EMBRAER S.A.
Av. Brigadeiro Faria Lima, 2170 - Putim
CEP 12227-901 São José dos Campos/SP - Brasil
http://www.embraer.com

AIRPORT PLANNING MANUAL

APM - 5824
22 SEPTEMBER 2017
REVISION 25 - 29 NOVEMBER 2024

TABLE OF CONTENTS

Revision Status: U - Unchanged, R - Revised, N - New, D - Deleted

RECORD OF REVISIONS

This list is intended to show the Operator the cumulative issued revisions to his manual.
The list consists of the revision number and the respective issuance date.

REV NO.	ISSUE DATE
0	Sep 22/17
1	Oct 27/17
2	Nov 24/17
3	Dec 15/17
4	Jan 12/18
5	Feb 09/18
6	Mar 09/18
7	Apr 20/18
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11	Nov 09/18
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14	Aug 09/19
15	Sep 27/19
16	Feb 07/20
17	May 08/20
18	Nov 06/20
19	Aug 06/21
20	Nov 12/21
21	Aug 05/22
22	Nov 04/22
23	Oct 06/23
24	Oct 11/24
25	Nov 29/24

HIGHLIGHTS

Content which have been added, revised or deleted by the current revision are indicated on the "Table of Contents".

INTRODUCTION

1. Applicability

The table below provides a cross-reference between the commercial and certification designations of the aircraft:

Table 1

AIRCRAFT COMMERCIAL DESIGNATION	AIRCRAFT CERTIFICATION DESIGNATION
E190-E2	ERJ 190-300
E195-E2	ERJ 190-400

2. General

The APM has been prepared in accordance with NAS 3601.

It provides aircraft characteristics for general airport planning, airport operators, airlines, and engineering consultant organizations.

The APM is arranged as shown in the table below:

3. APM Arrangement

The APM is arranged as shown in the table below:

Table 2 - APM Arrangement

ARRANGEMENTS	CONTENTS
Manual Front Matter	Title Page
	Highlights
	Record of Revision
	Table of Contents
	Introduction
Section	General Information
	Aircraft Description
	Aircraft Performance
	Ground Maneuvering
	Terminal Servicing
	Operating Conditions
	Pavement Data
	Possible Derivative Aircraft
	Scaled Drawings

The front matter for the whole manual contains:

A. Title Page

Shows the manufacturer's masthead, identification of the manual, the initial issue date, and revision number and date.

B. Highlights

It is a document that accompanies the manual revision and contains the detailed description of the technical reasons that lead to the revision. It provides the operator with a clear view of technical issue of the revision.

C. Record of Revision

Lists the successive revision numbers, issue date, insertion date and incorporators initials, which must be kept current by the operator.

D. Table of Contents

Lists front matter content with the latest issue dates and provides information to let the reader to quickly and accurately locate the material sought.

E. Introduction

This section present a description of the publication with:

1. General
The general subsection describes the APM objectives and the directions for Customers queries.

2. APM Arrangement
This subsection present the APM arrangement as regard to its front matter and sections contents.

Queries concerning any printed material, including purchasing, copying, shipping and handling, complaints, or compliments can be addressed to:

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4. Revisions

Embraer may revise this manual periodically as required to update information or provide information not available at the time of printing. Revised data may result from Embraer approved aircraft modifications and new available options. Changes to the text are indicated by a black bar in the page left-side margin, beside the revised, added, or deleted material. Relocated or rearranged text or illustrations will be indicated by a black bar beside the page number.

5. Acronyms and Abbreviations

The abbreviations shall be automatically generated by the editing system, and shall present all the acronyms and abbreviations, used throughout the manual sections.

6. Abbreviations

This list gives all the abbreviations, acronyms and measurement units used in this manual with their definitions.

Table 3 - List of Acronyms and Abbreviations used in the APM

ACRONYMS AND ABBREVIATIONS	DESCRIPTION
°C	Degree Celsius
°F	Degree Fahrenheit
ℓ	Liter
ACN	Aircraft Classification Number
ACR	Aircraft Classification Rating
AFM	Airplane Flight Manual
AOM	Airplane Operations Manual
APU	Auxiliary Power Unit
AR	As Required
CBR	California Bearing Rating
dBA	A-Weighted Decibel
ECS	Environmental Control System
FAA	Federal Aviation Administration
ft	Foot
ft^3	Cubic Foot
FWD	Forward
gal	Gallon
ICAO	International Civil Aviation Organization
in	Inch
inHg	Inch of Mercury
ISA	International Standard Atmosphere
kg	Kilogram
kPa	Kilopascal
lb	Pound
LCN	Load Classification Number
LH	Left-Hand
m	Meter
m^3	Cubic Meter
min	Minute
MLW	Maximum Landing Weight
MRW	Maximum Ramp Weight
MTBF	Mean Time Between Failures
MTOW	Maximum Takeoff Weight
MZFW	Maximum Zero Fuel Weight

(Continued)

Table 3 - List of Acronyms and Abbreviations used in the APM

ACRONYMS AND ABBREVIATIONS	DESCRIPTION
N	Newton
psi	Pound per Square Inch
RH	Right-Hand
STD	Standard

1. GENERAL INFORMATION

EFFECTIVITY: ALL

1.1. GENERAL

This document provides airplane characteristics for general airport planning. Since the operational practices vary among the airlines, specific data should be coordinated with the using airlines before the facility design is made.

The APM sections are presented as follows:

1.1.1. Section 1 - General Information

This section present general information applicable to all APM sections, and also scale aircraft drawing and possible derivative aircraft required on NAS 3601.

1.1.2. Section 2 - Aircraft Description

This section present the aircraft characteristics, general aircraft dimensions, ground clearances, interior arrangements, passenger cabin cross section, lower compartment containers, door clearances.

1.1.3. Section 3 - Aircraft Performance

This section present the general information, payload x range charts, takeoff field lengths and landing field lengths.

1.1.4. Section 4 - Ground Maneuvering

This section present the general information, turning radii for various nose landing gear steering angles, visibility from cockpit in static position, the minimum dimensions for runway and taxiway where the aircraft can be operated and runway holding apron.

1.1.5. Section 5 - Terminal Servicing

This section present the terminal servicing information, the typical arrangements of equipment during turnaround, the typical turnaround servicing time at an air terminal, the locations of ground servicing connections in graphic and tabular forms, the typical sea level air pressure and flow requirements for starting the engine, the air conditioning requirements and the ground towing requirements for various towing conditions.

1.1.6. Section 6 - Operation Conditions

This section provides the jet engine exhaust velocities and temperatures charts; the airport and community noise levels and the hazard areas charts.

1.1.7. Section 7 - Pavement Data

This section provides the general information with a brief description of the pavement charts which will be helpful in their use for airport planning. Each aircraft configuration is depicted with a minimum range of five loads imposed on the main landing gear to aid in the interpolation between the discrete values shown. The tire pressure used for the aircraft charts will produce the recommended tire deflection with the aircraft loaded to its maximum ramp weight and with center of gravity position. The tire pressure, where specifically designated in tables and on charts, are values obtained under loaded conditions as certificated for commercial use.

This section is presented as follows:

- The basic data on the landing gear footprint configuration, maximum design ramp loads, and tire sizes and pressures.

- The maximum pavement loads for certain critical conditions at the tire-ground interfaces.
- A chart in order to determine the loads throughout the stability limits of the aircraft at rest on the pavement.
  Pavement requirements for commercial aircraft are customarily derived from the static analysis of loads imposed on the main landing gear struts.
  These main landing gear loads are used to enter the pavement design charts which follow, interpolating load values where necessary.
- The flexible pavement curves prepared in accordance with the US Army Corps of Engineers Design Method and the LCN Method.
- The rigid pavement design curves in accordance with the Portland Cement Association Design Method and the LCN Method.
- The aircraft ACN values for flexible and rigid pavements.

1.1.8. Section 8 - Possible Embraer 190 E2 Derivative Aircraft

This sections provides information about derivative versions of the currently developed.

1.1.9. Section 9 - Scaled Drawings

This sections provides views to the following scales:

- English/American Customary Weights and Measures.
  1 inch = 32 feet
  1 inch = 50 feet
  1 inch = 100 feet
- Metric.
  1:500
  1:1000

2. AIRCRAFT DESCRIPTION

EFFECTIVITY: ALL

2.1. AIRCRAFT CHARACTERISTICS

The aircraft is:

- Low winged;
- Conventional tail design;
- Two wing-mounted engines;

The PW1714G is the standard engine for the EMBRAER 175 E2.

The PW1919G is the standard engine for the EMBRAER 190 E2.

The PW1921G is the standard engine for the EMBRAER 195 E2.

The STD aircraft model has the following design weights:

2.1.1. Basic Characteristics

EFFECTIVITY: EMBRAER 190-E2 ACFT

- Maximum ramp weight of 56600 kg (124781 lb)
- Maximum take-off weight of 56400 kg (124340 lb)
- Maximum landing weight of 49050 kg (108136 lb)
- Maximum zero fuel weight of 46700 kg (102956 lb)
- Maximum usable fuel of 13500 kg (29762 lb)

2.1.2. Basic Characteristics

EFFECTIVITY: EMBRAER 195-E2 ACFT

- Maximum ramp weight of 61700 kg (136025 lb)
- Maximum take-off weight of 61500 kg (128419 lb)
- Maximum landing weight of 54000 kg (116734 lb)
- Maximum zero fuel weight of 51850 kg (111002 lb)
- Maximum usable fuel of 13690 kg (30181 lb)

2.1.3. Basic Characteristics

EFFECTIVITY: EMBRAER 175-E2 ACFT

- Maximum ramp weight of kg (lb)
- Maximum take-off weight of 44600 kg (98326 lb)
- Maximum landing weight of 40000 kg (88184 lb)
- Maximum zero fuel weight of 37700 kg (83114 lb)
- Maximum usable fuel of 8645 kg (19058 lb)

2.1.4. Definitions

MRW

It is the maximum allowed aircraft weight for taxiing or maneuvering on the ground.

MLW

It is the maximum allowed weight at which the aircraft may normally be landed.

MTOW

It is the maximum allowed total loaded aircraft weight at the start of the takeoff run.

MZFW

It is the maximum allowed weight without usable fuel in tanks.

Maximum Seating Capacity

It is the maximum number of passengers specifically certified or anticipated for certification.

Maximum Cargo Volume

It is the maximum space available for cargo.

Usable Fuel

Fuel available for the aircraft propulsion.

Table 2.1 - Aircraft General Characteristics

Effectivity: EMBRAER 190-E2 ACFT

DESIGN WEIGHTS [1] [2]	AIRCRAFT MODEL
	STD
MRW	56600 kg (124781 lb)
MTOW	56400 kg (124341 lb)
MLW	49050 kg (108137 lb)
MZFW	46700 kg (102956 lb)
Maximum Seating Capacity	114 Passengers
Maximum Cargo Volume [3]	21.54 m^3 (76067.8 ft^3)
Maximum Usable Fuel [4]	13500 kg (29760 lb) 16800 ℓ (4440 gal.)

[1] Applicable for standard models. For further information, refer to AFM and AOM.
[2] Typical standard configuration (weights may vary according to optional equipment installed or interior layouts).
[3] Standard configuration (volume may vary according to optional equipment installed).
[4] Based on 0.803 kg /ℓ (6.71 lb/gal) fuel density. Fuel density varies from 0.785 to 0.811 kg/ℓ (6.55 to 6.77 lb/gal) at 15 °C.

Table 2.2 - Aircraft General Characteristics

Effectivity: EMBRAER 195-E2 ACFT

DESIGN WEIGHTS [1] [2]	AIRCRAFT MODEL
	STD
MRW	61700 kg (136058 lb)
MTOW	61500 kg (135584.6 lb)
MLW	54000 kg (119049.6 lb)
MZFW	51850 kg (114309 lb)
Maximum Seating Capacity	146 Passengers
Maximum Cargo Volume [3]	29.97 m ^{3} 1058 ft ^{3})
Maximum Usable Fuel [4]	13690 kg (30181 lb) 17060 ℓ (4507 gal.)

[1] Applicable for standard models. For further information, refer to AFM and AOM.
[2] Typical standard configuration (weights may vary according to optional equipment installed or interior layouts).
[3] Standard configuration (volume may vary according to optional equipment installed).
[4] Based on 0.803 kg /ℓ (6.71 lb/gal) fuel density. Fuel density varies from 0.785 to 0.811 kg/ℓ (6.55 to 6.77 lb/gal) at 15 °C.

Table 2.3 - Aircraft General Characteristics

Effectivity: EMBRAER 175-E2 ACFT

DESIGN WEIGHTS [1] [2]	AIRCRAFT MODEL
	STD
MRW	kg (lb)
MTOW	44600 kg (98326 lb)
MLW	40000 kg (88184lb)
MZFW	37700 kg (83114lb)
Maximum Seating Capacity	90 Passengers
Maximum Cargo Volume [3]	17.07 m ^{3} (60282.1ft ^{3})
Maximum Usable Fuel [4]	8645 kg (19058lb) 10659 ℓ (2815gal.)

[1] Applicable for standard models. For further information, refer to AFM and AOM.
[2] Typical standard configuration (weights may vary according to optional equipment installed or interior layouts).
[3] Standard configuration (volume may vary according to optional equipment installed).
[4] Based on 0.811 kg /ℓ (lb/gal) fuel density. Fuel density varies from 0.785 to 0.811 kg/ℓ (6.55 to 6.77 lb/gal) at 15 °C.

2.2. GENERAL AIRCRAFT DIMENSIONS

2.2.1. External Dimensions

EFFECTIVITY: EMBRAER 190-E2 ACFT

- Span over Swept Back Wingtip - 33.72 m (110 ft 7.6 in)
- Height (maximum) - 10.95 m (35 ft 11.2 in)
- Overall length - 36.24 m (118 ft 11 in.)

2.2.2. External Dimensions

EFFECTIVITY: EMBRAER 195-E2 ACFT

- Span over Swept Back Wingtip - 35.12 m (115 ft 2.7 in)
- Height (maximum) - 10.78 m (35 ft 4.4 in)
- Overall length - 41.60 m (136 ft 5.76 in.)

2.2.3. External Dimensions

EFFECTIVITY: EMBRAER 175-E2 ACFT

- Span over Swept Back Wingtip - 31.39 m (102 ft 11.9 in)
- Height (maximum) - 10.18 m (33 ft 5 in)
- Overall length 32.37 m (106 ft 2.2 in.)

2.2.4. Wing

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

- Reference area - 103 m^2 (1108.68 ft^2)
- Reference aspect ratio - 9.4

2.2.5. Wing

EFFECTIVITY: EMBRAER 175-E2 ACFT

- Reference area - 82 m^2 (ft^2)
- Reference aspect ratio - 9.5

2.2.6. Fuselage

EFFECTIVITY: EMBRAER 190-E2 ACFT

- Total length - 36.2 m (118 ft 2.7 in)
- Length of pressurized section - 29.1 m (95 ft 5.64 in)

2.2.7. Fuselage

EFFECTIVITY: EMBRAER 195-E2 ACFT

- Total length - 41.6 m (136 ft 5.76 in)
- Length of pressurized section - 34.3 m (112ft 6.36 in)

2.2.8. Fuselage

EFFECTIVITY: EMBRAER 175-E2 ACFT

- Total length - 32.366 m (106 ft 2 in)
- Length of pressurized section - 25.110 m (82 ft 5 in)

2.2.9. Horizontal Tail

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

- Span - 9.84 m (9 ft 10.1 in)
- Area - 23.25 m^2 (250.26ft^2)
- Aspect ratio - 4.16

2.2.10. Horizontal Tail

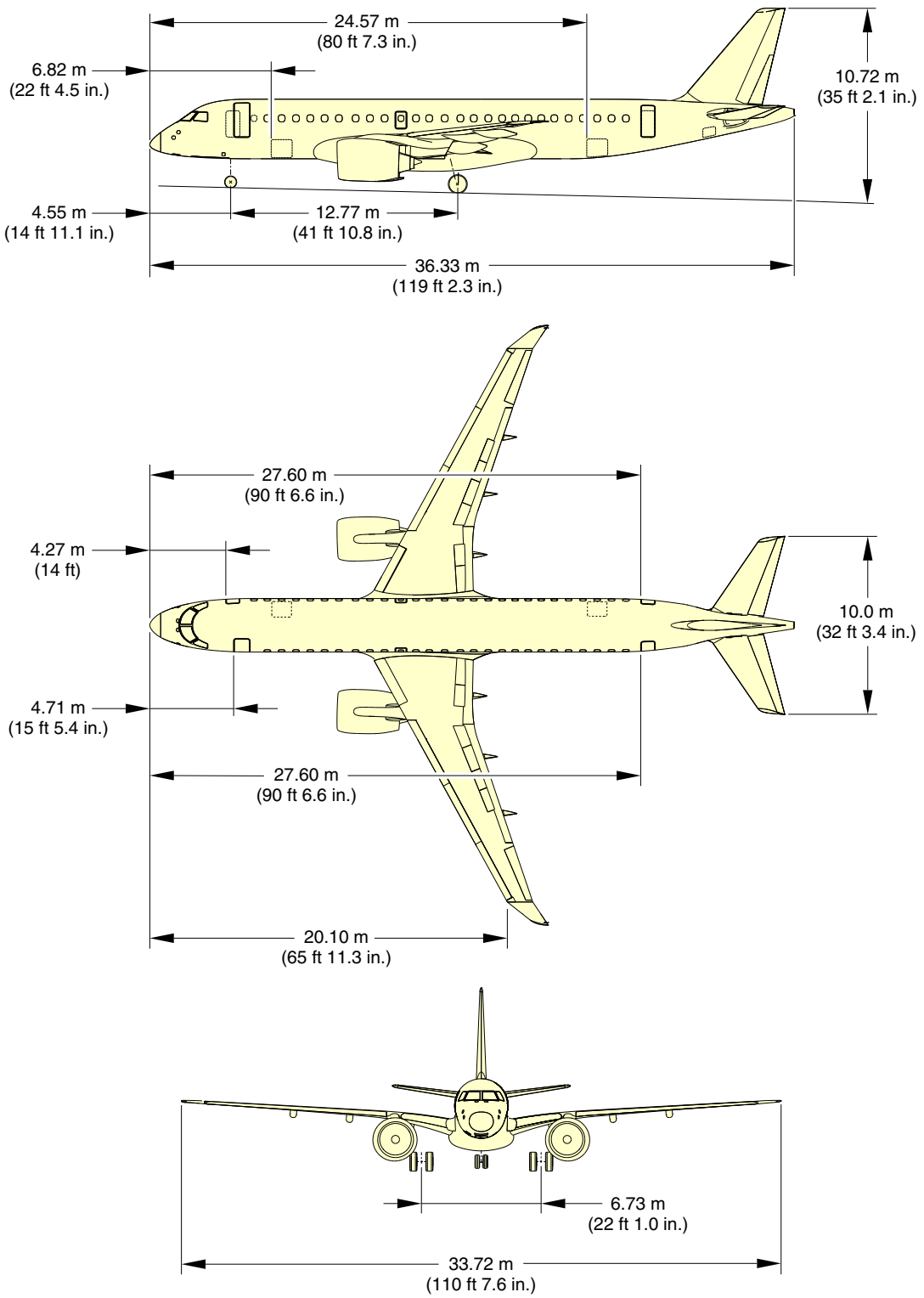
EFFECTIVITY: EMBRAER 175-E2 ACFT

- Span - 9.07 m (29 ft 9 in)
- Area - 19.77 m^2 (212.80 ft^2)
- Aspect ratio - 4.17

2.2.11. Vertical Tail

- Span - 5.27 m (9 ft 10.1 in)
- Area - 16.20 m^2 (174.38 ft^2)
- Aspect ratio - 1.71

EFFECTIVITY: EMBRAER 190-E2 ACFT
General Aircraft Dimensions
Figure 2.1



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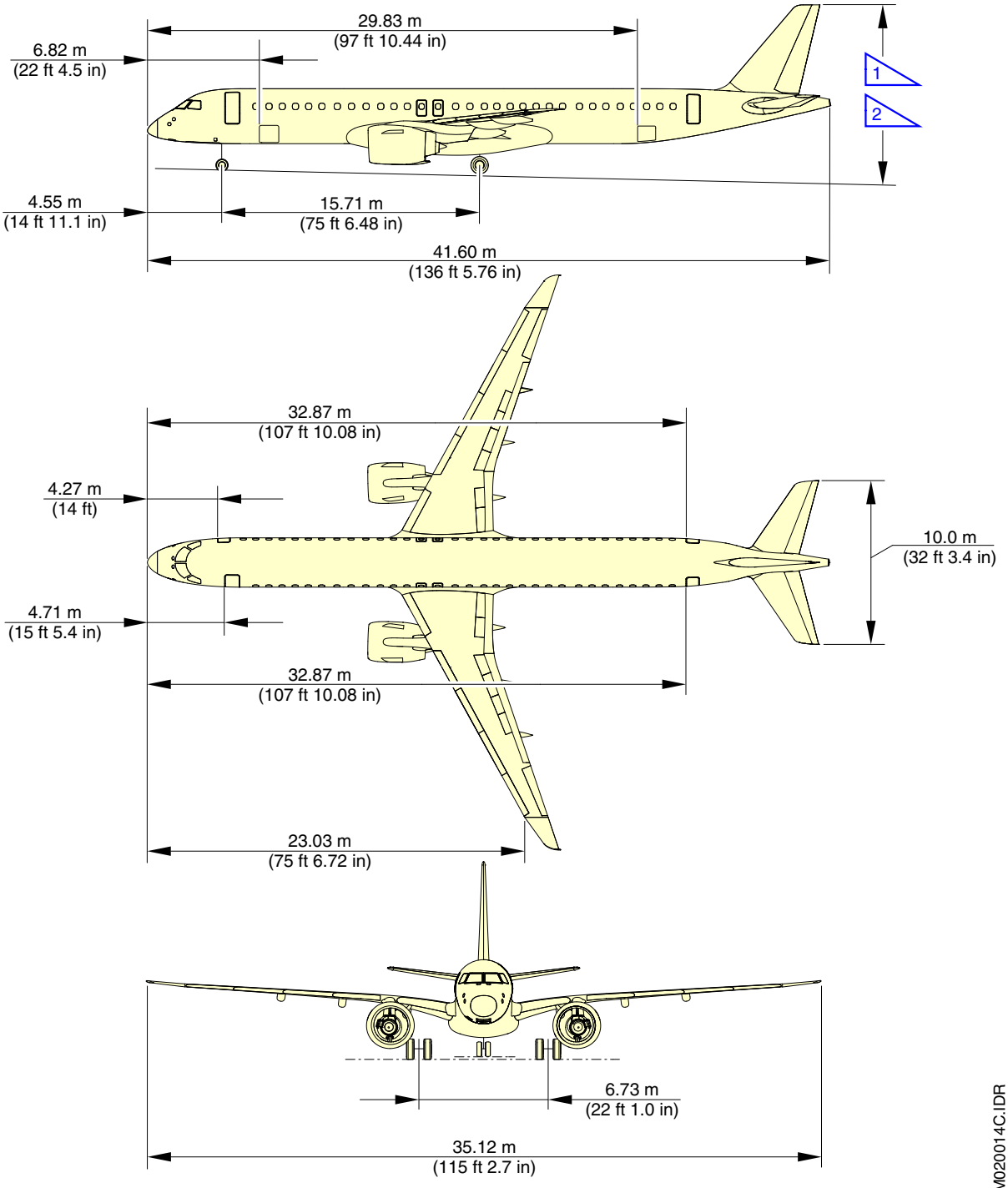
EFFECTIVITY: EMBRAER 195-E2 ACFT
General Aircraft Dimensions
Figure 2.2



1 10.78 m (35 ft 4 in) MAXIMUM 54 ˚C (129.2 ˚F)

2 10.32 m (33 ft 10 in) MINIMUM -40 ˚C (-40 ˚F)

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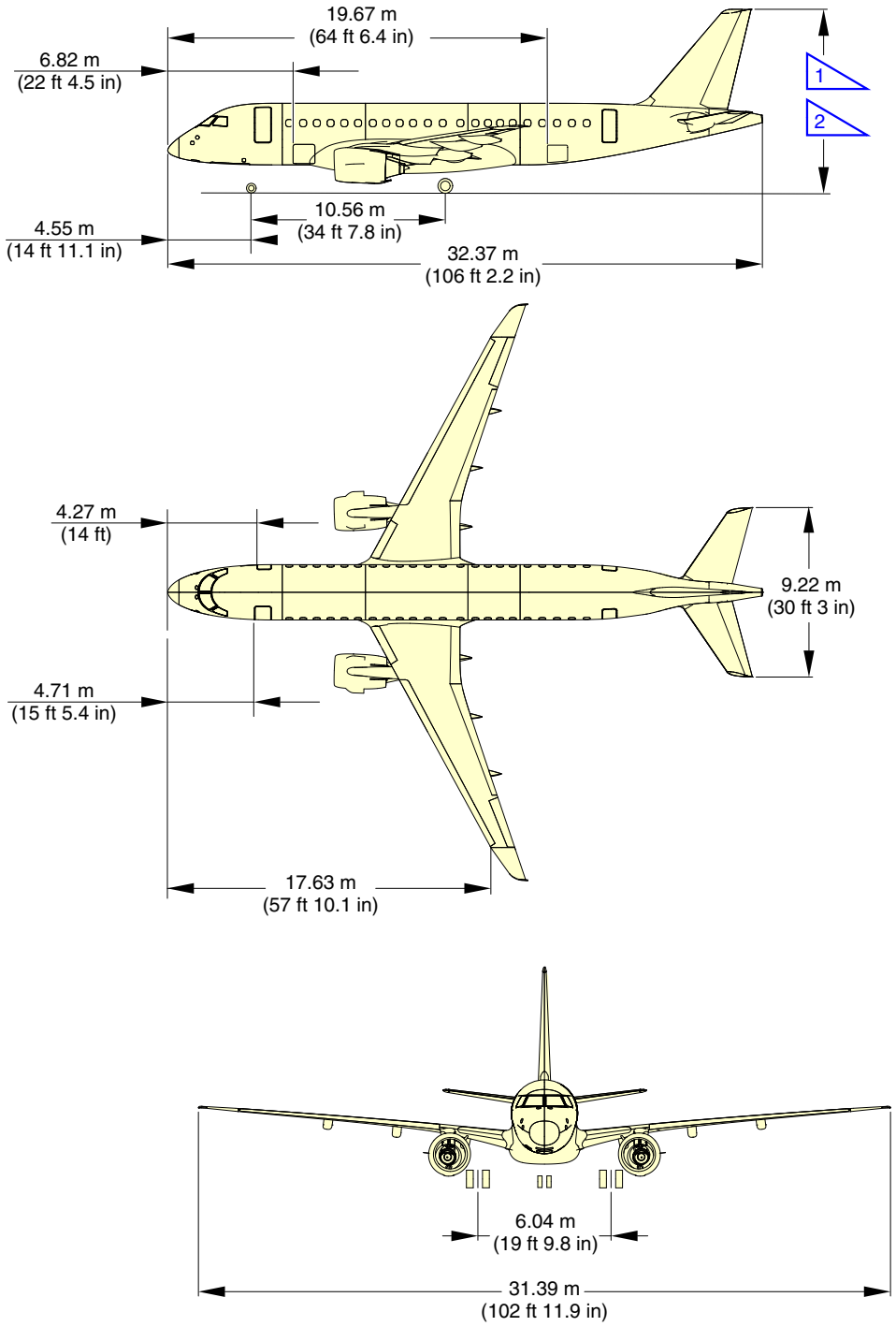
EFFECTIVITY: EMBRAER 175-E2 ACFT
General Aircraft Dimensions
Figure 2.3



1 10.184 m (33 ft 5 in) MAXIMUM 54 ˚C (129.2 ˚F)

2 9.795 m (32 ft 2 in) MINIMUM -45 ˚C (-103 ˚F)

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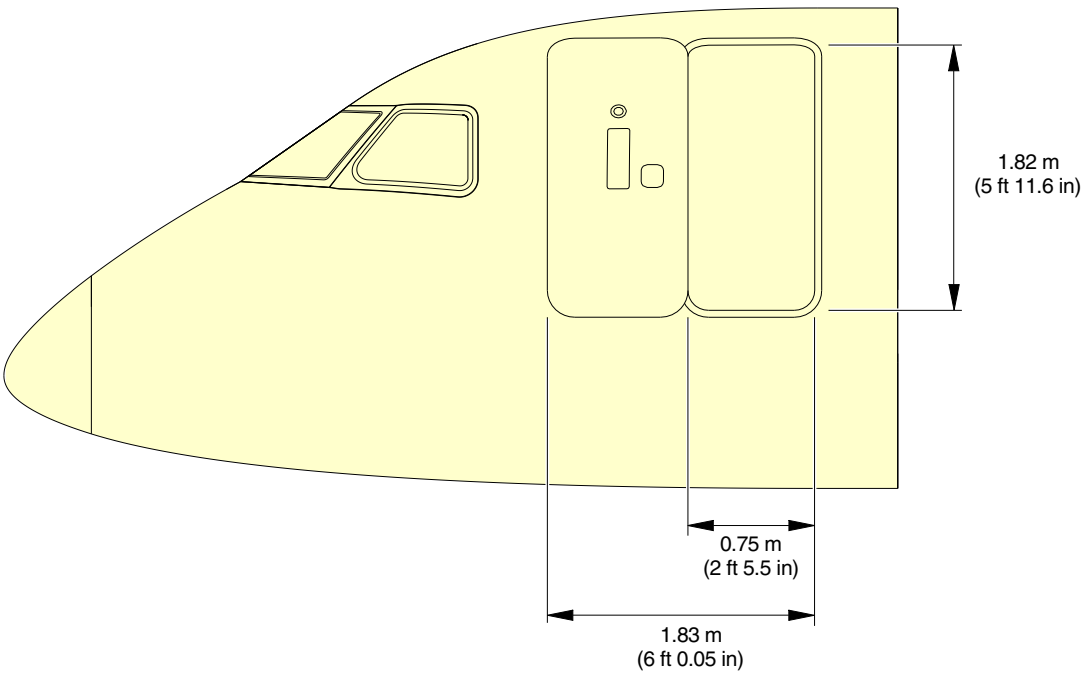
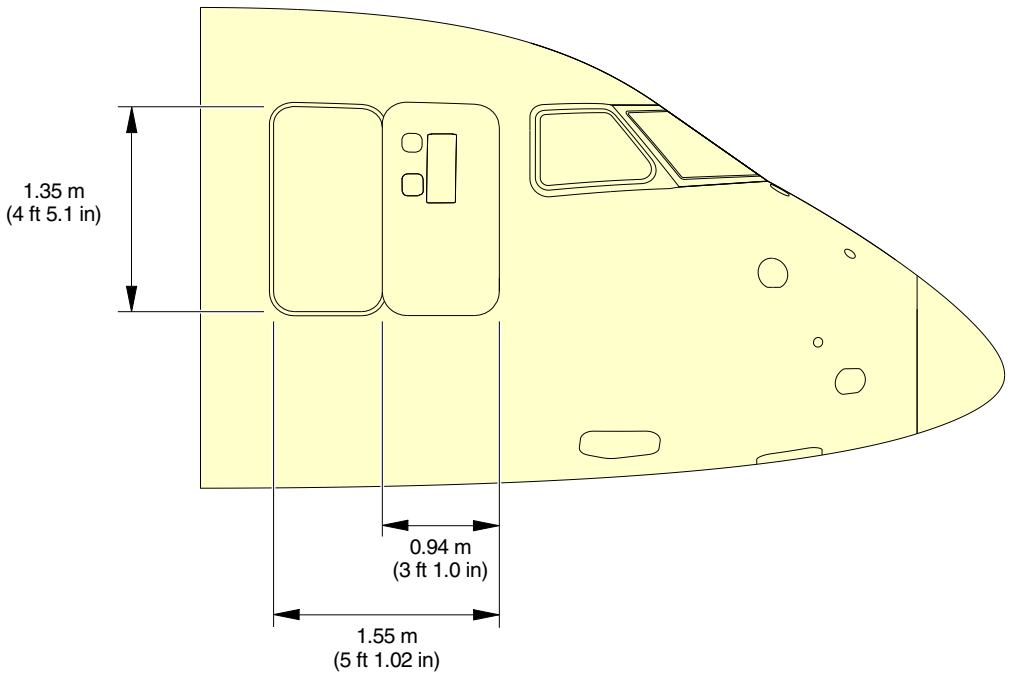
EFFECTIVITY: ALL

Passenger and Service Doors Dimensions
Figure 2.4 - Sheet 1





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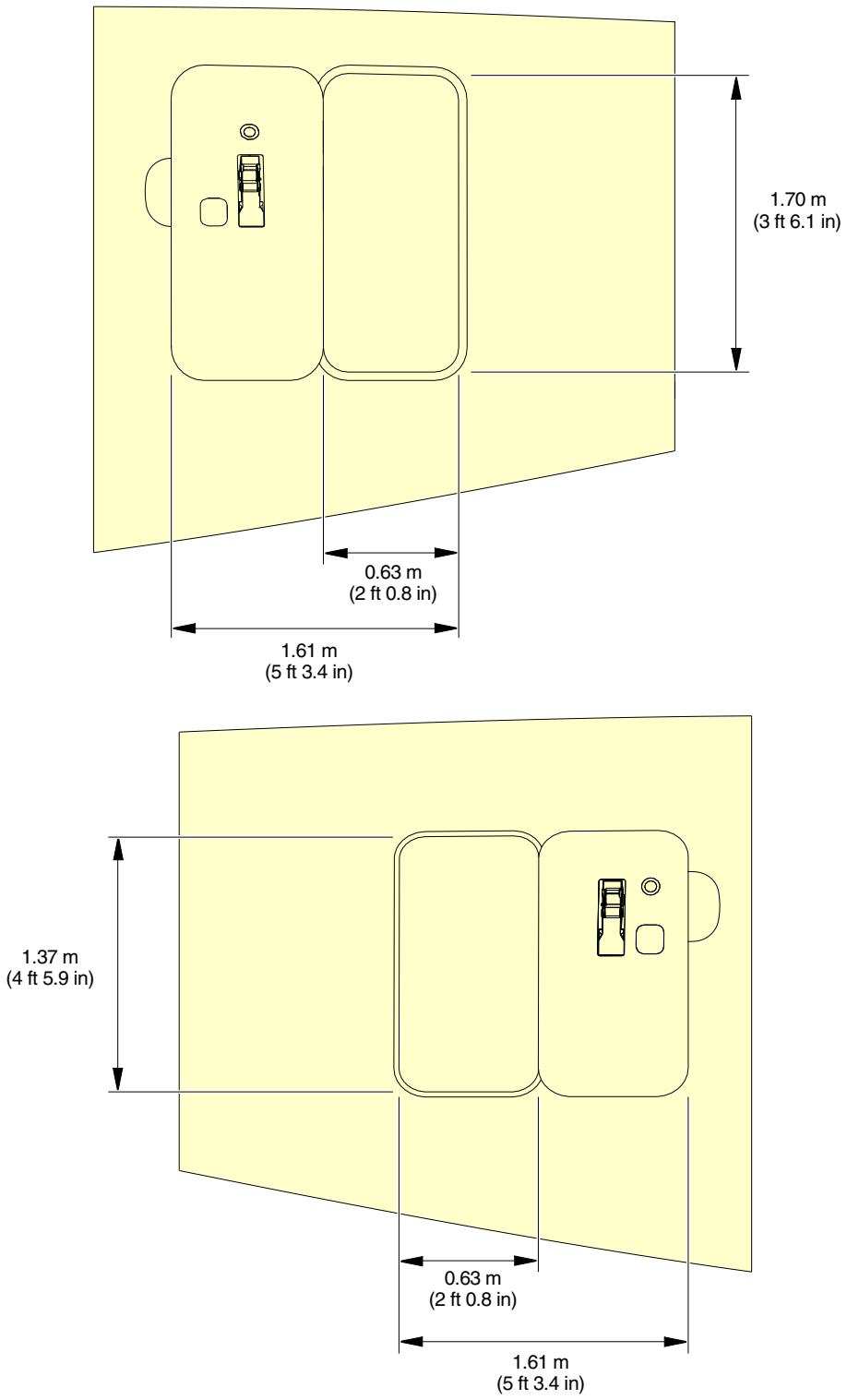
EFFECTIVITY: ALL

Passenger and Service Doors Dimensions
Figure 2.4 - Sheet 2



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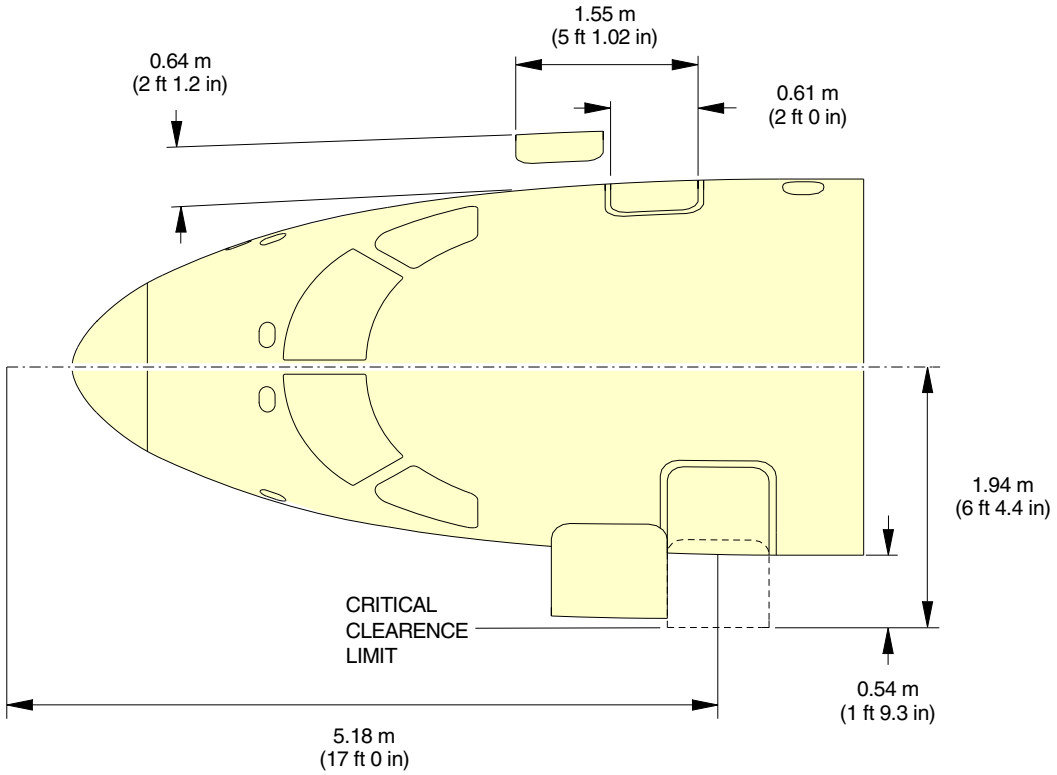
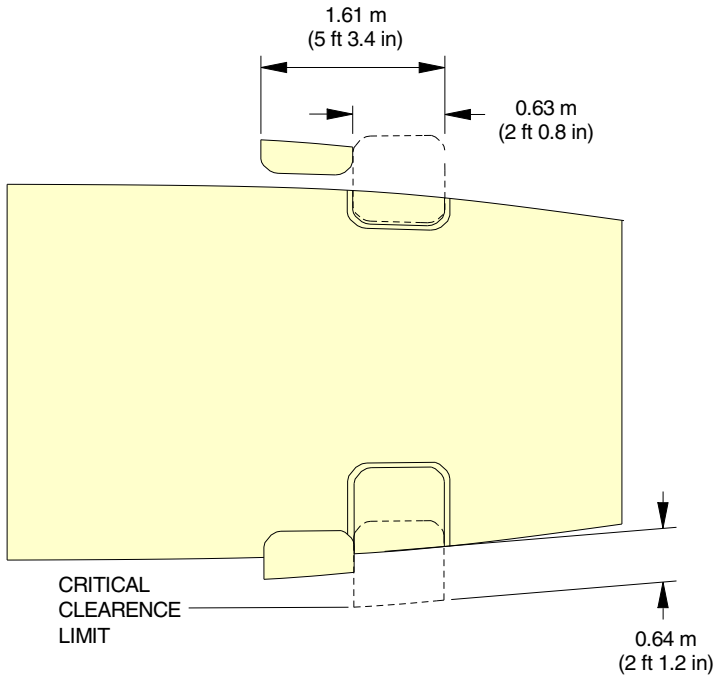
EFFECTIVITY: ALL

Passenger and Service Doors Dimensions
Figure 2.4 - Sheet 3





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EFFECTIVITY: EMBRAER 190-E2 ACFT

Aircraft Ground Clearances
Figure 2.5

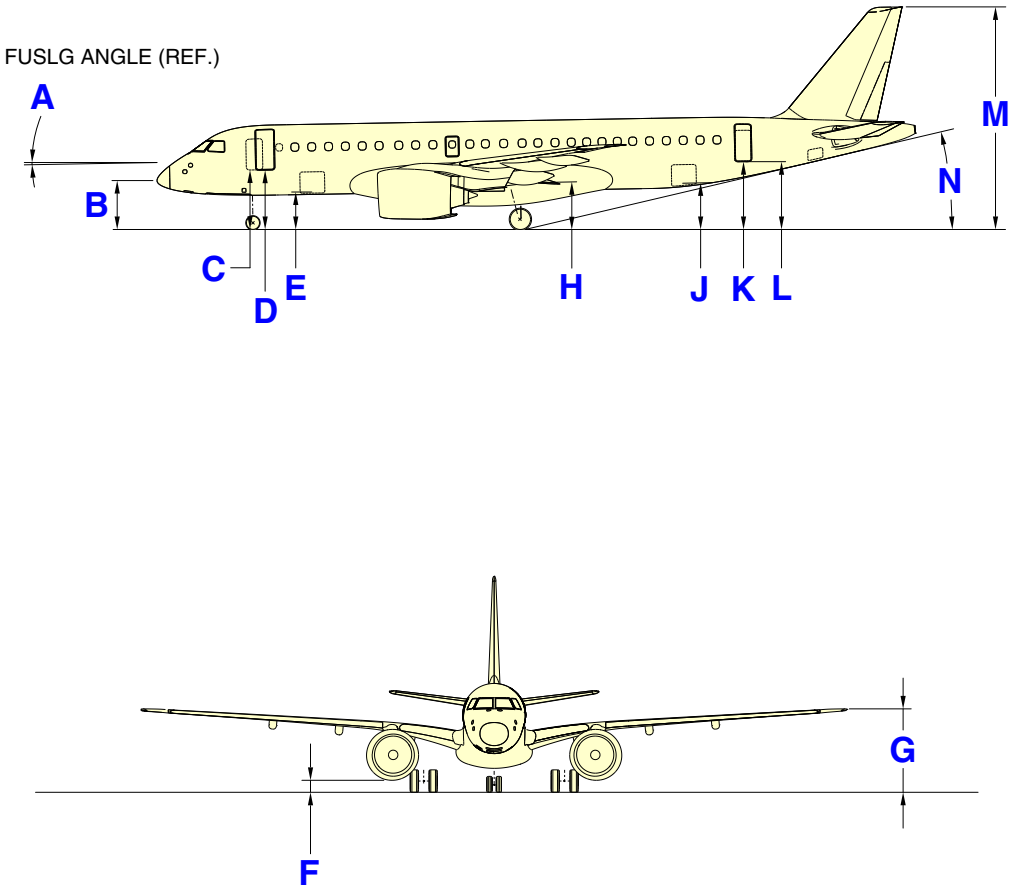

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Table 2.4 - Ground Clearance - STD Aircraft Model (@ -45 °C)

Effectivity: EMBRAER 190-E2 ACFT

WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FORWARD SERVICE DOOR (C)	FORWARD PASSENGER DOOR (D)	FORWARD CARGO DOOR (E)	NACELLE (F)	WING TIP (G)	OVER WING ESCAPE (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSENGER DOOR (L)	VERTICAL TAIL (M)	TAIL SKID ANGULAR CLEARANCE (DEG) (N)
56600 kg 124784 lb	18	-0.73	2.26 m 7 ft 5 in	2.77 m 9 ft 1 in	2.77 m 9 ft 1 in	1.72 m 5 ft 7.7 in	0.38 m 1 ft 3 in	3.81 m 12 ft 6 in	2.16 m 7 ft 1 in	2.0 m 6 ft 6.7 in	3.07 m 10 ft 4.7 in	3.0 m 9 ft 10.1 in	10.4 m 34 ft 1.5 in	12.2
56600 kg 124784 lb	34	-0.54	2.30 m 7 ft 6.5 in	2.80 m 9 ft 2 in	2.80 m 9 ft 2 in	1.74 m 5 ft 8.5 in	0.39 m 1 ft 3.3 in	3.79 m 12 ft 4.8 in	2.14 m 7 ft 0.25 in	2.0 m 6 ft 6.7 in	3.02 m 9 ft 10.9 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	12.0
56400 kg 124343 lb	18	-0.73	2.26 m 7 ft 5 in	2.77 m 9 ft 1 in	2.77 m 9 ft 1 in	1.72 m 5 ft 7.7 in	0.38 m 1 ft 3 in	3.81 m 12 ft 6 in	2.16 m 7 ft 1 in	2.0 m 6 ft 6.7 in	3.07 m 10 ft 4.7 in	3.0 m 9 ft 10.1 in	10.4 m 34 ft 1.5 in	12.2
56400 kg 124343 lb	34	-0.54	2.30 m 7 ft 6.5 in	2.80 m 9 ft 2 in	2.80 m 9 ft 2 in	1.74 m 5 ft 8.5 in	0.39 m 1 ft 3.3 in	3.79 m 12 ft 5.2 in	2.14 m 7 ft 0.25 in	2.0 m 6 ft 6.7 in	3.02 m 9 ft 10.9 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	12.0
49050 kg 108139 lb	18	-0.8	2.26 m 7 ft 5 in	2.78 m 9 ft 1.5 in	2.78 m 9 ft 1.5 in	1.73 m 5 ft 8.1 in	0.40 m 1 ft 3.8 in	3.85 m 12 ft 7.2 in	2.18 m 7 ft 1.8 in	2.0 m 6 ft 6.7 in	3.11 m 10 ft 2.4 in	3.1 m 10 ft 2 in	10.4 m 34 ft 1.5 in	12.4
49050 kg 108139 lb	41	-0.49	2.34 m 7 ft 8.1 in	2.83 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.77 m 5 ft 9.7 in	0.42 m 1 ft 4.5 in	3.80 m 12 ft 5.6 in	2.16 m 7 ft 1 in	2.0 m 6 ft 6.7 in	3.03 m 9 ft 11.3 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	12.0
46700 kg 102958 lb	18	-0.83	2.26 m 7 ft 5 in	2.78 m 9 ft 3.4 in	2.79 m 9 ft 1.8 in	1.74 m 5 ft 8.5 in	0.41 m 1 ft 4.1 in	3.86 m 12 ft 8 in	2.19 m 7 ft 2.2 in	2.0 m 6 ft 6.7 in	3.12 m 10 ft 2.8 in	3.1 m 10 ft 2 in	10.5 m 34 ft 5.4 in	12.4
46700 kg 102958 lb	41	-0.51	2.34 m 7 ft 8.1 in	2.84 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.78 m 5 ft 10 in	0.42 m 1 ft 4.5 in	3.82 m 12 ft 6.4 in	2.18 m 7 ft 1.8 in	2.0 m 6 ft 6.7 in	3.05 m 10 ft 2.1 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	12.1
32700 kg 72093 lb	22	-0.99	2.29 m 7 ft 6.2 in	2.82 m 9 ft 3.4 in	2.83 m 9 ft 3.4 in	1.78 m 5 ft 10 in	0.47 m 1 ft 6.5 in	3.94 m 12 ft 11.1 in	2.68 m 8 ft 9.5 in	2.20 m 7 ft 2.6 in	3.22 m 10 ft 6.8 in	3.2 m 10 ft 6 in	10.6 m 34 ft 9.3 in	12.9
32700 kg 72093 lb	32	-0.85	2.32 m 7 ft 7.3 in	2.84 m 9 ft 3 in	2.85 m 9 ft 4.2 in	1.80 m 5 ft 10.8 in	0.47 m 1 ft 6.5 in	3.92 m 12 ft 10.3 in	2.60 m 8 ft 6.3 in	2.10 m 7 ft 10.7 in	3.19 m 10 ft 5.6 in	3.2 m 10 ft 6 in	10.5 m 34 ft 5.4 in	12.7

Table 2.5 - Ground Clearance - STD Aircraft Model (@ +20 °C)

Effectivity: EMBRAER 190-E2 ACFT

WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FORWARD SERVICE DOOR (C)	FORWARD PASSENGER DOOR (D)	FORWARD CARGO DOOR (E)	NACELLE (F)	WING TIP (G)	OVER WING ESCAPE (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSENGER DOOR (L)	VERTICAL TAIL (M)	TAIL SKID ANGULAR CLEARANCE (DEG) (N)
56600 kg 124784 lb	18	-0.85	2.29 m 7 ft 6.2 in	2.81 m 9 ft 2.6 in	2.81 m 9 ft 2.6 in	1.76 m 5 ft 9.3 in	0.44 m 1 ft 5.3 in	3.89 m 12 ft 9.1 in	2.23 m 7 ft 3.8 in	2.10 m 6 ft 10.7 in	3.15 m 10 ft 4 in	3.16 m 10 ft 4.4 in	10.50 m 34 ft 5.4 in	12.6
56600 kg 124784 lb	34	-0.64	2.34 m 7 ft 8.1 in	2.84 m 9 ft 3 in	2.85 m 9 ft 4.2 in	1.79 m 5 ft 10.5 in	0.45 m 1 ft 5.7 in	3.86 m 12 ft 8 in	2.21 m 7 ft 3 in	2.07 m 6 ft 9.5 in	3.11 m 10 ft 2.4 in	3.11 m 10 ft 2.4 in	10.42 m 34 ft 2.2 in	12.3
56400 kg 124343 lb	18	-0.85	2.29 m 7 ft 6.2 in	2.81 m 9 ft 2.6 in	2.82 m 9 ft 3 in	1.76 m 5 ft 9.3 in	0.44 m 1 ft 5.3 in	3.89 m 12 ft 9.1 in	2.23 m 7 ft 3.8 in	2.10 m 6 ft 10.7 in	3.16 m 10 ft 4.4 in	3.16 m 10 ft 4.4 in	10.50 m 34 ft 5.4 in	12.6
56400 kg 124343 lb	34	-0.64	2.34 m 7 ft 8.1 in	2.84 m 9 ft 3 in	2.85 m 9 ft 4. 2 in	1.79 m 5 ft 10.5 in	0.45 m 1 ft 5.7 in	3.86 m 12 ft 8 in	2.21 m 7 ft 3 in	2.07 m 6 ft 9.5 in	3.11 m 10 ft 2.4 in	3.11 m 10 ft 2.4 in	10.42 m 34 ft 2.2 in	12.3
49050 kg 108139 lb	18	-1.01	2.29 m 7 ft 6.2 in	2.82 m 9 ft 3.4 in	2.83 m 9 ft 3.4 in	1.78 m 5ft 10 in	0.46 m 1 ft 6.1 in	3.93 m 12 ft 10.7 in	2.26 m 7 ft 5 in	2.15 m 7 ft 0.65 in	3.20 m 10 ft 6 in	3.20 m 10 ft 6 in	10.55 m 34 ft 7.4 in	12.8
49050 kg 108139 lb	41	-0.62	2.39 m 7 ft 10.1 in	2.88 m 9 ft 5.4 in	2.89 m 9 ft 5.8 in	1.83 m 6 ft 9.7 in	0.48 m 1 ft 6.9 in	3.88 m 12 ft 8.7 in	2.24 m 7 ft 4.2 in	2.08 m 6 ft 9.9 in	3.12 m 10 ft 2.8 in	3.12 m 10 ft 2.8 in	10.42 m 34 ft 2.2 in	12.4
46700 kg 102958 lb	18	-0.96	2.29 m 7 ft 6.2 in	2.82 m 9 ft 3.4 in	2.83 m 9 ft 3.4 in	1.79 m 5 ft 10.5 in	0.47 m 1 ft 6.5 in	3.94 m 12 ft 8.7 in	2.27 m 7 ft 5.4 in	2.02 m 6 ft 7.5 in	3.22 m 10 ft 6.8 in	3.22 m 10 ft 6.8 in	10.57 m 34 ft 8.1 in	12.8
46700 kg 102958 lb	41	-0.6	2.39 m 7 ft 10.1 in	2.89 m 9 ft 5.8 in	2.89 m 9 ft 5.8 in	1.83 m 6 ft 6 in	0.49 m 1 ft 7.3 in	3.89 m 12 ft 11.1 in	2.25 m 7 ft 4.6 in	2.10 m 6 ft 10.7 in	3.13 m 10 ft 3.2 in	3.13 m 10 ft 3.2 in	10.44 m 34 ft 3 in	12.4
32700 kg 72093 lb	22	-1.16	2.32 m 7 ft 7.3 in	2.86 m 9 ft 4.6 in	2.87 m 9 ft 5 in	1.84 m 6 ft 0.4 in	0.54 m 1 ft 9.3 in	4.04 m 13 ft 3.1 in	2.36 m 7 ft 8.9 in	2.27 m 7 ft 5.4 in	3.34 m 10 ft 11.5 in	3.34 m 10 ft 11.5 in	10.72 m 35 ft 2 in	13.3
32700 kg 72093 lb	32	-0.99	2.36 m 7 ft 8.9 in	2.89 m 9 ft 5.8 in	2.90 m 9 ft 6.2 in	1.86 m 6 ft 1.2 in	0.54 m 1 ft 9.3 in	4.02 m 13 ft 2.3 in	2.34 m 7 ft 8.1 in	2.24 m 7 ft 4.2 in	3.30 m 10 ft 9.9 in	3.30 m 10 ft 9.9 in	10.66 m 34 ft 11.7 in	13.1

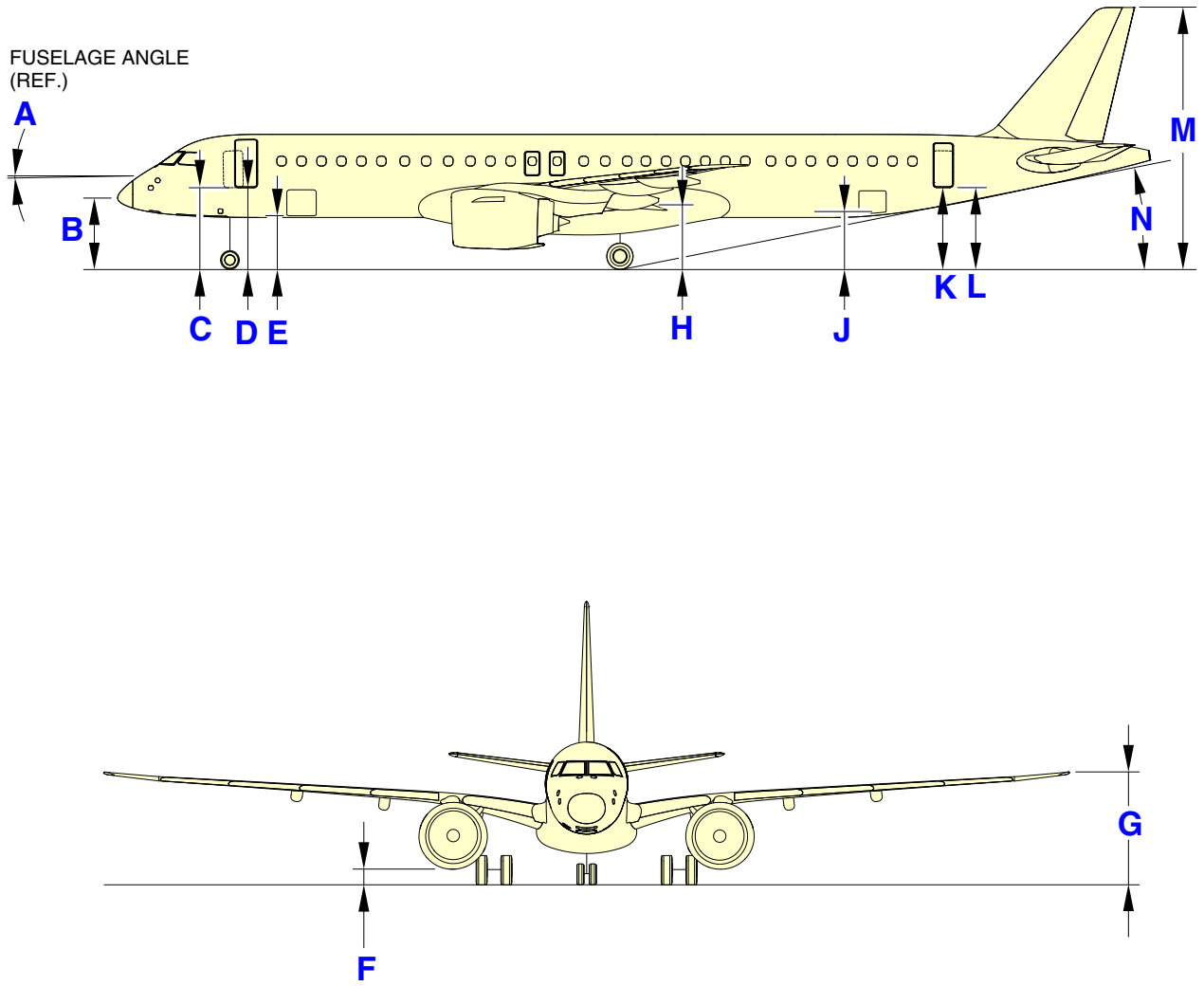
Table 2.6 - Ground Clearance - STD Aircraft Model (@ +54 °C)

Effectivity: EMBRAER 190-E2 ACFT

WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FORWARD SERVICE DOOR (C)	FORWARD PASSENGER DOOR (D)	FORWARD CARGO DOOR (E)	NACELLE (F)	WING TIP (G)	OVER WING ESCAPE (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSENGER DOOR (L)	VERTICAL TAIL M)	TAIL SKID ANGULAR CLEARANCE (DEG) (N)
56600 kg 124784 lb	18	-0.91	2.31 m 7 ft 6.9 in	2.83 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.79 m 5 ft 10.4 in	0.47 m 1 ft 6.5 in	3.93 m 12 ft 10.7 in	2.27 m 7 ft 5.4 in	2.15 m 7 ft 0.65 in	3.21 m 10 ft 6.4 in	3.21 m 10 ft 6.4 in	10.56 m 34 ft 7.7 in	12.8
56600 kg 124784 lb	34	-0.7	2.36 m 7 ft 8.9 in	2.87 m 9 ft 5 in	2.87 m 9 ft 5 in	1.82 m 5 ft 11.6 in	0.48 m 1 ft 6.9 in	3.90 m 12 ft 9.5 in	2.25 m 7 ft 4.6 in	2.11 m 6 ft 11 in	3.15 m 10 ft 4.0 in	3.16 m 10 ft 4.4 in	10.48 m 34 ft 4.6 in	12.5
56400 kg 124343 lb	18	-0.92	2.31 m 7 ft 6.9 in	2.83 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.79 m 5 ft 10.4 in	0.47 m 1 ft 6.5 in	3.94 m 12 ft 8.7 in	2.27 m 7 ft 5.4 in	2.15 m 7 ft 0.65 in	3.21 m 10 ft 6.4 in	3.21 m 10 ft 6.4 in	10.56 m 34 ft 7.7 in	12.8
56400 kg 124343 lb	34	-0.7	2.36 m 7 ft 8.9 in	2.87 m 9 ft 5 in	2.87 m 9 ft 5 in	1.82 m 5 ft 11.6 in	0.48 m 1 ft 6.9 in	3.90 m 12 ft 9.5 in	2.25 m 7 ft 4.6 in	2.11 m 6 ft 11 in	3.16 m 10 ft 4.4 in	3.16 m 10 ft 4.4 in	10.48 m 34 ft 4.6 in	12.5
49050 kg 108139 lb	18	-1.01	2.31 m 7 ft 6.9 in	2.84 m 9 ft 3.8 in	2.85 m 9 ft 4.2 in	1.81 m 5 ft 11.2 in	0.50 m 1 ft 7.7 in	3.97 m 13 ft 3 in	2.30 m 7 ft 6.6 in	2.20 m 6 ft 2.6 in	3.25 m 10 ft 8.0 in	3.26 m 10 ft 8.3 in	10.62 m 34 ft 10 in	13.0
49050 kg 108139 lb	41	-0.62	2.41 m 7 ft 10.9 in	2.91 m 9 ft 7 in	2.92 m 9 ft 7 in	1.86 m 6 ft 1.2 in	0.51 m 1 ft 8.1 in	3.92 m 12 ft 10.3 in	2.28 m 7 ft 5.7 in	2.13 m 6 ft 11.8 in	3.17 m 10 ft 4.8 in	3.17 m 10 ft 4.8 in	10.48 m 34 ft 4.6 in	12.5
46700 kg 102958 lb	18	-1.04	2.31 m 7 ft 6.9 in	2.85 m 9 ft 3.8 in	2.86 m 9 ft 4.6 in	1.81 m 5 ft 11.2 in	0.51 m 1 ft 8.1 in	3.99 m 13 ft 10.9 in	2.31 m 7 ft 6.9 in	2.21 m 7 ft 3 in	3.27 m 10 ft 8.7 in	3.27 m 10 ft 8.7 in	10.64 m 34 ft 11 in	13.1
46700 kg 102958 lb	41	-0.65	2.41 m 7 ft 10.9 in	2.92 m 9 ft 7 in	2.92 m 9 ft 7 in	1.86 m 6 ft 1.2 in	0.52 m 1 ft 8.5 in	3.94 m 12 ft 11.1 in	2.29 m 7 ft 6.1 in	2.14 m 7 ft 0.25 in	3.18 m 10 ft 5.2 in	3.18 m 10 ft 5.2 in	10.50 m 34 ft 5.4 in	12.6
32700 kg 72093 lb	22	-1.25	2.34 m 7 ft 8.1 in	2.89 m 9 ft 7.7 in	2.90 m 9 ft 7.7 in	1.87 m 6 ft 1.6 in	0.58 m 1 ft 10.8 in	4.10 m 13 ft 5.4 in	2.40 m 7 ft 10.5 in	2.33 m 7 ft 7.7 in	3.40 m 11 ft 1.8 in	3.40 m 11 ft 1.8 in	10.80 m 35 ft 6 in	13.6
32700 kg 72093 lb	32	-1.07	2.38 m 7 ft 9.7 in	2.92 m 9 ft 7 in	2.93 m 9 ft 7.3 in	1.89 m 6 ft 2.4 in	0.58 m 1 ft 10.8 in	4.07 m 13 ft 4.2 in	2.40 m 7 ft 10.5 in	2.30 m 7 ft 6.6 in	3.36 m 11 ft 2.8 in	3.36 m 11 ft 2.8 in	10.73 m 35 ft 2.4 in	13.4

EFFECTIVITY: EMBRAER 195-E2 ACFT

Aircraft Ground Clearances
Figure 2.6



EM170E2APM020015A.IDR

Table 2.7 - Ground Clearance - STD Aircraft Model (@ -45 °C)

Effectivity: EMBRAER 195-E2 ACFT

WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FORWARD SERVICE DOOR (C)	FORWARD PASSENGER DOOR (D)	FORWARD CARGO DOOR (E)	NACELLE (F)	WING TIP (G)	OVER WING ESCAPE (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSENGER DOOR (L)	VERTICAL TAIL (M)	TAIL SKID ANGULAR CLEARANCE (DEG) (N)
60100kg 132498 lb	13	-0.56	2.27 m 7 ft 5.4 in	2.77 m 9 ft 1 in	2.77 m 9 ft 1 in	1.71 m 5 ft 7.7 in	0.37 m 1 ft 3 in	3.90 m 12 ft 9.5 in	2.15 m 7 ft 1 in	2.0 m 6 ft 6.7 in	3.05 m 10 ft 0.1 in	3.0 m 9 ft 10.1 in	10.4 m 34 ft 1.5 in	10.5
61700 kg 136025 lb	34	-0.37	2.33 m 7 ft 7.7 in	2.81 m 9 ft 2.6 in	2.81 m 9 ft 2.6 in	1.74 m 5 ft 8.5 in	0.37 m 1 ft 3.3 in	3.90 m 12 ft 9.5 in	2.13 m 7 ft 0.25 in	1.97 m 6 ft 6.7 in	3.0 m 9 ft 10.1 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	10.2
61500 kg 135584 lb	34	-0.37	2.33 m 7 ft 7.7 in	2.81 m 9 ft 2.6 in	2.81 m 9 ft 2 in	1.74 m 5 ft 8.5 in	0.37 m 1 ft 3 in	3.90 m 12 ft 9.5 in	2.13 m 7 ft 1 in	1.97 m 6 ft 6.7 in	3.0 m 9 ft 10.08 in	3.0 m 9 ft 10.1 in	10.3 m 34 ft 1.5 in	10.2
59900 kg 132057 lb	13	-0.56	2.27 m 7 ft 5.4 in	2.77 m 9 ft 1 in	2.77 m 9 ft 1 in	1.71 m 5 ft 7.7 in	0.37 m 1 ft 3.3 in	3.90 m 12 ft 9.5 in	2.15 m 7 ft 0.25 in	2.0 m 6 ft 6.7 in	3.05 m 10 ft 0.1 in	3.0 m 9 ft 10.1 in	10.4 m 33 ft 9.5 in	10.5
54000 kg 119049 lb	13	-0.60	2.28 m 7 ft 5.8 in	2.78 m 9 ft 1.5 in	2.78 m 9 ft 1.5 in	1.72 m 5 ft 8.1 in	0.38 m 1 ft 3.8 in	3.90 m 12 ft 9.5 in	2.17 m 7 ft 1.8 in	2.0 m 6 ft 6.7 in	3.08 m 10 ft 1.2 in	3.1 m 10 ft 2 in	10.4 m 34 ft 1.5 in	10.6
54000 kg 119049 lb	40	-0.33	2.36 m 7 ft 8.9 in	2.84 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.77 m 5 ft 9.7 in	0.39 m 1 ft 4.5 in	3.90 m 12 ft 9.5 in	2.15 m 7 ft 1 in	2.0 m 6 ft 6.7 in	3.0 m 9 ft 10.1 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	10.3
51850 kg 114039 lb	13	-0.62	2.28 m 7 ft 5.8 in	2.78 m 9 ft 1.5 in	2.79 m 9 ft 1.8 in	1.73 m 5 ft 8.5 in	0.39 m 1 ft 4.1 in	3.90 m 12 ft 9.5 in	2.18 m 7 ft 2.2 in	2.0 m 6 ft 6.7 in	3.09 m 10 ft 1.7 in	3.1 m 10 ft 2 in	10.4 m 34 ft 5.4 in	10.6
51850 kg 114039 lb	40	-0.35	2.36 m 7 ft 8.9 in	2.84 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.78 m 5 ft 10 in	0.39 m 1 ft 4.5 in	3.90 m 12 ft 9.5 in	2.16 m 7 ft 1.8 in	2.0 m 6 ft 6.7 in	3.0 m 9 ft 10.1 in	3.0 m 9 ft 10.1 in	10.3 m 33 ft 9.5 in	10.3
34700kg 76500 lb	18	-0.75	2.31 m 7 ft 7 in	2.82 m 9 ft 3 in	2.83 m 9 ft 3.4 in	1.77 m 5 ft 10 in	0.45 m 1 ft 6.5 in	4.0 m 13 ft 1.4 in	2.26 m 8 ft 9.5 in	2.1 m 7 ft 2.6 in	3.2 m 10 ft 6 in	3.2 m 10 ft 6 in	10.5 m 34 ft 9.3 in	110
34700 kg 76500 lb	30	-0.62	2.35 m 7 ft 8.5 in	2.85 m 9 ft 4.2 in	2.85 m 9 ft 4.2 in	1.80 m 5 ft 10.8 in	0.46 m 1 ft 6.5 in	4.0 m 13 ft 1.4 in	2.25 m 8 ft 6.3 in	2.1 m 7 ft 10.7 in	3.16 m 10 ft 4.4 in	3.2 m 10 ft 6 in	10.5 m 34 ft 5.4 in	10.8

Table 2.8 - Ground Clearance - STD Aircraft Model (@ +20 °C)

Effectivity: EMBRAER 195-E2 ACFT

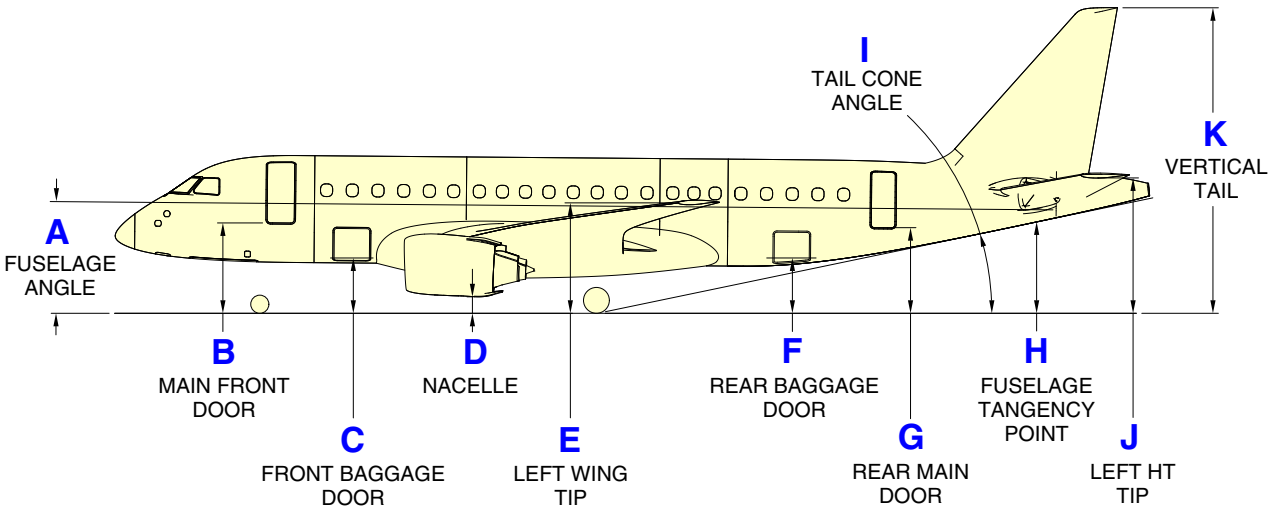
WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FORWARD SERVICE DOOR (C)	FORWARD PASSENGER DOOR (D)	FORWARD CARGO DOOR (E)	NACELLE (F)	WING TIP (G)	OVER WING ESCAPE (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSENGER DOOR (L)	VERTICAL TAIL (M)	TAIL SKID ANGULAR CLEARANCE (DEG) (N)
60100kg 132498 lb	13	-0.65	2.31 m 7 ft 7 in	2.81 m 9 ft 2.6 in	2.81 m 9 ft 2.6 in	1.76 m 5 ft 9.3 in	0.44 m 1 ft 5.3 in	4.0m 12 ft 9.6 in	2.23 m 7 ft 3.8 in	2.10 m 6 ft 10.7 in	3.14m 10 ft 3.6 in	3.16 m 10 ft 4.4 in	10.50 m 34 ft 5.4 in	10.7
61700 kg 136025 lb	34	-0.43	2.37 m 7 ft 9.4 in	2.85 m 9 ft 4.2 in	2.85 m 9 ft 4.2 in	1.79 m 5 ft 10.5 in	0.45 m 1 ft 5.7 in	3.9 m 12 ft 9.6 in	2.21 m 7 ft 3 in	2.07 m 6 ft 9.5 in	3.07 m 10 ft 0.8 in	3.11 m 10 ft 2.4 in	10.42 m 34 ft 2.2 in	10.5
61500 kg 135584 lb	34	-0.43	2.37 m 7 ft 9.4 in	2.85 m 9 ft 4.2 in	2.82 m 9 ft 3 in	1.76 m 5 ft 9.3 in	0.44 m 1 ft 5.3 in	3.9 m 12 ft 9.6 in	2.23 m 7 ft 3.8 in	2.10 m 6 ft 10.7 in	3.07 m 10 ft 0.8 in	3.16 m 10 ft 4.4 in	10.50 m 34 ft 5.4 in	10.5
59900 kg 132057 lb	13	-0.43	2.31m 7ft 7 in	2.81 m 9 ft 4. 2 in	2.85 m 9 ft 4. 2 in	1.79 m 5 ft 10.5 in	0.45 m 1 ft 5.7 in	3.9 m 12 ft 9.6 in	2.21 m 7 ft 3 in	2.07 m 6 ft 9.5 in	3.14 m 10 ft 3.6 in	3.11 m 10 ft 2.4 in	10.42 m 34 ft 2.2 in	10.8
54000 kg 119049 lb	13	-0.65	2.31 m 7 ft 7 in	2.82 m 9 ft 3.4 in	2.83 m 9 ft 3.4 in	1.78 m 5ft 10 in	0.46 m 1 ft 6.1 in	3.9 m 12 ft 9.6 in	2.26 m 7 ft 5 in	2.15 m 7 ft 0.65 in	3.17 m 10 ft 4.8 in	3.20 m 10 ft 6 in	10.55 m 34 ft 7.4 in	10.9
54000 kg 119049 lb	40	-0.70	2.41 m 7 ft 10.9 in	2.9 m 9 ft 5.8 in	2.9 m 9 ft 5.8 in	1.83 m 6 ft 9.7 in	0.48 m 1 ft 6.9 in	3.9 m 12 ft 9.6 in	2.24 m 7 ft 4.2 in	2.08 m 6 ft 9.9 in	3.08 m 10 ft 1.2 in	3.12 m 10 ft 2.8 in	10.42 m 34 ft 2.2 in	10.5
51850 kg 114039 lb	13	-0.38	2.31 m 7 ft 7 in	2.82 m 9 ft 5.8 in	2.83 m 9 ft 3.4 in	1.79 m 5 ft 10.5 in	0.47 m 1 ft 6.5 in	3.9 m 12 ft 9.6 in	2.27 m 7 ft 5.4 in	2.02 m 6 ft 7.5 in	3.18 m 10 ft 5.2 in	3.22 m 10 ft 6.8 in	10.57 m 34 ft 8.1 in	10.9
51850 kg 114039 lb	40	-0.71	2.41 m 7 ft 10.9 in	2.90 m 9 ft 5.8 in	2.89 m 9 ft 5.8 in	1.83 m 6 ft 6 in	0.49 m 1 ft 7.3 in	4.0 m 12 ft 9.6 in	2.25 m 7 ft 4.6 in	2.10 m 6 ft 10.7 in	3.09 m 10 ft 1.7 in	3.13 m 10 ft 3.2 in	10.44 m 34 ft 3 in	10.5
34700kg 76500 lb	18	-0.87	2.35 m 7 ft 8.5 in	2.87 m 9 ft 5 in	2.87 m 9 ft 5 in	1.84 m 6 ft 0.4 in	0.54 m 1 ft 9.3 in	4.0 m 13 ft 5.4 in	2.36 m 7 ft 8.9 in	2.27 m 7 ft 5.4 in	3.30 m 10 ft 10 in	3.34 m 10 ft 11.5 in	10.72 m 35 ft 2 in	11.3
34700 kg 76500 lb	30	-0.71	2.39 m 7 ft 10.1 in	2.90 m 9 ft 6.2 in	2.90 m 9 ft 6.2 in	1.86 m 6 ft 1.2 in	0.54 m 1 ft 9.3 in	4.0 m 13 ft 5.4 in	2.34 m 7 ft 8.1 in	2.24 m 7 ft 4.2 in	3.26 m 10 ft 8.4 in	3.30 m 10 ft 9.9 in	10.66 m 34 ft 11.7 in	11.2

Table 2.9 - Ground Clearance - STD Aircraft Model (@ +54 °C)

Effectivity: EMBRAER 195-E2 ACFT

WEIGHT	CG (%MAC)	FUS ANGLE (DEG) (A)	NOSE (B)	FORWARD SERVICE DOOR (C)	FORWARD PASSENGER DOOR (D)	FORWARD CARGO DOOR (E)	NACELLE (F)	WING TIP (G)	OVER WING ESCAPE (H)	AFT CARGO DOOR (J)	AFT SERVICE DOOR (K)	AFT PASSENGER DOOR (L)	VERTICAL TAIL M)	TAIL SKID ANGULAR CLEARANCE (DEG) (N)
60100kg 132498 lb	13	-0.70	2.33 m 7 ft 7.7 in	2.84 m 9 ft 3.8 in	2.84 m 9 ft 3.8 in	1.79 m 5 ft 10.4 in	0.47 m 1 ft 6.5 in	4.0 m 13 ft 5.4 in	2.27 m 7 ft 5.4 in	2.15 m 7 ft 0.65 in	3.18 m 10 ft 5.2 in	3.21 m 10 ft 6.4 in	10.56 m 34 ft 7.7 in	10.9
61700 kg 136025 lb	34	-0.47	2.39 m 7 ft 10.1 in	2.88 m 9 ft 5.4 in	2.87 m 9 ft 5 in	1.82 m 5 ft 11.6 in	0.48 m 1 ft 6.9 in	4.0 m 13 ft 5.4 in	2.25 m 7 ft 4.6 in	2.11 m 6 ft 11 in	3.12 m 10 ft 2.9 in	3.16 m 10 ft 4.4 in	10.48 m 34 ft 4.6 in	10.6
61500 kg 135584 lb	34	-0.47	2.39 m 7 ft 10.1 in	2.88 m 9 ft 5.4 in	2.84 m 9 ft 3.8 in	1.79 m 5 ft 10.4 in	0.47 m 1 ft 6.5 in	4.0 m 13 ft 5.4 in	2.27 m 7 ft 5.4 in	2.15 m 7 ft 0.65 in	3.12 m 10 ft 2.9 in	3.21 m 10 ft 6.4 in	10.56 m 34 ft 7.7 in	10.6
59900 kg 132057 lb	13	-0.70	2.33 m 7 ft 7.7 in	2.84 m 9 ft 3.8 in	2.87 m 9 ft 5 in	1.82 m 5 ft 11.6 in	0.48 m 1 ft 6.9 in	4.0 m 13 ft 5.4 in	2.25 m 7 ft 4.6 in	2.11 m 6 ft 11 in	3.19 m 10 ft 5.6 in	3.16 m 10 ft 4.4 in	10.48 m 34 ft 4.6 in	10.9
54000 kg 119049 lb	13	-0.75	2.33 m 7 ft 7.7 in	2.84 m 9 ft 3.8 in	2.85 m 9 ft 4.2 in	1.81 m 5 ft 11.2 in	0.50 m 1 ft 7.7 in	4.0 m 13 ft 5.4 in	2.30 m 7 ft 6.6 in	2.20 m 6 ft 2.6 in	3.22 m 10 ft 6.7 in	3.26 m 10 ft 8.3 in	10.62 m 34 ft 10 in	11.0
54000 kg 119049 lb	40	-0.42	2.44 m 8 ft 1.2 in	2.92 m 9 ft 7 in	2.92 m 9 ft 7 in	1.86 m 6 ft 1.2 in	0.51 m 1 ft 8.1 in	4.0 m 13 ft 5.4 in	2.28 m 7 ft 5.7 in	2.13 m 6 ft 11.8 in	3.13 m 10 ft 3.2 in	3.17 m 10 ft 4.8 in	10.48 m 34 ft 4.6 in	10.7
51850 kg 114039 lb	13	-0.77	2.33 m 7 ft 7.7 in	2.85 m 9 ft 4.2 in	2.86 m 9 ft 4.6 in	1.81 m 5 ft 11.2 in	0.51 m 1 ft 8.1 in	4.0 m 13 ft 5.4 in	2.31 m 7 ft 6.9 in	2.21 m 7 ft 3 in	3.23 m 10 ft 7.2 in	3.27 m 10 ft 8.7 in	10.64 m 34 ft 11 in	11.1
51850 kg 114039 lb	40	-0.43	2.44 m 8 ft 1.2 in	2.93 m 9 ft 7.3 in	2.92 m 9 ft 7 in	1.86 m 6 ft 1.2 in	0.52 m 1 ft 8.5 in	4.0 m 13 ft 5.4 in	2.29 m 7 ft 6.1 in	2.14 m 7 ft 0.25 in	3.14 m 10 ft 3.6 in	3.18 m 10 ft 5.2 in	10.50 m 34 ft 5.4 in	10.7
34700kg 76500 lb	18	-0.93	2.37 m 7 ft 9.4 in	2.90 m 9 ft 6.1 in	2.90 m 9 ft 7.7 in	1.87 m 6 ft 1.6 in	0.58 m 1 ft 10.8 in	4.1 m 13 ft 5.4 in	2.40 m 7 ft 10.5 in	2.33 m 7 ft 7.7 in	3.36 m 10 ft 0.2 in	3.40 m 11 ft 1.8 in	10.80 m 35 ft 6 in	11.5
34700 kg 76500 lb	30	-0.77	2.42 m 7 ft 11.3 in	2.93 m 9 ft 7.3 in	2.93 m 9 ft 7.3 in	1.89 m 6 ft 2.4 in	0.58 m 1 ft 10.8 in	4.1 m 13 ft 5.4 in	2.40 m 7 ft 10.5 in	2.30 m 7 ft 6.6 in	3.32 m 10 ft 10.7 in	3.36 m 11 ft 2.8 in	10.73 m 35 ft 2.4 in	11.4

EFFECTIVITY: EMBRAER 175-E2 ACFT
Aircraft Ground Clearances
Figure 2.7



EM170E2APM020023A.IDR

Table 2.10 - Ground Clearance - STD Aircraft Model (@ -45 °C)

Effectivity: EMBRAER 175-E2 ACFT

WEIGHT (Kg)	CG (%MAC)	FUS ANGLE (DEG) (A)	MAIN FRONT DOOR (m) (B)	FRONT BAG DOOR (m) (C)	NACELLE (m) (D)	LEFT WING TIP (m) (E)	REAR BAG DOOR (m) (F)	REAR MAIN DOOR (m) (G)	LEFT HT TIP (m) (J)	VERTICAL TAIL (m) (K)	FUS TAN POINT (m) (H)	TAIL ANGLE (dg) (I)
45700	25	0,15	2,729	1,644	0,462	3,536	1,680	2,688	4,206	9,889	3,376	12,00
45700	25	0,15	2,729	1,644	0,462	3,536	1,680	2,688	4,206	9,889	3,376	12,00
45700	31	0,24	2,741	1,654	0,465	3,527	1,668	2,671	4,178	9,860	3,348	11,90
45700	31	0,24	2,741	1,654	0,465	3,527	1,668	2,671	4,178	9,860	3,348	11,90
45700	25	0,15	2,730	1,644	0,458	3,550	1,680	2,687	4,210	9,889	3,376	12,00
45700	25	0,15	2,728	1,645	0,466	3,522	1,681	2,689	4,202	9,889	3,376	12,00
45700	25	0,15	2,730	1,644	0,457	3,554	1,680	2,686	4,211	9,889	3,376	12,00
45700	25	0,15	2,727	1,645	0,467	3,520	1,681	2,689	4,201	9,889	3,376	12,00
45700	31	0,24	2,743	1,654	0,461	3,542	1,667	2,670	4,182	9,860	3,348	11,90
45700	31	0,24	2,740	1,654	0,469	3,514	1,668	2,672	4,174	9,860	3,348	11,90
45700	31	0,24	2,743	1,654	0,460	3,545	1,667	2,669	4,183	9,860	3,348	11,90
45700	31	0,24	2,740	1,654	0,469	3,512	1,668	2,672	4,173	9,860	3,348	11,90
45500	25	0,14	2,729	1,645	0,463	3,537	1,681	2,689	4,207	9,890	3,377	12,01
45500	25	0,14	2,729	1,645	0,463	3,537	1,681	2,689	4,207	9,890	3,377	12,01
45500	31	0,23	2,742	1,654	0,466	3,528	1,668	2,672	4,179	9,861	3,349	11,91
45500	31	0,23	2,742	1,654	0,466	3,528	1,668	2,672	4,179	9,861	3,349	11,91
45500	25	0,14	2,731	1,644	0,459	3,551	1,681	2,688	4,211	9,890	3,377	12,01
45500	25	0,14	2,728	1,645	0,467	3,523	1,682	2,690	4,203	9,890	3,377	12,01
45500	25	0,14	2,731	1,644	0,458	3,555	1,680	2,687	4,212	9,891	3,377	12,01
45500	25	0,14	2,728	1,645	0,467	3,521	1,682	2,690	4,202	9,891	3,377	12,01
45500	31	0,23	2,743	1,654	0,461	3,543	1,668	2,670	4,183	9,861	3,349	11,91
45500	31	0,23	2,740	1,655	0,469	3,515	1,669	2,673	4,175	9,861	3,349	11,91
45500	31	0,23	2,743	1,654	0,461	3,546	1,668	2,670	4,184	9,861	3,349	11,91
45500	31	0,23	2,740	1,655	0,470	3,512	1,669	2,673	4,175	9,861	3,349	11,91
44170	20	0,07	2,723	1,641	0,465	3,548	1,696	2,708	4,235	9,920	3,406	12,11
44170	20	0,07	2,723	1,641	0,465	3,548	1,696	2,708	4,235	9,920	3,406	12,11
44170	20	0,07	2,724	1,640	0,460	3,564	1,696	2,707	4,240	9,920	3,406	12,11
44170	20	0,07	2,721	1,641	0,469	3,535	1,697	2,709	4,232	9,920	3,406	12,11
44170	20	0,07	2,724	1,640	0,459	3,567	1,696	2,707	4,241	9,920	3,406	12,11
44170	20	0,07	2,721	1,641	0,469	3,532	1,697	2,710	4,231	9,920	3,406	12,11
40500	20	0,03	2,730	1,649	0,475	3,563	1,713	2,726	4,258	9,943	3,428	12,19
40500	20	0,03	2,730	1,649	0,475	3,563	1,713	2,726	4,258	9,943	3,428	12,19
40500	37.1	0,31	2,768	1,679	0,484	3,538	1,675	2,675	4,173	9,854	3,343	11,88

Table 2.10 - Ground Clearance - STD Aircraft Model (@ -45 °C) (Continued)

Effectivity: EMBRAER 175-E2 ACFT

40500	37.1	0,31	2,768	1,679	0,484	3,538	1,675	2,675	4,173	9,854	3,344	11,88
40500	20	0,03	2,731	1,648	0,471	3,579	1,712	2,725	4,262	9,943	3,429	12,19
40500	20	0,03	2,728	1,649	0,480	3,548	1,713	2,728	4,253	9,943	3,429	12,19
40500	20	0,03	2,731	1,648	0,470	3,583	1,712	2,725	4,263	9,943	3,429	12,19
40500	20	0,03	2,728	1,649	0,481	3,544	1,714	2,728	4,252	9,943	3,429	12,19
40500	37.1	0,31	2,770	1,678	0,480	3,554	1,674	2,673	4,178	9,854	3,344	11,88
40500	37.1	0,31	2,767	1,679	0,488	3,524	1,675	2,676	4,169	9,854	3,344	11,88
40500	37.1	0,31	2,770	1,678	0,480	3,554	1,674	2,673	4,178	9,855	3,344	11,88
40500	37.1	0,31	2,767	1,679	0,488	3,524	1,675	2,676	4,169	9,855	3,344	11,88
38150	40	0,36	2,785	1,694	0,495	3,542	1,677	2,674	4,166	9,846	3,336	11,86
38150	40	0,36	2,785	1,694	0,495	3,542	1,677	2,674	4,166	9,847	3,336	11,86
38150	40	0,36	2,786	1,693	0,492	3,554	1,676	2,673	4,169	9,846	3,336	11,86
38150	40	0,36	2,784	1,694	0,498	3,533	1,677	2,674	4,164	9,846	3,336	11,86
38150	40	0,36	2,786	1,693	0,490	3,559	1,676	2,673	4,171	9,847	3,337	11,86
38150	40	0,36	2,783	1,694	0,500	3,527	1,677	2,675	4,162	9,847	3,337	11,86
38150	20	0,01	2,734	1,653	0,481	3,572	1,723	2,737	4,271	9,956	3,442	12,23
38150	39.6	0,35	2,782	1,691	0,494	3,541	1,676	2,674	4,167	9,848	3,337	11,86
29200	20	-0,10	2,756	1,679	0,516	3,621	1,777	2,797	4,345	10,033	3,516	12,49
32200	40	0,31	2,802	1,713	0,518	3,570	1,707	2,706	4,204	9,885	3,374	11,99
26200	23.5	-0,10	2,772	1,696	0,532	3,637	1,792	2,812	4,359	10,047	3,531	12,54
26200	30	0,01	2,788	1,708	0,536	3,626	1,777	2,791	4,325	10,010	3,495	12,41

Table 2.11 - Ground Clearance - STD Aircraft Model (@ +20 °C)

Effectivity: EMBRAER 175-E2 ACFT

WEIGHT (Kg)	CG (%MAC)	FUS ANGLE (DEG) (A)	MAIN FRONT DOOR (m) (B)	FRONT BAG DOOR (m) (C)	NACELLE (m) (D)	LEFT WING TIP (m) (E)	REAR BAG DOOR (m) (F)	REAR MAIN DOOR (m) (G)	LEFT HT TIP (m) (J)	VERTICAL TAIL (m) (K)	FUS TAN POINT (m) (H)	TAIL ANGLE (dg) (I)
45700	25	0,05	2,772	1,691	0,516	3,602	1,750	2,763	4,292	9,978	3,463	12,30
45700	25	0,05	2,772	1,691	0,516	3,602	1,750	2,763	4,292	9,978	3,463	12,30
45700	31	0,15	2,786	1,701	0,519	3,592	1,736	2,744	4,261	9,945	3,432	12,19
45700	31	0,15	2,786	1,701	0,519	3,592	1,736	2,744	4,261	9,945	3,432	12,19
45700	25	0,05	2,773	1,690	0,511	3,618	1,750	2,762	4,297	9,978	3,463	12,30
45700	25	0,05	2,771	1,691	0,520	3,587	1,751	2,764	4,288	9,978	3,463	12,30
45700	25	0,05	2,774	1,690	0,510	3,622	1,750	2,762	4,298	9,978	3,463	12,30
45700	25	0,05	2,770	1,691	0,521	3,585	1,751	2,765	4,288	9,978	3,463	12,30

Table 2.11 - Ground Clearance - STD Aircraft Model (@ +20 °C) (Continued)

Effectivity: EMBRAER 175-E2 ACFT

45700	31	0,15	2,787	1,701	0,514	3,609	1,736	2,743	4,266	9,945	3,432	12,19
45700	31	0,15	2,785	1,702	0,523	3,578	1,737	2,745	4,257	9,945	3,432	12,19
45700	31	0,15	2,788	1,701	0,514	3,612	1,736	2,743	4,267	9,945	3,432	12,19
45700	31	0,15	2,784	1,702	0,524	3,575	1,737	2,746	4,257	9,945	3,432	12,19
45500	25	0,05	2,772	1,691	0,516	3,603	1,751	2,764	4,294	9,979	3,464	12,30
45500	25	0,05	2,772	1,691	0,516	3,603	1,751	2,764	4,294	9,979	3,464	12,30
45500	31	0,15	2,786	1,702	0,520	3,593	1,737	2,745	4,263	9,946	3,433	12,19
45500	31	0,15	2,786	1,702	0,520	3,593	1,737	2,745	4,263	9,946	3,433	12,19
45500	25	0,05	2,774	1,691	0,512	3,619	1,751	2,763	4,298	9,979	3,465	12,30
45500	25	0,05	2,771	1,691	0,521	3,587	1,752	2,765	4,289	9,979	3,465	12,30
45500	25	0,05	2,774	1,690	0,511	3,623	1,751	2,763	4,300	9,979	3,465	12,30
45500	25	0,05	2,771	1,691	0,521	3,585	1,752	2,766	4,289	9,979	3,465	12,30
45500	31	0,15	2,788	1,701	0,515	3,610	1,737	2,744	4,267	9,946	3,433	12,19
45500	31	0,15	2,785	1,702	0,524	3,579	1,738	2,746	4,259	9,946	3,433	12,19
45500	31	0,15	2,788	1,701	0,514	3,612	1,737	2,744	4,268	9,946	3,433	12,19
45500	31	0,15	2,785	1,702	0,524	3,576	1,738	2,747	4,258	9,946	3,433	12,19
44170	20	-0,04	2,765	1,687	0,519	3,616	1,768	2,785	4,325	10,012	3,496	12,41
44170	20	-0,04	2,765	1,687	0,519	3,616	1,768	2,785	4,325	10,012	3,496	12,41
44170	20	-0,04	2,767	1,686	0,514	3,633	1,768	2,784	4,330	10,012	3,496	12,41
44170	20	-0,04	2,764	1,687	0,523	3,600	1,769	2,787	4,321	10,012	3,496	12,41
44170	20	-0,04	2,767	1,686	0,513	3,637	1,768	2,784	4,331	10,012	3,496	12,41
44170	20	-0,04	2,764	1,687	0,524	3,597	1,769	2,787	4,320	10,012	3,496	12,41
40500	20	-0,08	2,773	1,695	0,530	3,632	1,787	2,806	4,350	10,037	3,521	12,50
40500	20	-0,08	2,773	1,695	0,530	3,632	1,787	2,806	4,350	10,037	3,521	12,50
40500	37.1	0,24	2,818	1,730	0,541	3,603	1,743	2,746	4,253	9,935	3,423	12,15
40500	37.1	0,24	2,818	1,730	0,541	3,603	1,743	2,746	4,253	9,935	3,424	12,15
40500	20	-0,08	2,774	1,695	0,525	3,651	1,786	2,804	4,356	10,038	3,521	12,50
40500	20	-0,08	2,771	1,696	0,535	3,615	1,788	2,807	4,345	10,038	3,521	12,50
40500	20	-0,08	2,775	1,695	0,524	3,655	1,786	2,804	4,357	10,038	3,522	12,50

Table 2.11 - Ground Clearance - STD Aircraft Model (@ +20 °C) (Continued)

Effectivity: EMBRAER 175-E2 ACFT

40500	20	-0,08	2,771	1,696	0,536	3,611	1,788	2,808	4,344	10,038	3,522	12,50
40500	37.1	0,24	2,819	1,730	0,536	3,621	1,743	2,745	4,258	9,935	3,424	12,15
40500	37.1	0,24	2,816	1,731	0,546	3,588	1,744	2,748	4,249	9,935	3,424	12,15
40500	37.1	0,24	2,820	1,730	0,536	3,622	1,743	2,745	4,259	9,935	3,424	12,15
40500	37.1	0,24	2,816	1,731	0,546	3,588	1,744	2,748	4,249	9,935	3,424	12,15
38150	40	0,31	2,838	1,748	0,554	3,607	1,744	2,744	4,243	9,924	3,413	12,11
38150	40	0,31	2,838	1,748	0,554	3,607	1,745	2,744	4,243	9,924	3,413	12,11
38150	40	0,31	2,839	1,748	0,550	3,620	1,744	2,743	4,247	9,924	3,413	12,11
38150	40	0,31	2,837	1,749	0,557	3,597	1,745	2,745	4,240	9,924	3,413	12,11
38150	40	0,31	2,839	1,748	0,549	3,626	1,744	2,743	4,249	9,924	3,413	12,11
38150	40	0,31	2,836	1,749	0,559	3,590	1,745	2,746	4,238	9,924	3,413	12,11
38150	20	-0,10	2,777	1,700	0,537	3,642	1,798	2,818	4,365	10,053	3,536	12,55
38150	39.6	0,30	2,835	1,746	0,552	3,607	1,744	2,744	4,244	9,926	3,415	12,12
29200	20	-0,24	2,803	1,730	0,578	3,700	1,861	2,888	4,452	10,141	3,623	12,85
32200	40	0,26	2,859	1,771	0,580	3,639	1,778	2,780	4,283	9,965	3,454	12,25
26200	23.5	-0,23	2,823	1,750	0,597	3,718	1,879	2,906	4,469	10,158	3,640	12,90
26200	30	-0,10	2,842	1,765	0,601	3,705	1,860	2,880	4,427	10,114	3,598	12,75

Table 2.12 - Ground Clearance - STD Aircraft Model (@ +54 °C)

Effectivity: EMBRAER 175-E2 ACFT

WEIGHT (Kg)	CG (%MAC)	FUS ANGLE (DEG) (A)	MAIN FRONT DOOR (m) (B)	FRONT BAG DOOR (m) (C)	NACELLE (m) (D)	LEFT WING TIP (m) (E)	REAR BAG DOOR (m) (F)	REAR MAIN DOOR (m) (G)	LEFT HT TIP (m) (J)	VERTICAL TAIL (m) (K)	FUS TAN POINT (m) (H)	TAIL ANGLE (dg) (I)
45700	25	-0,02	2,797	1,717	0,547	3,641	1,793	2,809	4,346	10,032	3,517	12,48
45700	25	-0,02	2,797	1,717	0,547	3,641	1,793	2,809	4,346	10,032	3,517	12,48
45700	31	0,09	2,811	1,728	0,551	3,631	1,778	2,789	4,313	9,998	3,484	12,36
45700	31	0,09	2,811	1,728	0,551	3,631	1,778	2,789	4,313	9,998	3,484	12,36
45700	25	-0,02	2,798	1,717	0,543	3,658	1,792	2,807	4,350	10,032	3,517	12,48
45700	25	-0,02	2,795	1,718	0,552	3,626	1,794	2,810	4,341	10,032	3,517	12,48
45700	25	-0,02	2,798	1,717	0,541	3,662	1,792	2,807	4,352	10,032	3,517	12,48

Table 2.12 - Ground Clearance - STD Aircraft Model (@ +54 °C) (Continued)

Effectivity: EMBRAER 175-E2 ACFT

45700	25	-0,02	2,795	1,718	0,552	3,624	1,794	2,810	4,341	10,032	3,517	12,48
45700	31	0,09	2,813	1,728	0,546	3,648	1,778	2,788	4,318	9,998	3,484	12,36
45700	31	0,09	2,810	1,729	0,555	3,617	1,779	2,790	4,309	9,998	3,484	12,36
45700	31	0,09	2,813	1,728	0,545	3,651	1,778	2,787	4,319	9,998	3,484	12,36
45700	31	0,09	2,810	1,729	0,556	3,614	1,779	2,790	4,308	9,998	3,484	12,36
45500	25	-0,02	2,797	1,718	0,548	3,642	1,794	2,810	4,347	10,033	3,518	12,48
45500	25	-0,02	2,797	1,718	0,548	3,642	1,794	2,810	4,347	10,033	3,518	12,48
45500	31	0,09	2,812	1,729	0,551	3,632	1,779	2,790	4,315	9,999	3,485	12,37
45500	31	0,09	2,812	1,729	0,551	3,632	1,779	2,790	4,315	9,999	3,485	12,37
45500	25	-0,02	2,799	1,717	0,543	3,659	1,793	2,808	4,352	10,033	3,518	12,48
45500	25	-0,02	2,796	1,718	0,552	3,626	1,794	2,811	4,343	10,033	3,518	12,48
45500	25	-0,02	2,799	1,717	0,542	3,663	1,793	2,808	4,353	10,033	3,518	12,48
45500	25	-0,02	2,795	1,718	0,553	3,624	1,795	2,811	4,342	10,033	3,518	12,48
45500	31	0,09	2,813	1,728	0,546	3,649	1,779	2,789	4,320	9,999	3,485	12,37
45500	31	0,09	2,810	1,729	0,555	3,618	1,780	2,791	4,310	9,999	3,485	12,37
45500	31	0,09	2,813	1,728	0,546	3,652	1,779	2,788	4,320	9,999	3,485	12,37
45500	31	0,09	2,810	1,729	0,556	3,615	1,780	2,791	4,310	9,999	3,485	12,37
44170	20	-0,11	2,790	1,713	0,550	3,656	1,811	2,832	4,379	10,067	3,551	12,60
44170	20	-0,11	2,790	1,713	0,550	3,656	1,811	2,832	4,379	10,067	3,551	12,60
44170	20	-0,11	2,791	1,712	0,545	3,674	1,811	2,830	4,385	10,067	3,551	12,60
44170	20	-0,11	2,788	1,713	0,555	3,640	1,812	2,833	4,375	10,067	3,551	12,60
44170	20	-0,11	2,792	1,712	0,544	3,677	1,811	2,830	4,386	10,067	3,551	12,60
44170	20	-0,11	2,788	1,714	0,556	3,637	1,812	2,833	4,374	10,067	3,551	12,60
40500	20	-0,15	2,797	1,722	0,562	3,673	1,831	2,853	4,406	10,094	3,577	12,69
40500	20	-0,15	2,797	1,722	0,562	3,673	1,831	2,853	4,406	10,094	3,577	12,69
40500	37.1	0,19	2,846	1,760	0,574	3,642	1,785	2,790	4,302	9,985	3,473	12,32
40500	37.1	0,19	2,846	1,760	0,574	3,642	1,785	2,790	4,302	9,985	3,473	12,32

Table 2.12 - Ground Clearance - STD Aircraft Model (@ +54 °C) (Continued)

Effectivity: EMBRAER 175-E2 ACFT

40500	20	-0,15	2,799	1,722	0,557	3,692	1,830	2,852	4,411	10,094	3,577	12,69
40500	20	-0,15	2,796	1,723	0,568	3,655	1,831	2,855	4,401	10,094	3,577	12,69
40500	20	-0,15	2,800	1,721	0,556	3,696	1,830	2,851	4,413	10,094	3,577	12,69
40500	20	-0,15	2,795	1,723	0,569	3,651	1,832	2,855	4,400	10,094	3,577	12,69
40500	37.1	0,19	2,847	1,759	0,569	3,660	1,784	2,789	4,308	9,985	3,473	12,32
40500	37.1	0,19	2,844	1,760	0,579	3,626	1,785	2,791	4,298	9,985	3,473	12,32
40500	37.1	0,19	2,847	1,759	0,569	3,661	1,784	2,789	4,308	9,985	3,473	12,32
40500	37.1	0,19	2,844	1,760	0,579	3,626	1,785	2,791	4,298	9,985	3,473	12,32
38150	40	0,27	2,868	1,779	0,588	3,646	1,785	2,787	4,290	9,972	3,460	12,27
38150	40	0,27	2,867	1,779	0,588	3,646	1,785	2,787	4,290	9,972	3,461	12,27
38150	40	0,27	2,869	1,779	0,584	3,660	1,785	2,786	4,294	9,972	3,460	12,27
38150	40	0,27	2,867	1,780	0,591	3,636	1,785	2,788	4,287	9,972	3,460	12,27
38150	40	0,27	2,869	1,779	0,582	3,666	1,785	2,785	4,296	9,972	3,461	12,27
38150	40	0,27	2,866	1,780	0,593	3,629	1,786	2,788	4,285	9,972	3,461	12,27
38150	20	-0,17	2,802	1,727	0,570	3,684	1,842	2,866	4,422	10,110	3,593	12,74
38150	39.6	0,26	2,864	1,776	0,586	3,646	1,785	2,787	4,292	9,974	3,462	12,28
29200	20	-0,32	2,830	1,760	0,613	3,744	1,910	2,941	4,513	10,204	3,685	13,05
32200	40	0,23	2,892	1,805	0,616	3,679	1,819	2,823	4,331	10,013	3,501	12,41
26200	23.5	-0,31	2,851	1,780	0,633	3,764	1,929	2,960	4,532	10,222	3,703	13,11
26200	30	-0,16	2,872	1,797	0,638	3,750	1,909	2,932	4,486	10,174	3,657	12,95

2.3. **INTERIOR ARRANGEMENTS**

EFFECTIVITY: EMBRAER 190-E2 ACFT

The interior arrangement provides accommodation for two pilots, one observer, two flight attendants, 104 passengers in 31 in pitch nominal configuration and 114 passengers in 29 in pitch maximum configuration. One additional flight attendant seat is available as optional.

2.3.1. Passenger Cabin

EFFECTIVITY: EMBRAER 190-E2 ACFT

The passenger cabin accommodates 104 passengers in 26 double seats on both sides, in 0.7874 m (31 in) pitch nominal configuration and 114 passengers in 28 double seats on LH and 29 double seats on RH, in 0.7366 m (29 in) pitch maximum configuration.

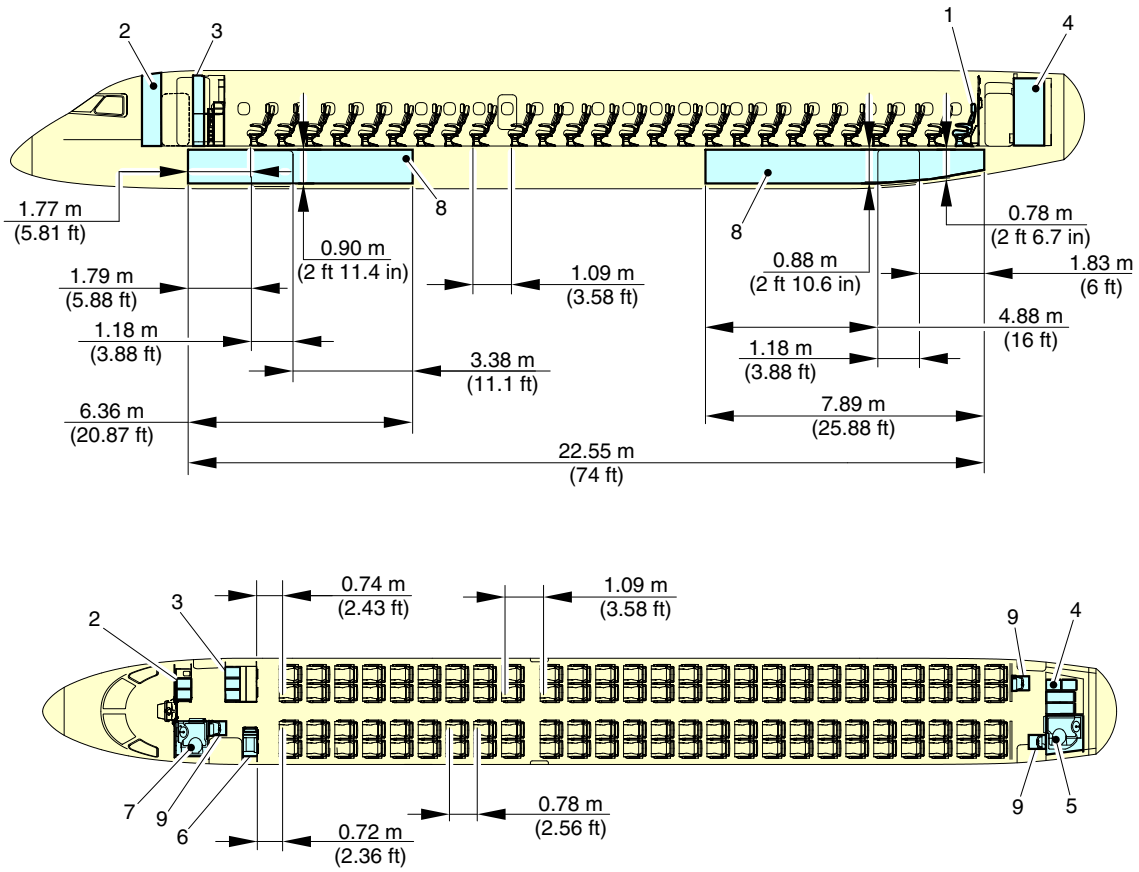
As optional, the passenger cabin is also provided with some double first-class seats on the RH side and some single first-class seats on the LH side.

The main dimensions of passenger cabin are presented below:

- Height - 2.00 m (6 ft 7 in.)
- Width - 2.74 m (9 ft)
- Aisle wide - 0.49 m (1 ft 7 in.)
- Pitch - 0.79 m (31 in.) in pitch nominal configuration and 0.74 m (29 in.) in pitch maximum configuration.

EFFECTIVITY: EMBRAER 190-E2 ACFT

Typical Interior Arrangements - 104 Pax Single Class at 0.7874 m (31 in) pitch nominal configuration
Figure 2.8



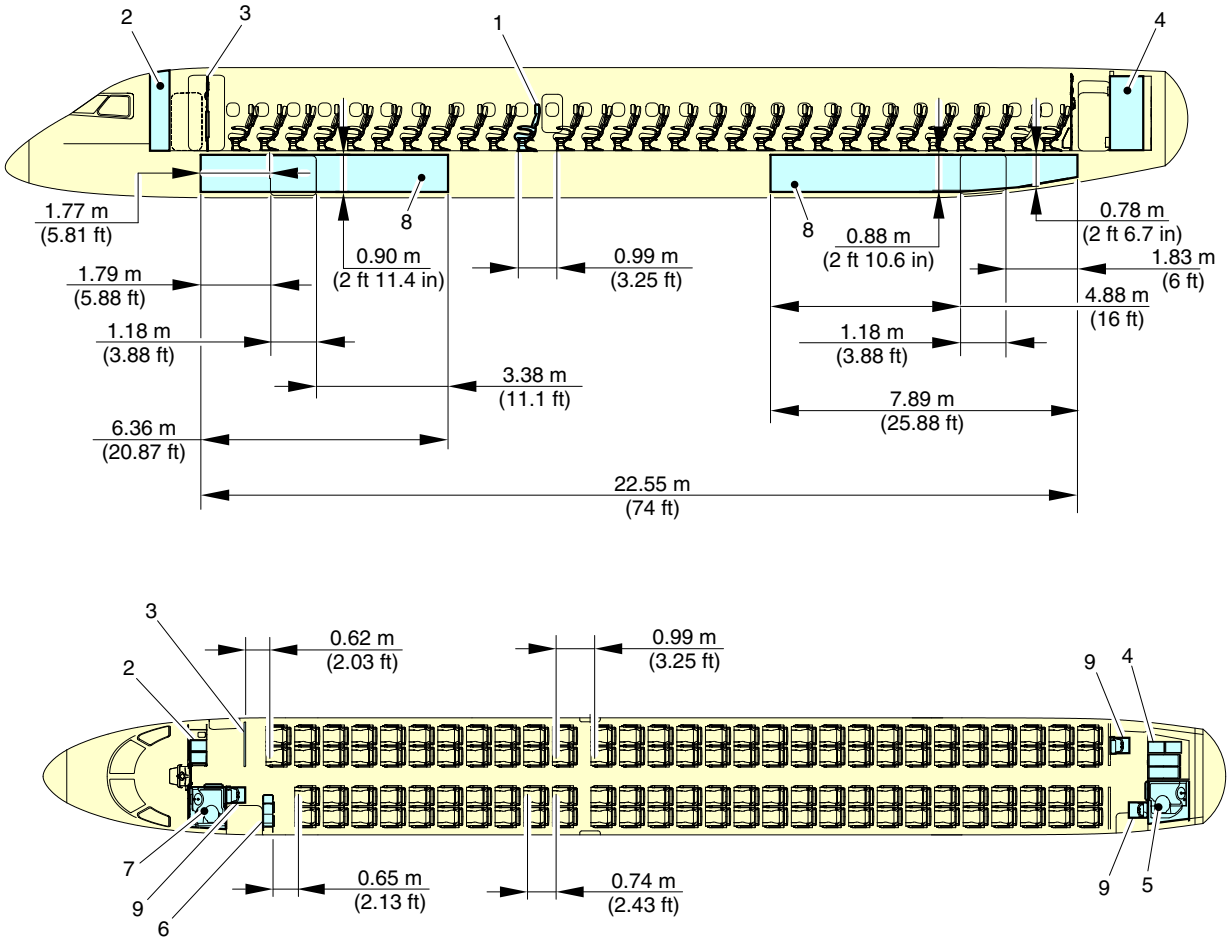
1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - GALLEY G2/STOWAGE
4 - GALLEY G5
5 - AFT TOILET
6 - LH FWD STOWAGE
7 - FWD TOILET
8 - CARGO COMPARTMENT
9 - FLIGHT ATTENDANT SEAT

CARGO/BAGGAGE VOLUME	
CARGO COMPARTMENT	22.63 m³ (799.18 ft³)
OVERHEAD BIN	0.06 m³ / pax (2.0 ft³ / pax)
UNDERSEAT VOLUME	0.04 m³ / pax (1.4 ft³ / pax)

EM170E2APM020003C.IDR

EFFECTIVITY: EMBRAER 190-E2 ACFT

Typical Interior Arrangements - 114 Pax Single Class at 0.7366 m (29 in) pitch maximum configuration
Figure 2.9



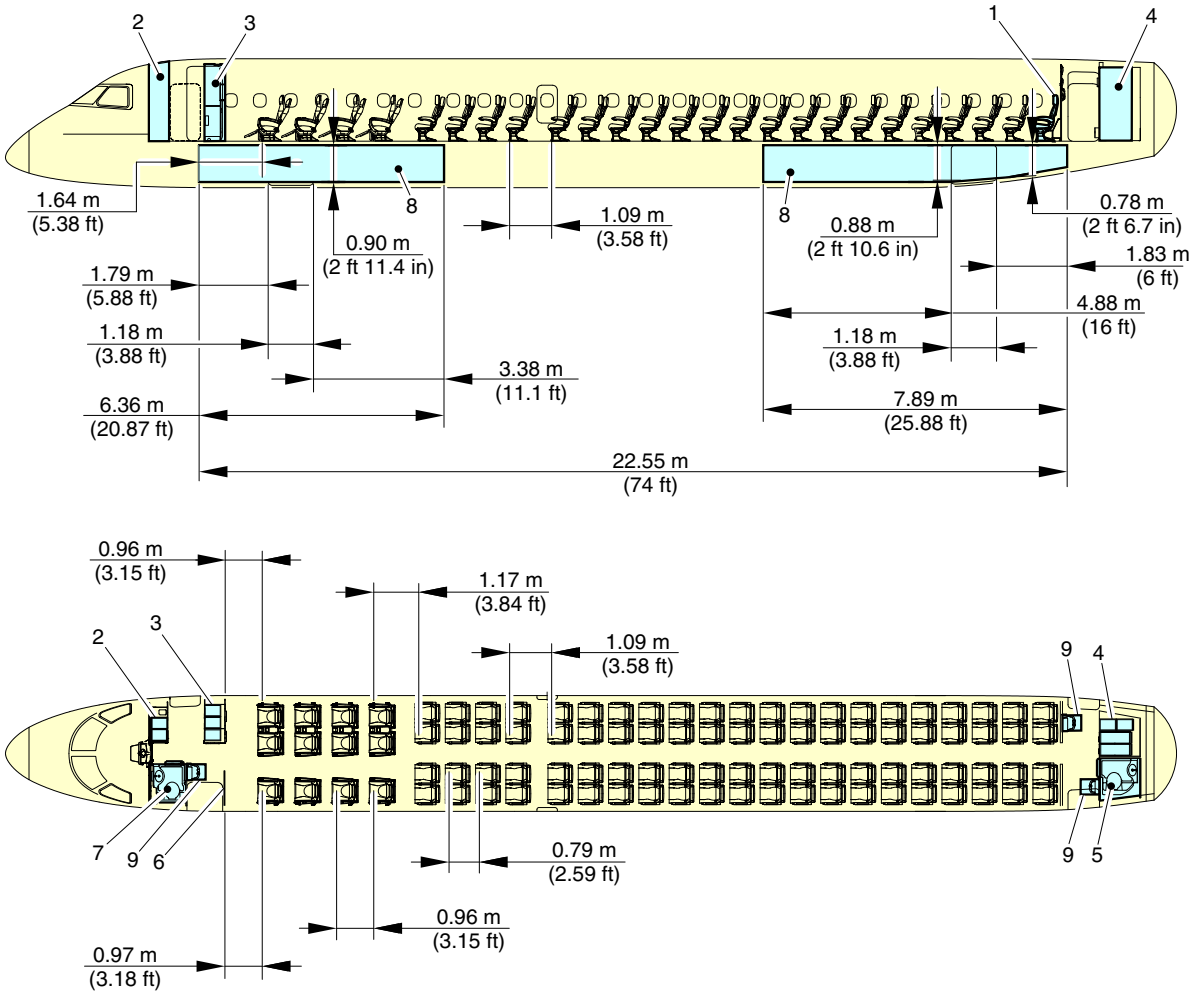
1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - FWD PARTITION
4 - GALLEY G5
5 - AFT TOILET
6 - LH FWD STOWAGE
7 - FWD TOILET
8 - CARGO COMPARTMENT
9 - FLIGHT ATTENDANT SEAT

CARGO/BAGGAGE VOLUME	
CARGO COMPARTMENT	22.63 m³ (799.18 ft³)
OVERHEAD BIN	0.06 m³ / pax (2.0 ft³ / pax)
UNDERSEAT VOLUME	0.04 m³ / pax (1.4 ft³ / pax)

EM170E2APM020004C.IDR

EFFECTIVITY: EMBRAER 190-E2 ACFT

Typical Interior Arrangements - 96 Pax Dual Class at 0.9652/0.7874 m (38/31 in) pitch configuration
Figure 2.10



1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - GALLEY G2
4 - GALLEY G5
5 - AFT TOILET
6 - FWD PARTITION
7 - FWD TOILET
8 - CARGO COMPARTMENT
9 - FLIGHT ATTENDANT SEAT

CARGO/BAGGAGE VOLUME	
CARGO COMPARTMENT	22.63 m³ (799.18 ft³)
OVERHEAD BIN	0.06 m³ / pax (2.0 ft³ / pax)
UNDERSEAT VOLUME	0.04 m³ / pax (1.4 ft³ / pax)

EM170E2APM020005C.IDR

2.3.2. Cargo Compartments

EFFECTIVITY: EMBRAER 190-E2 ACFT

Two cargo compartments are available, located underfloor, one forward of the wing, and another aft of the wing.

The cargo compartments comply with the FAR-25/JAR-25/RBHA-25 “class C” compartment classification.

The table below contains the capacity for the cargo compartment:

Table 2.13 - Capacity for the Cargo Compartment

Effectivity: EMBRAER 190-E2 ACFT

CARGO COMPARTMENT	LOADING	VOLUME
FWD [1]	1590 kg (3505 lb)	10.09 m³ (356.3 ft³)
Aft	1910 kg (4211 lb)	11.45 m³ (404.4 ft³)
Total	3500 kg (7716 lb)	21.54 m³ (760.7 ft³)

[1] Standard configuration (loading and volume may vary according to optional equipment installed).

2.3.3. Cockpit

The cockpit is acoustically and thermally insulated for appearance and durability. It follows the worldwide trend of rounded edges, which avoids harm to the flight crew.

The cockpit is separated from the passenger cabin by a bulkhead with a lockable door. The cockpit door is provided with lockable means operable only from the cockpit side, spy hole and escape mechanism on the cockpit side.

2.4. INTERIOR ARRANGEMENTS

EFFECTIVITY: EMBRAER 195-E2 ACFT

The interior arrangement provides accommodation for two pilots, one observer, three flight attendants, 138 passengers in 29 in pitch nominal configuration and 146 passengers in 28 in pitch maximum configuration. One additional flight attendant seat is available as optional.

2.4.1. Passenger Cabin

The passenger cabin accommodates 138 passengers in 35 double seats on the RH side and 34 double seats on the LH side, in 0.7366 m (29 in) pitch nominal configuration and 146 passengers in 36 double seats on LH and 37 double seats on RH, in 0.7112 m (28 in) pitch maximum configuration.

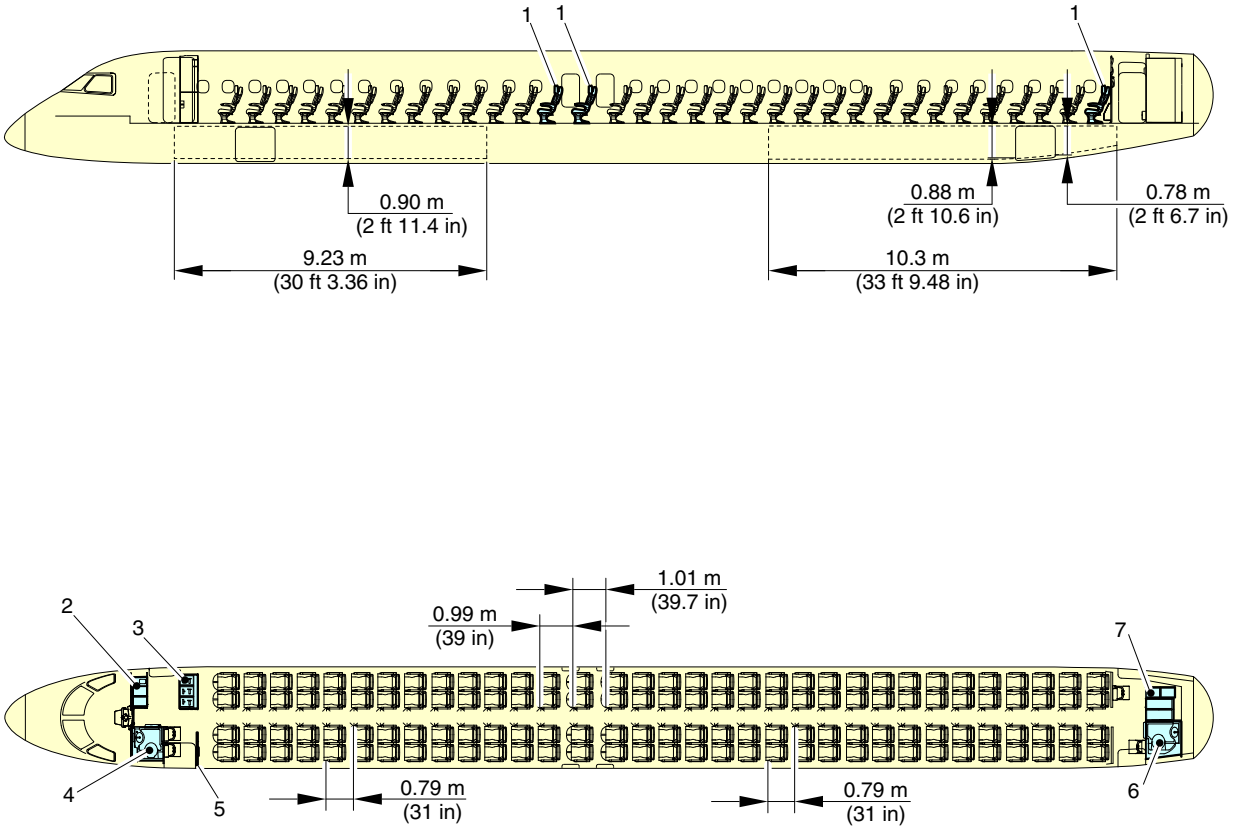
As optional, the passenger cabin is also provided with some double first-class seats on the RH side and some single first-class seats on the LH side.

The main dimensions of passenger cabin are presented below:

- Height - 2.00 m (6 ft 7 in.)
- Width - 2.52 m (8 ft 3.24 in.)
- Aisle wide - 0.49 m (1 ft 7 in.)
- Pitch - 0.74 m (29 in.) in pitch nominal configuration and 0.71 m (28 in.) in pitch maximum configuration.

EFFECTIVITY: EMBRAER 195-E2 ACFT

Typical Interior Arrangements - 132 Pax Single Class at 0.7874 m (31 in) pitch nominal configuration
Figure 2.11

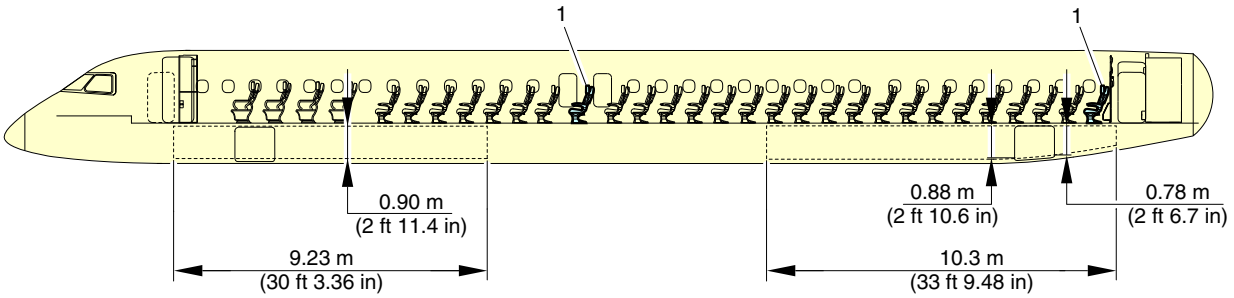


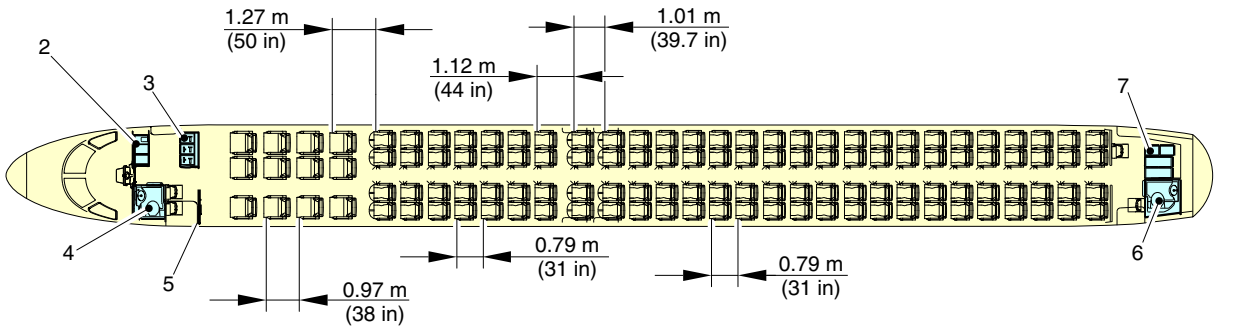
1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - GALLEY G2
4 - FWD TOILET
5 - HARD PARTITION
6 - AFT TOILET
7 - GALLEY G5

EM170E2APM020010B.IDR

EFFECTIVITY: EMBRAER 195-E2 ACFT

Typical Interior Arrangements - 120 Pax Dual Class at 0.965/0.7874 m (38/31 in) pitch configuration
Figure 2.12



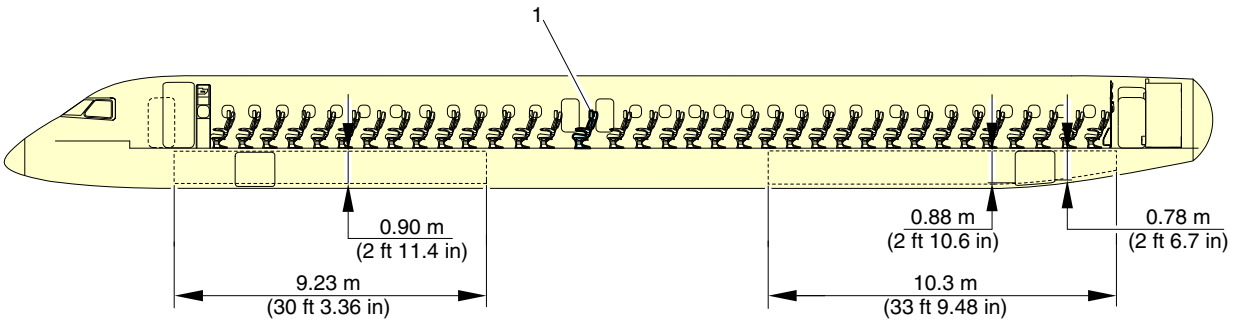


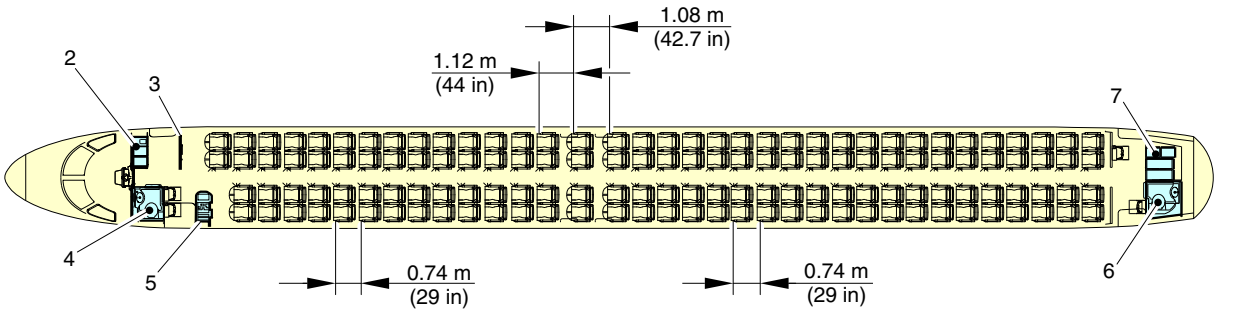
1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - GALLEY G2
4 - FWD TOILET
5 - LH WINDSCREEN
6 - AFT TOILET
7 - GALLEY G5

EM170E2APM020011B.IDR

EFFECTIVITY: EMBRAER 195-E2 ACFT

Typical Interior Arrangements - 138 Pax Single Class at 0.7366 m (29 in) pitch nominal configuration
Figure 2.13



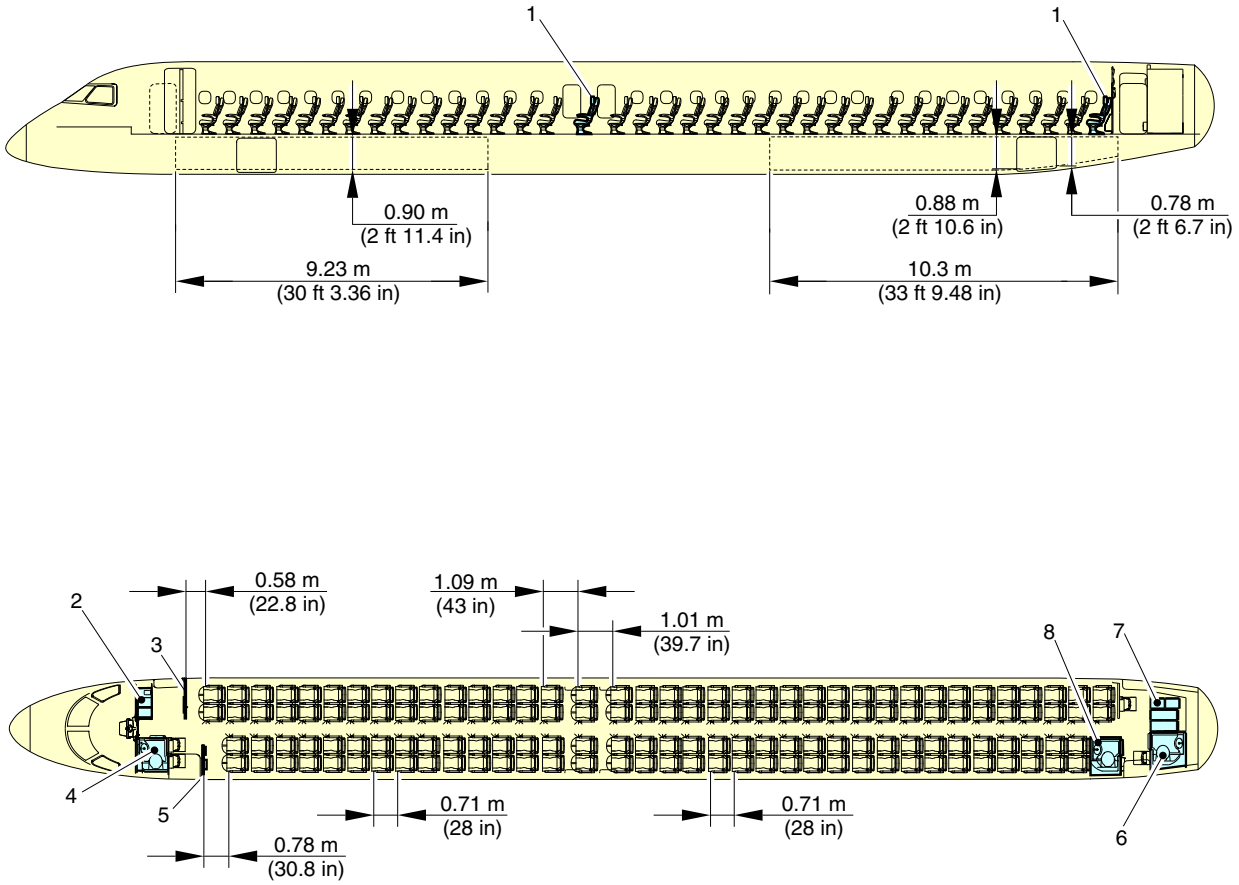


1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - WINDSCREEN
4 - FWD TOILET
5 - LH STOWAGE
6 - AFT TOILET
7 - GALLEY G5

EM170E2APM020012B.IDR

EFFECTIVITY: EMBRAER 195-E2 ACFT

Typical Interior Arrangements - 146 Pax Single Class at 0.7112 m (28 in) pitch nominal configuration
Figure 2.14



1 - NO RECLINING SEAT AT THIS ROW
2 - GALLEY G1
3 - RH WINDSCREEN (HIGH DENSITY)
4 - FWD TOILET
5 - LH WINDSCREEN
6 - AFT TOILET
7 - GALLEY G5
8 - THIRD TOILET

EM170E2APM020013B.IDR

2.4.2. Cargo Compartments

EFFECTIVITY: EMBRAER 195-E2 ACFT

Two cargo compartments are available, located underfloor, one forward of the wing, and another aft of the wing.

The cargo compartments comply with the FAR-25/JAR-25/RBHA-25 “class C” compartment classification.

The table below contains the capacity for the cargo compartment:

Table 2.14 - Capacity for the Cargo Compartment

Effectivity: EMBRAER 195-E2 ACFT

CARGO COMPARTMENT	LOADING	VOLUME
FWD [1]	2375 kg (5236 lb)	14.77 m³ (521.6 ft³)
Aft	2555 kg (5632.8 lb)	15.20 m³ (536.8 ft³)
Total	4930 kg (10868.8 lb)	29.97 m³ (1058.4 ft³)

[1] Standard configuration (loading and volume may vary according to optional equipment installed).

2.4.3. Cockpit

The cockpit is acoustically and thermally insulated for appearance and durability. It follows the worldwide trend of rounded edges, which avoids harm to the flight crew.

The cockpit is separated from the passenger cabin by a bulkhead with a lockable door. The cockpit door is provided with lockable means operable only from the cockpit side, spy hole and escape mechanism on the cockpit side.

2.5. INTERIOR ARRANGEMENTS

EFFECTIVITY: EMBRAER 175-E2 ACFT

The interior arrangement provides accommodation for two pilots, one observer, two flight attendants, 88 passengers in 31in pitch nominal configuration and 90 passengers in 29 in pitch maximum configuration. One additional flight attendant seat is available as optional.

2.5.1. Passenger Cabin

The passenger cabin accommodates 88 passengers in 22 double seats on both sides, in 0.7874 m (31 in) pitch nominal configuration and 90 passengers in 23 double seats on LH and 22 double seats on RH, in 0.7366 m (29 in) pitch maximum configuration.

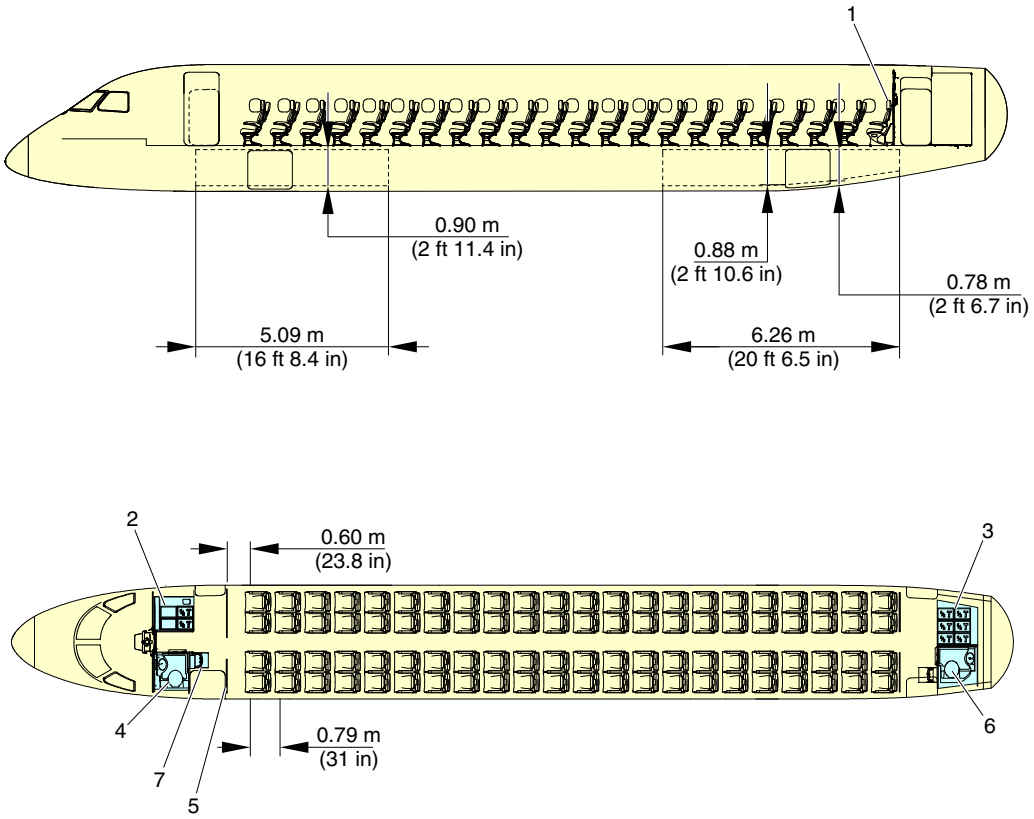
As optional, the passenger cabin is also provided with some double first-class seats on the RH side and some single first-class seats on the LH side.

The main dimensions of passenger cabin are presented below:

- Height - 2 m (6 ft 7in.)
- Width - 2.52 m (8 ft 3.24in.)
- Aisle wide - 0.49 m (1 ft 7 in.)
- Pitch - 0.74 m (29 in.) in pitch nominal configuration and 0.71 m (28 in.) in pitch maximum configuration.

EFFECTIVITY: EMBRAER 175-E2 ACFT

Typical Interior Arrangements - 88 Pax Single Class at 0.7874 m (31 in) pitch nominal configuration
Figure 2.15

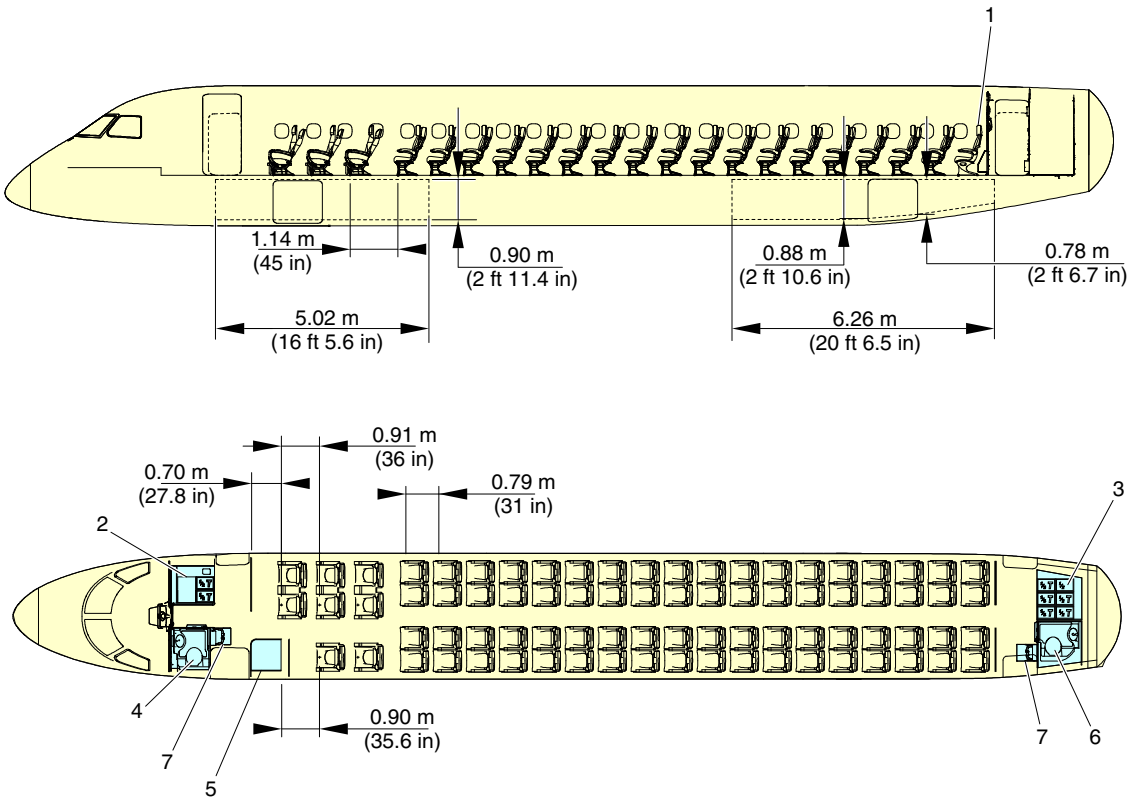


1 - NO RECLINING SEAT AT THIS ROW
2 - STOWAGE / GALLEY G1
3 - GALLEY G3
4 - FWD TOILET
5 - FWD PARTITION
6 - AFT TOILET
7 - ATTENDANT SEAT

EM170E2APM020019A.IDR

EFFECTIVITY: EMBRAER 175-E2 ACFT

Typical Interior Arrangements - 80 Pax Dual Class at 0.9144 / 0.7874 m (36/31 in) pitch configuration
Figure 2.16



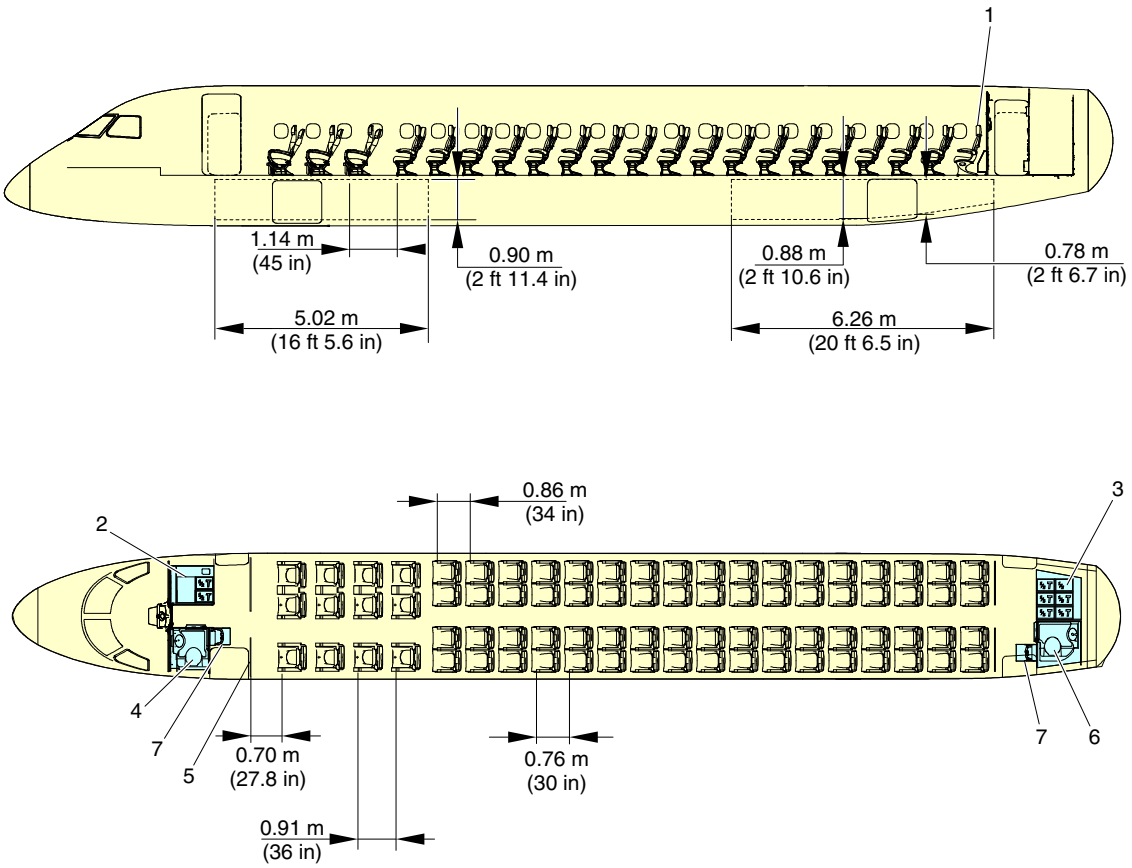
1 - NO RECLINING SEAT AT THIS ROW
2 - STOWAGE / GALLEY G1
3 - GALLEY G3
4 - FWD TOILET
5 - LH FWD STOWAGE
6 - AFT TOILET
7 - ATTENDANT SEAT

EM170E2APM020020A.IDR

EFFECTIVITY: EMBRAER 175-E2 ACFT

Typical Interior Arrangements - 80 Pax Three Classes at 0.9144 / 0.8636 / 0.762 m (36/34/30 in) pitch configuration

Figure 2.17

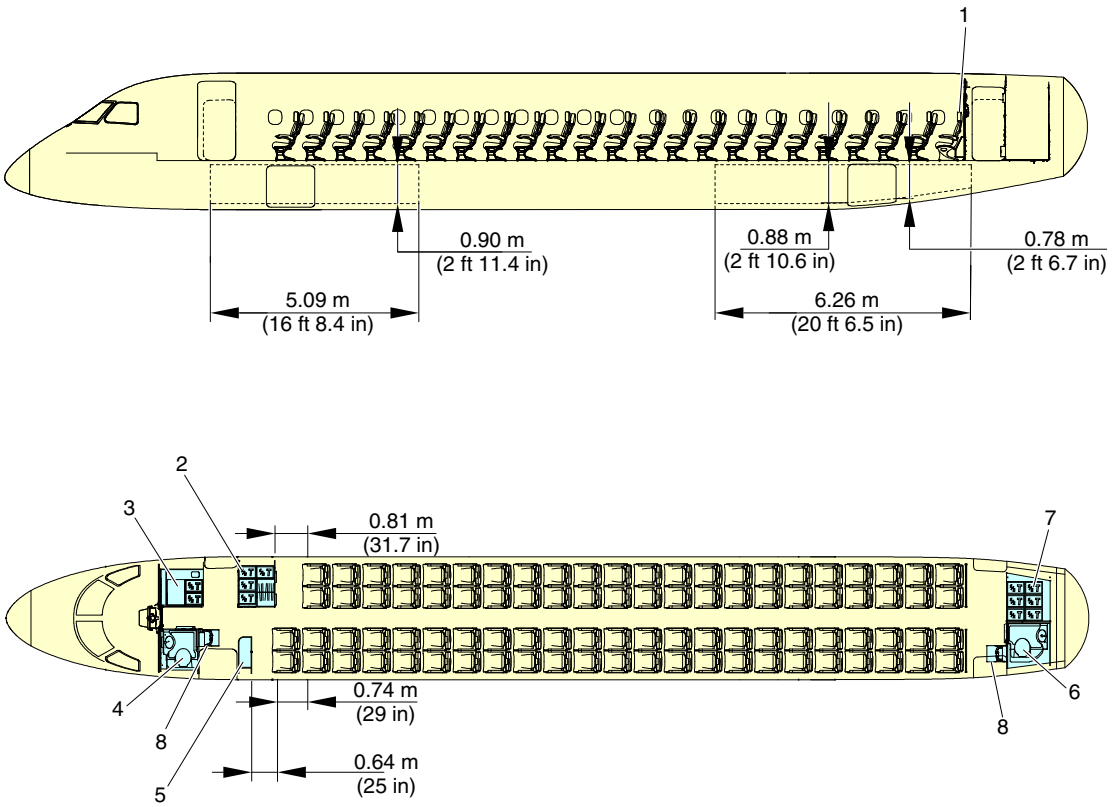


1 - NO RECLINING SEAT AT THIS ROW
2 - STOWAGE / GALLEY G1
3 - GALLEY G3
4 - FWD TOILET
5 - FWD PARTITION
6 - AFT TOILET
7 - ATTENDANT SEAT

EM170E2APM020020A.IDR

EFFECTIVITY: EMBRAER 175-E2 ACFT

Typical Interior Arrangements - 90 Pax Single Class at 0.7366 m (29 in) pitch configuration
Figure 2.18



1 - NO RECLINING SEAT AT THIS ROW
2 - STOWAGE / GALLEY G2
3 - STOWAGE / GALLEY G1
4 - FWD TOILET
5 - LH FWD STOWAGE
6 - AFT TOILET
7 - GALLEY G3
8 - ATTENDANT SEAT

EM170E2APM020022A.IDR

2.5.2. Cargo Compartments

EFFECTIVITY: EMBRAER 175-E2 ACFT

Two cargo compartments are available, located underfloor, one forward of the wing, and another aft of the wing.

The cargo compartments comply with the FAR-25/JAR-25/RBHA-25 “class C” compartment classification.

The table below contains the capacity for the cargo compartment:

Table 2.15 - Capacity for the Cargo Compartment

Effectivity: EMBRAER 175-E2 ACFT

CARGO COMPARTMENT	LOADING	VOLUME
FWD [1]	1500 kg (3307 lb)	8.18 m³ (288.2 ft³)
Aft	1150 kg (2535 lb)	8.89 m³ (313.9 ft³)
Total	2650 kg (5842 lb)	17.07 m³ (602.1 ft³)

[1] Standard configuration (loading and volume may vary according to optional equipment installed)

2.5.3. Cockpit

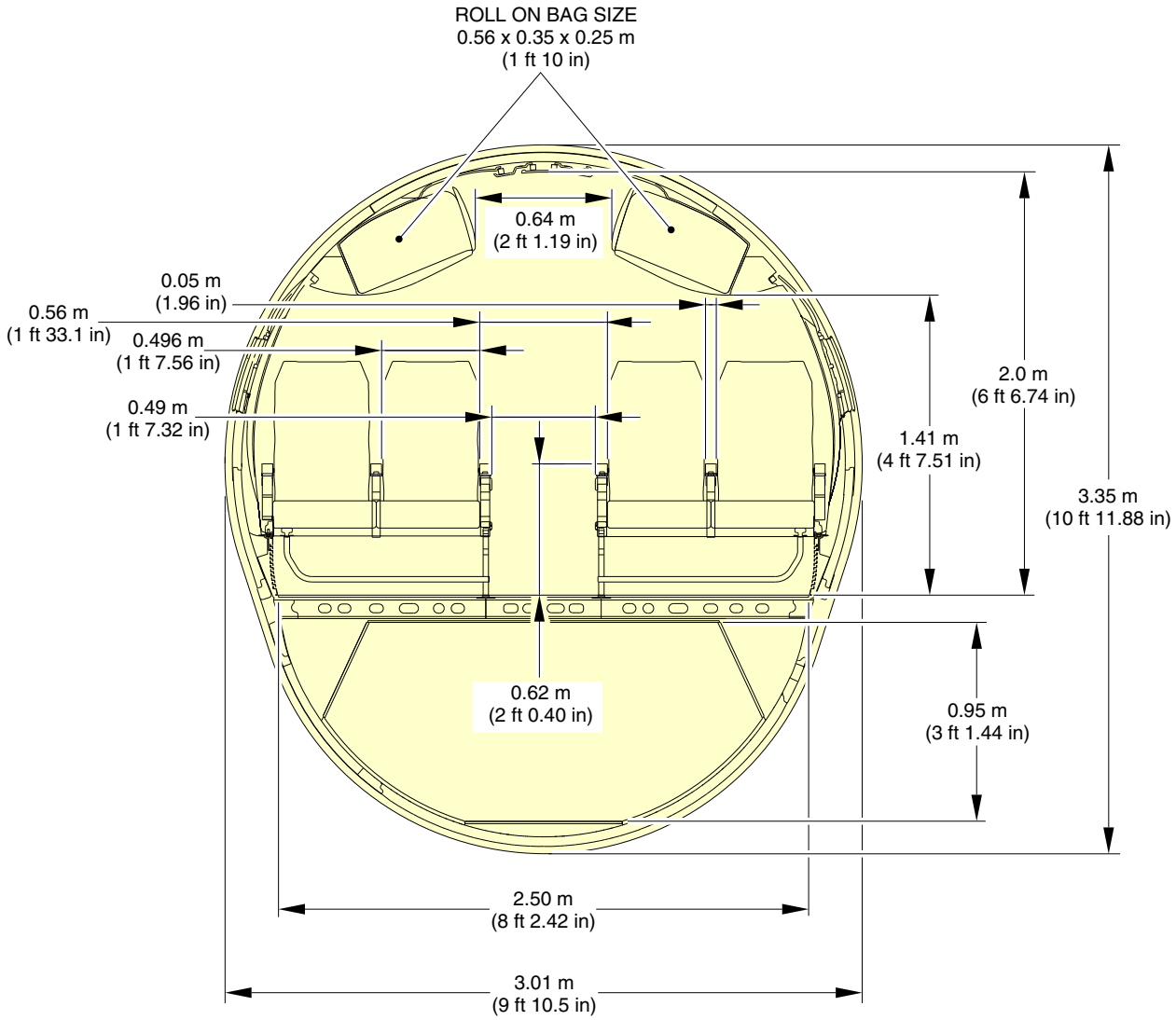
The cockpit is acoustically and thermally insulated for appearance and durability. It follows the worldwide trend of rounded edges, which avoids harm to the flight crew.

The cockpit is separated from the passenger cabin by a bulkhead with a lockable door. The cockpit door is provided with lockable means operable only from the cockpit side, spy hole and escape mechanism on the cockpit side.

2.6. PASSENGER CABIN CROSS SECTION

EFFECTIVITY: EMBRAER 190-E2 ACFT

Economy Class Passenger Cabin Cross-Section
Figure 2.19



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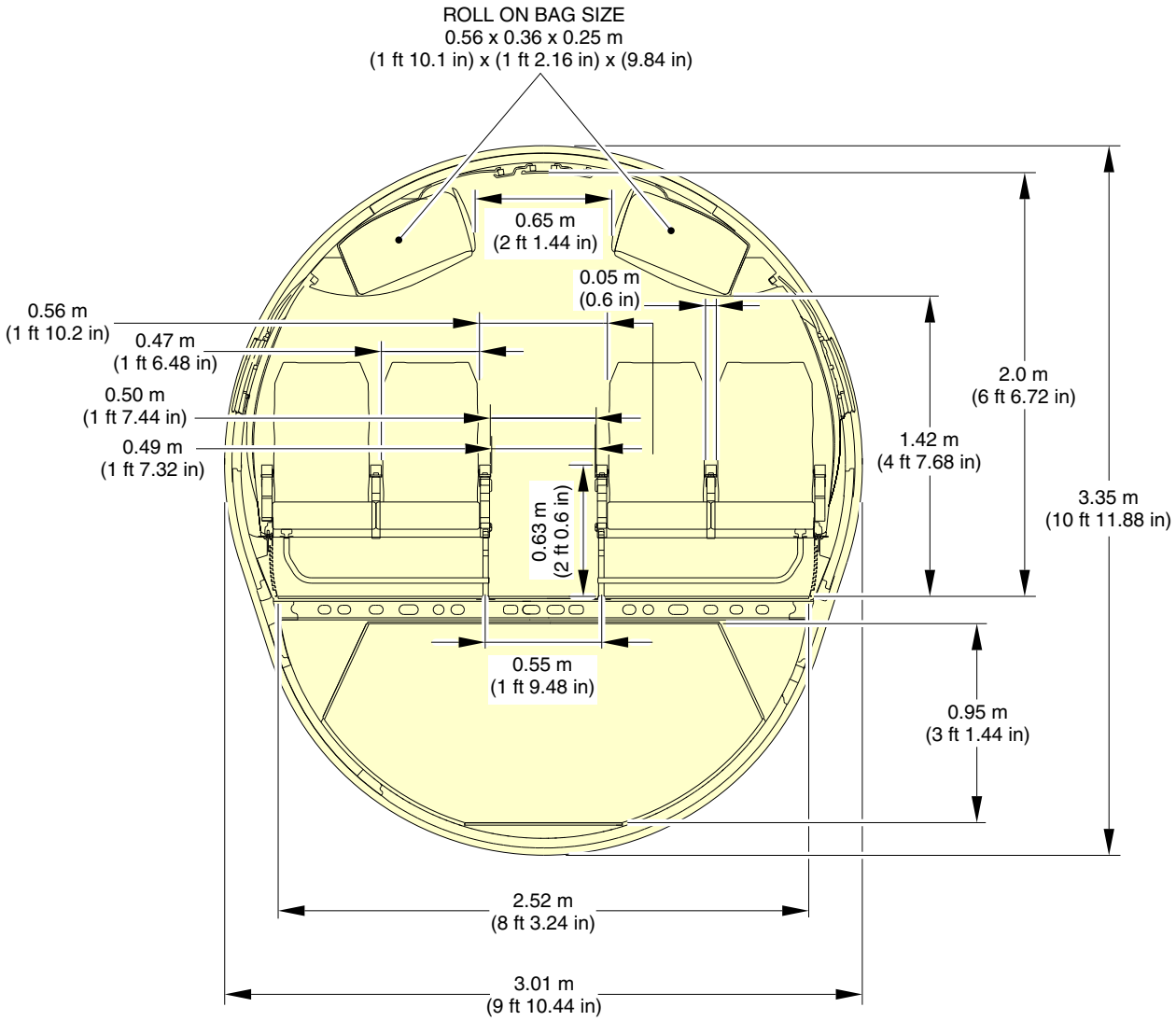
EFFECTIVITY: EMBRAER 195-E2 ACFT

Economy Class Passenger Cabin Cross-Section
Figure 2.20



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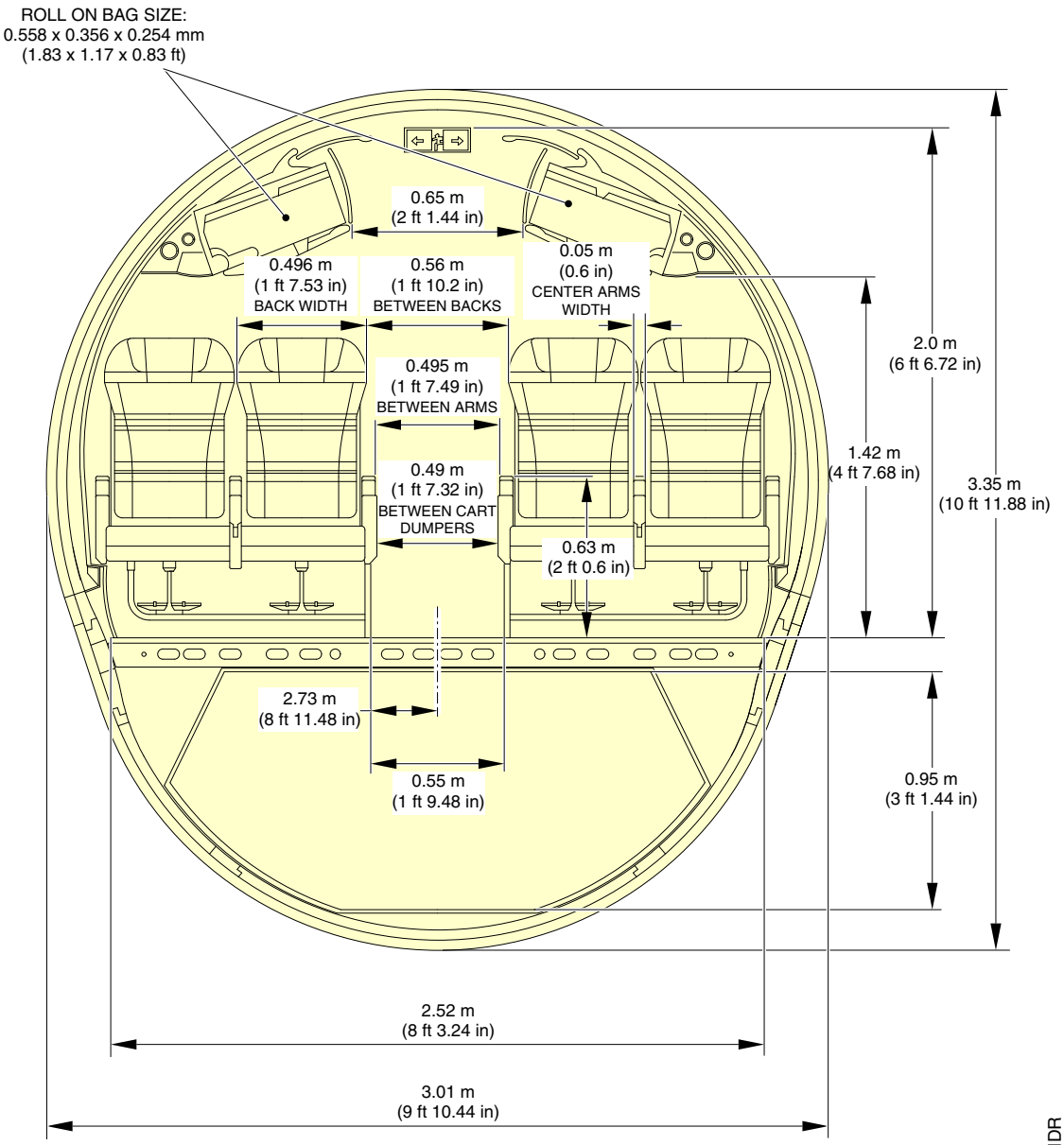
EFFECTIVITY: EMBRAER 175-E2 ACFT

Economy Class Passenger Cabin Cross-Section
Figure 2.21



EM170E2APM020018A.IDR

3. AIRCRAFT PERFORMANCE

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

3.1. GENERAL INFORMATION

The performance of the aircraft and engine depends on the generation of forces by the interaction between the aircraft or engine and the air mass through which it flies. The atmosphere has a pronounced effect on the temperature, pressure and density of the air.

The ICAO establishes standards to estimate and compare the aircraft and engine performance. Some ICAO standards are shown below:

1. Sea level standard day:
   Standard Temperature To = 15 °C (288.15 K)
   Standard Pressure Po = 101.3 kPa (29.92 inHg)
   Standard Density ρo = 0.002377 slug per cubic feet

2. ISA

Table 3.1 - ISA

ALTITUDE		TEMPERATURE	
m	ft	°C	°F
0	0	15.0	59.0
305	1000	13.0	55.4
610	2000	11.0	51.9
915	3000	9.1	48.3
1220	4000	7.1	44.7
1524	5000	5.1	41.2
3049	10000	-4.8	23.3
4573	15000	-14.7	5.5
6098	20000	-24.6	-12.3
7622	25000	-34.5	-30.2
9146	30000	-44.4	-48.0
11003	36089	-56.5	-69.7
12195	40000	-56.5	-69.7

NOTE: The performance data shown in this section must not be used for operations.

NOTE: For further information about performance, refer to AOM and AFM.

Tire speed limits are not applicable to this specific aircraft.

This section provides the following information:

- The payload x range charts.
- The takeoff field length charts.
- The landing field length charts.

NOTE: For other charts containing payload x ranges, takeoff field lengths and/or landing field lengths with conditions different from those presented in this section, contact Embraer to get these charts.

3.2. PAYLOAD X RANGE

The Payload x Range charts are based on the following conditions:

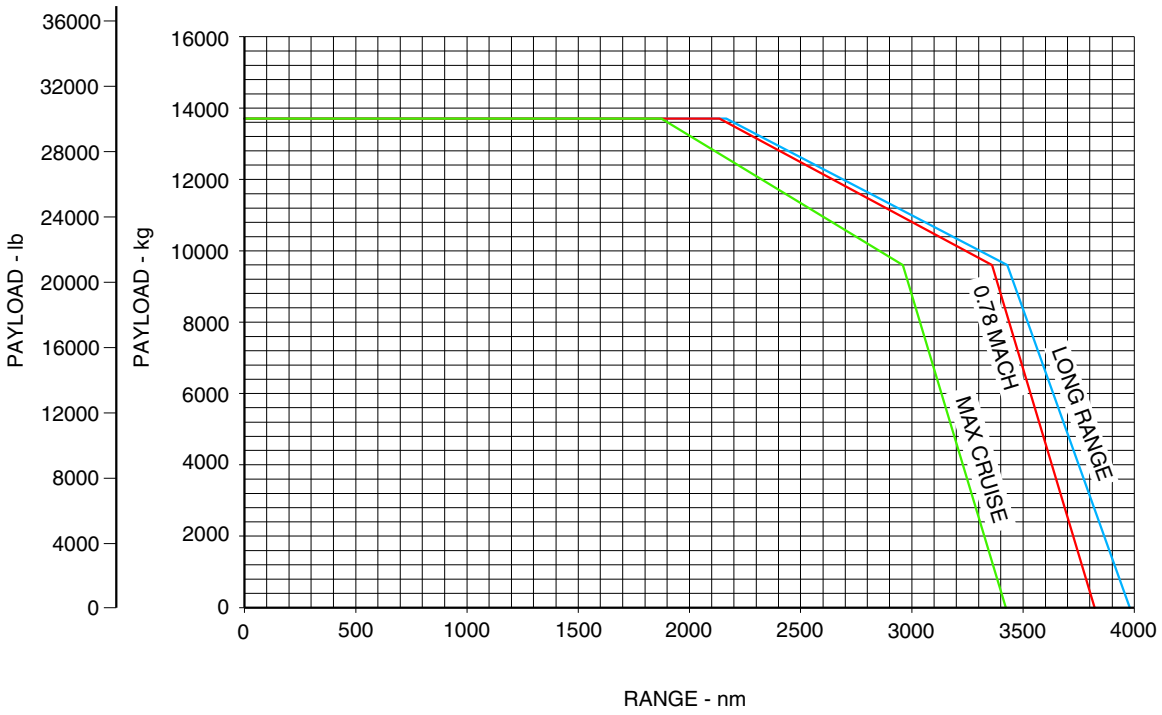
- PW1919G and PW1922G engine models;
- Aircraft carrying passengers with 100 kg (220 lb) each;
- Flight level 350, that represents the cruising altitude equal to 10668 m (35000 ft);
- Atmosphere according to ISA or ISA + 10 °C conditions;
- MTOW.

EFFECTIVITY: EMBRAER 190-E2 ACFT

Payload x Range - ISA Conditions

Figure 3.1

PAYLOAD VS RANGE
PW1919G, PW1922G ENGINES
FLIGHT LEVEL 370
ISA
RESERVE: 100 nm ALTERNATE + 45 min FLIGHT
MTOW = 56400 kg (124341 lb)



NOTES:

MAX TAKEOFF WEIGHT ---------- 56400 kg (124341 lb)

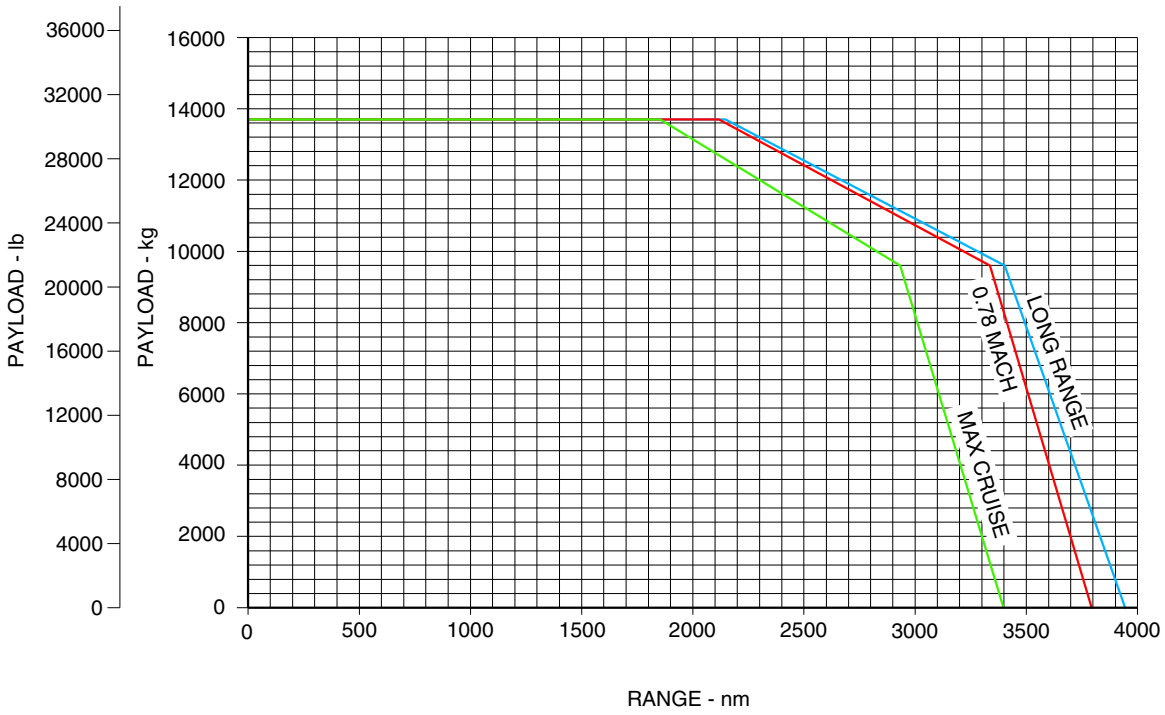
MAX ZERO FUEL WEIGHT---------- 46700 kg (102956 lb)

MAX USABLE FUEL---------- 13500 kg (29760 lb)

EM170E2APM030001C.IDR

EFFECTIVITY: EMBRAER 190-E2 ACFT
Payload x Range - ISA + 10 °C Conditions
Figure 3.2

PAYLOAD VS RANGE
PW1919G, PW1922G ENGINES
FLIGHT LEVEL 370
ISA + 10 ˚C
RESERVE: 100 nm ALTERNATE + 45 min FLIGHT
MTOW = 56400 kg (124341 lb)



NOTES:

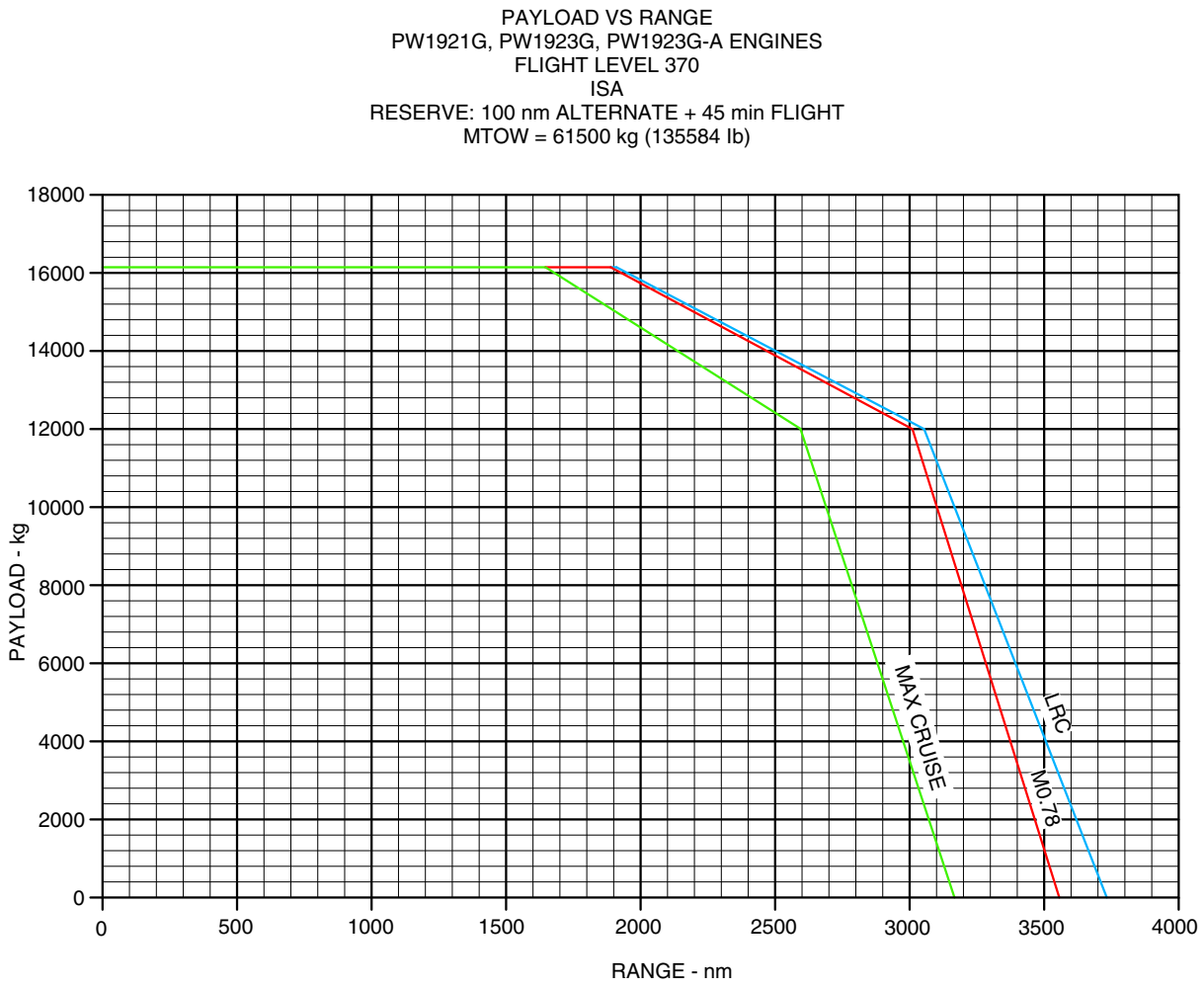
MAX TAKEOFF WEIGHT ---------- 56400 kg (124341 lb)
MAX ZERO FUEL WEIGHT---------- 46700 kg (102956 lb)
MAX USABLE FUEL---------- 13500 kg (29760 lb)

EM170E2APM030002B.IDR

EFFECTIVITY: EMBRAER 195-E2 ACFT

Payload x Range - ISA Conditions

Figure 3.3

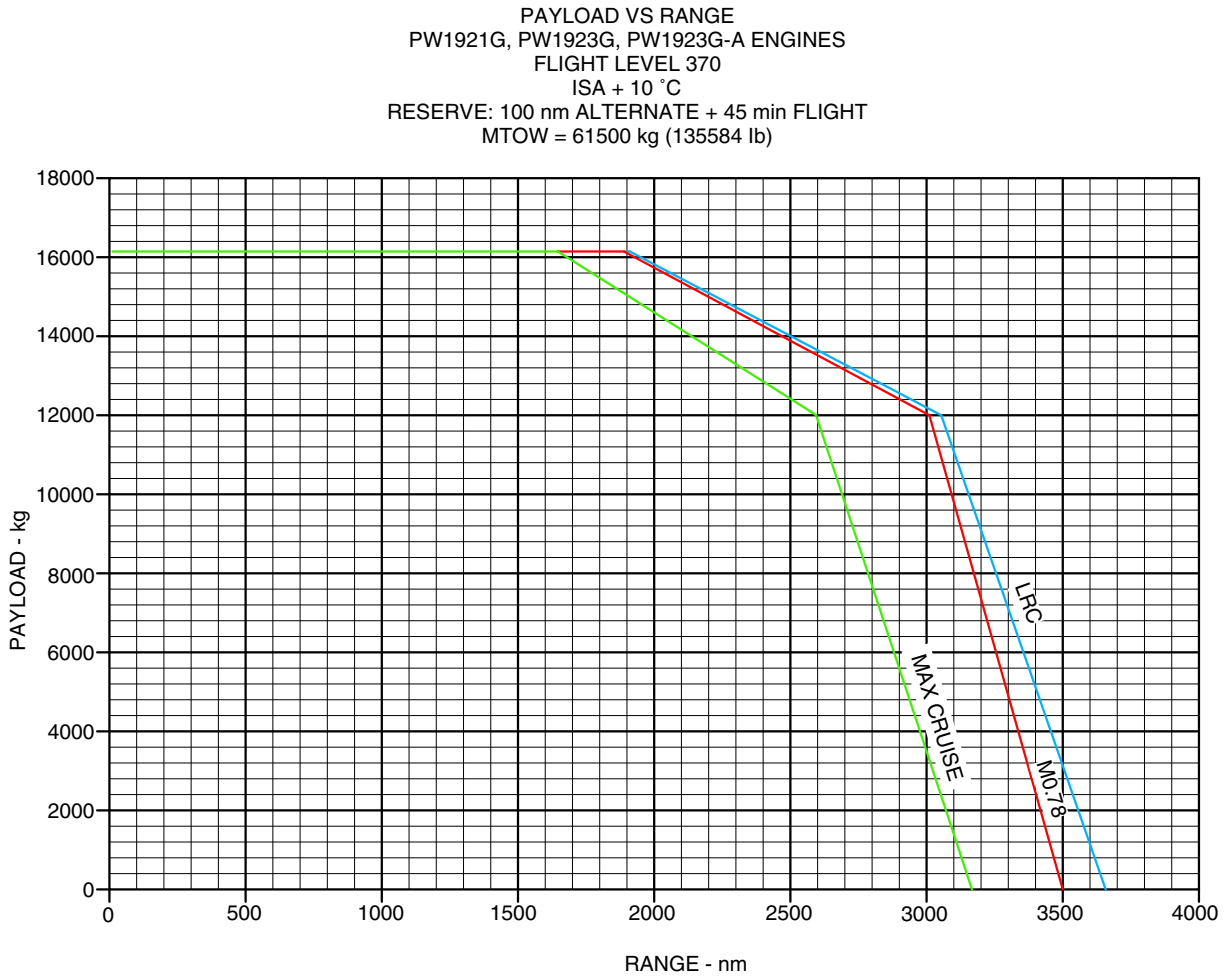


EM170E2APM030025A.IDR

EFFECTIVITY: EMBRAER 195-E2 ACFT

Payload x Range - ISA + 10 °C Conditions

Figure 3.4



EM170E2APM030026A.IDR

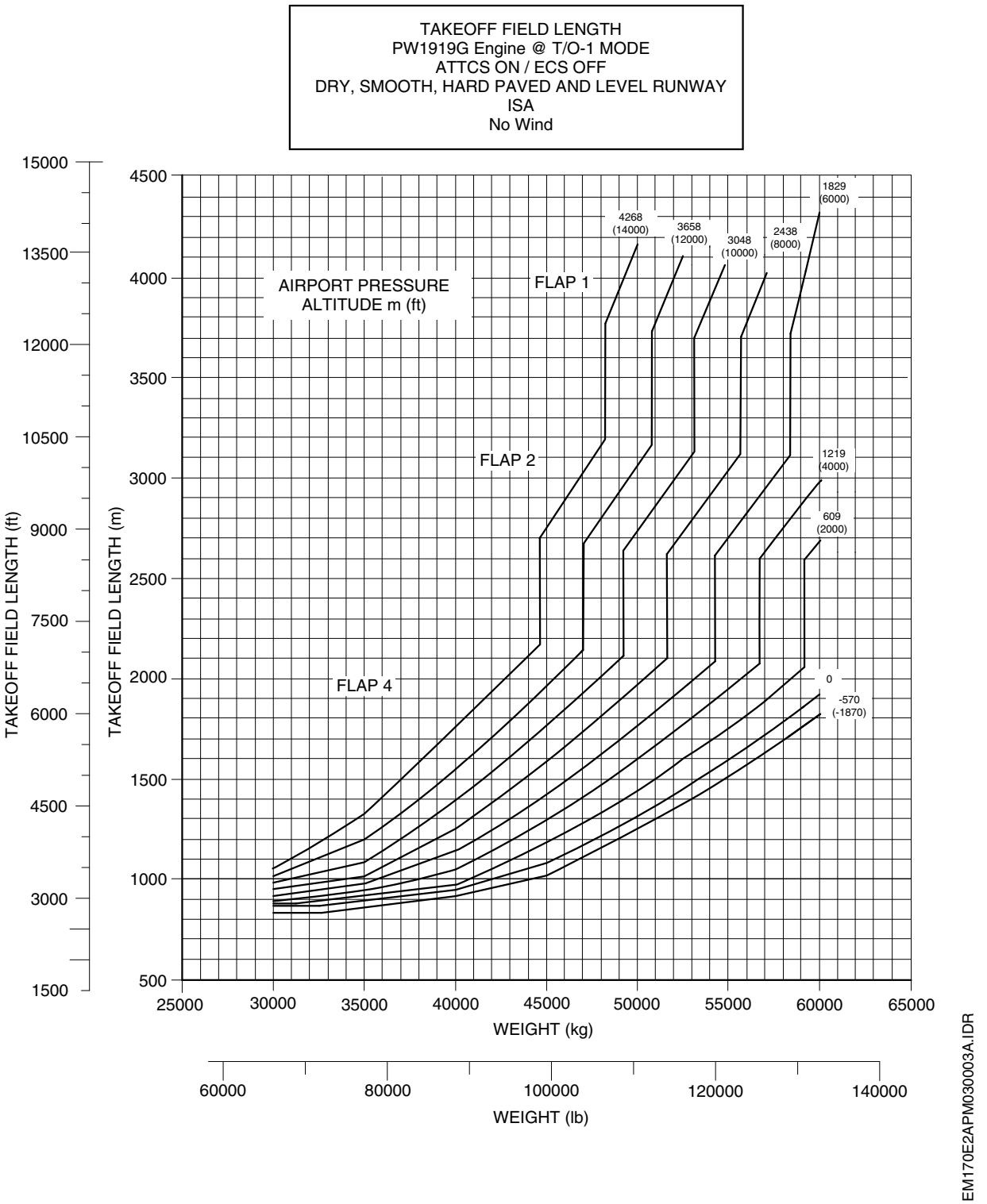
3.3. TAKEOFF FIELD LENGTHS

The takeoff field lengths charts provide data about the maximum takeoff weights for compliance with the operating regulations related to takeoff field lengths.

Data are presented according to the following associated conditions:

- PW1919G and PW1922G engine models;
- Takeoff Mode: 1;
- ATTCS MTBF positioning: ON and OFF;
- Flaps setting position: 1, 2 and 4;
- Pavement conditions: dry, hard paved and level runway surface with no obstacles;
- Zero wind and atmosphere according to ISA or ISA + 10 °C conditions;
- Pack OFF: No engine bleed extraction for air conditioning packs was considered in the takeoff and landing charts.

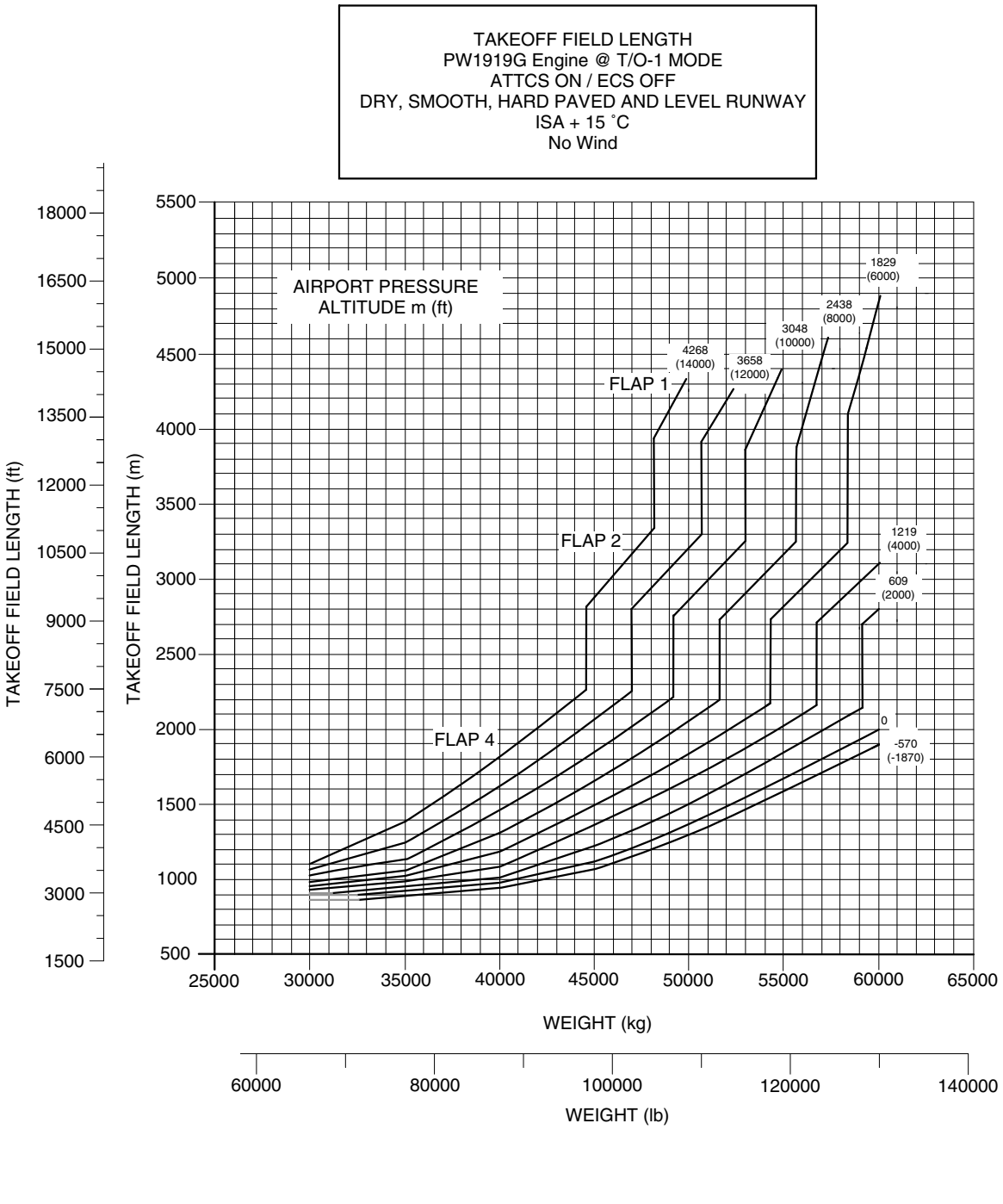
EFFECTIVITY: EMBRAER 190-E2 ACFT
Takeoff Field Lengths - ISA Conditions
Figure 3.5



EFFECTIVITY: EMBRAER 190-E2 ACFT

Takeoff Field Lengths - ISA + 15 °C Conditions

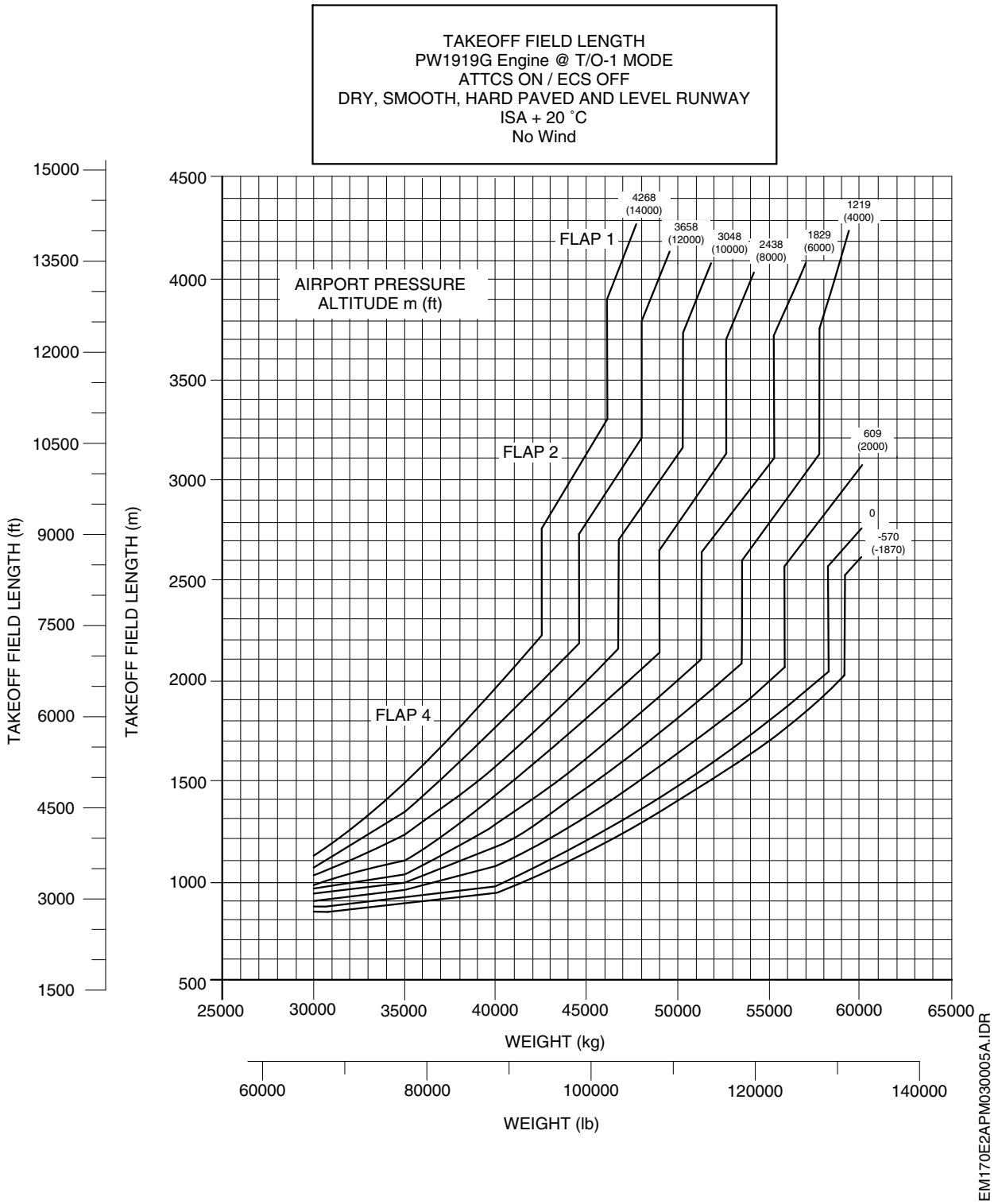
Figure 3.6



EFFECTIVITY: EMBRAER 190-E2 ACFT

Takeoff Field Lengths - ISA + 20 °C Conditions

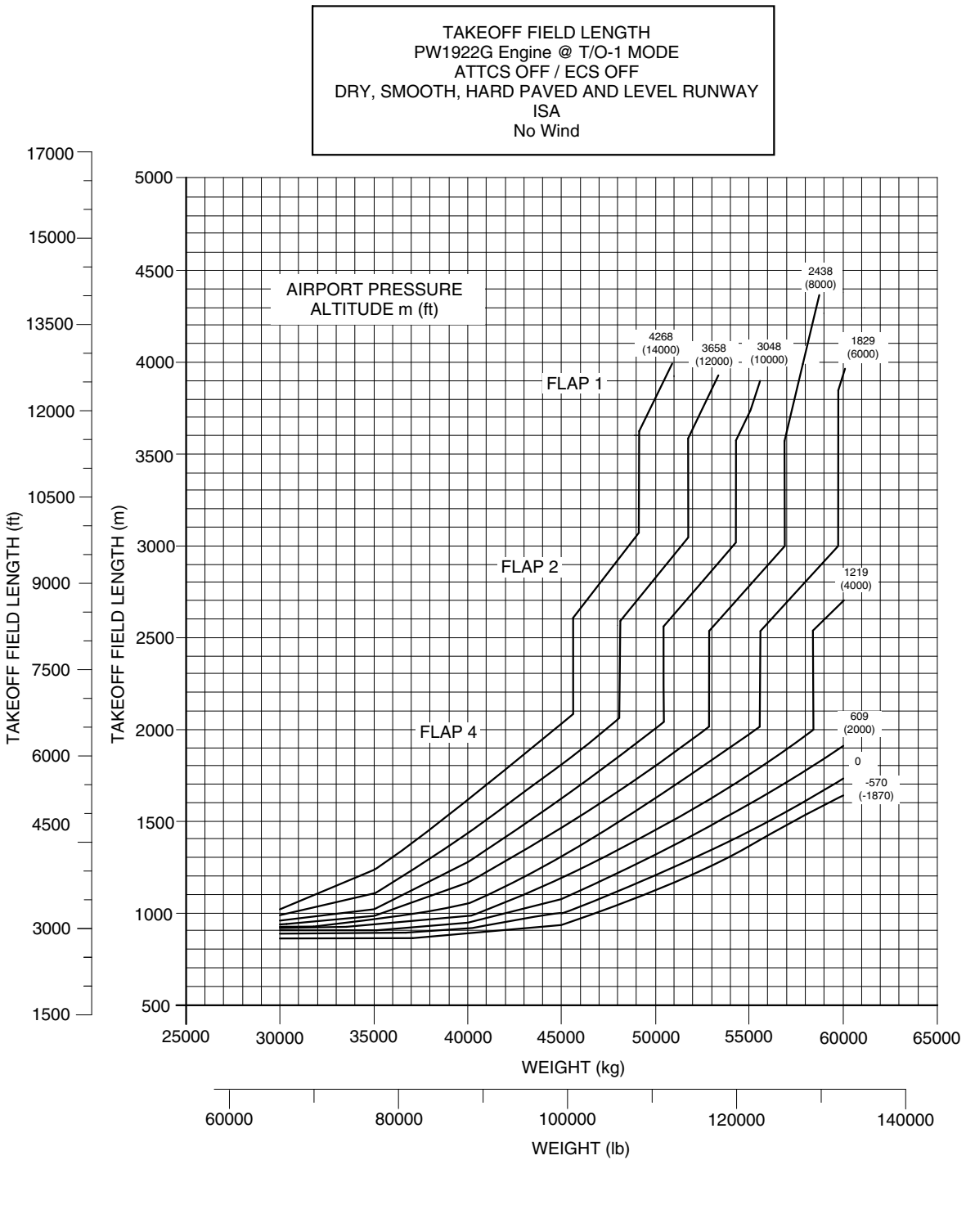
Figure 3.7



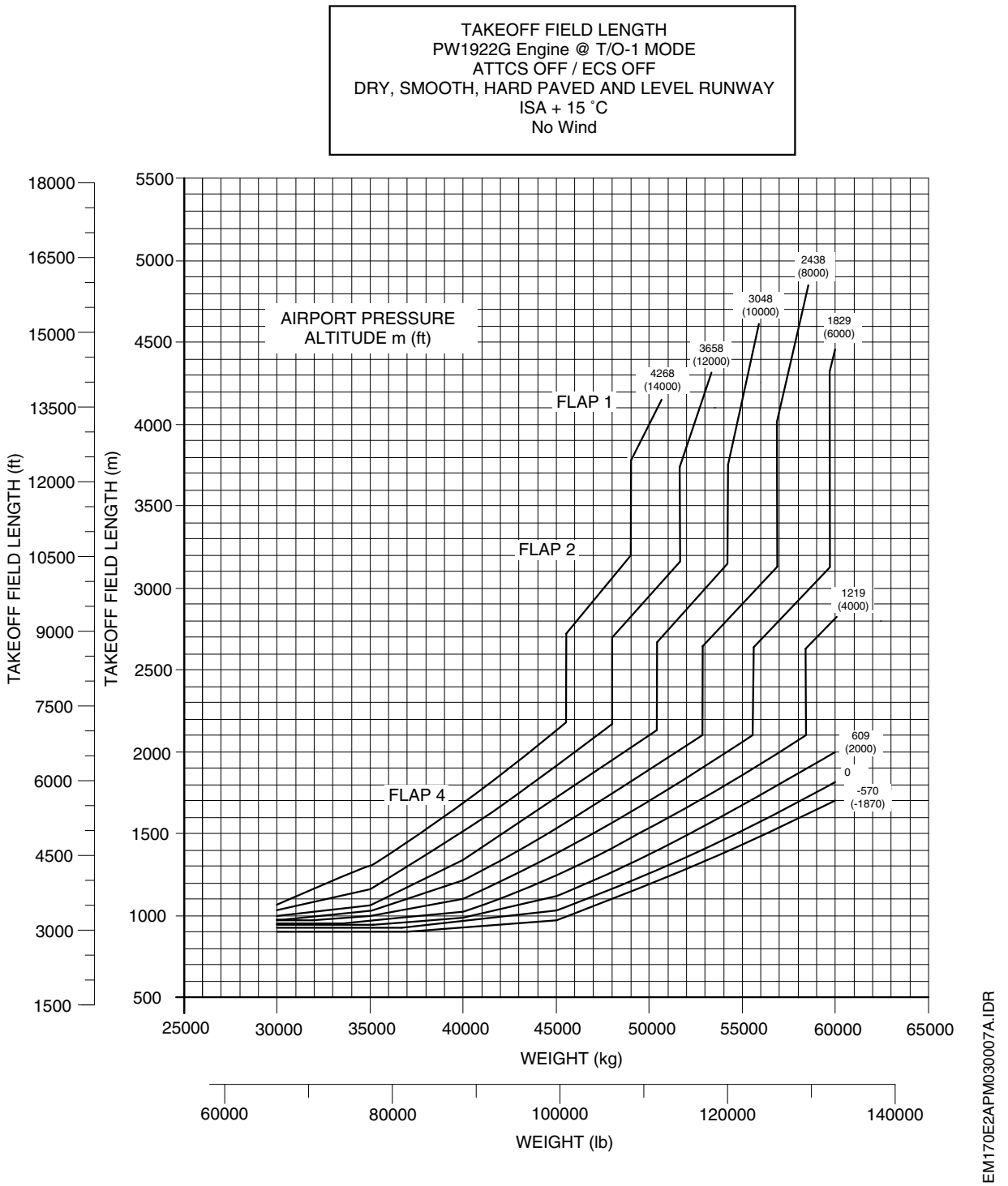
EFFECTIVITY: EMBRAER 190-E2 ACFT

Takeoff Field Lengths - ISA Conditions

Figure 3.8



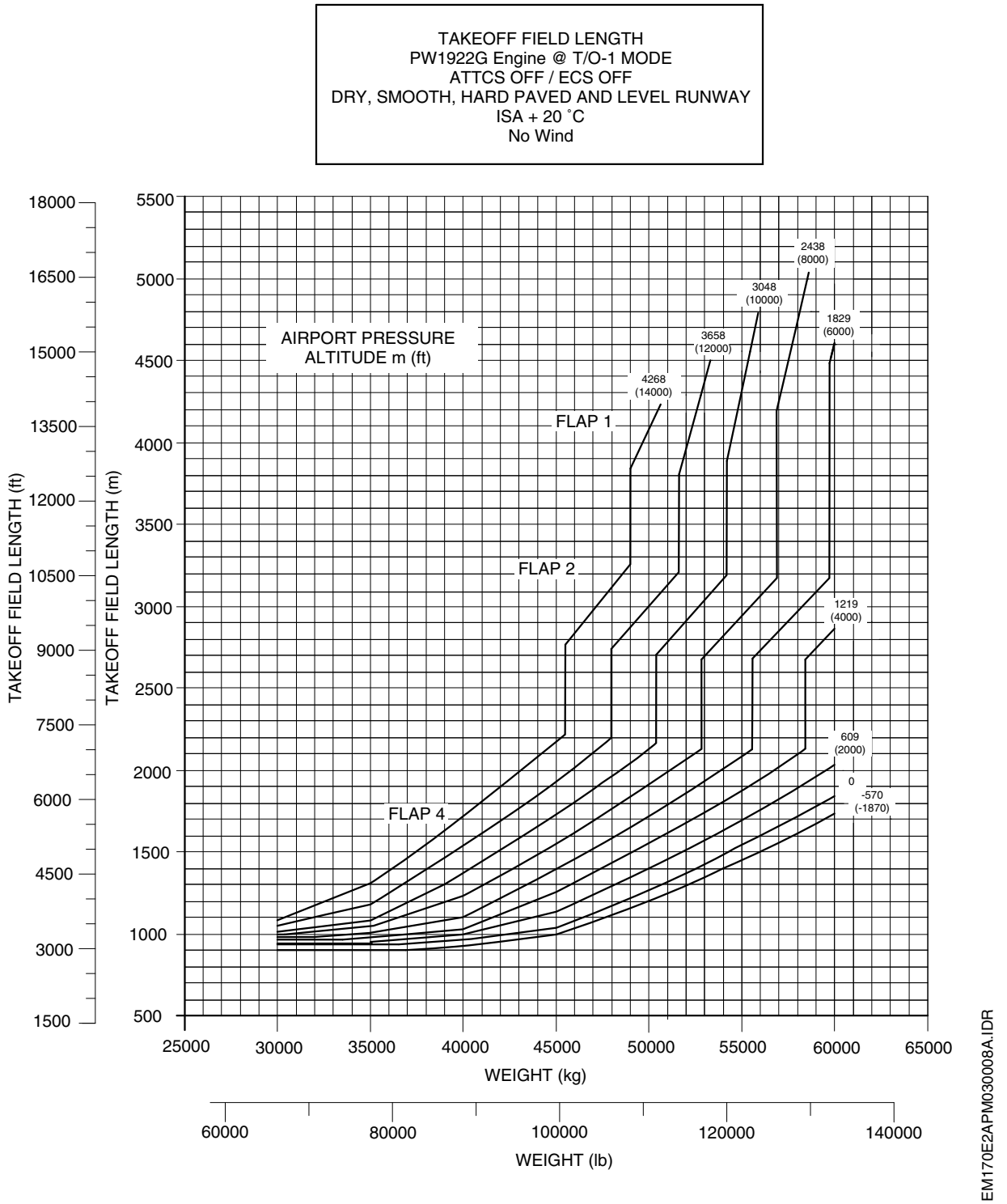
EFFECTIVITY: EMBRAER 190-E2 ACFT
Takeoff Field Lengths - ISA + 15 °C Conditions
Figure 3.9



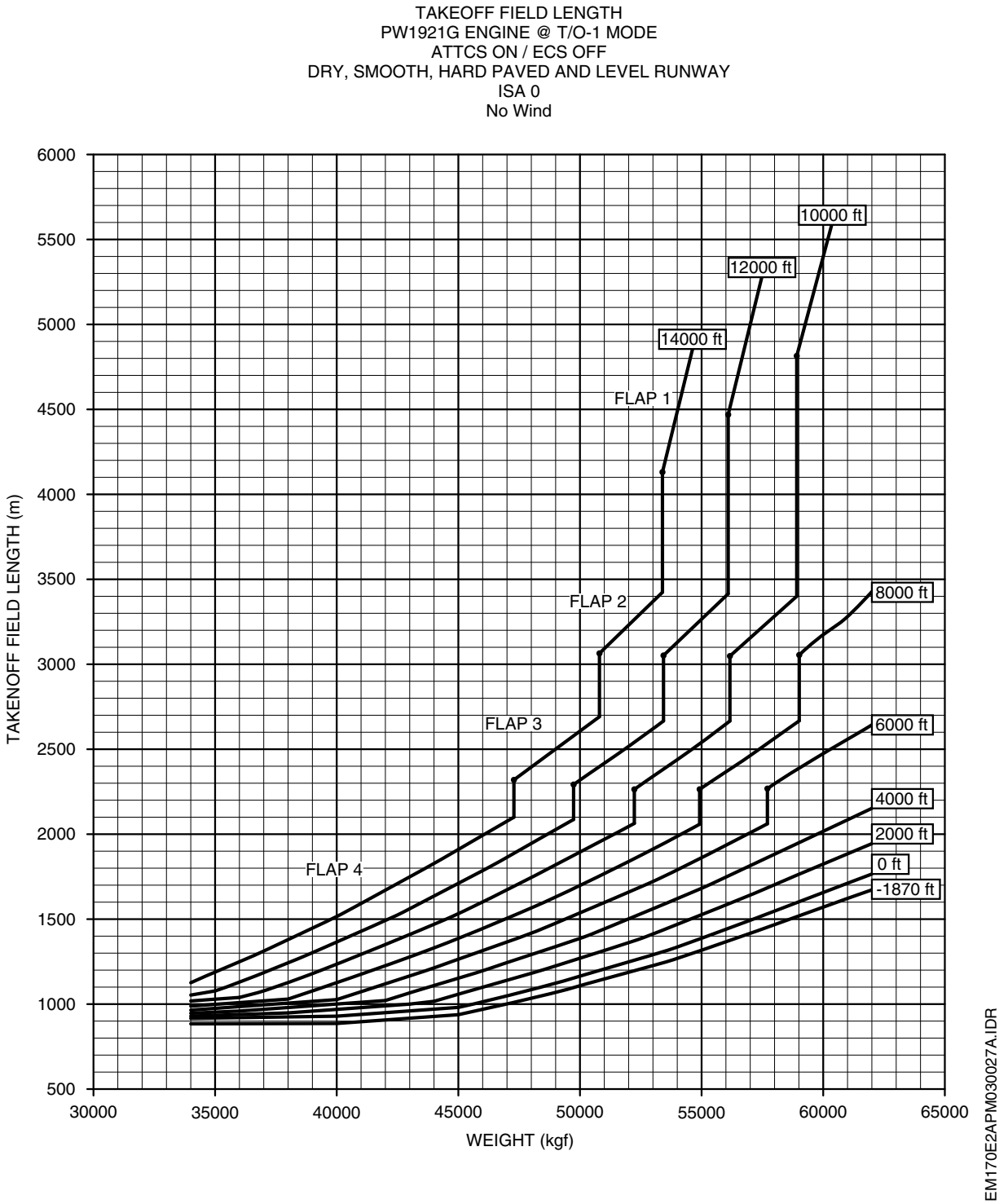
EFFECTIVITY: EMBRAER 190-E2 ACFT

Takeoff Field Lengths - ISA + 20 °C Conditions

Figure 3.10



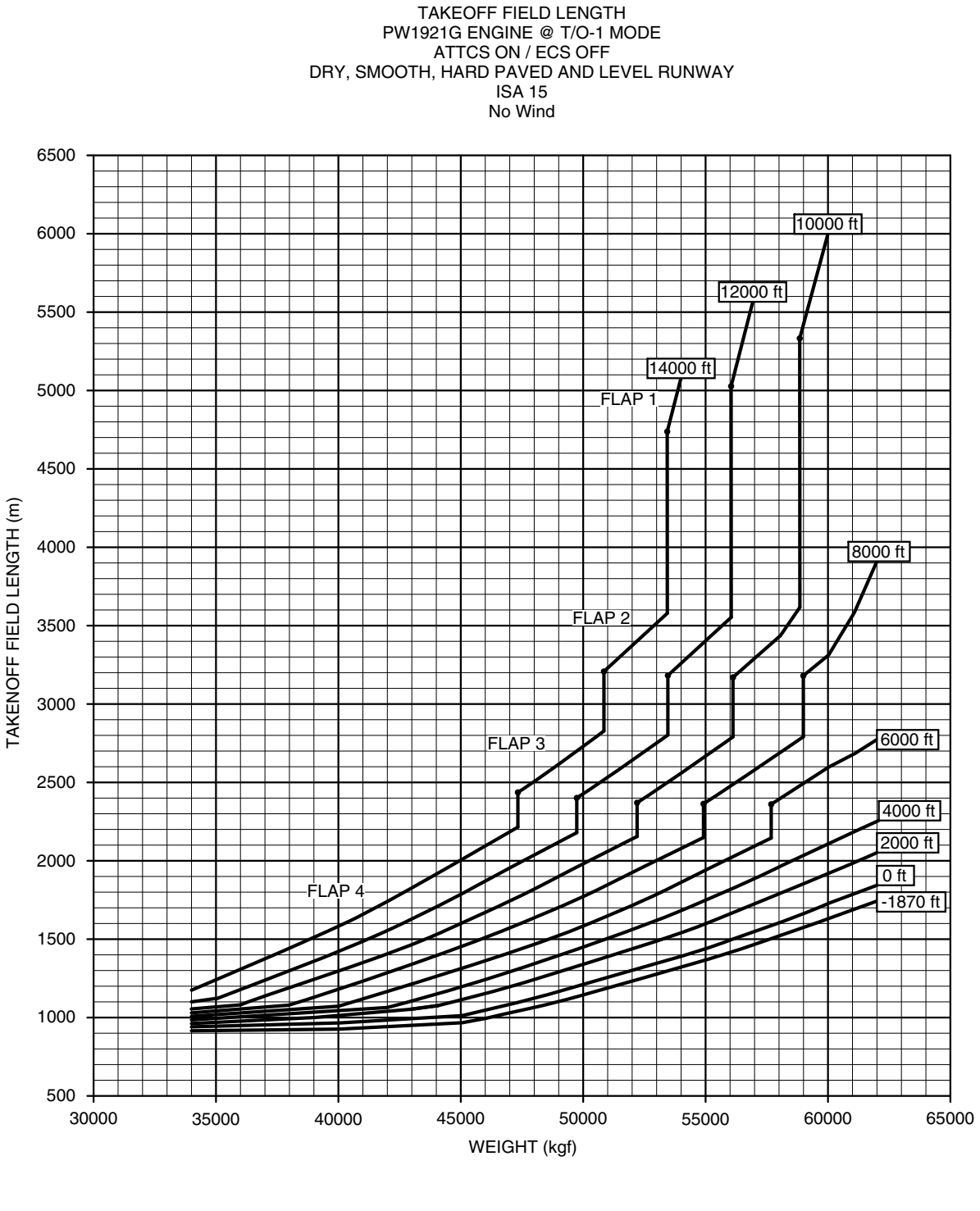
EFFECTIVITY: EMBRAER 195-E2 ACFT
Takeoff Field Lengths - ISA Conditions
Figure 3.11



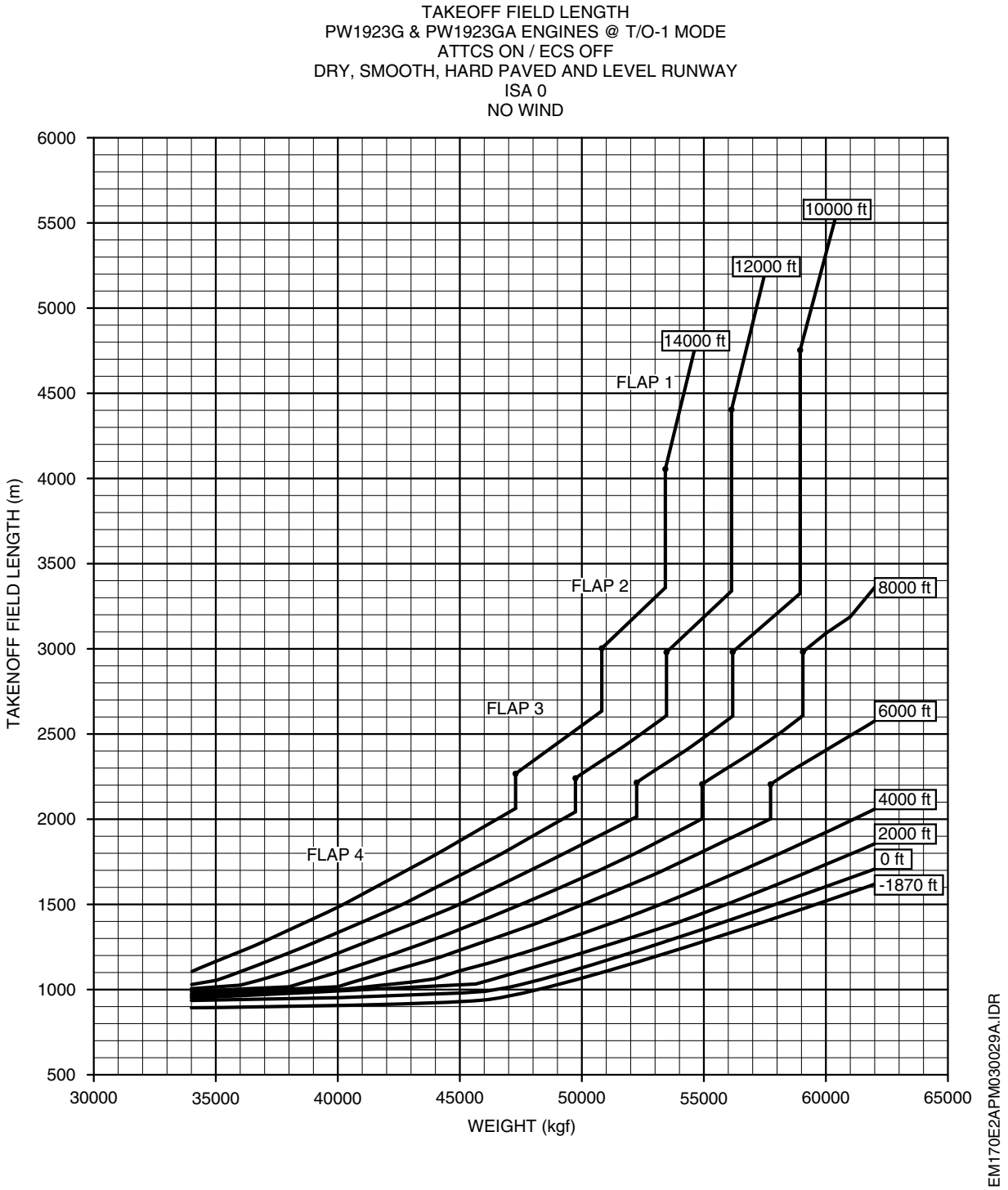
EFFECTIVITY: EMBRAER 195-E2 ACFT

Takeoff Field Lengths - ISA + 15 °C Conditions

Figure 3.12



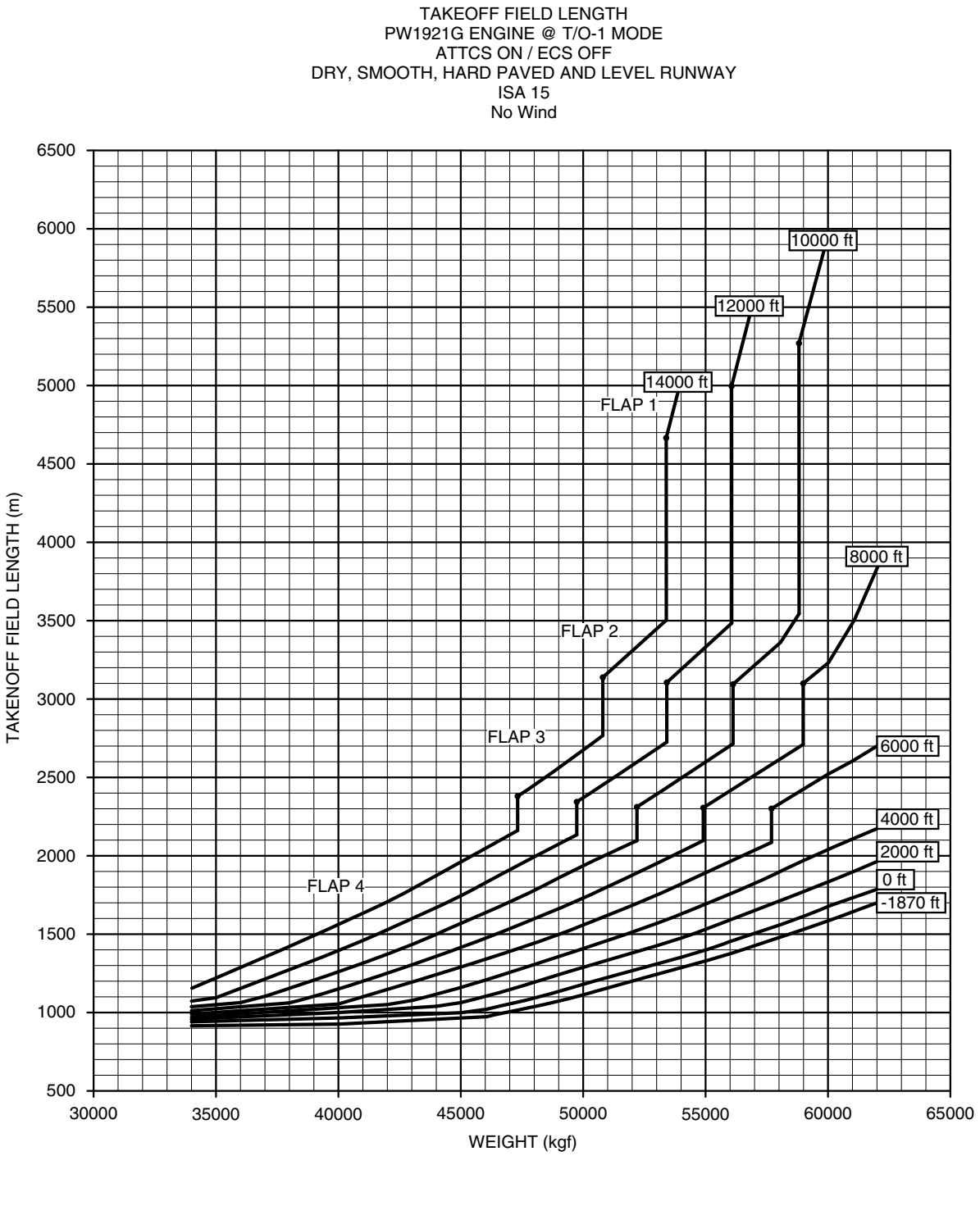
EFFECTIVITY: EMBRAER 195-E2 ACFT
Takeoff Field Lengths - ISA Conditions
Figure 3.13



EFFECTIVITY: EMBRAER 195-E2 ACFT

Takeoff Field Lengths - ISA + 15 °C Conditions

Figure 3.14



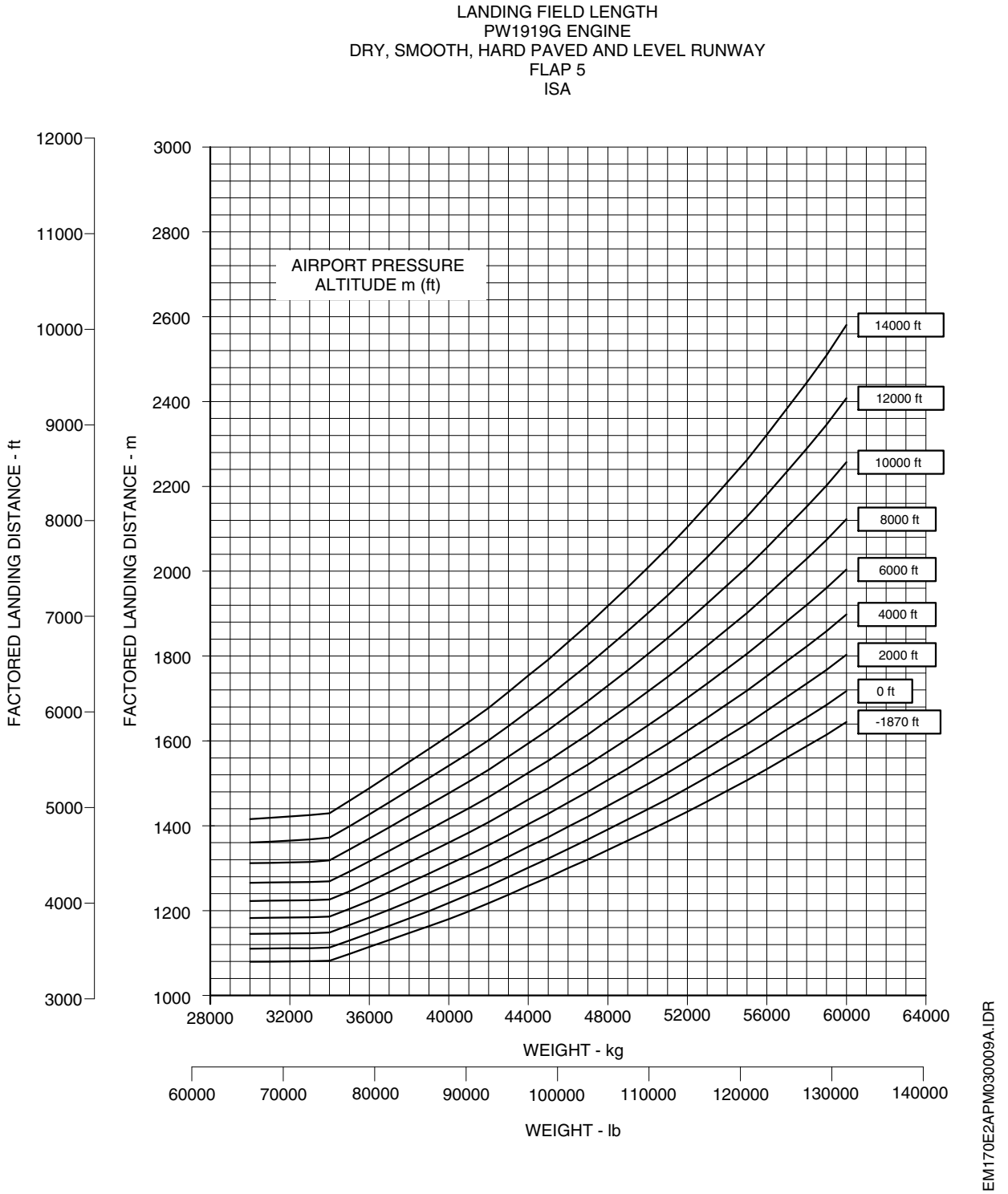
3.4. LANDING FIELDS LENGTHS

The landing field lengths charts provide data about the maximum landing weights for compliance with the operating regulations related to landing field lengths.

Data is presented according to the following associated conditions:

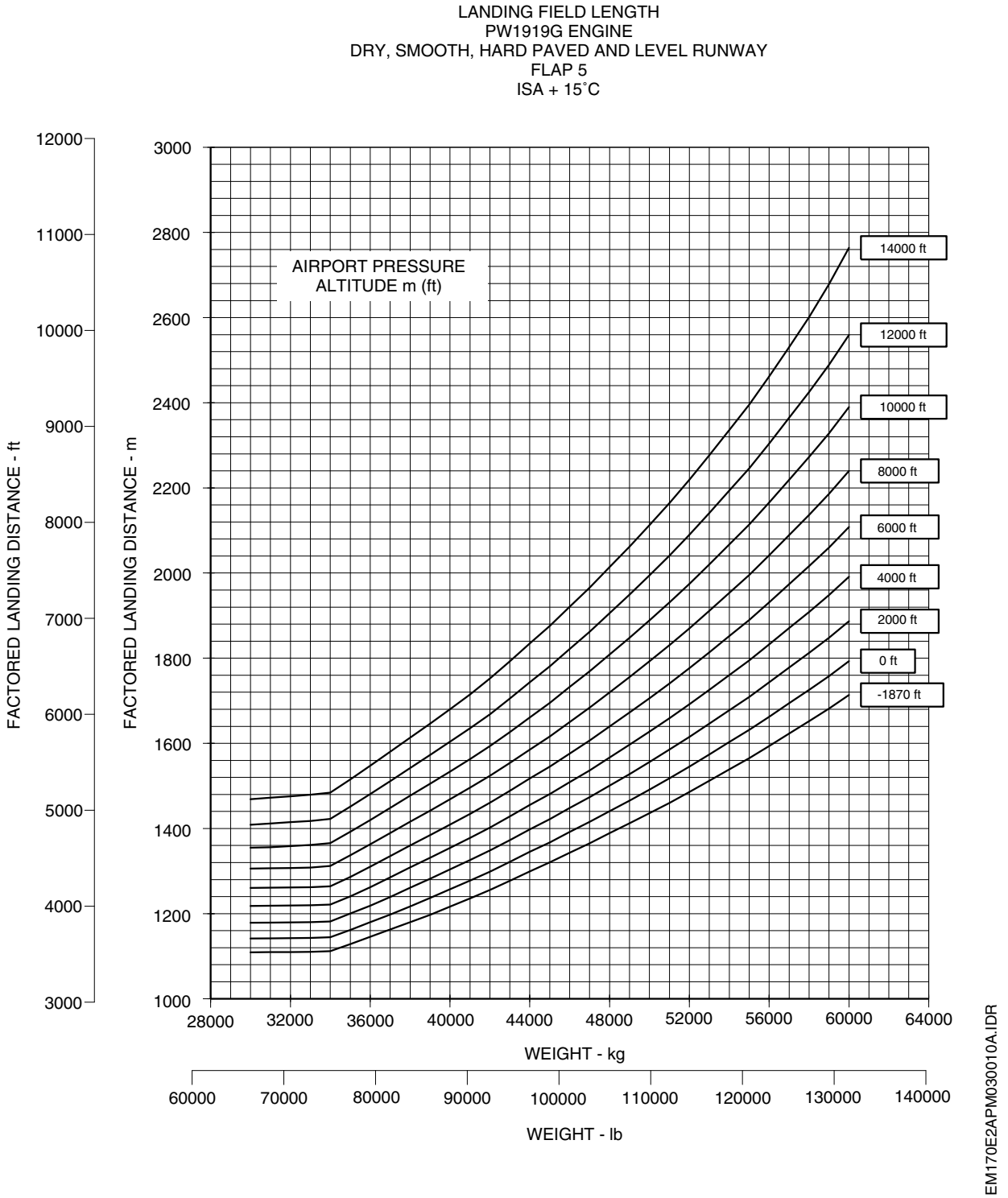
- Landing gear: down;
- Flaps setting position: 5 or full;
- Pavement conditions: dry, hard paved and level runway surface with no obstacles;
- Zero wind and atmosphere according to ISA conditions;
- Pack OFF: No engine bleed extraction for air conditioning packs was considered in the takeoff and landing charts.

EFFECTIVITY: EMBRAER 190-E2 ACFT
Landing Field Lengths - Flap 5 - ISA Conditions
Figure 3.15



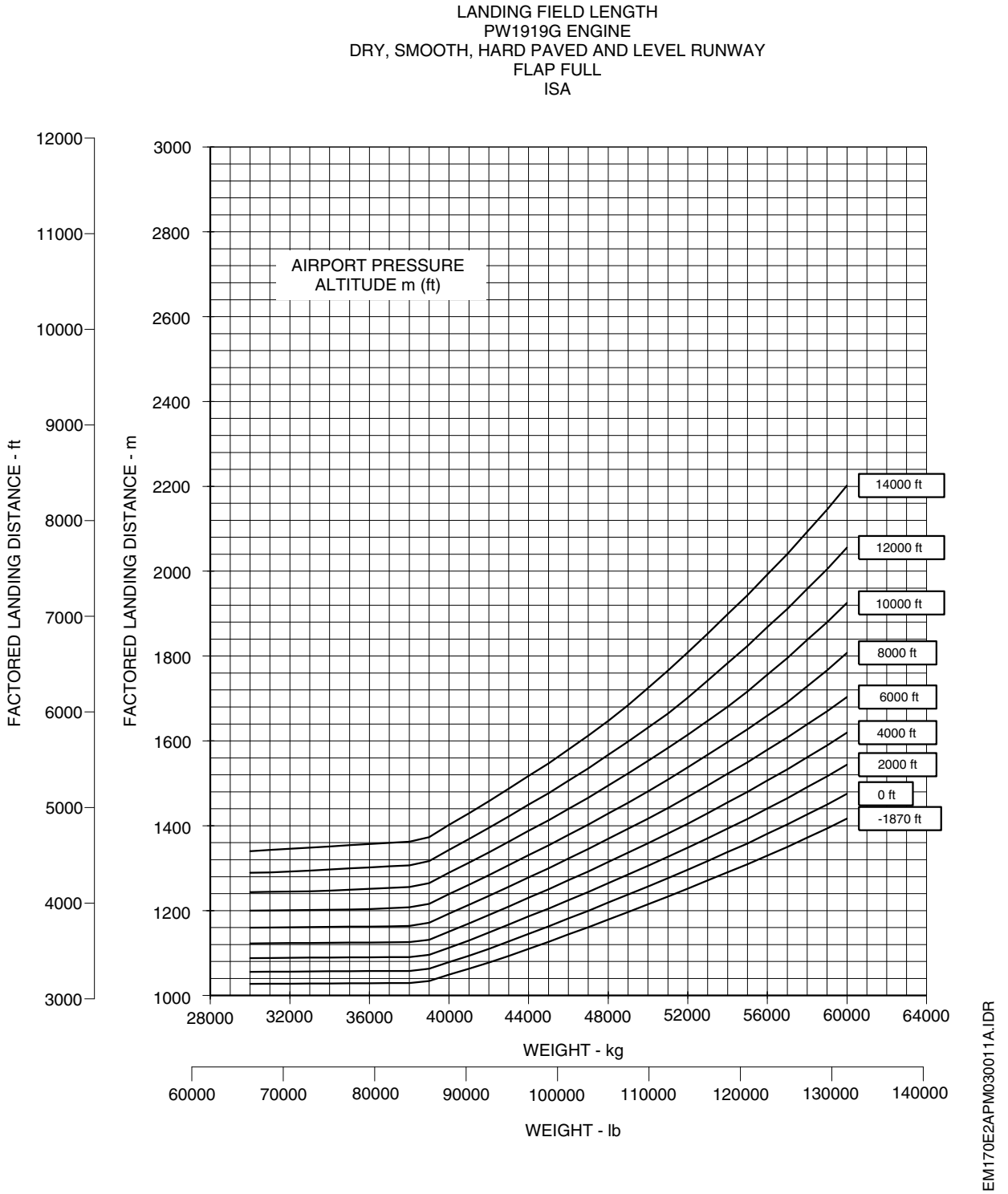
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap 5 - ISA + 15 °C Conditions
Figure 3.16



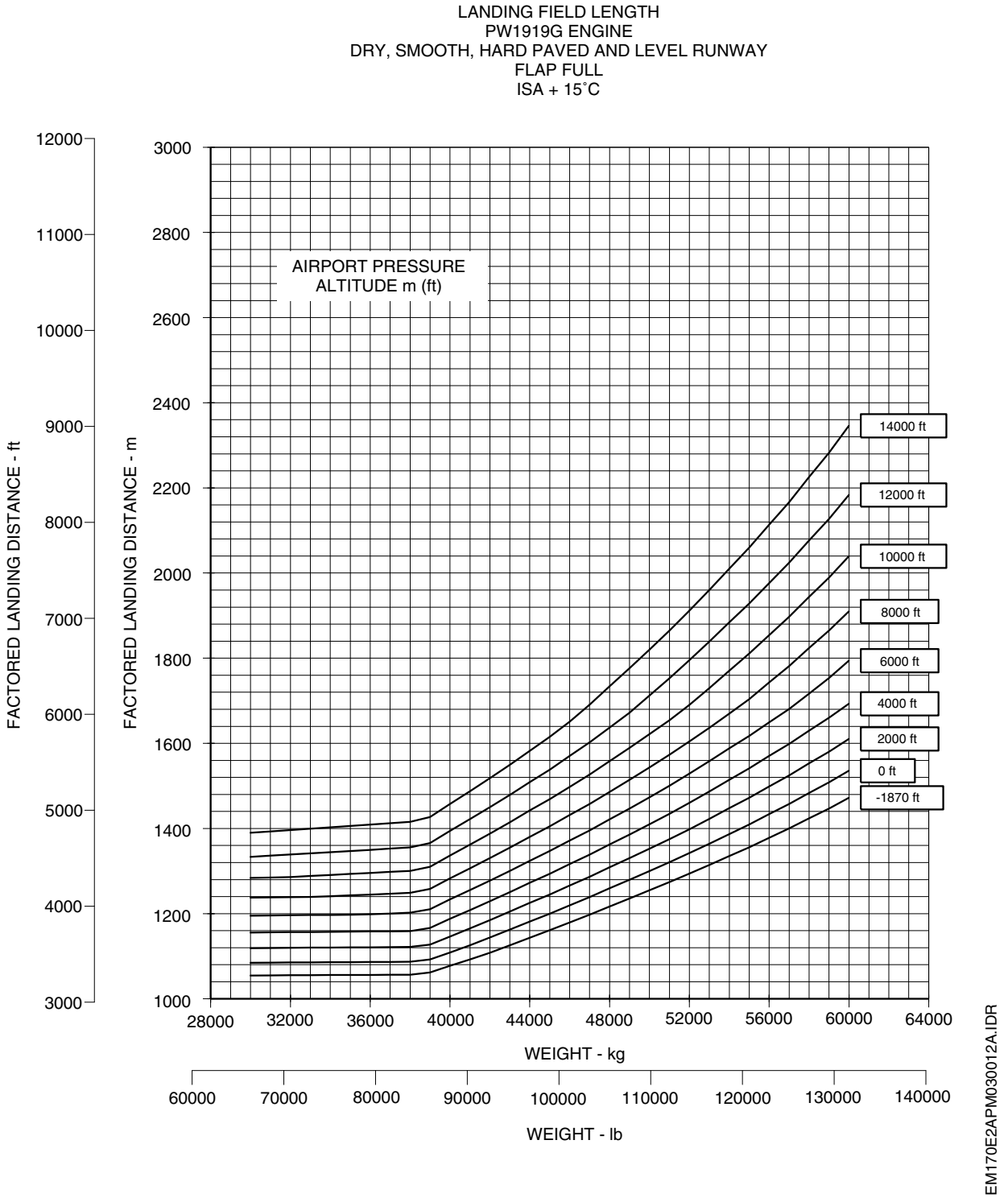
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap Full - ISA Conditions
Figure 3.17



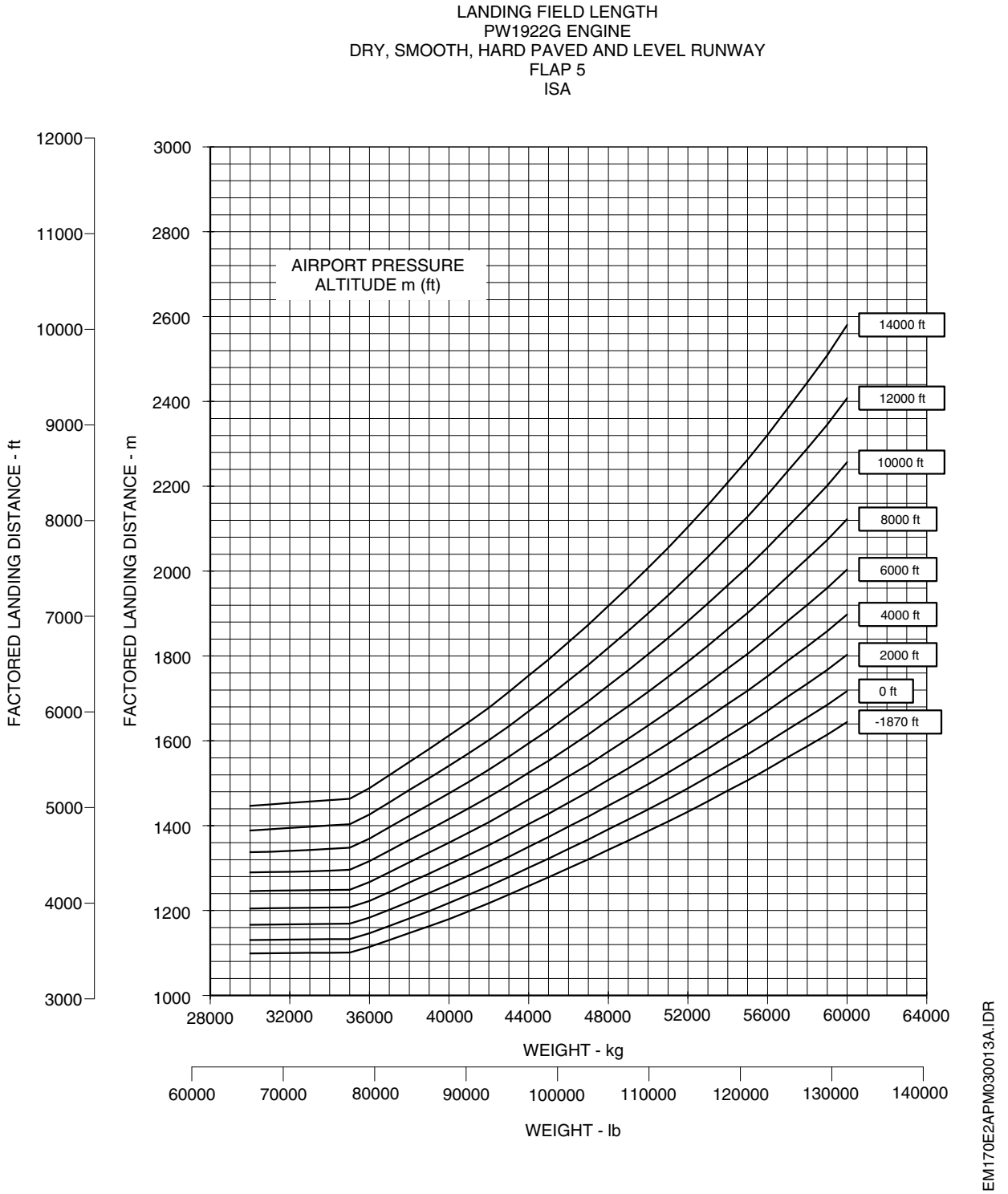
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap Full - ISA + 15 °C Conditions
Figure 3.18



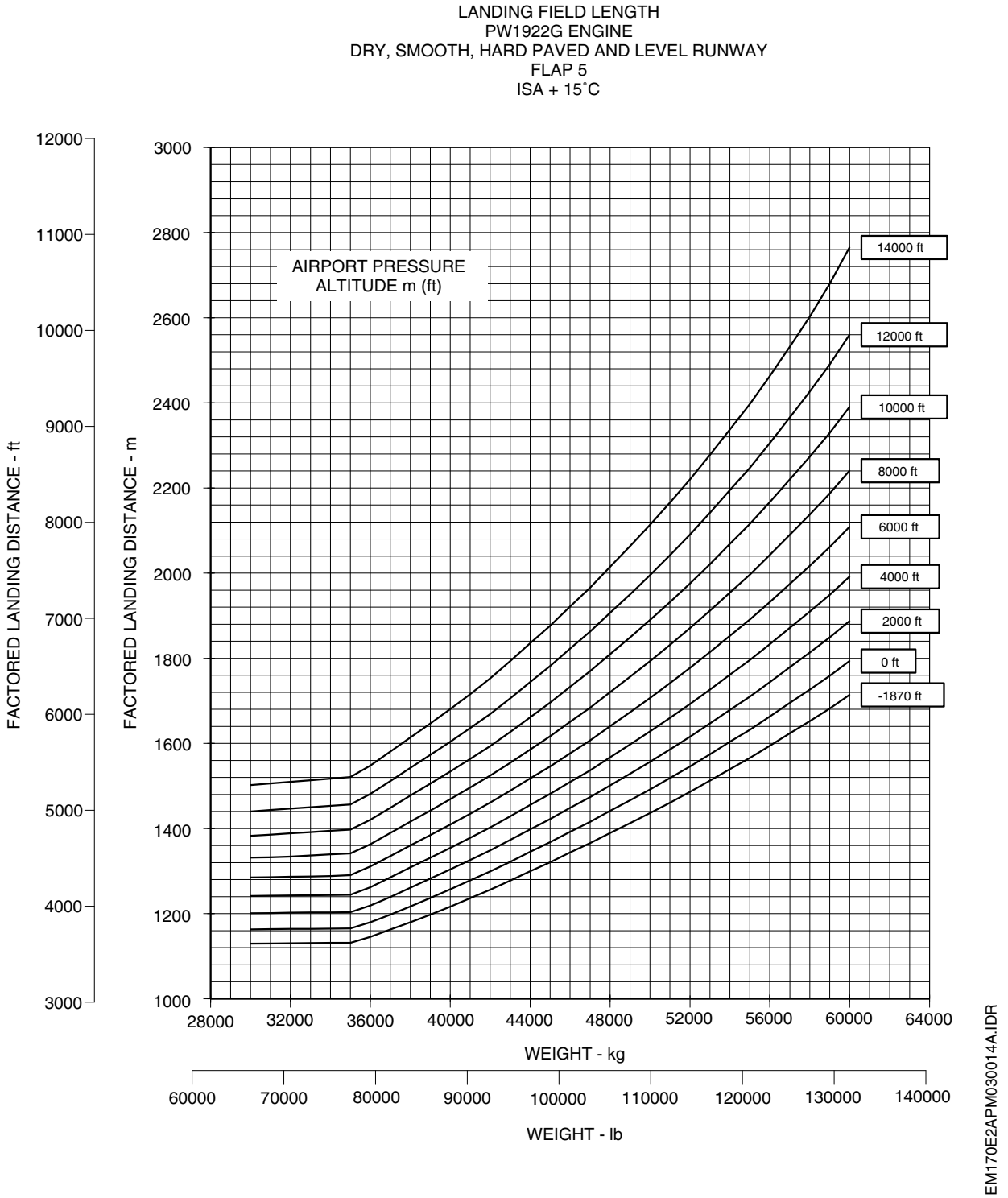
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap 5 - ISA Conditions
Figure 3.19



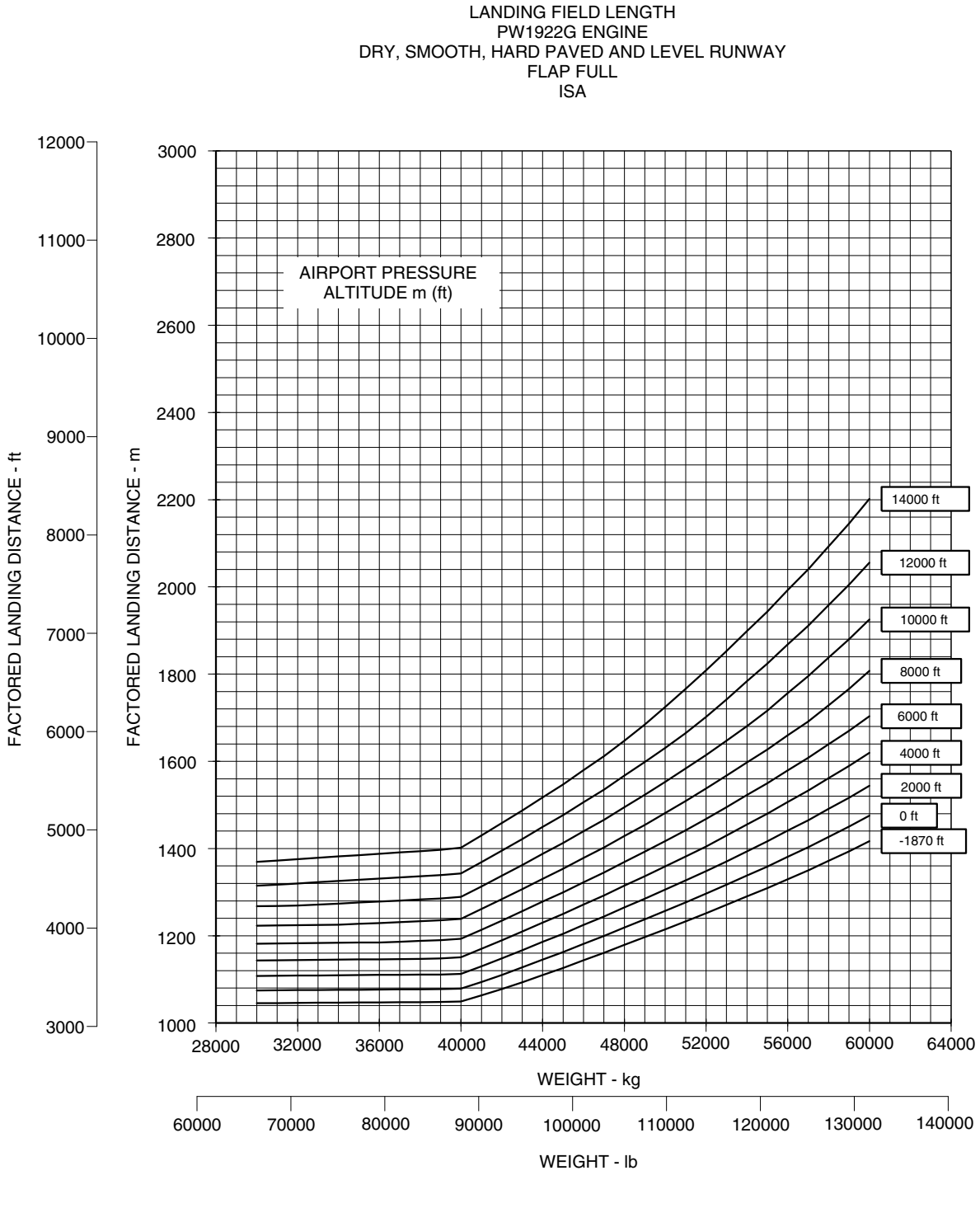
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap 5 - ISA + 15 °C Conditions
Figure 3.20



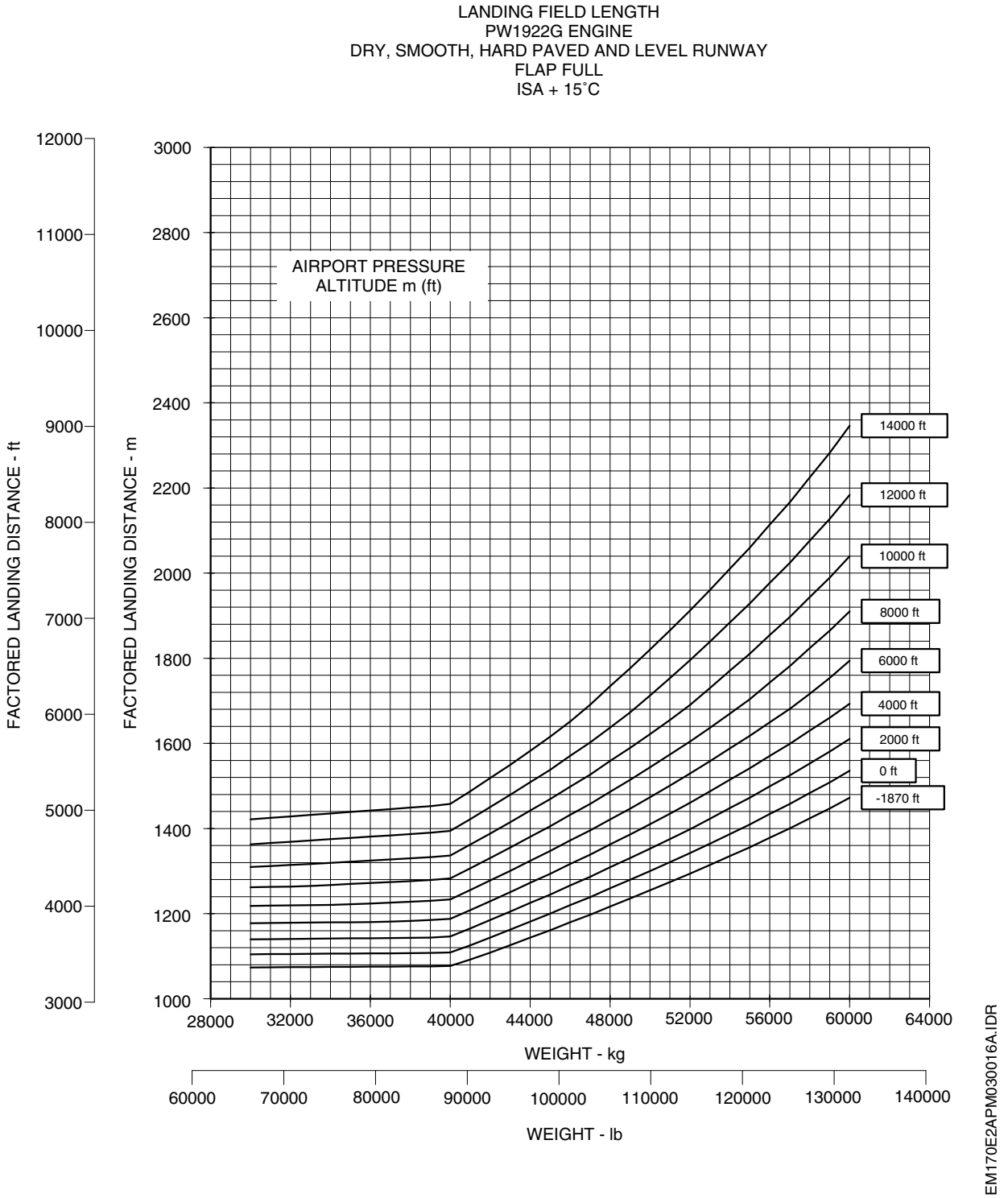
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap Full - ISA Conditions
Figure 3.21



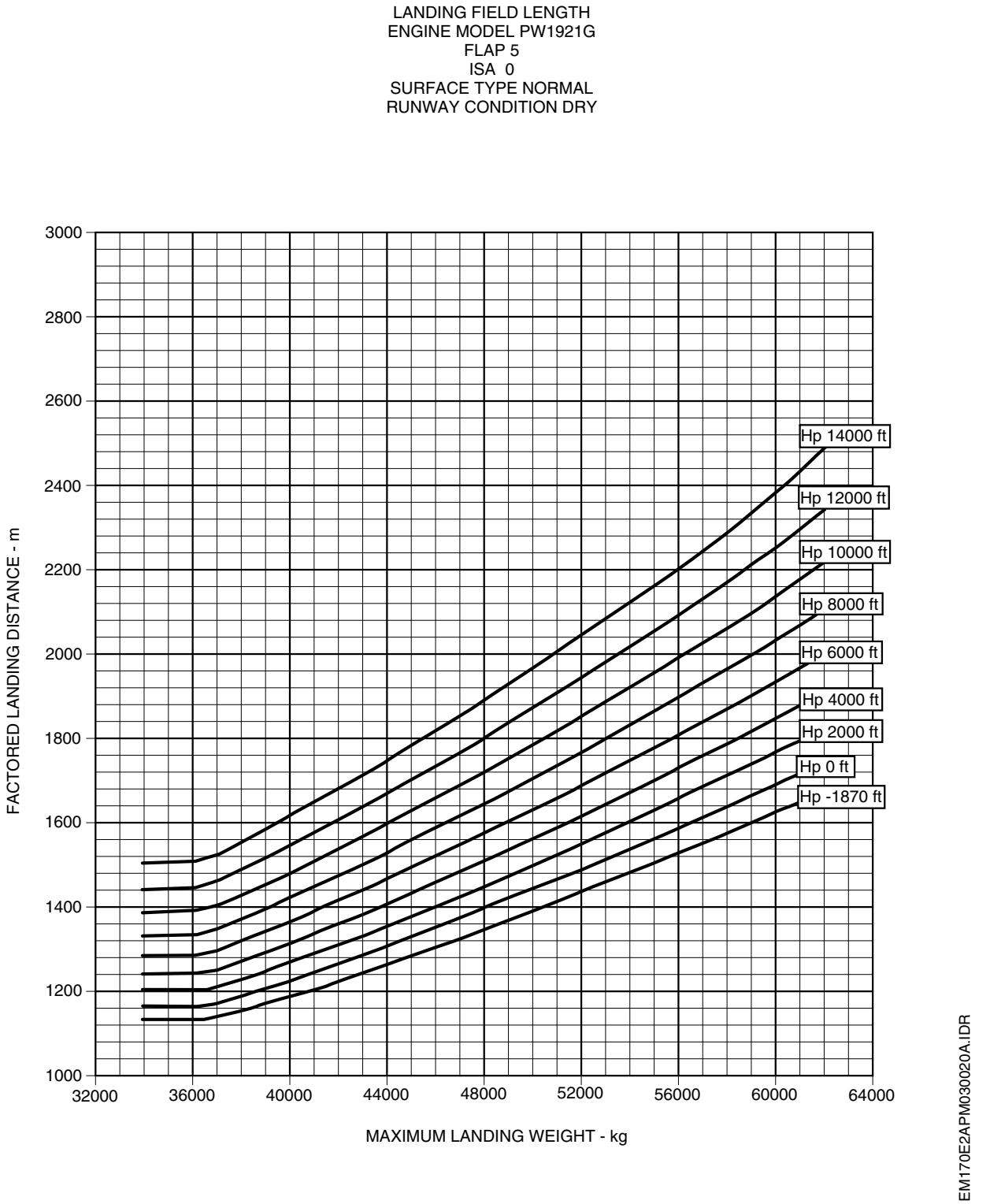
EFFECTIVITY: EMBRAER 190-E2 ACFT

Landing Field Lengths - Flap Full - ISA + 15 °C Conditions
Figure 3.22



EFFECTIVITY: EMBRAER 195-E2 ACFT

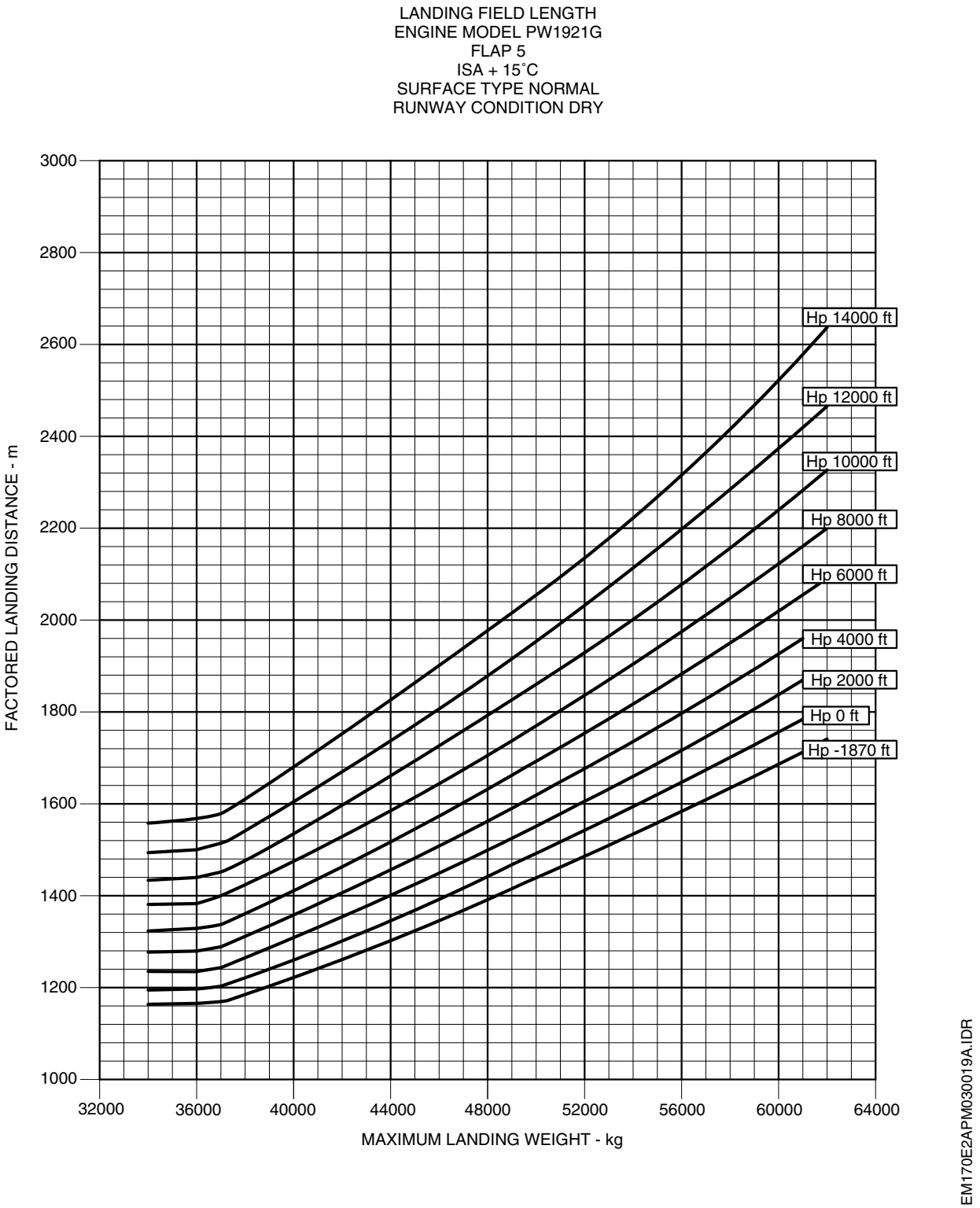
Landing Field Lengths - Flap 5 - ISA Conditions
Figure 3.23



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap 5 - ISA + 15 °C Conditions

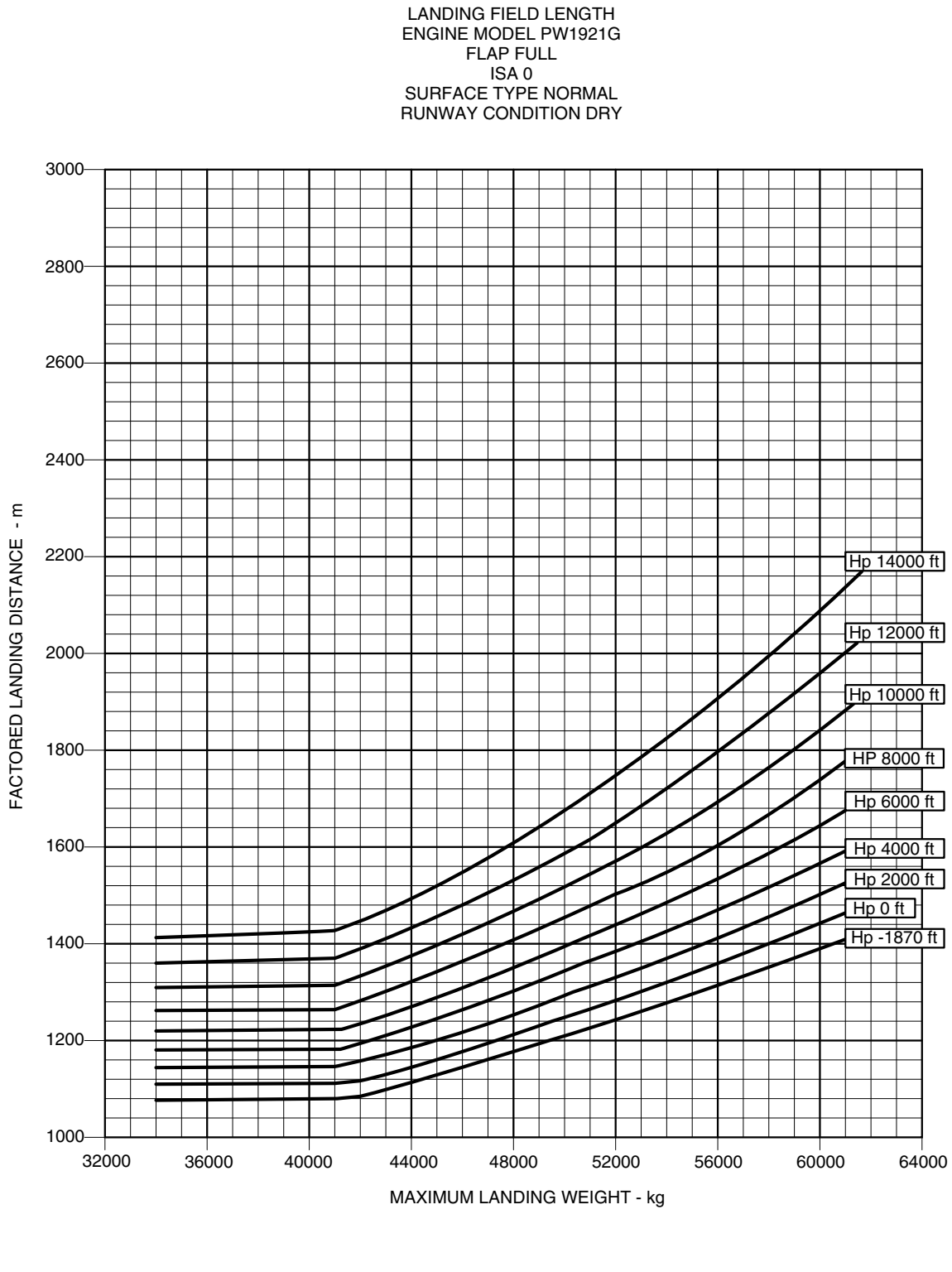
Figure 3.24



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap Full - ISA Conditions

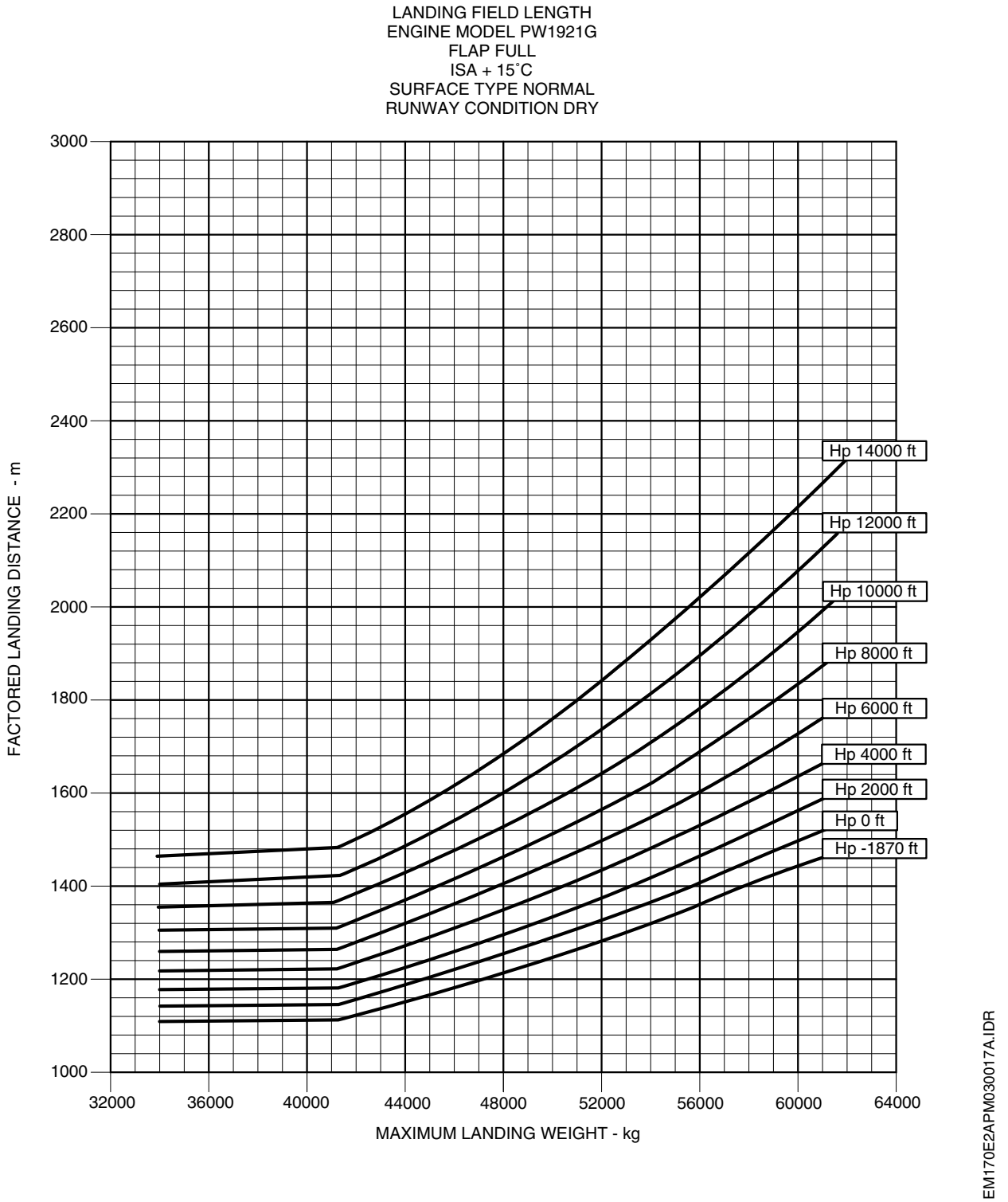
Figure 3.25



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap Full - ISA + 15 °C Conditions

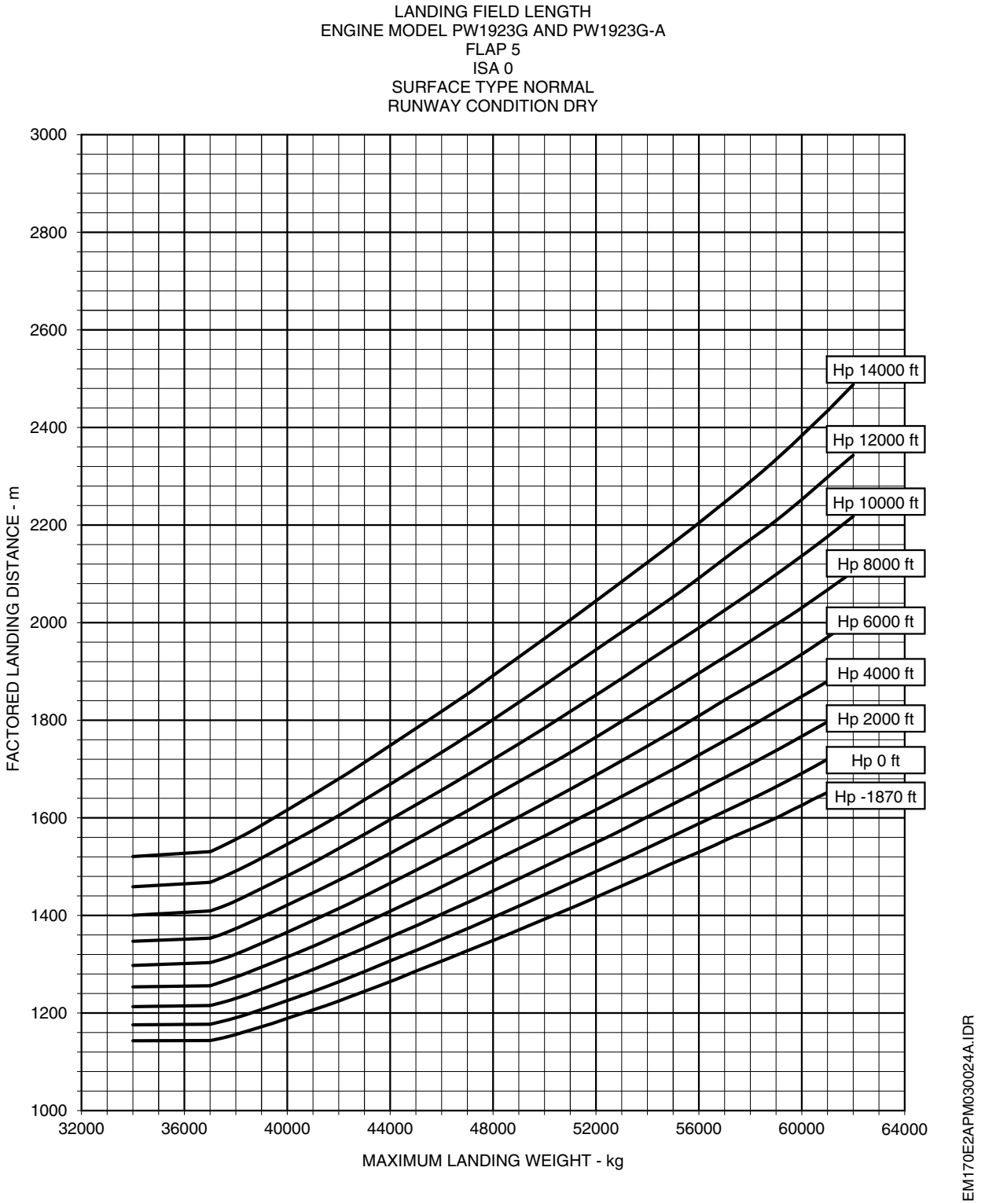
Figure 3.26



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap 5 - ISA Conditions

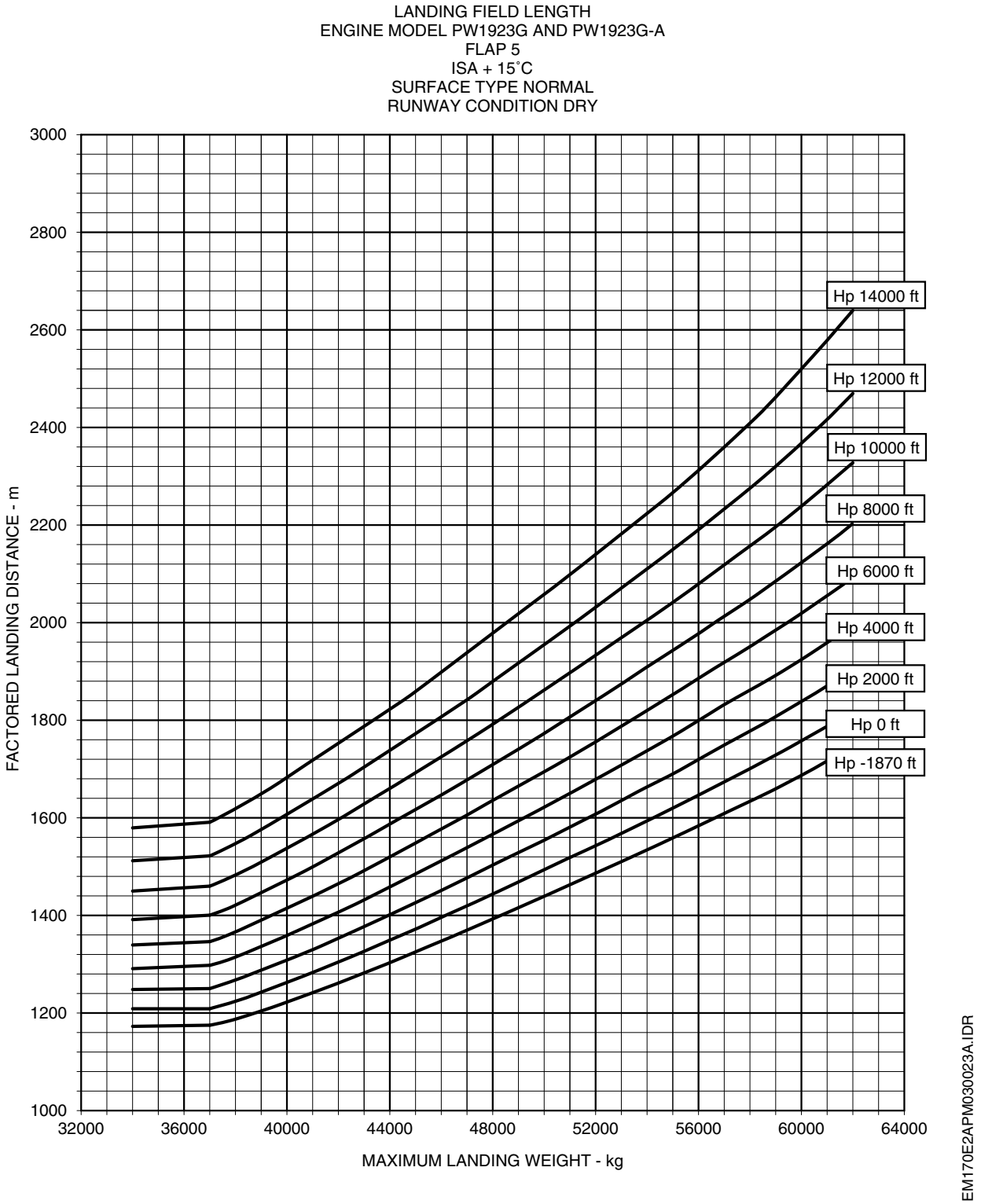
Figure 3.27



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap 5 - ISA + 15 °C Conditions

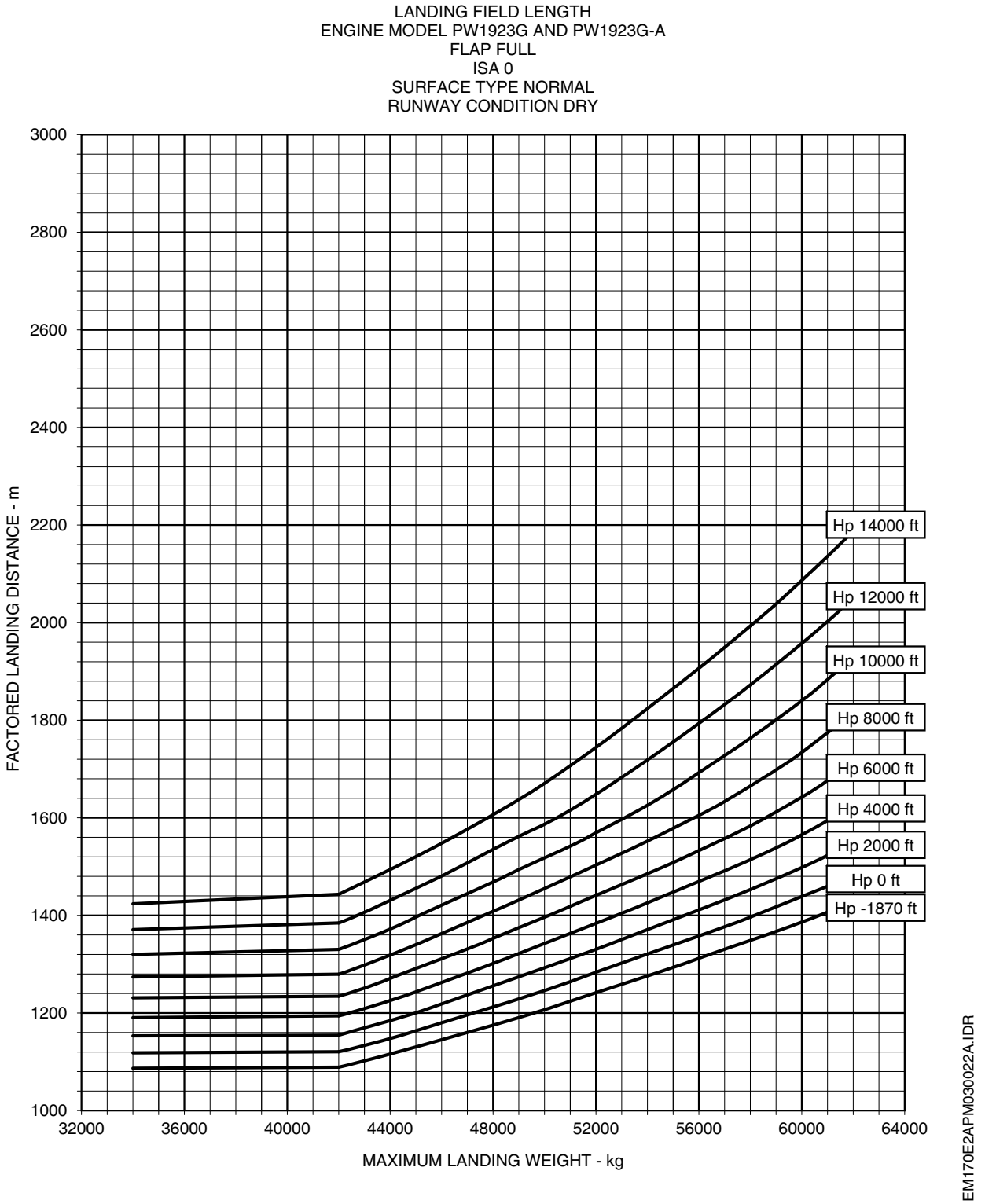
Figure 3.28



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap Full - ISA Conditions

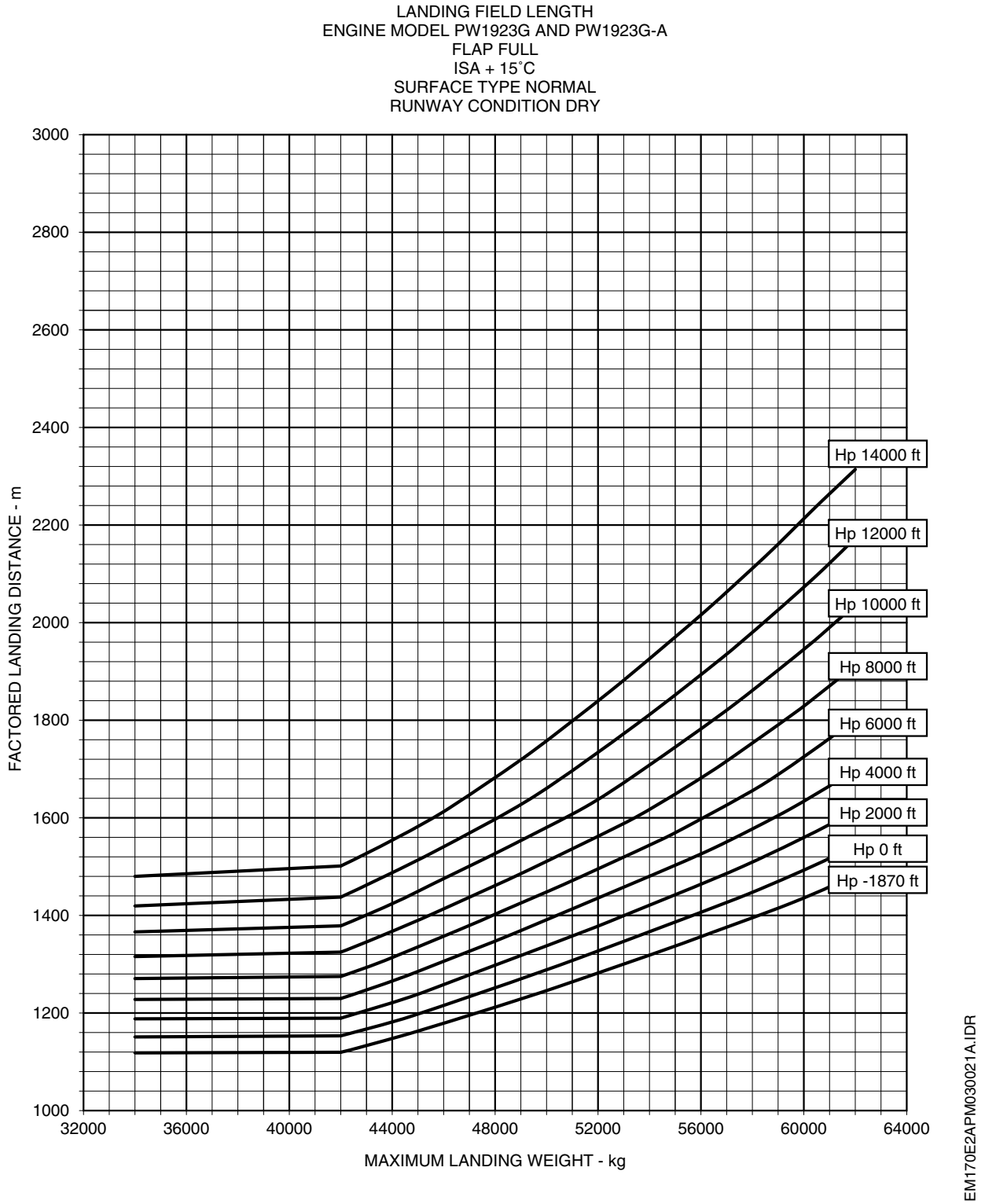
Figure 3.29



EFFECTIVITY: EMBRAER 195-E2 ACFT

Landing Field Lengths - Flap Full - ISA + 15 °C Conditions

Figure 3.30



4. GROUND MANEUVERING

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

4.1. GENERAL INFORMATION

This section provides the aircraft turning capability and maneuvering characteristics. To facilitate the presentation, the data was determined from theoretical limits imposed by the geometry of the aircraft.

As such, it reflects the turning capability of the aircraft in favorable operating circumstances. This data should be used only as guideline for the method of determining such parameters and for the maneuvering characteristics of the aircraft.

In the ground operating mode, varying airline practices may demand that more conservative turning procedures be adopted, to avoid excessive tire wear and reduce possible maintenance problems.

Variations from standard aircraft operating patterns may be necessary to satisfy physical constants within the maneuvering area, such as adverse grades, limited area, or high risk of jet blast damage. For these reasons, the ground maneuvering requirements should be coordinated with the using airline prior to the layout planning.

This section is presented as follows:

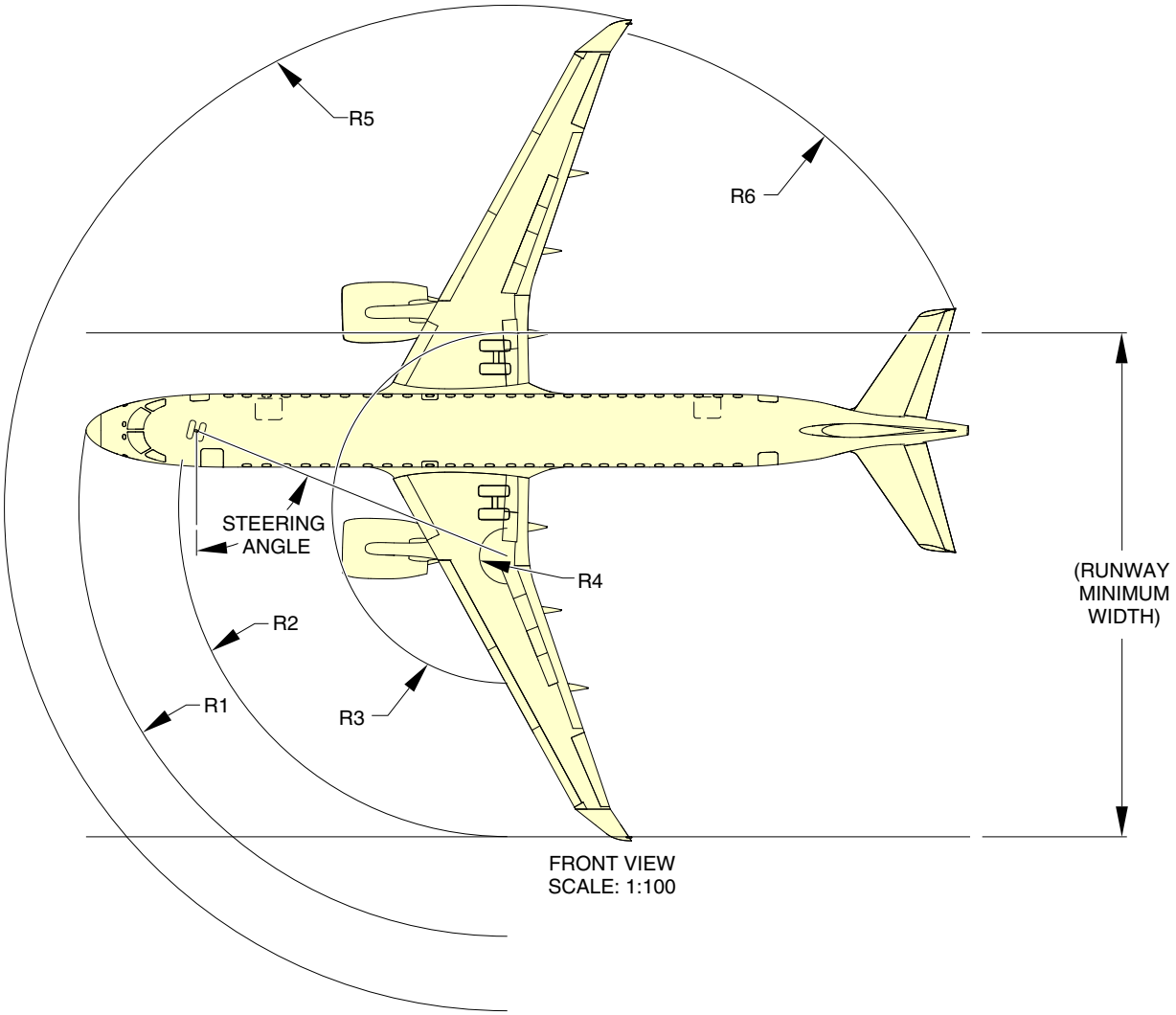
- The turning radii for nose landing gear steering angles.
- The pilot's visibility from the cockpit and the limits of ambinocular vision through the windows. Ambinocular vision is defined as the total field of vision seen by both eyes at the same time.
- The performance of the aircraft on runway-to-taxiway, taxiway-to-taxiway and runway holding bays dimensions.

4.2. TURNING RADII

This subsection presents the following information:

- The turning radii for various nose landing gear steering angles. The minimum turning radius is determined considering that the maximum nose landing gear steering angle is 76 degrees left and right.
- Data on the minimum width of the pavement for a 180° turn.

EFFECTIVITY: EMBRAER 190-E2 ACFT
Turning Radii - No Slip Angle
Figure 4.1



NOTE:
DATA PRESENTED IS BASED ON THEORETICAL CALCULATIONS.
ACTUAL OPERATING DATA MAY BE GREATER THAN SHOWN SINCE
TIRE SLIPPAGE IS NOT CONSIDERED IN THESE CALCULATIONS.

STEERING STEEL	NOSE		NOSE GEAR		OUTBOARD GEAR		INBOARD GEAR		RIGHT WINGLET		RIGHT TAILTIP	
	R1		R2		R3		R4		R5		R6	
35˚	25.30 m	83 ft	22.62 m	74 ft 21 in	22.26 m	73 ft 03 in	14.23 m	46 ft 70 in	35.47 m	116 ft 37 in	29.64 m	97 ft 24 in
40˚	23.20 m	76 ft 11 in	20.22 m	66 ft 34 in	19.24 m	63 ft 12 in	11.21 m	36 ft 77 in	32.49 m	106 ft 60 in	27.33 m	89 ft 66 in
45˚	21.60 m	70 ft 87 in	18.42 m	60 ft 43 in	16.80 m	55 ft 12 in	8.80 m	28 ft 87 in	30.07 m	98 ft 65 in	25.57 m	83 ft 90 in
50˚	20.42 m	67 ft	17.03 m	55 ft 87 in	14.74 m	48 ft 36 in	6.70 m	22 ft	28.05 m	92 ft 03 in	24.19 m	79 ft 36 in
55˚	19.53 m	64 ft 08 in	15.94 m	52 ft 30 in	13.00 m	42 ft 65 in	4.93 m	16 ft 17 in	26.30 m	86 ft 30 in	23.08 m	75 ft 72 in
60˚	18.53 m	61 ft 84 in	15.10 m	49 ft 54 in	11.40 m	37 ft 74 in	3.36 m	11 ft 02 in	24.76 m	81 ft 23 in	22.16 m	72 ft 70 in
65˚	18.33 m	60 ft 13 in	14.44 m	47 ft 37 in	9.98 m	32 ft 11 in	1.94 m	6 ft 36 in	23.38 m	76 ft 70 in	21.40 m	70 ft 21 in
70˚	17.94 m	58 ft 86 in	13.94 m	45 ft 73 in	8.67 m	28 ft 44 in	0.63 m	2 ft 07 in	22.10 m	72 ft 50 in	20.76 m	68 ft 11 in
76˚	17.61 m	57 ft 77 in	13.52 m	44 ft 35 in	7.20 m	23 ft 62 in	0.83 m	2 ft 72 in	20.68 m	67 ft 85 in	20.13 m	66 ft 04 in

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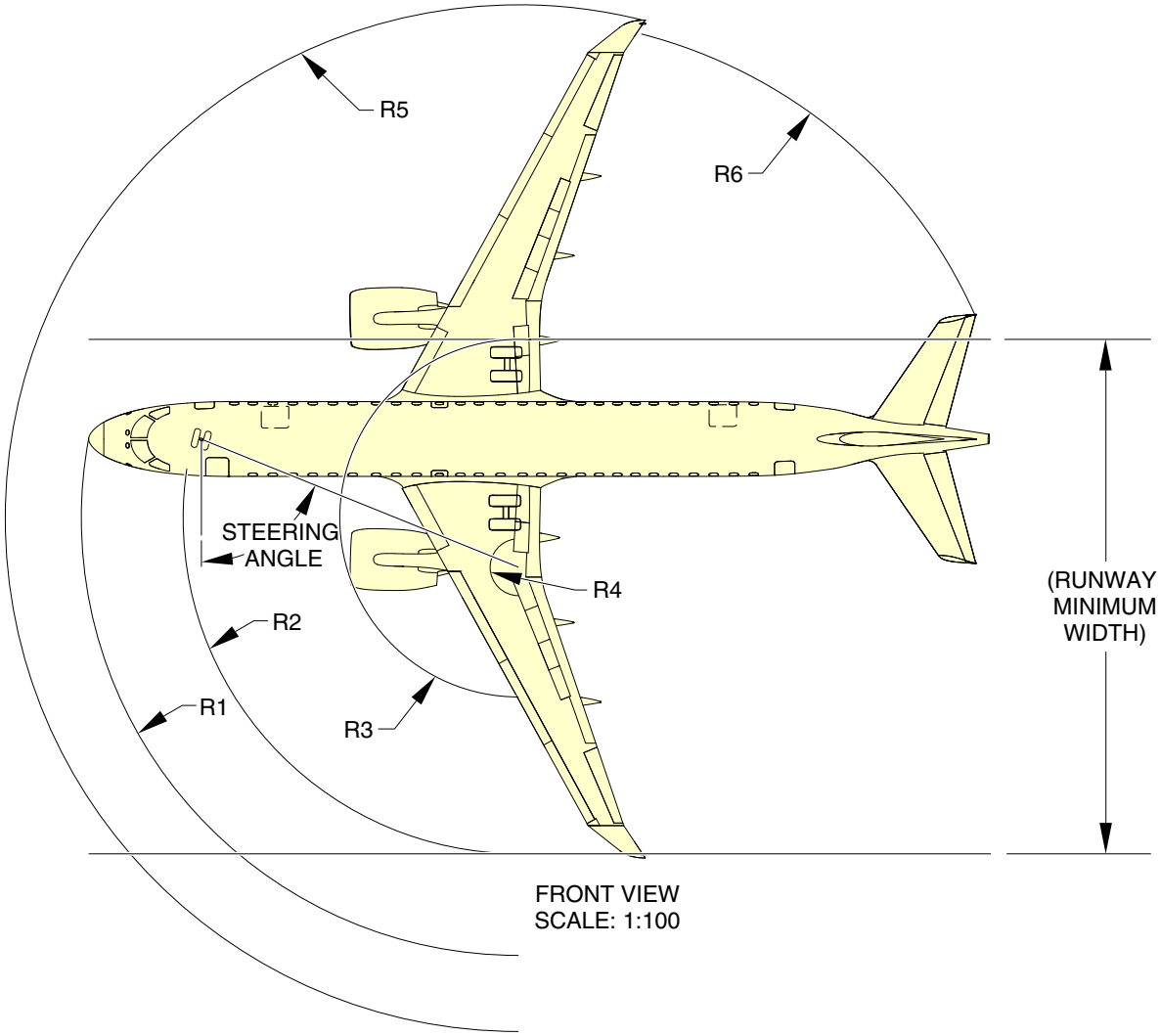
4.3. MINIMUM TURNING RADII

EFFECTIVITY: EMBRAER 190-E2 ACFT
Minimum Turning Radius
Figure 4.2



NOTE:
ACTUAL OPERATING DATA MAY BE GREATER THAN VALUES SHOWN
SINCE TIRE SLIPPAGE IS NOT CONSIDERED IN THESE CALCULATIONS.

STEERING STEEL	NOSE		NOSE GEAR		OUTBOARD GEAR		INBOARD GEAR		RIGHT WINGLET		RIGHT TAILTIP	
	R1		R2		R3		R4		R5		R6	
76˚	17.61 m	57 ft 77 in	13.52 m	44 ft 35 in	7.20 m	23 ft 62 in	0.83 m	2 ft 72 in	20.68 m	67 ft 85 in	20.13 m	66 ft 04 in

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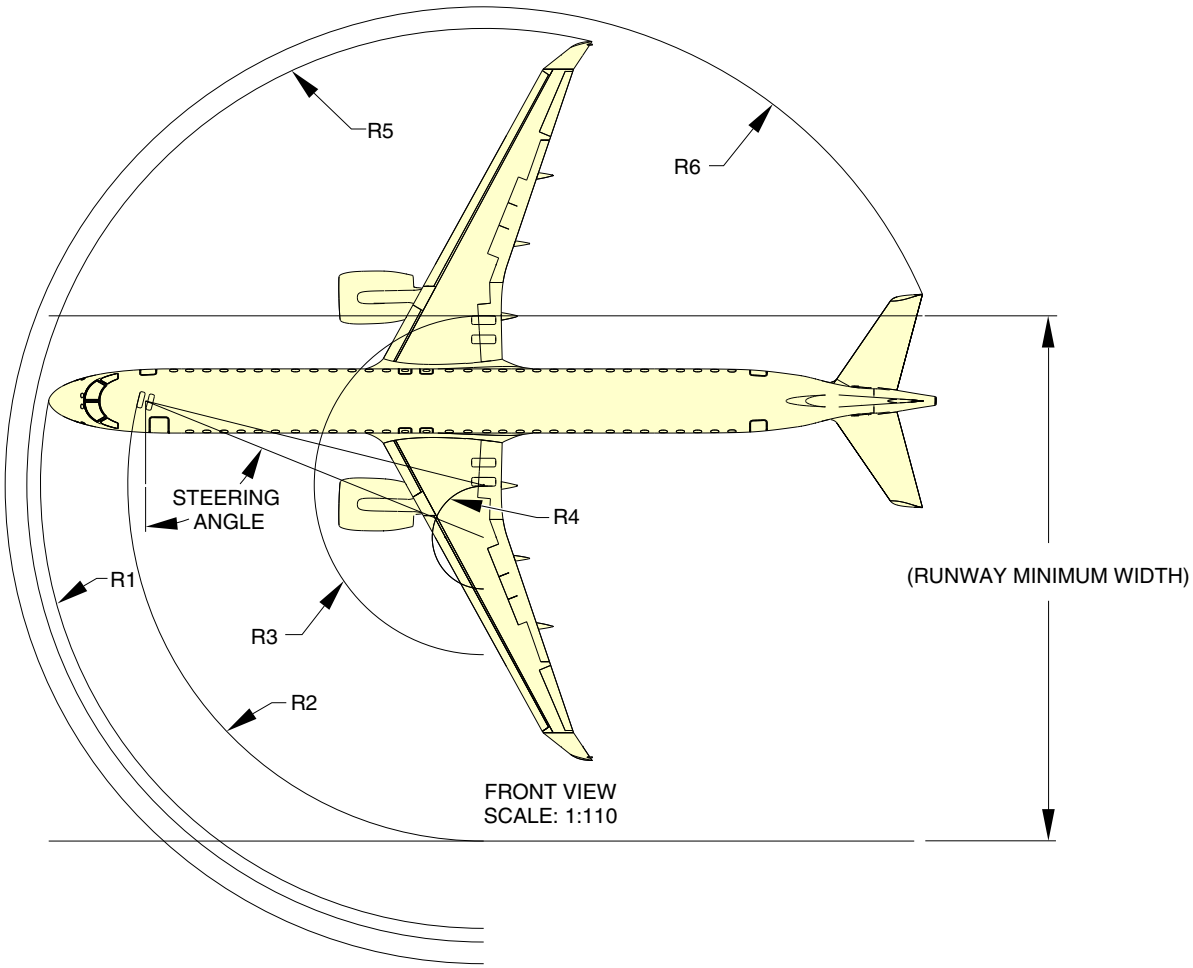
EFFECTIVITY: EMBRAER 195-E2 ACFT

Turning Radii - No Slip Angle

Figure 4.3



NOTE:
DATA PRESENTED IS BASED ON THEORETICAL CALCULATIONS.
ACTUAL OPERATING DATA MAY BE GREATER THAN SHOWN SINCE
TIRE SLIPPAGE IS NOT CONSIDERED IN THESE CALCULATIONS.

STEERING STEEL	NOSE		NOSE GEAR		OUTBOARD GEAR		INBOARD GEAR		RIGHT WINGLET		RIGHT TAIL TIP		RUNWAY WIDTH	
	R1		R2		R3		R4		R5		R6			
35˚	30.62 m	100 ft 5.5 in	27.99 m	91 ft 10.0 in	26.63 m	87 ft 4.4 in	18.65 m	61 ft 2.3 in	40.48 m	132 ft 9.7 in	34.46 m	113 ft 0.7 in	54.62 m	179 ft 2.4 in
40˚	27.91 m	91 ft 6.8 in	25.01 m	82 ft 0.6 in	22.89 m	75 ft 1.2 in	14.90 m	48 ft 10.6 in	36.76 m	120 ft 7.2 in	31.53 m	103 ft 5.3 in	47.90 m	157 ft 1.8 in
45˚	25.91 m	85 ft 0.1 in	22.77 m	74 ft 8.5 in	19.85 m	65 ft 1.5 in	11.86 m	38 ft 10.9 in	33.74 m	110 ft 8.3 in	29.30 m	96 ft 1.5 in	42.61 m	139 ft 9.6 in
50˚	24.40 m	80 ft 0.6 in	21.04 m	69 ft 0.3 in	17.30 m	56 ft 9.1 in	9.31 m	30 ft 6.5 in	31.22 m	102 ft 5.1 in	27.54 m	90 ft 4.3 in	38.34 m	125 ft 9.4 in
55˚	23.26 m	76 ft 3.7 in	10.70 m	35 ft 1.3 in	15.10 m	49 ft 6.5 in	7.11 m	23 ft 3.9 in	29.05 m	95 ft 3.7 in	26.12 m	85 ft 8.3 in	34.80 m	114 ft 2.1 in
60˚	22.39 m	73 ft 5.5 in	18.65 m	61 ft 2.3 in	13.15 m	43 ft 1.7 in	5.16 m	16 ft 11.1 in	27.13 m	89 ft 0.1 in	24.97 m	81 ft 11.1 in	31.80 m	104 ft 4.0 in
65˚	21.71 m	71 ft 2.7 in	17.84 m	58 ft 6.4 in	11.39 m	37 ft 4.4 in	3.40 m	11 ft 1.9 in	25.39 m	83 ft 3.6 in	24.02 m	78 ft 9.7 in	29.22 m	95 ft 10.4 in
70˚	21.21 m	69 ft 7.0 in	17.22 m	56 ft 6.0 in	9.76 m	32 ft 0.3 in	1.77 m	5 ft 9.7 in	23.80 m	78 ft 1.0 in	23.22 m	76 ft 2.2 in	26.98 m	88 ft 6.2 in
76˚	20.78 m	68 ft 2.1 in	16.69 m	54 ft 9.1 in	7.95 m	26 ft 1.0 in	0.04 m	0 ft 1.6 in	22.02 m	72 ft 2.9 in	22.44 m	73 ft 7.5 in	24.63 m	80 ft 9.7 in

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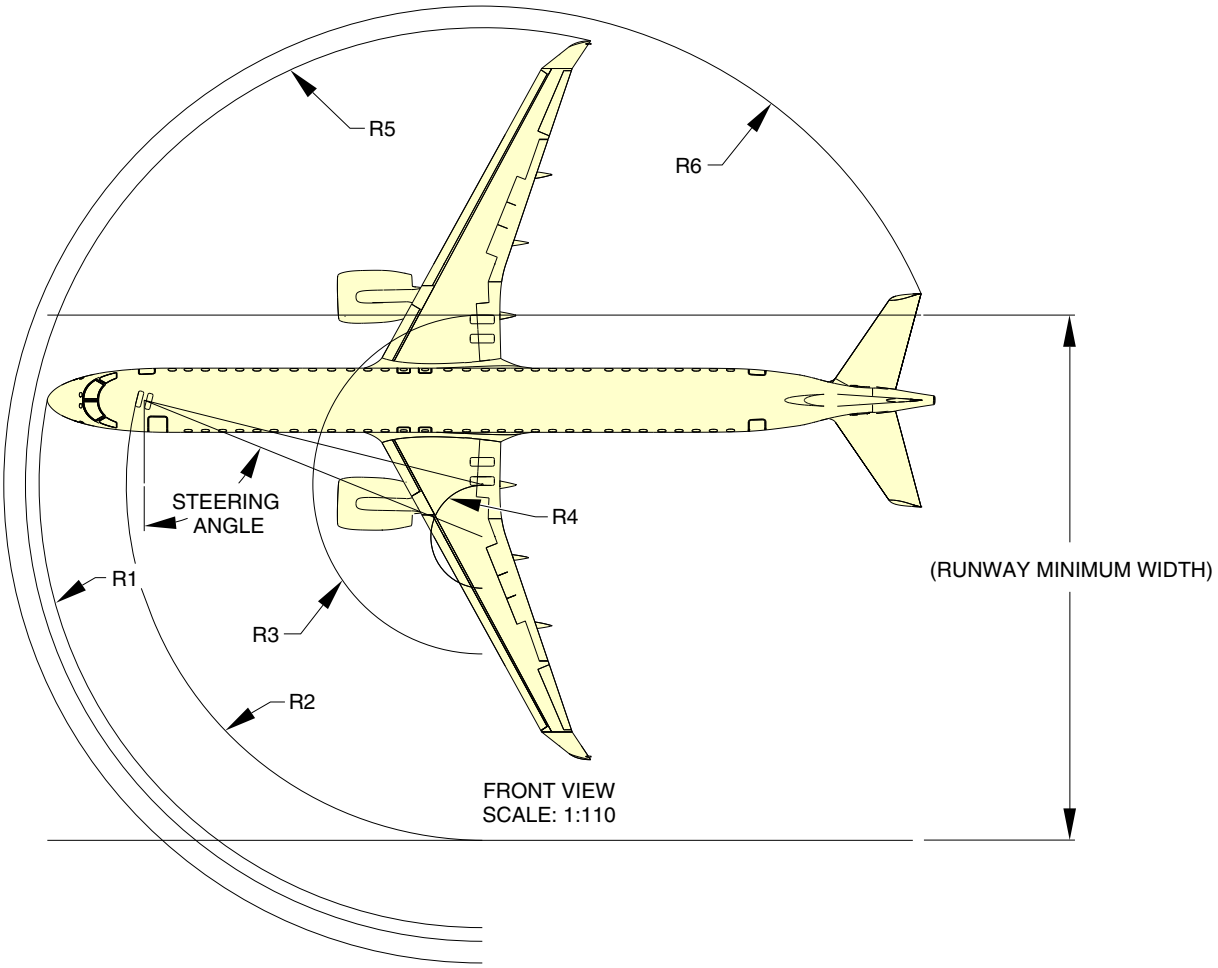
EFFECTIVITY: EMBRAER 195-E2 ACFT
Minimum Turning Radius
Figure 4.4



NOTE:
ACTUAL OPERATING DATA MAY BE GREATER THAN VALUES SHOWN
SINCE TIRE SLIPPAGE IS NOT CONSIDERED IN THESE CALCULATIONS.

STEERING STEEL	NOSE		NOSE GEAR		OUTBOARD GEAR		INBOARD GEAR		RIGHT WINGLET		RIGHT TAIL TIP		RUNWAY WIDTH	
	R1		R2		R3		R4		R5		R6			
76°	20.78 m	68 ft 2.1 in	16.69 m	54 ft 9.1 in	7.95 m	26 ft 1.0 in	0.04 m	0 ft 1.6 in	22.02 m	72 ft 2.9 in	22.44 m	73 ft 7.5 in	24.63 m	80 ft 9.7 in

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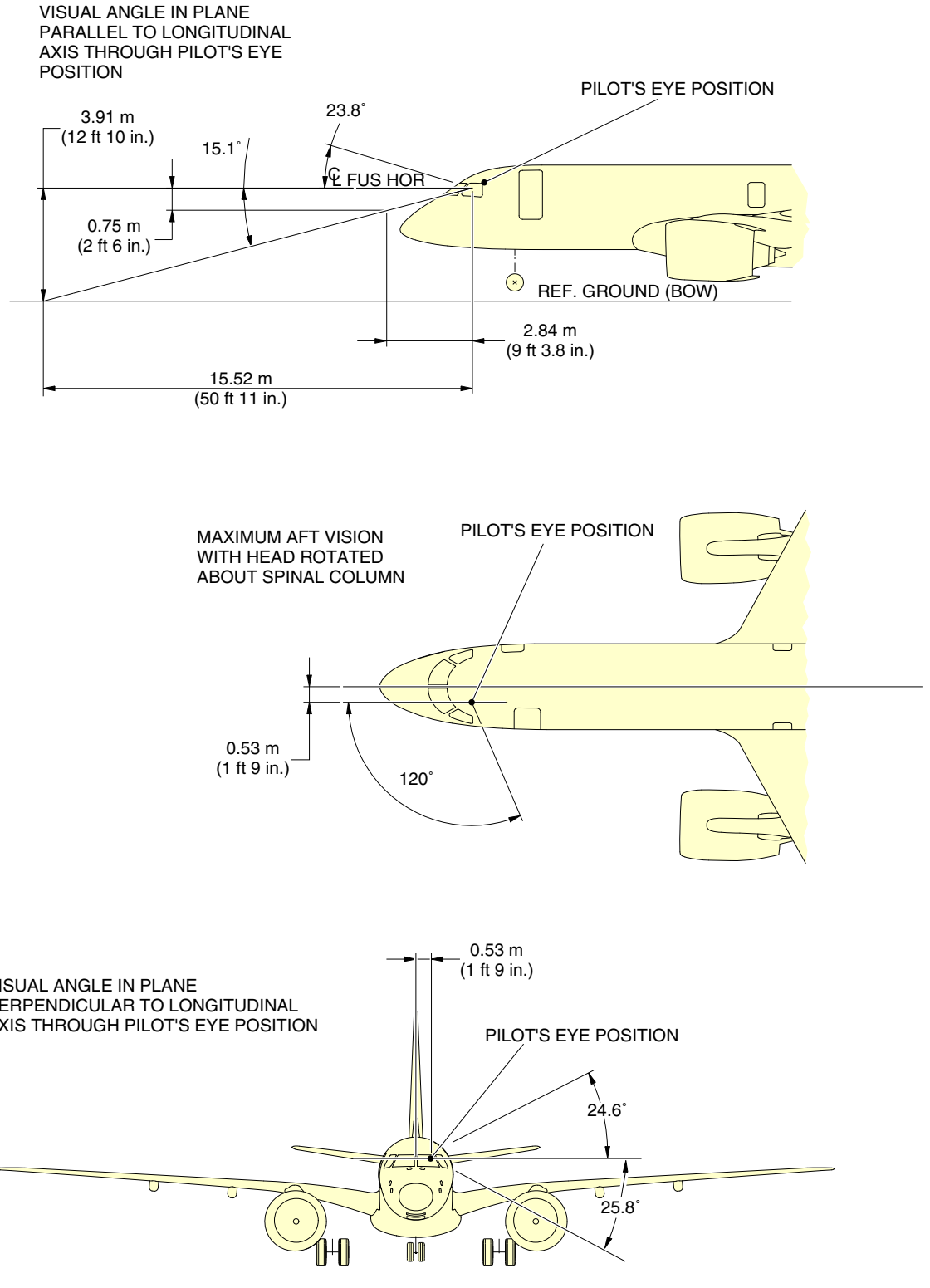
4.4. VISIBILITY FROM COCKPIT

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Visibility from Cockpit in Static Position

Figure 4.5



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4.5. RUNWAY AND TAXIWAY DIMENSIONS

To determine the minimum dimensions for runway and taxiway where the aircraft can be operated, the reference code of the aircraft must be determined.

The reference code of a specific aircraft is obtained in accordance with the Aerodrome Design and Operations - Volume 1, by the ICAO.

The code is composed of two elements which are related to the aircraft performance characteristics and dimensions:

- Element 1 is a number based on the aircraft reference field length;
- Element 2 is a letter based on the aircraft wingspan and outer main landing gear wheel span.

The table below shows the reference codes:

Table 4.1 - Reference Codes

CODE ELEMENT 1		CODE ELEMENT 2		
CODE NUMBER	**AIRCRAFT REFERENCE FIELD LENGTH**	**CODE LETTER**	**WING SPAN**	**OUTER MAIN LANDING GEAR WHEEL SPAN**
1	less than 800 m (2624 ft 8 in)	A	Up to 15 m (49 ft 3 in)	Up to 4.5 m (14 ft 9 in)
2	800 m (2624 ft 8 in) up to 1200 m (3937 ft)	B	15 m (49 ft 3 in) to 24 m (78 ft 9 in)	4.5 m (14 ft 9 in) to 6 m (19 ft 8 in)
3	1200 m (3937 ft) up to 1800 m (5905 ft 6 in)	C	24 m (78 ft 9 in) to 36 m (118 ft 1 in)	6 m (19 ft 8 in) to 9 m (29 ft 6 in)
4	1800 m (5905 ft 6 in) and over	D	36 m (118 ft 1 in) to 52 m (170 ft 7 in)	9 m (29 ft 6 in) to 14 m (45 ft 11 in)
5	–	E	52 m (170 ft 7 in) to 65 m (213 ft 3 in)	9 m (29 ft 6 in) to 14 m (45 ft 11 in)

In accordance with the table, the reference code for the EMBRAER 190-300 and 190-400 models is 3C.

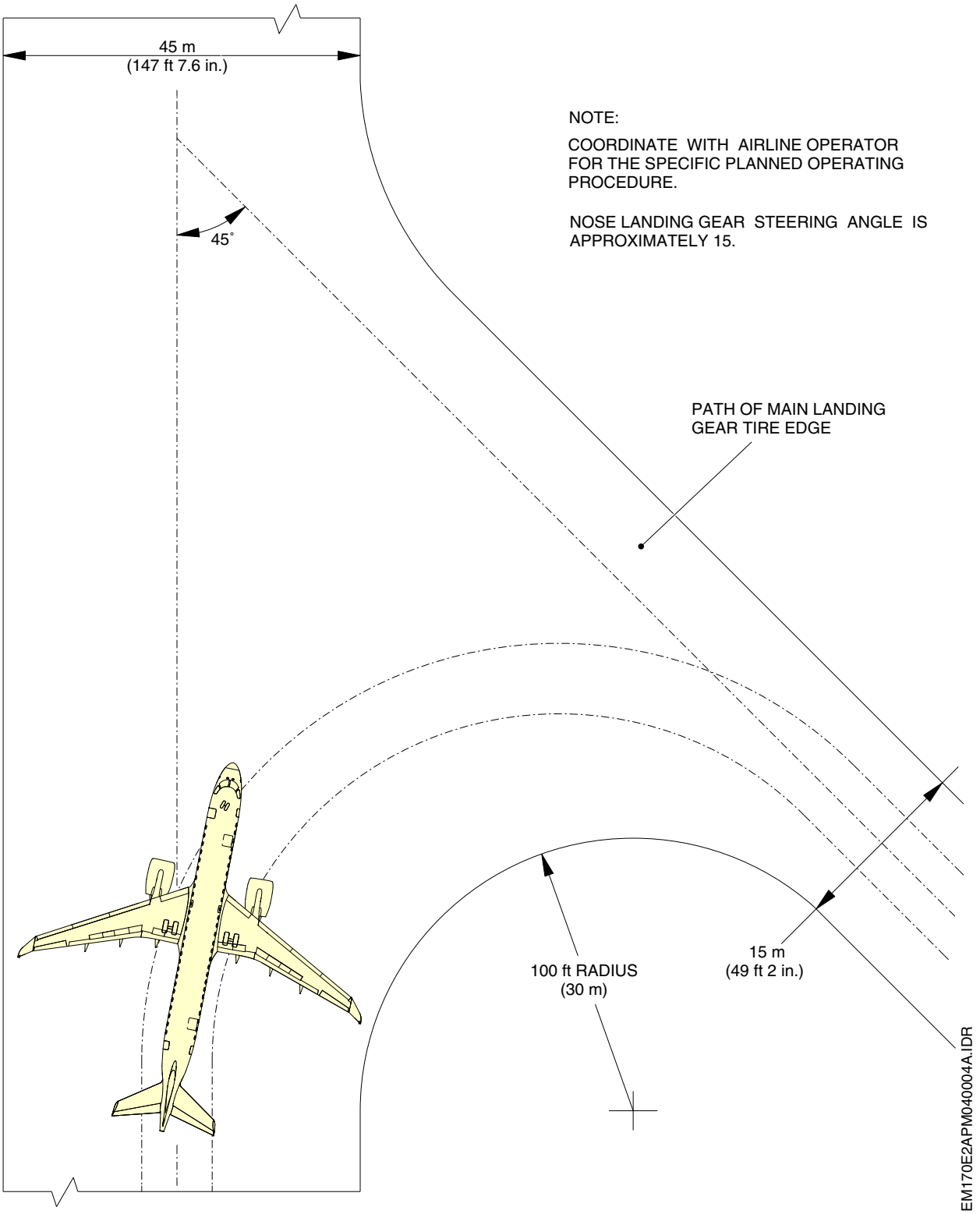
With the reference code, it is possible to obtain the limits of the runway and taxiway where the aircraft can be operated. For reference code 3C the limits are:

- The width of a runway should not be less than 30 m (98 ft 5 in);
- The width of a taxiway should not be less than 15 m (49 ft 2 in);
- The design of the curve in a taxiway should be such that, when the cockpit is on the taxiway centerline marking, the clearance distance between the outer main landing gear wheels of the aircraft and the edge of the taxiway should not be less than 3 m (9 ft 10 in);
- The clearance between a parked aircraft and one moving along the taxiway in a holding bay should not be less than 15 m (49 ft 2 in).

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

More than 90° Turn - Runway to Taxiway

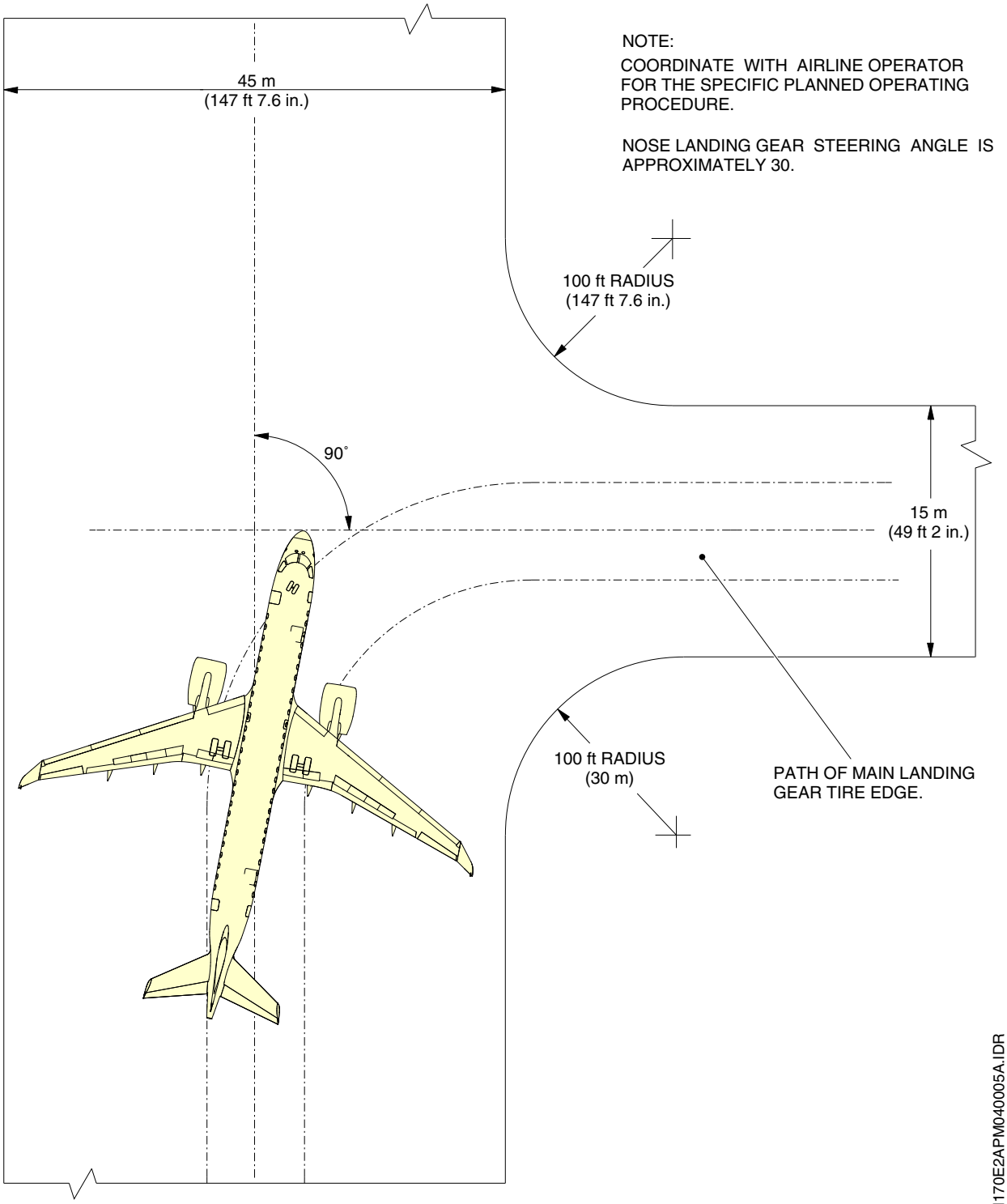
Figure 4.6



EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

90° Turn - Runway to Taxiway

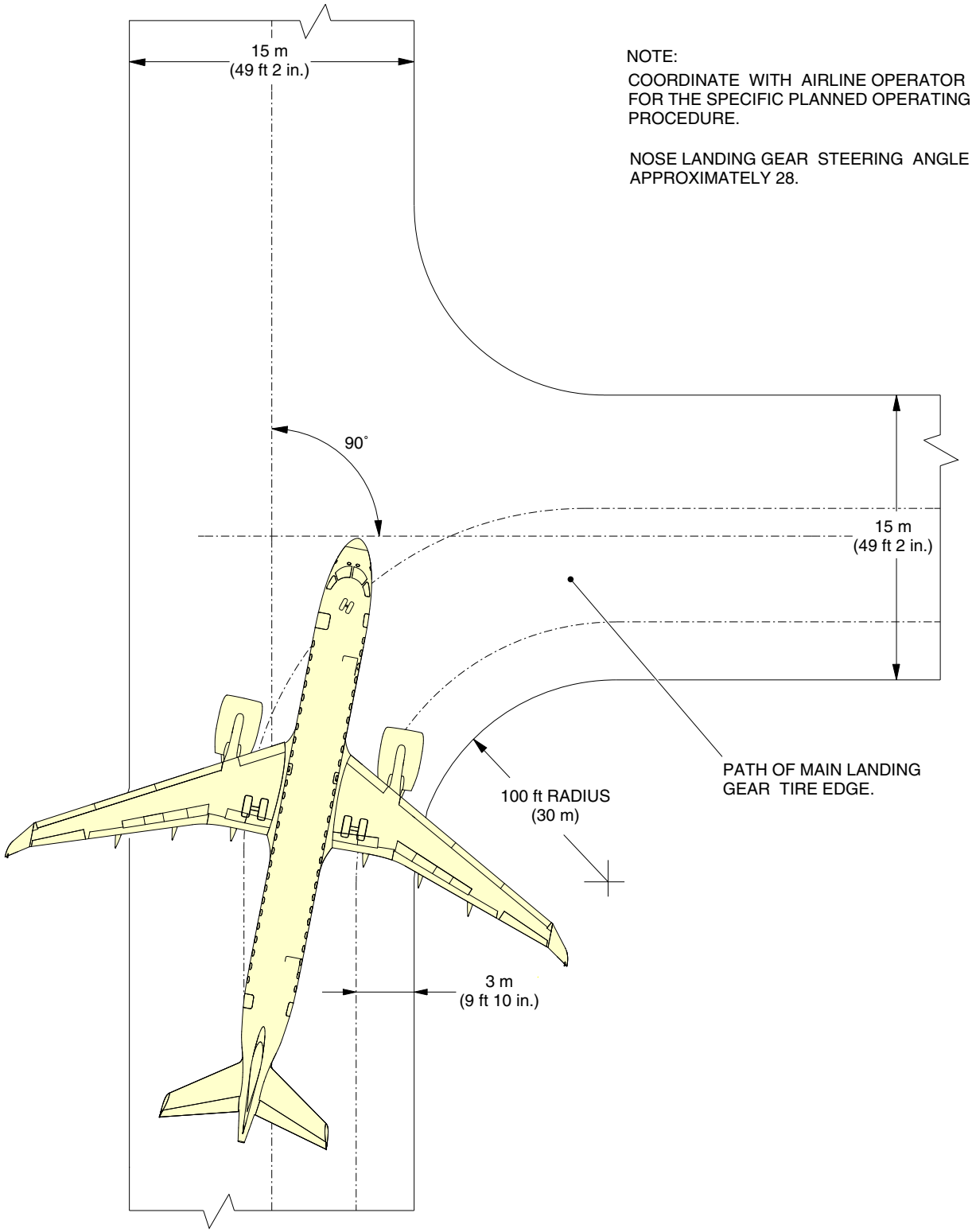
Figure 4.7



EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

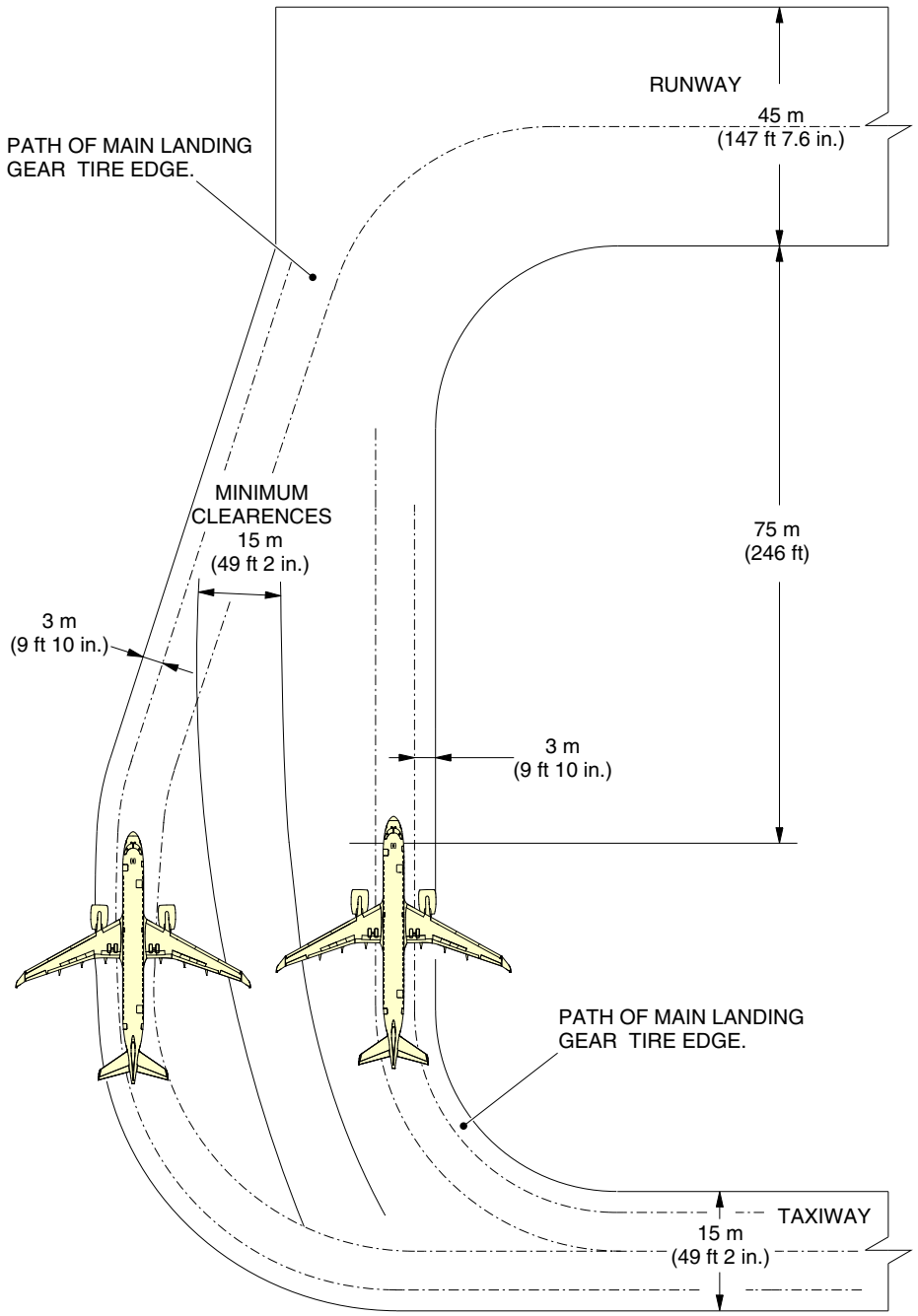
90° Turn - Taxiway to Taxiway

Figure 4.8



4.6. **RUNWAY HOLDING APRON**

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT
Runway Holding Bay
Figure 4.9



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4.7. RESCUE AND FIREFIGHTING SERVICES CATEGORY

The aerodrome category for rescue and firefighting services required for the operation of a given aircraft is determined by the ICAO Annex 14 Volume 1, based on its overall length and maximum fuselage width.

The aerodrome category for E2 190 aircraft is 6.

The aerodrome category for E2 195 aircraft is 7.

5. TERMINAL SERVICING

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

5.1. GENERAL INFORMATION

During turnaround at the air terminal, certain services must be performed on the aircraft, usually within a given time to meet flight schedules. This section shows service vehicle arrangements, schedules, locations of servicing points, and typical servicing requirements. The data presented herein reflects ideal conditions for a single aircraft. Servicing requirements may vary according to the aircraft condition and airline operational (servicing) procedures.

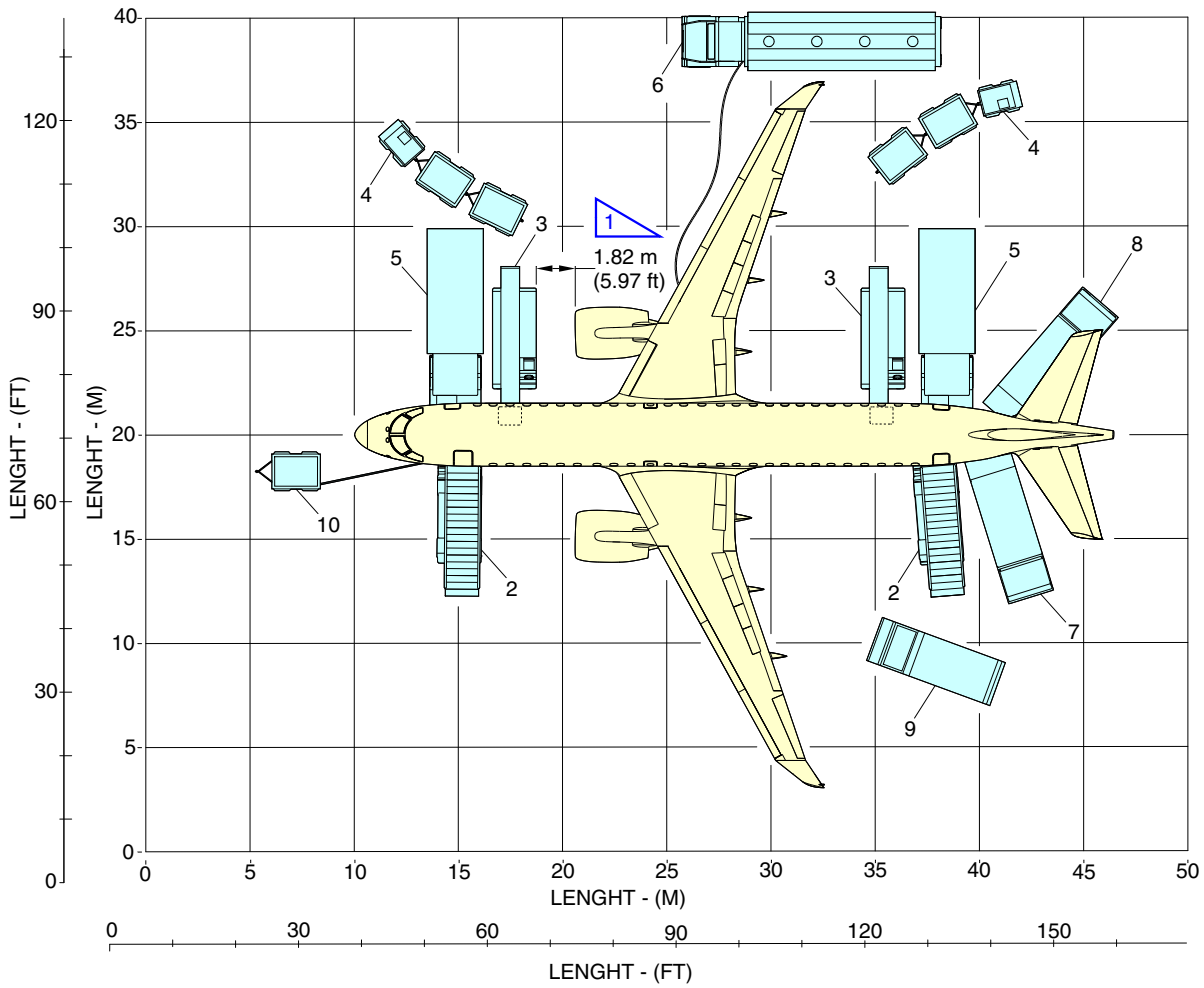
This section provides the following information:

- The typical arrangements of equipment during turnaround;
- The typical turnaround servicing time at an air terminal;
- The locations of ground servicing connections in graphic and tabular forms;
- The typical sea level air pressure and flow requirements for starting the engine;
- The air conditioning requirements;
- The ground towing requirements for various towing conditions. Towbar pull and total traction wheel load may be determined by considering aircraft weight, pavement slope, coefficient of friction, and engine idle thrust.

5.2. AIRCRAFT SERVICING ARRANGEMENT

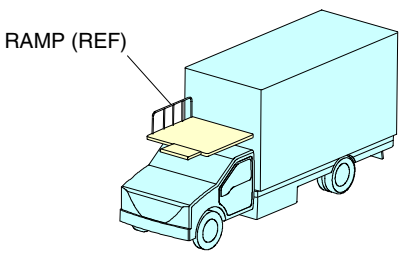
EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Aircraft Servicing Arrangement With Passenger Stairs
Figure 5.1



SERVICING ARRANGEMENT

2 - PASSENGER STAIR
3 - BAGGAGE LOADER
4 - BAGGAGE CARGO
5 - GALLEY SERVICE ADJUSTABLE RAMP
6 - FUEL SERVICE
7 - POTABLE WATER
8 - LAVATORY SERVICE
9 - CLEANING SERVICE
10 - GPU (GROUND POWER UNIT)



5 - GALLEY SERVICE
ADJUSTABLE RAMP

1 FOR SAFE OPERATION, KEEP A MINUMUM DISTANCE OF 0.80 m (2.62 ft)

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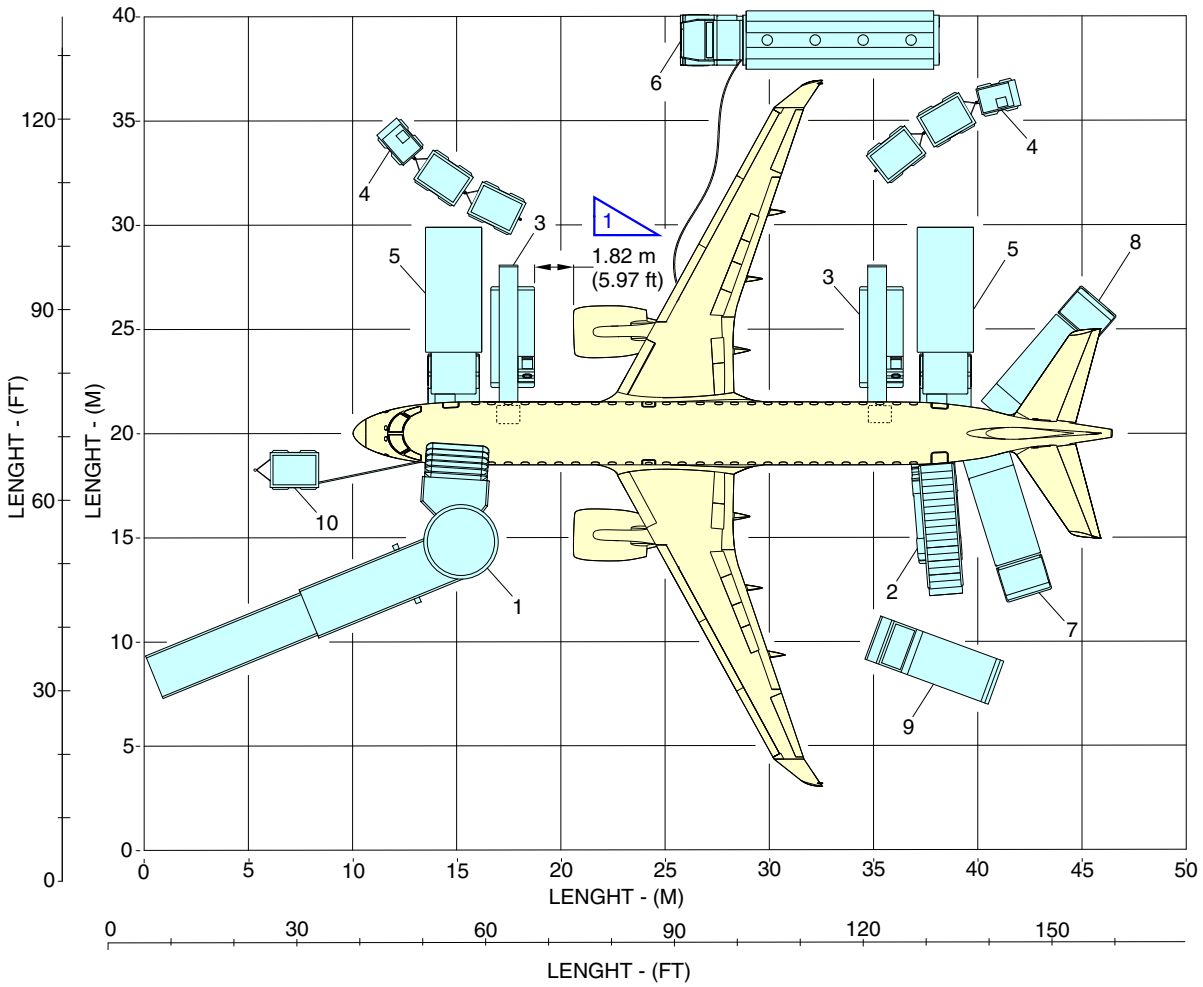
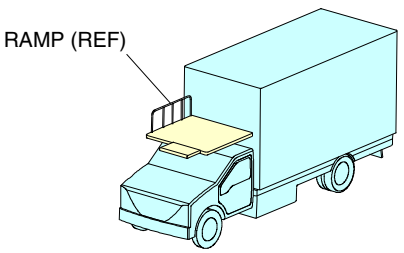
EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Aircraft Servicing Arrangement With Passenger Bridge (Galley Service Adjustable Ramp)
Figure 5.2



SERVICING ARRANGEMENT

1 - PASSENGER BRIDGE
2 - PASSENGER STAIR
3 - BAGGAGE LOADER
4 - BAGGAGE CARGO
5 - GALLEY SERVICE ADJUSTABLE RAMP
6 - FUEL SERVICE
7 - POTABLE WATER
8 - LAVATORY SERVICE
9 - CLEANING SERVICE
10 - GPU (GROUND POWER UNIT)



5 - GALLEY SERVICE
ADJUSTABLE RAMP

1 FOR SAFE OPERATION, KEEP A MINUMUM DISTANCE OF 0.80 m (2.62 ft)

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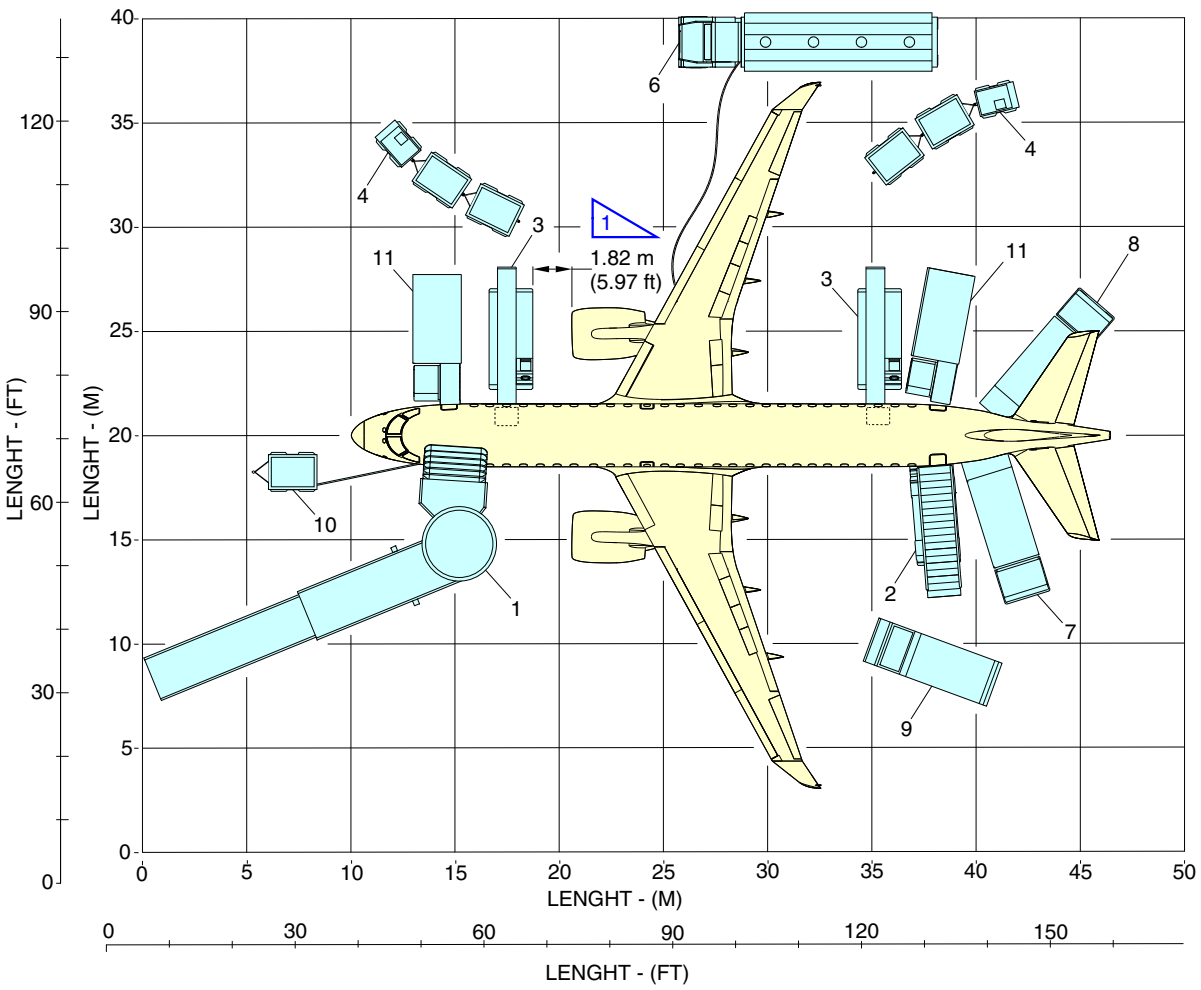
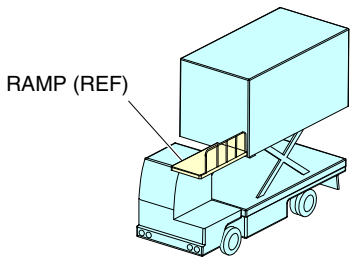
EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Aircraft Servicing Arrangement With Passenger Bridge (Galley Service Adjustable Left Ramp)
Figure 5.3



SERVICING ARRANGEMENT

1 - PASSENGER BRIDGE
2 - PASSENGER STAIR
3 - BAGGAGE LOADER
4 - BAGGAGE CARGO
6 - FUEL SERVICE
7 - POTABLE WATER
8 - LAVATORY SERVICE
9 - CLEANING SERVICE
10 - GPU (GROUND POWER UNIT)
11 - GALLEY SERVICE ADJUSTABLE LEFT RAMP



11 - GALLEY SERVICE
LEFT RAMP

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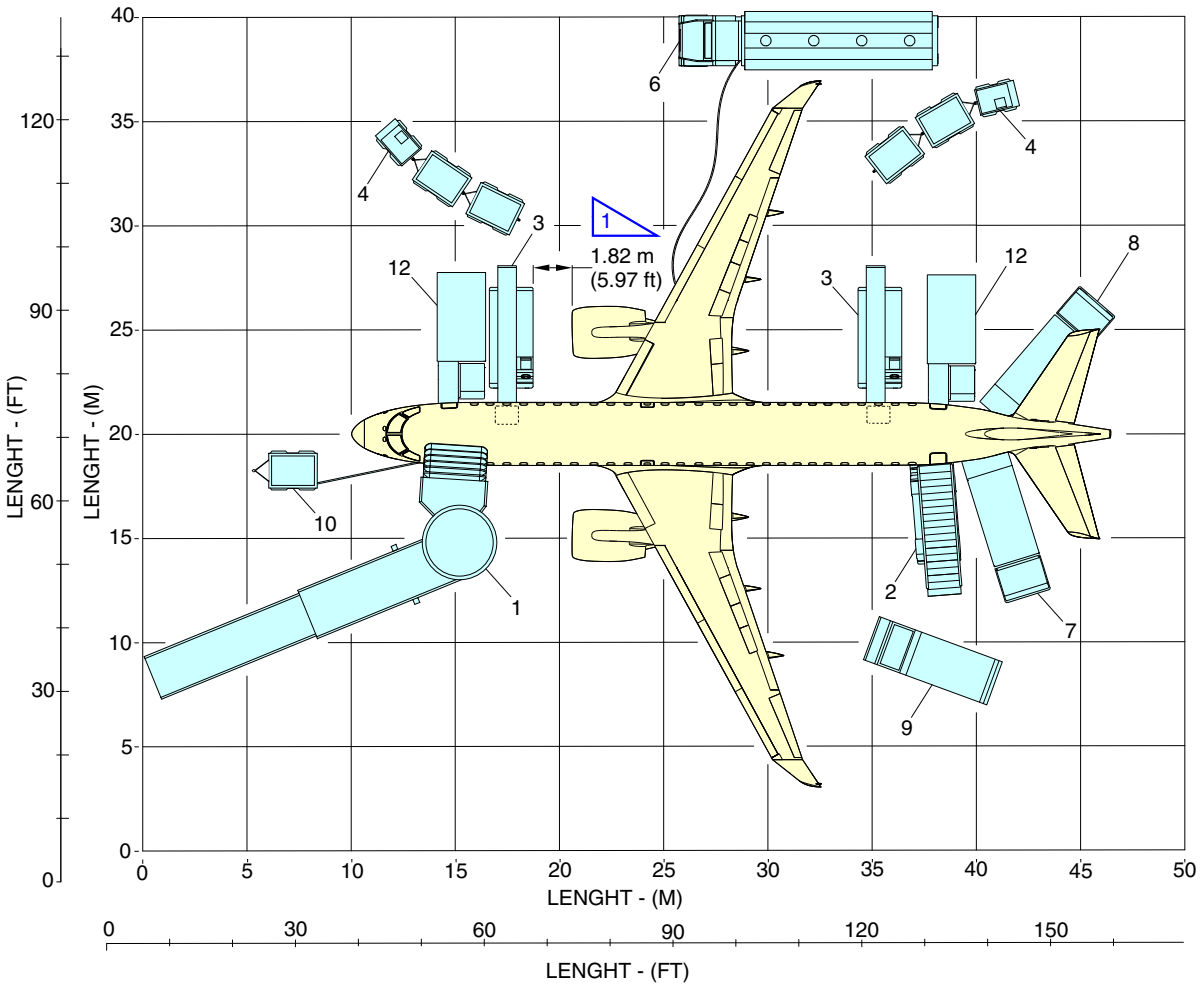
1 FOR SAFE OPERATION, KEEP A MINUMUM DISTANCE OF 0.80 m (2.62 ft)

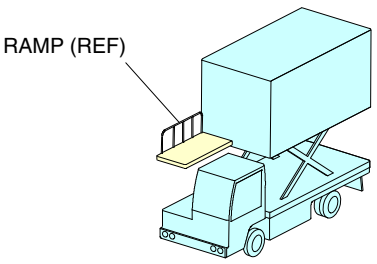
EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Aircraft Servicing Arrangement With Passenger Bridge (Galley Service Adjustable Right Ramp)
Figure 5.4



SERVICING ARRANGEMENT

1 - PASSENGER BRIDGE
2 - PASSENGER STAIR
3 - BAGGAGE LOADER
4 - BAGGAGE CARGO
6 - FUEL SERVICE
7 - POTABLE WATER
8 - LAVATORY SERVICE
9 - CLEANING SERVICE
10 - GPU (GROUND POWER UNIT)
12 - GALLEY SERVICE ADJUSTABLE RIGHT RAMP



12 - GALLEY SERVICE
RIGHT RAMP

1 FOR SAFE OPERATION, KEEP A MINUMUM DISTANCE OF 0.80 m (2.62 ft)

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5.3. TERMINAL OPERATIONS - TURNAROUND STATION

This section presents the typical turnaround servicing time at an air terminal. The chart gives typical schedules for performing servicing on the aircraft within a given time.

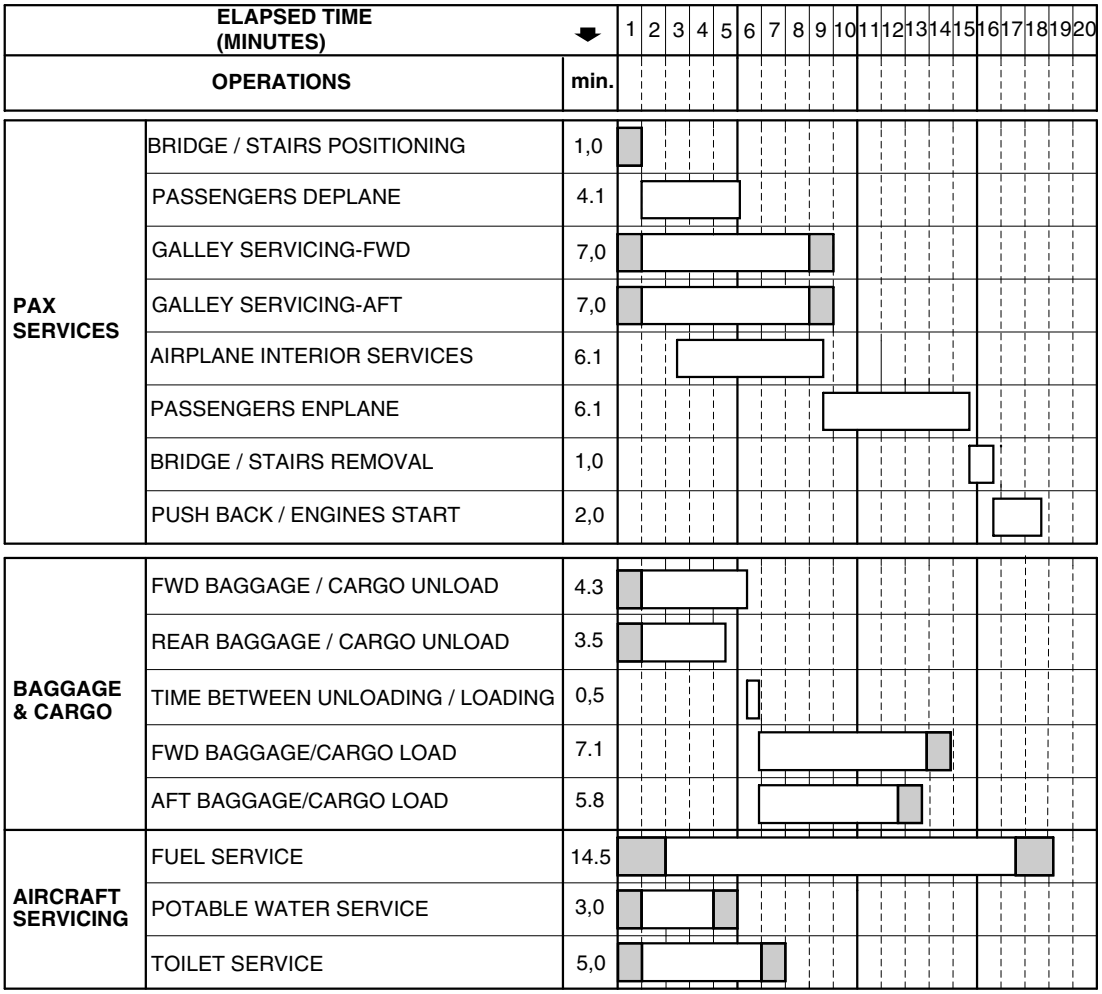
The time of each service in the chart was calculated taking the following into consideration:

- Load factor - 100%;
- Passenger deplane - 24 pax/min;
- Passenger enplane - 16 pax/min;
- Baggages checked per passenger - 1,2;
- Refuel (fuel quantity) - 80%;
- Flow - 290 gpm;
- Potable water - 70% to be refilled (56 ℓ);
- Galley service FWD and aft sequence - in parallel;
- Toilet type - vacuum;
- Baggages unloading/loading FWD/aft sequence - in parallel;
- Only FWD passenger door to be used to deplane and enplane passengers.

Servicing times can be rearranged to suit availability of personnel, aircraft configuration, and degree of servicing required.

The data illustrates the general scope and tasks involving airport terminal operations. Airline-specific practices and operating experience will result in different sequences and intervals.

EFFECTIVITY: EMBRAER 190-E2 ACFT
Air Terminal Operation - Turnaround Station
Figure 5.5



LEGEND:

TRUCK POSITIONING/REMOVAL/SETTINGS

NOTE:
THIS DATA ILUSTRATES THE GENERAL SCOPE AND TASKS INVOLVING AIRPORT TERMINAL OPERATIONS.
AIRLINE PARTICULAR PRACTICES AND OPERATING EXPERIENCE WILL RESULT IN DIFFERENT SEQUENCES AND INTERVALS.

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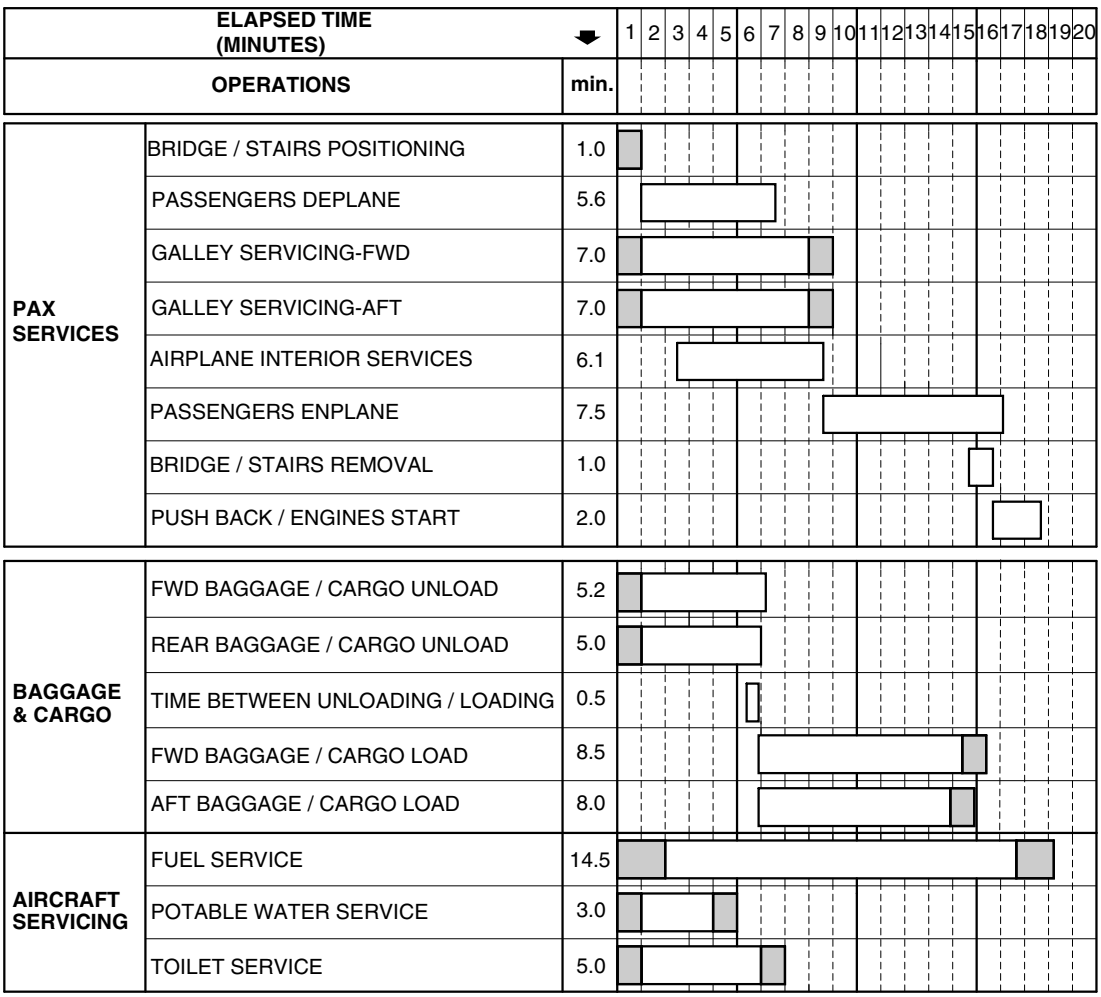
EFFECTIVITY: EMBRAER 195-E2 ACFT
Air Terminal Operation - Turnaround Station
Figure 5.6



LEGEND:

TRUCK POSITIONING / REMOVAL / SETTINGS

NOTE:

THIS DATA ILLUSTRATES THE GENERAL SCOPE AND TASKS INVOLVING AIRPORT TERMINAL OPERATIONS.
AIRLINE PARTICULAR PRACTICES AND OPERATING EXPERIENCE WILL RESULT IN DIFFERENT SEQUENCES AND INTERVALS.

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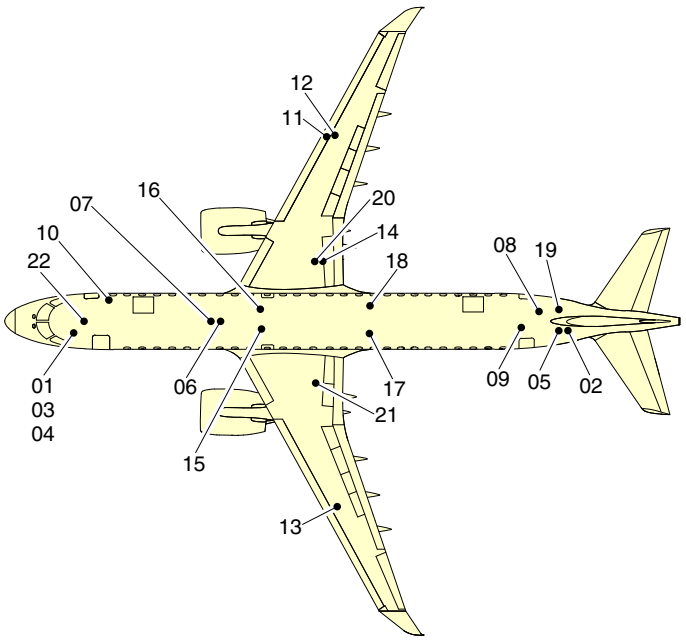
5.4. **TERMINAL OPERATIONS - EN ROUTE STATION**

Not Applicable

5.5. **GROUND SERVICING CONNECTIONS**

EFFECTIVITY: EMBRAER 190-E2 ACFT
Ground Servicing Connections
Figure 5.7



ITEM	DESCRIPTION	HEIGHT ABOVE GROUND (mm)
1	FWD RAMP HEADSET	1944
2	REAR RAMP HEADSET	3092
3	STEERING DISCONNECT SWITCH	830
4	EXTERNAL POWER SUPPLY 115 VAC	1935
5	EXTERNAL POWER SUPPLY 28 VDC	3065
6	ENGINE AIR STARTING	1370
7	AIR CONDITIONING LOW PRESSURE	1373
8	WASTE SERVICING PANEL	2660
9	POTABLE WATER SERVICING PANEL	2680
10	OXYGEN REFILL / REPLACE BOTTLE	2411
11	PRESSURE REFUELING / DEFUELING	3250
12	RIGHT GRAVITY FUEL PORT	3460
13	LEFT GRAVITY FUEL PORT	3460
14	GROUNDING POINT (RIGHT MLG)	1976
15	LEFT FUEL DRAIN VALVE	1825
16	RIGHT FUEL DRAIN VALVE	1825
17	HYDRAULIC SYS 1 SERVICING PANEL	1816
18	HYDRAULIC SYS 2 SERVICING PANEL	1816
19	HYDRAULIC SYS 3 SERVICING PANEL	3614
20	RIGHT MLG WHEEL JACKING POINT	522
21	LEFT MLG WHEEL JACKING POINT	522
22	NLG WHEEL JACKING POINT	280

NOTE:

THE GROUND CLEARANCES IN THE TABLE REFER TO THE AIRCRAFT WITH THE MINIMUM OPERATING WEIGHT (MOW), CGF, 20 ˚C.

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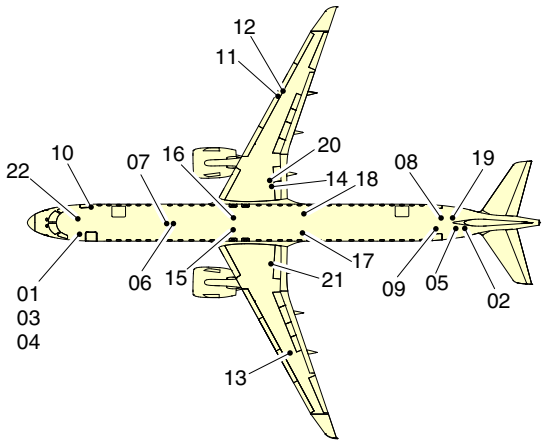
EFFECTIVITY: EMBRAER 195-E2 ACFT
Ground Servicing Connections
Figure 5.8



ITEM	DESCRIPTION	HEIGHT ABOVE GROUND (mm)
1	FWD RAMP HEADSET	1944
2	REAR RAMP HEADSET	3161
3	STEERING DISCONNECT SWITCH	944
4	EXTERNAL POWER SUPPLY 115 VAC	1935
5	EXTERNAL POWER SUPPLY 28 VDC	3142
6	ENGINE AIR STARTING	1201
7	AIR CONDITIONING LOW PRESSURE	1433
8	WASTE SERVICING PANEL	2644
9	POTABLE WATER SERVICING PANEL	2455
10	OXYGEN REFILL / REPLACE BOTTLE	2376
11	PRESSURE REFUELING / DEFUELING	3240
12	RIGHT GRAVITY FUEL PORT	3499
13	LEFT GRAVITY FUEL PORT	3499
14	GROUNDING POINT (RIGHT MLG)	2007
15	LEFT FUEL DRAIN VALVE	1862
16	RIGHT FUEL DRAIN VALVE	1862
17	HYDRAULIC SYS 1 SERVICING PANEL-197DL	1847
	HYDRAULIC SYS 1 SERVICING PANEL-197FL	2416
18	HYDRAULIC SYS 2 SERVICING PANEL-198DR	1817
	HYDRAULIC SYS 2 SERVICING PANEL-198FR	2392
19	HYDRAULIC SYS 3 SERVICING PANEL-314AR	3177
	HYDRAULIC SYS 3 SERVICING PANEL-314BR	3935
20	RIGHT MLG WHEEL JACKING POINT	522
21	LEFT MLG WHEEL JACKING POINT	522
22	NLG WHEEL JACKING POINT	280

NOTE:

THE GROUND CLEARANCES IN THE TABLE REFER TO THE AIRCRAFT WITH THE MINIMUM OPERATING WEIGHT (MOW), CGF, 20 ˚C.

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5.6. ENGINE STARTING PNEUMATIC REQUIREMENTS

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT
Engine Starting Pneumatic Requirements
Figure 5.9

TABLE 1 - PNEUMATIC ENGINE START REQUIREMENTS

Altitude (ft)	Ambient Temp (˚F)	Minimum Pressure (psia)	Minimum Temp (˚F)	Minimum Flow (lb/min)
SL	-40	48.0	349	95.1
SL	59	43.7	443	82.0
SL	120	40.7	505	73.7
9000	-40	37.7	350	74.5
9000	23	30.0	409	57.3
9000	86	28.9	474	53.4
13,000	-40	36.0	352	71.3
13,000	12	27.2	399	52.2
13,000	71	26.7	458	49.6
15,000	-40	32.9	352	66.6
15,000	5	25.3	392	49.0
15,000	59	24.4	446	46.1

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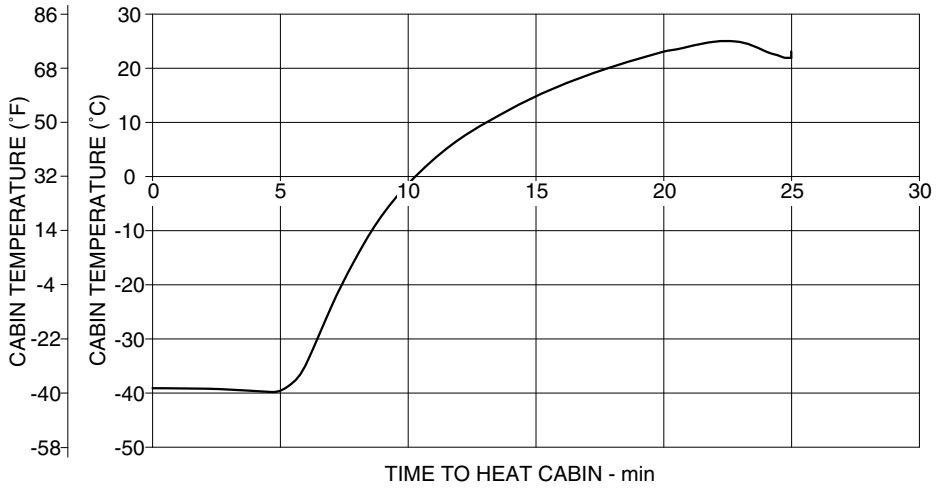
5.7. GROUND PNEUMATIC POWER REQUIREMENTS

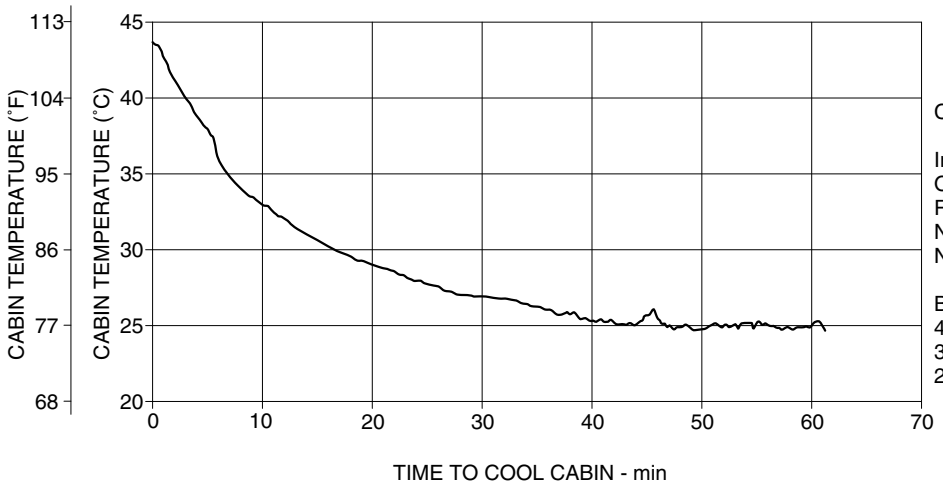
EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT
Ground Pneumatic Power Requirements
Figure 5.10



HEATING

Initial cabin temp: -38˚C (-36.4˚F)
Outside air temp: -45˚C (-49˚F)
Relative Humidity: 16%
No crew or passengers
No other heat load

Bleed air from APU:
90.7 kg/min. (200 lbm/min)
417 kPa (60.5 psia)
2 operating packs (ECS)



COOLING

Initial cabin temp: 43.6˚C (110.48˚F)
Outside air temp: 32˚C (89.6˚F)
Relative Humidity: 36%
No crew or passengers
No other heat load

Bleed air from APU:
48 kg/min (106 lbm/min)
393 kPa (57 psia)
2 operating packs (ECS)

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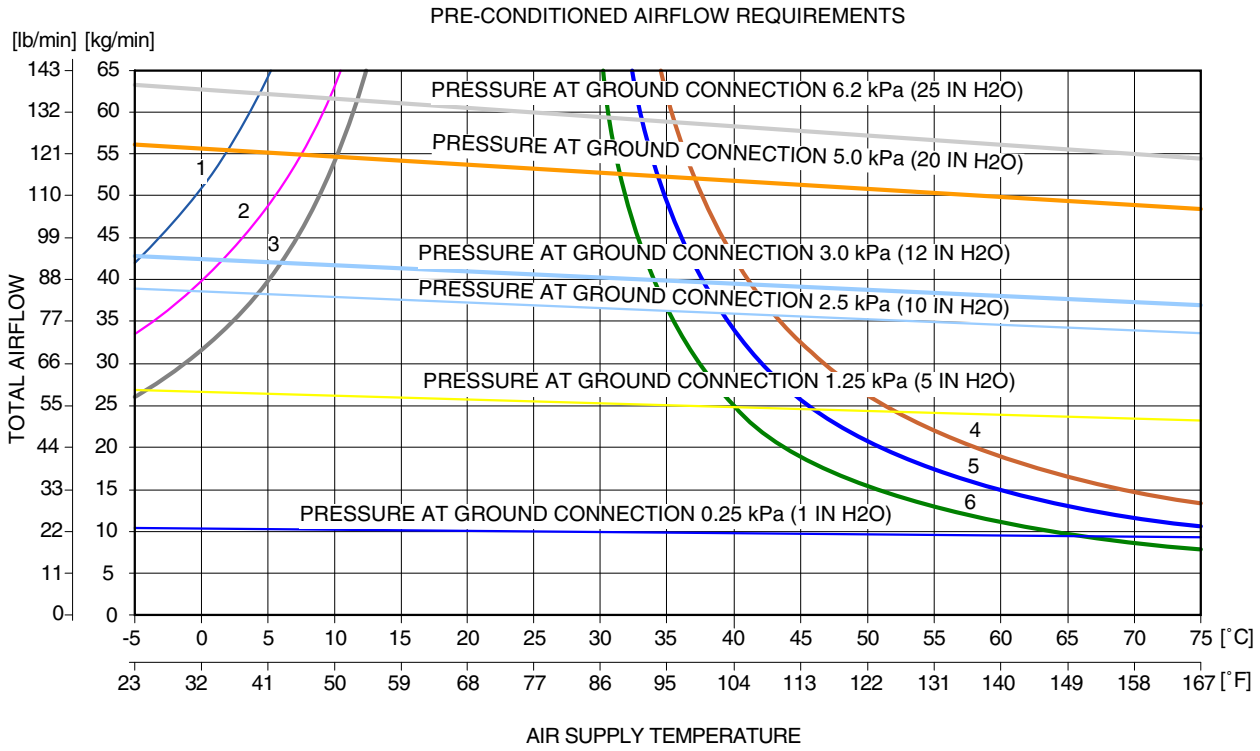
5.8. PRECONDITIONED AIRFLOW REQUIREMENTS

This subsection presents the following information:

- The air conditioning requirements for heating and cooling using ground conditioned air. The curves show airflow requirements to heat or cool the aircraft for the period of time that will be necessary at ambient conditions.
- The air conditioning requirements for heating and cooling to keep a constant cabin air temperature using low-pressure conditioned air. This conditioned air is supplied through a ground connection air directly to the passenger cabin, bypassing the aircraft's air conditioning cooling packs.

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT
Preconditioned Airflow Requirements
Figure 5.11



LEGEND:

- CASE 1 - CABIN AT 24˚C (75.2˚F), 124 OCCUPANTS, BRIGHT DAY (SOLAR IRRADIATION), 39˚C (102.2˚F) DAY.
- CASE 2 - CABIN AT 27˚C (80.6˚F), 124 OCCUPANTS, BRIGHT DAY (SOLAR IRRADIATION), 39˚C (102.2˚F) DAY.
- CASE 3 - CABIN AT 24˚C (75.2˚F), 4 CREW MEMBERS, BRIGHT DAY (SOLAR IRRADIATION), 39˚C (102.2˚F) DAY.
- CASE 4 - CABIN AT 24˚C (75.2˚F), NO CABIN OCCUPANTS, FOUR CREW MEMBERS ONLY, OVERCAST DAY (NO SOLAR IRRADIATION), -40˚C (-40˚F) DAY.
- CASE 5 - CABIN AT 24˚C (75.2˚F), NO CABIN OCCUPANTS, FOUR CREW MEMBERS ONLY, OVERCAST DAY (NO SOLAR IRRADIATION), -29˚C (-20.2˚F) DAY.
- CASE 6 - CABIN AT 24˚C (75.2˚F), NO CABIN OCCUPANTS, FOUR CREW MEMBERS ONLY, OVERCAST DAY (NO SOLAR IRRADIATION), -18˚C (-0.4˚F) DAY.
- STATIC PRESSURE AT GROUND CONNECTION - 0.25 kPa (1 IN H2O)
- STATIC PRESSURE AT GROUND CONNECTION - 1.25 kPa (5 IN H2O)
- STATIC PRESSURE AT GROUND CONNECTION - 2.5 kPa (10 IN H2O)
- STATIC PRESSURE AT GROUND CONNECTION - 3.0 kPa (12 IN H2O)
- STATIC PRESSURE AT GROUND CONNECTION - 5.0 kPa (20 IN H2O)
- STATIC PRESSURE AT GROUND CONNECTION - 6.2 kPa (25 IN H2O)

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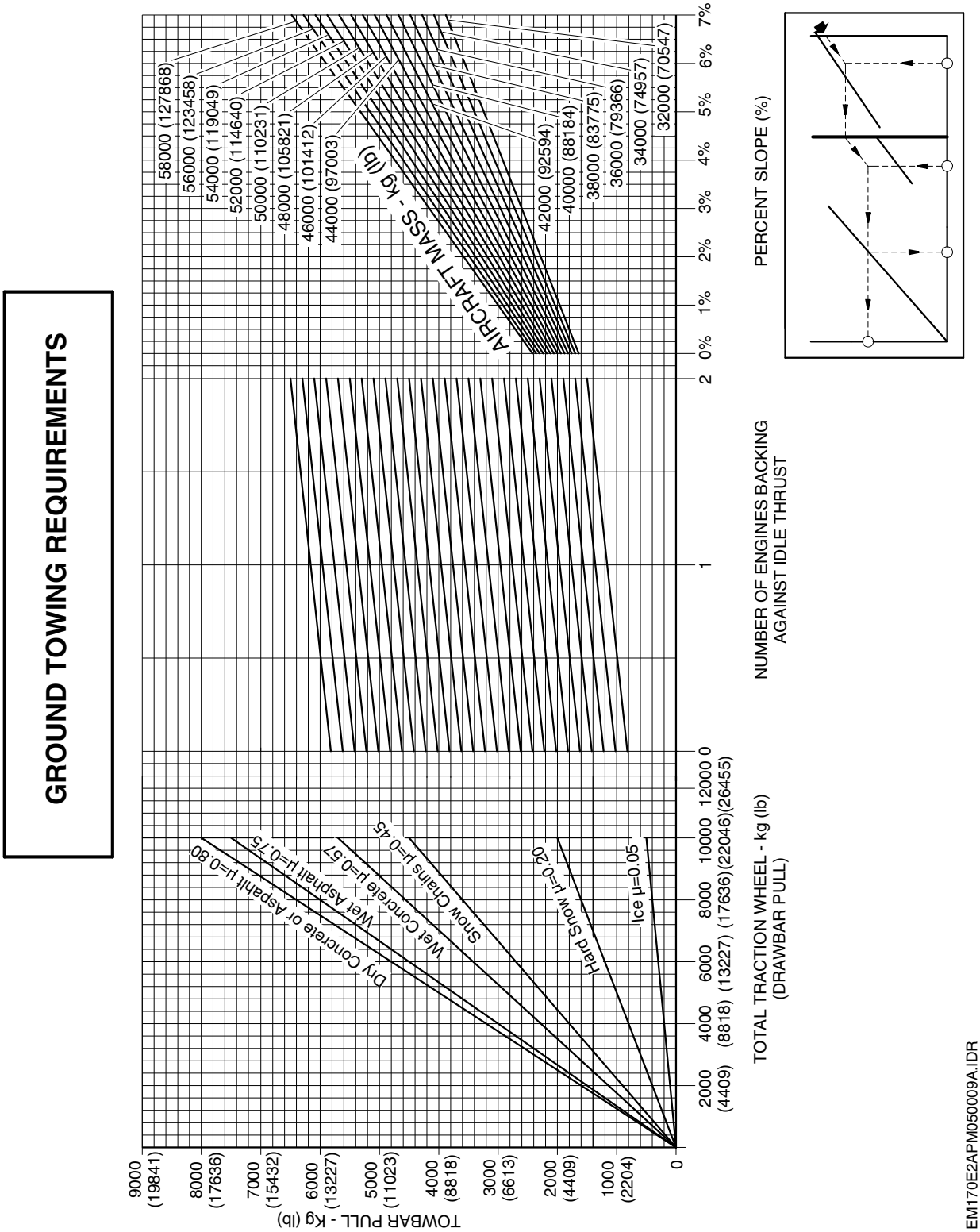
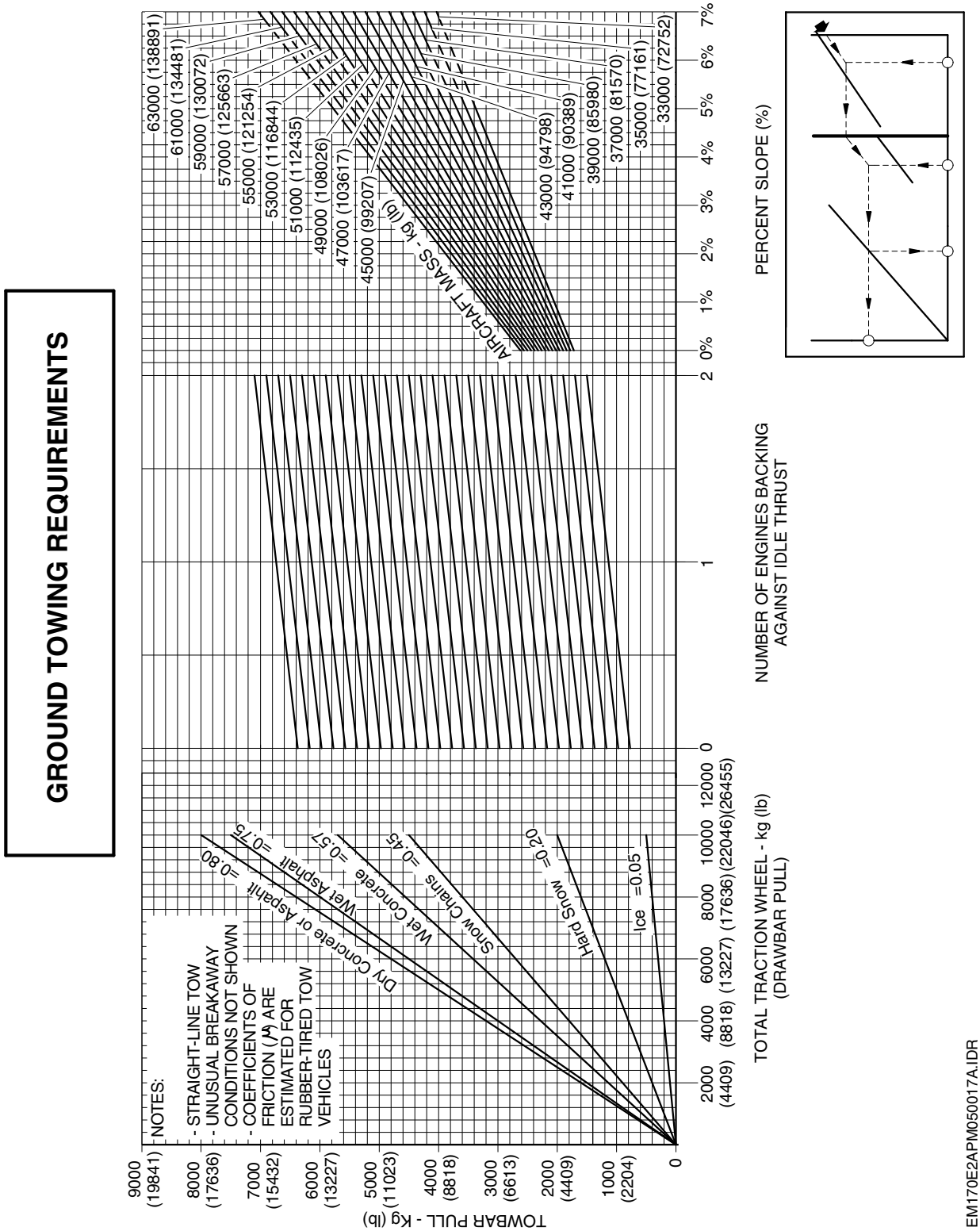
5.9. GROUND TOWING REQUIREMENTS

EFFECTIVITY: EMBRAER 190-E2 ACFT
Ground Towing Requirements
Figure 5.12



EFFECTIVITY: EMBRAER 195-E2 ACFT
Ground Towing Requirements
Figure 5.13



6. OPERATION CONDITIONS

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

6.1. OPERATING CONDITIONS

This section provides the following information:

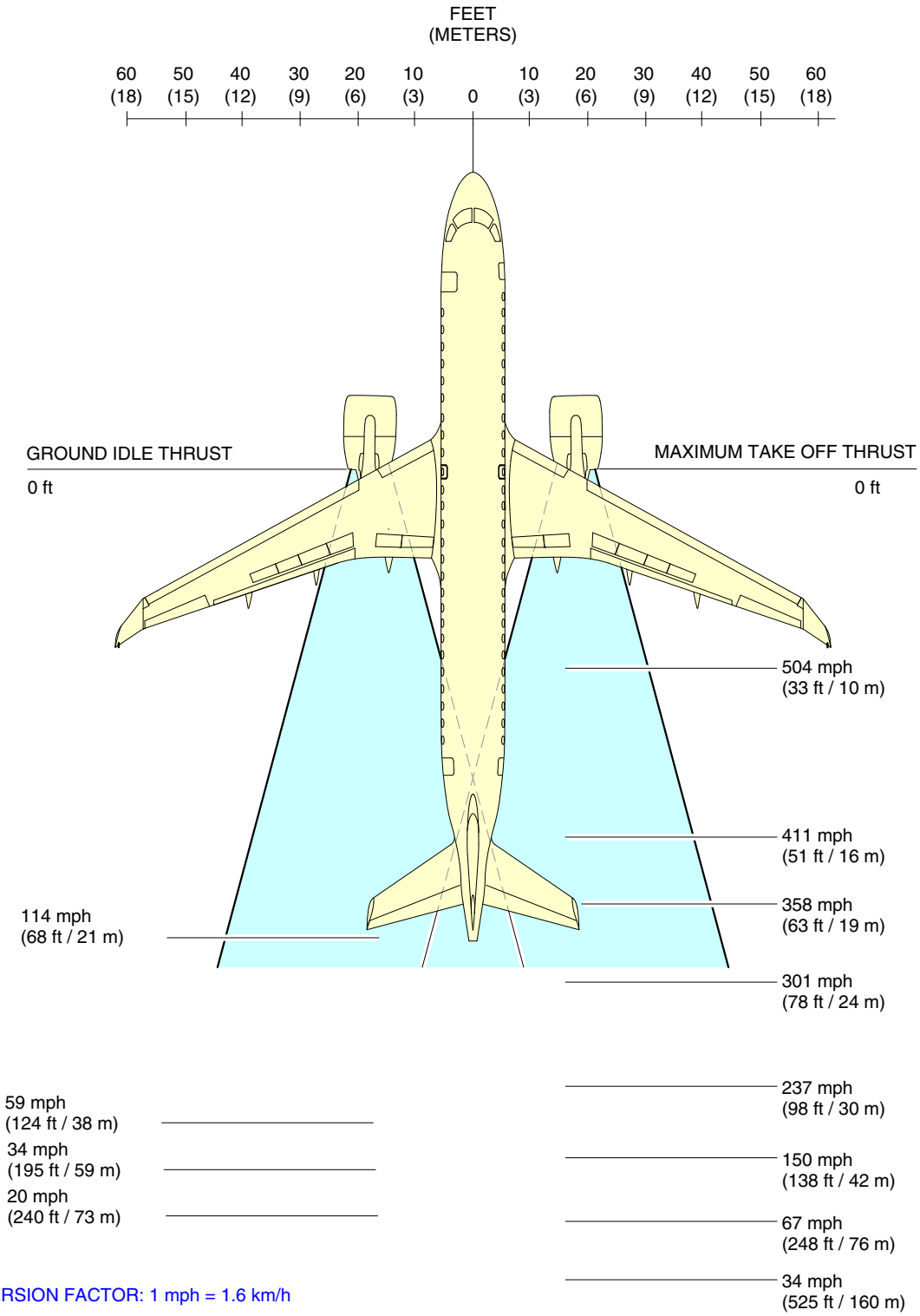
- The jet engine exhaust velocities;
- The airport and community noise levels;
- The hazard areas.
- The breakaway exhaust temperature/velocity plot;

6.2. ENGINE EXHAUST VELOCITIES

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Jet Wake Velocity Profile - Ground Idle and Maximum Takeoff Power

Figure 6.1



NOTE:

CONVERSION FACTOR: 1 mph = 1.6 km/h

6.3. AIRPORT AND COMMUNITY NOISE

Aircraft noise is a major concern for the airport and community planner. The airport is a basic element in the community's transportation system and, thus, is vital to its growth. However, the airport must also be a good neighbor, and this is only possible with proper planning. Since aircraft noise extends beyond the boundaries of the airport, it is vital to consider the noise impact on the surrounding communities.

Many means have been devised to provide the planner with a tool to estimate the impact of airport operations. Too often they oversimplify noise to the point where the results become erroneous. Noise is not a simple matter; therefore, there are no simple answers.

The cumulative noise contour is an effective tool. However, care must be taken to ensure that the contours, used correctly, estimate the noise resulting from aircraft operations conducted at an airport.

The size and shape of the single-event contours, which are inputs into the cumulative noise contours, are dependent upon numerous factors. They include operational factors (aircraft weight, engine power setting, airport altitude), atmospheric conditions (wind, temperature, relative humidity, surface condition), and terrain.

6.3.1. External Certification Noise Levels

The aircraft complies with the following noise certification requirements:

- ANAC RBAC 36 Amendment 28 corresponding to 14 CFR Part 36, incorporating Amendments 36-1 throughout 36-28
- 14 CFR Part 36, Amendment 36-1 to 36-29
- ICAO Annex 16, Volume 1, Chapter 4, Amendment 11-B

6.3.2. Ramp Noise Levels

The aircraft APUoperation complies with the noise limits as defined in ICAO Annex 16, Vol. 1, Chapter 9, Attachment C, sixth edition, effective 17th November 2011.

With the normal operation of APU, environmental control system (ECS), equipment cooling fans and ventilation fans, in any combination, corresponding to outside air temperatures up to 25 °C and with measurement positions as defined in ICAO Annex 16, Vol. 1, Chapter 9, Attachment C, sixth edition, effective 17th November 2011:

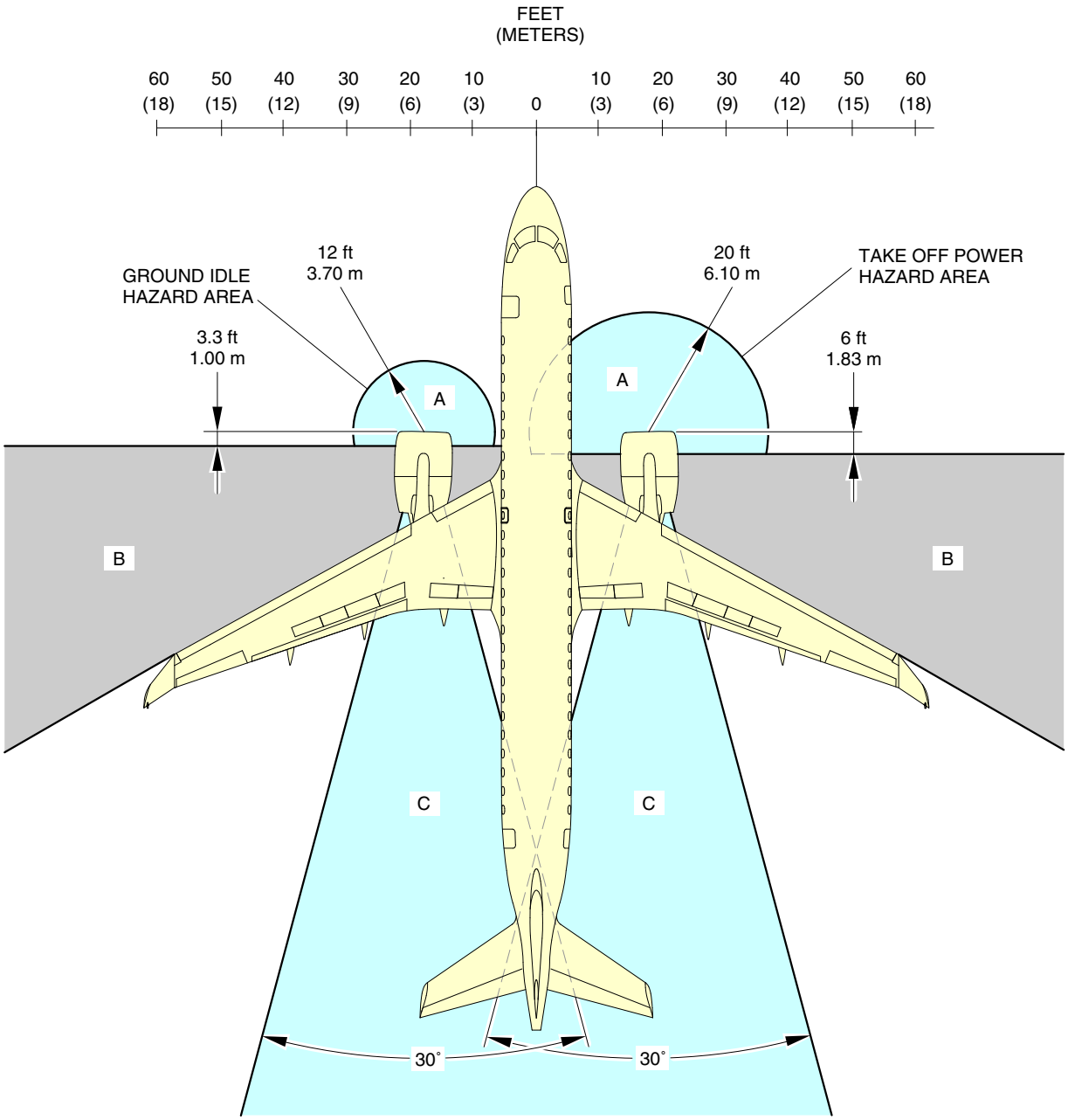
- The A-weighted sound levels at the FWD passenger and FWD service doors must not be more than 75 dBA.
- The A-weighted sound levels at the fuel servicing point, GPU connection point and rear passenger door must not be more than 80 dBA.
- The A-weighted sound levels at the FWD and rear cargo doors, lavatory servicing point and rear service door must not be more than 85 dBA.
- The A-weighted sound levels on a rectangular perimeter 20 meter from the aircraft centerline, nose and tail must not be more than 80 dBA.

6.4. HAZARD AREAS

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Hazard Areas - Ground Idle and Takeoff Power

Figure 6.2



LEGEND:

AREA A - INTAKE SUCTION DANGER AREA

AREA B - ENTRY CORRIDOR

AREA C - EXHAUST DANGER AREA (AFT OF EXHAUST NOZZLE):
240 ft (73.15 m) - GROUND IDLE (20 kt HEADWIND)
550 ft (167.64 m) - TAKE OFF POWER (20 kt HEADWIND)

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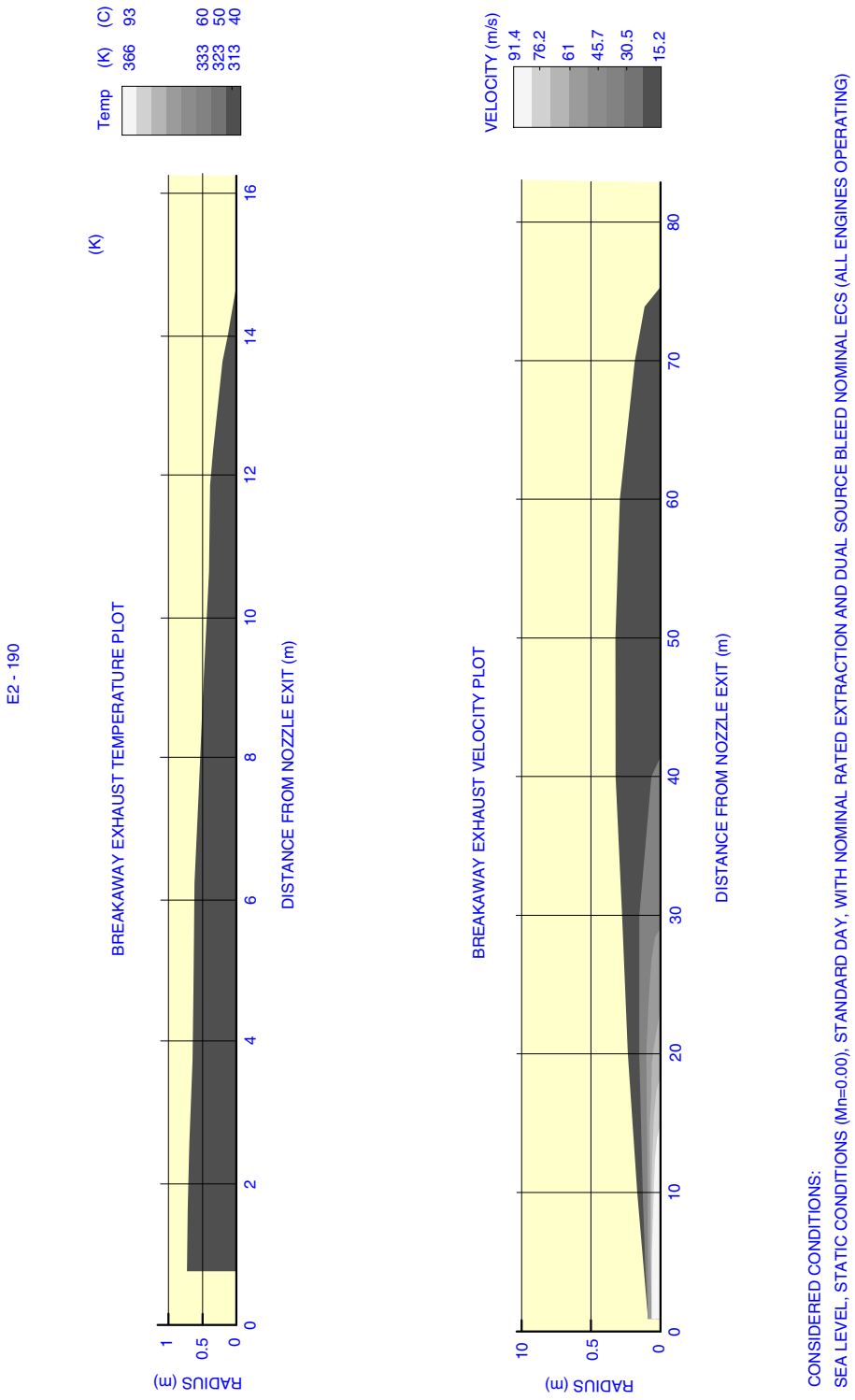
6.5. BREAKAWAY EXHAUST TEMPERATURE/VELOCITY PLOT

EFFECTIVITY: EMBRAER 190-E2 ACFT

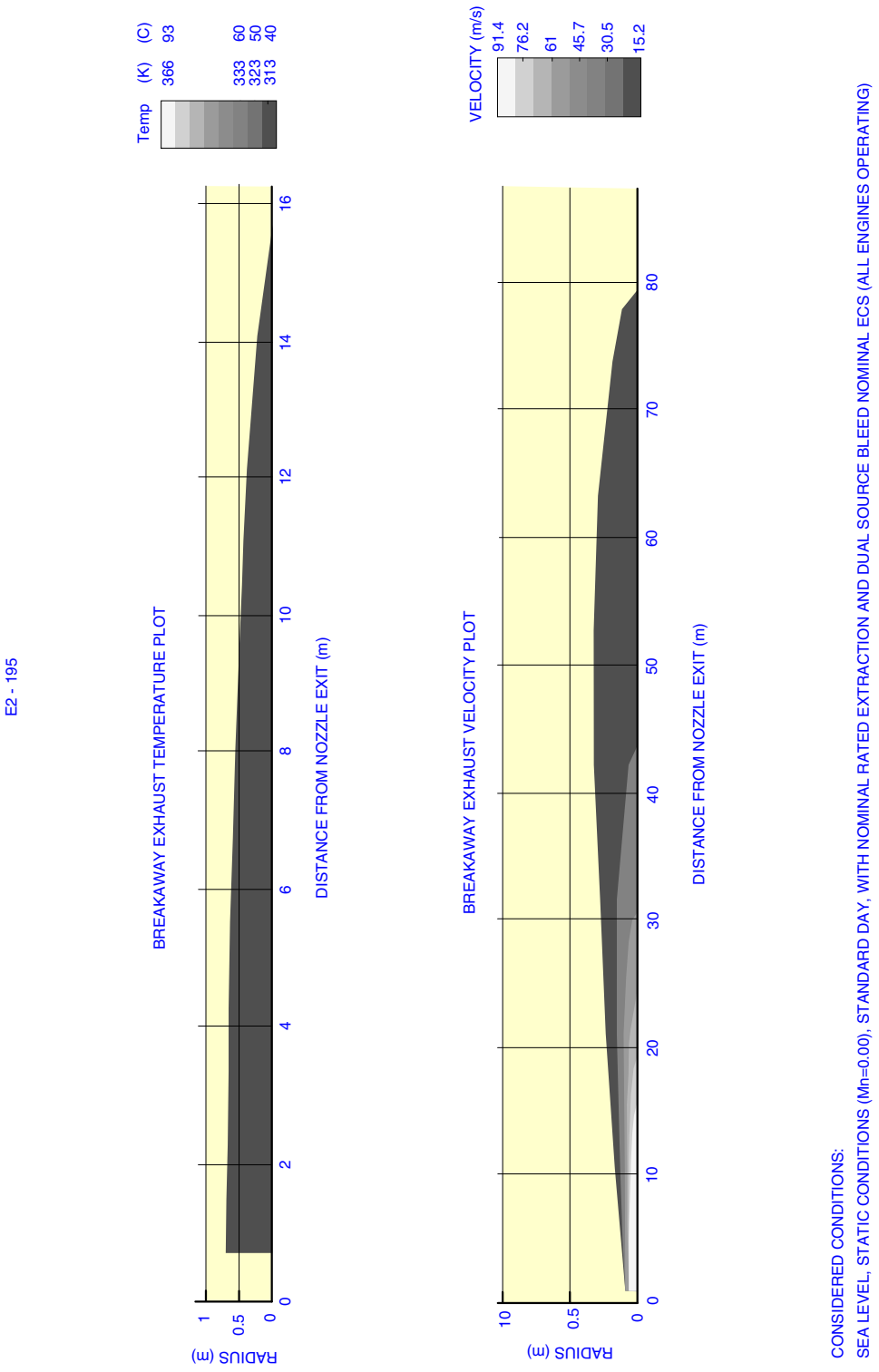
Breakaway Exhaust Temperature/Velocity Plot

Figure 6.3



EFFECTIVITY: EMBRAER 195-E2 ACFT

Breakaway Exhaust Temperature/Velocity Plot
Figure 6.4



7. PAVEMENT DATA

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

7.1. GENERAL INFORMATION

Pavement is defined as a structure which has one or more layers of processed materials.

The primary function of a pavement is to distribute concentrated loads to prevent the supporting capacity of the subgrade soil from being exceeded. The subgrade soil is defined as the material on which the pavement rests, whether it is an embankment or excavation.

Several methods to the airport pavements design, with considerable differences in their approach, have been developed.

The design methods are derived from observation of pavements in service or experimental pavements. Thus, the reliability of any method is proportional to the amount of experimental verification behind the method, and all methods require a considerable amount of common sense and judgment on the part of the engineer who applies them.

A brief description of the following pavement charts will be helpful for their use for airport planning. Each aircraft configuration is depicted with a minimum range of five loads on the main landing gear to help in the interpolation between the discrete values shown. The tire pressure used for the aircraft charts will produce the recommended tire deflection with the aircraft loaded to its maximum ramp weight and with the center of gravity position. The tire pressure, where specifically designated in tables and on charts, are values obtained under loaded conditions as certificated for commercial use.

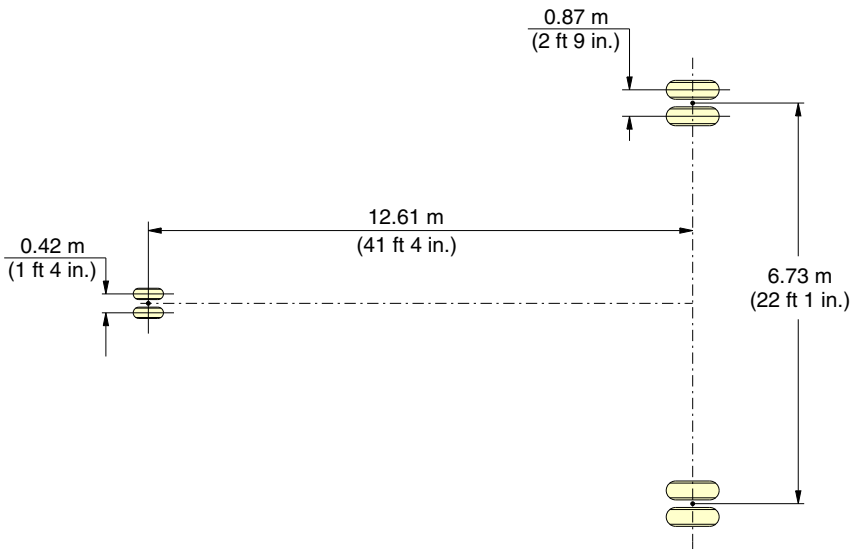
This section provides the information that follows:

- The basic data on the landing gear footprint configuration, maximum design ramp loads, and tire sizes and pressures.
- The maximum pavement loads for certain critical conditions at the tire-ground interfaces.
- A chart to determine the loads throughout the stability limits of the aircraft at rest on the pavement. Pavement requirements for commercial aircraft are generally determined from the static analysis of loads on the main landing gear struts. These main landing gear loads are used in the pavement design charts that follow, interpolating load values where necessary.
- The flexible pavement curves prepared in accordance with the US Army Corps of Engineers Design Method and LCN Method.
- The rigid pavement design curves in accordance with the Portland Cement Association Design Method and LCN Method.
- The aircraft AR values for flexible and rigid pavements.

7.2. FOOTPRINT

EFFECTIVITY: EMBRAER 190-E2 ACFT
Footprint
Figure 7.1

	AIRCRAFT MODEL (ERJ 190-300)
MAXIMUM RAMP WEIGHT	56600 kg (124781 lb)
NOSE GEAR TIRE SIZE	H27X8.5R12 16PR
NOSE GEAR TIRE PRESSURE	1.007 - 1.055 kPa (146 - 153 psi)
MAIN GEAR TIRE SIZE	H42X16.0R20 24PR
MAIN GEAR TIRE PRESSURE	1.082 - 1.131 kPa (157 - 164 psi)



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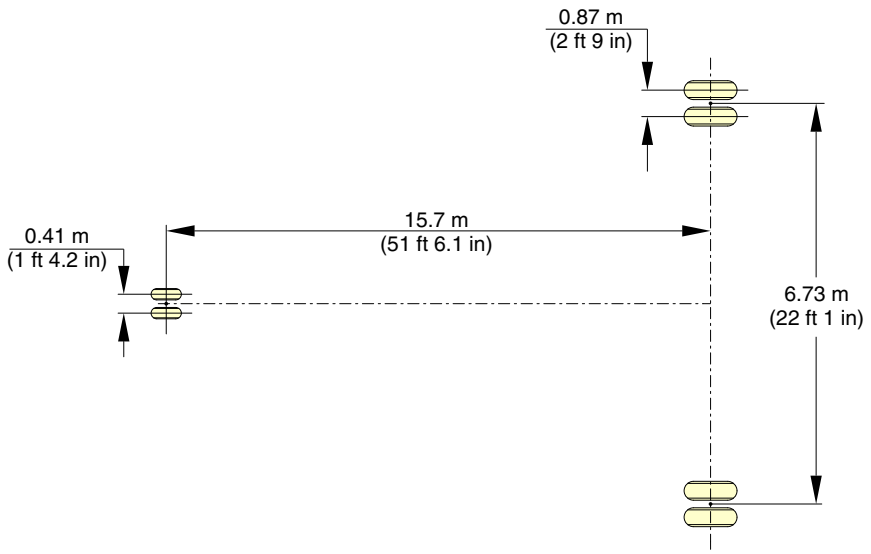
EFFECTIVITY: EMBRAER 195-E2 ACFT
Footprint
Figure 7.2

	AIRCRAFT MODEL (E195-E2)
MAXIMUM RAMP WEIGHT	61715 kg (136058 lb)
NOSE GEAR TIRE SIZE	H27X8.5R12 16PR
NOSE GEAR TIRE PRESSURE	965.3 - 1.013 kPa (140 - 147 psi)
MAIN GEAR TIRE SIZE	H42X16.0R20 24PR
MAIN GEAR TIRE PRESSURE	1.172 - 1.227 kPa (170 - 178 psi)



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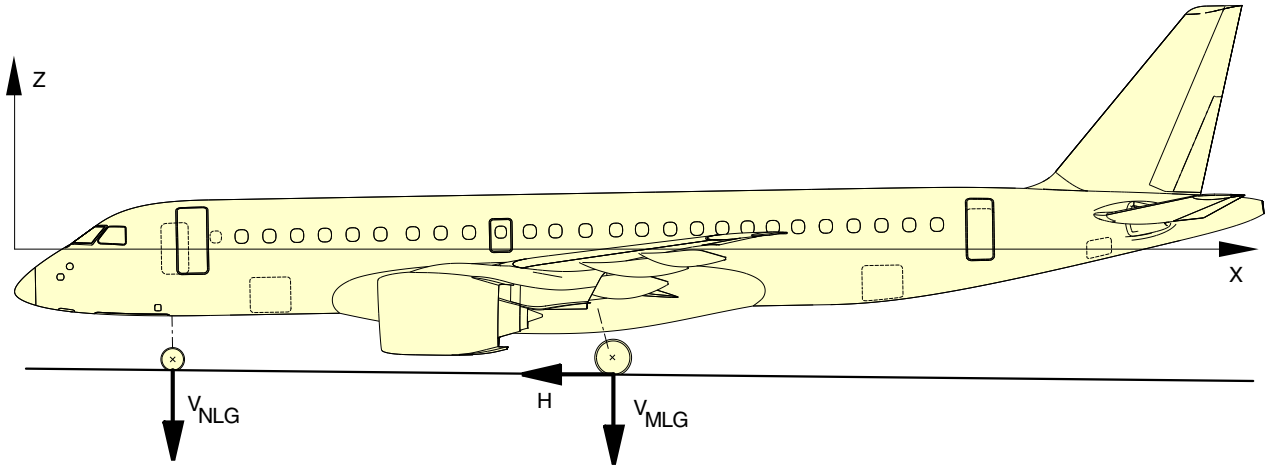
7.3. MAXIMUM PAVEMENT LOADS

EFFECTIVITY: EMBRAER 190-E2 ACFT
Maximum Pavement Loads
Figure 7.3

LEGEND: V_{NLG} = NOSE LANDING GEAR MAXIMUM VERTICAL GROUND LOAD AT MOST FORWARD C.G.
V_{MLG} = MAIN LANDING GEAR MAXIMUM VERTICAL GROUND LOAD AT MOST AFT C.G.
H = MAIN GEAR MAXIMUM HORIZONTAL GROUND LOAD FROM BRAKING

NOTES: ALL LOADS CALCULATED USING AIRCRAFT MAXIMUM RAMP WEIGHT



NOTES: STEADY BRAKING: $H = 0.30*V_{MLG}$
INSTANTANEOUS BRAKING: $H = 0.79*V_{MLG}$

MAXIMUM RAMP WEIGHT	V_{NLG}		V_{MLG} (PER STRUT)	H (PER STRUT)	
	STATIC AT MOST FOWARD C.G.	STEADY BRAKING WITH DECELERATION OF 3,0 m/sec^2	STATIC AT MOST AFT C.G.	STEADY BRAKING WITH DECELERATION OF 3,0 m/sec^2	INSTANTANEOUS BRAKING (FRICTION COEF. OF 0.8)
56601 kg (124784 lb)	7636 kg (16835 lb)	11469 kg (25285 lb)	26244 kg (57859 lb)	8136 kg (17937 lb)	20995 kg (46286 lb)

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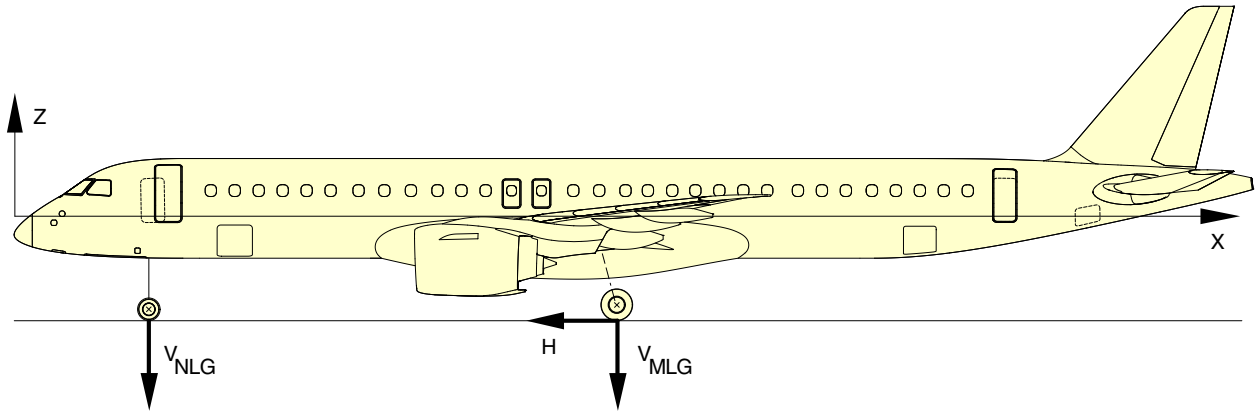
EFFECTIVITY: EMBRAER 195-E2 ACFT
Maximum Pavement Loads
Figure 7.4

LEGEND: V_{NLG} = NOSE LANDING GEAR MAXIMUM VERTICAL GROUND LOAD AT MOST FORWARD C.G.
V_{MLG} = MAIN LANDING GEAR MAXIMUM VERTICAL GROUND LOAD AT MOST AFT C.G.
H = MAIN GEAR MAXIMUM HORIZONTAL GROUND LOAD FROM BRAKING

NOTES: ALL LOADS CALCULATED USING AIRCRAFT MAXIMUM RAMP WEIGHT



NOTES: STEADY BRAKING: $H = 0.31*V_{MLG}$
INSTANTANEOUS BRAKING: $H = 0.80*V_{MLG}$

MAXIMUM RAMP WEIGHT	V_{NLG}		V_{MLG} (PER STRUT)	H (PER STRUT)	
	STATIC AT MOST FOWARD C.G.	STEADY BRAKING WITH DECELERATION OF 3,0 m/sec^2	STATIC AT MOST AFT C.G.	STEADY BRAKING WITH DECELERATION OF 3,0 m/sec^2	INSTANTANEOUS BRAKING (FRICTION COEF. OF 0.8)
60100 kg (132498 lb)	7273 kg (16034 lb)	10599 kg (23367 lb)	26921 kg (59352 lb)	8346 kg (18400 lb)	21537 kg (47481 lb)
61700 kg (136025 lb)	5430 kg (11971 lb)	8817 kg (19438 lb)	29185 kg (64342 lb)	9047 kg (19945 lb)	23348 kg (51473 lb)

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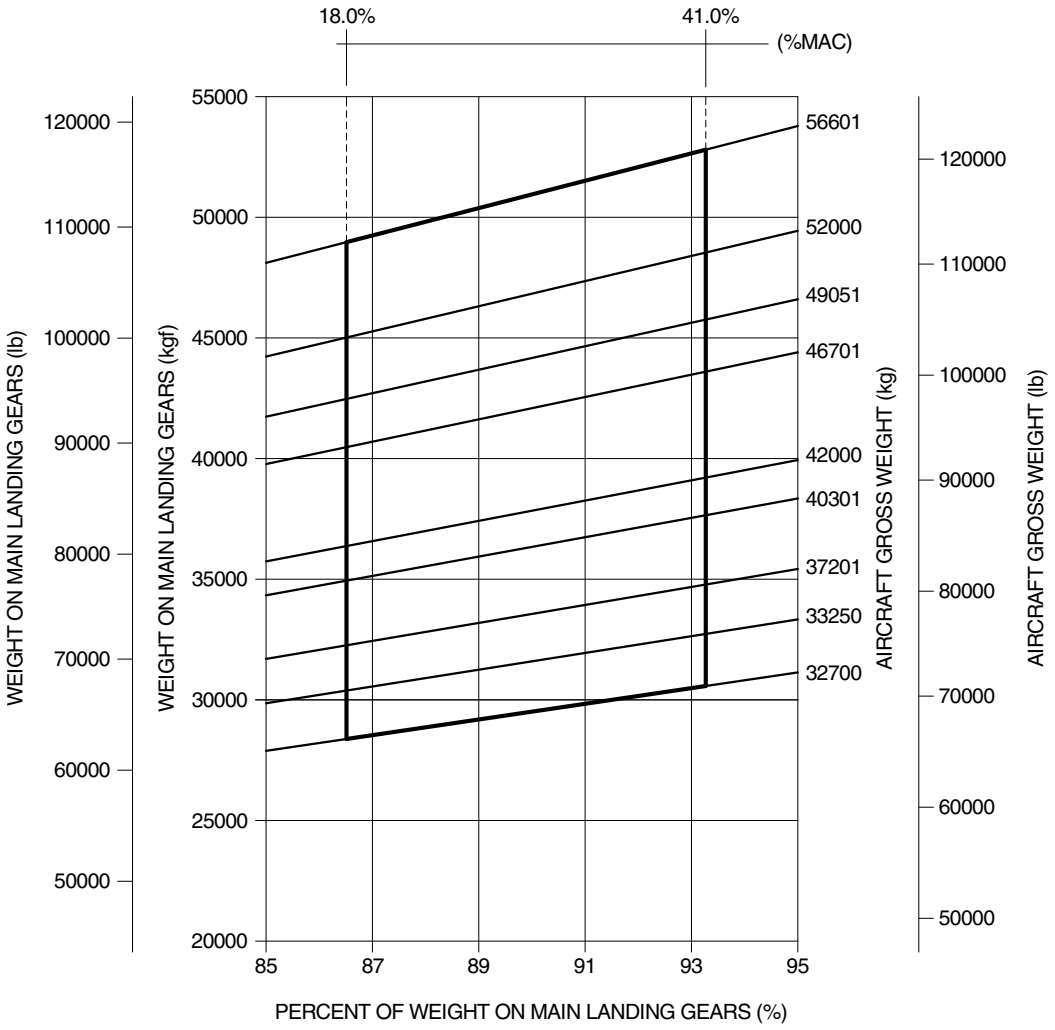
7.4. LANDING GEAR LOADING ON PAVEMENT

EFFECTIVITY: EMBRAER 190-E2 ACFT
Landing Gear Loading on Pavement
Figure 7.5



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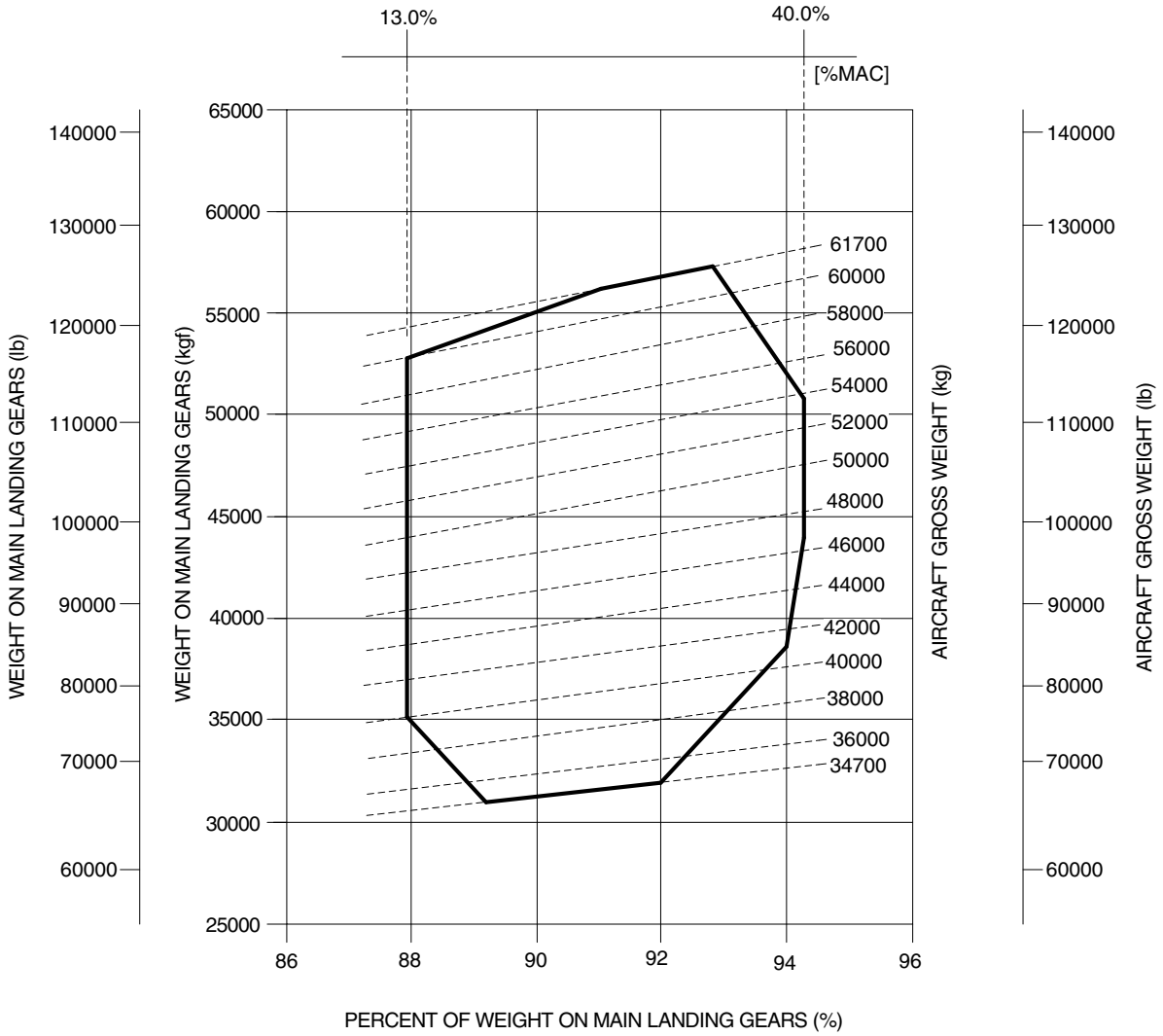
EFFECTIVITY: EMBRAER 195-E2 ACFT
Landing Gear Loading on Pavement
Figure 7.6



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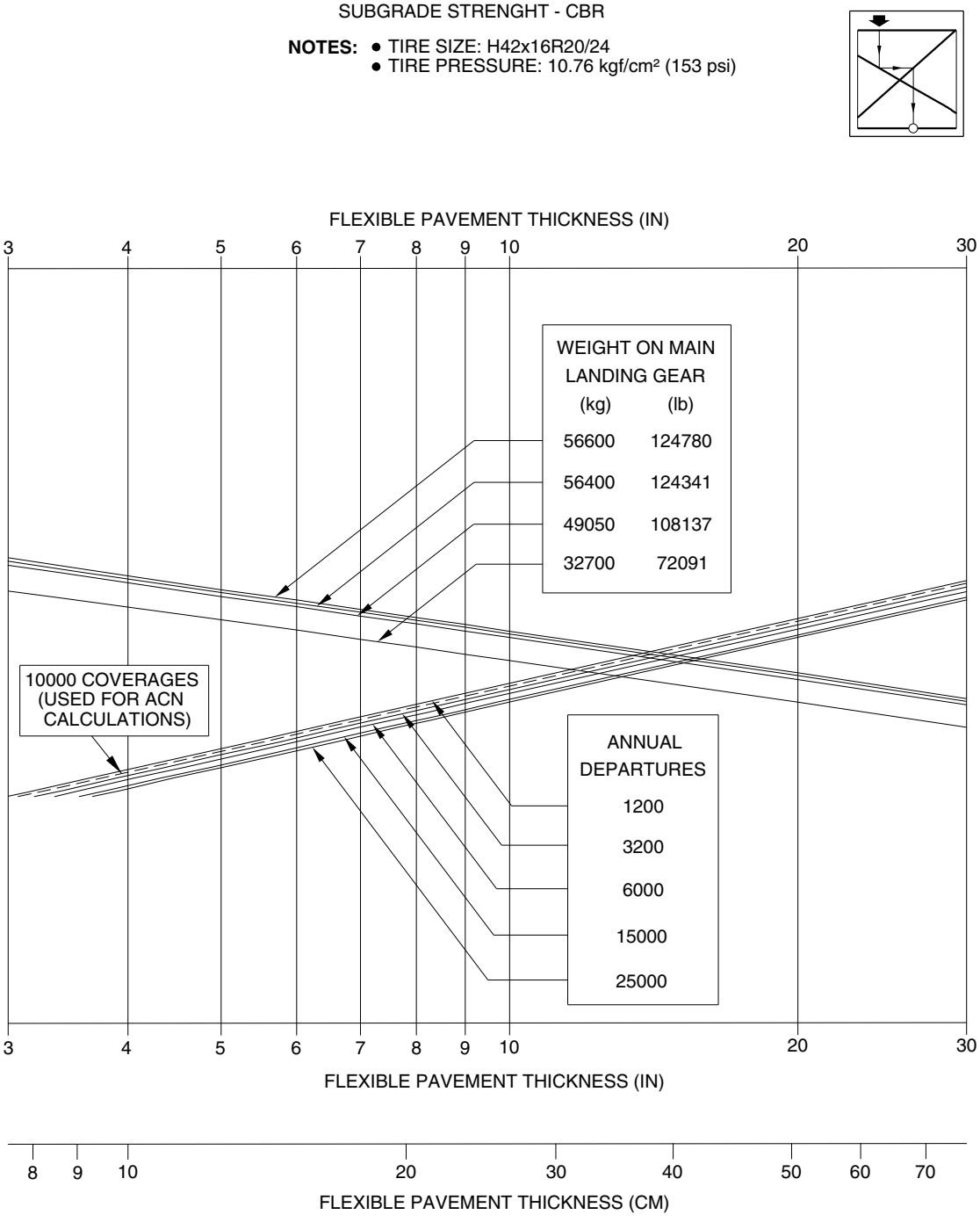
7.5. FLEXIBLE PAVEMENT REQUIREMENTS, US CORPS OF ENGINEERS DESIGN METHOD

The flexible pavement curves that are based on procedures set forth in Instruction Report No. S-77-1, “Procedures for Development of CBR Design Curves”, dated June 1977, and as modified according to the methods described in FAA Advisory Circular 150/5320-6D, “Airport Pavement Design and Evaluation”, dated July 7, 1995. Instruction Report No. S-77-1 were prepared by the US Army Corps of Engineers Waterways Experiment Station, Soils and Pavements Laboratory, Vicksburg, Mississippi. The line showing 10,000 coverages is used to calculate AR.

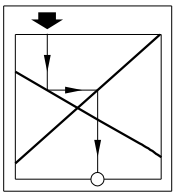
EFFECTIVITY: EMBRAER 190-E2 ACFT

Flexible Pavement Requirements - US Army Corps of Engineers Design Method
Figure 7.7



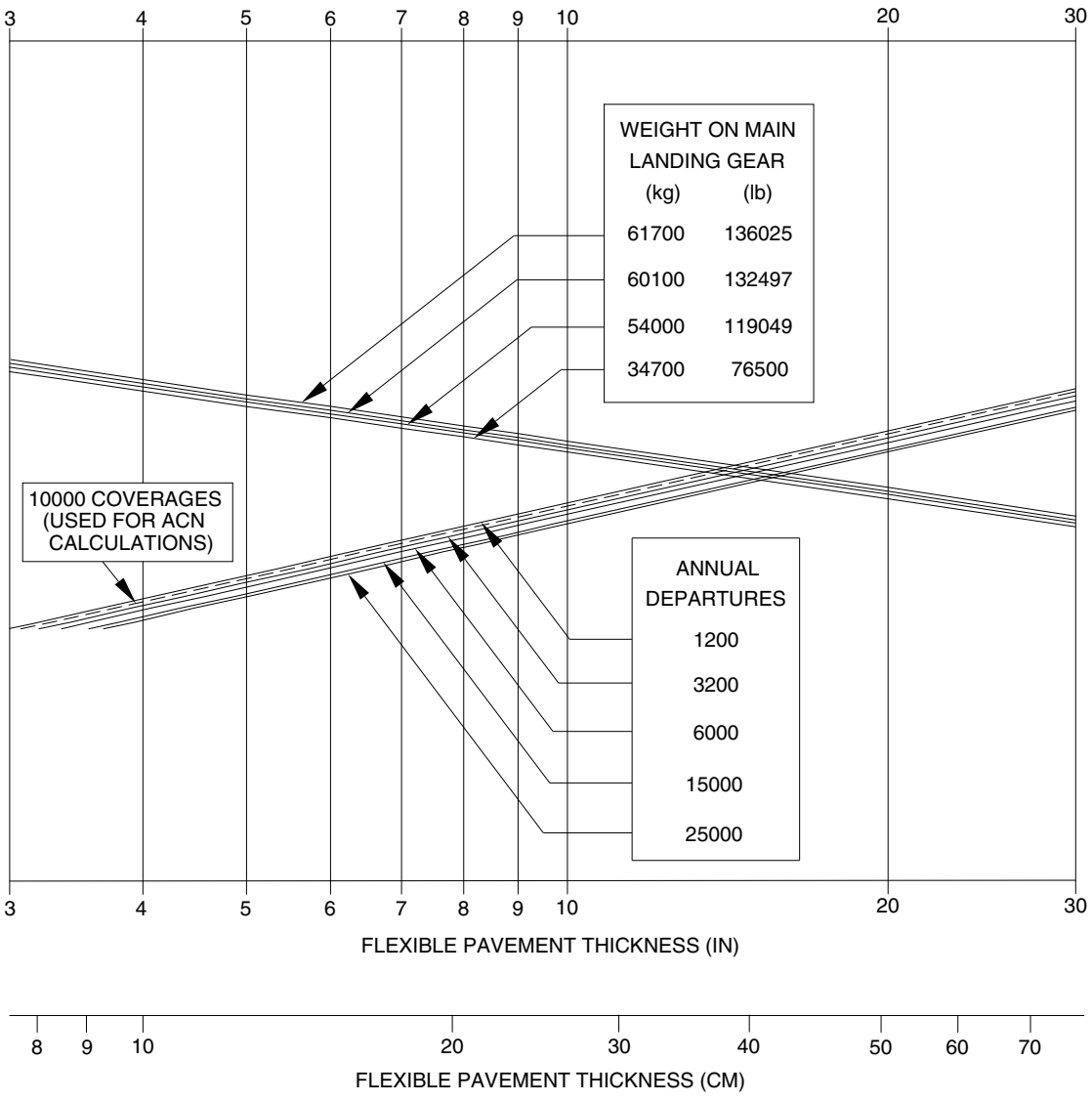
EFFECTIVITY: EMBRAER 195-E2 ACFT

Flexible Pavement Requirements - US Army Corps of Engineers Design Method
Figure 7.8



SUBGRADE STRENGHT - CBR

NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 11.95 kgf/cm² (170 psi)(UNLOADED)



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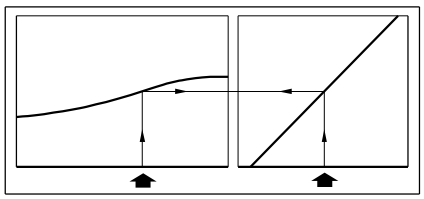
7.6. FLEXIBLE PAVEMENT REQUIREMENTS, LCN METHOD

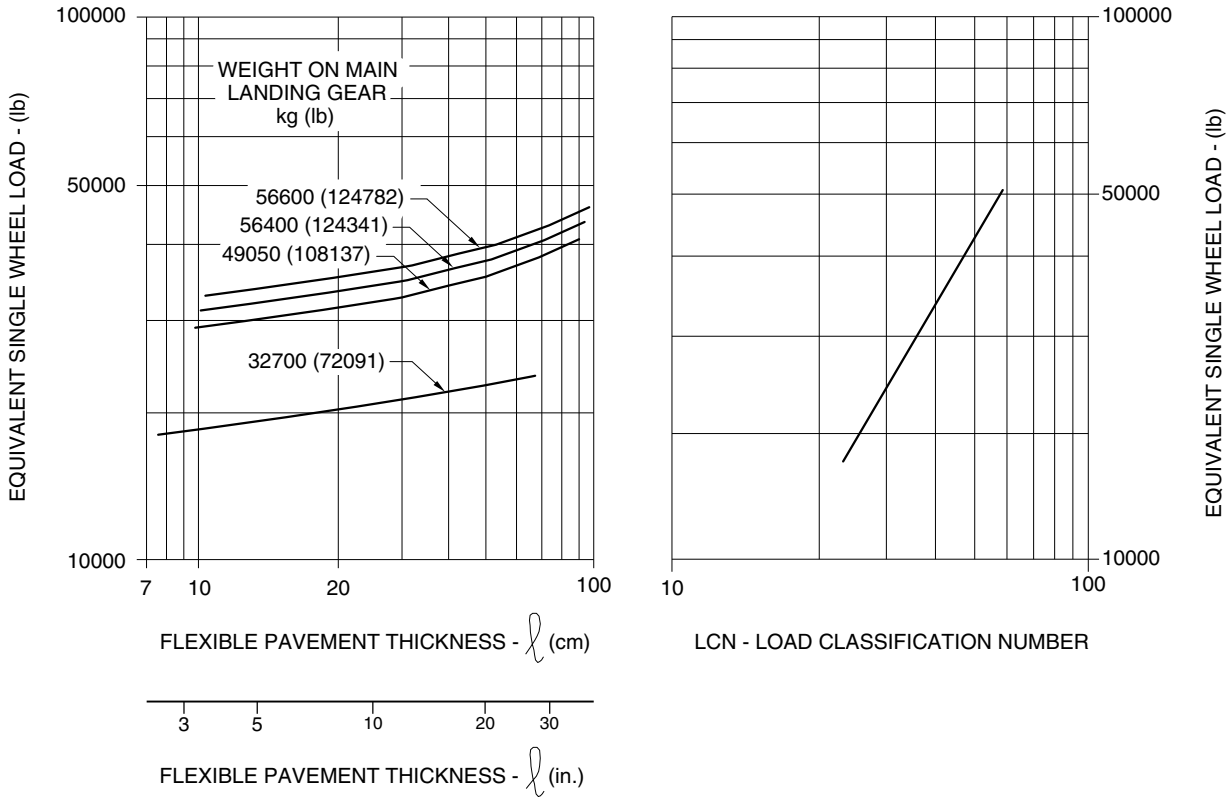
The LCN Method curves for flexible pavements. They have been built using procedures and curves in the ICAO Aerodrome Design Manual, Part 3 - Pavements, Document 9157-AN/901, 1983. The same chart includes the data of equivalent single-wheel load versus pavement thickness.

EFFECTIVITY: EMBRAER 190-E2 ACFT

Flexible Pavement Requirements - LCN Method
Figure 7.9



NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 10.76 kgf/cm² (153 psi)



NOTE: EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL. PART 2, PAR. 4.1.3

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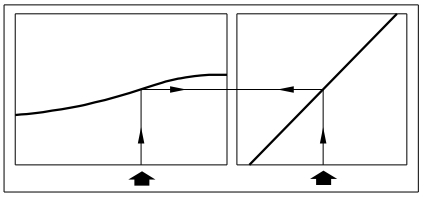
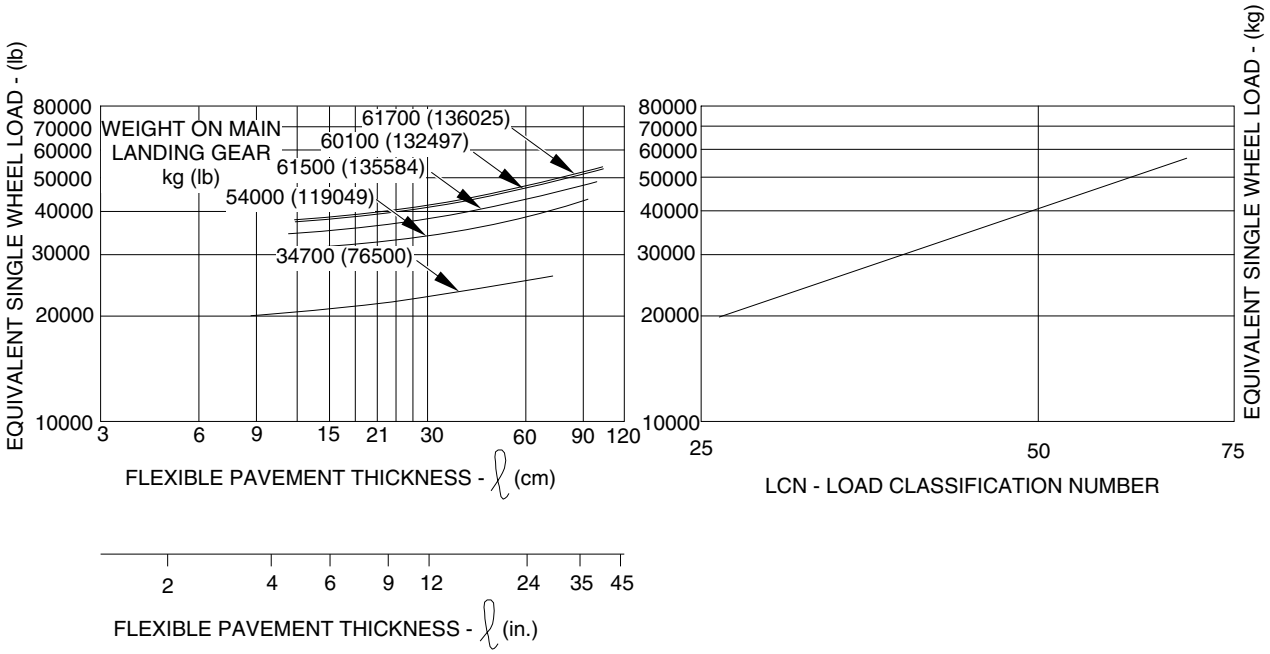
EFFECTIVITY: EMBRAER 195-E2 ACFT

Flexible Pavement Requirements - LCN Method

Figure 7.10



NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 11.95 kgf/cm² (170 psi)(UNLOADED)



NOTE:
EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL. PART 2, PAR. 4.1.3

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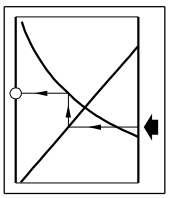
7.7. RIGID PAVEMENT REQUIREMENTS, PORTLAND CEMENT ASSOCIATION DESIGN METHOD

This method has a chart that has been prepared with the use of the Westergaard Equation in general accordance with the procedures outlined in the 1955 edition of “Design of Concrete Airport Pavement” published by the Portland Cement Association, 33 W. Grand Ave., Chicago 10, Illinois, but modified to the new format described in the 1968 Portland Cement Association publication, “Computer Program for Concrete Airport Pavement Design” by Robert G. Packard. The following procedure is used to develop rigid pavement design curves such as that shown in the chart:

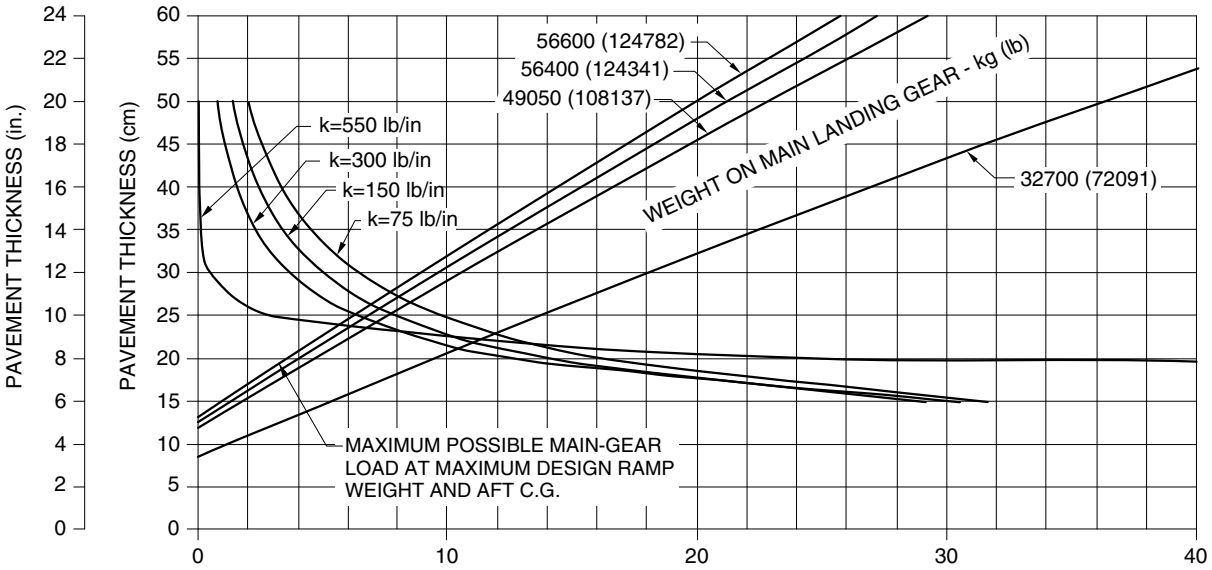
- Once the scale for the pavement thickness to the left and the scale for allowable working stress to the right have been established, an arbitrary load line is drawn representing the main landing gear maximum weight to be shown.
- All values of the subgrade modulus (k-values) are then plotted.
- Additional load lines for the incremental values of weight on the main landing gear are then established on the basis of the curve for k=300, already established.

EFFECTIVITY: EMBRAER 190-E2 ACFT

Rigid Pavement Requirements - Portland Cement Association Design Method
Figure 7.11



NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 10.76 kgf/cm² (153 psi) (UNLOADED)



NOTE: THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

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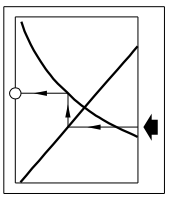
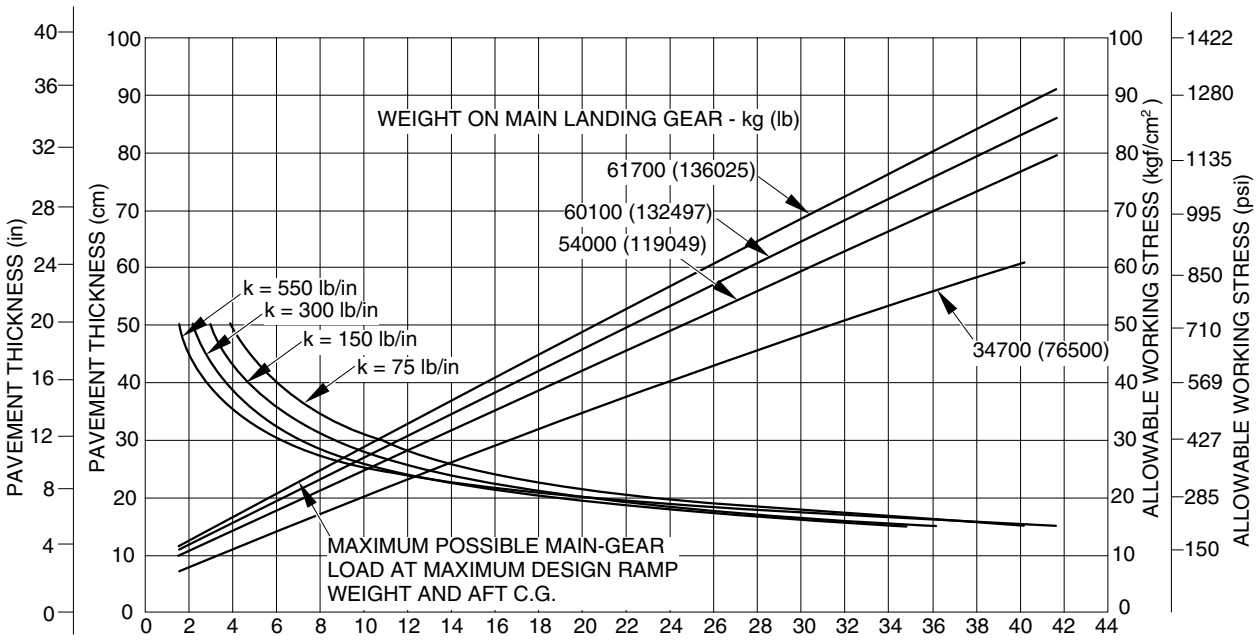
EFFECTIVITY: EMBRAER 195-E2 ACFT

Rigid Pavement Requirements - Portland Cement Association Design Method
Figure 7.12



NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 11.95 kgf/cm² (170 psi) (UNLOADED)



NOTE: THE VALUES OBTAINED BY USING THE MAXIMUM LOAD REFERENCE LINE AND ANY VALUE OF "K" ARE EXACT. FOR LOADS LESS THAN MAXIMUM, THE CURVES ARE EXACT FOR K=300 BUT DEVIATE SLIGHTLY FOR OTHER VALUES OF "K".

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7.8. RIGID PAVEMENT REQUIREMENTS, LCN METHOD

This LCN Method presents curves for rigid pavements. They have been built using procedures and curves in ICAO Aerodrome Design Manual, Part 3 - Pavements, Document 9157-AN/901, 1983. The same chart includes the data of equivalent single-wheel load versus radius of relative stiffness.

To determine the aircraft weight that can be accommodated on a particular rigid airport pavement, both the LCN of the pavement and the radius of relative stiffness must be known.

The radius of relative stiffness values is obtained from a table. This table presents the radius of relative stiffness values that are based on Young's modulus (E) of 4,000,000 psi and Poisson's ratio (μ) of 0.15.

For convenience in finding this radius based on other values of E and μ, the curves are included. For example, to find an RRS value based on an E of 3,000,000 psi, the “E” factor of 0.931 is multiplied by the RRS value found in figure 7.6.3. The effect of the variations of μ on the RRS value is treated in a similar manner.

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

Radius of Relative Stiffness

Figure 7.13

RADIUS OF RELATIVE STIFFNESS (ℓ)
VALUES IN INCHES

$$\ell = \sqrt[4]{\frac{Ed^3}{12(1-\mu^2)k}} = 24.1652 \sqrt[4]{\frac{d^3}{k}}$$

WHERE: E = YOUNG'S MODULUS = 4×10^6 psi
k = SUBGRADE MODULUS, lb/in^3
d = RIGID-PAVEMENT THICKNESS. in.
μ = POISSON'S RATIO = 0.15

d(in)	k=75	k=100	k=150	k=200	k=250	k=300	k=350	k=400	k=500	k=550
6.0	31.48	29.30	26.47	24.63	23.30	22.26	21.42	20.72	19.59	19.13
6.5	33.43	31.11	28.11	26.16	24.74	23.64	22.74	22.00	20.80	20.31
7.0	35.34	32.89	29.72	27.65	26.15	24.99	24.04	23.25	21.99	21.47
7.5	37.22	34.63	31.29	29.12	27.54	26.32	25.32	24.49	23.16	22.61
8.0	39.06	36.35	32.85	30.57	28.91	27.62	26.58	25.70	24.31	23.74
8.5	40.88	38.04	34.37	31.99	30.25	28.91	27.81	26.90	25.44	24.84
9.0	42.67	39.71	35.88	33.39	31.58	30.17	29.03	28.08	26.55	25.93
9.5	44.43	41.35	37.36	34.77	32.89	31.42	30.23	29.24	27.65	27.00
10.0	46.18	42.97	38.83	36.14	34.17	32.65	31.42	30.39	28.74	28.06
10.5	47.90	44.57	40.28	37.48	35.45	33.87	32.59	31.52	29.81	29.11
11.0	49.60	46.16	41.71	38.81	36.71	35.07	33.75	32.64	30.87	30.14
11.5	51.28	47.72	43.12	40.13	37.95	36.26	34.89	33.74	31.91	31.16
12.0	52.94	49.27	44.52	41.43	39.18	37.44	36.02	34.84	32.95	32.17
12.5	54.59	50.80	45.90	42.72	40.40	38.60	37.14	35.92	33.97	33.17
13.0	56.22	52.32	47.27	43.99	41.61	39.75	38.25	36.99	34.99	34.16
13.5	57.83	53.82	48.63	45.26	42.80	40.89	39.35	38.06	35.99	35.14
14.0	59.43	55.31	49.98	46.51	43.98	42.02	40.44	39.11	36.99	36.12
14.5	61.02	56.78	51.31	47.75	45.16	43.15	41.51	40.15	37.97	37.08
15.0	62.59	58.25	52.63	48.98	46.32	44.26	42.58	41.19	38.95	38.03
15.5	64.15	59.70	53.94	50.20	47.47	45.36	43.64	42.21	39.92	38.98
16.0	65.69	61.13	55.24	51.41	48.62	46.45	44.70	43.23	40.88	39.92
16.5	67.23	62.56	56.53	52.61	49.75	47.54	45.74	44.24	41.84	40.85
17.0	68.75	63.98	57.81	53.80	50.88	48.61	46.77	45.24	42.78	41.78
17.5	70.26	65.38	59.08	54.98	52.00	49.68	47.80	46.23	43.72	42.70
18.0	71.76	66.78	60.34	56.15	53.11	50.74	48.82	47.22	44.66	43.61
18.5	73.25	68.17	61.60	57.32	54.21	51.80	49.84	48.20	45.59	44.51
19.0	74.73	69.54	62.84	58.48	55.31	52.84	50.84	49.17	46.51	45.41
19.5	76.20	70.91	64.08	59.63	56.39	53.88	51.84	50.14	47.42	46.30
20.0	77.66	72.27	65.30	60.77	57.47	54.91	52.84	51.10	48.33	47.19
20.5	79.11	73.62	66.52	61.91	58.55	55.94	53.83	52.06	49.23	48.07
21.0	80.55	74.96	67.74	63.04	59.62	56.96	54.81	53.01	50.13	48.95
21.5	81.99	76.30	68.94	64.16	60.68	57.97	55.78	53.95	51.02	49.82
22.0	83.41	77.63	70.14	65.28	61.73	58.98	56.75	54.89	51.91	50.69
22.5	84.83	78.95	71.34	66.38	62.78	59.99	57.72	55.82	52.79	51.55
23.0	86.24	80.26	72.52	67.49	63.83	60.98	58.68	56.75	53.67	52.41
23.5	87.64	81.56	73.70	68.59	64.86	61.97	59.63	57.67	54.54	53.26
24.0	89.04	82.86	74.87	69.68	65.90	62.96	60.58	58.59	55.41	54.11
24.5	90.43	84.15	76.04	70.76	66.92	63.94	61.52	59.50	56.28	54.95
25.0	91.81	85.44	77.20	71.84	67.95	64.92	62.46	60.41	57.14	55.79

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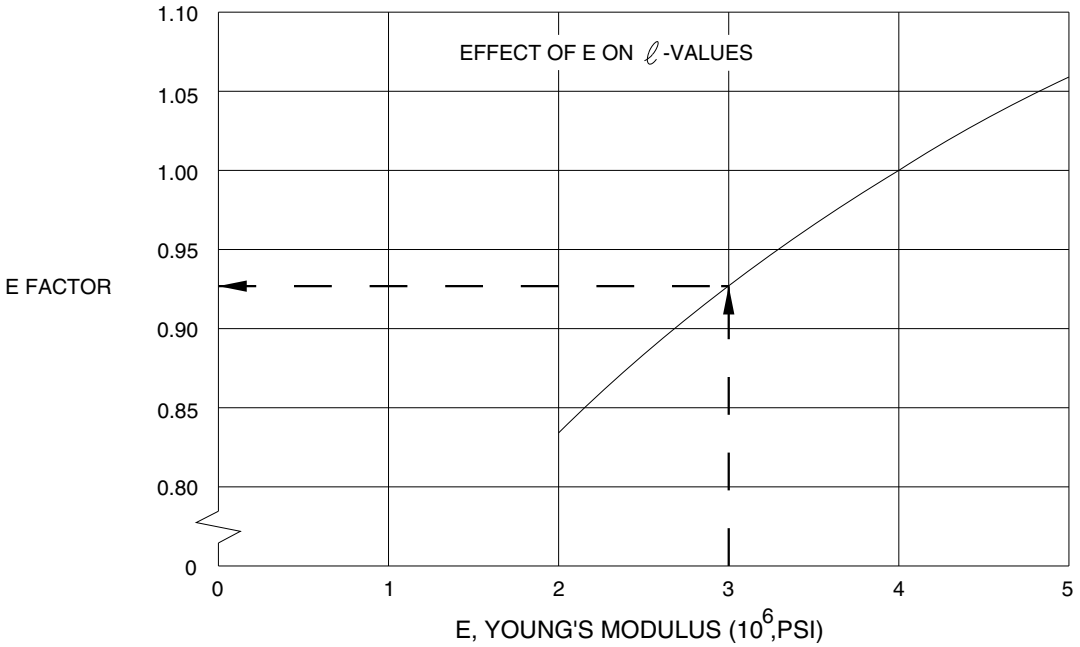
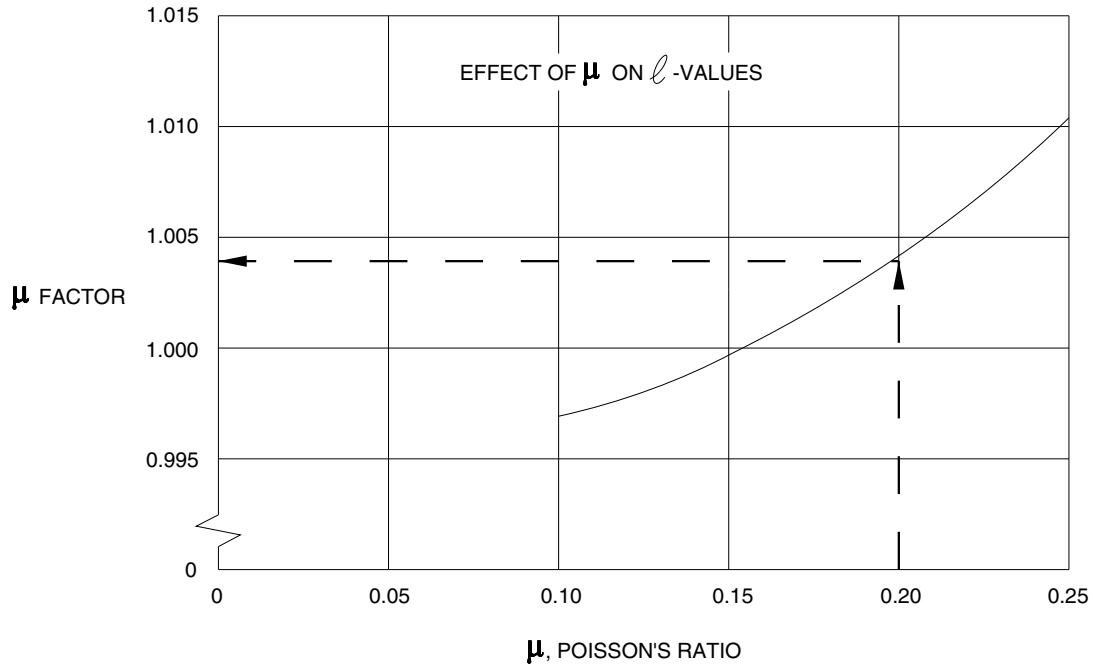
EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT
Radius of Relative Stiffness (other values)
Figure 7.14





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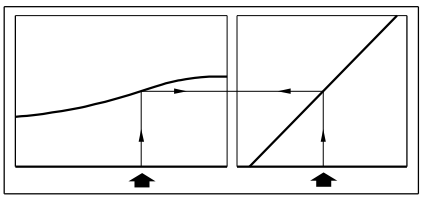
NOTE:
BOTH CURVES ON THIS PAGE ARE USED TO ADJUST THE ℓ -VALUES.

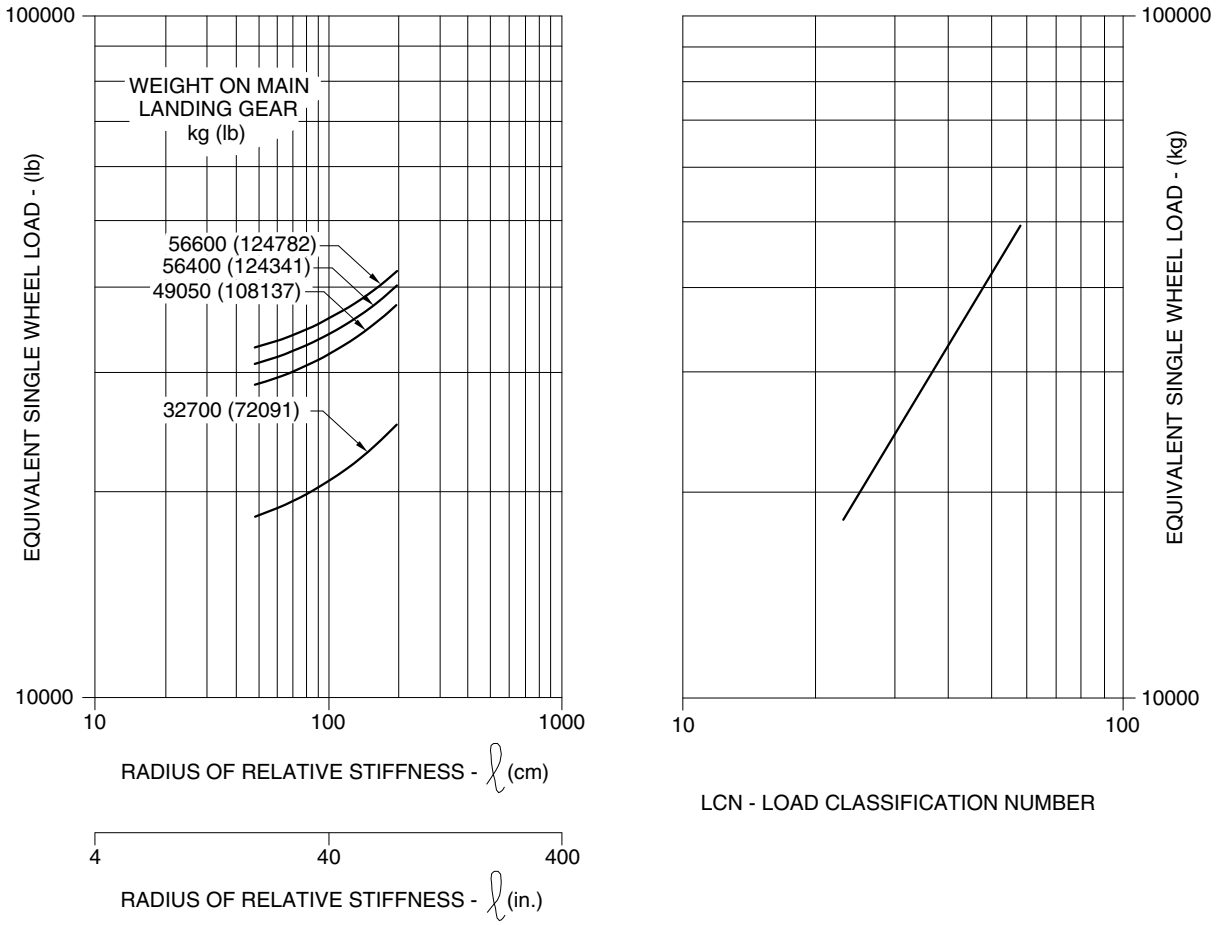
EFFECTIVITY: EMBRAER 190-E2 ACFT

Rigid Pavement Requirements - LCN Method

Figure 7.15



NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 10.76 kgf/cm² (153 psi)



NOTE: EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL. PART 2, PAR. 4.1.3

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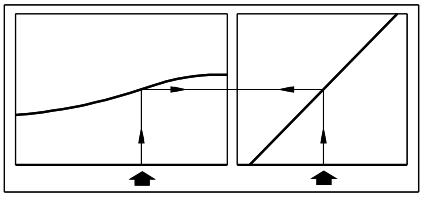
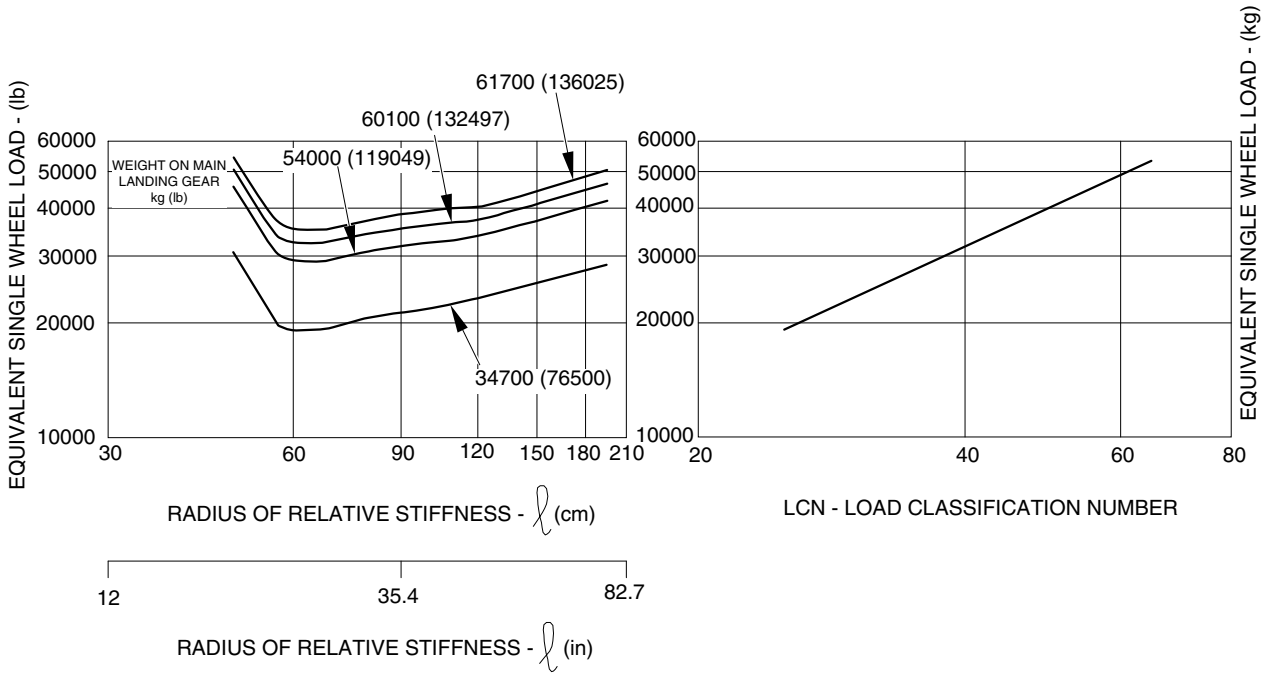
EFFECTIVITY: EMBRAER 195-E2 ACFT

Rigid Pavement Requirements - LCN Method
Figure 7.16

NOTES:
- TIRE SIZE: H42x16R20/24
- TIRE PRESSURE: 11.95 kgf/cm² (170 psi) (UNLOADED)





NOTE: EQUIVALENT SINGLE WHEEL LOADS ARE DERIVED BY METHODS SHOWN IN ICAO AERODROME MANUAL. PART 2, PAR. 4.1.3

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7.9. ACN - PCN SYSTEM - FLEXIBLE AND RIGID PAVEMENTS

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

The ACN/PCN system as referenced in Amendment 35 to ICAO Annex 14, “Aerodromes”, provides a standardized international aircraft/pavement rating system.

The PCN is an index rating of the mass which an evaluation shows the pavement can withstand when applied by a standard single wheel. The ACN is established for the particular pavement type and subgrade category of the rated pavement as well as for the particular aircraft mass and characteristics.

An aircraft must have an ACN equal to or less than the PCN to operate without restriction on the pavement.

The method of pavement evaluation is left to the airport with the results of their evaluation presented as follows:

Table 7.1 - Pavement Evaluation

PAVEMENT TYPE	SUBGRADE CATEGORY	TIRE PRESSURE CATEGORY	METHOD
R – Rigid	A – High	W – No Limit	T – Technical
F – Flexible	B – Medium	X – to 1.75 Mpa (254 psi)	U – Using aircraft
	C – Low	Y – to 1.25 Mpa (181 psi)	
	D – Ultra Low	Z – to 0.5 Mpa (73 psi)	
Report example: PCN 80/R/B/X/T, where:			
80 = PCN			
R = Pavement Type: Rigid			
B = Subgrade Category: Medium			
X = Tire Pressure Category: Medium (limited to 1.5 Mpa)			
T = Evaluation Method: Technical			

The flexible pavements have four subgrade categories:

A. High Strength - Pavement Data 15.

B. Medium Strength - Pavement Data 10.

C. Low Strength - Pavement Data 6.

D. Ultra Low Strength - Pavement Data 3.

The rigid pavements have four subgrade categories:

A. High Strength - Subgrade k = 150 MN/m³ (550 lb/ft³).

B. Medium Strength - k = 80 MN/m³ (300 lb/ft³).

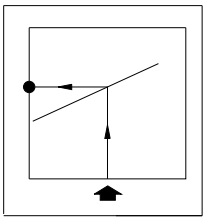
C. Low Strength - k = 40 MN/m³ (150 lb/ft³).

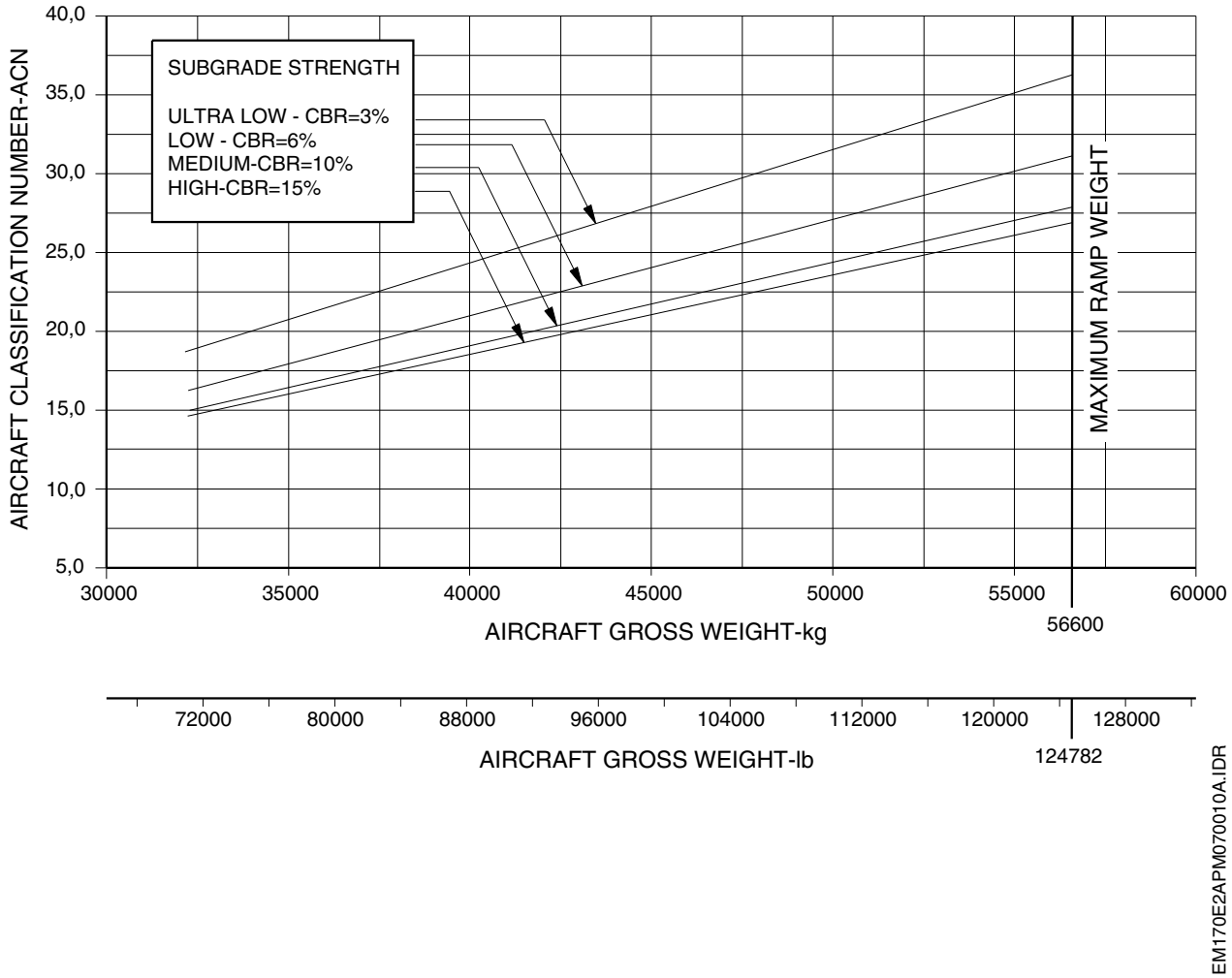
D. Ultra Low Strength - k = 20 MN/m³ (75 lb/ft³).

EFFECTIVITY: EMBRAER 190-E2 ACFT
ACN For Flexible Pavement
Figure 7.17

FLEXIBLE PAVEMENT SUBGRADE

NOTES:
- TIRE SIZE: H42 x 16 - 20 24 PR
- TIRE PRESSURE: 10.62 kgf/cm^2(151psi) (UNLOADED)





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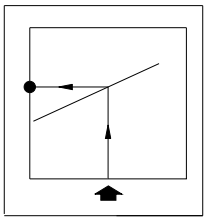
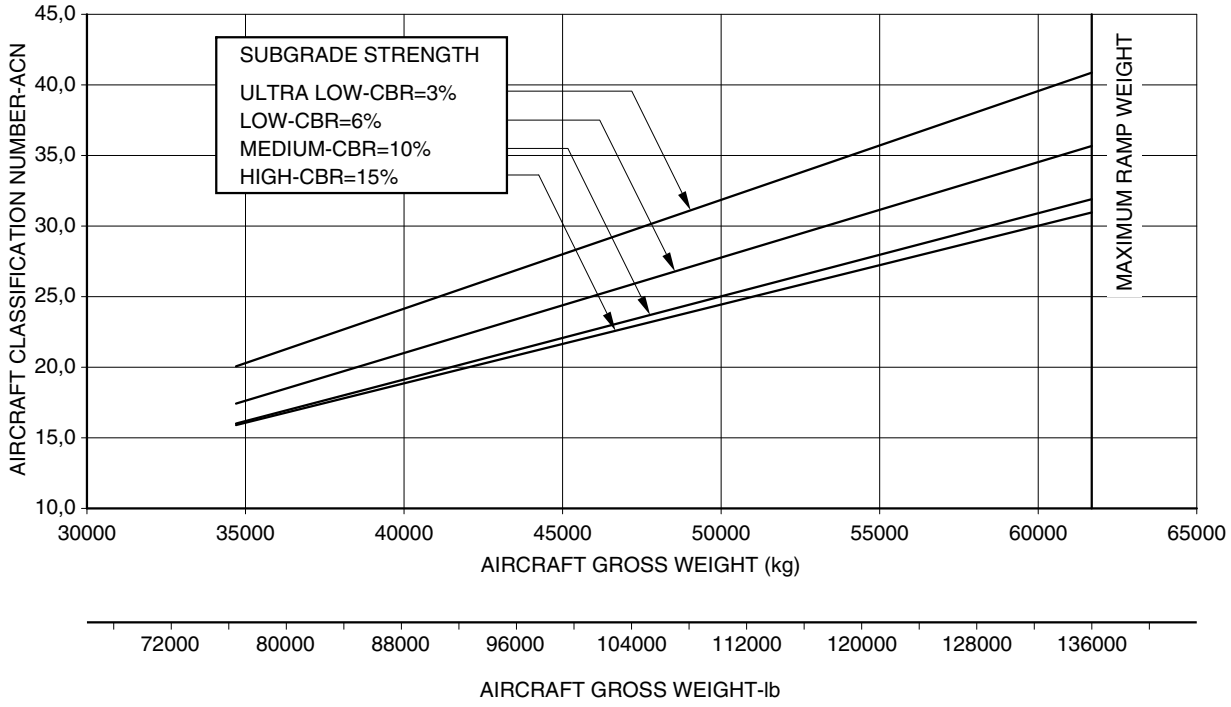
EFFECTIVITY: EMBRAER 195-E2 ACFT
ACN For Flexible Pavement
Figure 7.18

FLEXIBLE PAVEMENT SUBGRADE

NOTES:
- TIRE SIZE: H42 x 16.0R 20
- TIRE PRESSURE: 11.95 kgf/cm² (170psi) (UNLOADED)





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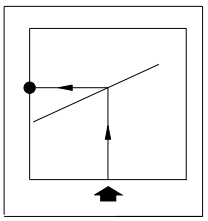
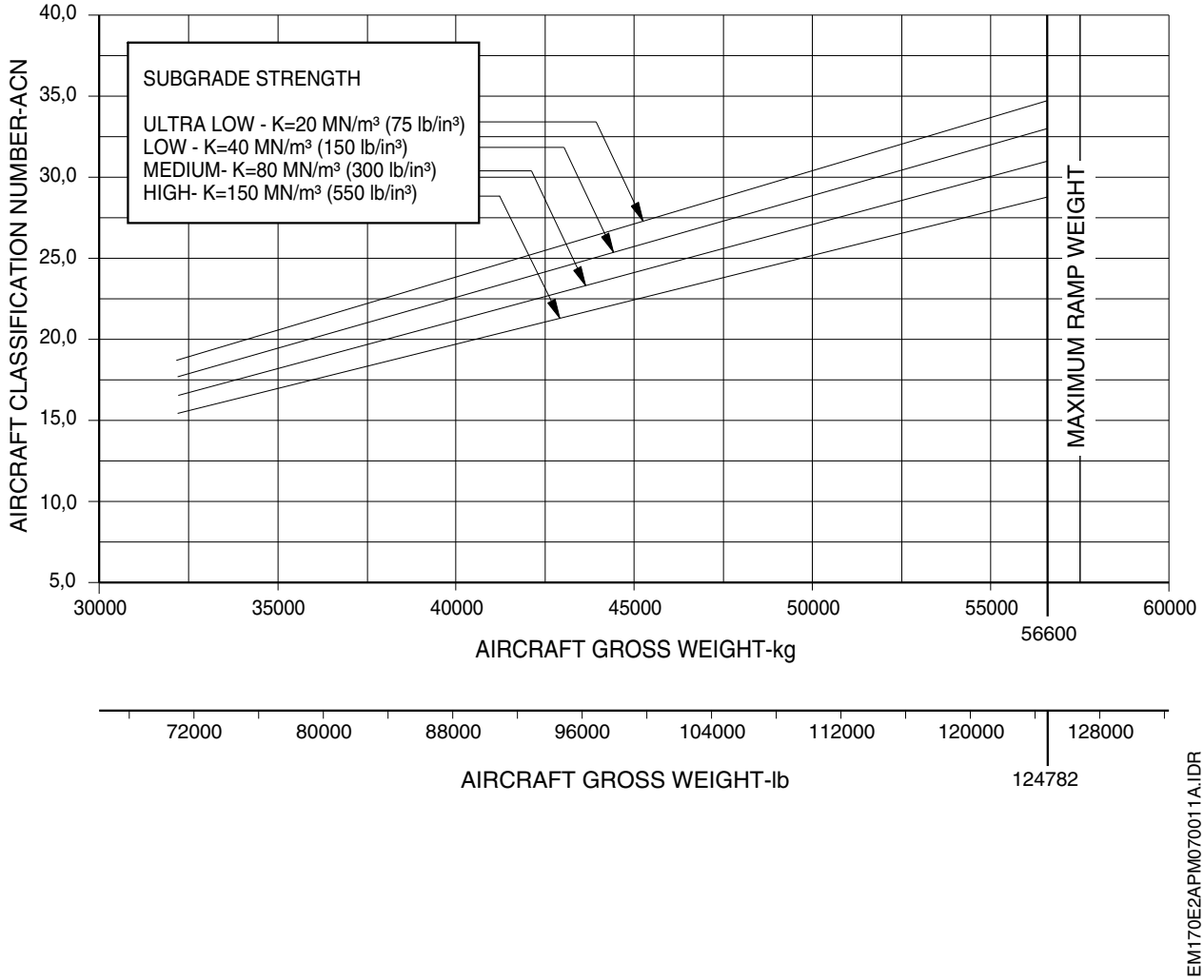
EFFECTIVITY: EMBRAER 190-E2 ACFT
ACN For Rigid Pavement
Figure 7.19

RIGID PAVEMENT SUBGRADE

NOTES:
- TIRE SIZE: H42 x 16 - 20 24 PR
- TIRE PRESSURE: 10.62 kgf/cm^2 (151psi) (UNLOADED)





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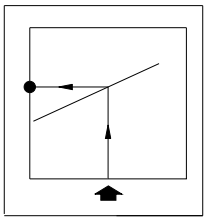
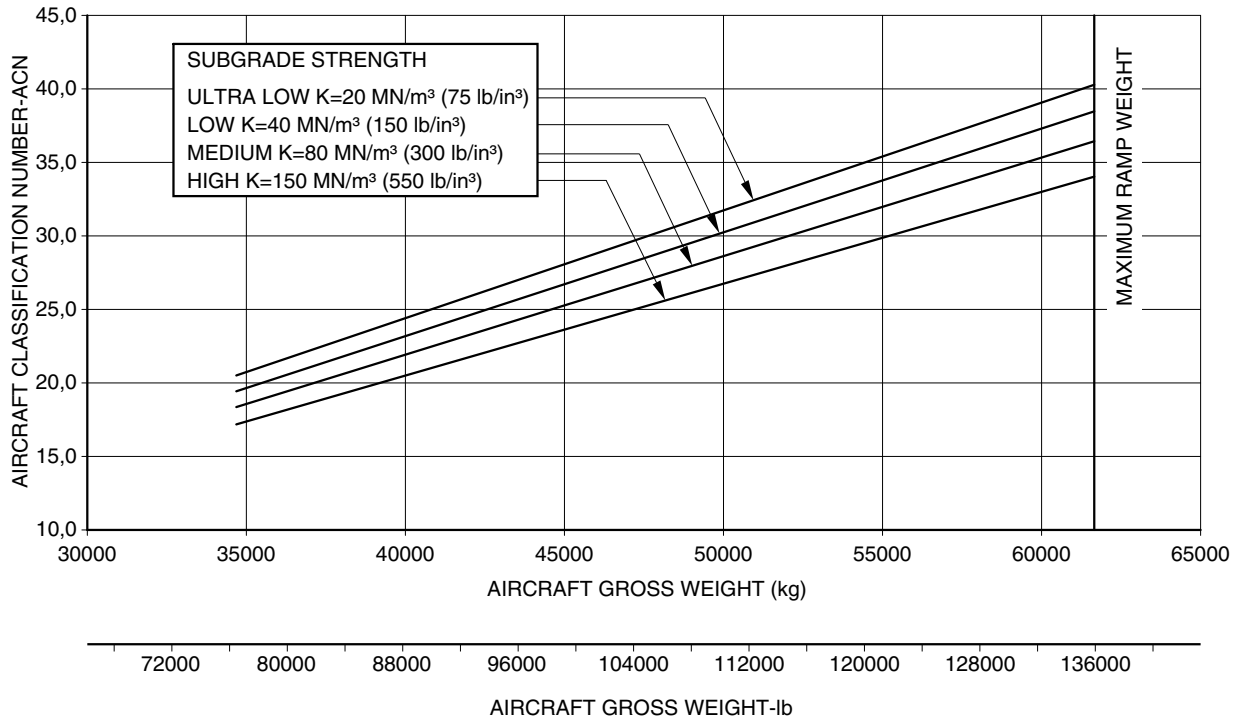
EFFECTIVITY: EMBRAER 195-E2 ACFT
ACN For Rigid Pavement
Figure 7.20

RIGID PAVEMENT SUBGRADE

NOTES:
- TIRE SIZE: H42 x 16.0R 20
- TIRE PRESSURE: 11.95 kgf/cm² (170psi) (UNLOADED)





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7.10. ACR- PCR METHOD

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

The ACR/PCR system as referenced in ICAO Annex 14, “Aerodromes”, Volume I, “Aerodrome Design and Operations”, 9th Edition, Jully 2022, provides a standardized international aircraft/ pavement rating system. The ACR/PCR method is based on the concept of accumulated damage, expressed by the variable CDF (Cumulative Damage Factor). By definition, CDF is the portion of the estimated useful life of the pavement that was consumed through the fatigue process resulting from the repeated stresses imposed on the structure. The PCR is an index rating of the mass which an evaluation shows the pavement can withstand when applied by a standard single wheel. The ACR is established for the particular pavement type and subgrade category of the rated pavement as well as for the particular aircraft mass and characteristics. An aircraft must have an ACR equal to or less than the PCR to operate without restriction on the pavement. The calculation was done by means of the program ICAO-ACR v. 1.3.2, which calculates ICAO aircraft classification rating (ACR) numbers for aircraft operating on flexible and rigid airport pavements. The method follows Amendment 15 to ICAO Annex 14 replacing the legacy ACN-PCN system with ACR-PCR. The ACR system is similar in concept to ACN, with the following major differences:

7.10.
- All structures are layered elastic (rigid and flexible). Alpha factors are not used.
- Retains 4 standard subgrade categories but defined by modulus E (not CBR or k).
- Flexible ACR considers all wheels in the main landing gear.
- Standard tire pressure increased to 1.5 MPa.
- Standard coverage increased to 36,500 for flexible ACR.
- Derived single wheel load (DSWL) is expressed in 100’s (not 1000’s) of kg. Note that ACR numerical values are approximately one order of magnitude higher than the equivalent ACN. This is intentional, to prevent confusion between the two systems.

- The method of pavement evaluation is left to the airport with the results of their evaluation presented as follows:

7.10.1. ACR Calculation for ERJ 190-400

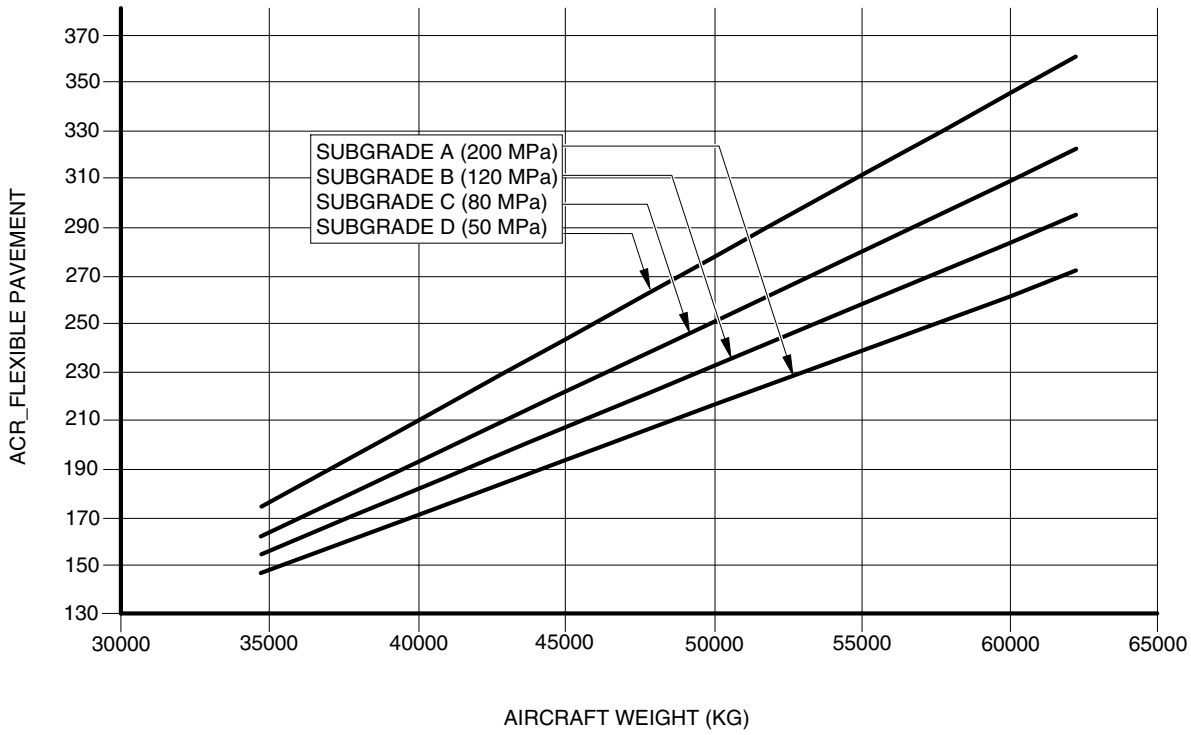
EFFECTIVITY: EMBRAER 195-E2 ACFT

Table 7.2 - RESULTS OF ACR CALCULATION FOR ERJ 190-400

						ACR relative to							
Aircraft Type Tire Size MLG CL to CL Wheels CL to CL	Maximum Ramp Weight / Minimum Operating Weight	Load on one main gear leg		Standard aircraft unloaded tire pressure		Rigid pavement subgrades				Flexible pavement subgrades			
						High E = 200 MPa	Medium E = 120 MPa	Low E = 80 MPa	Ultra-low E = 50 MPa	High E = 200 MPa	Medium E = 120 MPa	Low E = 80 MPa	Ultra-low E = 50 MPa
ERJ 190-400 H42 x 16 R20 6.73 m 0.87 m	lb	kg	%	psi	kPa	A	B	C	D	A	B	C	D
	137,127	62,200	46.4	170	1172	351.91	373.14	388.36	404.19	271.61	294.88	322.05	360.31
	76,500	34,700	46.0			172.94	184.19	192.78	202.21	147.73	155.38	162.50	174.54

EFFECTIVITY: EMBRAER 195-E2 ACFT
ACR Flexible Pavement
Figure 7.21

FLEXIBLE PAVEMENT ACR NUMBER - ERJ 190-400



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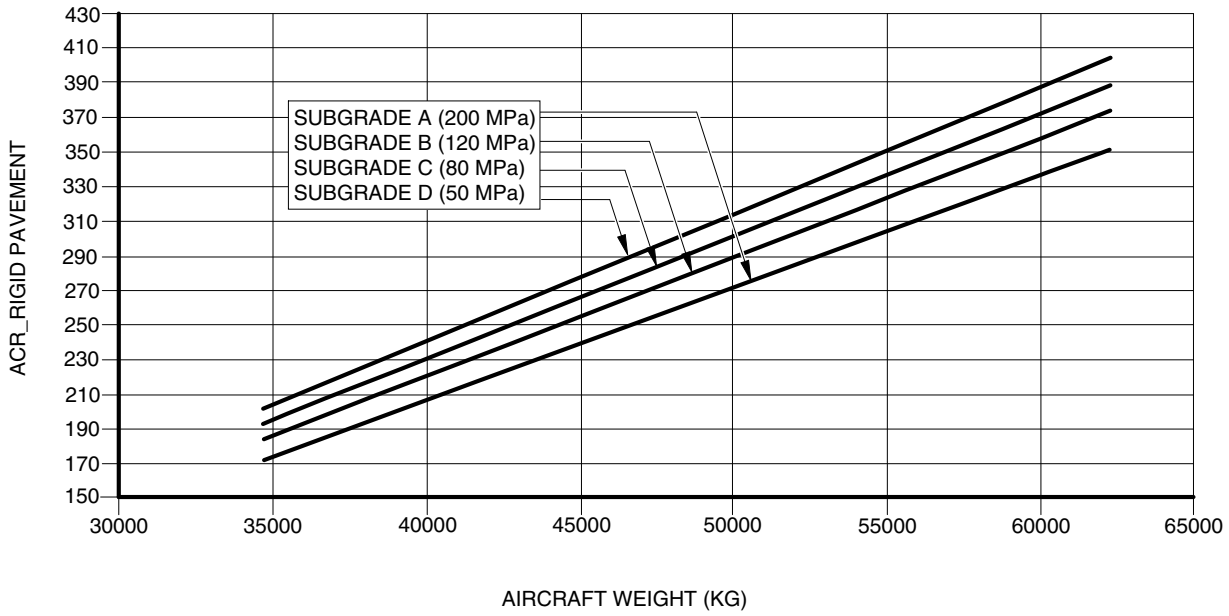
EFFECTIVITY: EMBRAER 195-E2 ACFT
ACR Rigid Pavement
Figure 7.22

RIGID PAVEMENT ACR NUMBER - ERJ 190-400



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7.10.2. ACR Calculation for ERJ 190-400 (MTOW 62,500Kg)

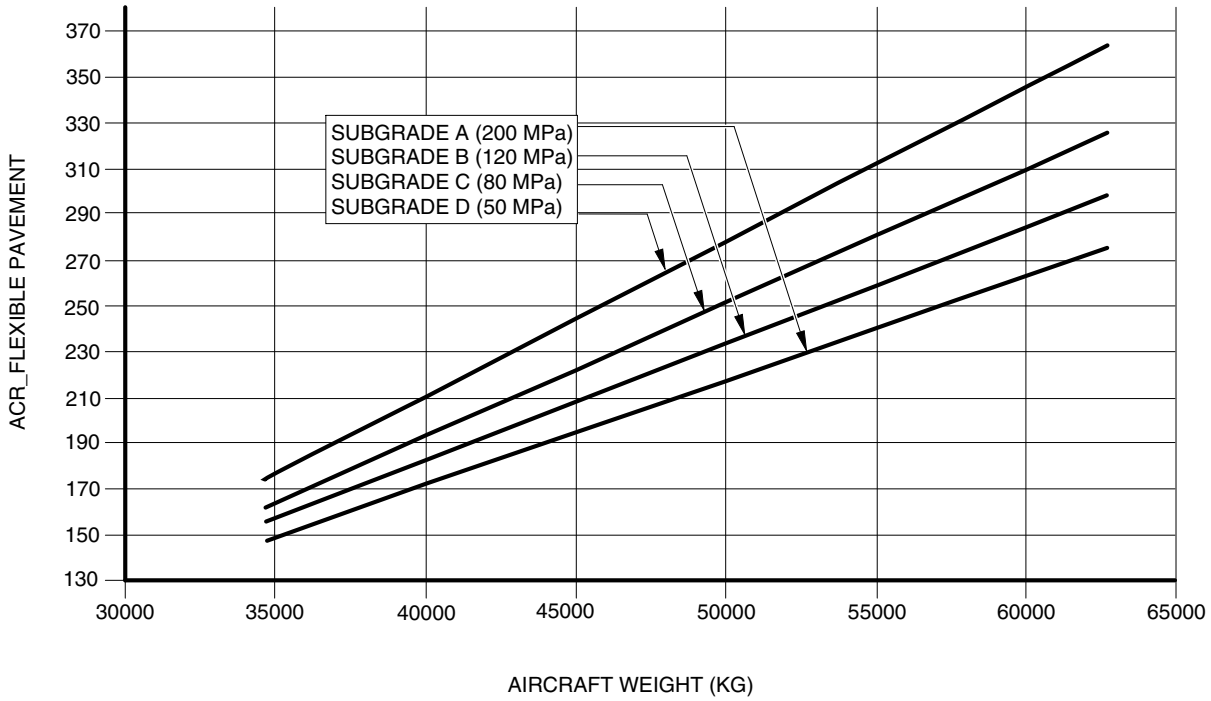
EFFECTIVITY: EMBRAER 195-E2 ACFT

Table 7.3 - RESULTS OF ACR CALCULATION FOR ERJ 190-400

						ACR relative to							
Aircraft Type Tire Size MLG CL to CL Wheels CL to CL	Maximum Ramp Weight / Minimum Operating Weight		Load on one main gear leg	Standard aircraft unloaded tire pressure		Rigid pavement subgrades				Flexible pavement subgrades			
						High E = 200 MPa	Medium E = 120 MPa	Low E = 80 MPa	Ultra-low E = 50 MPa	High E = 200 MPa	Medium E = 120 MPa	Low E = 80 MPa	Ultra-low E = 50 MPa
	lb	kg	%	psi	kPa	A	B	C	D	A	B	C	D
ERJ 190-400 (MTOW 62,500 Kg) H42 x 16 R20 6.73 m 0.87 m	138,230	62,700	46.4	172	1186	356.60	377.78	392.93	408.69	275.07	298.23	325.70	364.35
	76,500	34,700	46.0			173.66	184.79	193.29	202.65	148.33	155.73	162.74	174.70

EFFECTIVITY: EMBRAER 195-E2 ACFT
ACR Flexible Pavement
Figure 7.23

FLEXIBLE PAVEMENT ACR NUMBER - ERJ 190-400 (MTOW 62,500KG)



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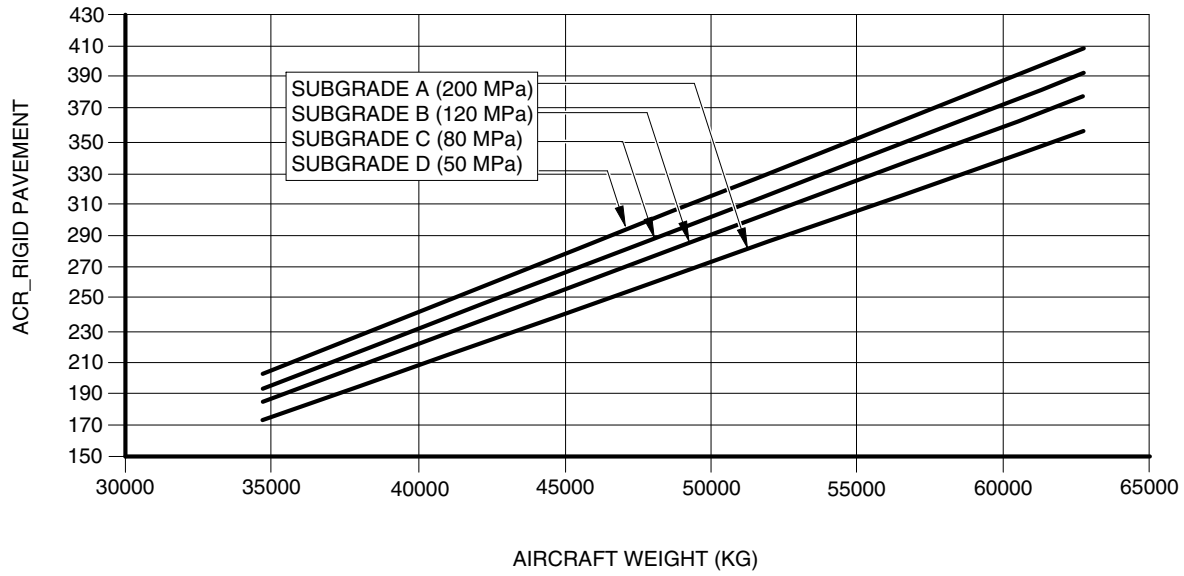
EFFECTIVITY: EMBRAER 195-E2 ACFT
ACR Rigid Pavement
Figure 7.24

RIGID PAVEMENT ACR NUMBER - ERJ 190-400 (MTOW 62,500KG)



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7.10.3. ACR Calculation for ERJ 190-300

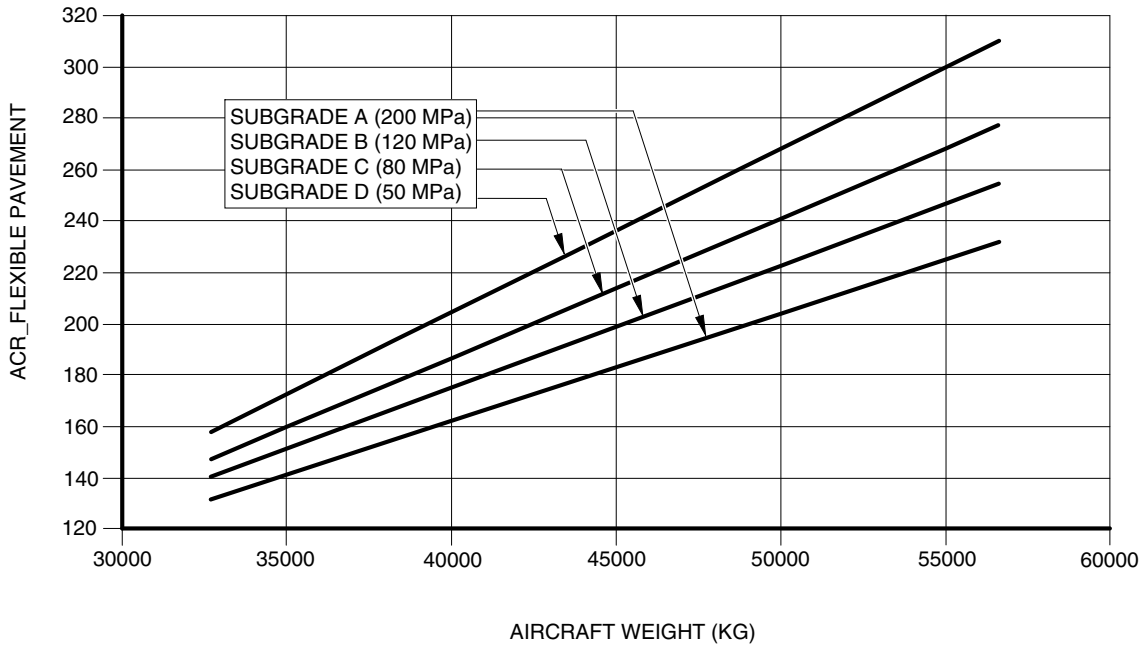
EFFECTIVITY: EMBRAER 190-E2 ACFT

Table 7.4 - RESULTS OF ACR CALCULATION FOR ERJ 190-300

						ACR relative to							
Aircraft Type Tire Size MLG CL to CL Wheels CL to CL	Maximum Ramp Weight / Minimum Operating Weight		Load on one main gear leg	Standard aircraft unloaded tire pressure		Rigid pavement subgrades				Flexible pavement subgrades			
						High E = 200 MPa	Medium E = 120 MPa	Low E = 80 MPa	Ultra-low E = 50 MPa	High E = 200 MPa	Medium E = 120 MPa	Low E = 80 MPa	Ultra-low E = 50 MPa
ERJ 190-300 H42 x 16 R20 6.73 m 0.87 m	lb	kg	%	psi	kPa	A	B	C	D	A	B	C	D
	124,781	56,600	45.6	153	1055	296.80	317.99	332.93	348.28	231.92	254.68	277.21	310.38
	72,091	32,700	45.3			152.04	163.39	172.01	181.44	131.84	140.60	147.74	158.42

EFFECTIVITY: EMBRAER 190-E2 ACFT
ACR Flexible Pavement
Figure 7.25

FLEXIBLE PAVEMENT ACR NUMBER - ERJ 190-300



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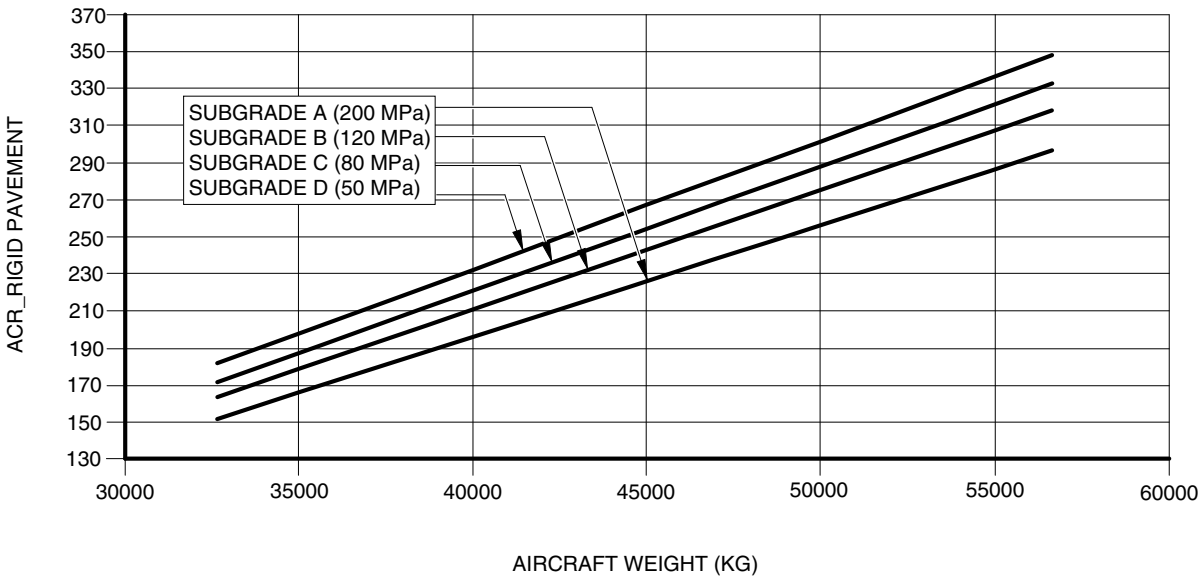
EFFECTIVITY: EMBRAER 190-E2 ACFT
ACR Rigid Pavement
Figure 7.26

RIGID PAVEMENT ACR NUMBER - ERJ 190-300



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8. **POSSIBLE EMBRAER 196 DERIVATIVE AIRCRAFT**

EFFECTIVITY: EMBRAER 175-E2, 190-E2 AND 195-E2 SERIES ACFT

8.1. NOT APPLICABLE

9. SCALED DRAWINGS

EFFECTIVITY: EMBRAER 190-E2 AND 195-E2 ACFT

9.1. GENERAL

This section provides plan views to the following scales:

- English/American Customary Weights and Measures:

  1 in = 32 ft

  1 in = 50 ft

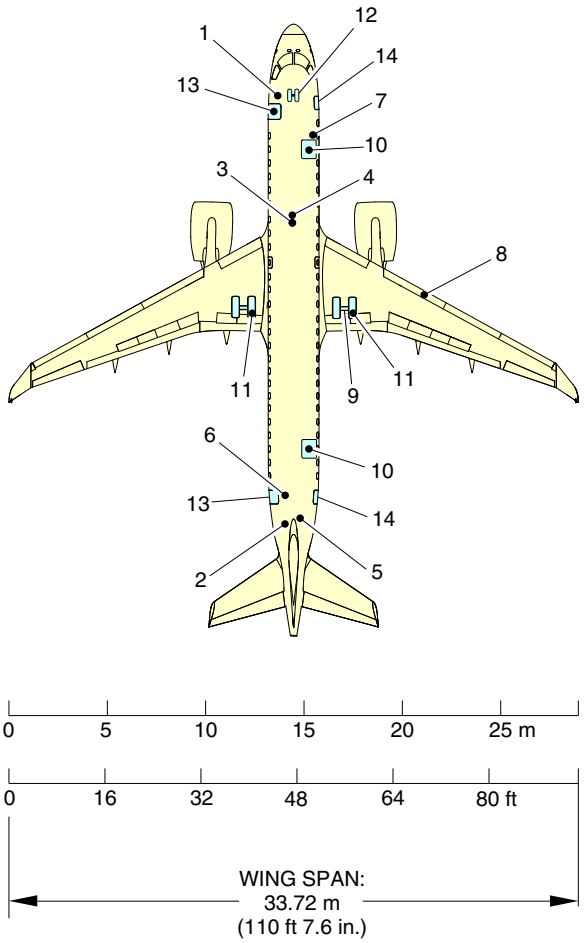
  1 in = 100 ft

- Metric

  1:500

  1:1000

EFFECTIVITY: EMBRAER 190-E2 ACFT
Scale: 1 Inch Equals 32 Feet
Figure 9.1



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

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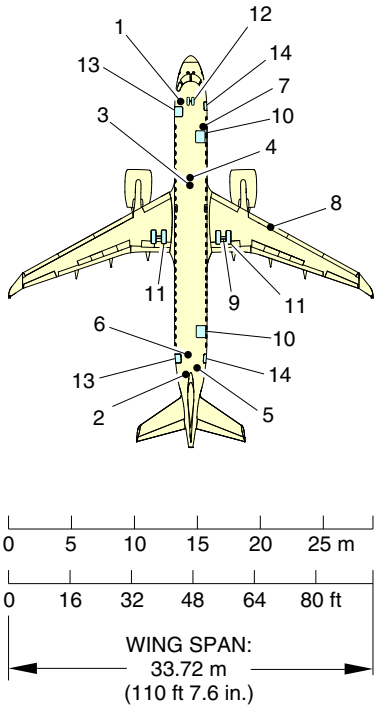
EFFECTIVITY: EMBRAER 190-E2 ACFT
Scale: 1 Inch Equals 50 Feet
Figure 9.2



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5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

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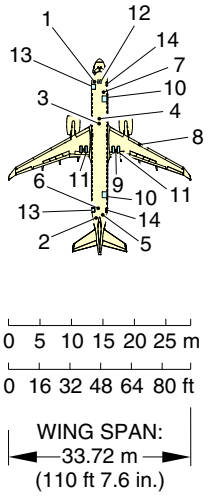
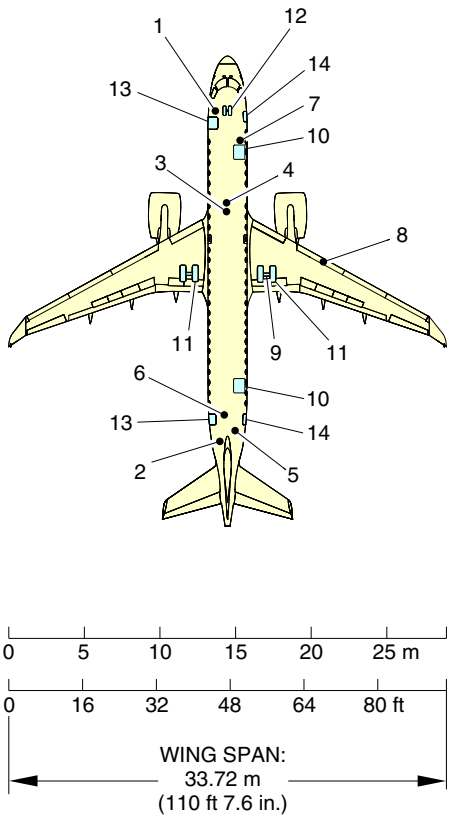
EFFECTIVITY: EMBRAER 190-E2 ACFT
Scale: 1 Inch Equals 100 Feet
Figure 9.3



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090003A.IDR

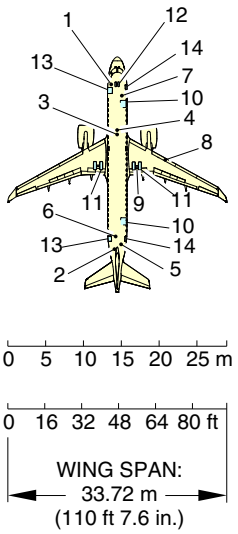
EFFECTIVITY: EMBRAER 190-E2 ACFT
Scale: 1 to 500
Figure 9.4



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090004A.IDR

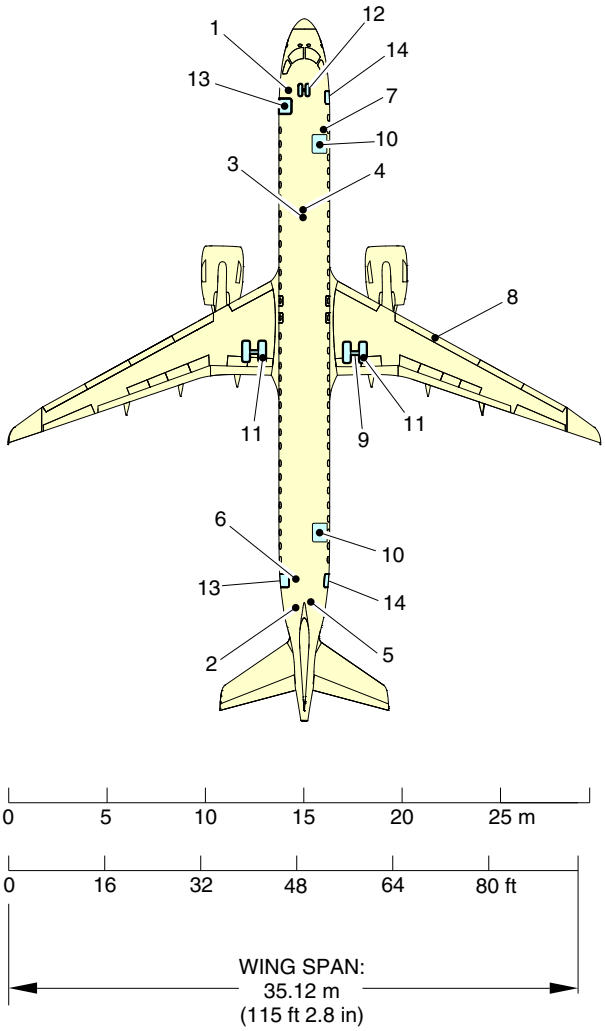
EFFECTIVITY: EMBRAER 190-E2 ACFT
Scale: 1 to 1000
Figure 9.5



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090005A.IDR

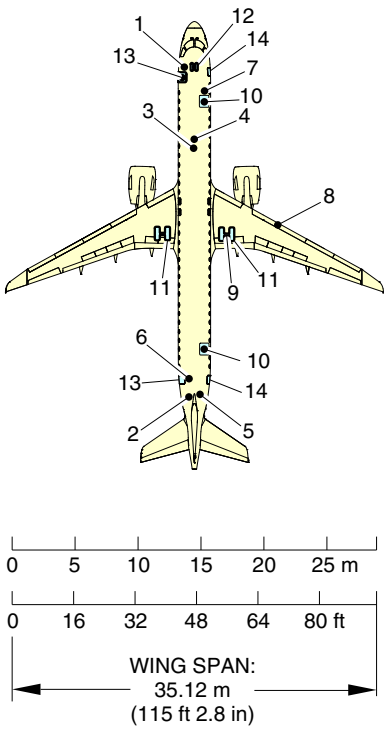
EFFECTIVITY: EMBRAER 195-E2 ACFT
Scale: 1 Inch Equals 32 Feet
Figure 9.6



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090006A.IDR

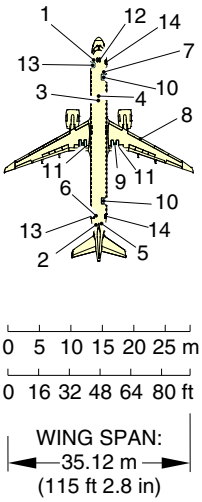
EFFECTIVITY: EMBRAER 195-E2 ACFT
Scale: 1 Inch Equals 50 Feet
Figure 9.7



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090007A.IDR

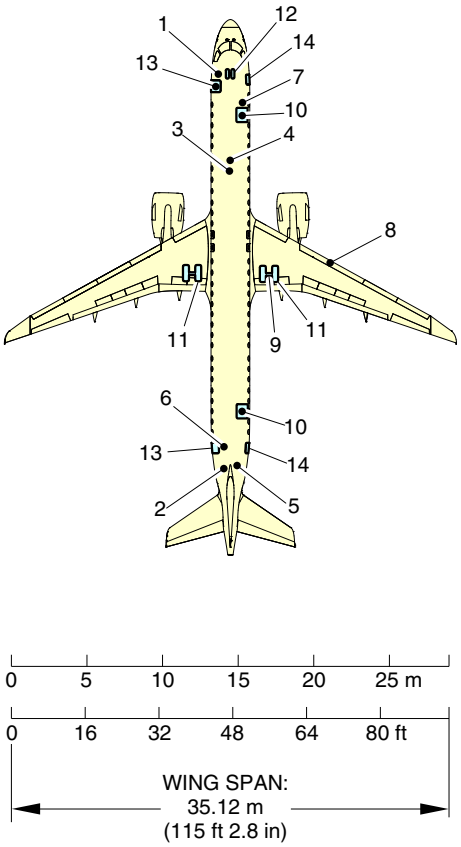
EFFECTIVITY: EMBRAER 195-E2 ACFT
Scale: 1 Inch Equals 100 Feet
Figure 9.8



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090008A.IDR

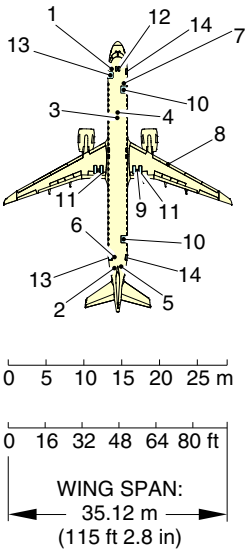
EFFECTIVITY: EMBRAER 195-E2 ACFT
Scale: 1 to 500
Figure 9.9



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090009A.IDR

EFFECTIVITY: EMBRAER 195-E2 ACFT
Scale: 1 to 1000
Figure 9.10



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	EXTERNAL POWER SUPPLY 115 VAC	8	PRESSURE REFUELING / DEFUELING
2	EXTERNAL POWER SUPPLY 28 VDC	9	GROUNDING POINT (RIGHT MLG)
3	HIGH PRESSURE AIR GROUND SUPPLY	10	CARGO DOOR
4	LOW PRESSURE AIR GROUND SUPPLY	11	MAIN LANDING GEAR
5	WASTE SERVICING PANEL	12	NOSE LANDING GEAR
6	POTABLE WATER SERVICING PANEL	13	PASSENGER DOOR
7	OXYGEN REFILL / REPLACE BOTTLE	14	SERVICE DOOR

EM170E2APM090010A.IDR