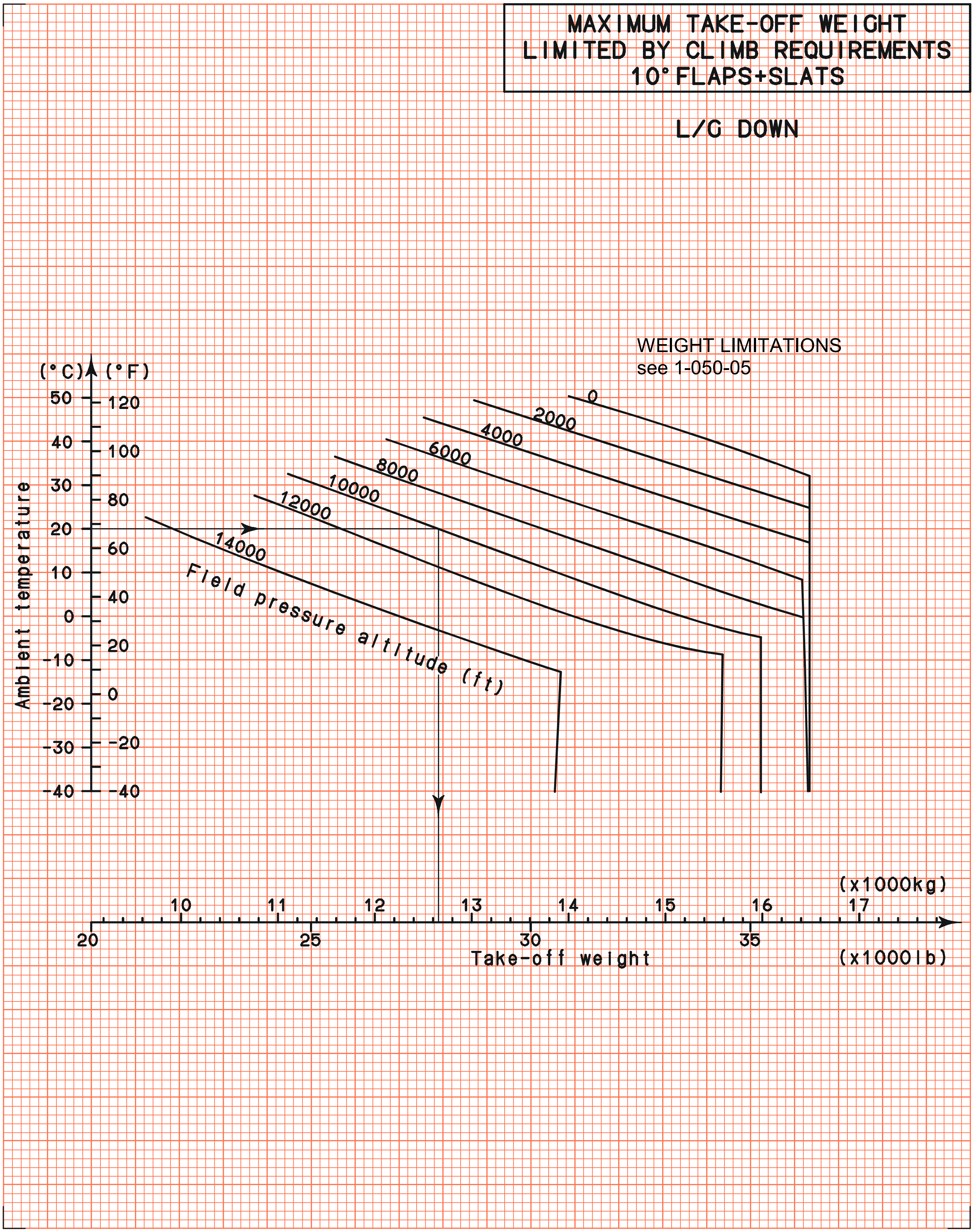

MAXIMUM TAKE-OFF WEIGHT
LIMITED BY CLIMB REQUIREMENTS
10° FLAPS+SLATS
L/G DOWN
WEIGHT LIMITATIONS
see 1-050-05
(°C)
(°F)
50
40
30
20
10
0
-10
-20
-30
-40
120
100
80
60
40
20
0
-20
-40
Ambient temperature
0
2000
4000
6000
8000
10000
12000
14000
Field pressure altitude (ft)
(x1000kg)
10
11
12
13
14
15
16
17
20
25
30
35
Take-off weight
(x1000lb)

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