CENTO ANNI DI AVIAZIONE

Udine 9 - 12 aprile 2003

Limitazioni del peso massimo al decollo –

V_1 V_r V_2 - Tabelle di pista –

- Carta ostacoli -

A cura di Remi GORI

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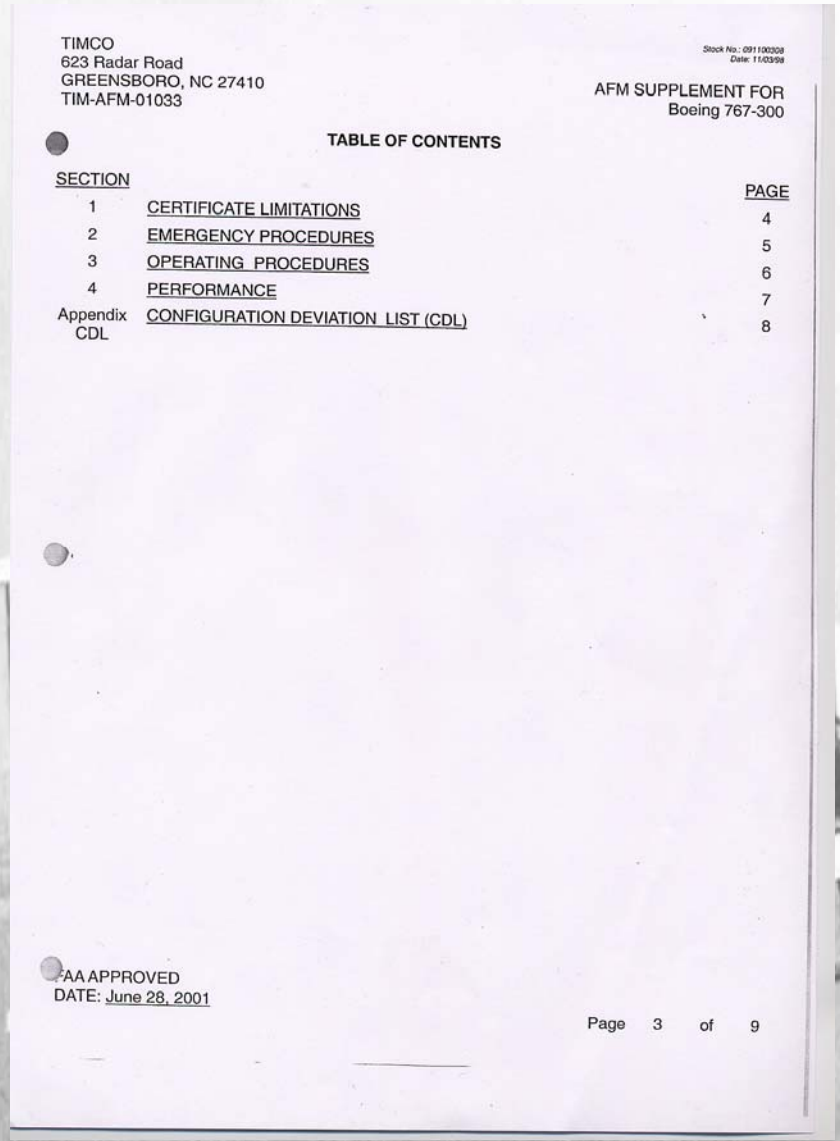
Certificazione Limiti Operativi
-AFM-



TIMCO
623 Radar Road
GREENSBORO, NC 27410
TIM-AFM-01033

Stock No.: 091100208
Date: 11/03/99

AFM SUPPLEMENT FOR
Boeing 767-300

TABLE OF CONTENTS

FAA APPROVED
DATE: June 28, 2001

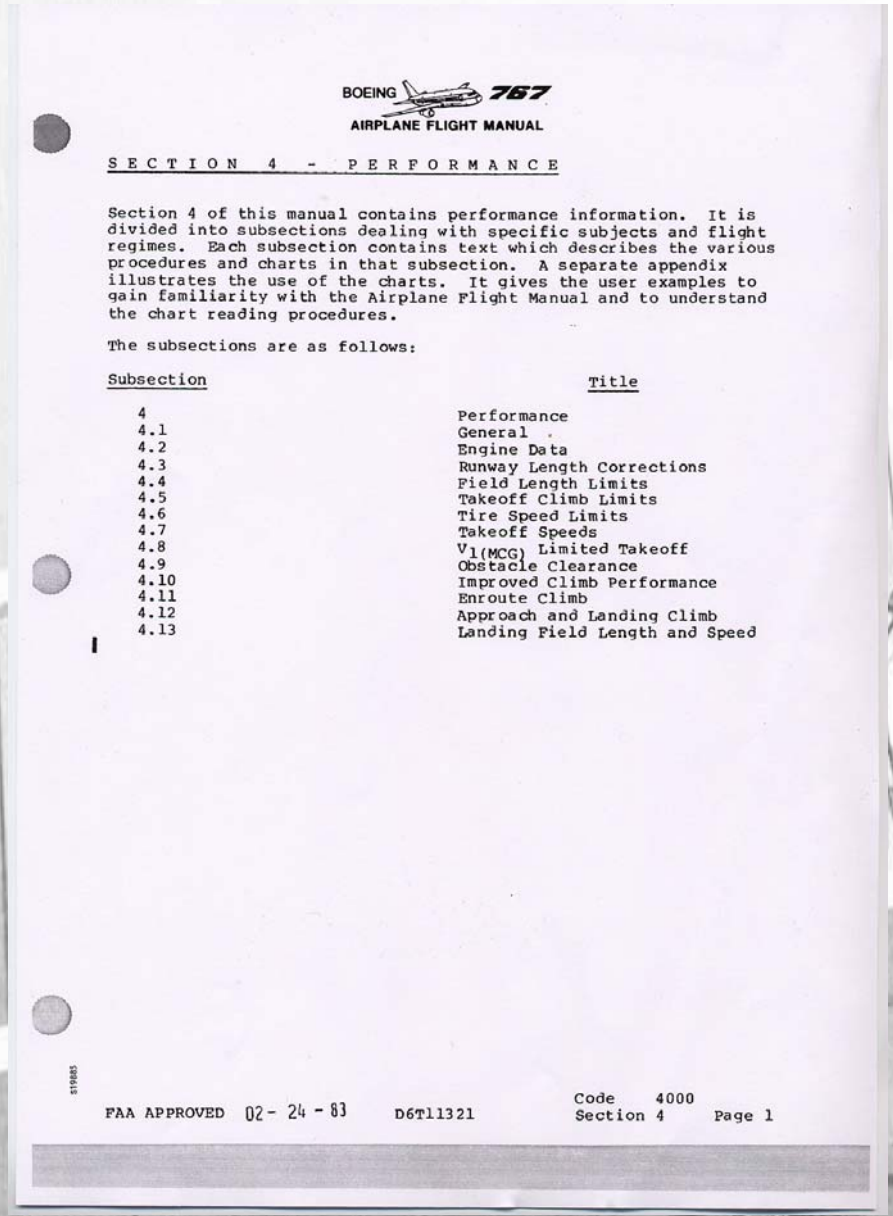
Certificate Limitation

Emergency Procedure

Operating Limitation

Performance

Configuration Deviation List



BOEING 767

AIRPLANE FLIGHT MANUAL

SECTION 4 - PERFORMANCE

Section 4 of this manual contains performance information. It is divided into subsections dealing with specific subjects and flight regimes. Each subsection contains text which describes the various procedures and charts in that subsection. A separate appendix illustrates the use of the charts. It gives the user examples to gain familiarity with the Airplane Flight Manual and to understand the chart reading procedures.

The subsections are as follows:

Subsection	Title
4	Performance
4.1	General
4.2	Engine Data
4.3	Runway Length Corrections
4.4	Field Length Limits
4.5	Takeoff Climb Limits
4.6	Tire Speed Limits
4.7	Takeoff Speeds
4.8	$V_{1(MCG)}$ Limited Takeoff
4.9	Obstacle Clearance
4.10	Improved Climb Performance
4.11	Enroute Climb
4.12	Approach and Landing Climb
4.13	Landing Field Length and Speed

FAA APPROVED 02 - 24 - 83 D6T11321 Code 4000 Section 4 Page 1

Performance

General

Engine Data

Runway Length Corrections

Takeoff Climb Limits

Tire Speed Limits

Takeoff Speed Limits

$V_{1(MCG)}$ Limited Takeoff

Obstacle Clearance

Improved Climb Performance

Enroute Climb

Approach and Landing Climb

Landing Field Length and Speed

OPERATING LIMITATIONS

Pesi Strutturali

Weight Limitations	kg
# MAX TAXI	297103
# MAX TAKEOFF (at brake release)	296195
# MAX LANDING	213188
#MAX ZERO FUEL	197312

Pesi da rispettare in ogni condizione

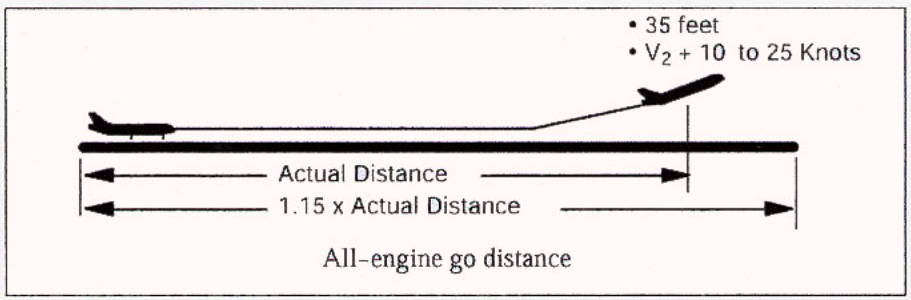
Peso massimo al decollo

- Peso funzione lunghezza di pista
- Peso funzione 2° Segmento
- Peso funzione presenza Ostacoli
- Correzioni per condizioni ambientali.

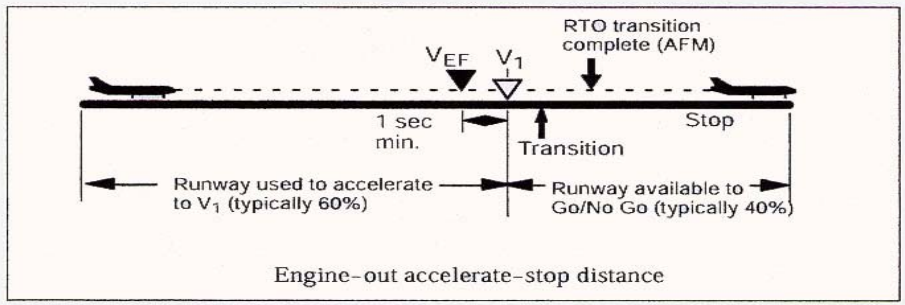
Lunghezza di Pista

La normativa richiede che il peso dell'aereo, per operare su una pista di determinate caratteristiche, permetta di:

A- Con tutti i motori efficienti di raggiungere la quota di 35 ft e alla velocità V_2 con un margine del 115% ;

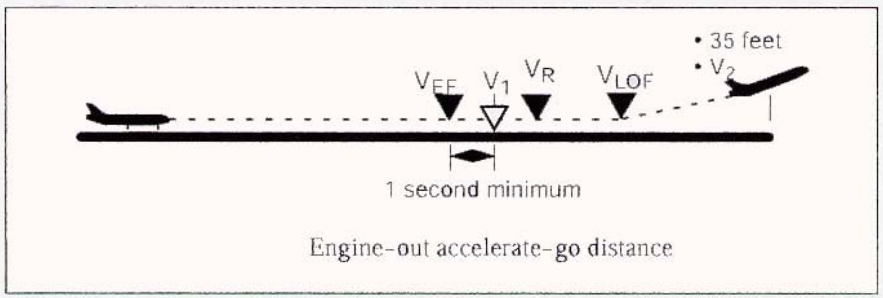


B- Interrompere il decollo alla V_1 con l'aereo che si ferma entro la soglia pista;



Engine-out accelerate-stop distance

C- Decidere di proseguire il decollo, con avaria ad un motore, sorvolare la soglia pista ad una quota di 35 ft alla V_2



V_1

Velocità di inizio
interruzione di decollo

Vr

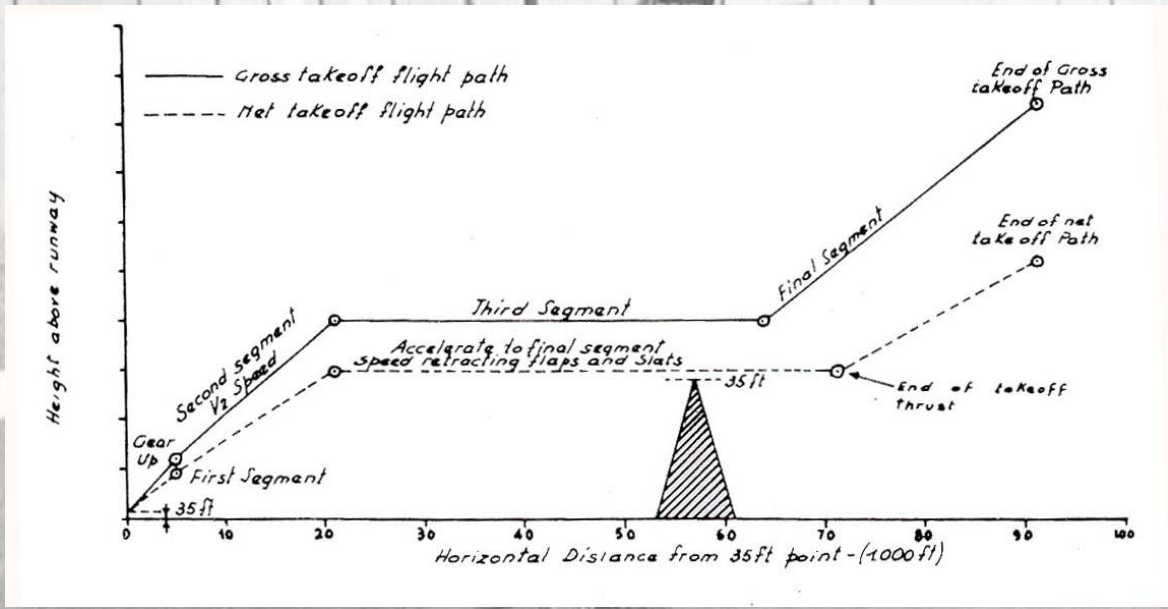
Velocità di inizio rotazione dell'aeromobile

V_2

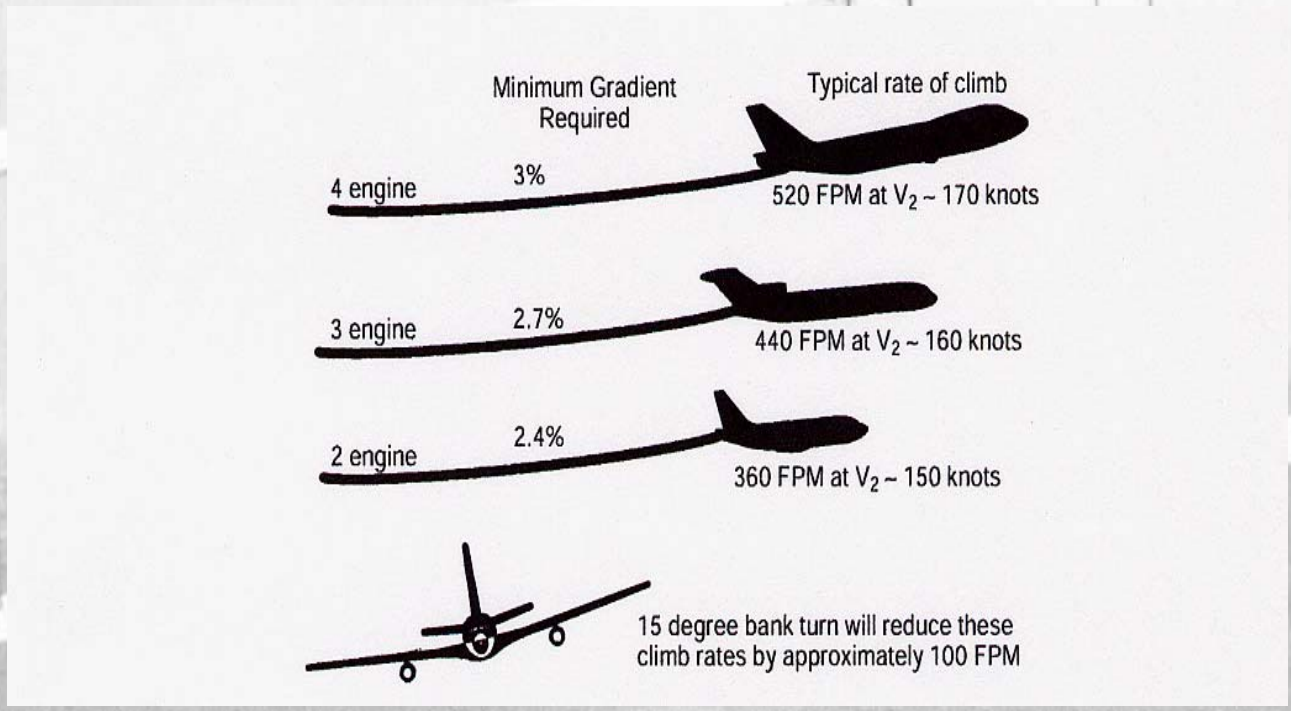
Velocità da mantenere durante la traiettoria di decollo,con un motore in avaria, per rispettare le limitazioni di 2° Segmento ed eventuali Ostacoli, con adeguato margine sulla velocità di stallo.

Limitazione 2° Segmento

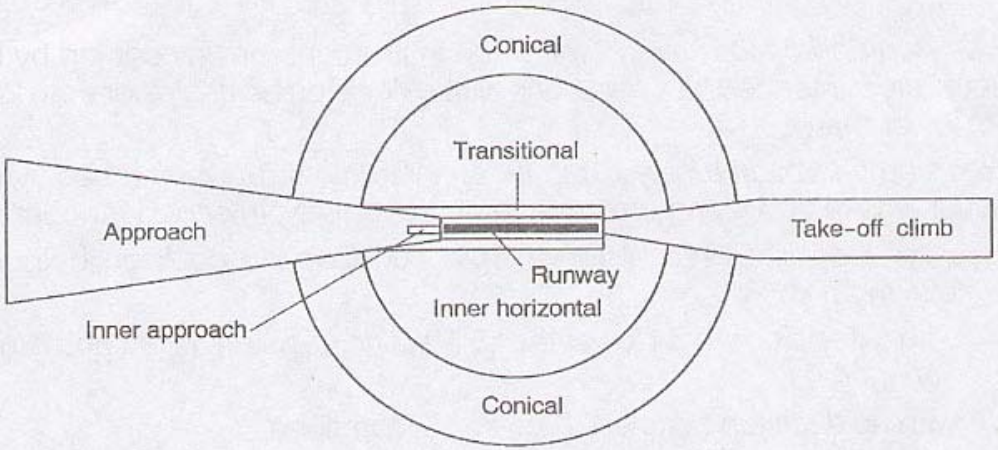
Il gradiente che si considera, sempre con un motore in avaria, si considera dalla quota di retrazione carrello a 1500ft



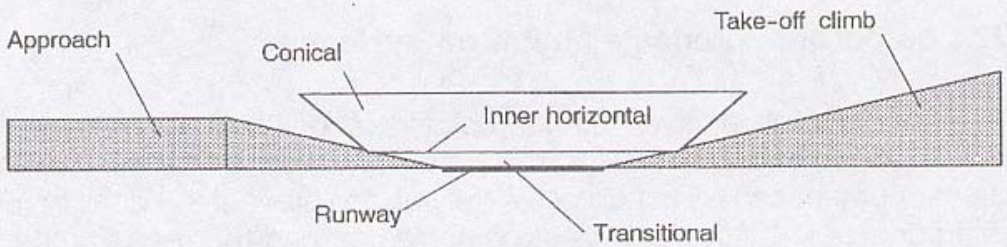
Gradienti minimi richiesti per classe di aerei



Limitazione Ostacoli

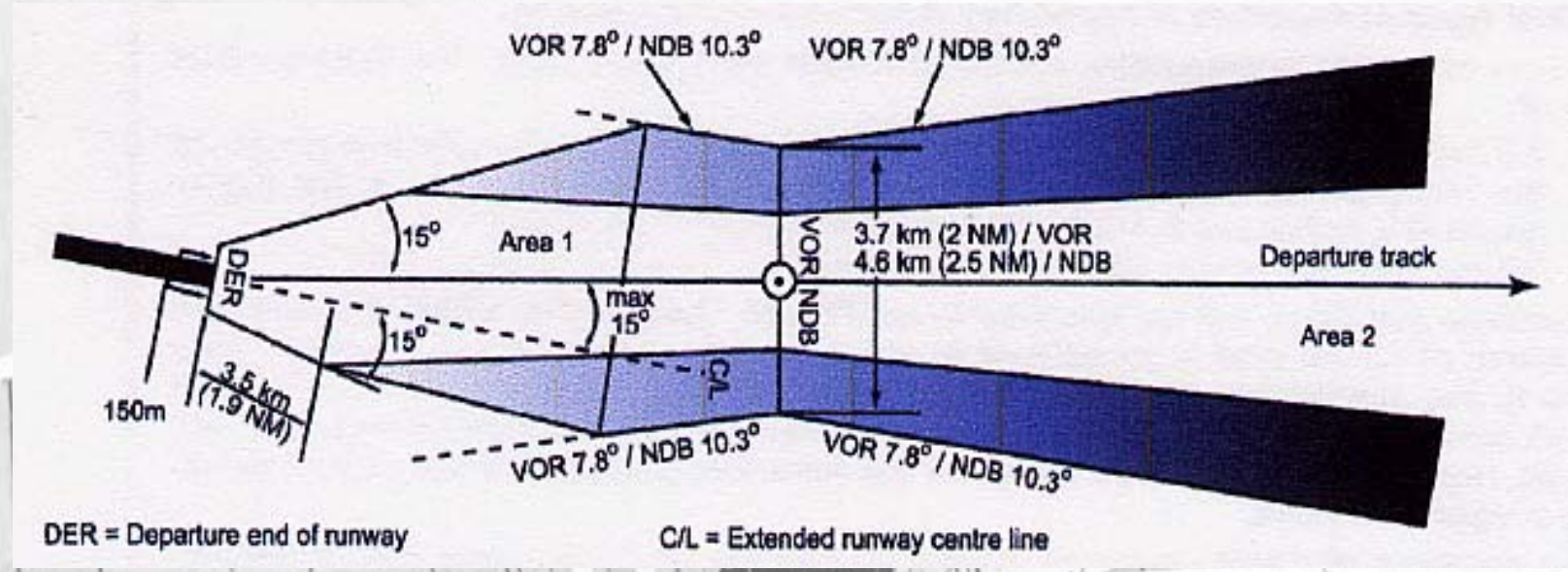


Obstacle limitation surfaces: plan view

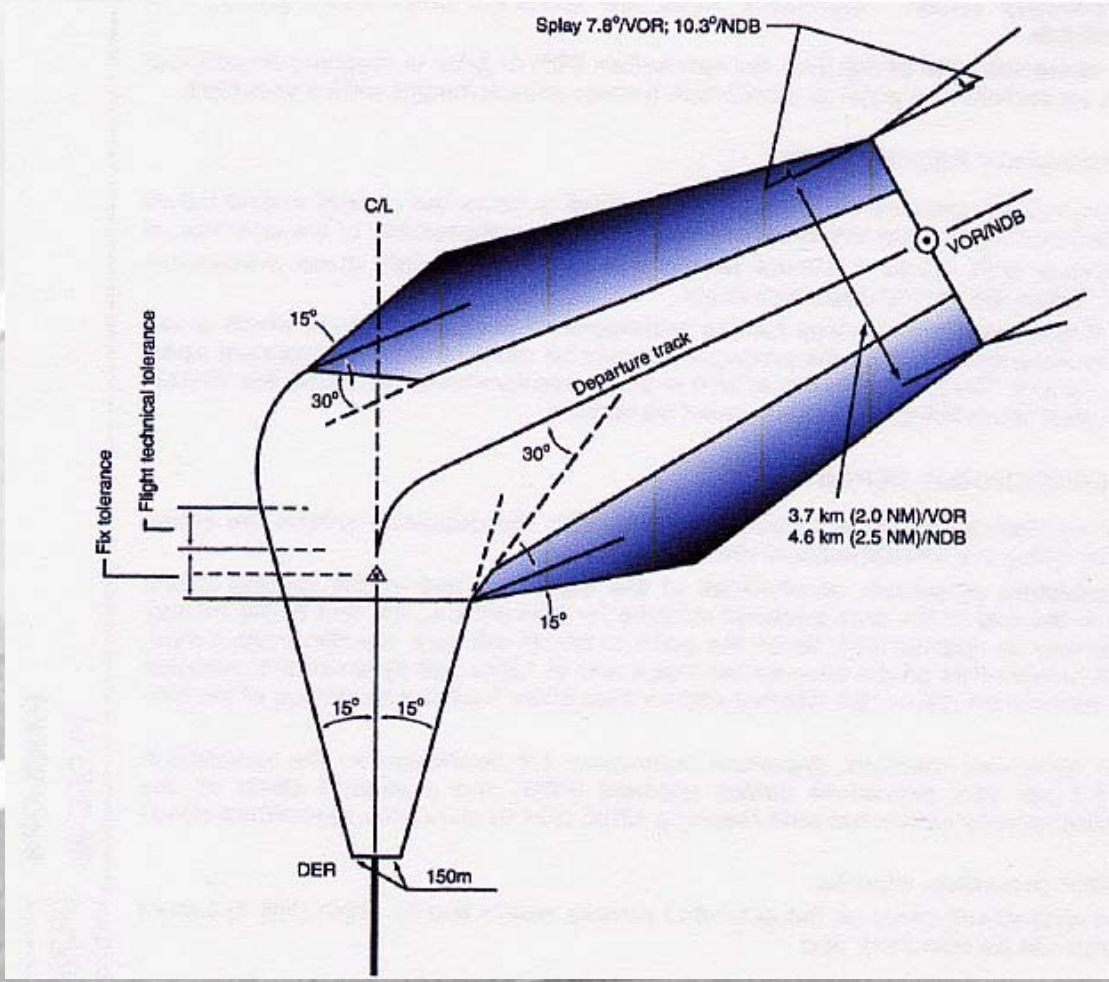


Obstacle limitation surfaces: logitudinal section

Decollo in asse con la pista



Decollo con traiettoria curva



Nell’area di protezione inviluppo ostacoli *lungo la traiettoria di decollo,* definita da un gradiente del 2%, qualora il sorvolo del/gli ostacolo/i alla quota minima di 35 ft non sia possibile si interviene diminuendo il peso di decollo.

Valenza delle condizioni Ambientali

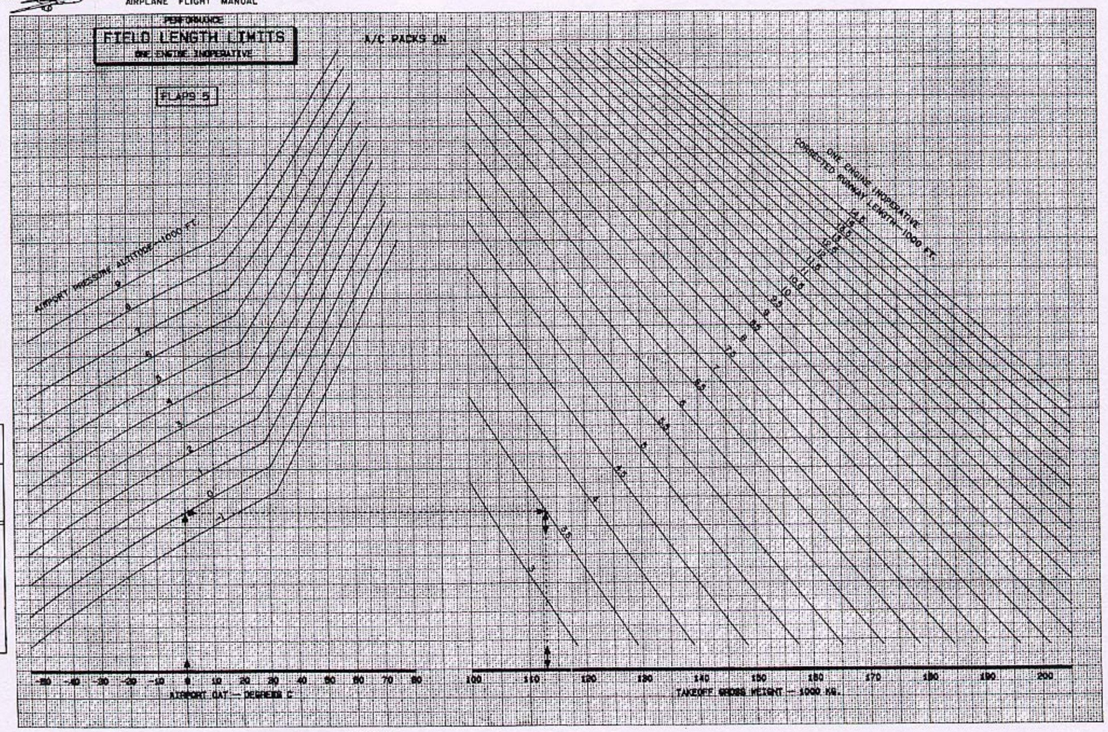
Vento

Temperatura esterna

Quota del campo

Azione Frenante

Impiego Antighiaccio



P.C. BL001790
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DUTTON
787-300ER
CF6-80C2B6/B6F

APPROVED	DATE
M. LECHMAN MM-305	10 Feb 89

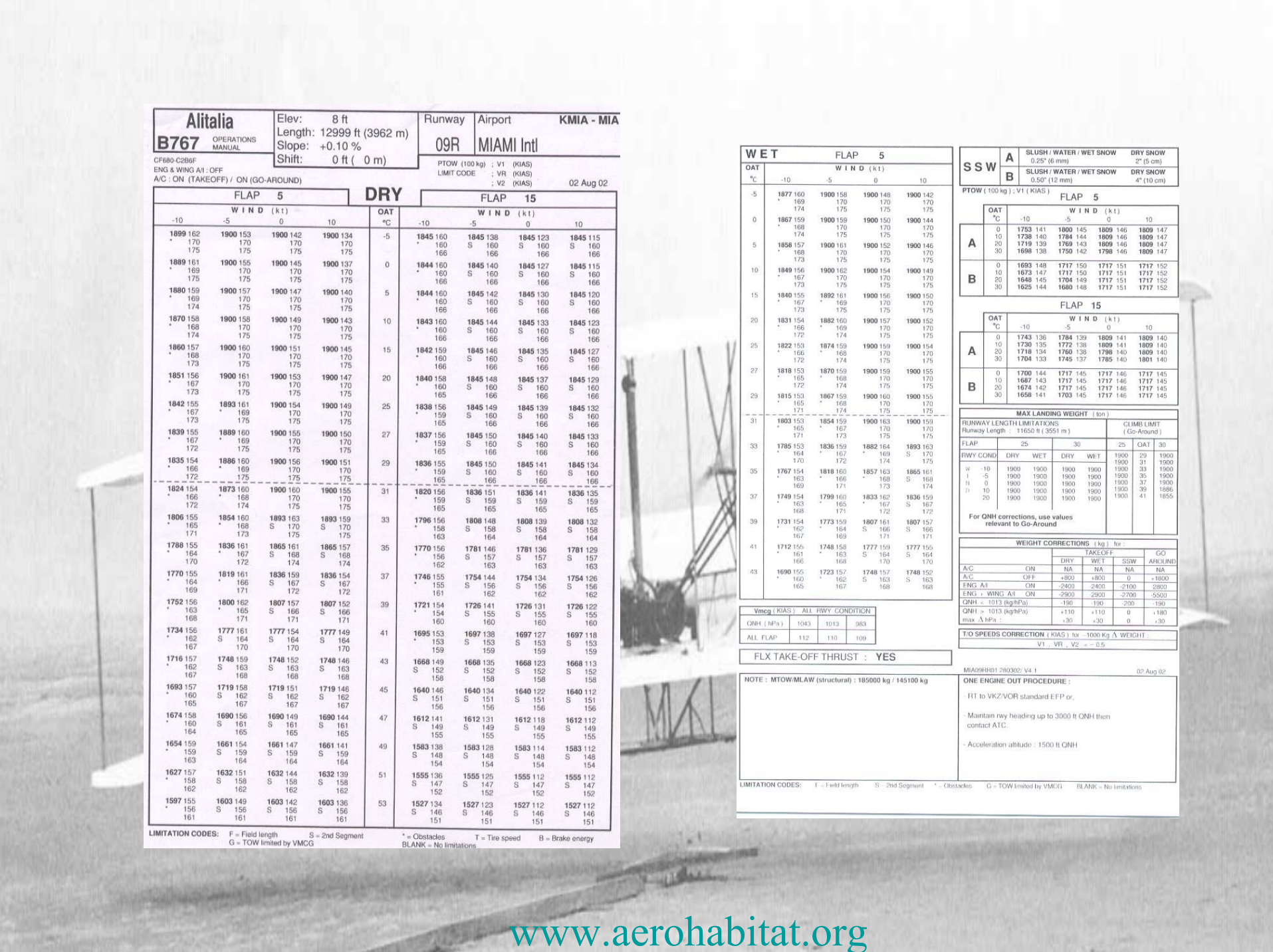
533249

6E4208

RUNWAY WEIGHT LIMITATIONS TABLES

Come usare queste informazioni per definire il Peso Massimo di Decollo, in sicurezza ed in tempi contenuti?

Utilizzando le tabelle di Pista



Alitalia — **B767** OPERATIONS MANUAL

CF680-C2B6F
ENG & WING A/I : OFF
A/C : ON (TAKEOFF) / ON (GO-AROUND)

Elev: 8 ft
Length: 12999 ft (3962 m)
Slope: +0.10 %
Shift: 0 ft (0 m)

Runway: 09R
Airport: MIAMI Intl
KMIA - MIA

PTOW (100 kg) ; V1 (KIAS)
LIMIT CODE ; VR (KIAS)
; V2 (KIAS)

02 Aug 02

DRY

FLAP 5 — WIND (kt)				OAT	FLAP 15 — WIND (kt)			
-10	-5	0	10	°C	-10	-5	0	10
1899 162 * 170 175	1900 153 170 175	1900 142 170 175	1900 134 170 175	-5	1845 160 * 160 166	1845 138 S 160 166	1845 123 S 160 166	1845 115 S 160 166
1889 161 * 169 175	1900 155 170 175	1900 145 170 175	1900 137 170 175	0	1844 160 * 160 166	1845 140 S 160 166	1845 127 S 160 166	1845 115 S 160 166
1880 159 * 169 174	1900 157 170 175	1900 147 170 175	1900 140 170 175	5	1844 160 * 160 166	1845 142 S 160 166	1845 130 S 160 166	1845 120 S 160 166
1870 158 * 168 174	1900 158 170 175	1900 149 170 175	1900 143 170 175	10	1843 160 * 160 166	1845 144 S 160 166	1845 133 S 160 166	1845 123 S 160 166
1860 157 * 168 173	1900 160 170 175	1900 151 170 175	1900 145 170 175	15	1842 159 * 160 166	1845 146 S 160 166	1845 135 S 160 166	1845 127 S 160 166
1851 156 * 167 173	1900 161 170 175	1900 153 170 175	1900 147 170 175	20	1840 158 * 160 165	1845 148 S 160 166	1845 137 S 160 166	1845 129 S 160 166
1842 155 * 167 173	1893 161 * 169 175	1900 154 170 175	1900 149 170 175	25	1838 156 * 159 165	1845 149 S 160 166	1845 139 S 160 166	1845 132 S 160 166
1839 155 * 167 172	1889 160 * 169 175	1900 155 170 175	1900 150 170 175	27	1837 156 * 159 165	1845 150 S 160 166	1845 140 S 160 166	1845 133 S 160 166
1835 154 * 166 172	1886 160 * 169 175	1900 156 170 175	1900 151 170 175	29	1836 155 * 159 165	1845 150 S 160 166	1845 141 S 160 166	1845 134 S 160 166
1824 154 * 166 172	1873 160 * 168 174	1900 160 170 175	1900 155 170 175	31	1820 156 * 159 165	1836 151 S 159 165	1836 141 S 159 165	1836 135 S 159 165
1806 155 * 165 171	1854 160 * 168 173	1893 163 S 170 175	1893 159 S 170 175	33	1796 156 * 158 163	1808 148 S 158 164	1808 139 S 158 164	1808 132 S 158 164
1788 155 * 164 170	1836 161 * 167 172	1865 161 S 168 174	1865 157 S 168 174	35	1770 156 * 156 162	1781 146 S 157 163	1781 136 S 157 163	1781 129 S 157 163
1770 155 * 164 169	1819 161 * 166 171	1836 159 S 167 172	1836 154 S 167 172	37	1746 155 * 155 161	1754 144 S 156 162	1754 134 S 156 162	1754 126 S 156 162
1752 156 * 163 168	1800 162 * 165 171	1807 157 S 166 171	1807 152 S 166 171	39	1721 154 * 154 160	1726 141 S 155 160	1726 131 S 155 160	1726 122 S 155 160
1734 156 * 162 167	1777 161 S 164 170	1777 154 S 164 170	1777 149 S 164 170	41	1695 153 * 153 159	1697 138 S 153 159	1697 127 S 153 159	1697 118 S 153 159
1716 157 * 162 167	1748 159 S 163 168	1748 152 S 163 168	1748 146 S 163 168	43	1668 149 S 152 158	1668 135 S 152 158	1668 123 S 152 158	1668 113 S 152 158
1693 157 * 160 165	1719 158 S 162 167	1719 151 S 162 167	1719 146 S 162 167	45	1640 146 S 151 156	1640 134 S 151 156	1640 122 S 151 156	1640 112 S 151 156
1674 158 * 160 164	1690 156 S 161 165	1690 149 S 161 165	1690 144 S 161 165	47	1612 141 S 149 155	1612 131 S 149 155	1612 118 S 149 155	1612 112 S 149 155
1654 159 * 159 163	1661 154 S 159 164	1661 147 S 159 164	1661 141 S 159 164	49	1583 138 S 148 154	1583 128 S 148 154	1583 114 S 148 154	1583 112 S 148 154
1627 157 * 158 162	1632 151 S 158 162	1632 144 S 158 162	1632 139 S 158 162	51	1555 136 S 147 152	1555 125 S 147 152	1555 112 S 147 152	1555 112 S 147 152
1597 155 * 156 161	1603 149 S 156 161	1603 142 S 156 161	1603 136 S 156 161	53	1527 134 S 146 151	1527 123 S 146 151	1527 112 S 146 151	1527 112 S 146 151

LIMITATION CODES: F = Field length; S = 2nd Segment; * = Obstacles; T = Tire speed; B = Brake energy; G = TOW limited by VMCG; BLANK = No limitations

WET

FLAP 5

OAT °C	WIND (kt) -10	-5	0	10
-5	1877 160 * 169 174	1900 158 170 175	1900 148 170 175	1900 142 170 175
0	1867 159 * 168 174	1900 159 170 175	1900 150 170 175	1900 144 170 175
5	1858 157 * 168 173	1900 161 170 175	1900 152 170 175	1900 146 170 175
10	1849 156 * 167 173	1900 162 170 175	1900 154 170 175	1900 149 170 175
15	1840 155 * 167 173	1892 161 * 169 175	1900 156 170 175	1900 150 170 175
20	1831 154 * 166 172	1882 160 * 169 174	1900 157 170 175	1900 152 170 175
25	1822 153 * 166 172	1874 159 * 168 174	1900 159 170 175	1900 154 170 175
27	1818 153 * 165 172	1870 159 * 168 174	1900 159 170 175	1900 155 170 175
29	1815 153 * 165 171	1867 159 * 168 174	1900 160 170 175	1900 155 170 175
31	1803 153 * 165 171	1854 159 * 167 173	1900 163 170 175	1900 159 170 175
33	1785 153 * 164 170	1836 159 * 167 172	1882 164 * 169 174	1893 163 S 170 175
35	1767 154 * 163 169	1818 160 * 166 171	1857 163 * 168 173	1865 161 S 168 174
37	1749 154 * 163 168	1799 160 * 165 171	1833 162 * 167 172	1836 159 S 167 172
39	1731 154 * 162 167	1773 159 * 164 169	1807 161 S 166 171	1807 157 S 166 171
41	1712 155 * 161 166	1748 158 * 163 168	1777 159 S 164 170	1777 155 S 164 170
43	1690 155 * 160 165	1723 157 * 162 167	1748 157 S 163 168	1748 152 S 163 168

Vmcg (KIAS)	ALL RWY CONDITION		
QNH (hPa)	1043	1013	983
ALL FLAP	112	110	109

FLX TAKE-OFF THRUST : **YES**

NOTE : MTOW/MLAW (structural) : 185000 kg / 145100 kg

MIA09HR01 260302/ V4.1 — 02 Aug 02

ONE ENGINE OUT PROCEDURE :

- RT to VKZ/VOR standard EFP or,
- Maintain hdg heading up to 3000 ft QNH then contact ATC.
- Acceleration altitude : 1500 ft QNH

LIMITATION CODES: F = Field length; S = 2nd Segment; * = Obstacles; G = TOW limited by VMCG; BLANK = No limitations

SSW

A	SLUSH / WATER / WET SNOW 0.25" (6 mm)	DRY SNOW 2" (5 cm)
B	SLUSH / WATER / WET SNOW 0.50" (12 mm)	DRY SNOW 4" (10 cm)

PTOW (100 kg) ; V1 (KIAS)

FLAP 5

	OAT °C	WIND (kt) -10	-5	0	10
A	0	1753 141	1800 145	1809 146	1809 147
	10	1738 140	1784 144	1809 146	1809 147
	20	1719 139	1769 143	1809 146	1809 147
	30	1698 138	1750 142	1798 146	1809 147
B	0	1693 148	1717 150	1717 151	1717 152
	10	1673 147	1717 150	1717 151	1717 152
	20	1648 145	1704 149	1717 151	1717 152
	30	1625 144	1680 148	1717 151	1717 152

FLAP 15

	OAT °C	WIND (kt) -10	-5	0	10
A	0	1743 136	1784 139	1809 141	1809 140
	10	1730 135	1772 138	1809 141	1809 140
	20	1718 134	1760 138	1798 140	1809 140
	30	1704 133	1745 137	1785 140	1801 140
B	0	1700 144	1717 145	1717 146	1717 145
	10	1687 143	1717 145	1717 146	1717 145
	20	1674 142	1717 145	1717 146	1717 145
	30	1658 141	1703 145	1717 146	1717 145

MAX LANDING WEIGHT (ton)

RUNWAY LENGTH LIMITATIONS
Runway Length : 11650 ft (3551 m)

FLAP	25		30	
RWY COND	DRY	WET	DRY	WET
W -10	1900	1900	1900	1900
I -5	1900	1900	1900	1900
N 0	1900	1900	1900	1900
D 10	1900	1900	1900	1900
20	1900	1900	1900	1900

For QNH corrections, use values relevant to Go-Around

CLIMB LIMIT (Go-Around)

25	OAT	30
1900	29	1900
1900	31	1900
1900	33	1900
1900	35	1900
1900	37	1900
1900	39	1886
1900	41	1855

WEIGHT CORRECTIONS (kg) for :

		TAKEOFF DRY	TAKEOFF WET	TAKEOFF SSW	GO AROUND
A/C	ON	NA	NA	NA	NA
A/C	OFF	+800	+800	0	+1800
ENG A/I	ON	-2400	-2400	-2100	-2800
ENG + WING A/I	ON	-2900	-2900	-2700	-5500
QNH < 1013 (kg/hPa)		-190	-190	-200	-190
QNH > 1013 (kg/hPa)		+110	+110	0	+180
max Δ hPa :		+30	+30	0	+30

T/O SPEEDS CORRECTION (KIAS) for -1000 Kg Δ WEIGHT :
V1 , VR , V2 = - 0.5

Riepilogando quanto in precedenza accennato per una determinata pista, correlando le condizioni meteorologiche esistenti, il Peso Massimo di Decollo potrebbe risultare inferiore al Peso Massimo di Decollo Strutturale

Mandi

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