A220

Master

Aircraft characteristics publication ACP

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Issue No. 001

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Change record

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Issue	Incorporated date	by (signature)	Issue	Incorporated date	by (signature)
001	Oct 19/2023	Signature on file	026		
002			027		
003			028		
004			029		
005			030		
006			031		
007			032		
008			033		
009			034		
010			035		
011			036		
012			037		
013			038		
014			039		
015			040		
016			041		
017			042		
018			043		
019			044		
020			045		
021			046		
022			047		
023			048		
024			049		
025			050		

Applicable to: All

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List of effective data modules

The listed documents are included in Issue 001, dated 2023-10-19, of this publication.

C = Changed data module
N = New data module

Document title	Data module code	Issue date	No. of pages	Applicable to
A220-100 Aircraft Charact eristics - Introduction	BD500-A-J00-00-00-20AAA-018A-A	2023-09-15	3	50001-54999
A220-300 Aircraft Charact eristics - Introduction	BD500-A-J00-00-00-20AAB-018A-A	2023-09-15	3	55001-59999
Aircraft charact eristics - Technical data	BD500-A-J00-00-00-00AAA-030A-A	2023-09-12	3	50001-54999, 55001-59999
A220 Aircraft Charact eristics - Introduction	BD500-A-J00-00-00-09AAA-018A-A	2023-09-15	2	50001-54999, 55001-59999
Aircraft description - Technical data	BD500-A-J00-00-00-12AAA-030A-A	2023-09-08	34	50001-54999
Aircraft description - Technical data	BD500-A-J00-00-00-12AAB-030A-A	2022-05-12	38	55001-59999
Aircraft dimensions - Technical data	BD500-A-J06-10-00-00AAA-030A-A	2021-03-18	12	50001-54999, 55001-59999
Nacelle and pylon stations - Technical data	BD500-A-J06-20-03-01AAA-030A-A	2014-11-13	3	50001-54999, 55001-59999
Slinging and hoisting - Function, data for plans and description	BD500-A-J07-30-00-00AAA-000A-A	2019-10-21	1	50001-54999, 55001-59999
Aircraft grounding - General maintenance procedure	BD500-A-J10-10-02-01AAA-913A-A	2017-08-08	5	50001-54999, 55001-59999
Forward cargo compartment volume, weight and maximum item dimensions - Technical data	BD500-A-J14-20-00-01AAA-030A-A	2023-03-23	12	50001-54999, 55001-59999
Aft cargo compartment volume, weight and maximum item dimensions - Technical data	BD500-A-J14-20-00-02AAA-030A-A	2023-03-23	12	50001-54999, 55001-59999
Aircraft touch and no-touch zones - Technical data	BD500-A-J15-30-00-00AAA-030A-A	2019-10-21	5	50001-54999, 55001-59999
Aircraft performance - Technical data	BD500-A-J00-00-00-13AAA-030A-A	2015-09-01	14	50001-54999
Aircraft performance - Technical data	BD500-A-J00-00-00-13AAB-030A-A	2015-10-29	12	55001-59999

Applicable to: All

Document title	Data module code	Issue date	No. of pages	Applicable to
Operating conditions - Technical data	BD500-A-J00-00-00-17AAA-030A-A	2023-09-08	14	50001-54999
Operating conditions - Technical data	BD500-A-J00-00-00-17AAB-030A-A	2020-07-08	12	55001-59999
Ground maneuvering - Technical data	BD500-A-J00-00-00-19AAA-030A-A	2019-10-22	33	50001-54999
Ground maneuvering - Technical data	BD500-A-J00-00-00-19AAB-030A-A	2019-10-22	33	55001-59999
Ground maneuvering, turning radii - Technical data	BD500-A-J09-20-01-00AAA-030A-A	2018-02-05	4	50001-54999, 55001-59999
Ground maneuvering, visibility from flight compartment - Technical data	BD500-A-J09-20-01-01AAA-030A-A	2016-01-13	3	50001-54999, 55001-59999
Terminal servicing - Technical data	BD500-A-J00-00-00-18AAA-030A-A	2022-09-30	40	50001-54999
Terminal servicing - Technical data	BD500-A-J00-00-00-18AAB-030A-A	2022-09-30	40	55001-59999
Refueling - rate and time - Technical data	BD500-A-J12-10-28-01AAB-030A-A	2017-01-16	6	55001-59999
Deicing/Anti-icing - Remove ice	BD500-A-J12-31-00-00AAA-261A-A	2023-03-10	42	50001-54999, 55001-59999
Crew safety precautions - dangerous areas - Technical data	BD500-A-J15-30-10-00AAA-030A-A	2019-12-03	3	50001-54999
Pavement data - Technical data	BD500-A-J00-00-00-11AAA-030A-A	2023-09-08	66	50001-54999
Pavement data - Technical data	BD500-A-J00-00-00-11AAB-030A-A	2022-05-12	40	55001-59999
Principal dimensions, landing gear footprint - Technical data	BD500-A-J06-10-32-00AAA-030A-A	2016-05-02	3	50001-54999, 55001-59999
Scaled drawings - Technical data	BD500-A-J00-00-00-21AAA-030A-A	2019-10-22	2	50001-54999
Scaled drawings - Technical data	BD500-A-J00-00-00-21AAB-030A-A	2019-10-22	2	55001-59999
Aircraft scaled down dimensions - Technical data	BD500-A-J06-10-00-01AAA-030A-A	2019-10-21	3	50001-54999, 55001-59999
Emergency exits and evacuation - Technical data	BD500-A-J15-41-00-01AAA-030A-A	2019-11-05	4	50001-54999, 55001-59999

Document title	Data module code	Issue date	No. of pages	Applicable to
Fire-fighting - Fire-fighting and rescue	BD500-A-J15-41-00-02AAA-989A-A	2014-11-07	6	50001-54999, 55001-59999

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Table of contents

The listed documents are included in Issue 001, dated 2023-10-19, of this publication.

Document title	Data module code	Issue date	Applicable to
Chapter 1: Scope			
A220-100 Aircraft Characteristics - Introduction	BD500-A-J00-00-00-20AAA-018A-A	2023-09-15	50001-54999
A220-300 Aircraft Characteristics - Introduction	BD500-A-J00-00-00-20AAB-018A-A	2023-09-15	55001-59999
Chapter 2: Aircraft description			
Aircraft characteristics - Technical data	BD500-A-J00-00-00-00AAA-030A-A	2023-09-12	50001-54999, 55001-59999
A220 Aircraft Characteristics - Introduction	BD500-A-J00-00-00-09AAA-018A-A	2023-09-15	50001-54999, 55001-59999
Aircraft description - Technical data	BD500-A-J00-00-00-12AAA-030A-A	2023-09-08	50001-54999
Aircraft description - Technical data	BD500-A-J00-00-00-12AAB-030A-A	2022-05-12	55001-59999
Aircraft dimensions - Technical data	BD500-A-J06-10-00-00AAA-030A-A	2021-03-18	50001-54999, 55001-59999
Nacelle and pylon stations - Technical data	BD500-A-J06-20-03-01AAA-030A-A	2014-11-13	50001-54999, 55001-59999
Slinging and hoisting - Function, data for plans and description	BD500-A-J07-30-00-00AAA-000A-A	2019-10-21	50001-54999, 55001-59999
Aircraft grounding - General maintenance procedure	BD500-A-J10-10-02-01AAA-913A-A	2017-08-08	50001-54999, 55001-59999
Forward cargo compartment volume, weight and maximum item dimensions - Technical data	BD500-A-J14-20-00-01AAA-030A-A	2023-03-23	50001-54999, 55001-59999
Aft cargo compartment volume, weight and maximum item dimensions - Technical data	BD500-A-J14-20-00-02AAA-030A-A	2023-03-23	50001-54999, 55001-59999
Aircraft touch and no-touch zones - Technical data	BD500-A-J15-30-00-00AAA-030A-A	2019-10-21	50001-54999, 55001-59999
Chapter 3: Aircraft performance			
Aircraft performance - Technical data	BD500-A-J00-00-00-13AAA-030A-A	2015-09-01	50001-54999
Aircraft performance - Technical data	BD500-A-J00-00-00-13AAB-030A-A	2015-10-29	55001-59999
Chapter 4: Ground maneuvering			
Operating conditions - Technical data	BD500-A-J00-00-00-17AAA-030A-A	2023-09-08	50001-54999
Operating conditions - Technical data	BD500-A-J00-00-00-17AAB-030A-A	2020-07-08	55001-59999
Ground maneuvering - Technical data	BD500-A-J00-00-00-19AAA-030A-A	2019-10-22	50001-54999
Ground maneuvering - Technical data	BD500-A-J00-00-00-19AAB-030A-A	2019-10-22	55001-59999

Applicable to: All

Document title	Data module code	Issue date	Applicable to
Ground maneuvering, turning radii - Technical data	BD500-A-J09-20-01-00AAA-030A-A	2018-02-05	50001-54999, 55001-59999
Ground maneuvering, visibility from flight compartment - Technical data	BD500-A-J09-20-01-01AAA-030A-A	2016-01-13	50001-54999, 55001-59999
Chapter 5: Terminal servicing			
Terminal servicing - Technical data	BD500-A-J00-00-00-18AAA-030A-A	2022-09-30	50001-54999
Terminal servicing - Technical data	BD500-A-J00-00-00-18AAB-030A-A	2022-09-30	55001-59999
Refueling - rate and time - Technical data	BD500-A-J12-10-28-01AAB-030A-A	2017-01-16	55001-59999
Deicing/Anti-icing - Remove ice	BD500-A-J12-31-00-00AAA-261A-A	2023-03-10	50001-54999, 55001-59999
Chapter 6: Operating conditions			
Crew safety precautions - dangerous areas - Technical data	BD500-A-J15-30-10-00AAA-030A-A	2019-12-03	50001-54999
Chapter 7: Pavement data			
Pavement data - Technical data	BD500-A-J00-00-00-11AAA-030A-A	2023-09-08	50001-54999
Pavement data - Technical data	BD500-A-J00-00-00-11AAB-030A-A	2022-05-12	55001-59999
Principal dimensions, landing gear footprint - Technical data	BD500-A-J06-10-32-00AAA-030A-A	2016-05-02	50001-54999, 55001-59999
Chapter 8: Scaled drawing			
Scaled drawings - Technical data	BD500-A-J00-00-00-21AAA-030A-A	2019-10-22	50001-54999
Scaled drawings - Technical data	BD500-A-J00-00-00-21AAB-030A-A	2019-10-22	55001-59999
Aircraft scaled down dimensions - Technical data	BD500-A-J06-10-00-01AAA-030A-A	2019-10-21	50001-54999, 55001-59999
Chapter 10: Aircraft rescue and fire fighting			
Emergency exits and evacuation - Technical data	BD500-A-J15-41-00-01AAA-030A-A	2019-11-05	50001-54999, 55001-59999
Fire-fighting - Fire-fighting and rescue	BD500-A-J15-41-00-02AAA-989A-A	2014-11-07	50001-54999, 55001-59999

A220

Chapter 1: Scope

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A220

A220-100 Aircraft Characteristics - Introduction

Applicability: 50001-54999

Table of contents

Page

A220-100 Aircraft Characteristics - Introduction 1
References 1
Description 1
1 Scope of the publication 1
2 Publication organization 1
3 Dimensions and weight 2
4 Correspondence 2
5 Translation of publication 2
6 Standard term definitions 2
7 Acronyms 3

List of tables

Page

1 References 1

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Scope of the publication

The A220-100 Aircraft Characteristics , prepared by Airbus, contains general data on the airport facilities, ramp, and runway areas necessary to operate the Airbus commercial aircraft model BD-500-1A10 (A220-100).

Since operational practices vary among airlines, specific data should be coordinated with the user airlines prior to facility design. For additional information, please contact Airbus.

The content of this publication will change as options and aircraft changes occur. Make sure that you refer to the latest release of this publication.

If there is a difference between the data contained in this publication and that given by the local regulatory authority, the data from the local regulatory authority must be obeyed.

2 Publication organization

This publication is divided into eight sections:

- Aircraft description
- Aircraft performance
- Ground maneuvering

- Terminal servicing
- Operating conditions
- Pavement data
- Derivative aircraft
- Scaled drawings

3 Dimensions and weight

Linear dimensions given in this publication are in inches. The metric equivalents are given in parentheses ( ).

Weight measures is given in pound (lb) with the metric equivalent in parentheses ( ).

4 Correspondence

The publications change request form is available online and is used to request technical changes to rectify any errors, omissions, or procedural inconsistencies (if applicable), etc. using the Airbus A220 Interactive Electronic Technical Publication (IETP) viewer.

5 Translation of publication

If all or part of this publication is translated, the official version is the English language version by Airbus.

6 Standard term definitions

Maximum design Taxi Weight (MTW)	Maximum weight at which an aircraft can move safely on the ground. This includes the fuel for these displacements and the takeoff run.
Maximum design Landing Weight (MLW)	Maximum weight for landing as limited by aircraft strength and airworthiness requirement.
Maximum design Take-Off Weight (MTOW)	Maximum weight for take off as limited by aircraft strength and airworthiness requirements. This includes weight of fuel for taxi and run-up.
Operational Weight Empty (OWE)	Weight of structure, power plant, furnishings, systems, unusable fuel and other items of equipment that are a necessary part of a particular aircraft configuration. Also included are certain standard items, personnel, equipment and supplies necessary for full operations, but does not include usable fuel or payload.
Maximum design Zero Fuel Weight (MZFW)	Maximum weight permitted before usable fuel and other usable agents must be loaded in defined sections of the aircraft, as limited by strength and airworthiness requirements.
Maximum cargo volume	The maximum space available for cargo.

Maximum seating capacity	The maximum number of passengers permitted based on certification requirements.
Usable fuel	Fuel available for aircraft propulsion and the Auxiliary Power Unit (APU).

7 Acronyms

The first time an acronym is used it will be defined, and all subsequent uses will be in blue. When you mouse over the acronym the definition will appear. Acronyms are not plural in this publication.

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A220

A220-300 Aircraft Characteristics - Introduction

Applicability: 55001-59999

Table of contents

Page

A220-300 Aircraft Characteristics - Introduction 1
References 1
Description 1
1 Scope of the publication 1
2 Publication organization 1
3 Dimensions and weight 2
4 Correspondence 2
5 Translation of publication 2
6 Standard term definitions 2
7 Acronyms 3

List of tables

Page

1 References 1

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Scope of the publication

The A220-300 Aircraft Characteristics prepared by Airbus, contains general data on the airport facilities, ramp, and runway areas necessary to operate the Airbus BD-500-1A11 (A220-300).

Since operational practices vary among airlines, specific data should be coordinated with the user airlines prior to facility design. For additional information, please contact Airbus.

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Maximum design Zero Fuel Weight (MZFW)	Maximum weight permitted before usable fuel and other usable agents must be loaded in defined sections of the aircraft, as limited by strength and airworthiness requirements.
Maximum cargo volume	The maximum space available for cargo.
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Usable fuel Fuel available for aircraft propulsion and the Auxiliary Power Unit (APU).

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A220

Chapter 2: Aircraft description

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Aircraft characteristics - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Aircraft characteristics - Technical data 1
References 1
Description 1
1 Introduction 1
2 Aircraft characteristics 1
3 System fluid capacities 2
4 Service fluid capacities 3

List of tables

Page

1 References 1
2 Aircraft characteristics 1
3 System fluid capacities 2
4 Service fluid capacities 3

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains general data about the BD-500-1A10 (A220-100) and BD-500-1A11 (A220-300) aircraft characteristics. The structural weight limits, such as maximum ramp weight, and zero fuel weight are dependent on configuration. Refer to each aircraft's specified Weight and Balance Manual (WBM BD500-A-J00-00-00-00AAA-030A-A) and weight and balance report for structural limits and other weight information.

Refer to Table 2 for the aircraft characteristics.

Refer to Table 3 for the system fluid capacities.

Refer to Table 4 for the service fluid capacities.

2 Aircraft characteristics

Table 2 Aircraft characteristics

Description	**BD-500-1A10 (A220-100)**	**BD-500-1A11 (A220-300)**
Engines	QTY: 2 Pure Power™ PW1519G	QTY: 2 Pure Power™ PW1521G
Mode	Passenger	Passenger

Description	BD-500-1A10 (A220-100)	BD-500-1A11 (A220-300)
Standard seating capacity	120	140
Maximum Ramp Weight (MRW)	135,000 lb (61 235 kg)	150,000 lb (68 039 kg)
Maximum Take-Off Weight (MTOW)	134,000 lb (60 781 kg)	149,000 lb (67 585 kg)
Maximum Landing Weight (MLW)	115,500 lb (52 390 kg)	129,500 lb (58 740 kg)
Operating Weight Empty (OWE)	77,650 lb (35 221 kg)	81,750 lb (37 081 kg)
Maximum Zero Fuel Weight (MZFW)	111,000 lb (50 349 kg)	123,000 lb (55 792 kg)
Maximum fuel tank capacity	5,790 USG (21 918 L)	5,790 USG (21 918 L)
Unusable fuel	240 lb (109 kg)	240 lb (109 kg)
Maximum wet cargo volume - Aft cargo compartment	474 cu. ft (13,4 cu. m)	627 cu. ft (17,75 cu. m)
Maximum wet cargo volume - Fwd cargo compartment	349 cu. ft (9,88 cu. m)	473 cu. ft (13,39 cu. m)
Maximum cargo volume - Over-head bins	280 cu. ft (7,93 cu. m)	332 cu. ft (9,40 cu. m)

3 System fluid capacities

Table 3 System fluid capacities

Description	Volume	Weight
Engine fluids calculated with 7.7 lb/US gal (0,920 kg/L)		
Engines oil tank at 60 °F	12.9 US gal (49,0 L)	99 lb (44,9 kg)
Lines and internal engine oil	3.3 US gal (12,6 L)	26 lb (11,8 kg)
Total	16.2 US gal (61,6 L)	125 lb (56,7 kg)
APU fluids calculated with 7.7 lb/US gal (0,920 kg/L)		
APU	3.3 US gal (12,3 L)	25 lb (11,3 kg)
Hydraulic fluids at 77°F (25 °C) low density 8.43 lb/US gal (1,01 kg/L)		
System 1 reservoir	4.98 US gal (18.85 L)	41.98 lb (19.04 kg)
System 2 reservoir	4.33 US gal (16.39 L)	36.50 lb (16.55 kg)
System 3 reservoir	3.46 US gal (13.10 L)	29.17 lb (13.23 kg)
Total	12.77 US gal (48.34 L)	107.65 lb (48.82 kg)

Description	Volume	Weight
Hydraulic fluids at 77°F (25 °C) high density 8.86 lb/US gal (1,06 kg/L)		
System 1 reservoir	4.98 US gal (18.85 L)	44.12 lb (20.01 kg)
System 2 reservoir	4.33 US gal (16.39 L)	38.36 lb (17.40 kg)
System 3 reservoir	3.46 US gal (13.10 L)	30.65 lb (13.90 kg)
Total	12.77 US gal (48.34 L)	113.13 lb (51.31 kg)

4 Service fluid capacities

Table 4 Service fluid capacities

Description	Volume	Weight
Potable water at 60 °F (15,5 °C)		
Galley/Lavatory tank	42.0 US gal (159,0 L)	350.5 lb (159.0 kg)
Chemical toilet fluid at 60 °F (15,5 °C)		
Waste tank	42.0 US gal (159,1 L)	350 lb (158,8 kg)

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A220

A220 Aircraft Characteristics - Introduction

Applicability: 50001-54999, 55001-59999

Table of contents

Page

A220 Aircraft Characteristics - Introduction 1
References 1
Description 1
1 General 1
2 Dimensions and weight 1
3 Correspondence 2
4 Translation of publication 2
5 Acronyms 2

List of tables

Page

1 References 1

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

The A220 Aircraft Characteristics, prepared by Airbus, contains information necessary to support the Airbus aircraft models BD-500-1A10 (A220-100) and BD-500-1A11 (A220-300) during ramp operations. The information provided here includes aircraft dimensions, servicing access, emergency access and equipments, routine fluid replenishment procedure and general servicing of the aircraft.

This publication agrees with the international specification for technical publications (S1000D) issue 4.0.1 dated 2009-05-12 and is written in simplified technical english.

The content of this publication will change as options and aircraft changes occur. Make sure that you refer to the latest release of this publication.

If there is a difference between the data contained in this publication and that given by the local regulatory authority, the data from the local regulatory authority must be obeyed.

All the procedures in the A220 Aircraft Characteristics can be performed by Aircraft Maintenance Engineers (AME). However, ramp personnel may be authorized to perform (RSP) procedures, if they are trained and certified by the operator.

2 Dimensions and weight

Linear dimensions given in this publication are in inches or feet with the metric equivalence in parentheses.

Weight measures is given in pounds with the metric equivalence in parentheses.

3 Correspondence

Send all correspondence about this publication to:

AIRBUS

CUSTOMER SUPPORT

13100 HENRI-FABRE BLVD, MIRABEL, QUEBEC

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4 Translation of publication

If all or part of this publication is translated, the official version is the English language version produced by Airbus.

5 Acronyms

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Aircraft description - Technical data

Applicability: 50001-54999

Table of contents

Page

Aircraft description - Technical data 1
References 2
Description 2
1 Aircraft characteristics 2
1.1 Introduction 2
1.2 Aircraft characteristics 2
1.3 System fluid capacities 3
1.4 Service fluid capacities 4
2 Aircraft dimensions 4
2.1 General aircraft dimensions 4
2.2 General aircraft area 7
3 Ground clearances 7
3.1 Ground clearances 7
3.2 Ground clearances for evacuation slides 9
4 Layout of passenger compartment accommodation 11
5 Passenger cross-section 13
6 Cargo compartment 17
6.1 Cargo door nets 17
6.2 Volumes – Cargo compartment 17
7 Door clearances and clear opening dimensions 23
7.1 Passenger/Crew 23
7.2 Emergency exit 23
7.3 Flight compartment emergency exit 23
7.4 Cargo doors 23
7.5 Service doors 24
7.6 Forward avionics bay door 24
7.7 Mid avionics bay door 24
7.8 Aft equipment bay door 24
7.9 Doors identification 24
7.10 Access and exit doors dimensions 26
7.11 Door distance from nose 26
7.12 Door opening and clearance 28

List of tables

Page

1 References 2
2 Aircraft characteristics 2
3 Aircraft characteristics 3
4 System fluid capacities 3
5 Service fluid capacities 4
6 General aircraft area 7
7 Ground clearances for evacuation slides 9
8 Cargo compartment volumes 17
9 Access and exit doors dimensions 26

List of figures

Page

1 General aircraft dimensions 5
2 Ground clearances 8

3 Ground clearances for evacuation slides..... 10
4 Layout Of Passenger Accommodation (LOPA)..... 12
5 Passenger cross-section (economy class)..... 14
6 Passenger cross-section (optional business class)..... 15
7 Overhead stowage bins..... 16
8 Aircraft cargo side view..... 18
9 Cargo nets..... 21
10 General door location..... 25
11 Door distance from nose..... 27
12 Forward passenger door opening and clearances..... 29
13 Aft passenger door opening and clearances..... 30
14 Forward cargo compartment door opening and clearances..... 31
15 Aft cargo compartment door opening and clearances..... 32
16 Forward service door opening and clearance..... 33
17 Aft service door opening and clearances..... 34

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Aircraft characteristics

1.1 Introduction

This data module contains general data about the Airbus model BD-500-1A10 (A220-100) characteristics. The structural weight limits, such as maximum ramp weight, and zero fuel weight are dependent on configuration. Refer to each aircraft's specified Weight and Balance Manual (WBM) BD500-3AB48-22100-00 and weight and balance report for structural limits and other weight information.

Refer to Table 2 and Table 3 for the aircraft characteristics.

Refer to Table 4 for the system fluid capacities.

Refer to Table 5 for the service fluid capacities.

1.2 Aircraft characteristics

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 2 Aircraft characteristics

Description	A220-100
Engines	2 Pure Power™ PW1519G[1]
Mode	Passenger

Description	A220-100
Standard seating capacity	120
Maximum Ramp Weight (MRW)	141,500 lb (64,183 kg)
Maximum Take-Off Weight (MTOW)	140,500 lb (63,730 kg)
Maximum Landing Weight (MLW)	120,500 lb (54,658 kg)
Maximum Zero Fuel Weight (MZFW)	116,000 lb (52,617 kg)
Minimum Flight Weight (MFW)	77,000 lb (34,927 kg)
Maximum fuel tank capacity	5,756 US gal (21 805 L)
Unusable fuel	220.5 lb (100 kg)
Maximum cargo volume - Overhead bins	280 ft³ (7,93 m³)
1 Optional engine models: PW1521G and PW1524G	

Applicability: 50062, 50066-50067, 50069, 50071, 50077-50078, 50081

Table 3 Aircraft characteristics

Description	A220-100
Engines	2 Pure Power™ PW1519G[1]
Mode	Passenger
Maximum Ramp Weight (MRW)	135,000 lb (64,183 kg)
Maximum Take-Off Weight (MTOW)	134,000 lb (60,781 kg)
Maximum Landing Weight (MLW)	112,500 lb (51,029 kg)
Maximum Zero Fuel Weight (MZFW)	108,000 lb (48,987 kg)
Minimum Flight Weight (MFW)	77,000 lb (34,927 kg)
1 Optional engine models: PW1521G and PW1524G	

1.3 System fluid capacities

Table 4 System fluid capacities

Description	Volume	Weight
Engine fluids calculated with 8.24 lb/US gal (0,987 kg/L)		
Engine oil tank at 60 °F	6.5 US gal (24.4 L)	53.1 lb (24.1 kg)
Lines and internal engine oil	7.7 US gal (29.2 L)	63.5 lb (28.8 kg)
APU fluids calculated with 7.98 lb/US gal (0.956 kg/L)		

Description	Volume	Weight
APU oil tank	1.94 US gal (7.3 L)	15.4 lb (7.0 kg)
APU lines and internal oil	0.84 US gal (3.2 L)	6.7 lb (3.0 kg)
Hydraulic fluids at 77 °F (25 °C) low density 8.20 lb/US gal (0.983 kg/L)		
System No. 1 reservoir	5.0 US gal (18.8 L)	40.8 lb (18.5 kg)
System No. 2 reservoir	4.33 US gal (16.4 L)	35.50 lb (16.1 kg)
System No. 3 reservoir	4.33 US gal (16.4 L)	35.50 lb (16.1 kg)
Systems and lines	34.6 US gal (131.0 L)	283.8 lb (128.7 kg)

1.4 Service fluid capacities

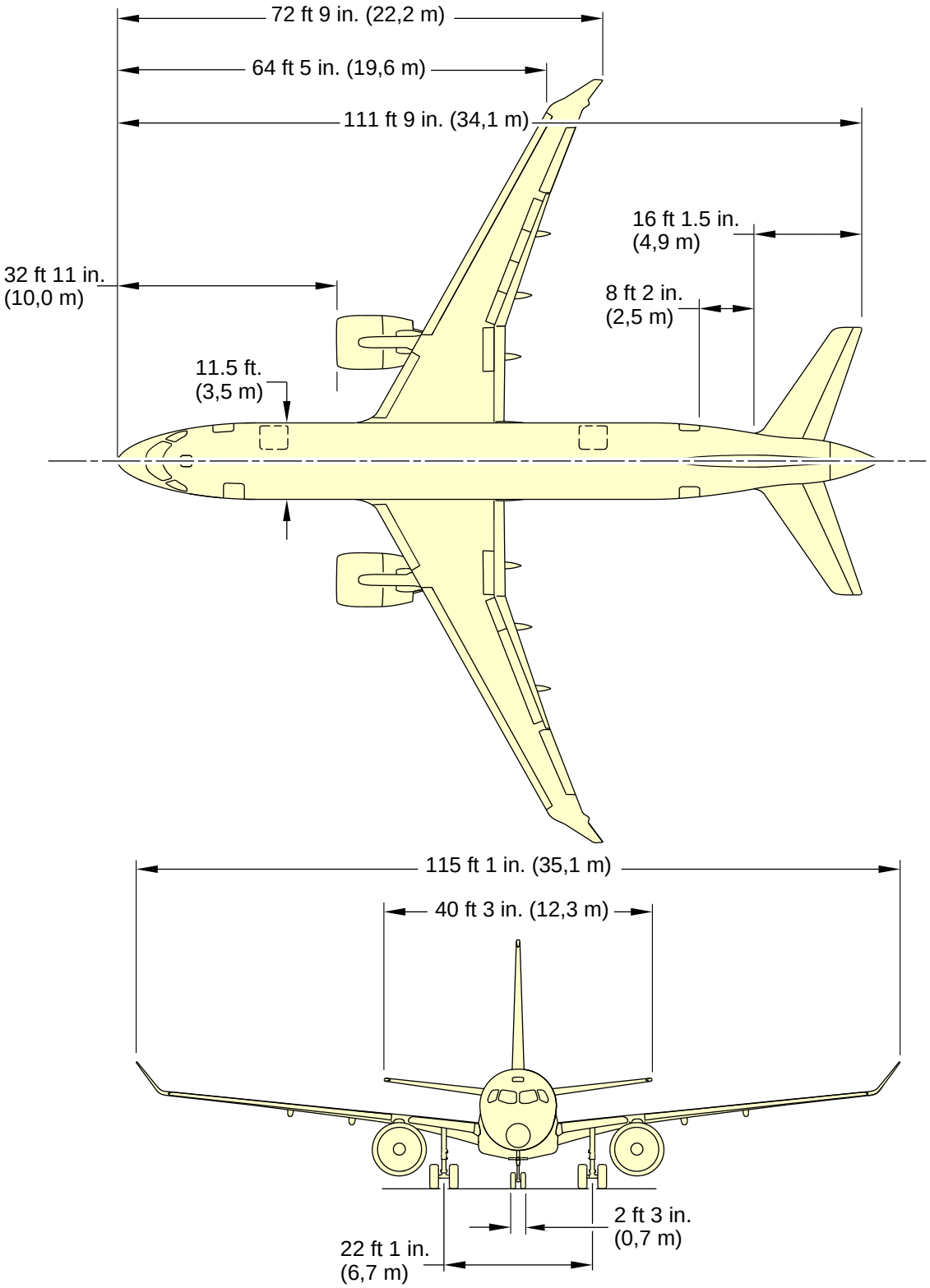
Table 5 Service fluid capacities

Description	Volume	Weight
Potable water at 60 °F (15,5 °C)		
Galley/Lavatory tank level 100%	41.9 US gal (158.8 L)	350.0 lb (158.8 kg)
Chemical toilet fluid at 60 °F (15,5 °C)		
Waste tank level 100%	38 US gal (143.8 L)	317.1 lb (143.8 kg)

2 Aircraft dimensions

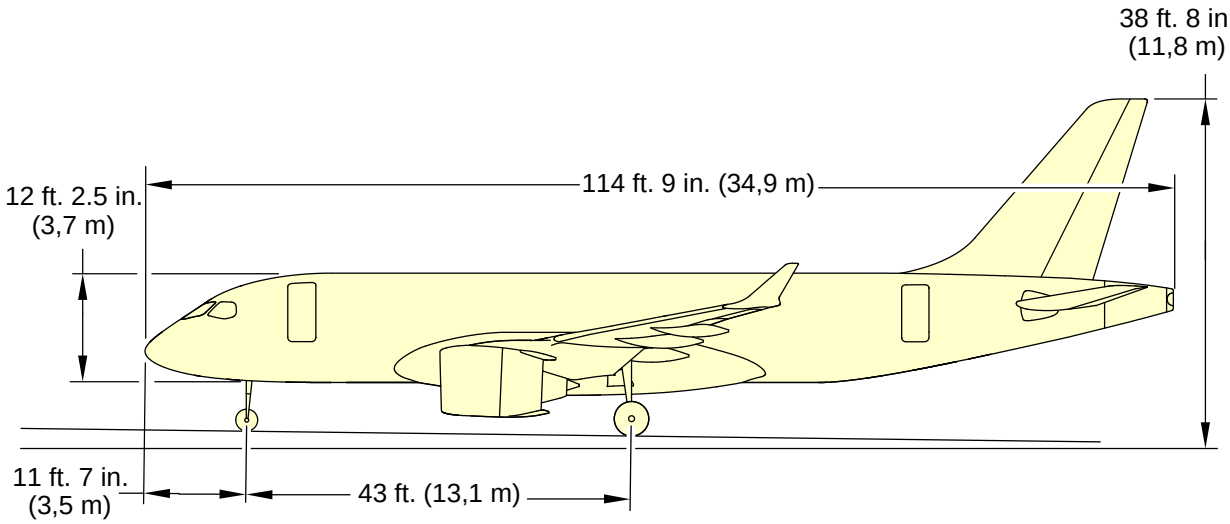
2.1 General aircraft dimensions

This section contains general data about the aircraft dimensions.



ICN-BD500-A-J000000-A-3AB48-22469-A-002-01

Figure 1 General aircraft dimensions - (Sheet 1 of 2)



ICN-BD500-A-J000000-A-3AB48-22470-A-003-01

Figure 1 General aircraft dimensions - (Sheet 2 of 2)

2.2 General aircraft area

Table 6 General aircraft area

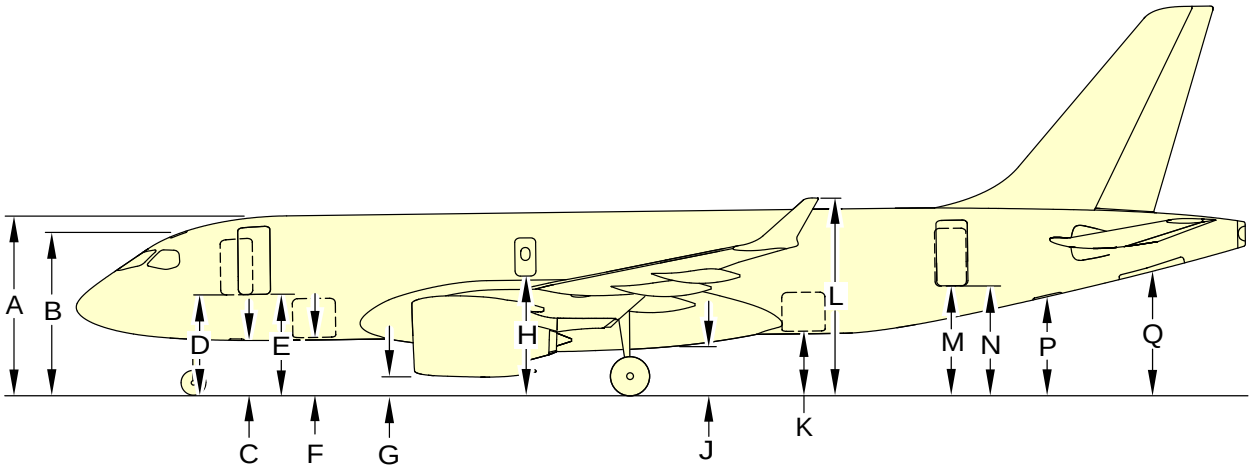
Description	A220-100
ESDU wing area (including ailerons, flaps, spoilers and area within the fuselage)	1209 ft² (112.3 m²)
Total horizontal stabilizer area (horizontal tail area and elevator area)	395 ft² (36.6 m²)
Total vertical stabilizer area (vertical tail area and rudder area)	304 ft² (28.2 m²)

3 Ground clearances

This section gives the height of various points of the aircraft, above the ground.

Dimensions in the tables are approximate and will vary with tire type, weight and balance and other special conditions.

3.1 Ground clearances



Dimensions	Minimum	Maximum
A	17 ft 5 in.(5,3 m)	17 ft 10 in.(5,4 m)
B	15 ft 8 in.(4,8 m)	16 ft 2 in.(4,9 m)
C	5 ft 3 in.(1,6 m)	5 ft 8 in.(1,7 m)
D	9 ft 9 in.(3,0 m)	10 ft 2 in.(3,1 m)
E	9 ft 9 in.(3,0 m)	10 ft 2 in.(3,1 m)
F	5 ft 6 in.(1,7 m)	5 ft11in.1,8 m)
G	1 ft 7 in.(0,5 m)	2 ft 0 in.(0,6 m)
H	11 ft 6 in.(3,5 m)	11 ft 11 in.(3,5 m)
J	4 ft 8 in.(1,4 m)	5 ft 1 in.(1,5 m)
K	6 ft 1 in.(1,8 m)	6 ft 7 in.(2,0 m)
L	19 ft 1 in.(5,8 m)	19 ft 18 in.(6,0 m)
M	10 ft 6 in.(3,2 m)	11 ft 2 in.(3,4 m)
N	10 ft 6 in.(3,2 m)	11 ft 2 in.(3,4 m)
P	9 ft 0 in.(2,8 m)	10 ft 1 in.(3,1 m)
Q	11 ft 8 in.(3,6 m)	12 ft 7 in.(3,8 m)

NOTES

Vertical clearances shown are the greatest possible variations in attitude due to the variation of aircraft weight and center of gravity.

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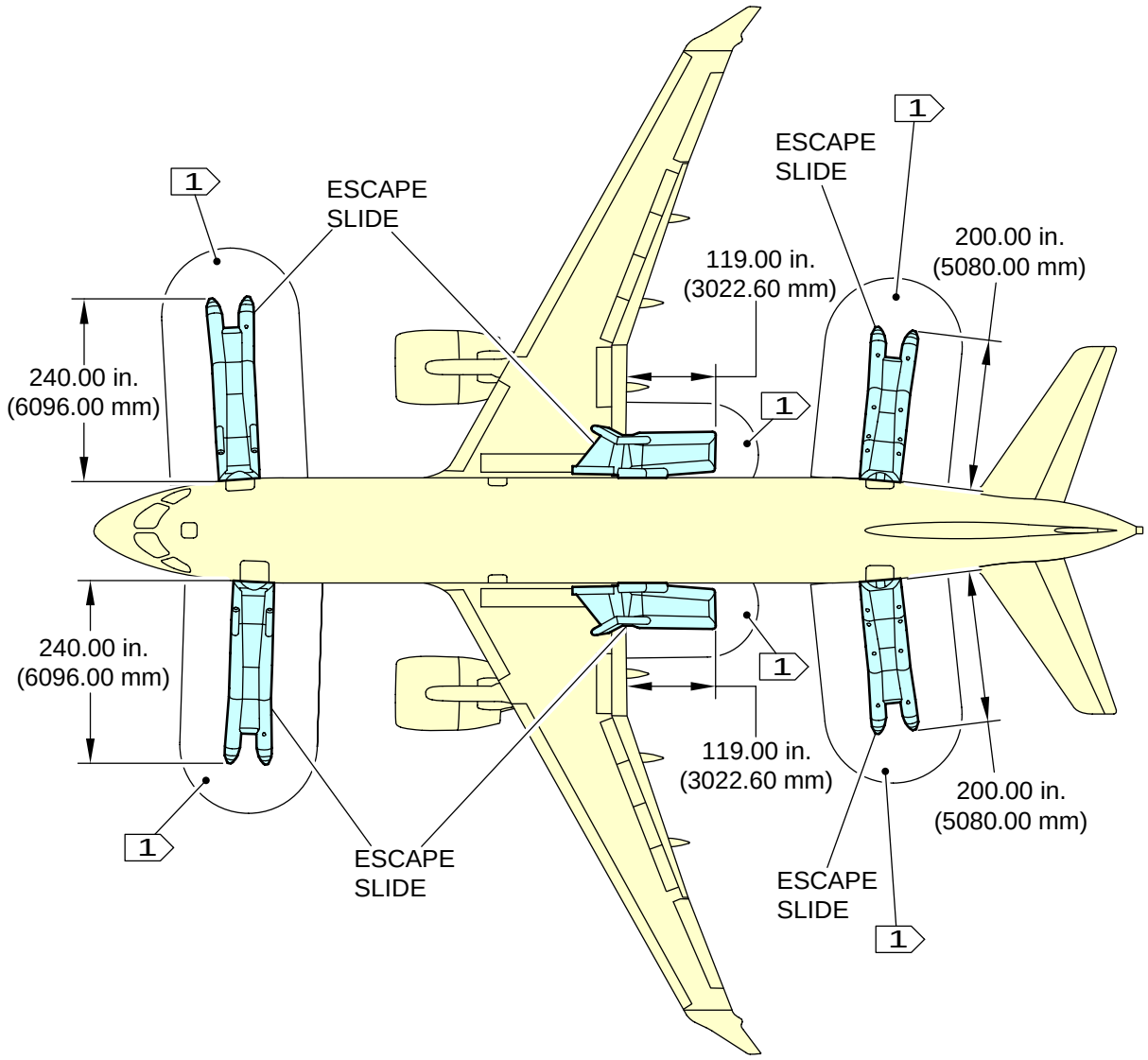
Figure 2 Ground clearances

3.2 Ground clearances for evacuation slides

This section gives ground clearances for evacuation slides. Refer to Table 7 and Fig. 3 .

Table 7 Ground clearances for evacuation slides

Description	Dimensions
Forward Passenger Door (FPD) Slide	240 in. (6096 mm)
Forward Service Door (FSD) Slide	240 in. (6096 mm)
Aft Passenger Door (APD) Slide	200 in. (5080 mm)
Aft Service Door (ASD) Slide	200 in. (5080 mm)
Overwing Emergency Exit Door (OWEED) Slides (Left & Right sides)	119 in. (3022.60 mm)



NOTE

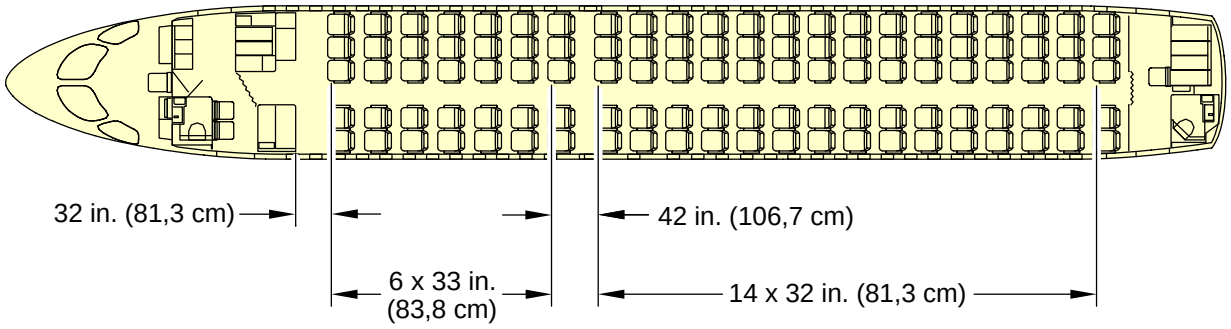
1 Emergency evacuation ground area.

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Figure 3 Ground clearances for evacuation slides

4 Layout of passenger compartment accommodation

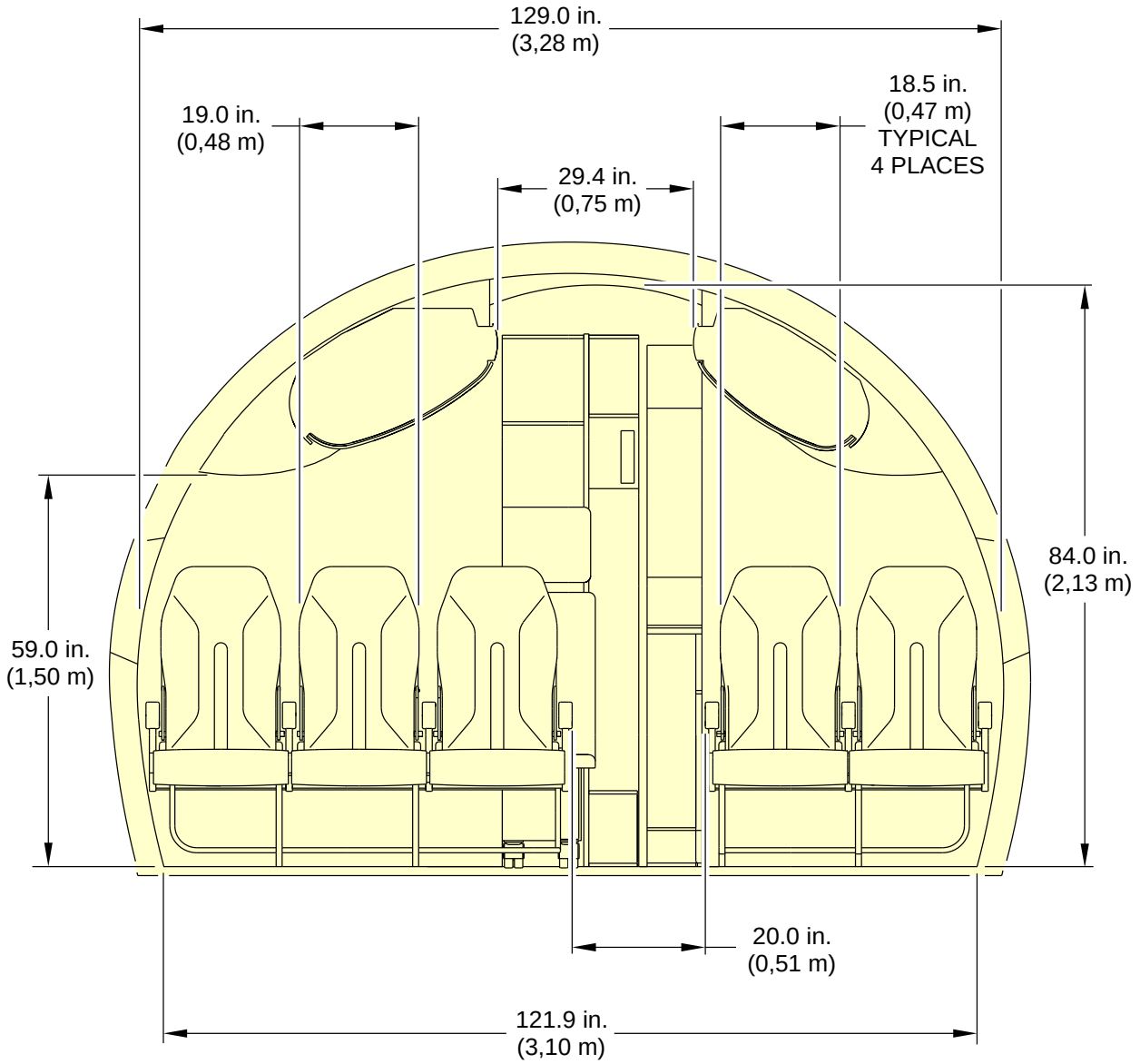
The passenger compartment includes the galley area, lavatory, and passenger seating area. The galleys and utility areas are isolated from the passenger area by partitions and curtains. Refer to Fig. 4 .



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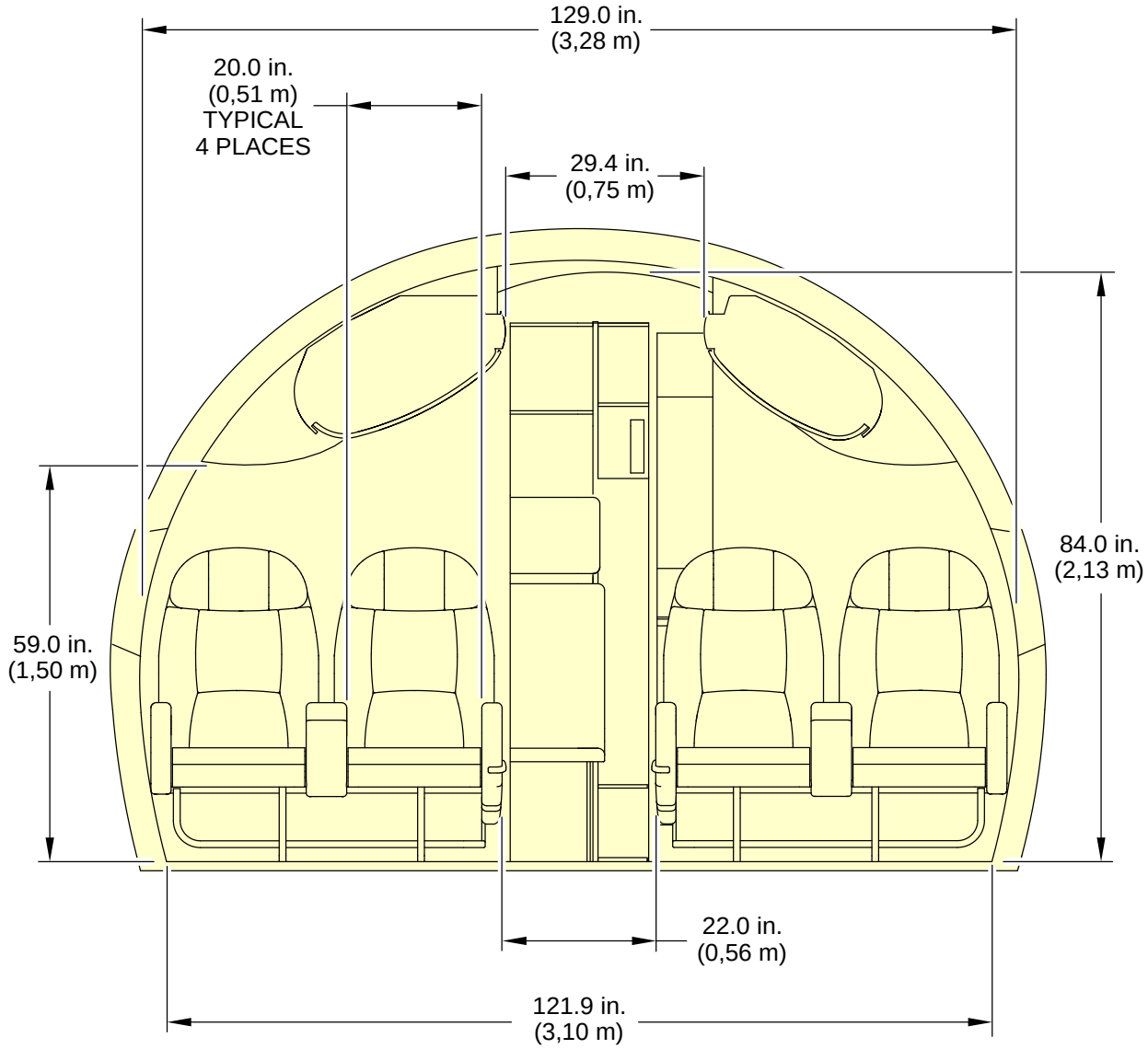
Figure 4 Layout Of Passenger Accommodation (LOPA)

5 Passenger cross-section



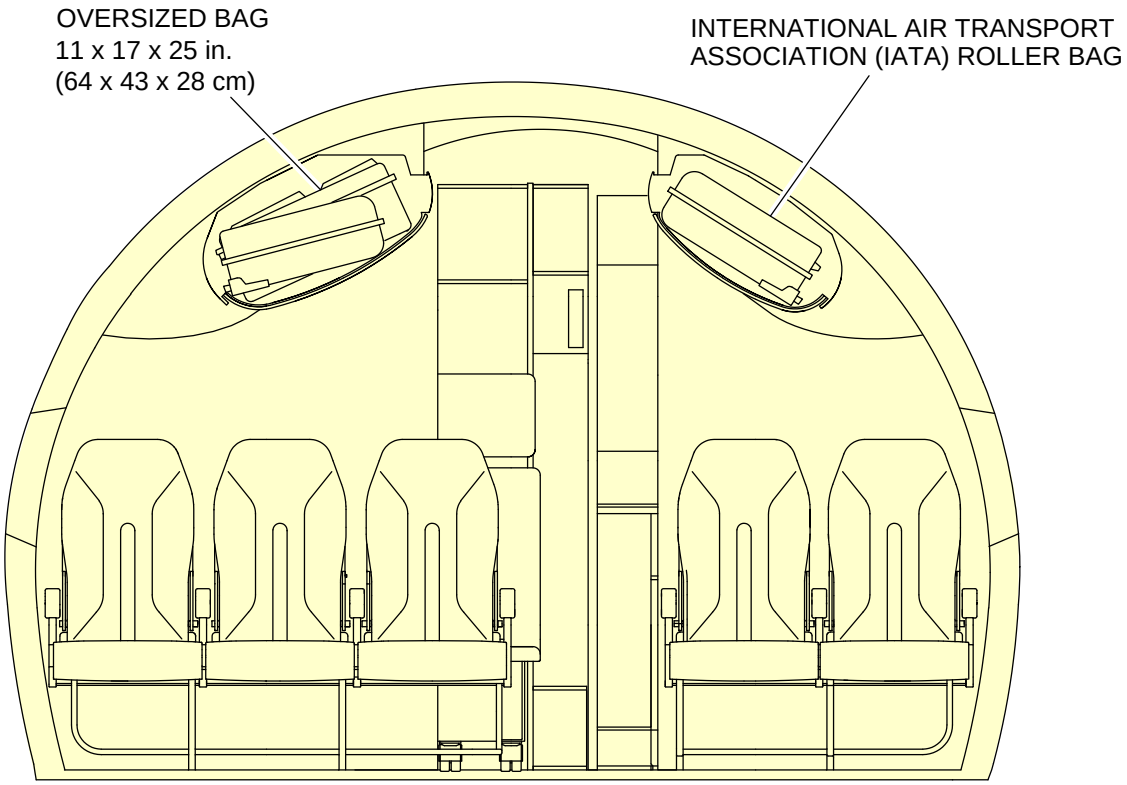
ICN-BD500-A-J061200-A-3AB48-00010-A-001-01

Figure 5 Passenger cross-section (economy class)



ICN-BD500-A-J061200-A-3AB48-00011-A-001-01

Figure 6 Passenger cross-section (optional business class)



ICN-BD500-A-J061200-A-3AB48-00012-A-001-01

Figure 7 Overhead stowage bins

6 Cargo compartment

Two under-floor cargo compartments are provided, each with a dedicated outward-opening access door. The forward compartment is positioned between the forward equipment compartment and the Environmental Control System (ECS) distribution bay. The aft compartment is positioned between the mid equipment compartment and the water system bay. Refer to Fig. 8 .

Both compartments are furnished with heavy duty floor panels and sidewall linings and are sealed to meet the requirements of a Class C compartment. Decompression and ventilation panels are provided as well. The compartment linings also incorporate provisions for compartment lighting, smoke detector, and fire extinguish.

The combined maximum weight loading of the cargo compartment is 8,290 lb (3 760 kg).

6.1 Cargo door nets

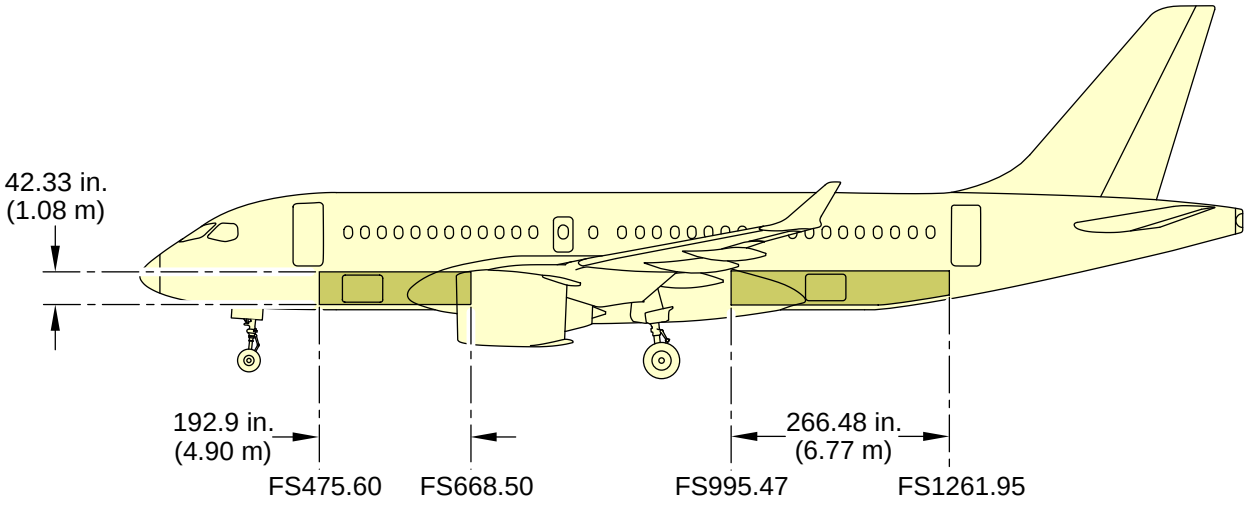
Protective nets are provided at the door area of each cargo compartment to prevent baggage from fouling the door due to in-flight shifting of the loads. Refer to Fig. 9 .

6.2 Volumes – Cargo compartment

The estimated volume of the cargo compartments is based on geometric volume and accounts for the unusable area in the vicinity of the cargo doors. Table 8 lists the estimated wet volume of the cargo compartments.

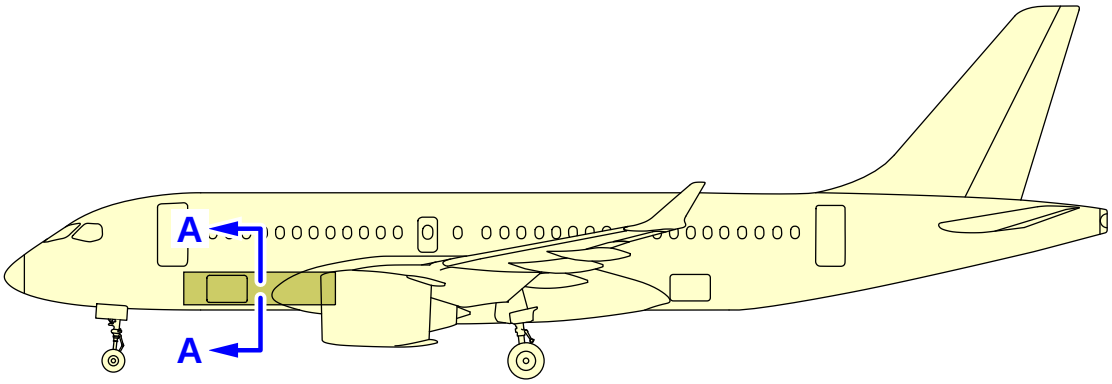
Table 8 Cargo compartment volumes

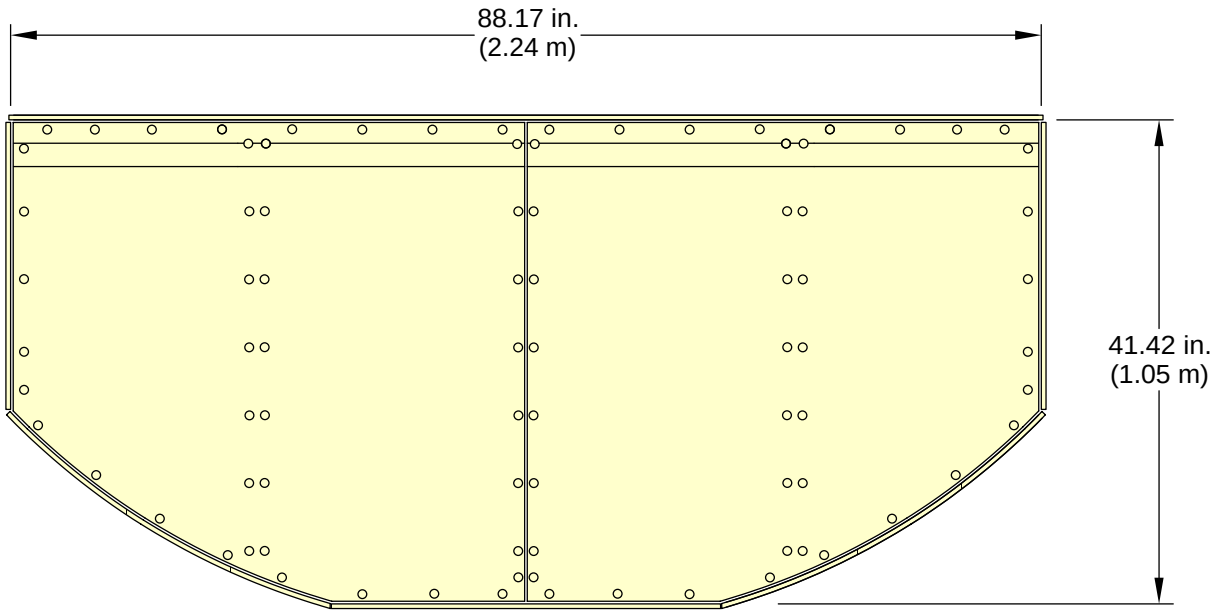
Description	Usable Volume		Maximum load	
	ft^3	m^3	lb	kg
Fwd cargo compartment	311	8.80	3742	1697
Aft cargo compartment	422	11.95	4548	2063



ICN-BD500-A-J084305-A-3AB48-10441-A-001-01

Figure 8 Aircraft cargo side view - (Sheet 1 of 3)

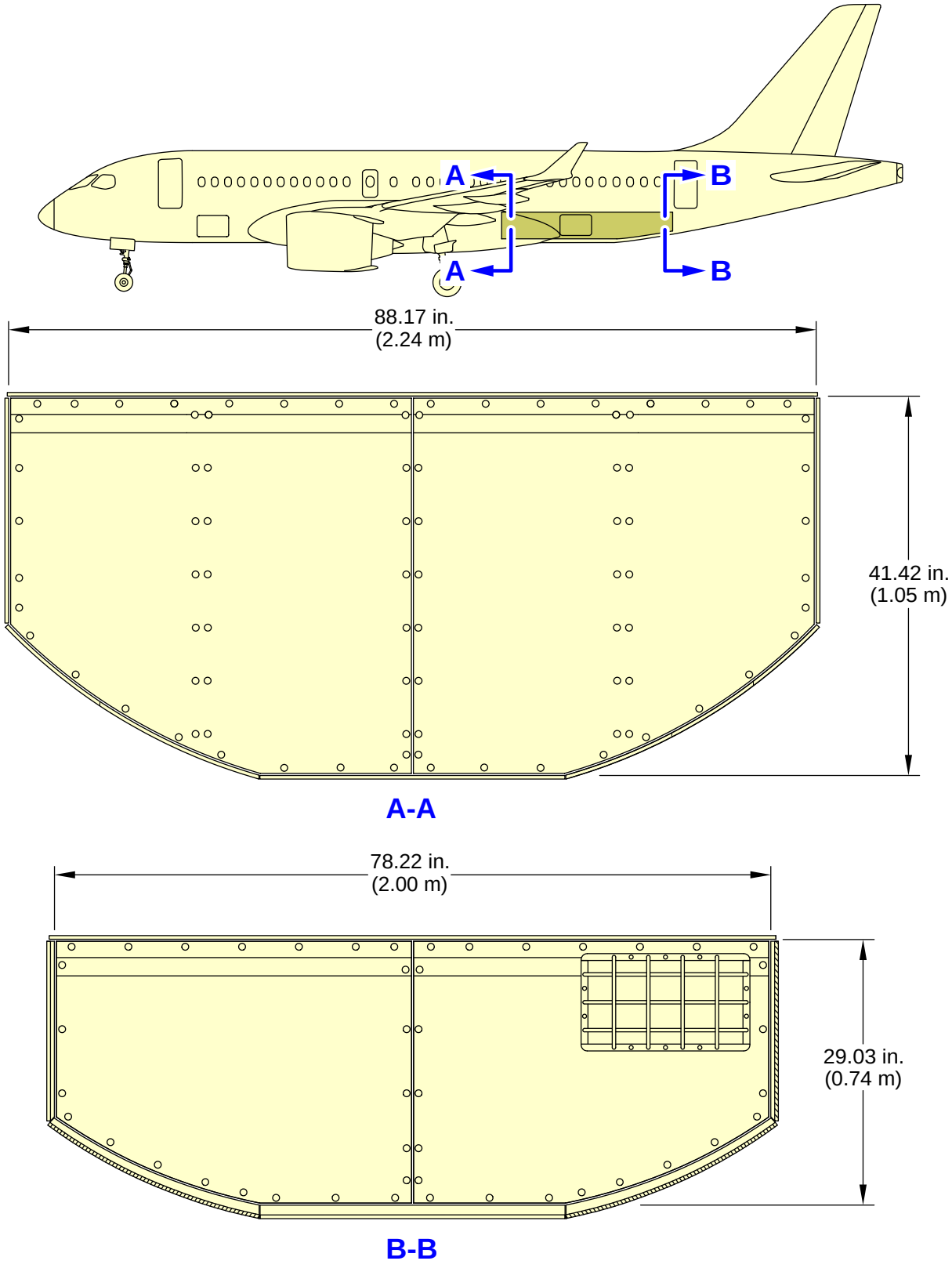




A-A

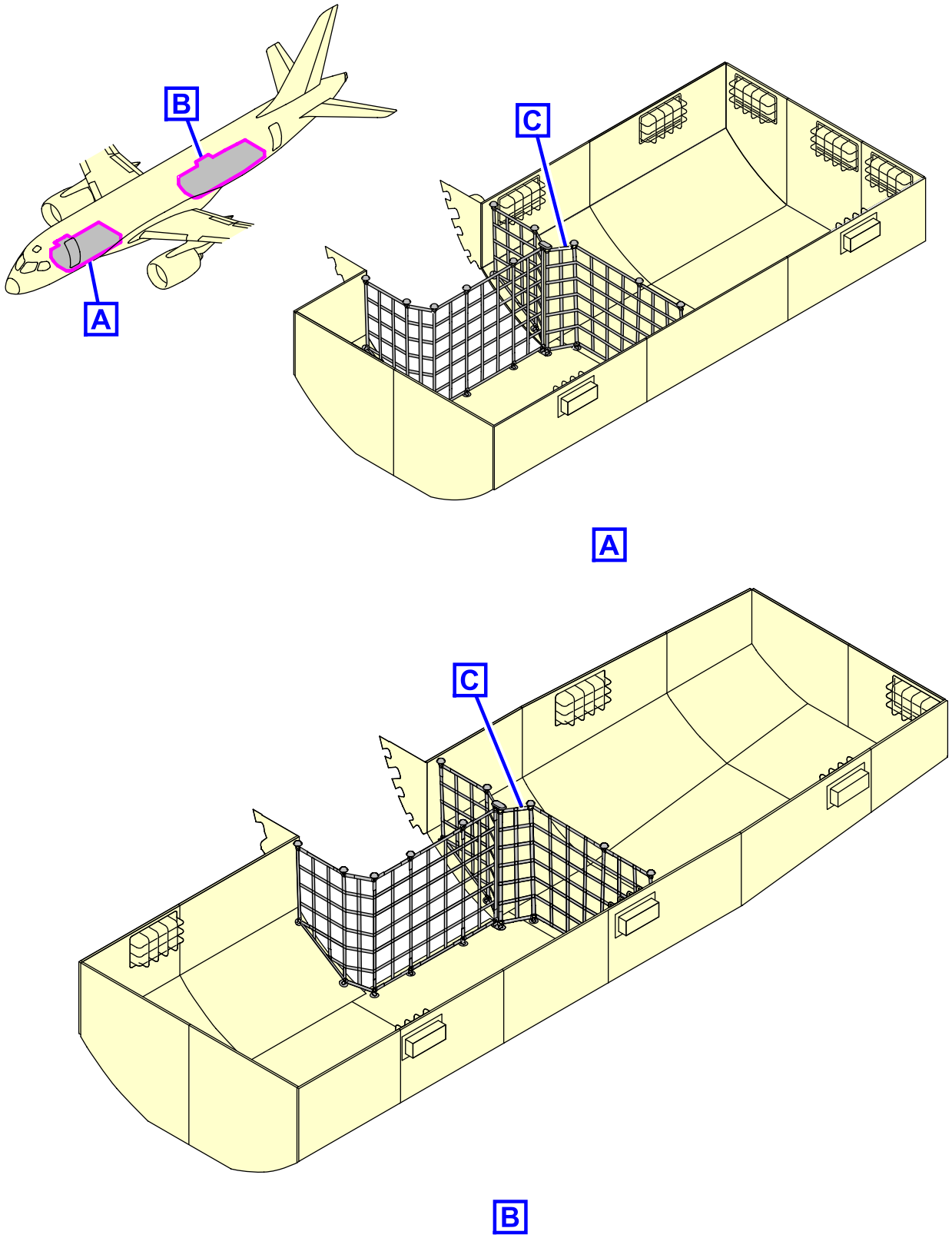
ICN-BD500-A-J084305-A-3AB48-10438-A-001-01

Figure 8 Aircraft cargo side view - (Sheet 2 of 3)



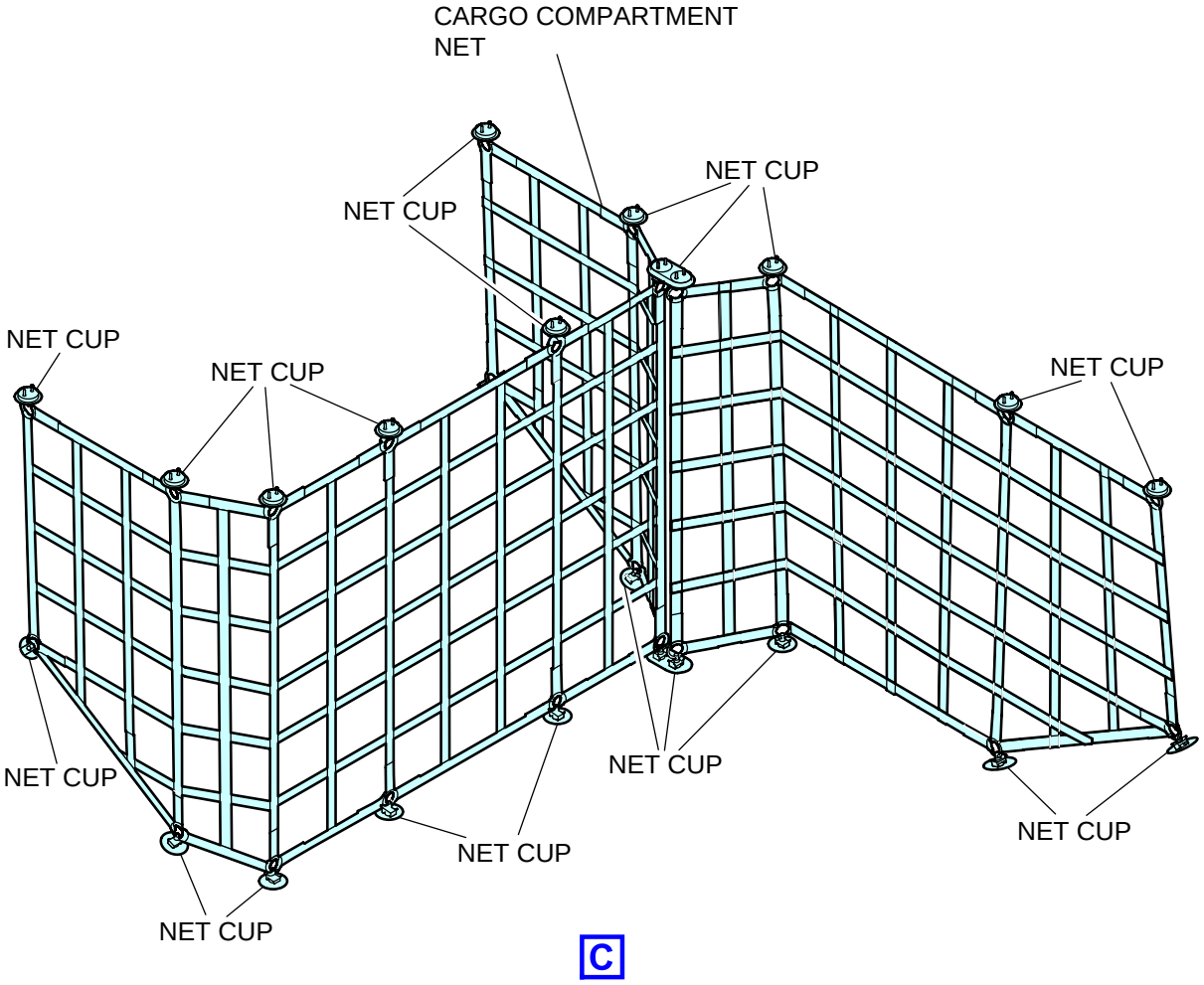
ICN-BD500-A-J084305-A-3AB48-10440-A-001-01

Figure 8 Aircraft cargo side view - (Sheet 3 of 3)



ICN-BD500-A-J502200-C-3AB48-17798-A-001-01

Figure 9 Cargo nets - (Sheet 1 of 2)



ICN-BD500-A-J502200-C-3AB48-17809-A-001-01

Figure 9 Cargo nets - (Sheet 2 of 2)

7 Door clearances and clear opening dimensions

A general description of the doors is as follows:

7.1 Passenger/Crew

Two semi-plug type doors on the left side of the aircraft provide access for passengers and crew. Door 1L is considered the primary entrance while door 2L provides a secondary entrance available for passenger loading/unloading as well as ground servicing.

Each door is classified as a type C floor level exit. Due to the sill height, every door incorporates an emergency evacuation slide system. In addition each one translates outwards from closed position, supported by a hinged arm to rest in open position.

Every door is operable from the exterior and interior of the aircraft and features an inspection window to allow verification of the outside conditions from the interior. The exterior operating handle has a linear motion and is interconnected to a vent flap system to provide pressure equalization between the aircraft and the ambient air prior to be opened.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For Passenger/Crew doors distance from the nose, refer to Fig. 11Fig. 12 . For aft passenger door opening and clearances, refer to Fig. 13 .

7.2 Emergency exit

The over-wing emergency exits are type III semi-plug type doors.

The exits are provided with an operating handle with removable cover and are fitted with a standard sized passenger compartment window. Each door is fully lined and insulated to meet thermal and noise performance requirements.

The door rotates upwards from the closed position, supported by a hinged arm to rest in open position. The door opening sequence is automatically supported by the energy stored in its own mechanism.

For emergency access to the passenger compartment, the doors may be opened from an exterior handle.

Due to the exit path height from the ground, an off-wing evacuation slide system is provided.

For over-wing emergency exits distance from the nose, refer to Fig. 11 . For doors dimensions, refer to Table 9 .

7.3 Flight compartment emergency exit

The flight compartment is outfitted with a single, inward-opening overhead escape hatch.

7.4 Cargo doors

Access doors are provided to allow cargo compartment loading and unloading.

The semi-plug forward and aft cargo doors are identical components, each hinged along the top edge of its frame.

Each door incorporates an exterior lock/unlock handle with linear motion that is interconnected to a vent flap system and provide pressure equalization between the aircraft and the ambient air prior to be opened.

An electrical actuation system with a switch panel, installed on the fuselage near each door, is provided to open and close the door.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For cargo doors distance from the nose, refer to Fig. 11 . For doors dimensions, refer to Table 9 . For forward cargo door opening and clearances, refer to Fig. 14 . For aft cargo door opening and clearances, refer to Fig. 15 .

7.5 Service doors

Two semi-plug type doors are provided on the right side of the aircraft to provide access for the forward (door 1R) and aft (door 2R) galley service areas.

Each door is classified as a type C floor level exit. Due to the sill height, each door incorporates an emergency evacuation slide system.

Each door translates outwards from the closed position, supported by a hinged arm and stabilizing system, to rest parallel to the fuselage in the open position.

Each door is operable from the exterior and interior of the aircraft and features an inspection window to allow verification of the outside conditions from the interior. The exterior operating handle has a linear motion and is interconnected to a vent flap system to provide pressure equalization between the aircraft and the ambient air prior to be opened.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For service doors distance from the nose, refer to Fig. 11 . For service doors dimensions, refer to Table 9 . For forward service door opening and clearances, refer to Fig. 16 . For aft service door opening and clearances, refer to Fig. 17 .

7.6 Forward avionics bay door

A plug-type door is provided in the forward fuselage to gain access to the pressurized forward equipment compartment. The door is fitted with a stowable operating handle.

For forward equipment compartment door distance from the nose, refer to Fig. 11 . For dimensions, refer to Table 9 .

7.7 Mid avionics bay door

A plug-type door is provided in the mid fuselage to gain access to the pressurized mid equipment compartment. The door is fitted with a stowable operating handle.

For mid equipment compartment door distance from the nose, refer to Fig. 11 . For dimensions, refer to Table 9 .

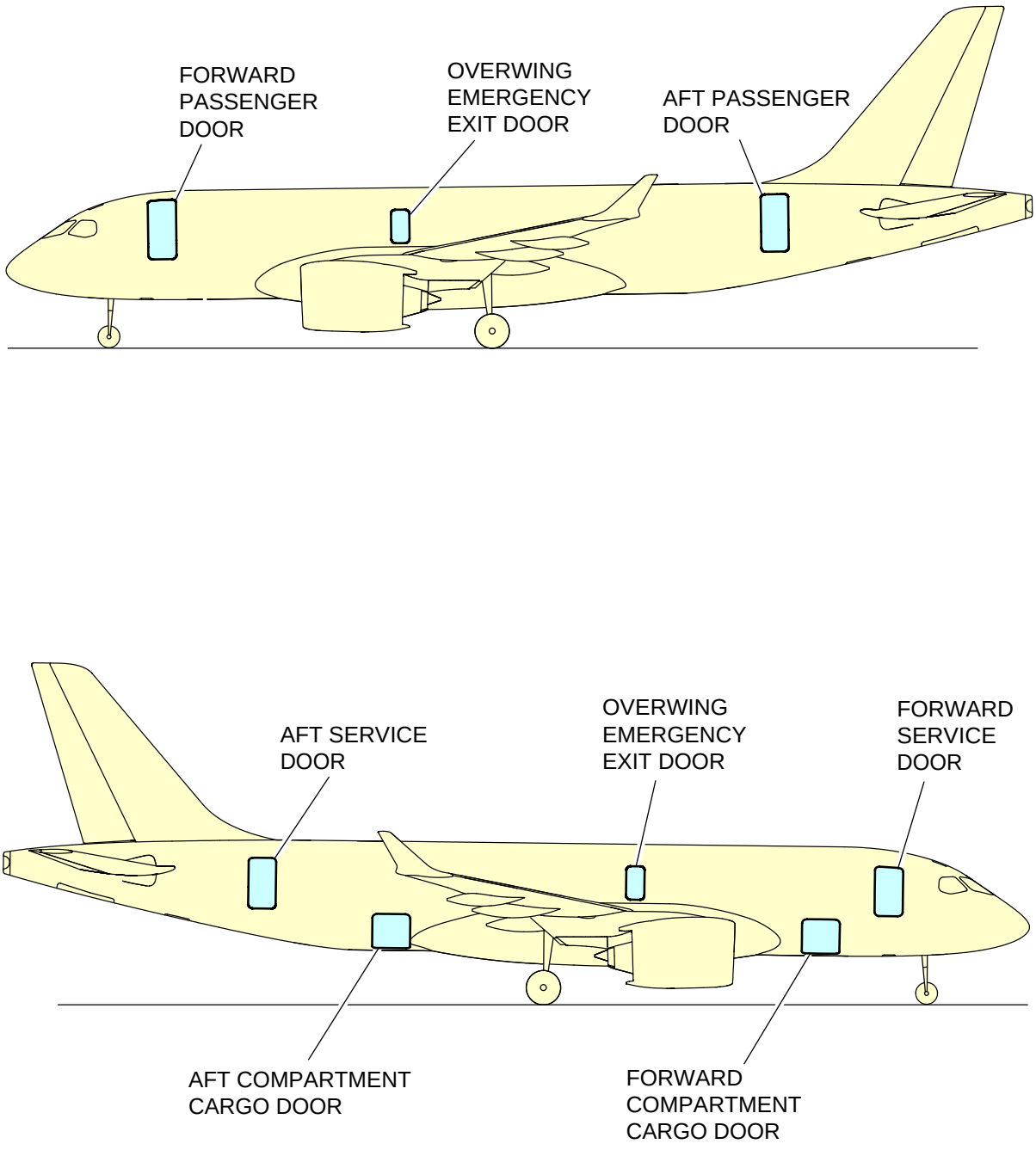
7.8 Aft equipment bay door

A door is provided in the aft fuselage to gain access to the unpressurized aft equipment compartment.

For aft equipment compartment door distance from the nose, refer to Fig. 11 . For dimensions, refer to Table 9 .

7.9 Doors identification

This section shows a general overview of the doors



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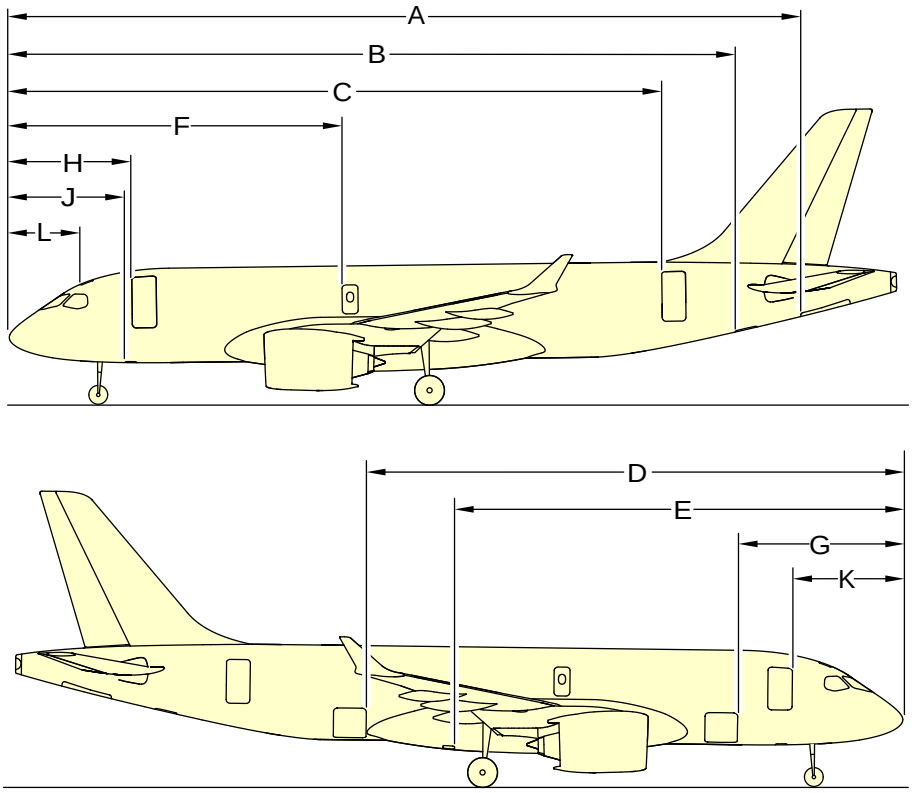
Figure 10 General door location

7.10 Access and exit doors dimensions

Table 9 Access and exit doors dimensions

Door	Height	Width
Main entrance door - Type C exit (door 1L)	6 ft 3 in. (1,9 m)	2 ft 6 in. (0,8 m)
Service door - Type C exit (door 1R)	5 ft 0 in. (1,5 m)	2 ft 6 in. (0,8 m)
Aft entrance door - Type C exit (door 2L)	6 ft 0 in. (1,8 m)	2 ft 6 in. (0,8 m)
Service door - Type C exit (door 2R)	5 ft 0 in. (1,5 m)	2 ft 6 in. (0,8 m)
Forward avionics bay door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Mid avionics bay door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Aft equipment bay door	3 ft 6 in. (1,08 m)	1 ft 11 in. (0,6 m)
Forward cargo compartment door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Aft cargo compartment door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Over-wing emergency exit	3 ft 6 in. (1,08 m)	1 ft 11 in. (0,59 m)
Flight compartment emergency exit	22 in. (0,559 m)	20 in. (0,508 m)

7.11 Door distance from nose



Dimensions	A220-100
A	102 ft 4 in. (31.2 m)
B	93 ft 10 in. (28.6 m)
C	84 ft 4 in. (25.7 m)
D	69 ft 4 in. (21.1 m)
E	58 ft 0 in. (17.7 m)
F	43 ft 0 in. (13.11 m)
G	21 ft 4 in. (6.5 m)
H	15 ft 10 in. (4.8 m)
J	15 ft 0 in. (4.6 m)
K	14 ft 3 in. (4.3 m)
L	9 ft 2 in. (2.8 m)

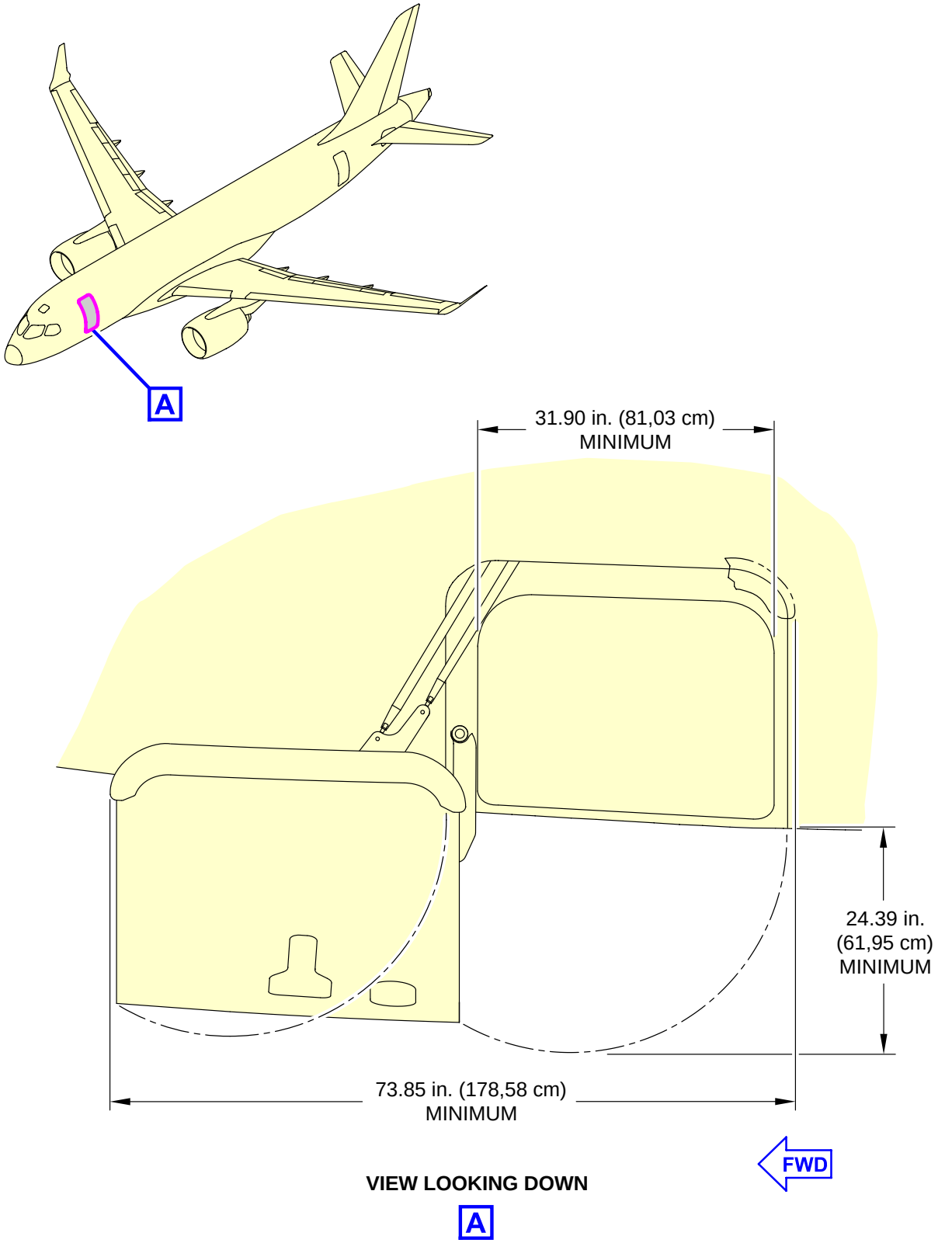
NOTE

The values shown are the greatest possible variations in attitude due to the variation of aircraft weight and gravity.

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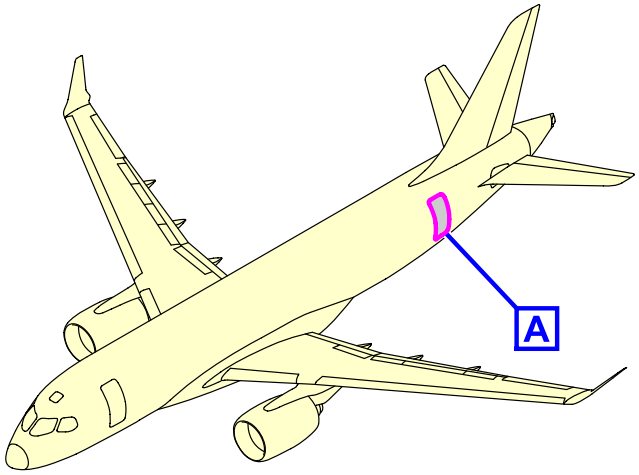
Figure 11 Door distance from nose

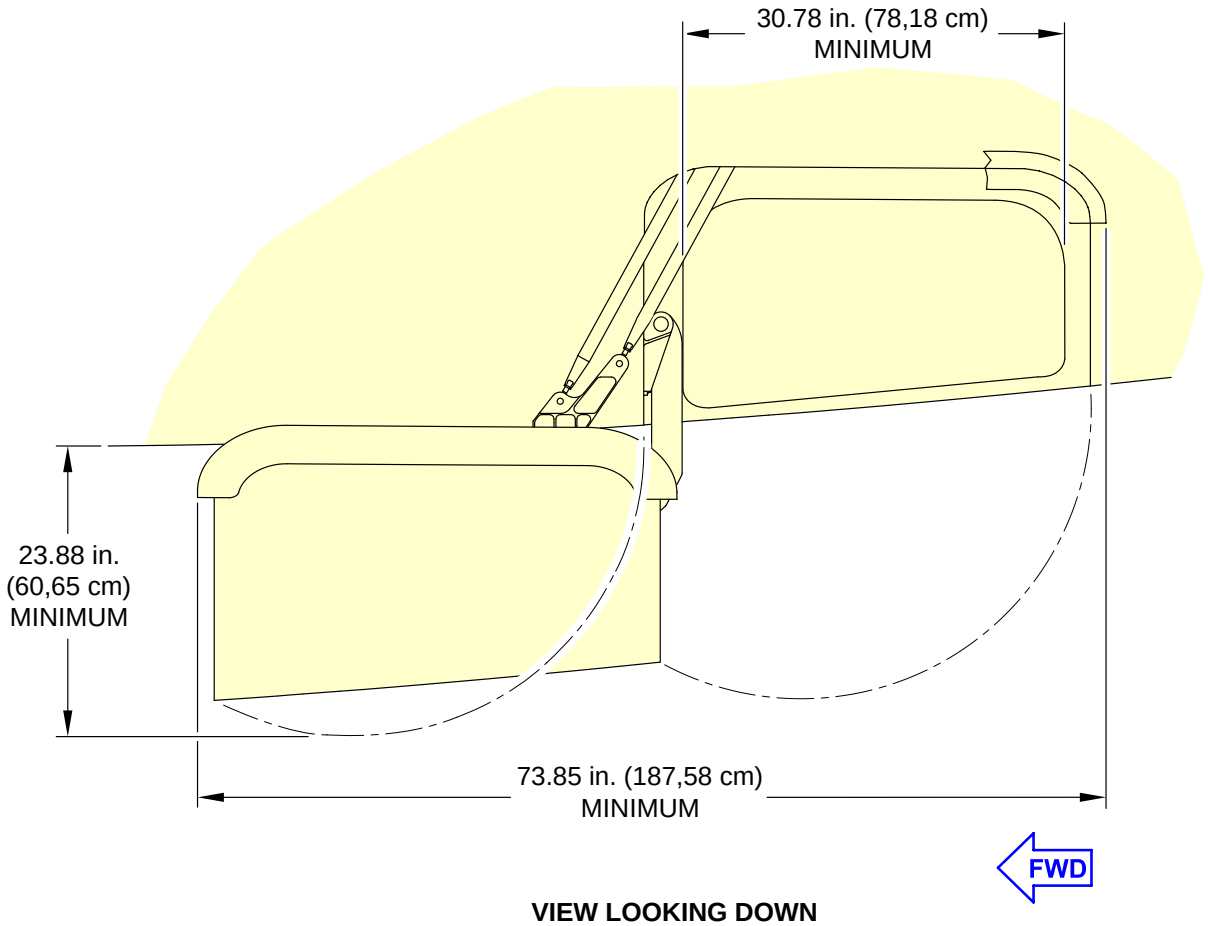
7.12 Door opening and clearance



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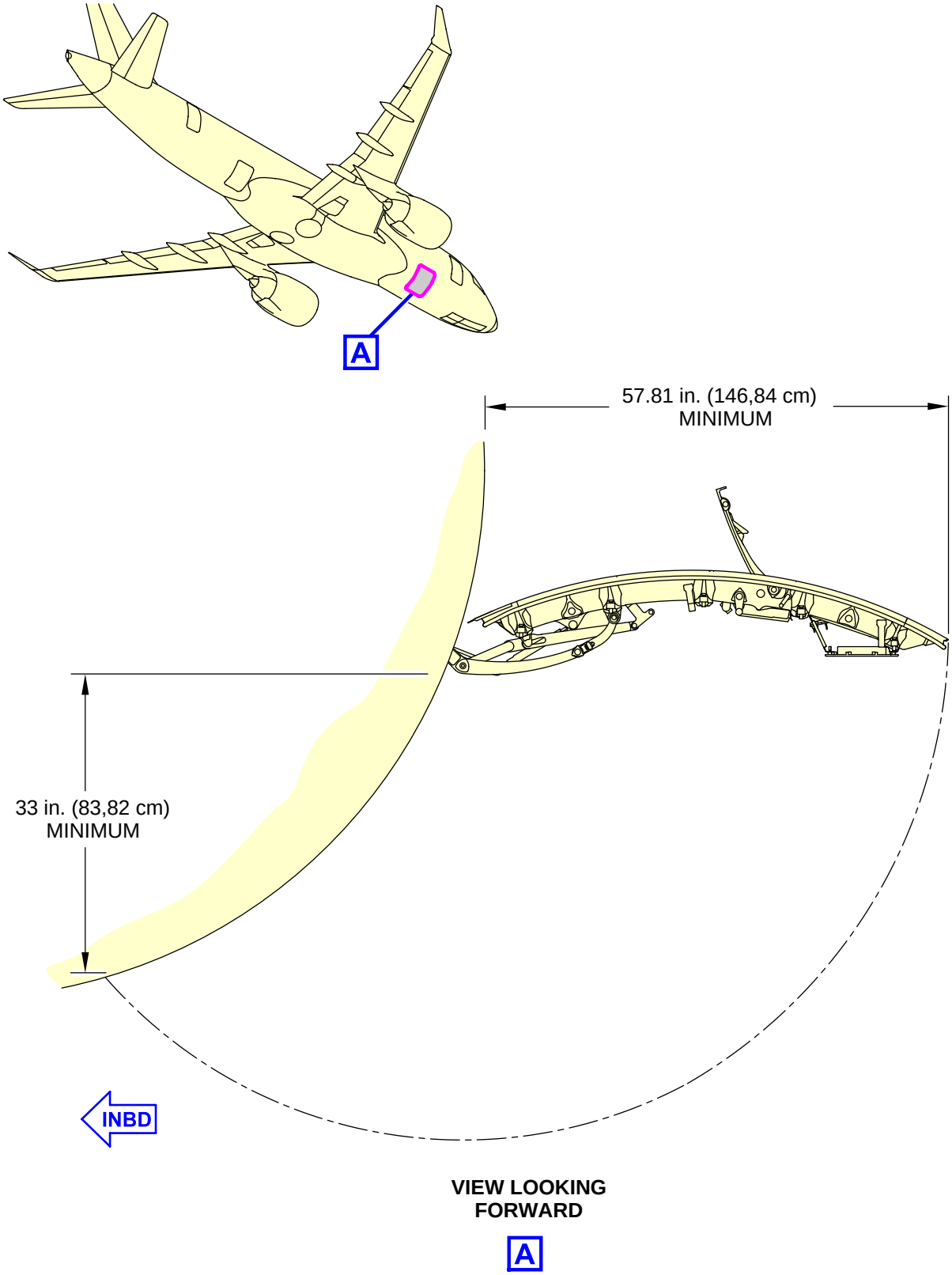
Figure 12 Forward passenger door opening and clearances





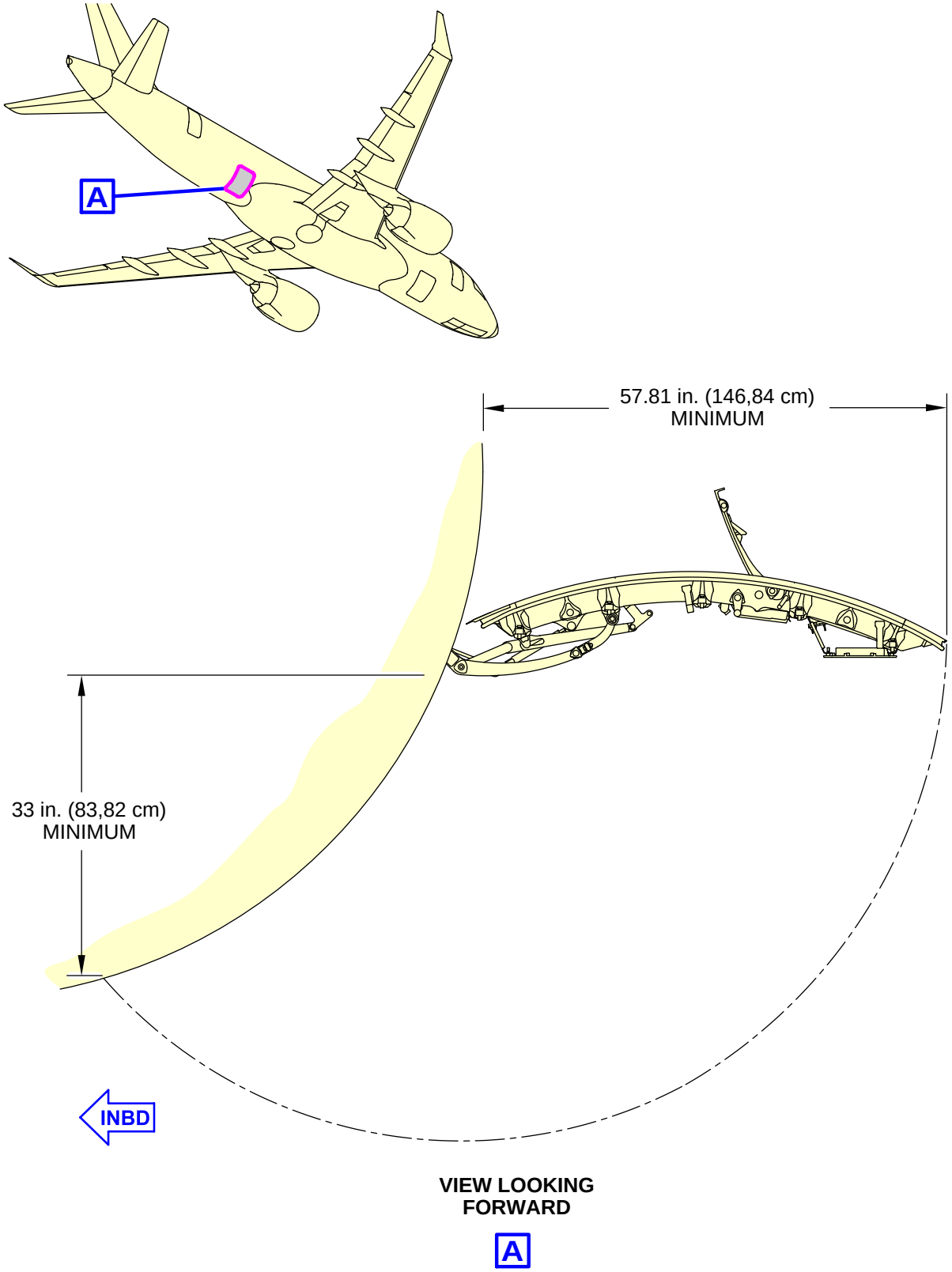
ICN-BD500-A-J061100-A-3AB48-00104-A-003-01

Figure 13 Aft passenger door opening and clearances



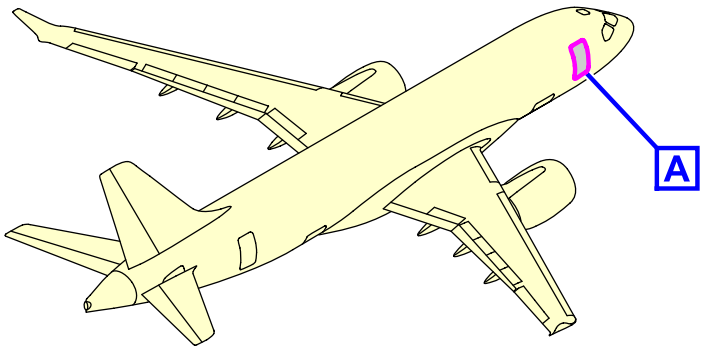
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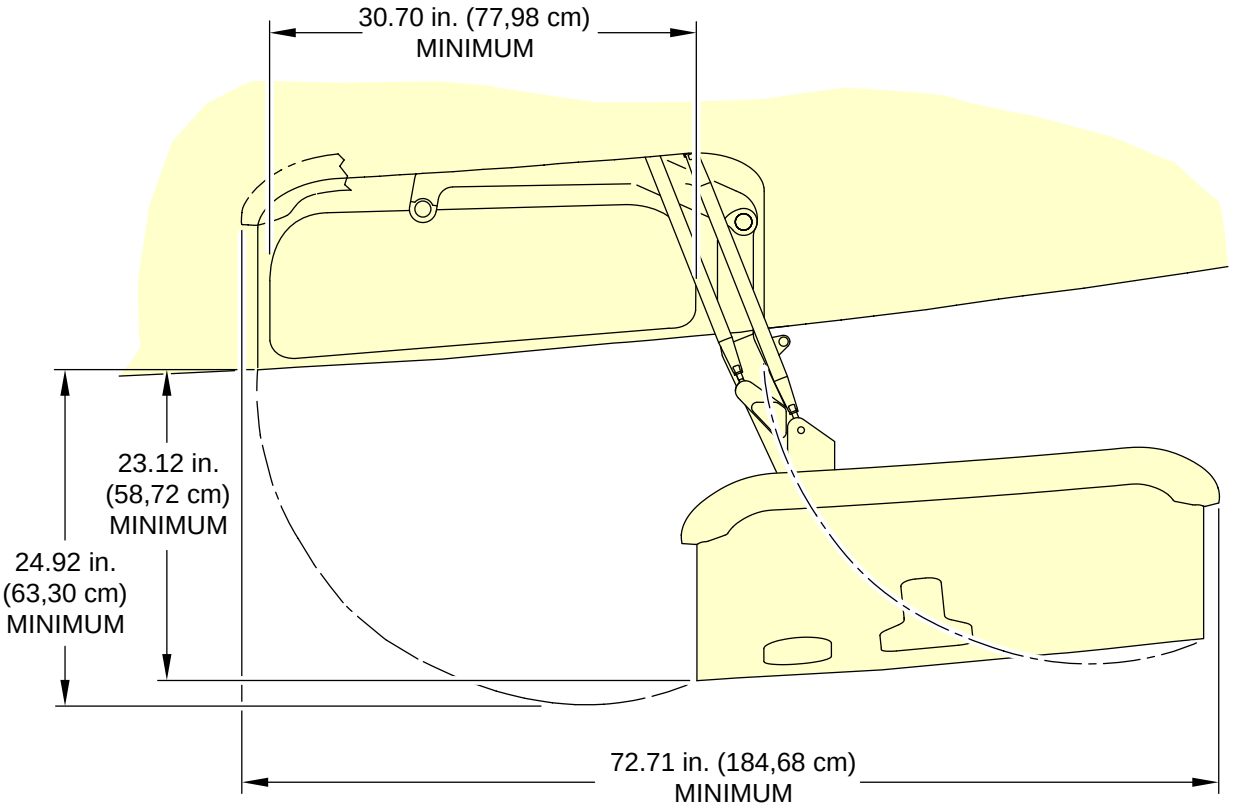
Figure 14 Forward cargo compartment door opening and clearances



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Figure 15 Aft cargo compartment door opening and clearances



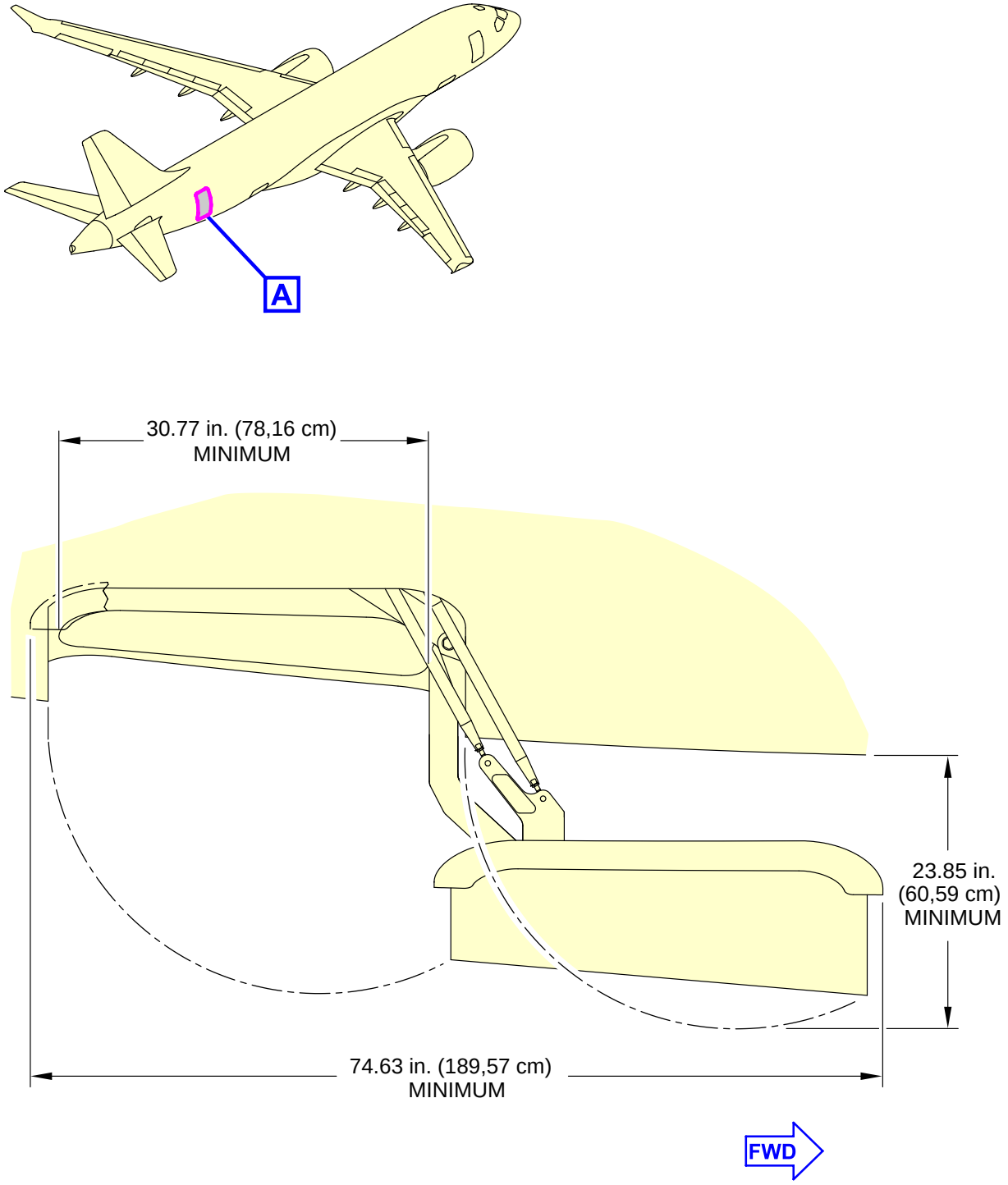


VIEW LOOKING DOWN

A

ICN-BD500-A-J061100-A-3AB48-00106-A-002-01

Figure 16 Forward service door opening and clearance



ICN-BD500-A-J061100-A-3AB48-00105-A-002-01

Figure 17 Aft service door opening and clearances

A220

Aircraft description - Technical data

Applicability: 55001-59999

Table of contents

Page

Aircraft description - Technical data ... 1
References ... 2
Description ... 2
1 Aircraft characteristics ... 2
1.1 Introduction ... 2
1.2 Aircraft characteristics ... 2
1.3 System fluid capacities ... 3
1.4 Service fluid capacities ... 3
2 Aircraft dimensions ... 4
2.1 General aircraft dimensions ... 4
2.2 General aircraft area ... 9
3 Ground clearances ... 9
3.1 Ground clearances ... 9
3.2 Ground clearances for evacuation slides ... 11
4 Layout of passenger compartment accommodation ... 14
5 Passenger cross-section ... 16
6 Cargo compartment ... 20
6.1 Cargo door nets ... 20
6.2 Volumes – Cargo compartment ... 20
7 Door clearances and clear opening dimensions ... 27
7.1 Passenger/Crew ... 27
7.2 Emergency exit ... 27
7.3 Flight compartment emergency exit ... 27
7.4 Cargo doors ... 27
7.5 Service doors ... 28
7.6 Forward avionics bay door ... 28
7.7 Mid avionics bay door ... 28
7.8 Aft equipment bay door ... 28
7.9 Doors identification ... 28
7.10 Access and exit doors dimensions ... 30
7.11 Door distance from nose ... 30
7.12 Door opening and clearance ... 32

List of tables

Page

1 References ... 2
2 Aircraft characteristics ... 2
3 System fluid capacities ... 3
4 Service fluid capacities ... 3
5 General aircraft dimensions (A220-300) ... 4
6 General aircraft area ... 9
7 Ground clearances for evacuation slides ... 11
8 Cargo compartment volumes ... 20
9 Access and exit doors dimensions ... 30

List of figures

Page

1 General aircraft dimensions ... 7
2 Ground clearances ... 10

3 Ground clearances for evacuation slides..... 12
4 Layout Of Passenger Accommodation (LOPA)..... 15
5 Passenger cross-section (economy class)..... 17
6 Passenger cross-section (optional business class)..... 18
7 Overhead stowage bins..... 19
8 Aircraft cargo side view..... 21
9 Cargo nets..... 24
10 General door location..... 29
11 Door distance from nose..... 31
12 Forward passenger door opening and clearances..... 33
13 Aft passenger door opening and clearances..... 34
14 Forward cargo compartment door opening and clearances..... 35
15 Aft cargo compartment door opening and clearances..... 36
16 Forward service door opening and clearance..... 37
17 Aft service door opening and clearances..... 38

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Aircraft characteristics

1.1 Introduction

This data module contains general data about the Airbus model BD-500-1A11 (A220-300) characteristics. The structural weight limits, such as maximum ramp weight, and zero fuel weight are dependent on configuration. Refer to each aircraft's specified Weight and Balance Manual (WBM) BD500-3AB48-32100-00 and weight and balance report for structural limits and other weight information.

Refer to Table 5 for general aircraft dimension.

Refer to Table 2 for the aircraft characteristics.

Refer to Table 3 for the system fluid capacities.

Refer to Table 4 for the service fluid capacities.

1.2 Aircraft characteristics

Table 2 Aircraft characteristics

Description	A220-300
Engines	2 Pure Power™ PW1521G[1]
Mode	Passenger
Standard seating capacity	140

Description	A220-300
Maximum Ramp Weight (MRW)	157,000 lb (71,214 kg)
Maximum Take-Off Weight (MTOW)	156,300 lb (70,896 kg)
Maximum Landing Weight (MLW)	134,500 lb (61,008 kg)
Maximum Zero Fuel Weight (MZFW)	128,000 lb (58,060 kg)
Minimum Flight Weight (MFW)	80,000 lb (36,287 kg)
Maximum fuel tank capacity	5,681 US gal (21 508 L)
Unusable fuel	220.5 lb (100 kg)
Maximum cargo volume - Overhead bins	332 ft³ (9,40 m³)
1 Optional engine model: PW1524G	

1.3 System fluid capacities

Table 3 System fluid capacities

Description	Volume	Weight
Engine fluids calculated with 8.24 lb/US gal (0.987 kg/L)		
Engine oil tank at 60 °F	6.5 US gal (24.4 L)	53.1 lb (24.1 kg)
Engine lines and internal engine oil	7.7 US gal (29.2 L)	63.5 lb (28.8 kg)
APU fluids calculated with 7.98 lb/US gal (0.956 kg/L)		
APU oil tank	1.94 US gal (7.3 L)	15.4 lb (7.0 kg)
APU lines and internal oil	0.84 US gal (3.2 L)	6.7 lb (3.0 kg)
Hydraulic fluids at 77 °F (25 °C) low density 8.20 lb/US gal (0.983 kg/L)		
System No. 1 reservoir	5.0 US gal (18.8 L)	40.8 lb (18.5 kg)
System No. 2 reservoir	4.3 US gal (16.4 L)	35.5 lb (16.55 kg)
System No. 3 reservoir	4.3 US gal (16.4 L)	35.5 lb (16.55 kg)
Systems and lines	39.8 US gal (150.6 L)	326.2 lb (147.9 kg)

1.4 Service fluid capacities

Table 4 Service fluid capacities

Description	Volume	Weight
Potable water at 60 °F (15,5 °C)		
Galley/Lavatory tank	42.0 US gal (159,0 L)	350.5 lb (159.0 kg)

Description	Volume	Weight
Chemical toilet fluid at 60 °F (15,5 °C)		
Waste tank	38 US gal (143.84 L)	316.54 lb (143.58 kg)

2 Aircraft dimensions

2.1 General aircraft dimensions

This section contains general data about the aircraft dimensions.

Table 5 General aircraft dimensions (A220-300)

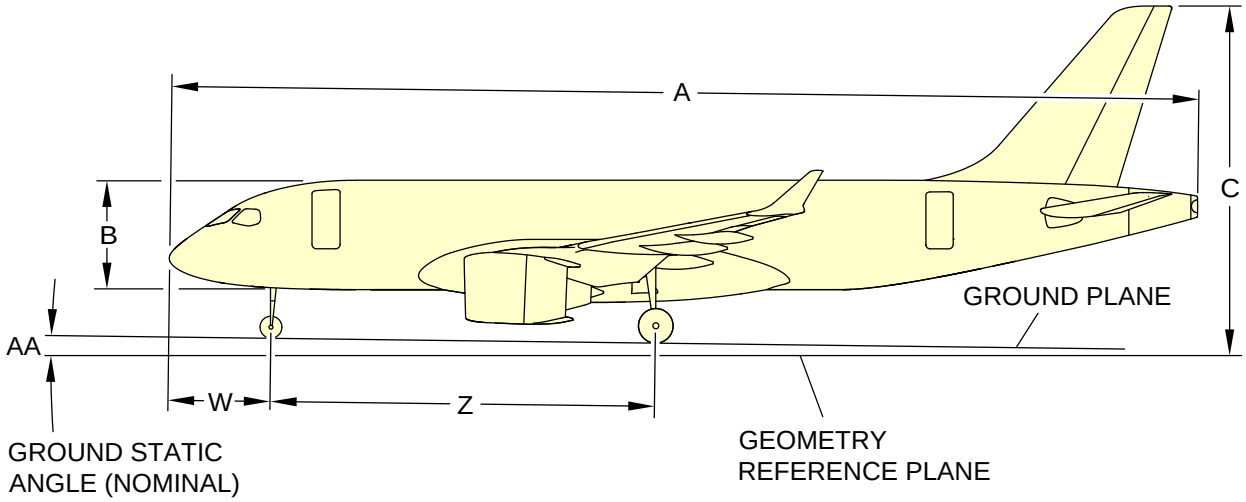
Locator (refer to Fig. 1)	Value in. (cm)
A	1523.2 38689.28
B	146.500 (372.11)
C	461.900 (1173.23)
D	482.800 (1226.31)
E	Baseline 1377.300 (3498.34)
	Fuel loaded 1381.300 (3508.50)
F	961.4 (2441.96)
G	857.9 (2179.06)
H	1489.2 (3782.57)
J	783.2 (1989.33)
K	479.0 (1216.66)

Locator (refer to Fig. 1)	Value in. (cm)
L	172.4 (437.90)
M	513.3 (1303.78)
P	263.000 (668.02)
Q	96.500 (245.11)
R	162.2 (411.99)
S	198.5 (504.19)
T	267.900 (680.47)
U	97.7 (248.16)
V	194.6 (494.28)
W	133.4 (338.83)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	602.6 (1530.60)
AA	0.477 Deg Nose down
BB	138.000 (350.52)

This data module contains data on the landing gear footprint.

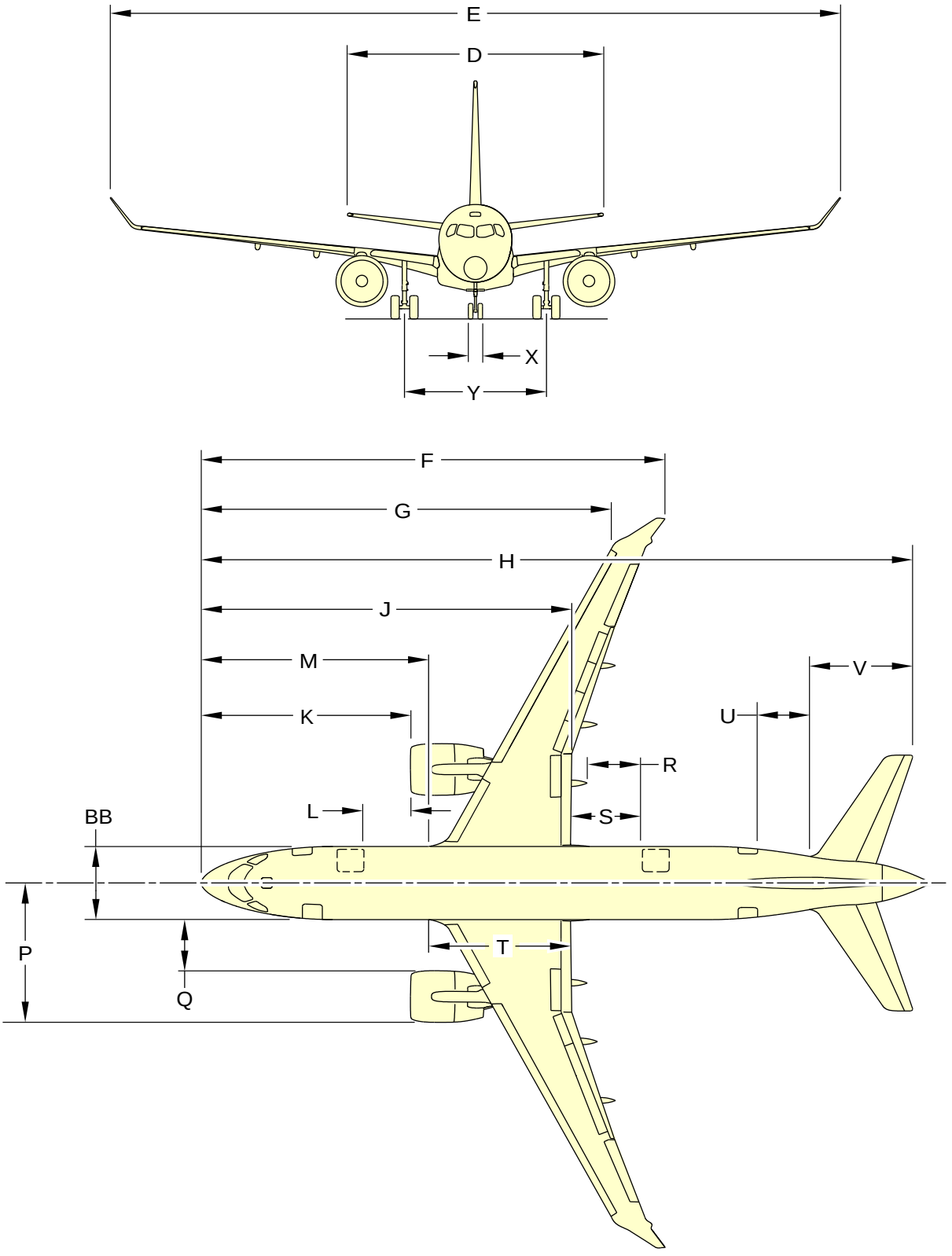
Note

The values given change due to the variation of aircraft weight and gravity.



ICN-BD500-A-J061000-A-3AB48-00005-A-001-01

Figure 1 General aircraft dimensions - (Sheet 1 of 2)



ICN-BD500-A-J061000-A-3AB48-00004-A-003-01

Figure 1 General aircraft dimensions - (Sheet 2 of 2)

2.2 General aircraft area

Table 6 General aircraft area

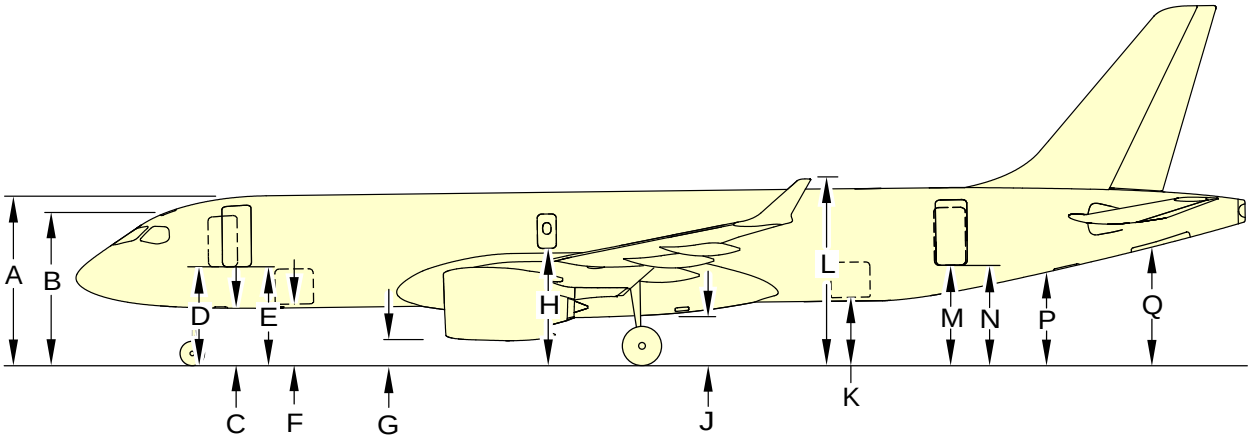
Description	A220-300
ESDU wing area (including ailerons, flaps, spoilers and area within the fuselage)	1209 ft² (112.3 m²)
Total horizontal stabilizer area (horizontal tail area and elevator area)	395 ft² (36.6 m²)
Total vertical stabilizer area (vertical tail area and rudder area)	304 ft² (28.2 m²)

3 Ground clearances

This section gives the height of various points of the aircraft, above the ground.

Dimensions in the tables are approximate and will vary with tire type, weight and balance and other special conditions.

3.1 Ground clearances



Dimensions	Minimum	Maximum
A	17 ft 5 in.(5,3 m)	17 ft 10 in.(5,4 m)
B	15 ft 8 in.(4,8 m)	16 ft 2 in.(4,9 m)
C	5 ft 3 in.(1,6 m)	5 ft 8 in.(1,7 m)
D	9 ft 9 in.(3,0 m)	10 ft 2 in.(3,1 m)
E	9 ft 9 in.(3,0 m)	10 ft 2 in.(3,1 m)
F	5 ft 6 in.(1,7 m)	5 ft11in.1,8 m)
G	1 ft 7 in.(0,5 m)	2 ft 0 in.(0,6 m)
H	11 ft 6 in.(3,5 m)	11 ft 11 in.(3,5 m)
J	4 ft 8 in.(1,4 m)	5 ft 1 in.(1,5 m)
K	6 ft 1 in.(1,8 m)	6 ft 7 in.(2,0 m)
L	19 ft 1 in.(5,8 m)	19 ft 18 in.(6,0 m)
M	10 ft 6 in.(3,2 m)	11 ft 2 in.(3,4 m)
N	10 ft 6 in.(3,2 m)	11 ft 2 in.(3,4 m)
P	9 ft 0 in.(2,8 m)	10 ft 1 in.(3,1 m)
Q	11 ft 8 in.(3,6 m)	12 ft 7 in.(3,8 m)

NOTES

Vertical clearances shown are the greatest possible variations in attitude due to the variation of aircraft weight and center of gravity.

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Figure 2 Ground clearances

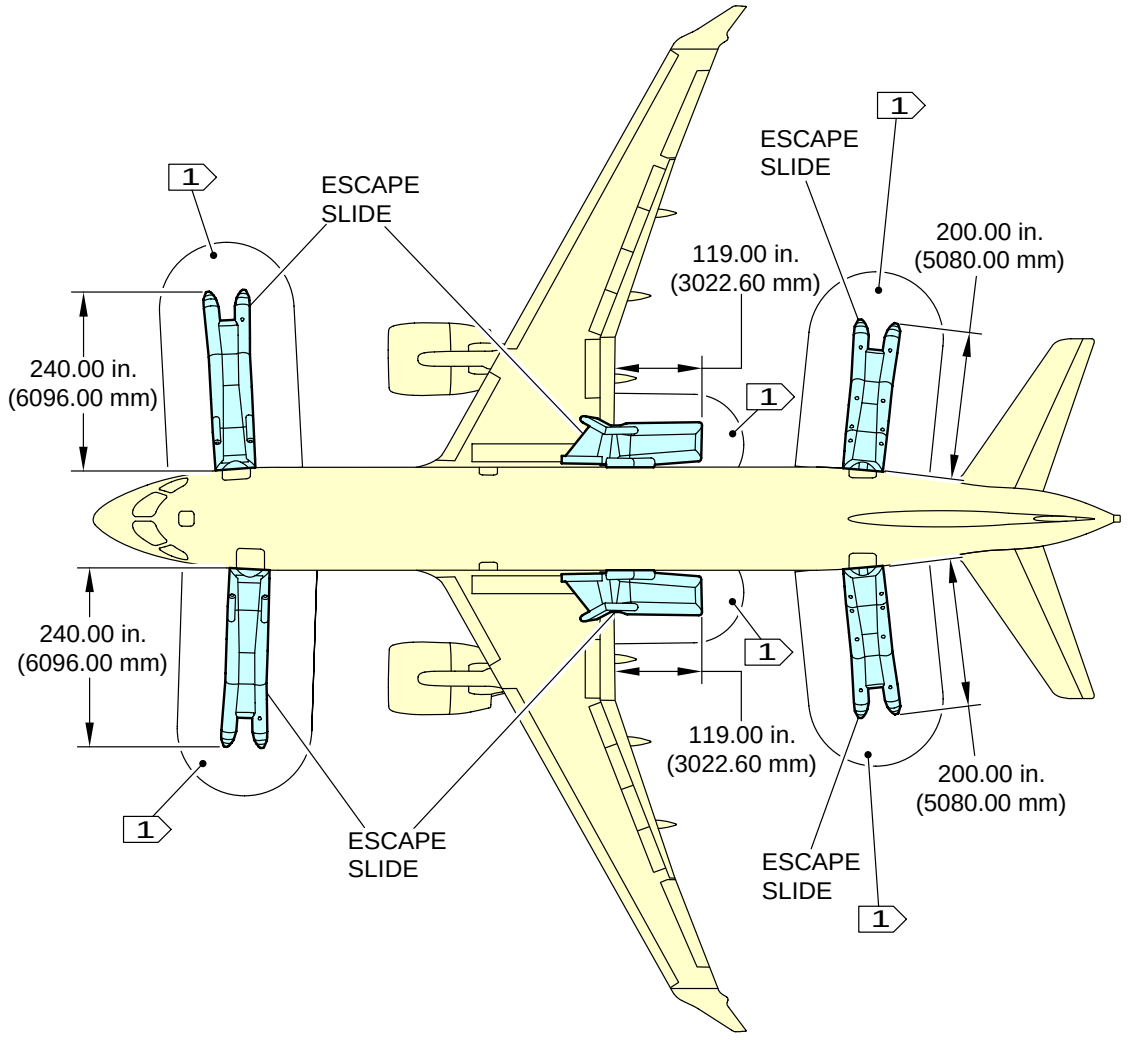
3.2 Ground clearances for evacuation slides

This section gives ground clearances for evacuation slides. Refer to Table 7 and Fig. 3 .

Table 7 Ground clearances for evacuation slides

Description	Dimensions
Forward Passenger Door (FPD) Slide	240 in. (6096 mm)
Forward Service Door (FSD) Slide	240 in. (6096 mm)
Aft Passenger Door (APD) Slide	200 in. (5080 mm)
Aft Service Door (ASD) Slide	200 in. (5080 mm)
Overwing Emergency Exit Door (OWEED) Single Lane Slides (Left & Right sides)	119 in. (3022.60 mm)
OWEED Dual Lane Slides (Left & Right sides)	139 in. (3530.60 mm)

(Sheet) Applicability: 55001-55002, 55010-55015, 55017-55033, 55035-55037, 55040, 55044-55049, 55058-55063, 55067-55070, 55074-55085, 55087-55093, 55096-55113, 55115-55120, 55122-55125, 55128, 55130, 55132, 55135-55138, 55142-55145, 55147-55148, 55150-55153, 55156, 55158, 55160-55161, 55164, 55166-55167, 55169-55170, 55172, 55175, 55178-55179, 55181, 55184, 55186, 55188-55190, 55192, 55194-55195, 55199, 55201-55209, 55211-55212, 55214, 55217, 55220, 55222, 55225-55226, 55228, 55231, 55234, 55236-55237, 55239, 55241, 55246, 55249-55254, 55256-55263, 55265-55269, 55271-55274, 55276-55277, 55279-55280, 55282, 55284-55285, 55287-55289, 55292-55293, 55295-55298, 55300-55301, 55306-55307, 55310, 55312-55315, 55318-55320, 55322, 55325-55326, 55328 and 55005-55007, 55053, 55056-55057, 55065-55066, 55072-55073 PRE BD500-256002



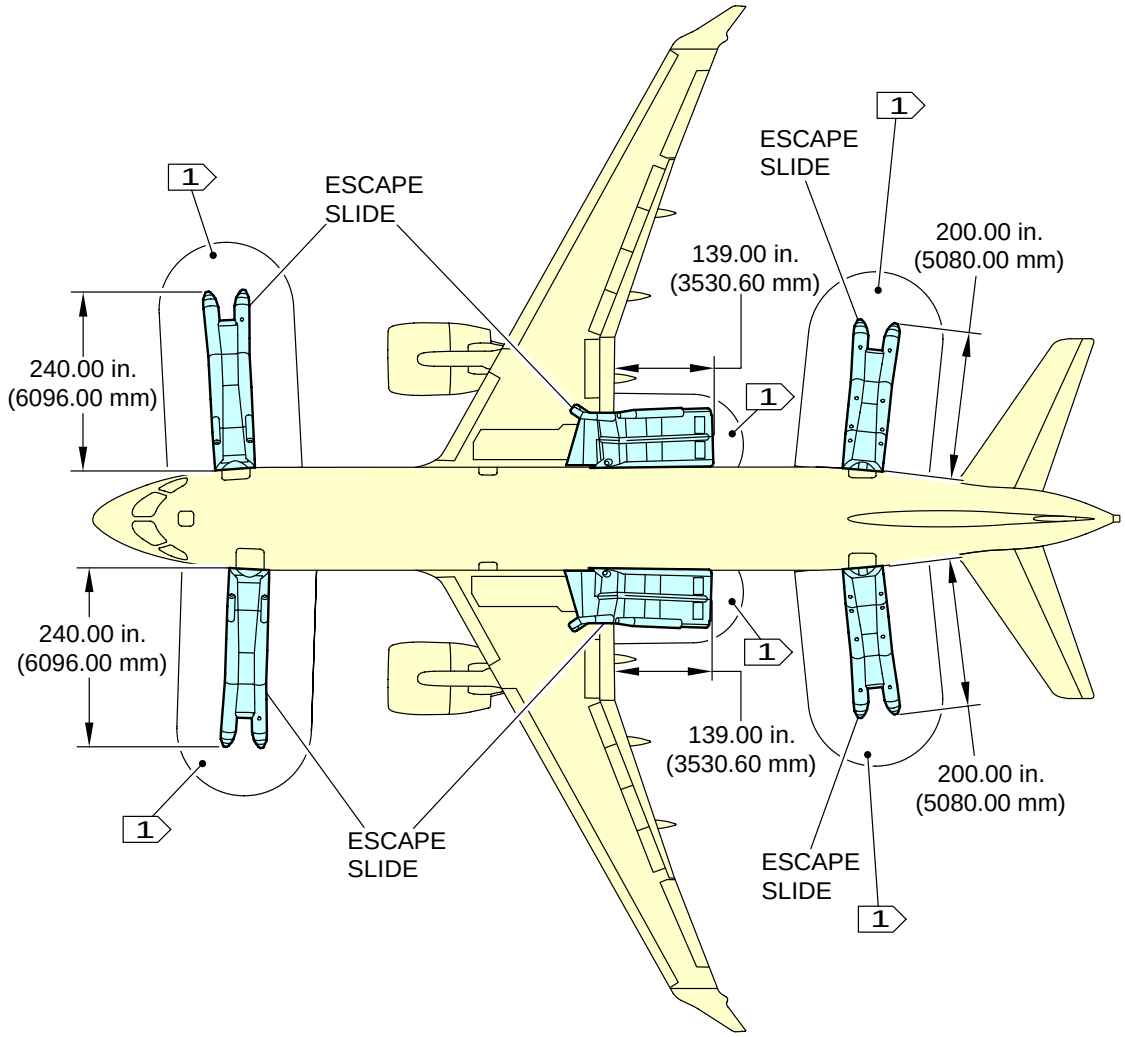
NOTE

1 Emergency evacuation ground area.

See a ...)A-A
first p... of the BM...

Figure 3 Ground clearances for evacuation slides - (Sheet 1 of 2)

(Sheet) Applicability: 55086, 55094-55095, 55114, 55121, 55126-55127, 55129, 55131, 55133-55134, 55139-55141, 55146, 55149, 55154-55155, 55157, 55159, 55162-55163, 55165, 55168, 55171, 55173-55174, 55176-55177, 55180, 55182-55183, 55185, 55187, 55191, 55193, 55196-55198, 55200, 55210, 55213, 55215-55216, 55218-55219, 55221, 55223-55224, 55227, 55229-55230, 55232-55233, 55235, 55238, 55240, 55242-55245, 55247-55248, 55255, 55264, 55270, 55275, 55278, 55281, 55283, 55286, 55290-55291, 55294, 55299, 55302-55305, 55308-55309, 55311, 55316-55317, 55321, 55323-55324, 55327, 55329 and 55003-55009, 55016, 55034, 55038-55039, 55041-55043, 55050-55057, 55064-55066, 55071-55073 POST BD500-256002



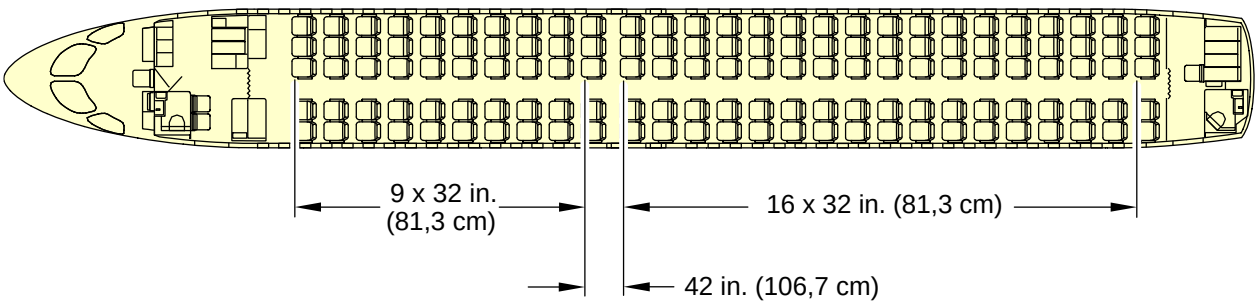
NOTE

1 Emergency evacuation ground area.

Figure 3: Ground clearances for evacuation slides - (Sheet 2 of 2)

4 Layout of passenger compartment accommodation

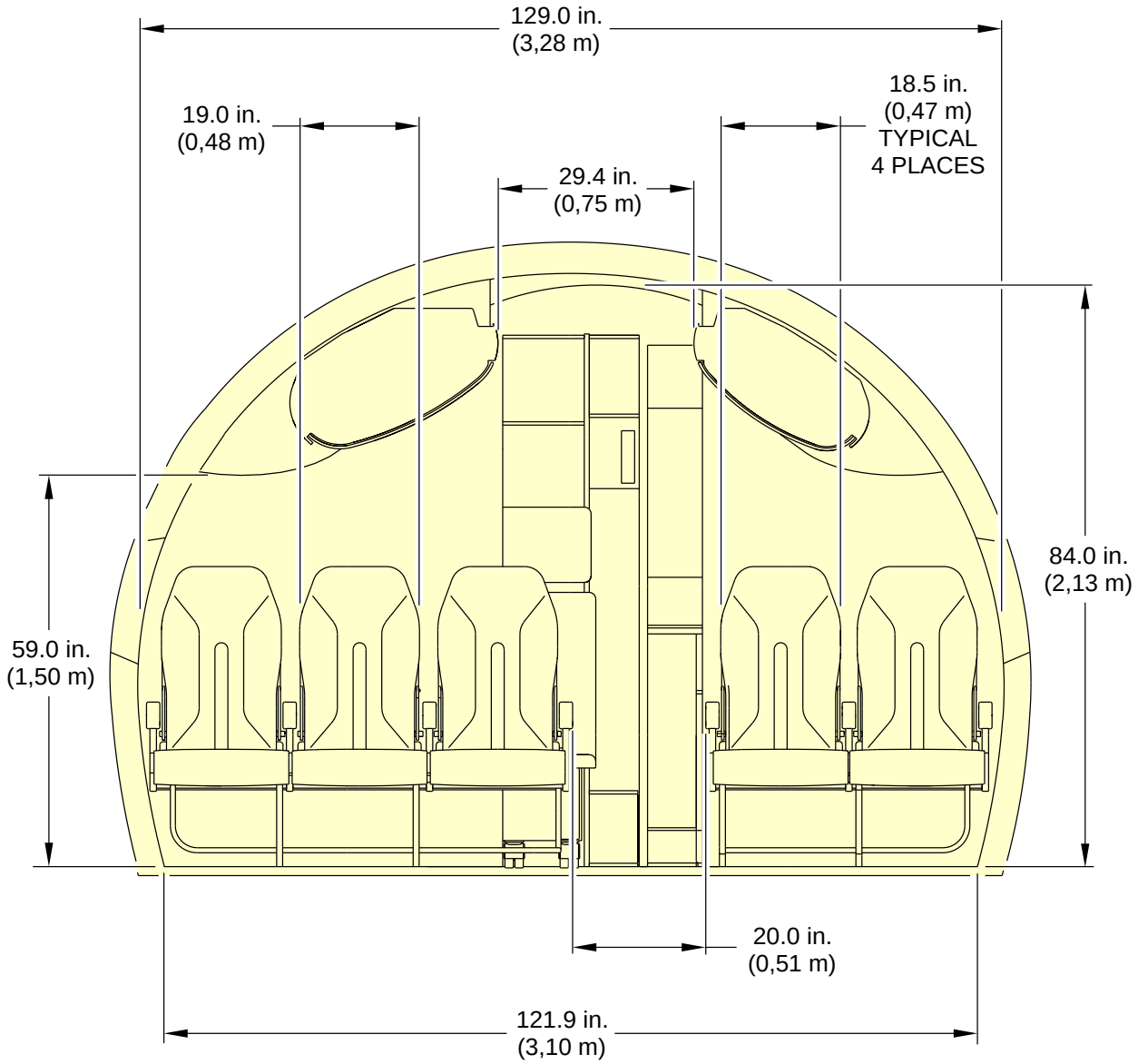
The passenger compartment includes the galley area, lavatory, and passenger seating area. The galleys and utility areas are isolated from the passenger area by partitions and curtains. Refer to Fig. 4 .



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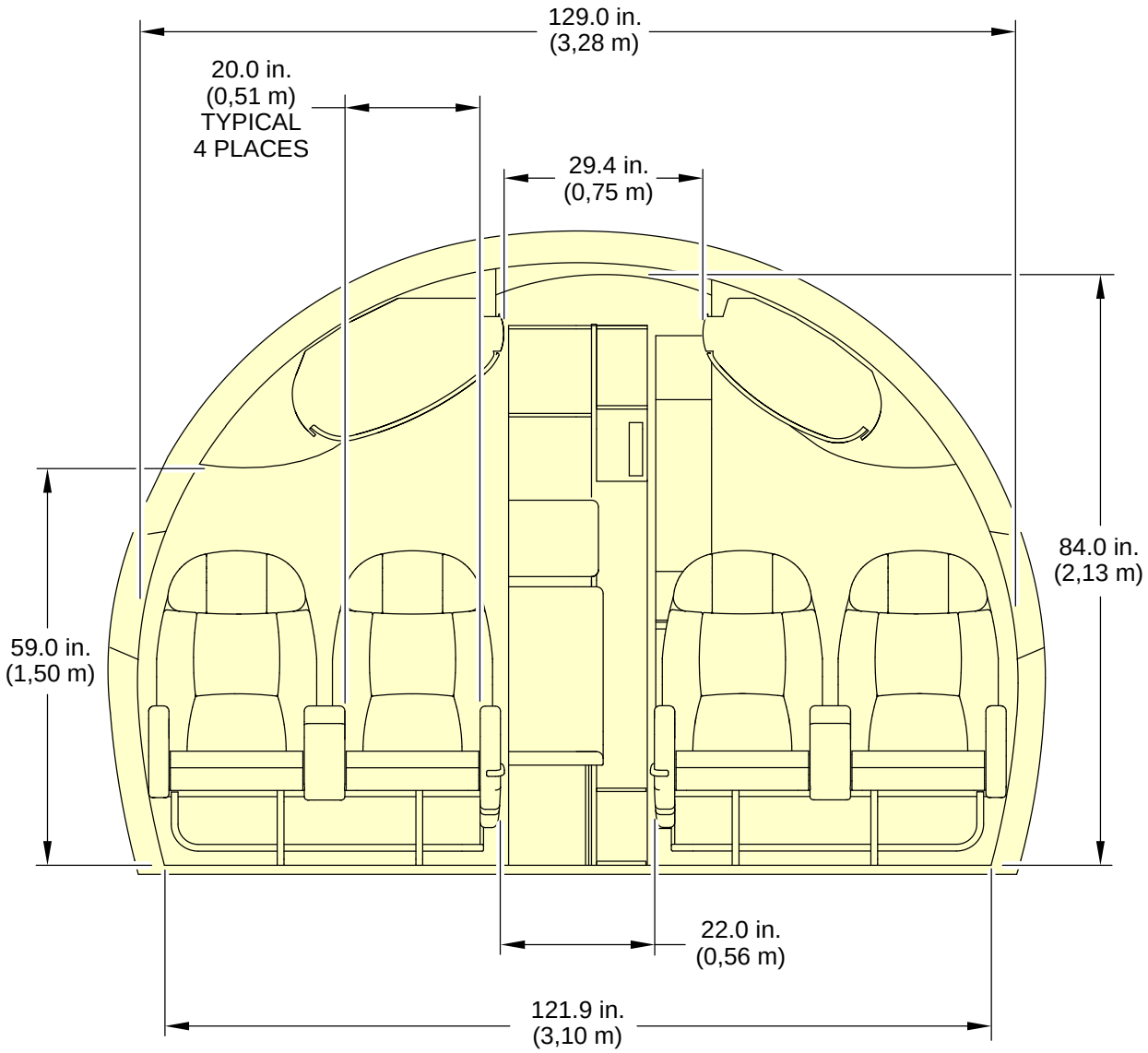
Figure 4 Layout Of Passenger Accommodation (LOPA)

5 Passenger cross-section



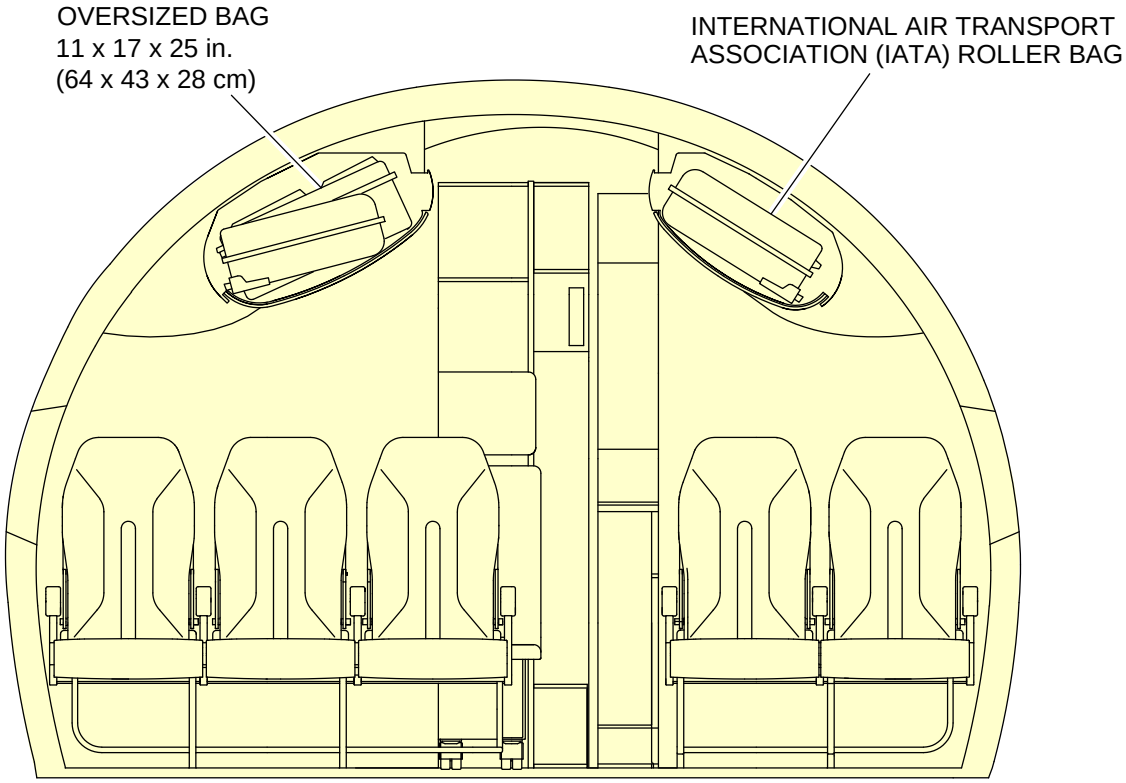
ICN-BD500-A-J061200-A-3AB48-00010-A-001-01

Figure 5 Passenger cross-section (economy class)



ICN-BD500-A-J061200-A-3AB48-00011-A-001-01

Figure 6 Passenger cross-section (optional business class)



ICN-BD500-A-J061200-A-3AB48-00012-A-001-01

Figure 7 Overhead stowage bins

6 Cargo compartment

Two under-floor cargo compartments are provided, each with a dedicated outward-opening access door. The forward compartment is positioned between the forward equipment compartment and the Environmental Control System (ECS) distribution bay. The aft compartment is positioned between the mid equipment compartment and the water system bay. Refer to Fig. 8

Both compartments are furnished with heavy duty floor panels and sidewall linings and are sealed to meet the requirements of a Class C compartment. Decompression and ventilation panels are provided as well. The compartment linings also incorporate provisions for compartment lighting, smoke detector, and fire extinguish.

The combined maximum weight loading of the cargo compartment is 11 139 lb (5052 kg).

6.1 Cargo door nets

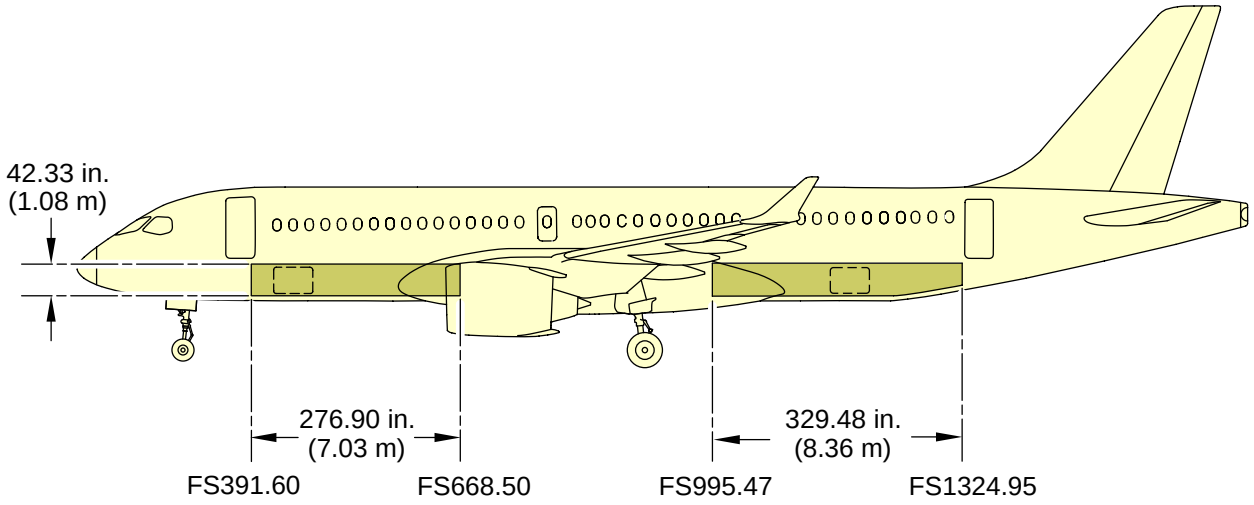
Protective nets are provided at the door area of each cargo compartment to prevent baggage from fouling the door due to in-flight shifting of the loads. Refer to Fig. 9 .

6.2 Volumes – Cargo compartment

The estimated volume of the cargo compartments is based on geometric volume and accounts for the unusable area in the vicinity of the cargo doors. Table 8 lists the estimated wet volume of the cargo compartments.

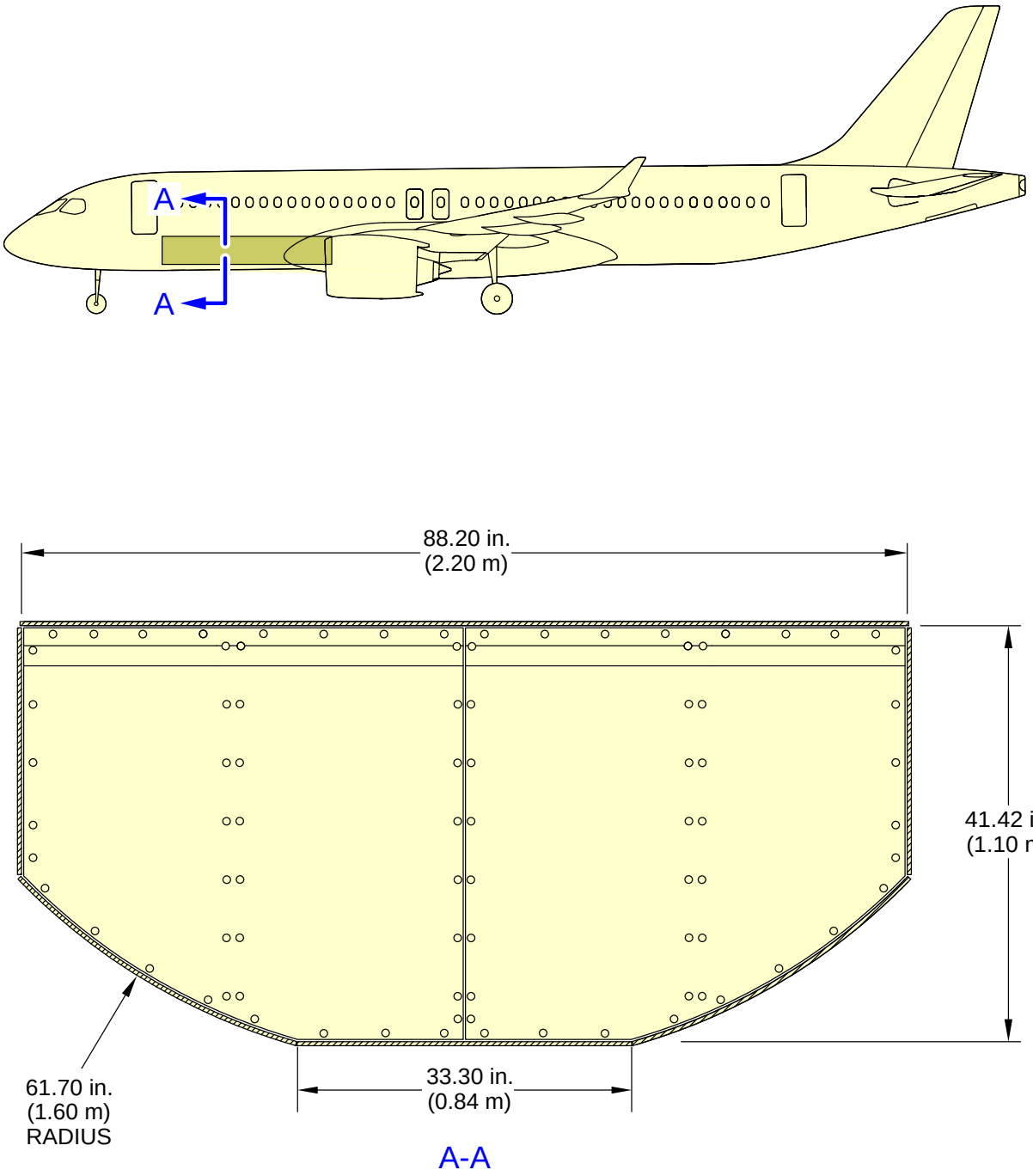
Table 8 Cargo compartment volumes

Description	Usable Volume		Maximum load	
	ft^3	m^3	lb	kg
Fwd cargo compartment	447	12.65	5393	2446
Aft cargo compartment	523	14.81	5746	2606



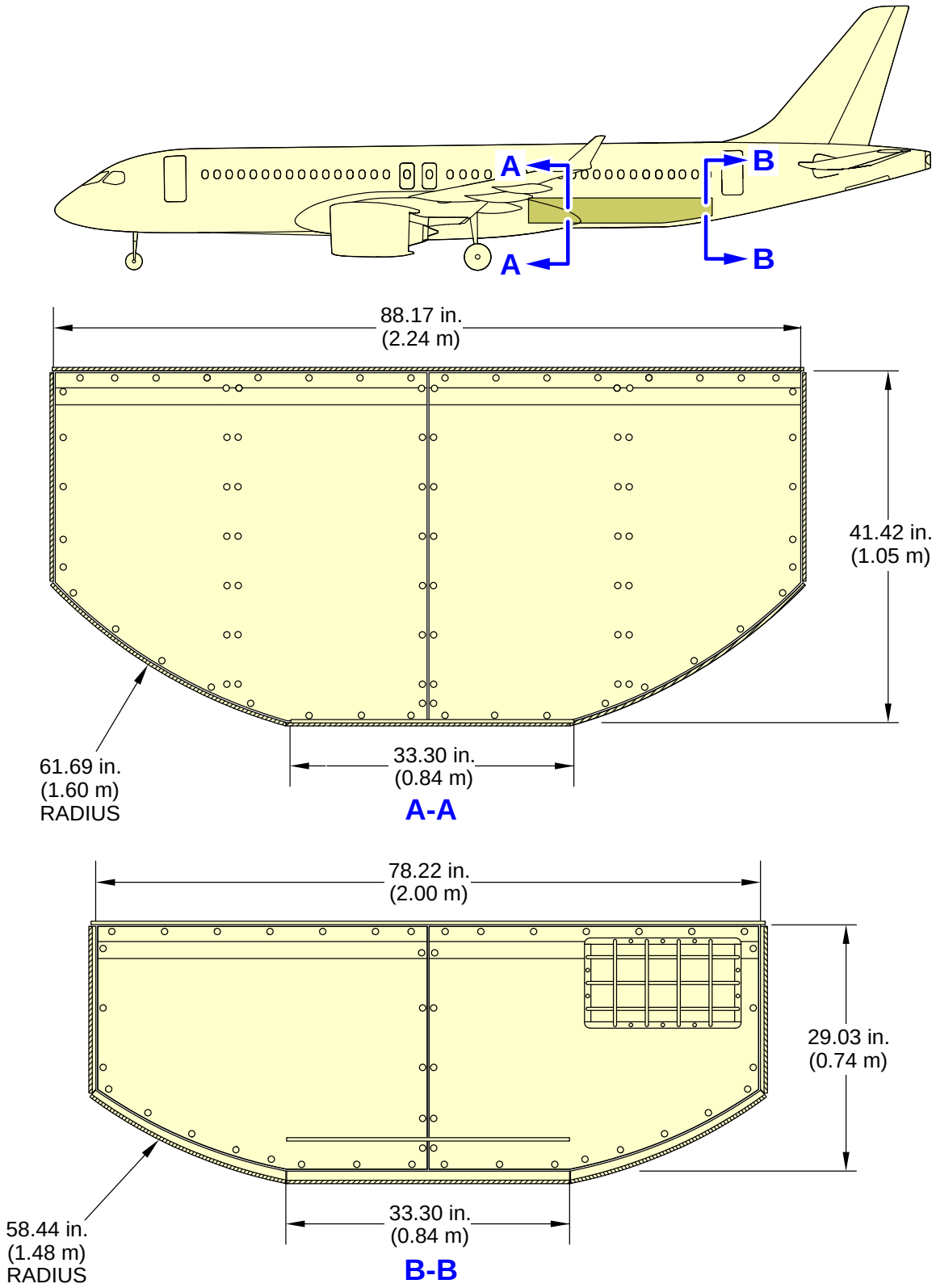
ICN-BD500-A-J000000-A-3AB48-23352-A-001-01

Figure 8 Aircraft cargo side view - (Sheet 1 of 3)



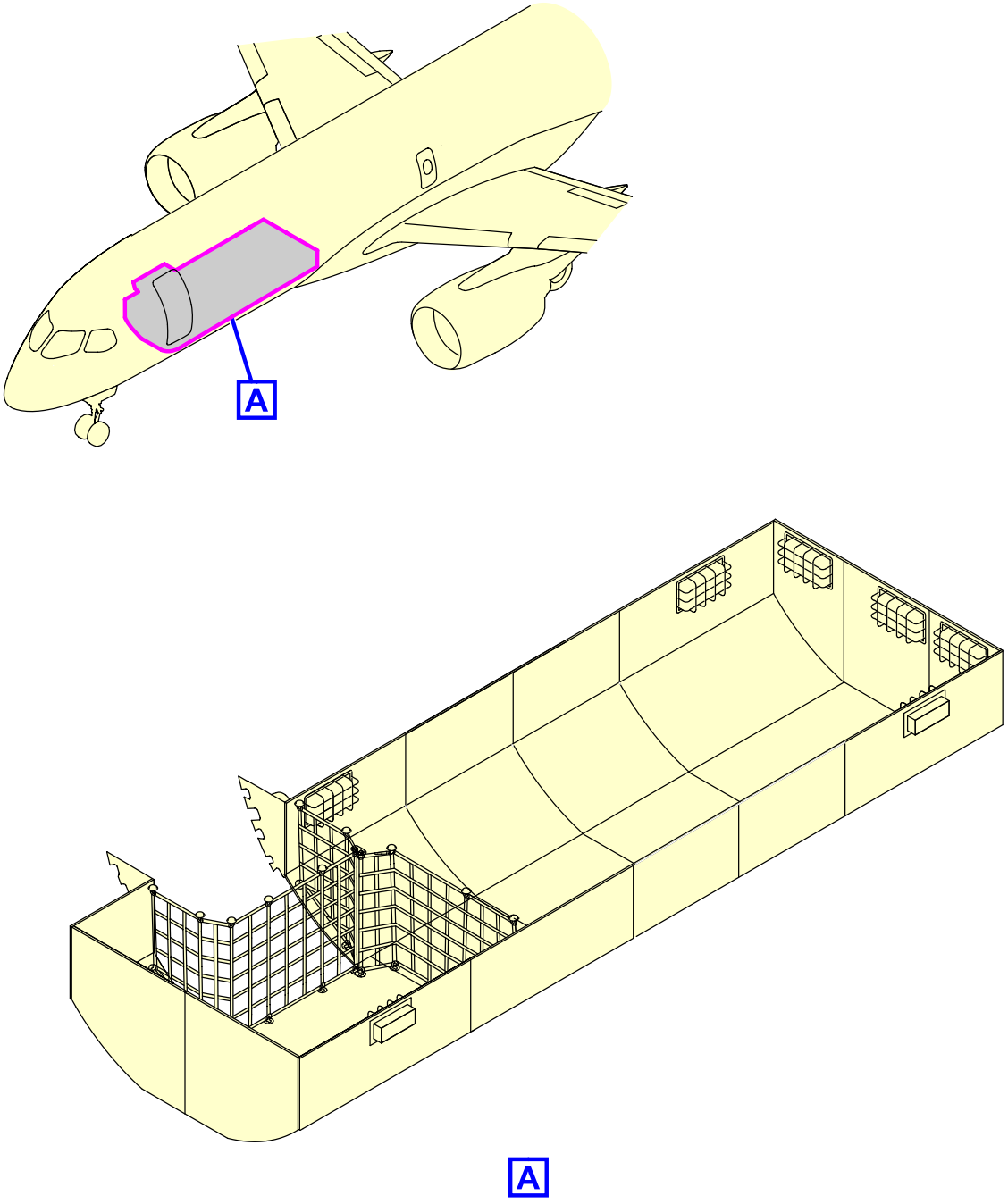
ICN-BD500-A-J084305-A-3AB48-24366-A-001-01

Figure 8 Aircraft cargo side view - (Sheet 2 of 3)



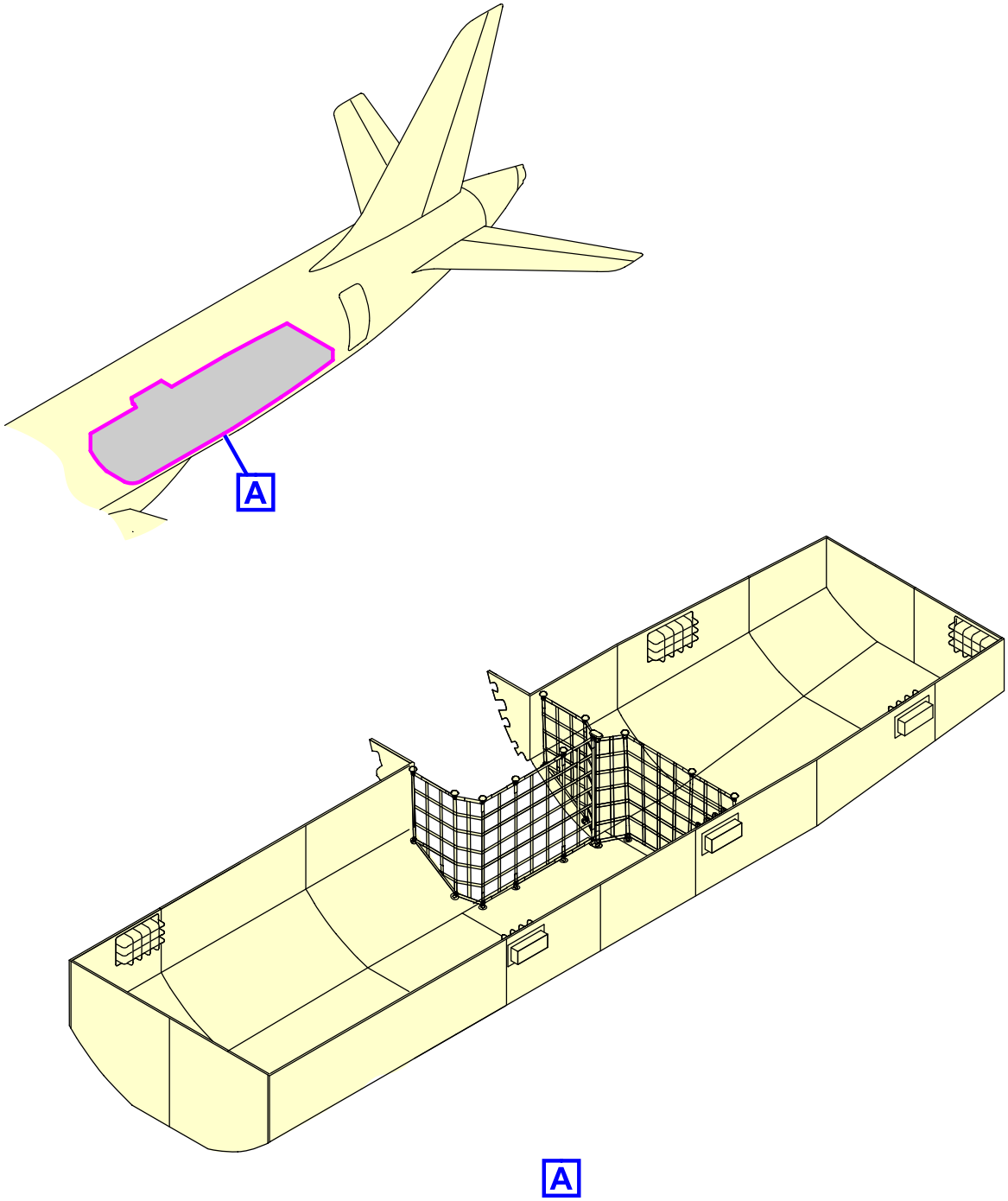
ICN-BD500-A-J084305-A-3AB48-24372-A-001-01

Figure 8 Aircraft cargo side view - (Sheet 3 of 3)



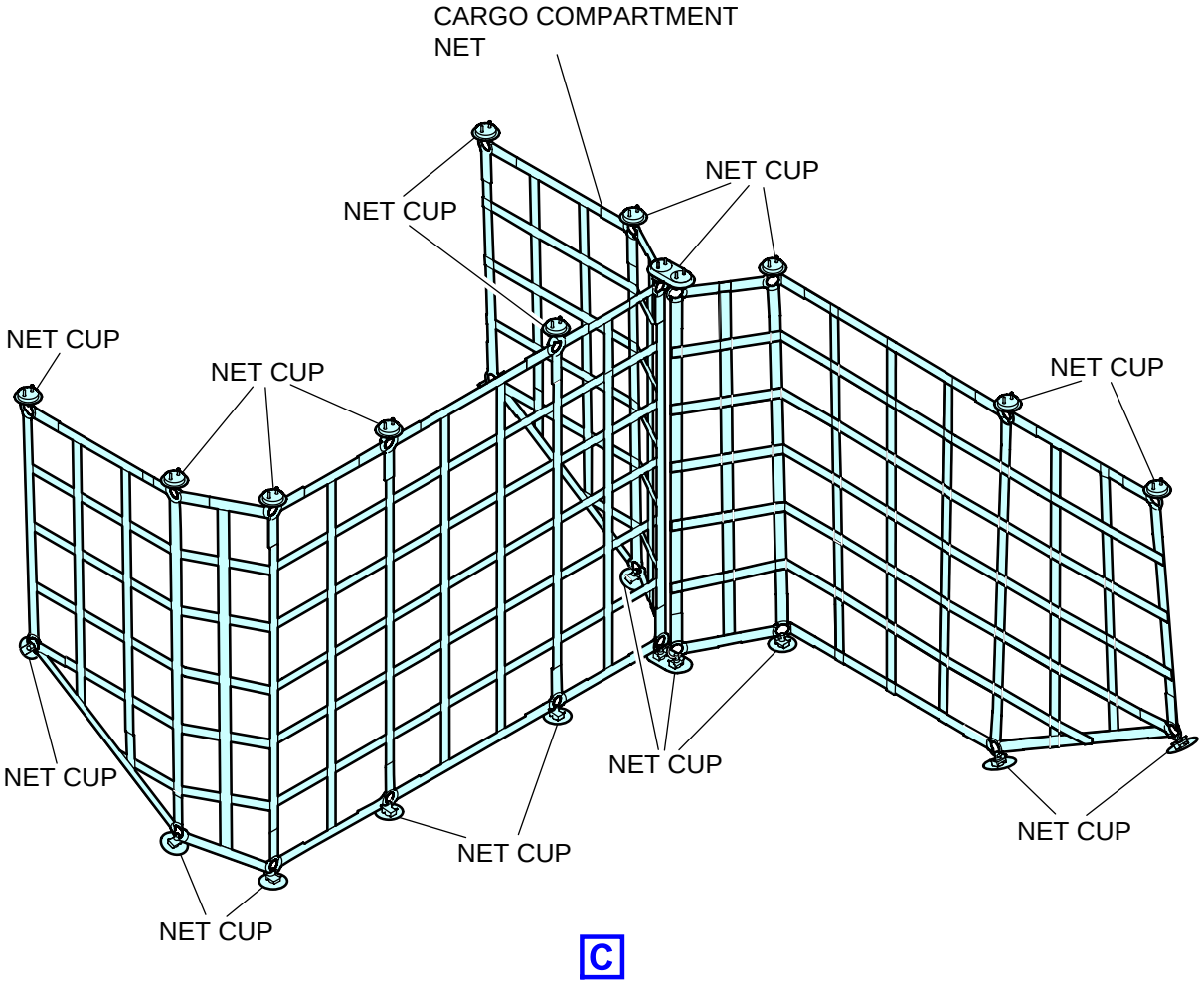
ICN-BD500-A-J084305-A-3AB48-24368-A-001-01

Figure 9 Cargo nets - (Sheet 1 of 3)



ICN-BD500-A-J084305-A-3AB48-24371-A-001-01

Figure 9 Cargo nets - (Sheet 2 of 3)



ICN-BD500-A-J502200-C-3AB48-17809-A-001-01

Figure 9 Cargo nets - (Sheet 3 of 3)

7 Door clearances and clear opening dimensions

A general description of the doors is as follows:

7.1 Passenger/Crew

Two semi-plug type doors on the left side of the aircraft provide access for passengers and crew. Door 1L is considered the primary entrance while door 2L provides a secondary entrance available for passenger loading/unloading as well as ground servicing.

Each door is classified as a type C floor level exit. Due to the sill height, every door incorporates an emergency evacuation slide system. In addition each one translates outwards from closed position, supported by a hinged arm to rest in open position.

Every door is operable from the exterior and interior of the aircraft and features an inspection window to allow verification of the outside conditions from the interior. The exterior operating handle has a linear motion and is interconnected to a vent flap system to provide pressure equalization between the aircraft and the ambient air prior to be opened.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For Passenger/Crew doors distance from the nose, refer to Fig. 11Fig. 12 . For aft passenger door opening and clearances, refer to Fig. 13 .

7.2 Emergency exit

The over-wing emergency exits are type III semi-plug type doors.

The exits are provided with an operating handle with removable cover and are fitted with a standard sized passenger compartment window. Each door is fully lined and insulated to meet thermal and noise performance requirements.

The door rotates upwards from the closed position, supported by a hinged arm to rest in open position. The door opening sequence is automatically supported by the energy stored in its own mechanism.

For emergency access to the passenger compartment, the doors may be opened from an exterior handle.

Due to the exit path height from the ground, an off-wing evacuation slide system is provided.

For over-wing emergency exits distance from the nose, refer to Fig. 11 . For doors dimensions, refer to Table 9 .

7.3 Flight compartment emergency exit

The flight compartment is outfitted with a single, inward-opening overhead escape hatch.

7.4 Cargo doors

Access doors are provided to allow cargo compartment loading and unloading.

The semi-plug forward and aft cargo doors are identical components, each hinged along the top edge of its frame.

Each door incorporates an exterior lock/unlock handle with linear motion that is interconnected to a vent flap system and provide pressure equalization between the aircraft and the ambient air prior to be opened.

An electrical actuation system with a switch panel, installed on the fuselage near each door, is provided to open and close the door.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For cargo doors distance from the nose, refer to Fig. 11 . For doors dimensions, refer to Table 9 . For forward cargo door opening and clearances, refer to Fig. 14 . For aft cargo door opening and clearances, refer to Fig. 15 .

7.5 Service doors

Two semi-plug type doors are provided on the right side of the aircraft to provide access for the forward (door 1R) and aft (door 2R) galley service areas.

Each door is classified as a type C floor level exit. Due to the sill height, each door incorporates an emergency evacuation slide system.

Each door translates outwards from the closed position, supported by a hinged arm and stabilizing system, to rest parallel to the fuselage in the open position.

Each door is operable from the exterior and interior of the aircraft and features an inspection window to allow verification of the outside conditions from the interior. The exterior operating handle has a linear motion and is interconnected to a vent flap system to provide pressure equalization between the aircraft and the ambient air prior to be opened.

Each door is fully lined and insulated to meet thermal and noise performance requirements.

For service doors distance from the nose, refer to Fig. 11 . For service doors dimensions, refer to Table 9 . For forward service door opening and clearances, refer to Fig. 16 . For aft service door opening and clearances, refer to Fig. 17 .

7.6 Forward avionics bay door

A plug-type door is provided in the forward fuselage to gain access to the pressurized forward equipment compartment. The door is fitted with a stowable operating handle.

For forward equipment compartment door distance from the nose, refer to and Fig. 11 . For dimensions, refer to Table 9 .

7.7 Mid avionics bay door

A plug-type door is provided in the mid fuselage to gain access to the pressurized mid equipment compartment. The door is fitted with a stowable operating handle.

For mid equipment compartment door distance from the nose, refer to Fig. 11 . For dimensions, refer to Table 9 .

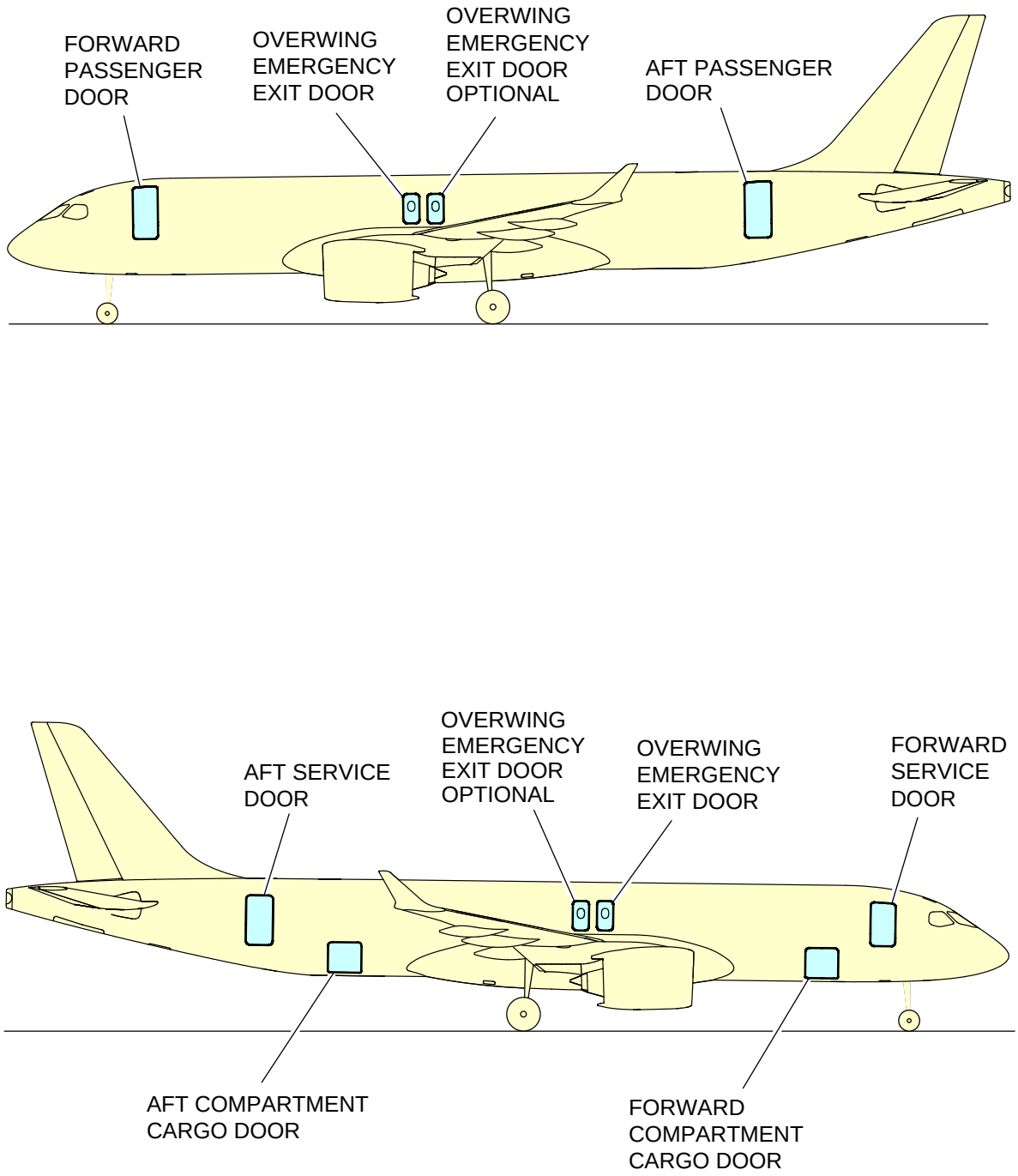
7.8 Aft equipment bay door

A door is provided in the aft fuselage to gain access to the unpressurized aft equipment compartment.

For aft equipment compartment door distance from the nose, refer to Fig. 11 . For dimensions, refer to Table 9 .

7.9 Doors identification

This section shows a general overview of the doors



ICN-BD500-A-J000000-A-3AB48-23217-A-001-01

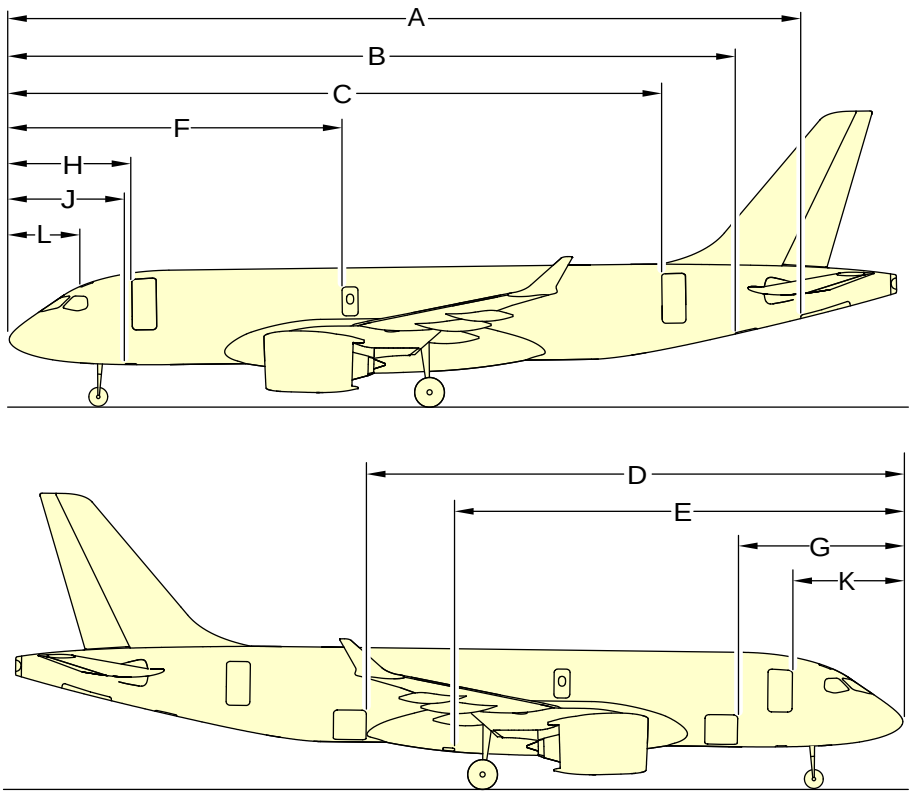
Figure 10 General door location

7.10 Access and exit doors dimensions

Table 9 Access and exit doors dimensions

Door	Height	Width
Main entrance door - Type C exit (door 1L)	6 ft 3 in. (1,9 m)	2 ft 6 in. (0,8 m)
Service door - Type C exit (door 1R)	5 ft 0 in. (1,5 m)	2 ft 6 in. (0,8 m)
Aft entrance door - Type C exit (door 2L)	6 ft 0 in. (1,8 m)	2 ft 6 in. (0,8 m)
Service door - Type C exit (door 2R)	5 ft 0 in. (1,5 m)	2 ft 6 in. (0,8 m)
Forward avionics bay door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Mid avionics bay door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Aft equipment bay door	3 ft 6 in. (1,08 m)	1 ft 11 in. (0,6 m)
Forward cargo compartment door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Aft cargo compartment door	2 ft 8 in. (0,81 m)	3 ft 8 in. (1,1 m)
Over-wing emergency exit	3 ft 6 in. (1,08 m)	1 ft 11 in. (0,59 m)
Flight compartment emergency exit	22 in. (0,559 m)	20 in. (0,508 m)

7.11 Door distance from nose



Dimensions	A220-300
A	114 ft 4 in. (34,85 m)
B	106 ft 1 in. (32,33 m)
C	96 ft 8 in. (29,46 m)
D	81 ft 7 in. (24,86 m)
E	64 ft 9 in. (19,74 m)
F	50 ft 1 in. (15,26 m)
G	21 ft 4 in. (6,5 m)
H	15 ft 10 in. (4,8 m)
J	15 ft 0 in. (4,6 m)
K	14 ft 3 in. (4,3 m)
L	9 ft 2 in. (2,8 m)

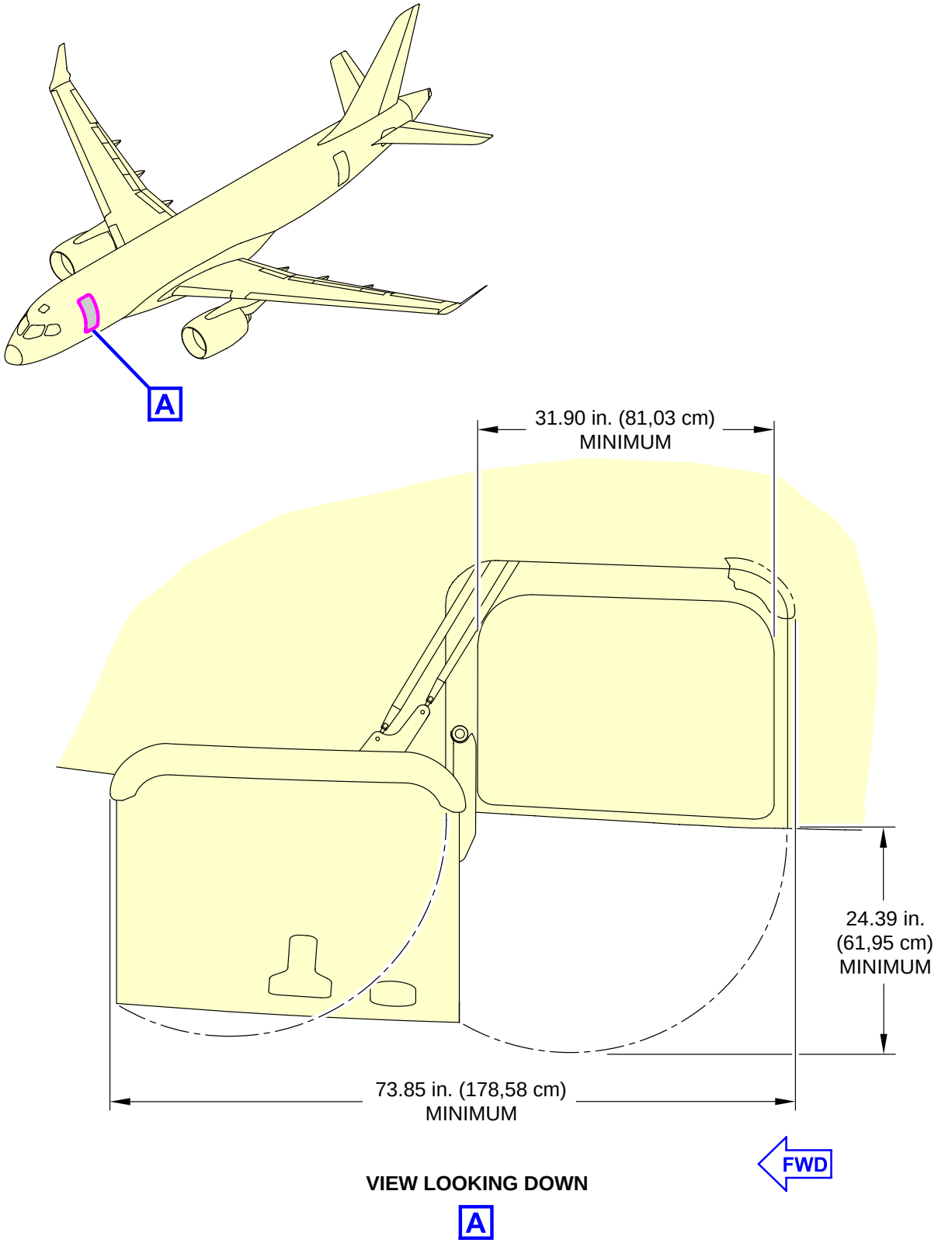
NOTE

The values shown are the greatest possible variations in attitude due to the variation of aircraft weight and gravity.

ICN-BD500-A-J000000-A-3AB48-21713-A-003-01

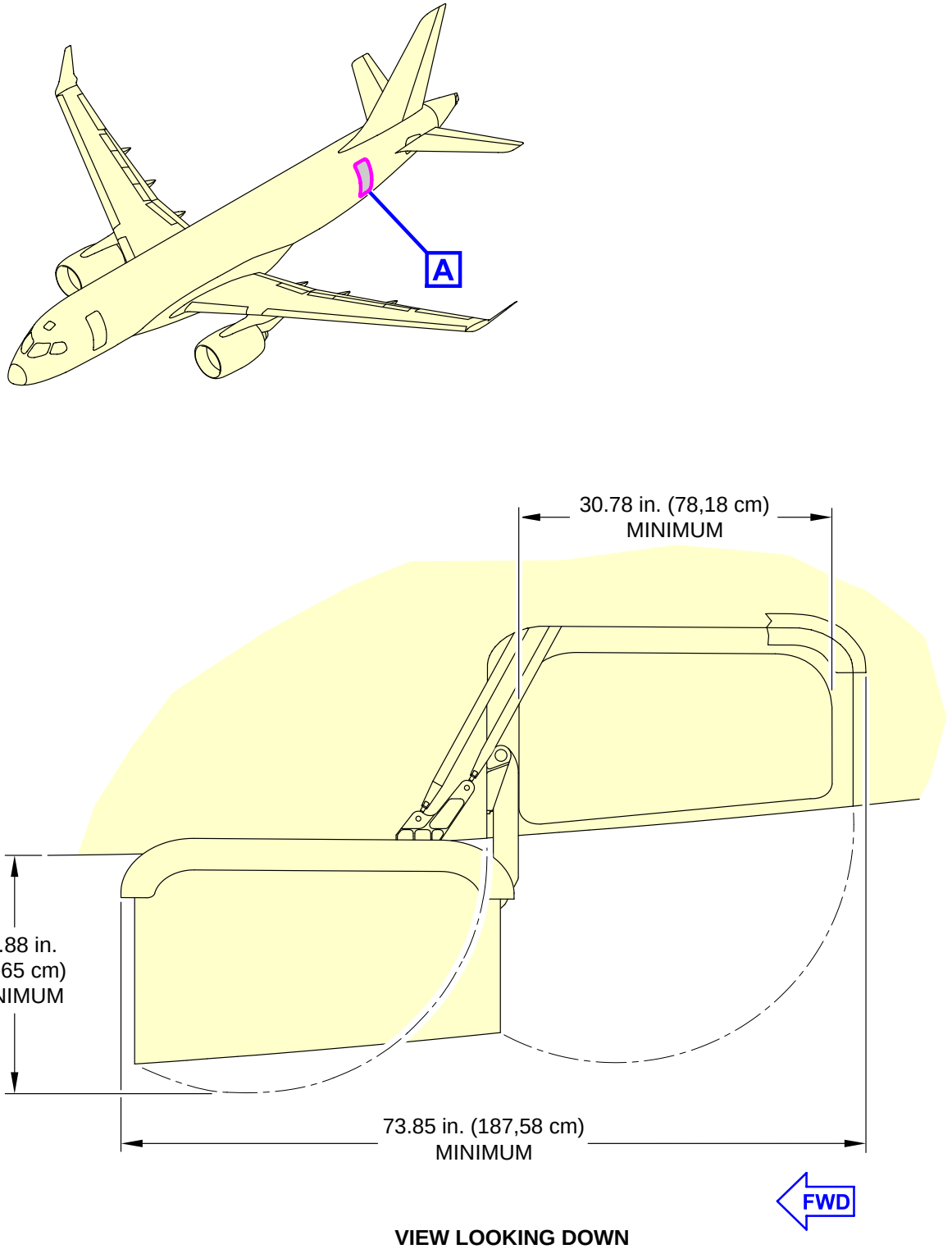
Figure 11 Door distance from nose

7.12 Door opening and clearance



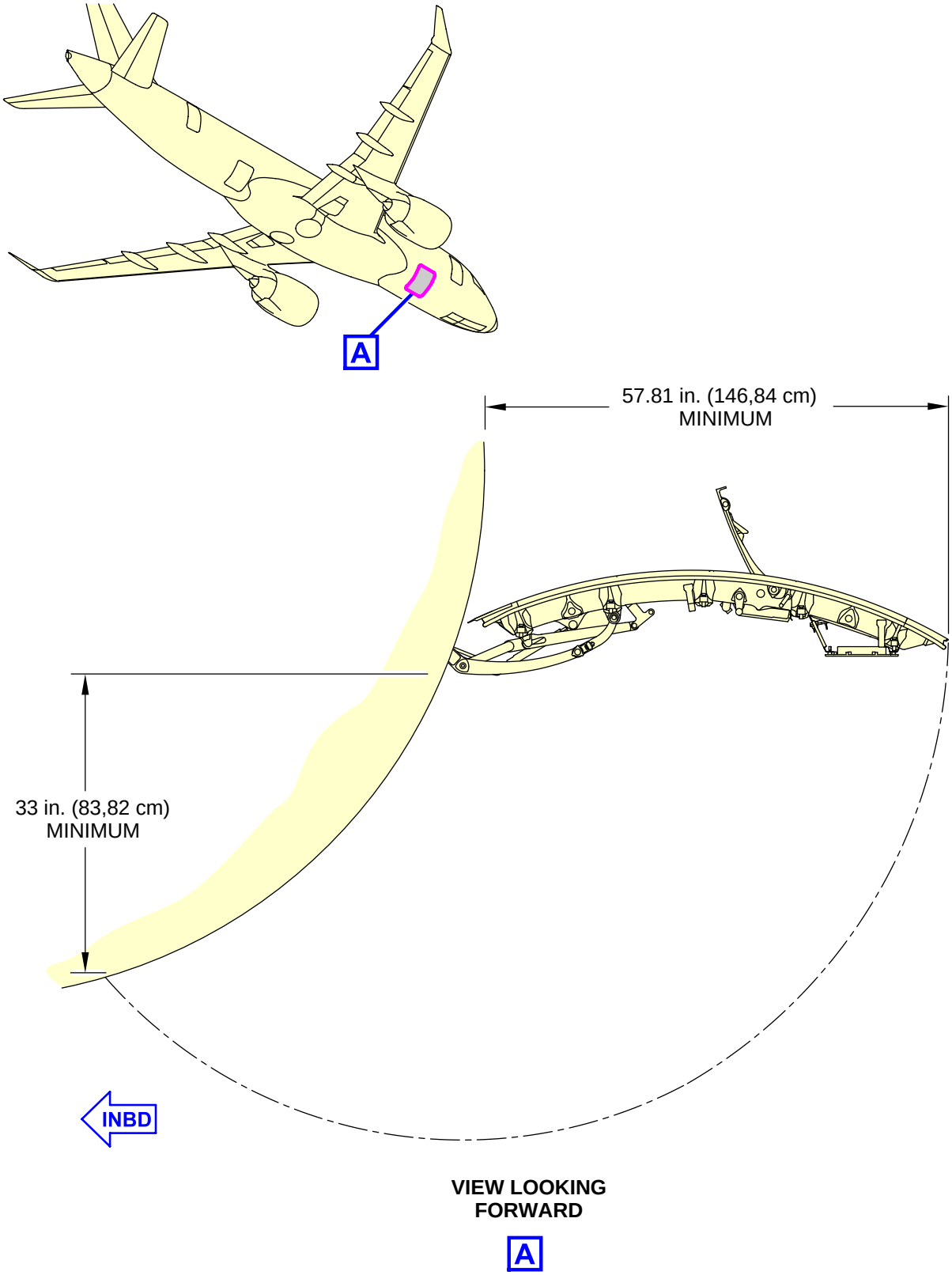
ICN-BD500-A-J061100-A-3AB48-00103-A-003-01

Figure 12 Forward passenger door opening and clearances



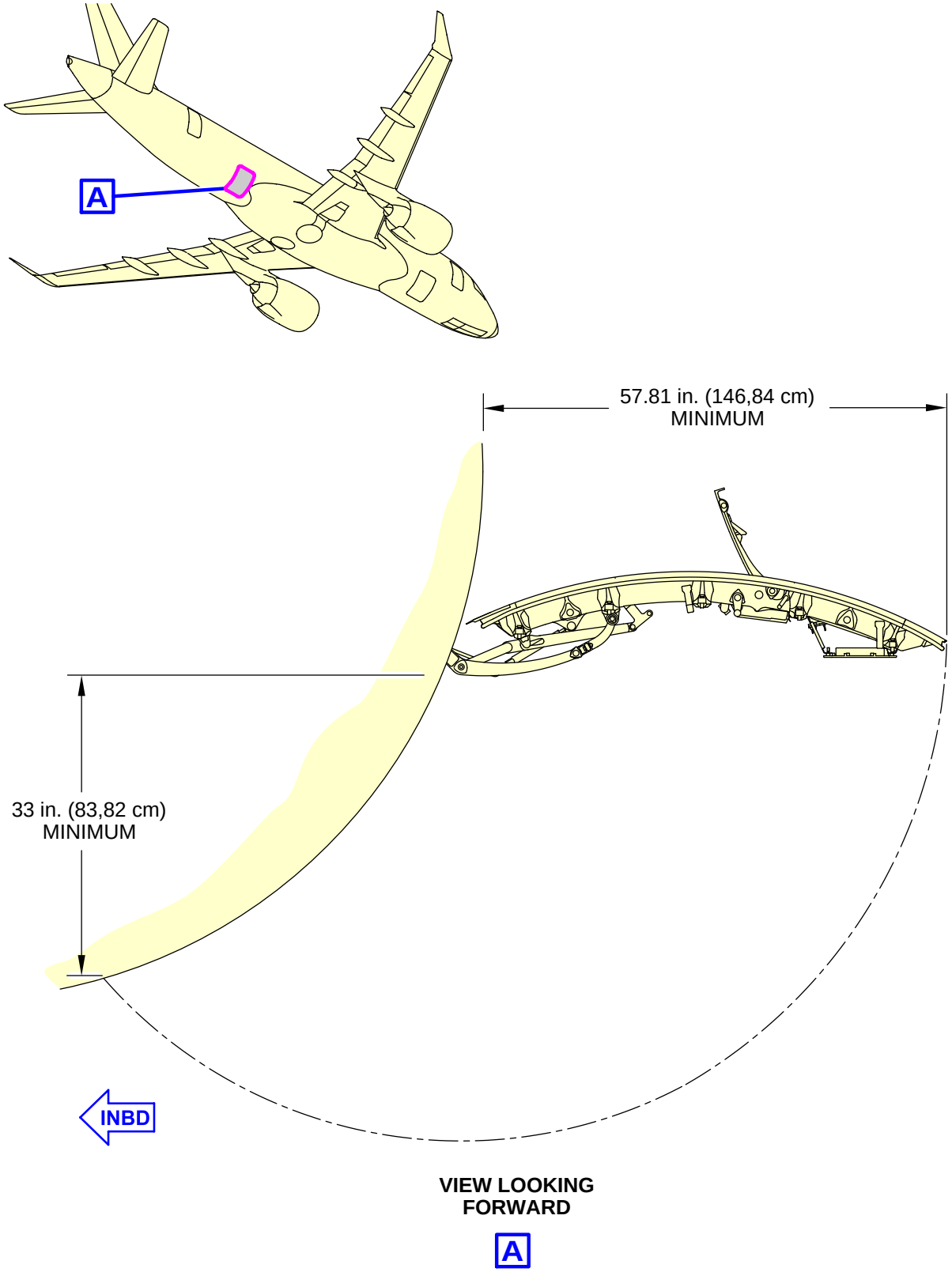
ICN-BD500-A-J061100-A-3AB48-00104-A-003-01

Figure 13 Aft passenger door opening and clearances



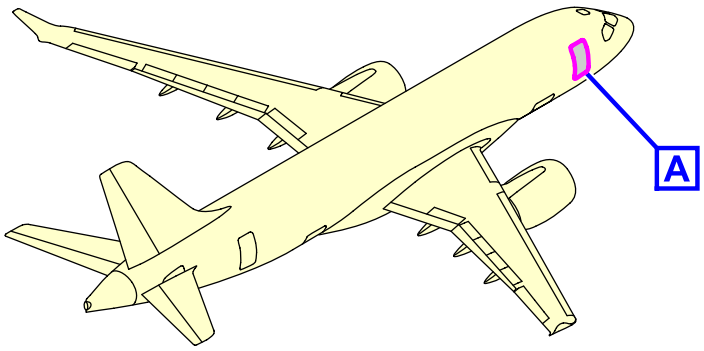
ICN-BD500-A-J061100-A-3AB48-00102-A-002-01

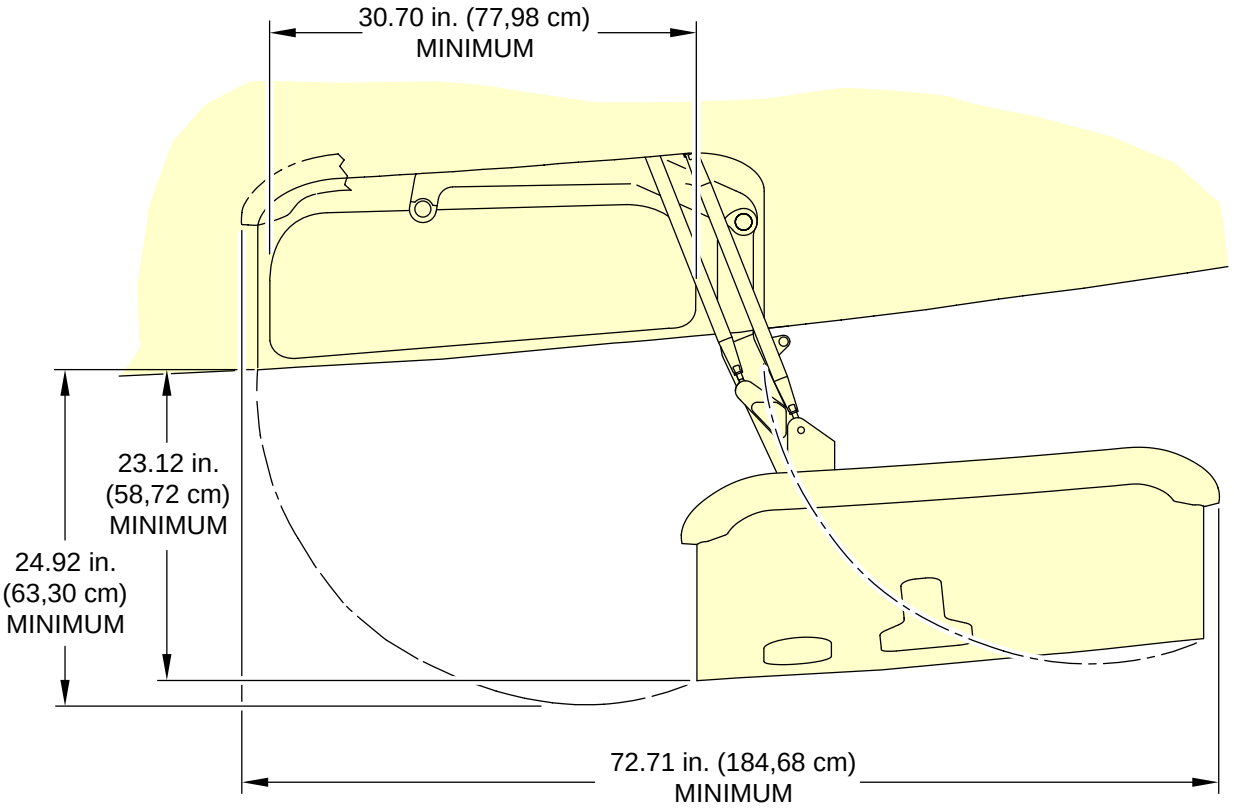
Figure 14 Forward cargo compartment door opening and clearances



ICN-BD500-A-J061100-A-3AB48-00101-A-002-01

Figure 15 Aft cargo compartment door opening and clearances



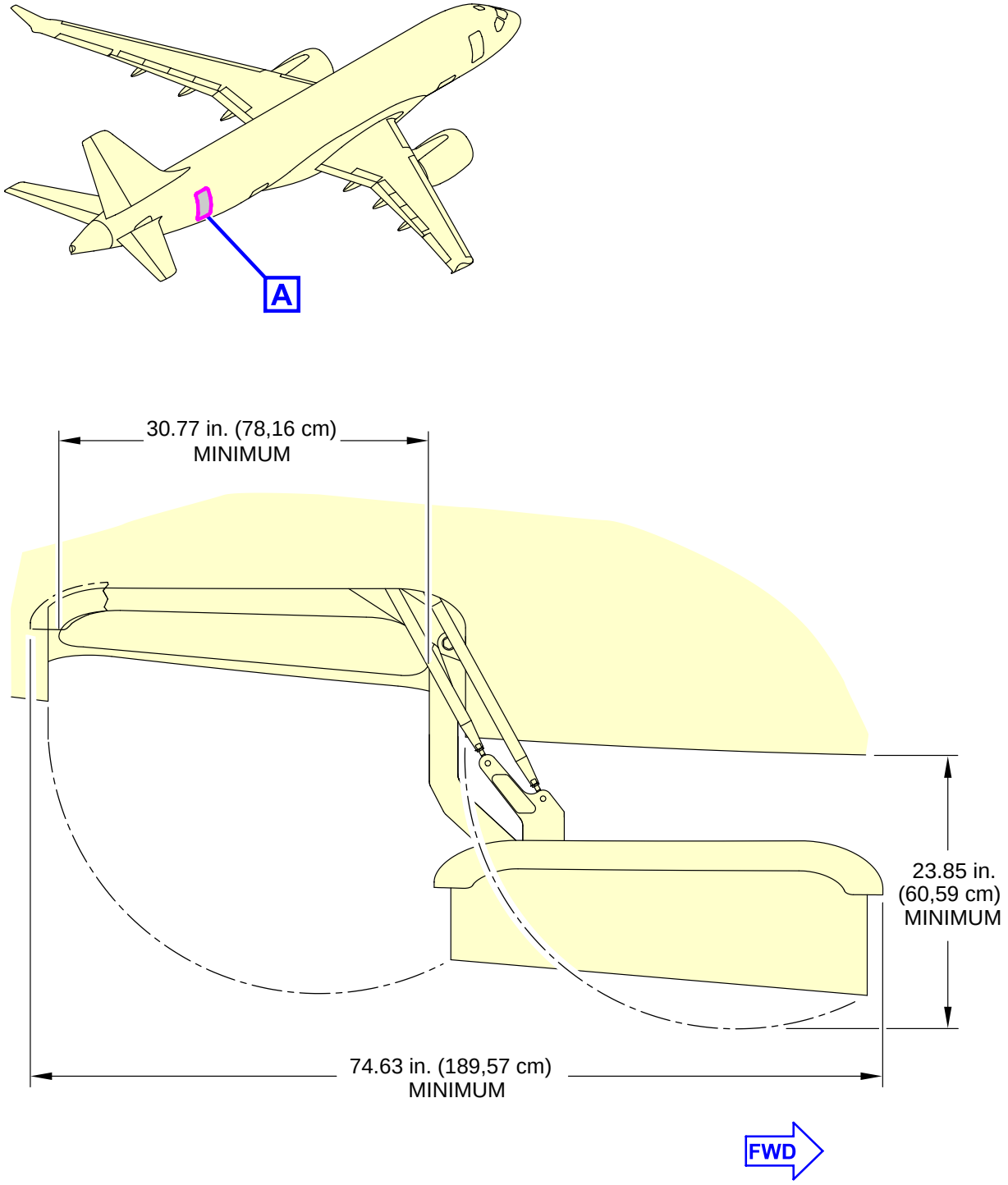


VIEW LOOKING DOWN

A

ICN-BD500-A-J061100-A-3AB48-00106-A-002-01

Figure 16 Forward service door opening and clearance



ICN-BD500-A-J061100-A-3AB48-00105-A-002-01

Figure 17 Aft service door opening and clearances

A220

Aircraft dimensions - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Aircraft dimensions - Technical data 1
References 1
Description 1
1 Introduction 1
2 General aircraft dimensions 2
3 Landing gear footprint dimensions 8
4 General aircraft area 10
5 Pressure refueling and pilots eye position 10

List of tables

Page

1 References 1
2 General aircraft dimensions (A220-100) 2
3 General aircraft dimensions (A220-300) 4
4 Landing gear footprint dimensions (A220-100) 8
5 Landing gear footprint dimensions (A220-300) 8
6 General aircraft area 10
7 Pilots eye position (A220-100) 10
8 Pressure refueling connection position (A220-100) 10
9 Pilots eye position (A220-300) 11
10 Pressure refueling connection position (A220-300) 11

List of figures

Page

1 General aircraft dimensions 6
2 Landing gear footprint dimensions 9
3 Pressure refueling and pilots eye position 12

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains general data about the aircraft dimensions and clearances. The structural weight limits, such as maximum ramp weight, landing weight and zero fuel weight are dependent on configuration. Refer to Weight and Balance Manual (WBM) BD500-3AB48-22100-00 (A220-100), BD500-3AB48-22100-00 (A220-300) and weight and balance report for structural limits and other weight information.

2 General aircraft dimensions

Applicability: 50001-54999

Table 2 General aircraft dimensions (A220-100)

Locator (refer to Fig. 1)	Value in. (cm)
A	1377.0 (3497.58)
B	146.500 (372.11)
C	463.800 (117805)
D	482.800 (1226.31)
E	Baseline 1377.300 (3498.34)
	Fuel loaded 1381.300 (3508.50)
F	873.500 (2218.69)
G	773.200 (1963.93)
H	1341.000 (3406.14)
J	698.900 (1775.21)
K	395.000 (1003.30)
L	87.800 (223.01)
M	429.400 (1090.68)

Locator (refer to Fig. 1)	Value in. (cm)
P	263.000 (668.02)
Q	96.500 (245.11)
R	103.800 (263.65)
S	134.900 (342.65)
T	267.900 (680.47)
U	98.300 (249.68)
V	193.500 (491.49)
W	135.200 (343.40)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	515.700 (1309.87)
AA	0.38 Deg Nose down
BB	138.000 (350.52)

Note

The values given change due to the variation of aircraft weight and gravity.

Applicability: 55001-59999

Table 3 General aircraft dimensions (A220-300)

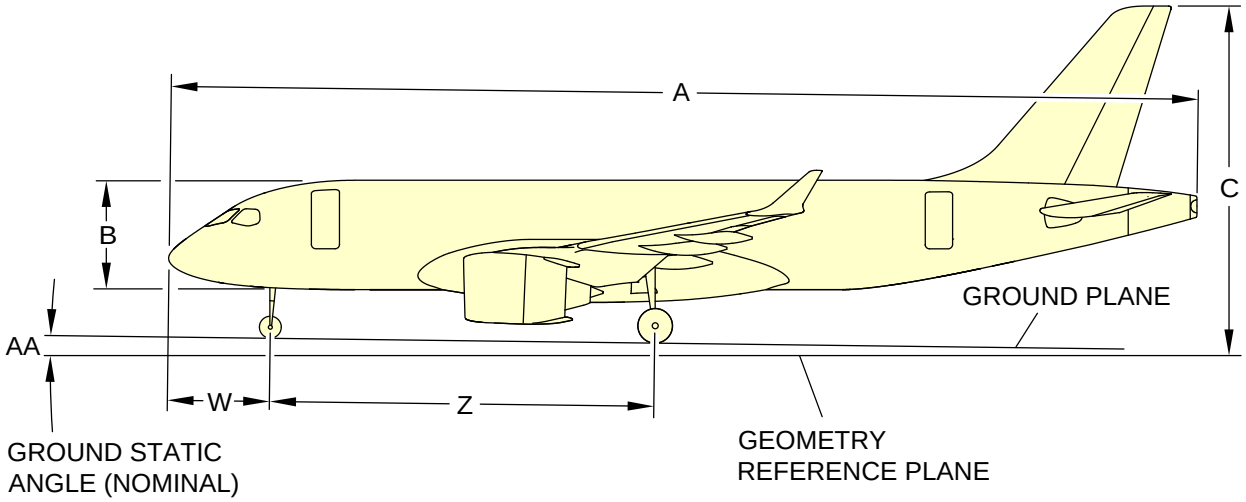
Locator (refer to Fig. 1)	Value in. (cm)
A	1523.2 38689.28
B	146.500 (372.11)
C	461.9 (1173.23)
D	482.800 (1226.31)
E	Baseline 1377.300 (3498.34)
	Fuel loaded 1381.300 (3508.50)
F	961.4 (2441.96)
G	857.9 (2179.01)
H	1489.2 (3782.57)
J	783.2 (1989.33)
K	479.0 (1216.66)
L	172.4 (437.90)
M	513.3 (1303.78)
P	262.9 (667.77)

Locator (refer to Fig. 1)	Value in. (cm)
Q	96.500 (245.11)
R	162.2 (411.99)
S	198.5 (504.19)
T	268.0 (680.72)
U	97.7 (248.16)
V	194.6 (494.28)
W	133.4 (338.83)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	602.6 (1530.60)
AA	0.477 Deg Nose down
BB	138.000 (350.52)

This data module contains data on the landing gear footprint.

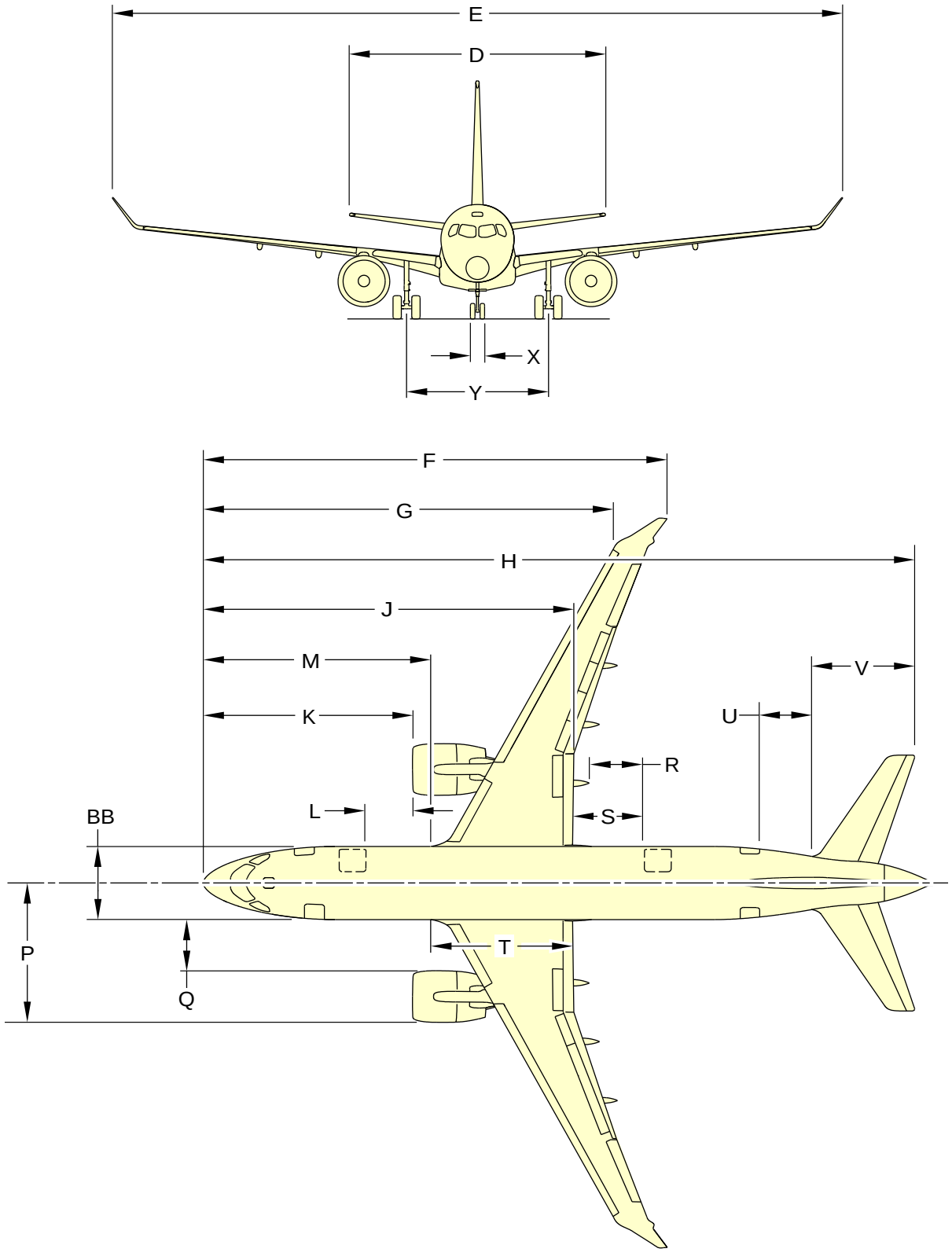
Note

The values given change due to the variation of aircraft weight and gravity.



ICN-BD500-A-J061000-A-3AB48-00005-A-001-01

Figure 1 General aircraft dimensions - (Sheet 1 of 2)



ICN-BD500-A-J061000-A-3AB48-00004-A-003-01

Figure 1 General aircraft dimensions - (Sheet 2 of 2)

3 Landing gear footprint dimensions

This data module contains data on the landing gear footprint.

Applicability: 50001-54999

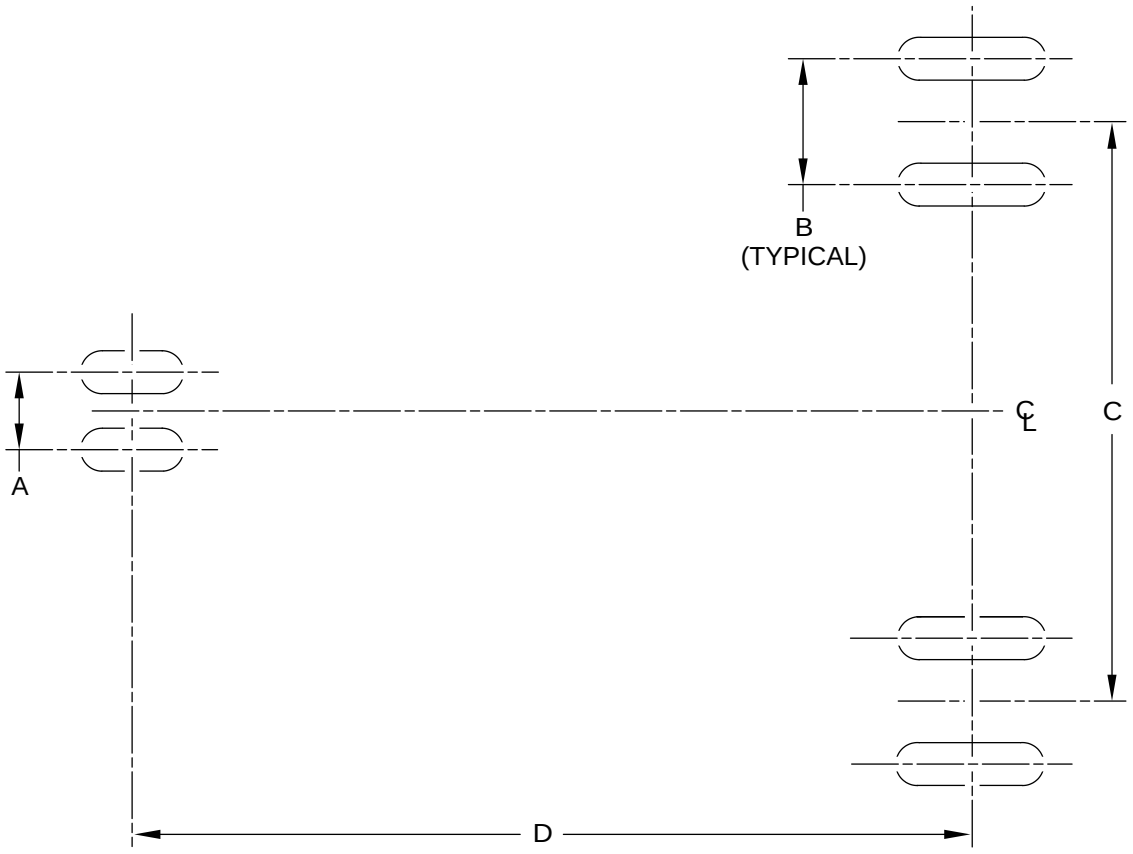
Table 4 Landing gear footprint dimensions (A220-100)

Locator	Value in. (cm)
A	18.571 (47.17)
B	35.000 (88.90)
C	265.000 (673.10)
D	515.7 (1309.87)

Applicability: 55001-59999

Table 5 Landing gear footprint dimensions (A220-300)

Locator	Value in. (cm)
A	18.571 (47.17)
B	35.000 (88.90)
C	265.000 (673.10)
D	602.6 (1530.60)



NOTE

Not to scale.

ICN-BD500-A-J061032-A-3AB48-00118-A-001-01

Figure 2 Landing gear footprint dimensions

4 General aircraft area

Table 6 General aircraft area

Description	Value sq. ft. (sq. m)
ESDU wing area (including ailerons, flaps, spoilers and area within the fuselage)	1208.880 (112.31)
Total horizontal stabilizer area (horizontal tail area and elevator area)	313.500 (29.13)
Total vertical stabilizer area (vertical tail area and rudder area)	223.600 (20.77)

5 Pressure refueling and pilots eye position

Applicability: 50001-54999

Table 7 Pilots eye position (A220-100)

Locator (refer to Fig. 3)	Value in. (cm)
A	FS = 354 (899.16) BL ± 20.00 (50.80) WL = 196.00 (497.80)
D	29.60°
E	17.65°

Applicability: 50001-54999

Table 8 Pressure refueling connection position (A220-100)

Locator (refer to Fig. 3)	Value in. (cm)
B	615.9

Locator (refer to Fig. 3)	Value in. (cm)
	(1564.39)
C	600.21 (1524.53)

Applicability: 55001-59999

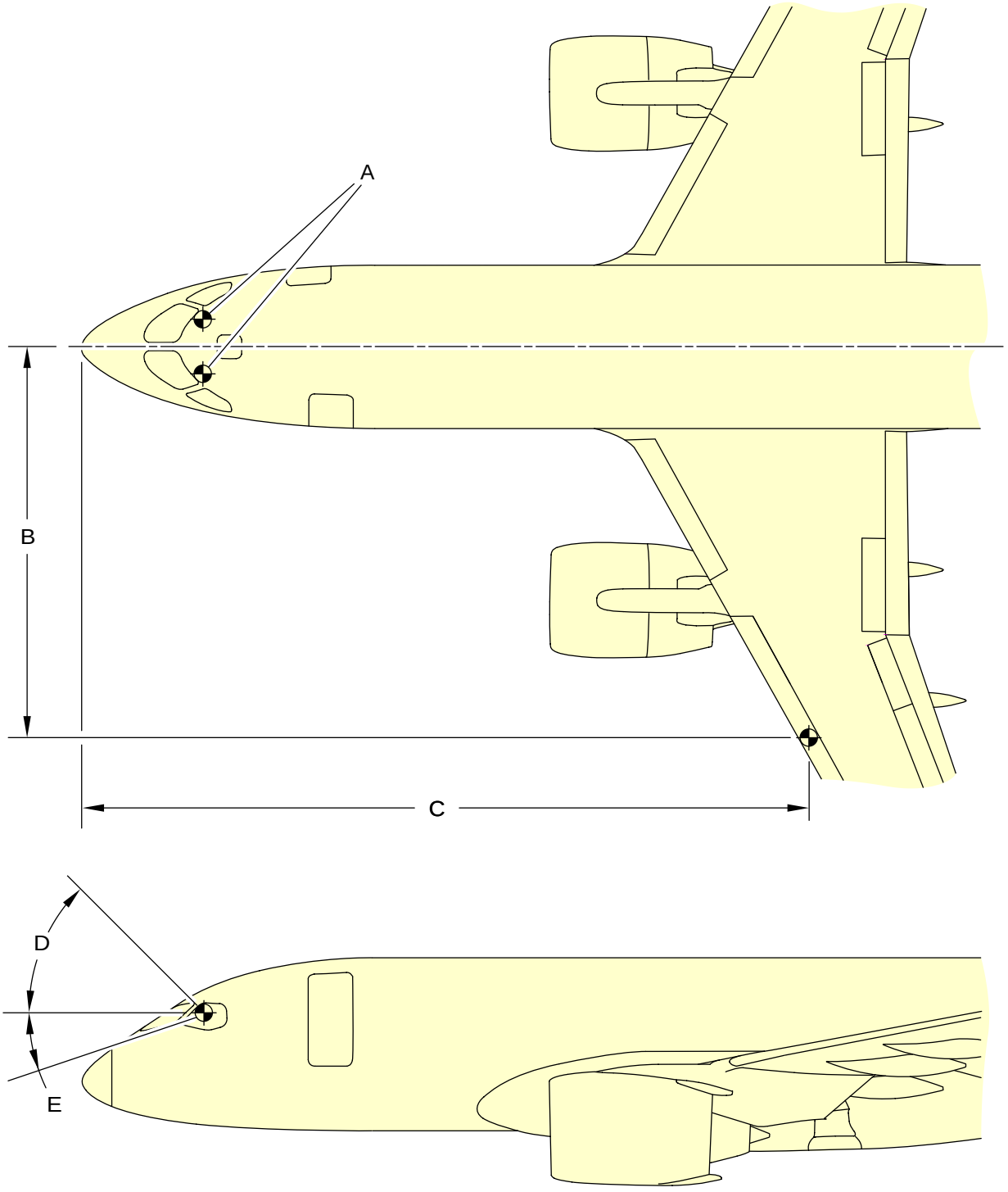
Table 9 Pilots eye position (A220-300)

Locator (refer to Fig. 3)	Value in. (cm)
A	FS = 270 (685.80) BL ± 20.00 (50.80) WL = 196.00 (497.80)
D	29.60°
E	17.65°

Applicability: 55001-59999

Table 10 Pressure refueling connection position (A220-300)

Locator (refer to Fig. 3)	Value in. (cm)
B	615.9 (1564.39)
C	684.21 (1737.89)



ICN-BD500-A-J061000-A-3AB48-10809-A-001-01

Figure 3 Pressure refueling and pilots eye position

A220

Nacelle and pylon stations - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Nacelle and pylon stations - Technical data 1
References 1
Description 1
1 General 1
2 Pylon stations 1
3 Nacelle stations 1

List of tables

Page

1 References 1

List of figures

Page

1 Pylon stations 2
2 Nacelle stations 3

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

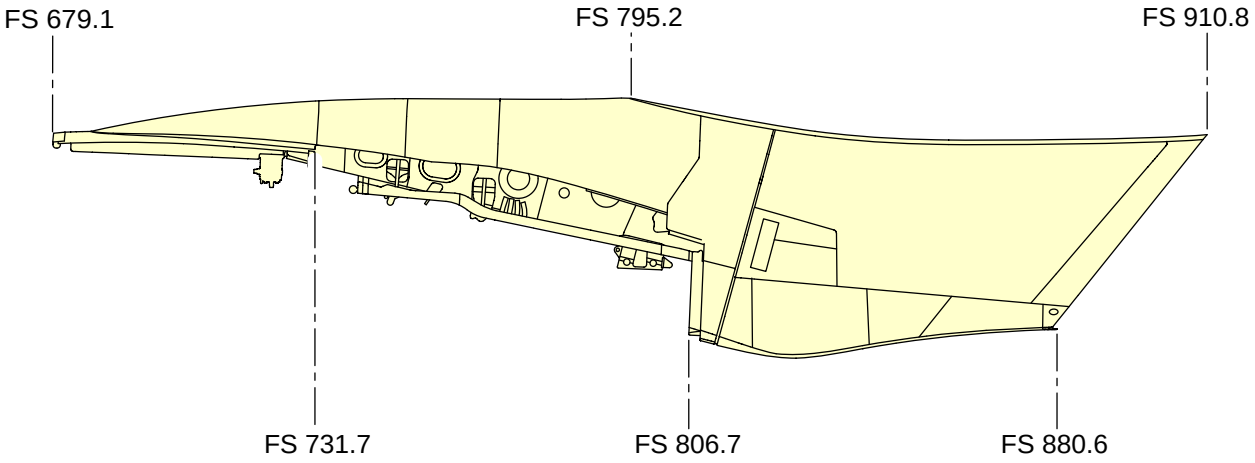
- This section shows the stations along the pylon and the nacelle.

2 Pylon stations

- Fig. 2 shows the pylon with reference to the Fuselage Station (FS).
- The FS references in this manual are used to measure or specify distances along the pylon.

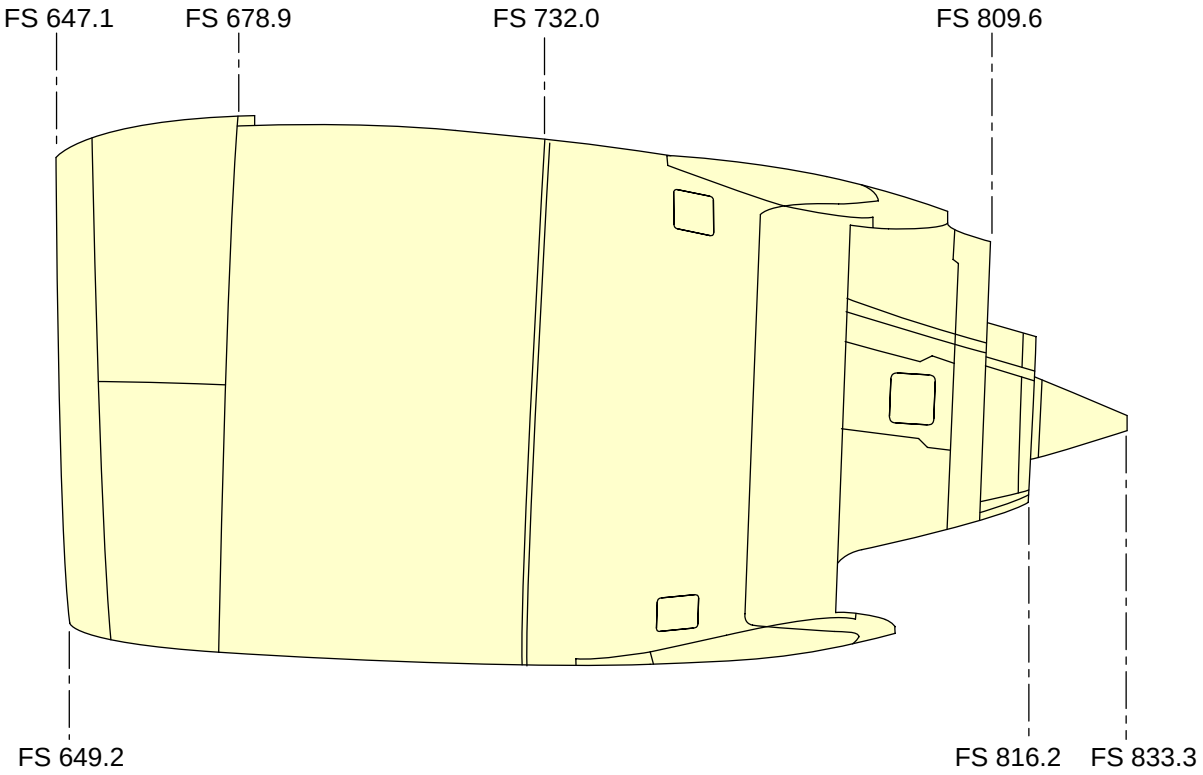
3 Nacelle stations

- Fig. 1 shows the nacelle with reference to the FS.
- The FS references in this manual are used to measure or specify distances along the nacelle.



ICN-BD500-A-J062003-A-3AB48-11221-A-001-01

Figure 1 Pylon stations



ICN-BD500-A-J062003-A-3AB48-11220-A-001-01

Figure 2 Nacelle stations

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A220

Slinging and hoisting - Function, data for plans and description

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Slinging and hoisting - Function, data for plans and description 1
References 1
Description 1
1 General 1
1.1 Slinging and hoisting 1

List of tables

Page

1 References 1

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This data module gives the information to sling and hoist the procedures to lift the BD-500-1A10 (A220-100) and BD-500-1A11 (A220-300).

1.1 Slinging and hoisting

For slinging and hoisting procedures please refer to the latest revision of the Aircraft Recovery Publication (ARP), BD500-3AB48-10400-00.

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Aircraft grounding - General maintenance procedure

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Aircraft grounding - General maintenance procedure 1
References 1
Common information 1
Preliminary requirements 1
Procedure 3
Requirements after job completion 5

List of tables

Page

1 References 1
2 Required conditions 2
3 Support equipment 2
4 Consumables, materials, and expendables 2
5 Spares 2
6 Required conditions 5

List of figures

Page

1 Landing gears grounding points 4

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J24-00-00-01AAA-913G-A	Electrical/Electronic safety precautions - General maintenance safety procedure
BD500-A-J24-00-00-02AAA-913G-A	Electrostatic discharge safety precautions - General maintenance safety procedure

Common information

This data module gives the procedure to ground the aircraft. The grounding points are located on the landing gears.

Preliminary requirements

Production maintenance data

Zones	711	Nose landing gear
	731	Main landing gear, left side
	741	Main landing gear, right side

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Obey all the electrical/electronic safety precautions.	BD500-A-J24-00-00-01AAA-913G-A
Obey all the electrostatic discharge safety precautions.	BD500-A-J24-00-00-02AAA-913G-A

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
None			

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

WARNINGS

- **When the aircraft is parked for maintenance or during bad weather, make sure that it is grounded. Static electrical charges in the aircraft can cause injury to persons and/or damage to equipment.**

  It is not mandatory to ground the aircraft if you do not do maintenance, there is no bad weather and the tires are in direct contact with the ground. Some airports can apply non-conductive coating on the ramp, which can prevent release of the static charges to the ground. In such conditions, you must ground the aircraft.

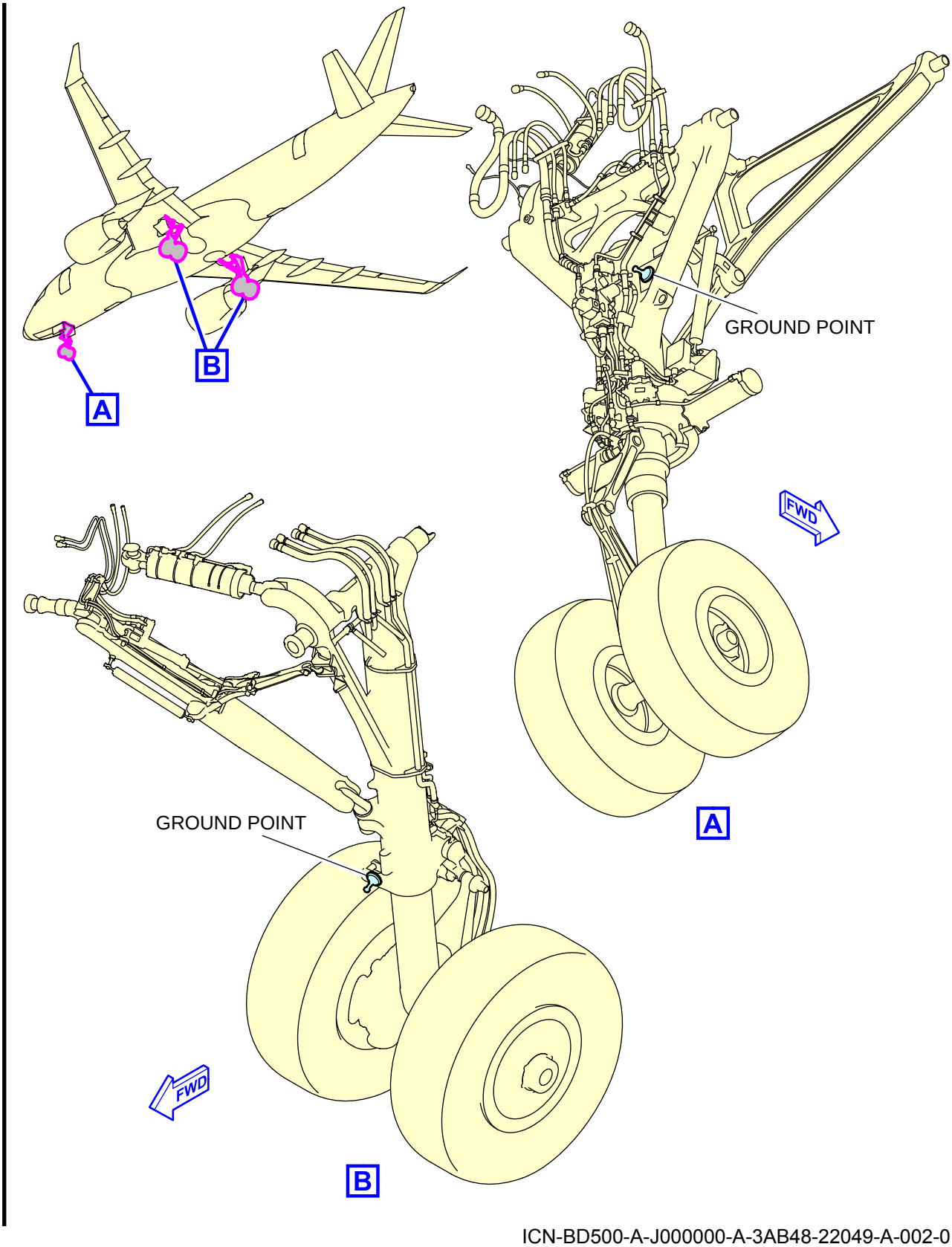
- **Ground the aircraft before you connect the external electrical power. If you do not do this, you can cause injuries to persons and/or damage the equipment.**

1 To ground the aircraft do as follows:

Refer to Fig. 1 .

1.1 Attach the alligator clamp to one of the grounding points located on the Nose Landing Gear (NLG) or the Main Landing Gear (MLG).

1.2 Attach the other end of the wire to a ground point off of the aircraft.



ICN-BD500-A-J000000-A-3AB48-22049-A-002-01

Figure 1 Landing gears grounding points

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
None	

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Forward cargo compartment volume, weight and maximum item dimensions - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Forward cargo compartment volume, weight and maximum item dimensions - Technical data 1
References 1
Description 2
1 Information 2
2 Cargo door operation 2
4 Cargo compartment volume and weight 2
5 Maximum item dimensions 2
6 Maximum item dimensions 3
7 Maximum live animal and dry ice 3
7.1 Live animal 3
7.2 Dry ice 4
7.3 Combined maximum dry ice load in cargo with maximum passengers 4
7.4 Supplemental dry ice load with reduced occupants (less than 15 occupants) 6

List of tables

Page

1 References 1
2 Cargo compartment volumes 2
3 Cargo compartment volumes 2
4 Standard day (15 °C (59 °F) Outside Air Temperature (OAT) at sea level) operations 3
5 Standard day (40 °C (104 °F) Outside Air Temperature (OAT) at sea level) operations 4

List of figures

Page

1 Combined maximum dry ice load in cargo with maximum passengers 5
2 Supplemental dry ice load with reduced occupants (less than 15 occupants) 7
3 Forward cargo compartment - clearances 9

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J14-20-00-03AAA-030A-A	Cargo nets and tie-downs - Technical data
BD500-A-J52-30-00-01AAA-540A-A	Cargo compartment door - Open for access procedure
BD500-A-J52-30-00-01AAA-740A-A	Cargo compartment door - Close after access procedure

Description

1 Information

This data module gives the volume, the weight and the maximum item dimensions for the forward cargo compartment.

2 Cargo door operation

Refer to BD500-A-J52-30-00-01AAA-540A-A, BD500-A-J52-30-00-01AAA-740A-A to open and close the cargo door.

4 Cargo compartment volume and weight

The forward cargo floor structure has a maximum load of 235 lb/ft (350 kg/m).

Refer to Table 2 and Table 3 for the estimate wet volume and weight of the forward cargo compartment.

Applicability: 50001-54999

Table 2 Cargo compartment volumes

Description	Usable Volume		Maximum load	
	ft^3	m^3	lb	kg
Fwd cargo compartment	311	8.80	3742	1697

Applicability: 55001-59999

Table 3 Cargo compartment volumes

Description	Usable Volume		Maximum load	
	ft^3	m^3	lb	kg
Fwd cargo compartment	447	12.65	5393	2446

Applicability: 50001-54999

5 Maximum item dimensions

Refer to the Weight and balance manual for the maximum item dimensions. Refer to BD500-A-J08-60-02AAA-030A-A.

Note

There must be no item near the cargo compartment door.

Divide the floor load equally in the cargo compartment.

The cargo door net and the cargo restraint net hold the items in their area, refer to BD500-A-J14-20-00-03AAA-030A-A for both cargo nets.

Use other cargo items to hold the items which are wider than the flat floor.

There must be no item above the “NO LOADING ABOVE THIS LINE“ placard. Refer to Fig.3Sheet. 2 .

The cargo compartment door gives the clearances to load a human remains pallet in the forward cargo compartment.

Applicability: 55001-59999

6 Maximum item dimensions

Refer to the Weight and balance manual for the maximum item dimensions. Refer to BD500-A-J08-60-02AAB-030A-A.

Note

There must be no item near the cargo compartment door.

Divide the floor load equally in the cargo compartment.

The cargo door net and the cargo restraint net hold the items in their area, refer to BD500-A-J14-20-00-03AAA-030A-A for both cargo nets.

Use other cargo items to hold the items which are wider than the flat floor.

There must be no item above the “NO LOADING ABOVE THIS LINE“ placard. Refer to Fig.3Sheet. 2 .

The cargo compartment door gives the clearances to load a human remains pallet in the forward cargo compartment.

7 Maximum live animal and dry ice

7.1 Live animal

CAUTION

Animal cages/boxes have to be located near to an cargo air supply and the dry Ice container near to the cargo air exhaust in order to ensure animal receive enough air to breathe adequately.

Table 4 Standard day (15 °C (59 °F) Outside Air Temperature (OAT) at sea level) operations

Aircraft	Maximum number of chicks	Maximum mass of chicks lbs (kg)	Maximum mass of dogs lbs (kg)
A220-100	3229	427 (194)	597 (271)
A220-300	5417	716 (325)	1349 (612)

Table 5 Standard day (40 °C (104 °F) Outside Air Temperature (OAT) at sea level) operations

Aircraft	Maximum number of chicks	Maximum mass of chicks lbs (kg)	Maximum mass of dogs lbs (kg)
A220-100	1208	158 (72)	299 (136)
A220-300	2291	302 (137)	328 (149)

The mass of chicks and dogs are exclusive, ie carry 302 lbs (137 kg) of chicks OR 328 lbs (149 kg) of dogs

It is allowed to carry mix baby chicks and dogs provided respecting the weight ration, e.g. 110 lbs (50 kg) of chicks plus 207 lbs (94 kg) of dogs.

7.2 Dry ice

For health and safety of ground handling personnel and all parties involved in dry ice handling, the access to any compartments which carry dry ice shall not be granted before sufficient venting has been performed by means of air supply equipment such as air conditioning packs, ground support equipment, opening the respective compartment door, etc. Alternatively, or in addition, the use of portable breathing equipment, oxygen masks and/or equivalent devices are recommended.

While occupants are on board, it is considered that all air conditioning packs or equivalent equipment are operating permanently (both air conditioning packs ON) during the transportation of dry ice. It is understood that aircraft ventilation may be reduced during aircraft de-icing. It is strongly recommended that this reduced ventilation period be minimized.

Avoid Pack-Off Take-Off (POTO). It is recommended to dispatch in dual bleed and dual pack configuration.

1000 lbs (453 kg) of dry ice can be carried in the forward cargo compartment, provided that no live animal carried in the forward cargo compartment.

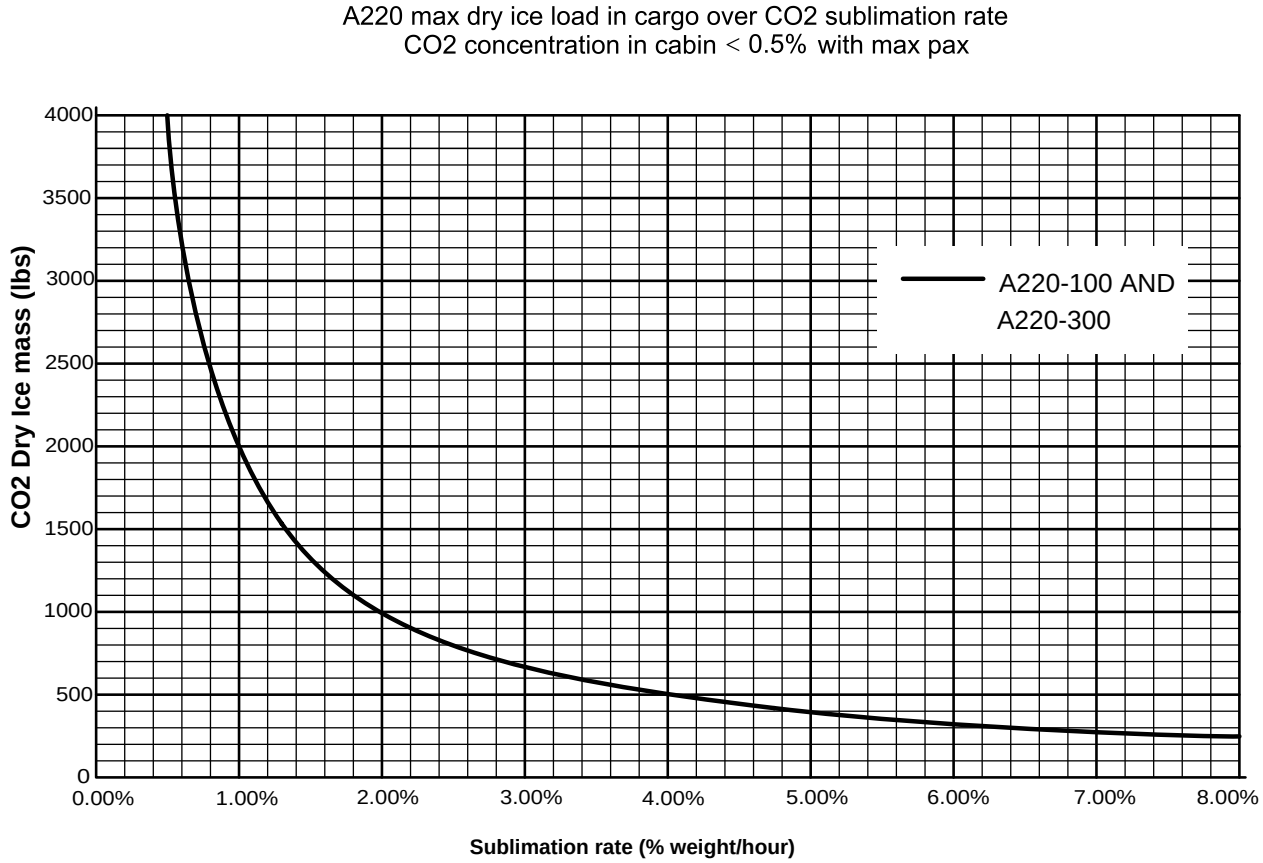
700 lbs (317 kg) of dry ice can be carried in the forward cargo in addition to the live animal shown in Table 4 and Table 5 .

The FWD CARGO VENT switch must not be selected OFF when dry ice is carried in the forward cargo compartment. Refer to Fig.3Sheet. 4 .

7.3 Combined maximum dry ice load in cargo with maximum passengers

Refer to Fig. 1 for the maximum allowed amount of dry ice loaded in the aircraft cargo compartments assuming that the cabin is occupied with the maximum number of occupants and the cockpit with 3 flight crew.

The curve on the graph shows the maximum allowed concentration of CO2 in the cabin to be less than 0.5%. The calculation is based on single pack operation but the aircraft must be dispatched with two packs operating for this type of operation. In case of a loss of one pack in flight a diversion is not necessary.



Subl. Rate (% weight /hour)	Dry Ice Mass (lbs)
0.50%	4000
1.00%	2000
1.50%	1333
2.00%	1000
3.00%	667
4.00%	500
5.00%	400
6.00%	333
7.00%	286
8.00%	250

ICN-BD500-A-J142000-A-3AB48-67632-A-001-01

Figure 1 Combined maximum dry ice load in cargo with maximum passengers

Note

The Fig. 1 represents the combined loading of both forward and aft cargo compartments. The individual limit of each cargo bay is 50% of this value.

If live animals are transported in the forward cargo, the forward cargo compartment limit becomes 35% of the value represented in Fig. 1 .

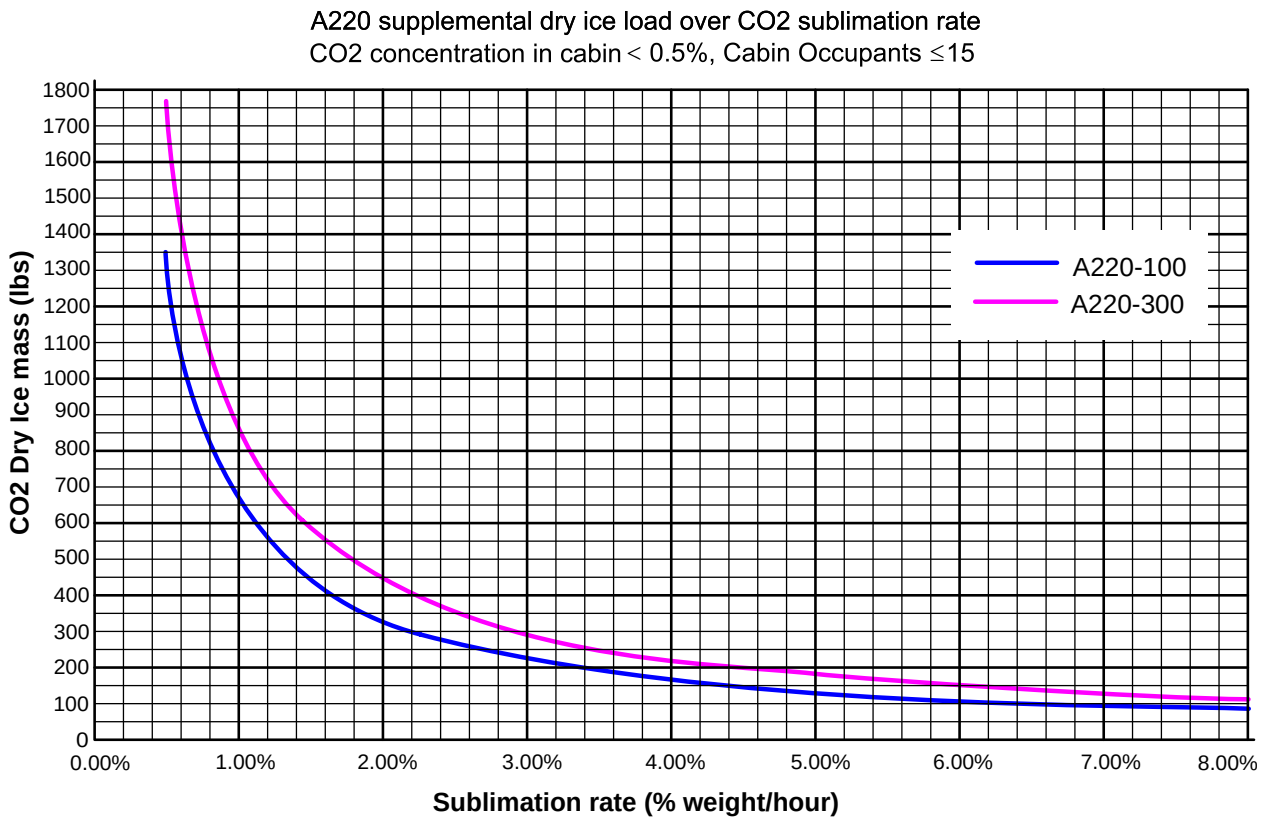
The FWD CARGO VENT switch must not be selected OFF when dry ice is carried in the forward cargo compartment. Refer to Fig.3Sheet. 4 .

Even with ventilation ON, CO_2 concentration in cargo could raise above 0.5%. Precaution should be taken prior to cargo access.

7.4 Supplemental dry ice load with reduced occupants (less than 15 occupants)

In addition to the cargo capacity shown in Fig. 1 , dry ice transport allowance can be increased when operating with reduced number of occupants and maintaining less than 0.5% CO_2 concentration in the cabin.

Refer to Fig. 2 for the supplemental dry ice capacity that may be transported with equal or less than 15 occupants in the cabin and 3 flight crew in the cockpit. The curve on the graph shows the maximum allowed concentration of CO_2 in the cabin to be less than 0.5%. The calculation is based on single pack operation but the aircraft must be dispatched with two packs operating for this type of operation. In case of a loss of one pack in flight a diversion is not necessary.



Subl. Rate (% weight /hour)	Dry Ice Mass	
	A220-100 (lbs)	A220-300 (lbs)
0.50%	1336	1758
1.00%	668	879
1.50%	445	586
2.00%	334	439
3.00%	223	293
4.00%	167	220
5.00%	134	176
6.00%	111	146
7.00%	95	126
8.00%	84	110

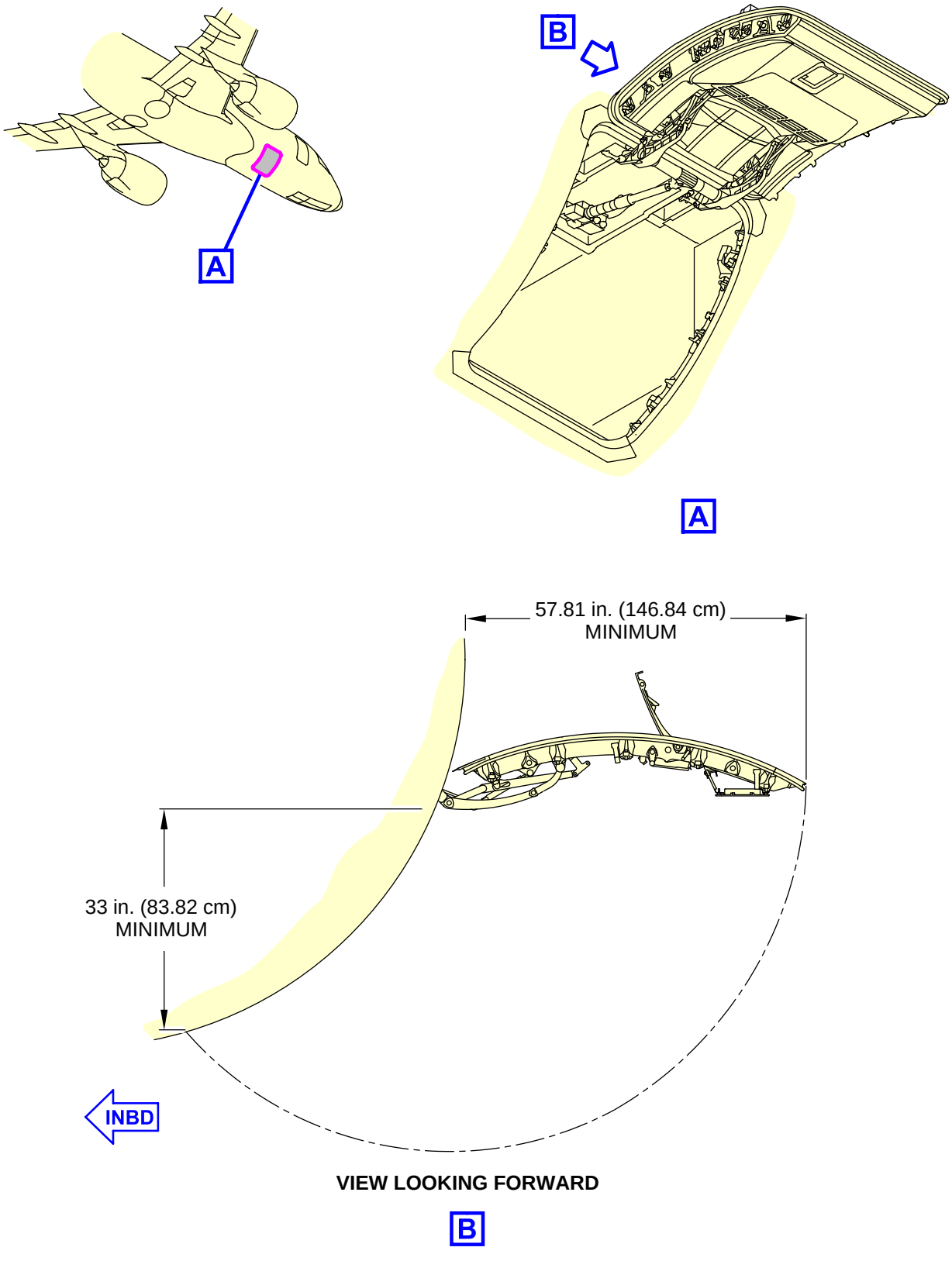
ICN-BD500-A-J142000-A-3AB48-67633-A-001-01

Figure 2 Supplemental dry ice load with reduced occupants (less than 15 occupants)

Note

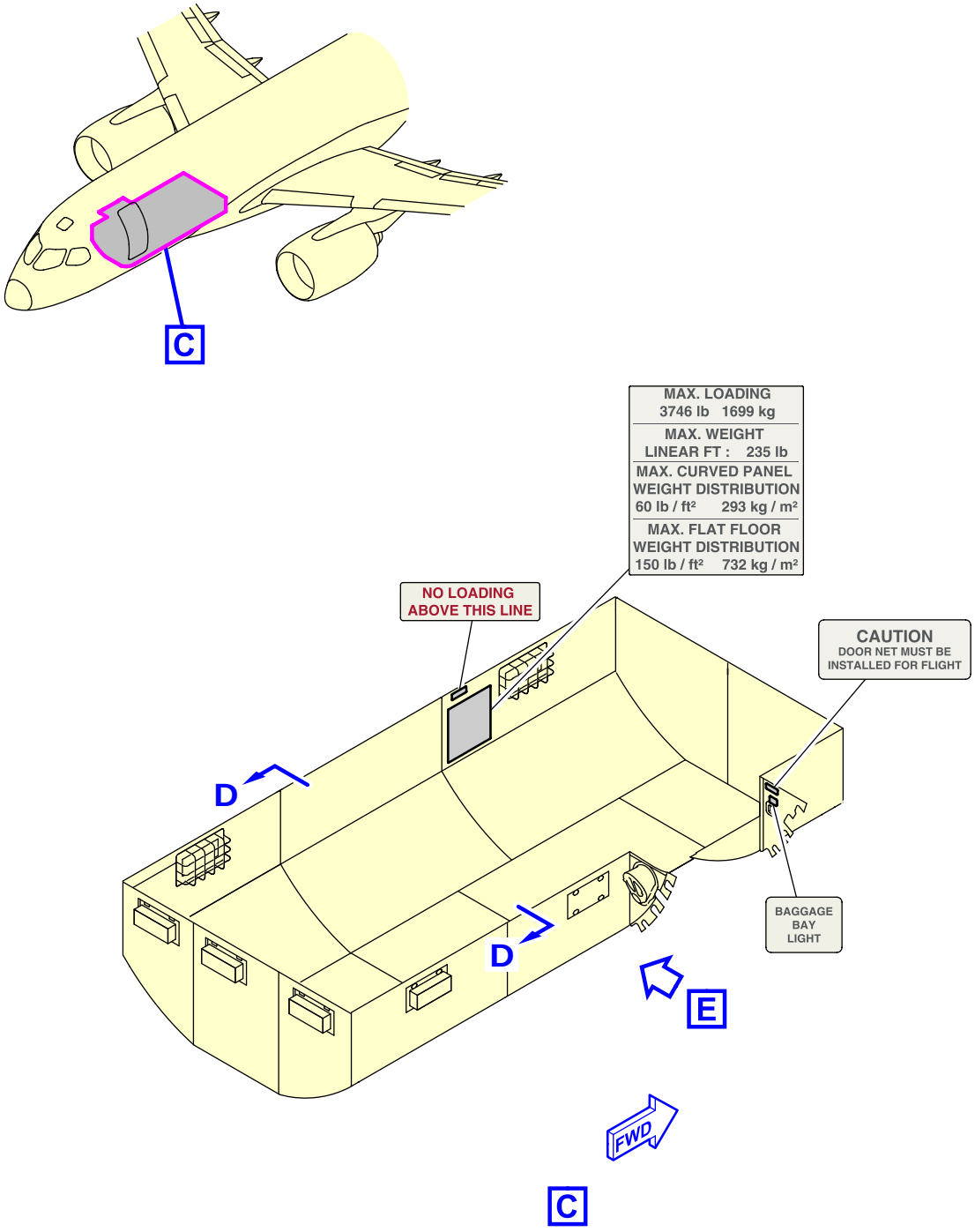
The Fig. 2 represents the supplemental dry ice mass that can be transported in addition to the normal cargo loading (2) when operating with less than 15 occupants in the cabin.

The Fig. 2 represents the combined loading of the cabin, forward cargo and aft cargo compartments. No restriction applies regarding the distribution of this supplemental loading, except when transporting live animals. In this case, supplemental dry ice in the forward cargo compartment may be limited.



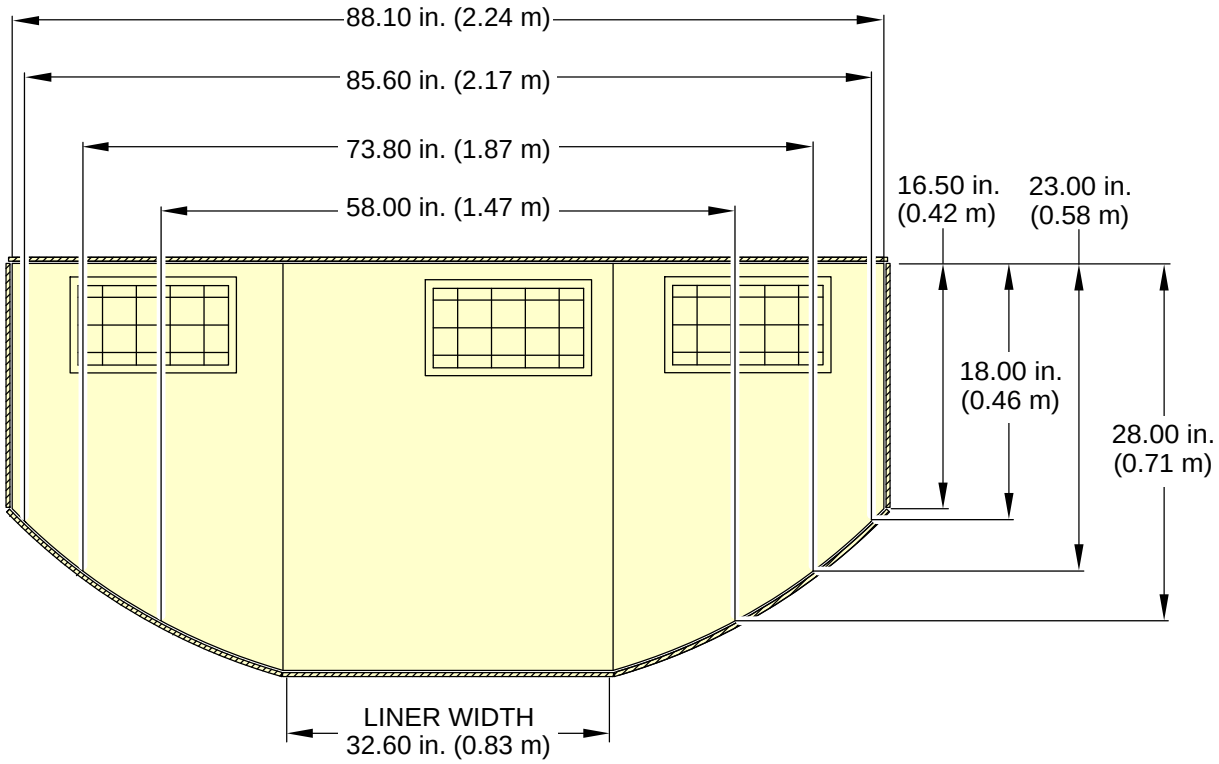
ICN-BD500-A-J142000-A-3AB48-31017-A-001-01

Figure 3 Forward cargo compartment - clearances - (Sheet 1 of 4)

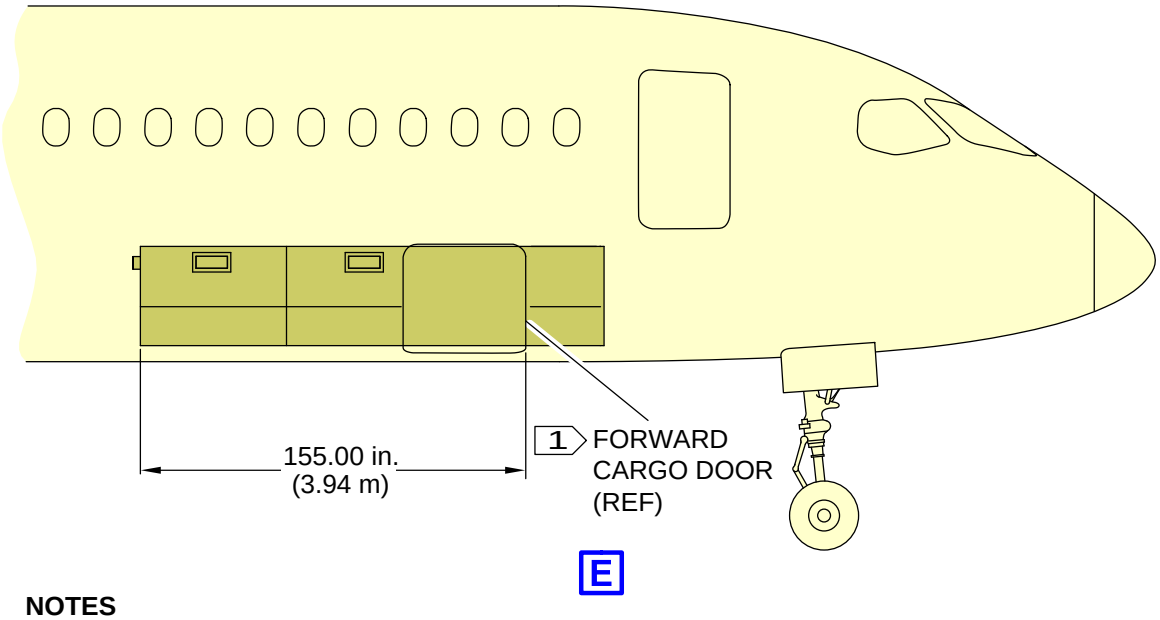


ICN-BD500-A-J142000-A-3AB48-31127-A-002-01

Figure 3 Forward cargo compartment - clearances - (Sheet 2 of 4)



D-D



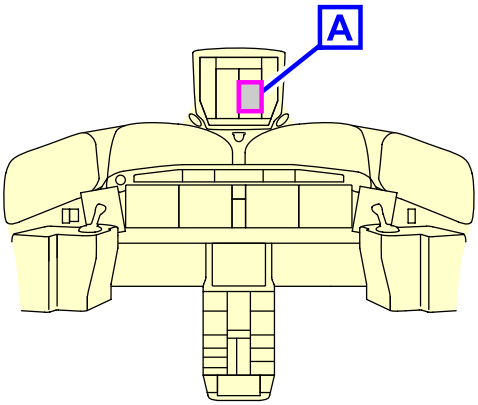
E

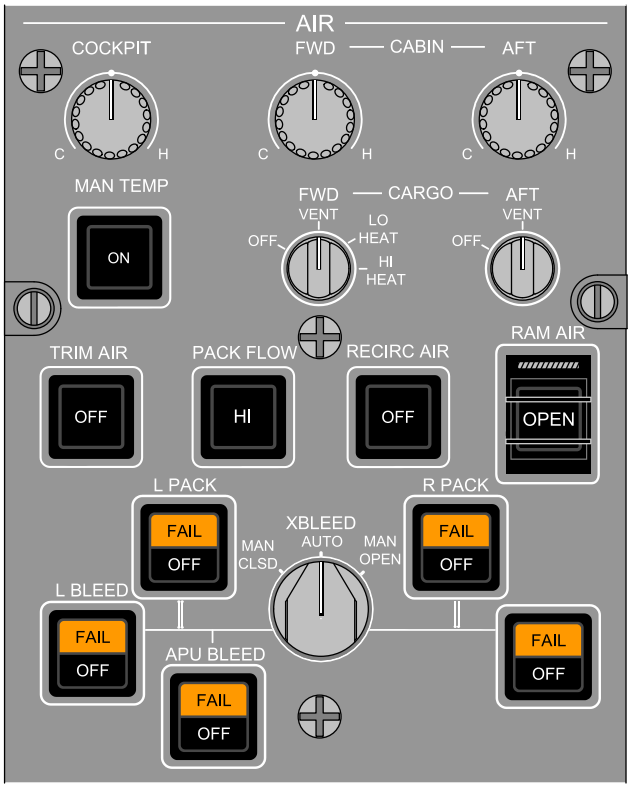
NOTES

1. Max Clear opening 46.4 in. x 32.6 in. (1.18 m x 0.83 m).
2. Max box length that can fit in cargo compartment: 155.00 in. (3.94 m).

ICN-BD500-A-J142000-A-3AB48-31128-A-001-01

Figure 3 Forward cargo compartment - clearances - (Sheet 3 of 4)





AIR PANEL

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ICN-BD500-A-J210000-C-3AB48-06682-A-003-01

Figure 3 Forward cargo compartment - clearances - (Sheet 4 of 4)

Aft cargo compartment volume, weight and maximum item dimensions - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Aft cargo compartment volume, weight and maximum item dimensions - Technical data..... 1
References..... 1
Description..... 1
1 Information..... 1
2 Cargo door operation..... 2
4 Cargo compartment volume and weight..... 2
5 Maximum item dimensions..... 2
6 Maximum item dimensions..... 3
7 Maximum dry ice..... 3
8 Combined maximum dry ice load in cargo with maximum passengers..... 3
9 Supplemental dry ice load with reduced occupants (less than 15 occupants)..... 6

List of tables

Page

1 References..... 1
2 Cargo compartment volumes..... 2
3 Cargo compartment volumes..... 2

List of figures

Page

1 Combined maximum dry ice load in cargo with maximum passengers..... 5
2 Supplemental dry ice load with reduced occupants (less than 15 occupants)..... 7
3 Aft cargo compartment – clearances..... 9

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J14-20-00-03AAA-030A-A	Cargo nets and tie-downs - Technical data
BD500-A-J52-30-00-01AAA-540A-A	Cargo compartment door - Open for access procedure
BD500-A-J52-30-00-01AAA-740A-A	Cargo compartment door - Close after access procedure

Description

1 Information

This data module gives the volume, the weight and the maximum item dimensions for the aft cargo compartment.

2 Cargo door operation

Refer to BD500-A-J52-30-00-01AAA-540A-A, BD500-A-J52-30-00-01AAA-740A-A to open and close the cargo door.

4 Cargo compartment volume and weight

The aft cargo floor structure has a maximum load of 235lb/ft (350 kg/m).

Refer to Table 2 and Table 3 for the estimate wet volume and weight of the aft cargo compartment.

Applicability: 50001-54999

Table 2 Cargo compartment volumes

Description	Usable Volume		Maximum load	
	ft^3	m^3	lb	kg
Aft cargo compartment	422	11.95	4548	2063

Applicability: 55001-59999

Table 3 Cargo compartment volumes

Description	Usable Volume		Maximum load	
	ft^3	m^3	lb	kg
Aft cargo compartment	523	14.81	5746	2606

Applicability: 50001-54999

5 Maximum item dimensions

Refer to the Weight and balance manual for the maximum item dimensions. Refer to BD500-A-J08-60-02AAA-030A-A.

Note

There must be no item near the cargo compartment door.

Divide the floor load equally in the cargo compartment.

The cargo door net and the cargo restraint net hold the items in their area, refer to BD500-A-J14-20-00-03AAA-030A-A for both cargo nets.

Use other cargo items to hold the items which are wider than the flat floor.

There must be no item above the “NO LOADING ABOVE THIS LINE“ PLACARD. Refer to Fig.3Sheet. 2 .

The cargo compartment door gives the clearances to load a human remains pallet in the aft cargo compartment.

Applicability: 55001-59999

6 Maximum item dimensions

Refer to the Weight and balance manual for the maximum item dimensions. Refer to BD500-A-J08-60-02AAB-030A-A.

Note

There must be no item near the cargo compartment door.

Divide the floor load equally in the cargo compartment.

The cargo door net and the cargo restraint net hold the items in their area, refer to BD500-A-J14-20-00-03AAA-030A-A for both cargo nets.

Use other cargo items to hold the items which are wider than the flat floor.

There must be no item above the “NO LOADING ABOVE THIS LINE“ PLACARD. Refer to Fig.3Sheet. 2 .

The cargo compartment door gives the clearances to load a human remains pallet in the aft cargo compartment.

7 Maximum dry ice

For health and safety of ground handling personnel and all parties involved in dry ice handling, the access to any compartments which carry dry ice shall not be granted before sufficient venting has been performed by means of air supply equipment such as air conditioning packs, ground support equipment, opening the respective compartment door, etc. Alternatively, or in addition, the use of portable breathing equipment, oxygen masks and/or equivalent devices are recommended.

While occupants are on board, it is considered that all air conditioning packs or equivalent equipment are operating permanently (both air conditioning packs ON) during the transportation of dry ice. It is understood that aircraft ventilation may be reduced during aircraft de-icing. It is strongly recommended that this reduced ventilation period be minimized.

Avoid Pack-Off Take-Off (POTO). It is recommended to dispatch in dual bleed and dual pack configuration.

1000 lbs (453 kg) of dry ice can be carried in the aft cargo compartment.

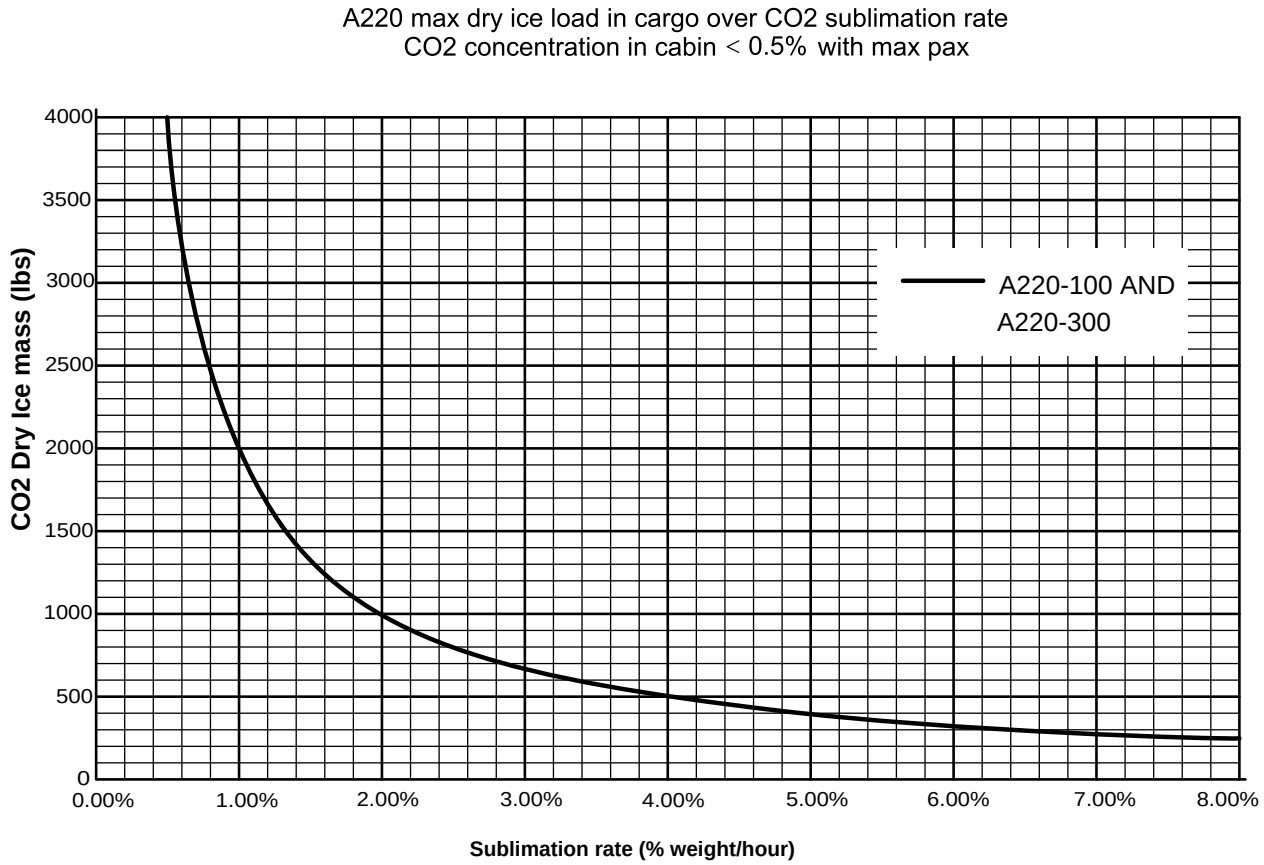
AFT CARGO VENT switch must not be selected OFF when dry ice is carried in the aft cargo compartment. Refer to Fig.3Sheet. 4

8 Combined maximum dry ice load in cargo with maximum passengers

Refer to Fig. 1 for the maximum allowed amount of dry ice loaded in the aircraft cargo compartments assuming that the cabin is occupied with the maximum number of occupants and the cockpit with 3 flight crew.

The curve on the graph shows the maximum allowed concentration of CO_2 in the cabin to be less than 0.5%. The calculation is based on single pack operation but the aircraft must be dis-

patched with two packs operating for this type of operation. In case of a loss of one pack in flight a diversion is not necessary.



Subl. Rate (% weight /hour)	Dry Ice Mass (lbs)
0.50%	4000
1.00%	2000
1.50%	1333
2.00%	1000
3.00%	667
4.00%	500
5.00%	400
6.00%	333
7.00%	286
8.00%	250

ICN-BD500-A-J142000-A-3AB48-67632-A-001-01

Figure 1 Combined maximum dry ice load in cargo with maximum passengers

Note

The Fig. 1 represents the combined loading of both forward and aft cargo compartments. The individual limit of each cargo bay is 50% of this value.

If live animals are transported in the forward cargo, the forward cargo compartment limit becomes 35% of the value represented in Fig. 1 .

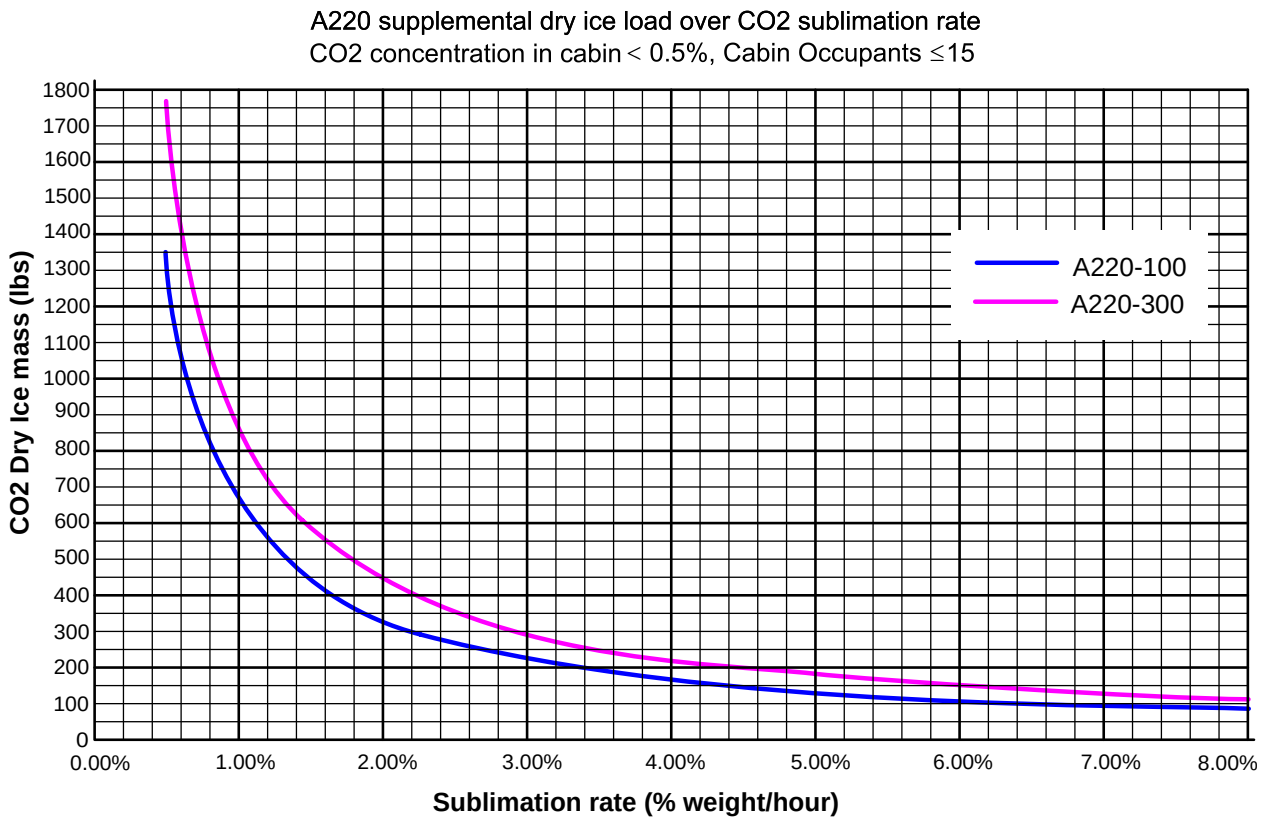
The FWD CARGO VENT switch must not be selected OFF when dry ice is carried in the forward cargo compartment. Refer to Fig.3Sheet. 4 .

Even with ventilation ON, CO_2 concentration in cargo could raise above 0.5%. Precaution should be taken prior to cargo access.

9 Supplemental dry ice load with reduced occupants (less than 15 occupants)

In addition to the cargo capacity shown in Fig. 1 , dry ice transport allowance can be increased when operating with reduced number of occupants and maintaining less than 0.5% CO_2 concentration in the cabin.

Refer to Fig. 2 for the supplemental dry ice capacity that may be transported with equal or less than 15 occupants in the cabin and 3 flight crew in the cockpit. The curve on the graph shows the maximum allowed concentration of CO_2 in the cabin to be less than 0.5%. The calculation is based on single pack operation but the aircraft must be dispatched with two packs operating for this type of operation. In case of a loss of one pack in flight a diversion is not necessary.



Subl. Rate (% weight /hour)	Dry Ice Mass	
	A220-100 (lbs)	A220-300 (lbs)
0.50%	1336	1758
1.00%	668	879
1.50%	445	586
2.00%	334	439
3.00%	223	293
4.00%	167	220
5.00%	134	176
6.00%	111	146
7.00%	95	126
8.00%	84	110

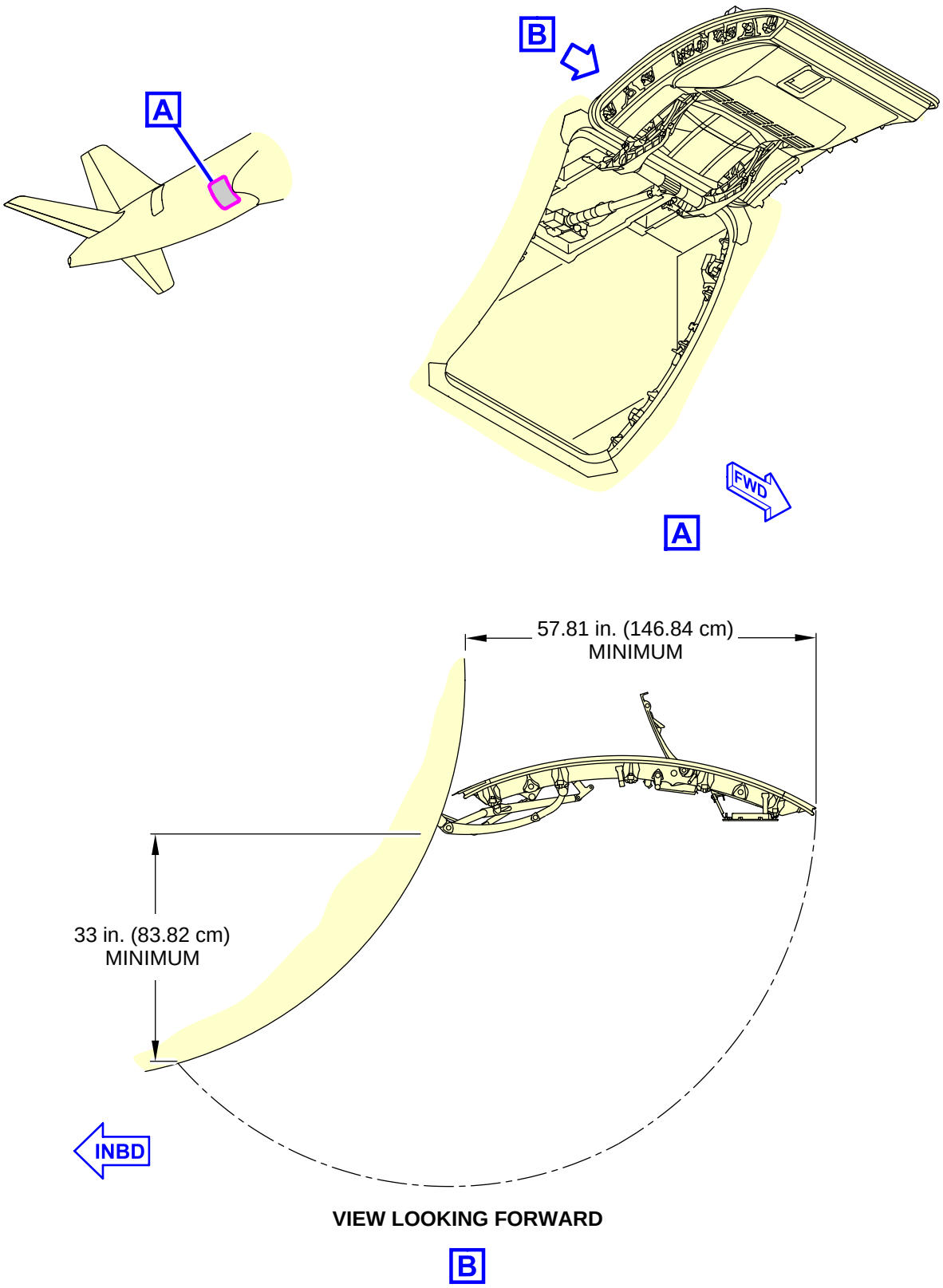
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Figure 2 Supplemental dry ice load with reduced occupants (less than 15 occupants)

Note

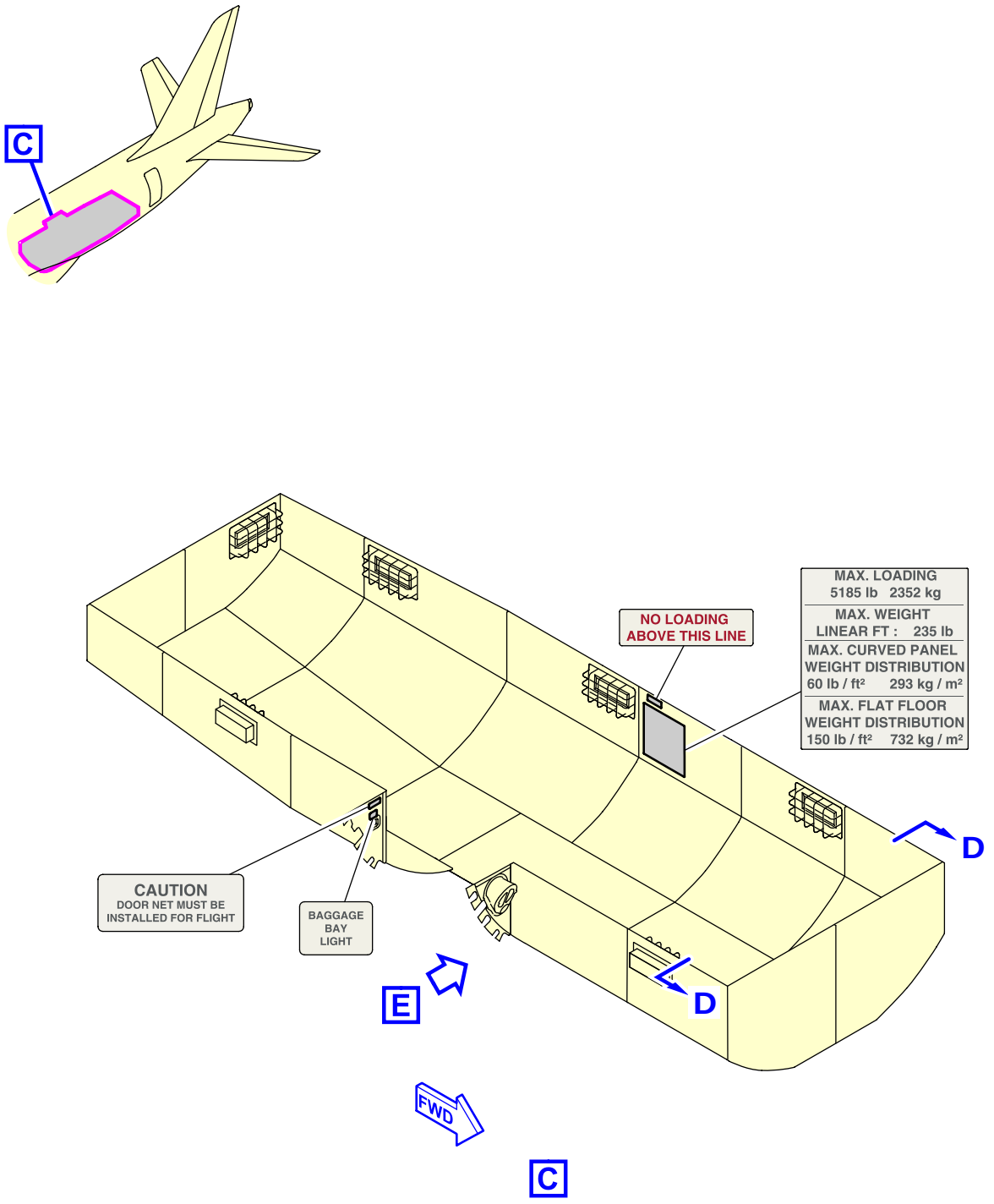
The Fig. 2 represents the supplemental dry ice mass that can be transported in addition to the normal cargo loading (2) when operating with less than 15 occupants in the cabin.

The Fig. 2 represents the combined loading of the cabin, forward cargo and aft cargo compartments. No restriction applies regarding the distribution of this supplemental loading, except when transporting live animals. In this case, supplemental dry ice in the forward cargo compartment may be limited.



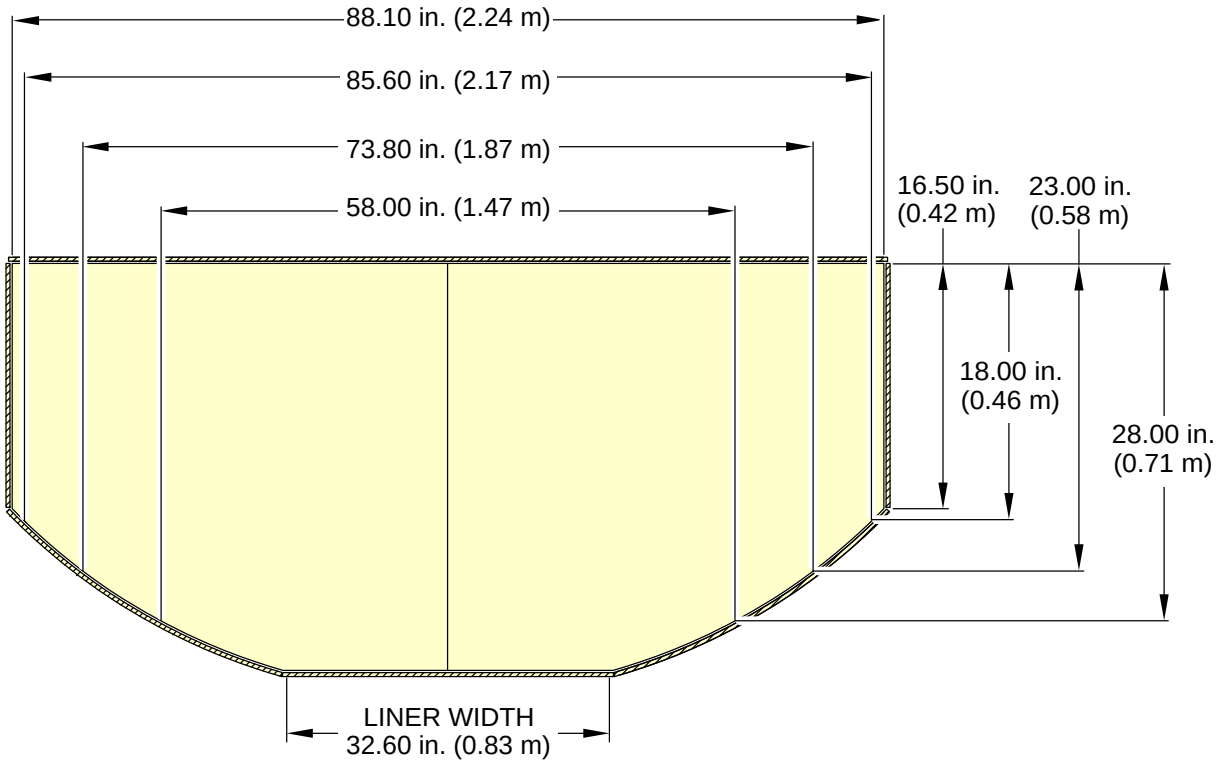
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Figure 3 Aft cargo compartment – clearances - (Sheet 1 of 4)

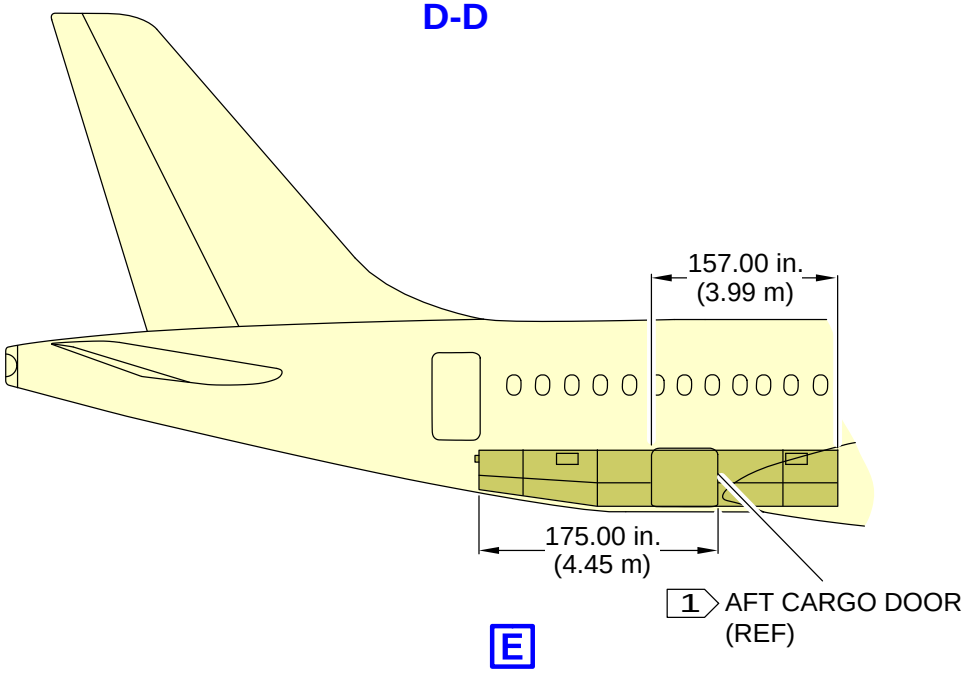


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Figure 3 Aft cargo compartment – clearances - (Sheet 2 of 4)



D-D

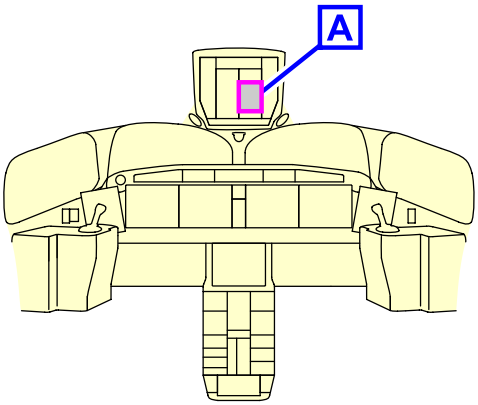


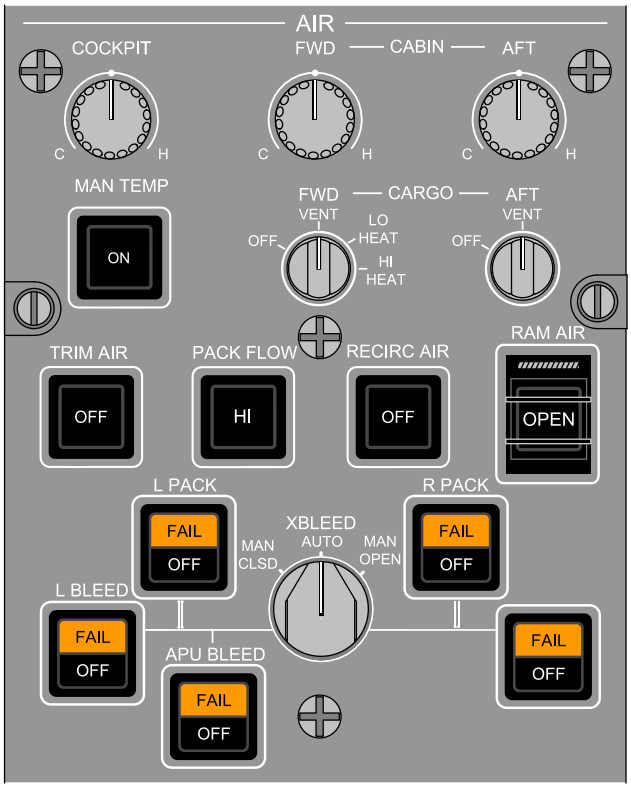
NOTES

1. Max Clear opening 46.4 in. x 32.6 in. (1.18 m x 0.83 m).
2. Max box length that can fit in cargo compartment FWD: 157.00 in. (3.99 m).
3. Max box length that can fit in cargo compartment AFT: 175.00 in. (4.45 m).

ICN-BD500-A-J142000-A-3AB48-31130-A-001-01

Figure 3 Aft cargo compartment – clearances - (Sheet 3 of 4)





AIR PANEL

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ICN-BD500-A-J210000-C-3AB48-06682-A-003-01

Figure 3 Aft cargo compartment – clearances - (Sheet 4 of 4)

Aircraft touch and no-touch zones - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Aircraft touch and no-touch zones - Technical data 1
References 1
Description 1
1 Information 1
2 Doors ground clearances and distances from the aircraft nose 1
3 Touch and no-touch zones 3

List of tables

Page

1 References 1
2 A220-100 Doors ground clearances and distances from the aircraft nose 2
3 A220-300 Doors ground clearances and distances from the aircraft nose 2

List of figures

Page

1 Door ground clearances and distances from the aircraft nose 4
2 Composite materials 5

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Information

This data module gives, to the crew, the clear opening, the touch and the no-touch zones, the ground clearances and the distances from the aircraft nose for these aircraft doors:

Forward Passenger Door (FPD) and the Aft Passenger Door (APD).

Forward Service Door (FSD) and the Aft Service Door (ASD).

Forward Cargo Door (FCD) and the Aft Cargo Door (ACD).

For A220-100 refer to Table 2 and to Fig. 1 .

For A220-300 refer to Table 3 and to Fig. 1 .

2 Doors ground clearances and distances from the aircraft nose

Note

Vertical clearances shown are more than differences in attitude because of the difference of aircraft weight and the center of gravity.

Table 2 A220-100 Doors ground clearances and distances from the aircraft nose

Locator	Description	Minimum
A	From the nose to the end of pilot side window	126.25 in. (3,207 m)
B	From the nose to the forward fuselage frame of the forward passenger door	191 in. (4,851 m)
C	From the nose to the forward fuselage frame of the aft passenger door	1,013 in. 25,730 m
D	From the nose to the forward fuselage frame of the forward cargo compartment door	256 in. (6,502 m)
E	From the nose to the forward fuselage frame of the aft cargo compartment door	832 in. (21,132 m)
F	From the nose to the forward fuselage frame of the aft service door	1,013 in. 25,730 m
G	From the ground to the bottom of the forward passenger door	117 in. (2,971 m)
H	From the ground to the bottom of the aft passenger door	126 in. (3,200 m)
J	From the ground to the bottom of the forward service door	117 in. (2,971 m)
K	From the ground to the bottom of the forward cargo compartment door	66 in. (1,677 m)
L	From the ground to the bottom of the aft cargo compartment door	73 in. (1,854 m)
M	From the ground to the bottom of the aft service door	126 in. (3,200 m)

Table 3 A220-300 Doors ground clearances and distances from the aircraft nose

Locator	Description	Minimum
A	From the nose to the end of pilot side window	126.25 in. (3,207 m)
B	From the nose to the forward fuselage frame of the forward passenger door	191 in. (4,851 m)

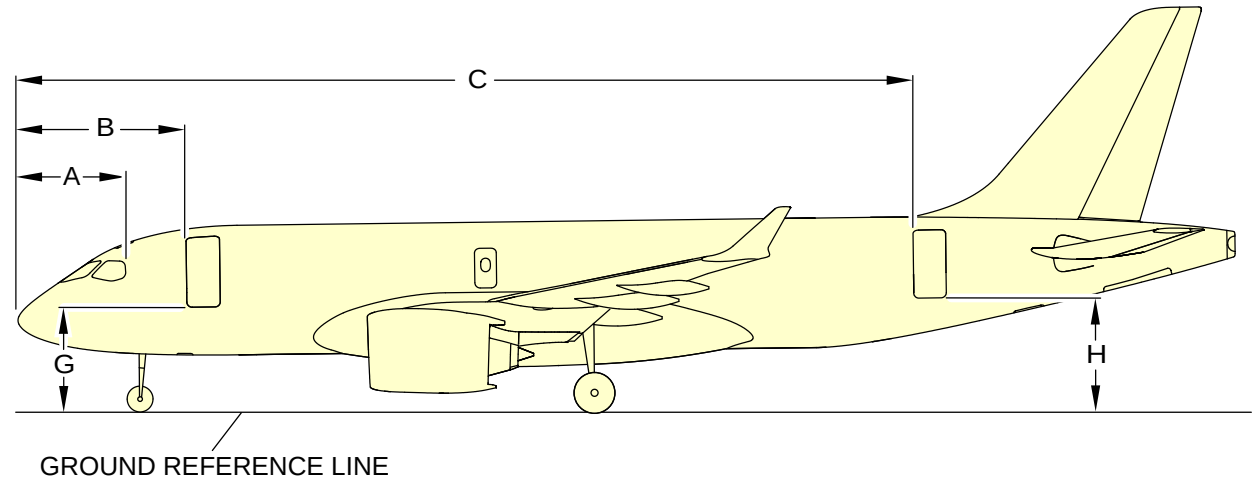
Locator	Description	Minimum
C	From the nose to the forward fuselage frame of the aft passenger door	1,160 in. (29,464 m)
D	From the nose to the forward fuselage frame of the forward cargo compartment door	256 in. (6,502 m)
E	From the nose to the forward fuselage frame of the aft cargo compartment door	979 in. (24,866 m)
F	From the nose to the forward fuselage frame of the aft service door	1,160 in. 25,730 m
G	From the ground to the bottom of the forward passenger door	117 in. (2,971 m)
H	From the ground to the bottom of the aft passenger door	126 in. (3,200 m)
J	From the ground to the bottom of the forward service door	117 in. (2,971 m)
K	From the ground to the bottom of the forward cargo compartment door	66 in. (1,677 m)
L	From the ground to the bottom of the aft cargo compartment door	73 in. (1,854 m)
M	From the ground to the bottom of the aft service door	126 in. (3,200 m)

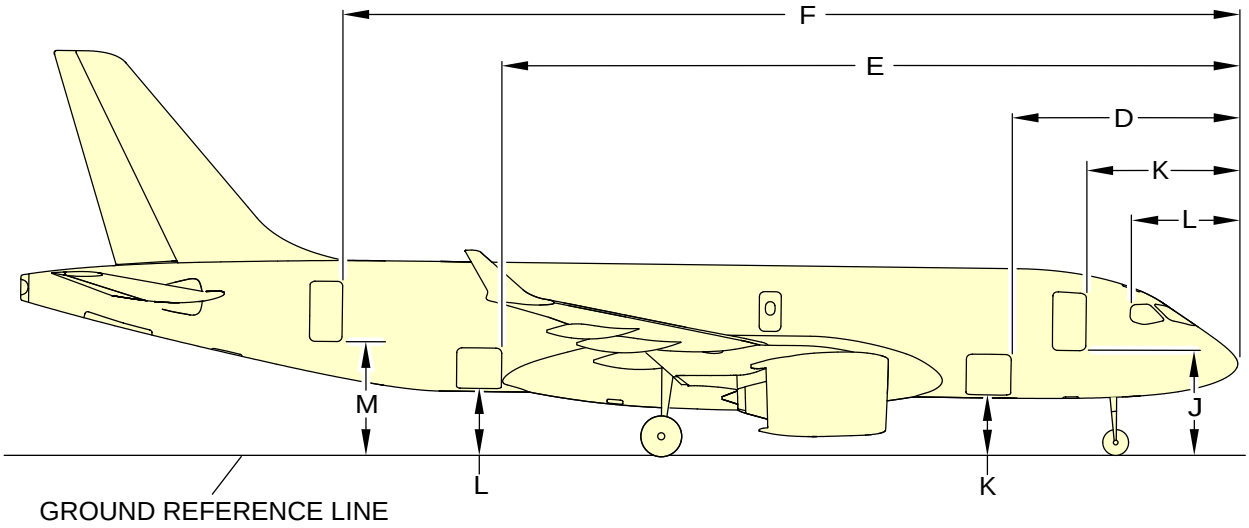
3 Touch and no-touch zones

Composite structures are sensitive to damage caused by the hails, the bird strikes and the ground vehicles. There are small damages on the external aircraft surface which do not show all possible internal surface damages.

Note

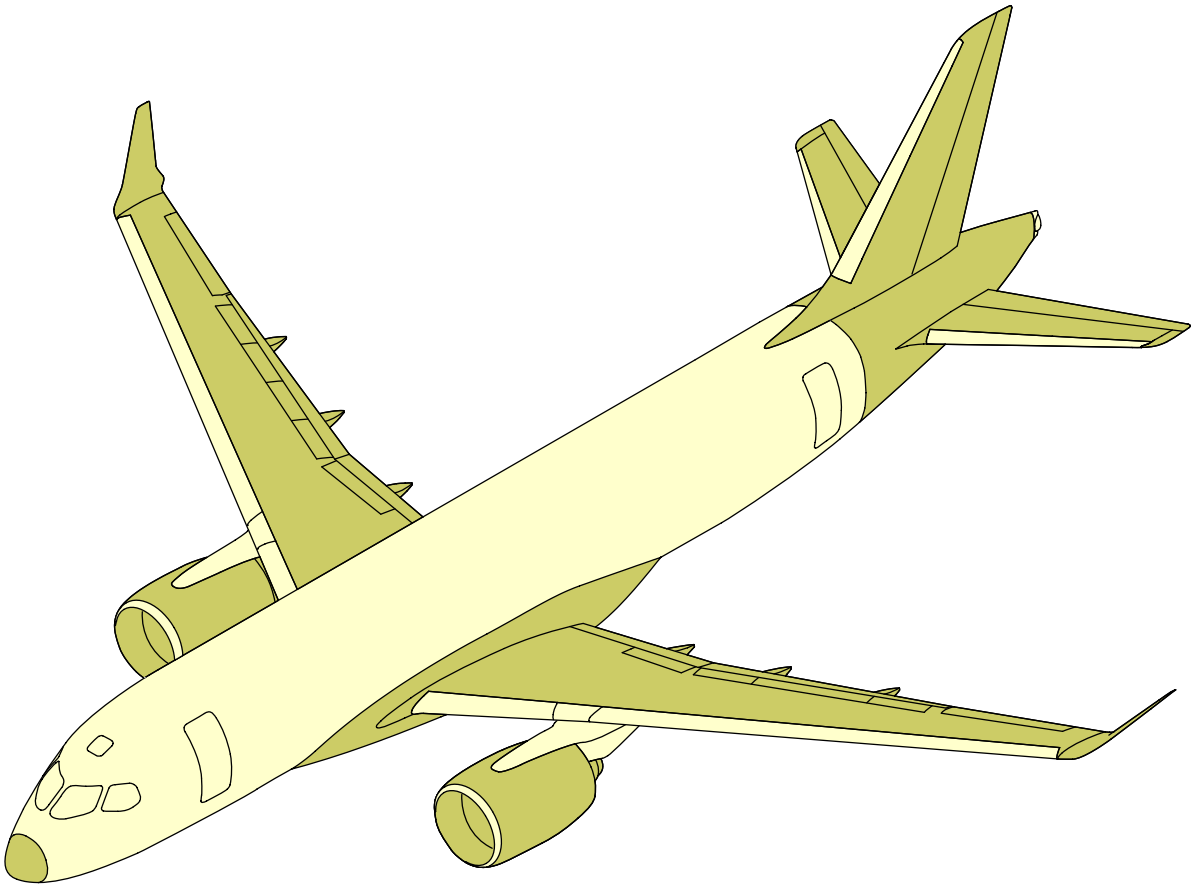
The damage on the composite structures are not easily find as the damages on the metal structures. Record all the incident to the aircraft terminal. Refer to Fig. 2 for the location of composite material.





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Figure 1 Door ground clearances and distances from the aircraft nose



LEGEND

Composite.

ICN-BD500-A-J079500-C-3AB48-24022-A-001-01

Figure 2 Composite materials

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Chapter 3: Aircraft performance

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Aircraft performance - Technical data

Applicability: 50001-54999

Table of contents

Page

Aircraft performance - Technical data 1
References 1
Description 1
1 Introduction 1
2 Payload/Range 2
3 Takeoff field length requirements 4
4 Landing field length requirements 11
5 Landing reference speed 13

List of tables

Page

1 References 1
2 Standard day temperature chart 2

List of figures

Page

1 Zero Fuel Weight (ZFW) vs Range ISA 3
2 Takeoff field length - ISA - PW1519G 5
3 Takeoff field length ISA +15°C - PW1519G 6
4 Takeoff field length ISA - PW1521G 7
5 Takeoff field length ISA +15°C - PW1521G 8
6 Takeoff field length ISA - PW1524G 9
7 Takeoff field length ISA +15°C - PW1524G 10
8 Landing field length - Dry runway 12
9 Landing reference speed 14

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module gives data about:

- Payload/Range
- Takeoff field length requirements
- Landing field length requirements
- Landing reference speed

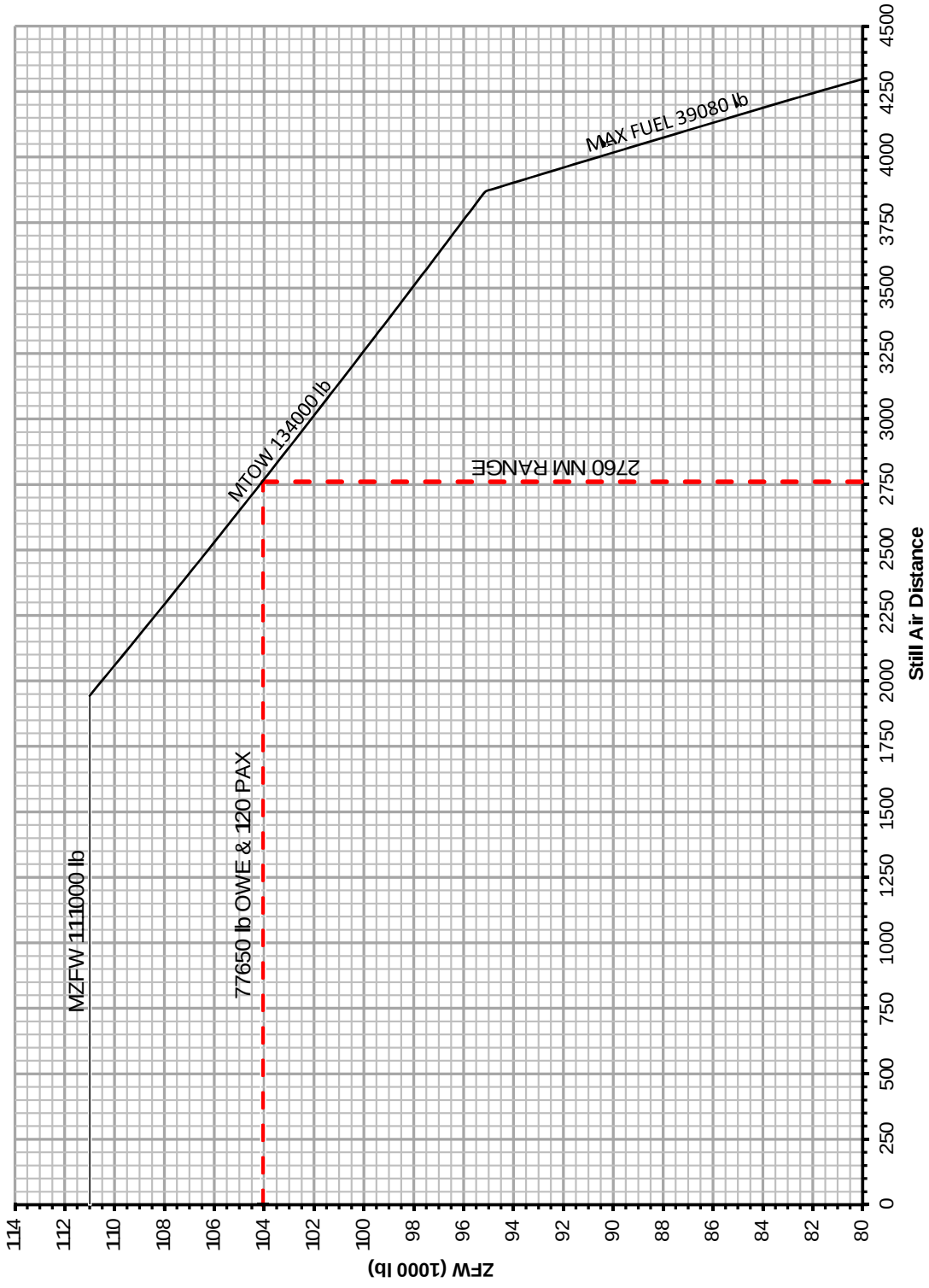
The table below provides standard day temperature for pressure altitudes.

Table 2 Standard day temperature chart

Altitude		Standard day temperature	
Feet (ft.)	Meters (m)	ºF	ºC
0	0	59	15
2000	610	51.9	11
4000	1220	44.7	7.1
6000	1830	37.6	3.1
8000	2440	30.5	-0.8
10000	3050	23.3	-4.8

2 Payload/Range

This section gives information about the payload/range at ISA conditions.



ICN-BD500-A-J000000-A-3AB48-23899-A-002-01

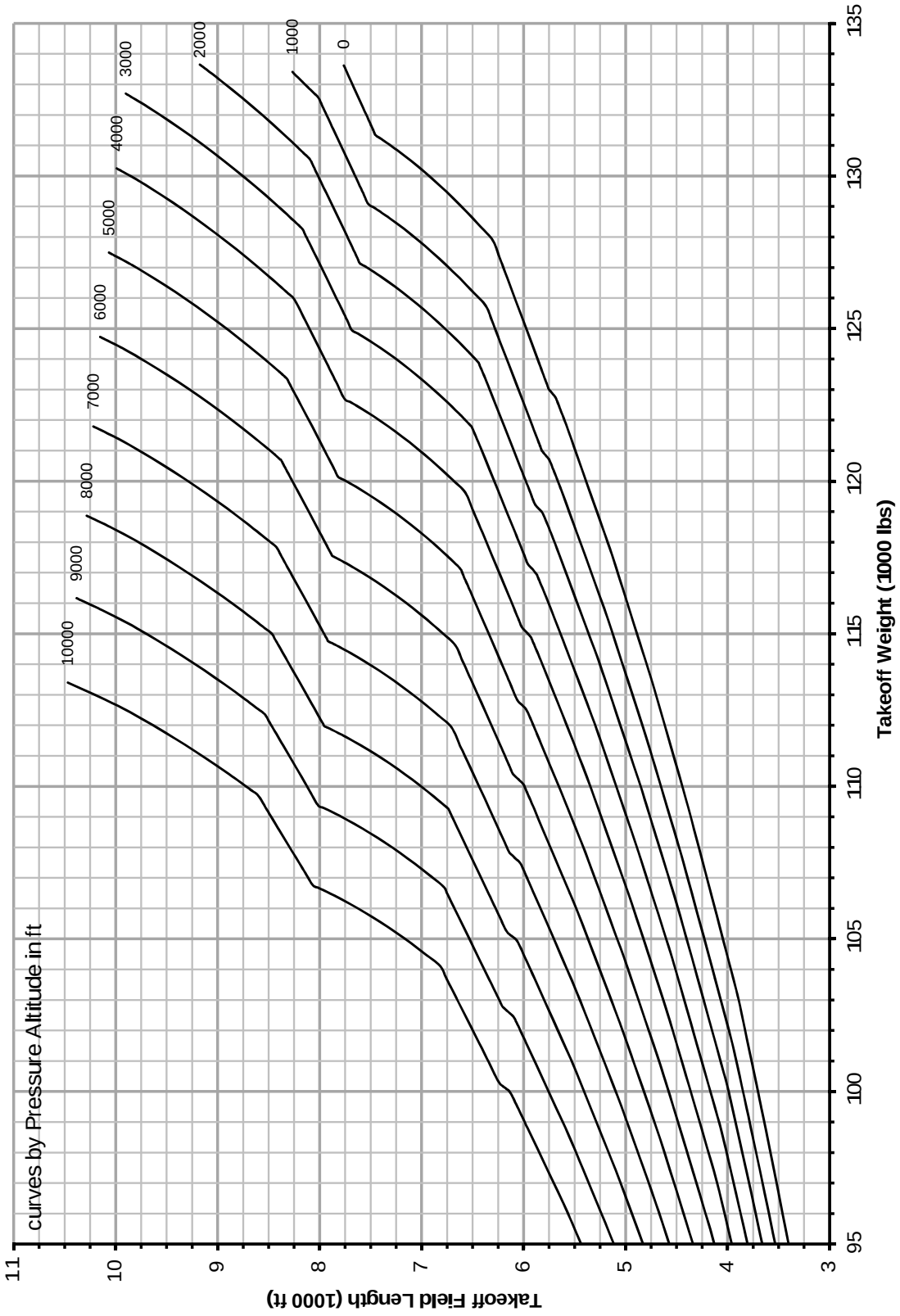
Figure 1 Zero Fuel Weight (ZFW) vs Range ISA

3 Takeoff field length requirements

For more information about aircraft performance, refer to the Aircraft Flight Manual (AFM) BD500–3AB48–22200-00.

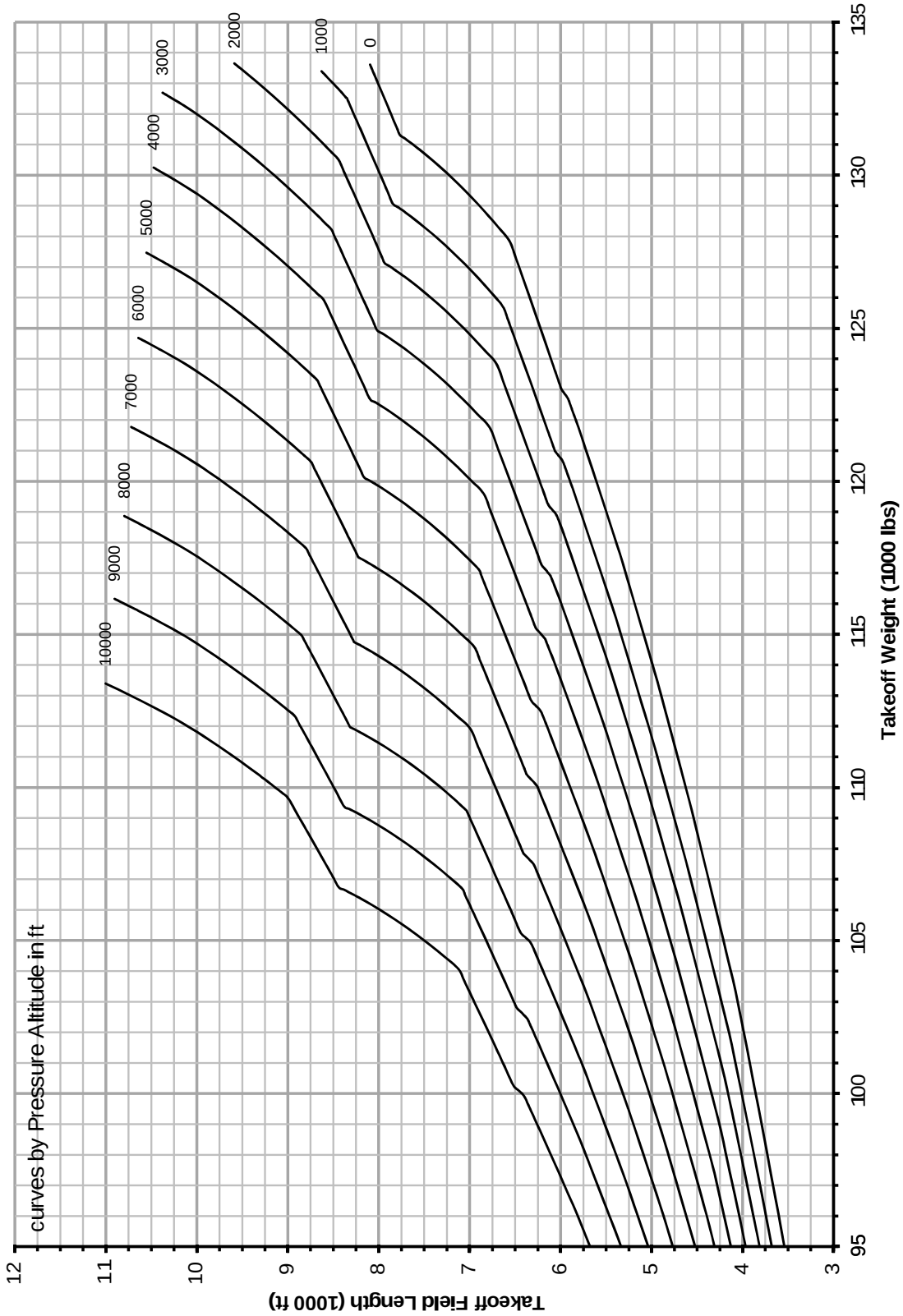
For aircraft performance and field length requirements refer to:

- Fig. 2 for the takeoff field length ISA - PW1519G.
- Fig. 3 for the takeoff field length ISA +15°C - PW1519G.
- Fig. 4 for the takeoff field length ISA - PW1521G.
- Fig. 5 for the takeoff field length ISA +15°C - PW1521G.
- Fig. 6 for the takeoff field length ISA - PW1524G.
- Fig. 7 for the takeoff field length ISA +15°C - PW1524G.



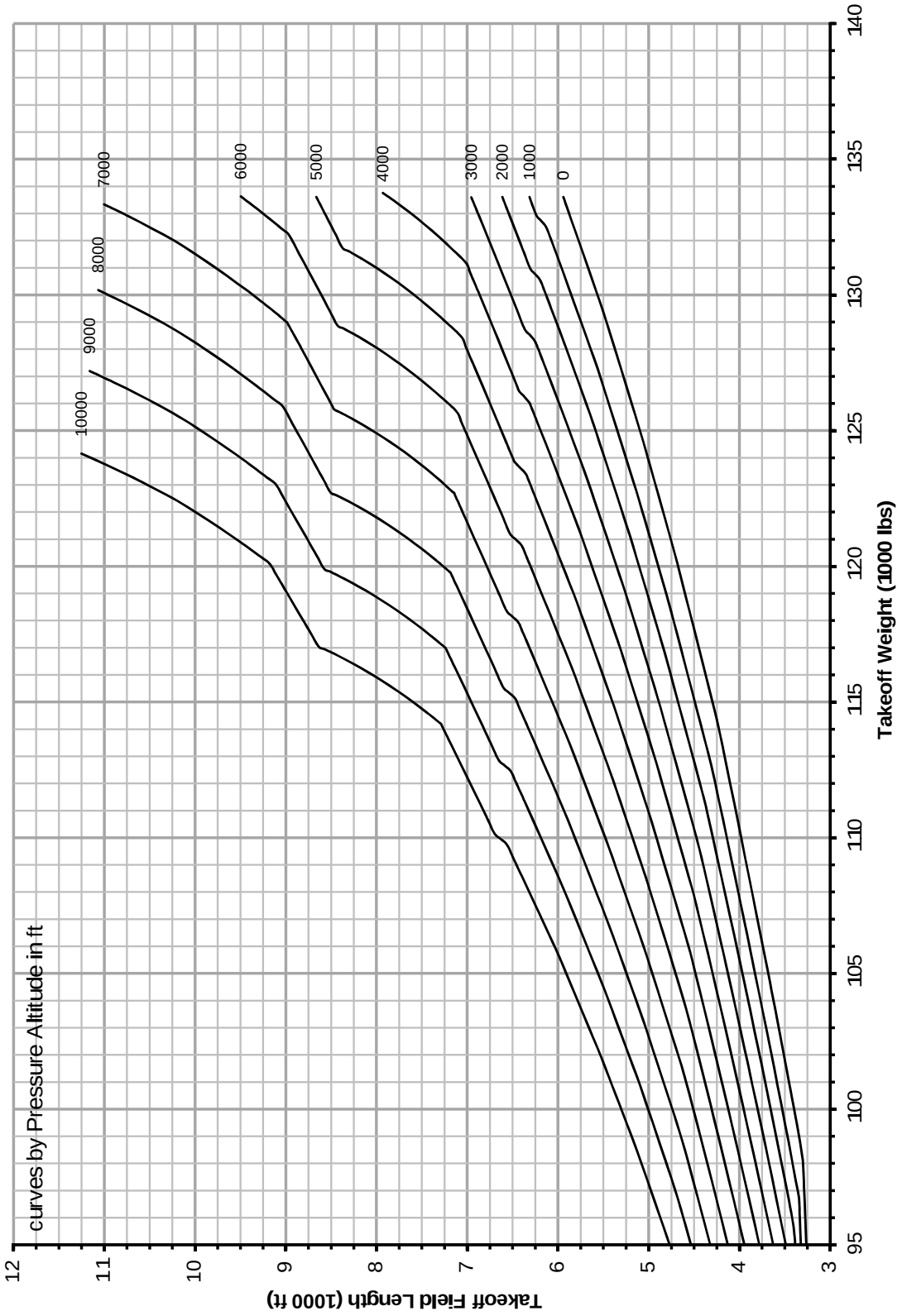
ICN-BD500-A-J000000-A-3AB48-01753-A-002-01

Figure 2 Takeoff field length - ISA - PW1519G



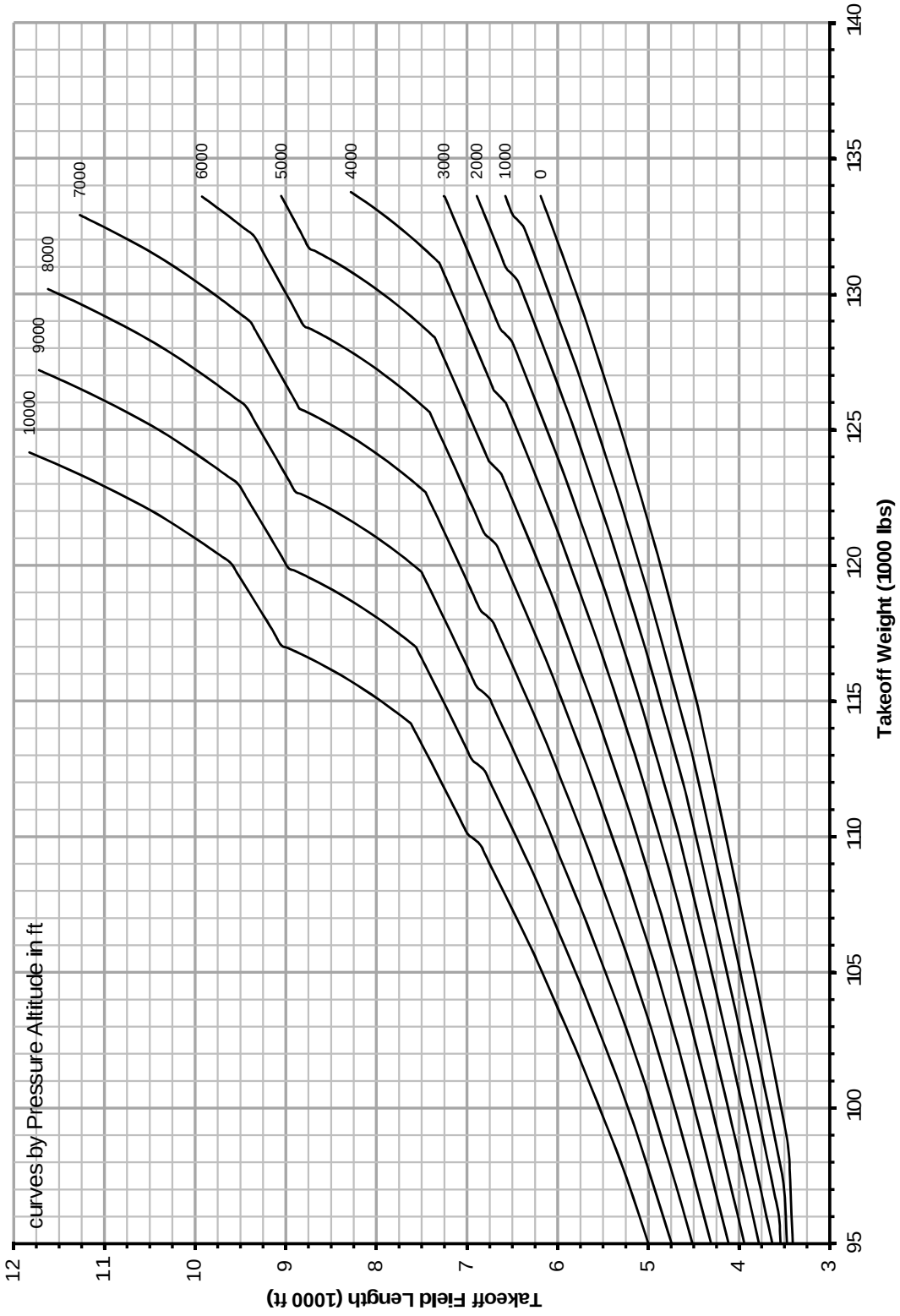
ICN-BD500-A-J000000-A-3AB48-01754-A-002-01

Figure 3 Takeoff field length ISA +15°C - PW1519G



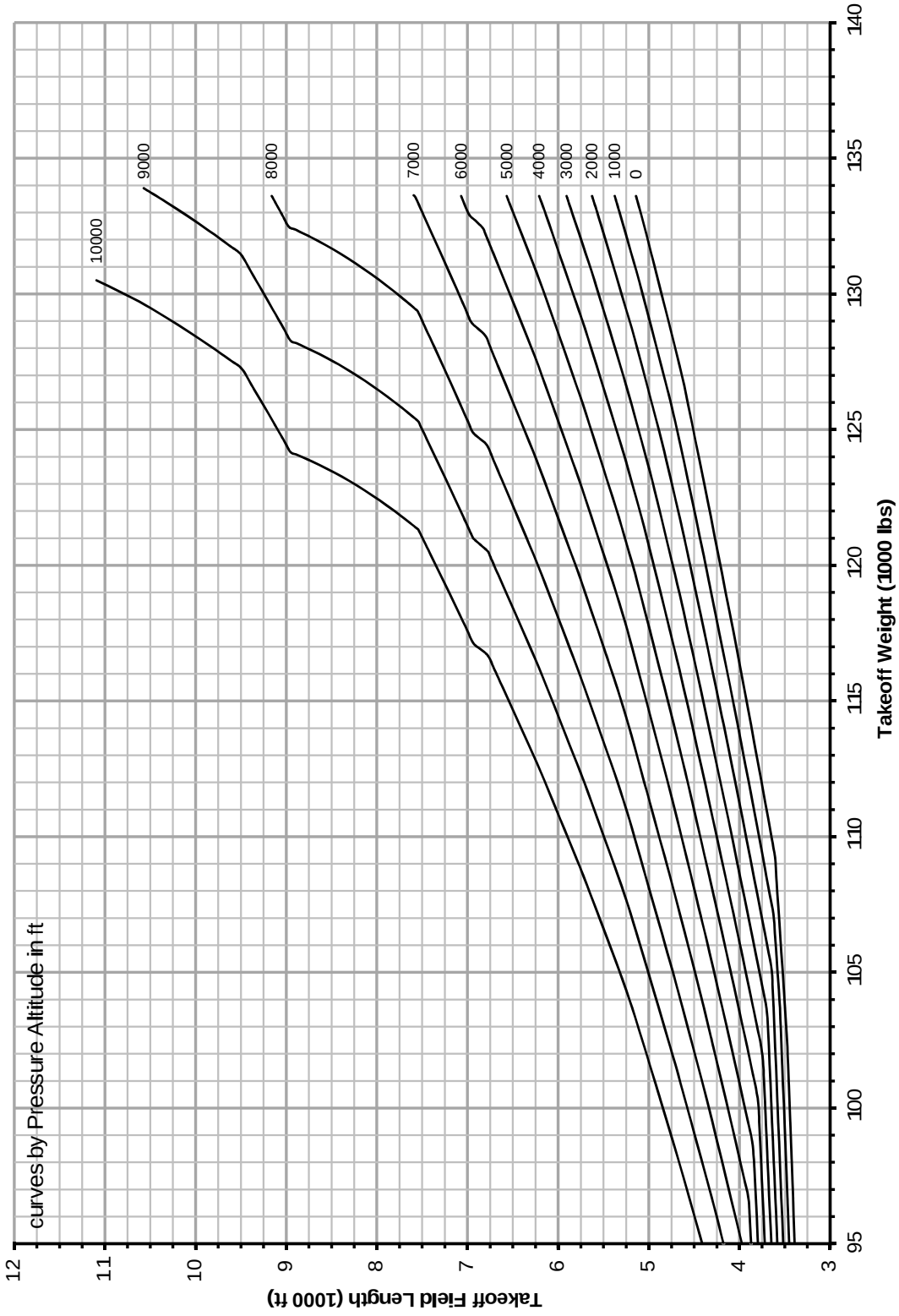
ICN-BD500-A-J000000-A-3AB48-29045-A-001-01

Figure 4 Takeoff field length ISA - PW1521G



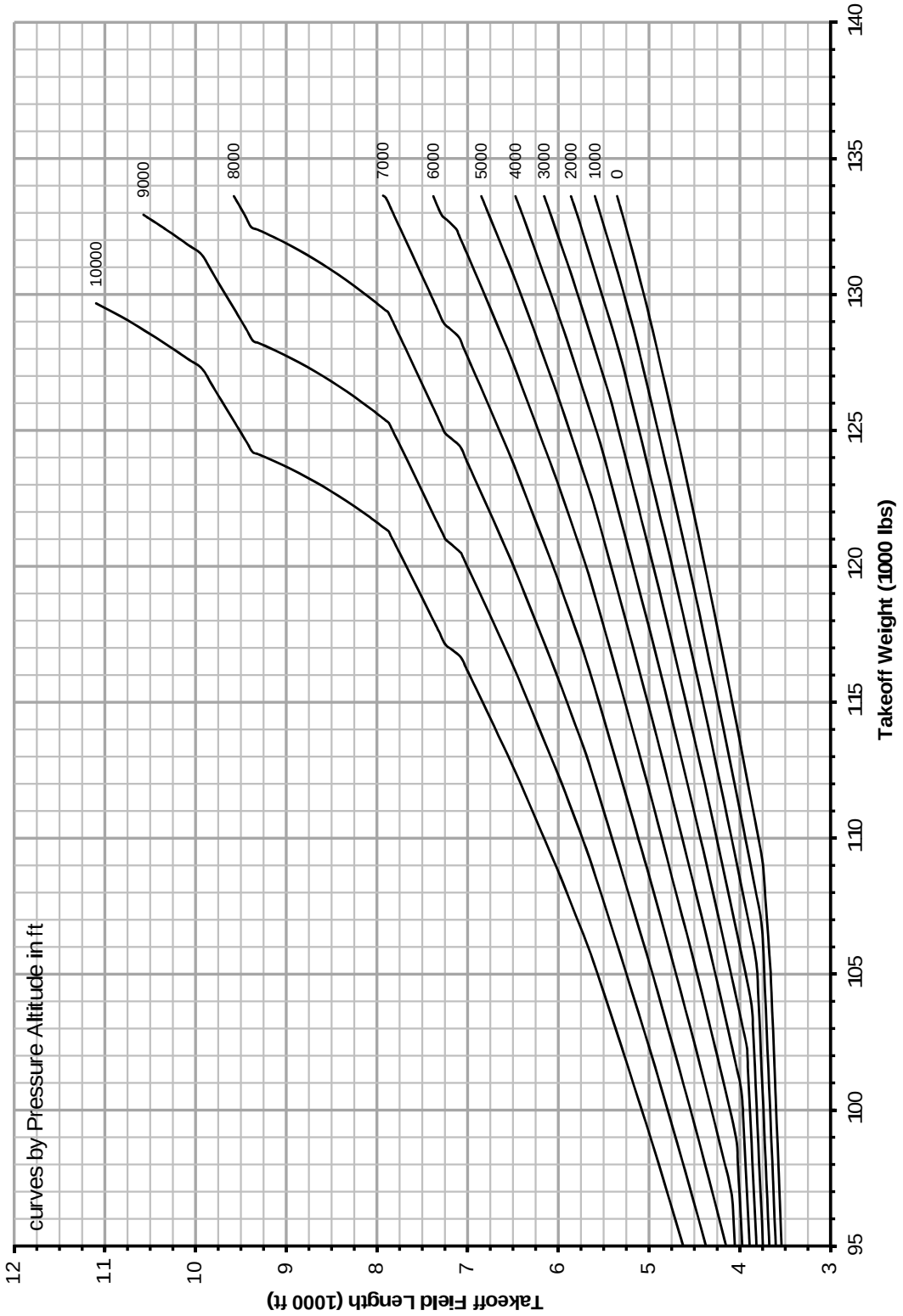
ICN-BD500-A-J000000-A-3AB48-29046-A-001-01

Figure 5 Takeoff field length ISA +15°C - PW1521G



ICN-BD500-A-J000000-A-3AB48-29047-A-001-01

Figure 6 Takeoff field length ISA - PW1524G



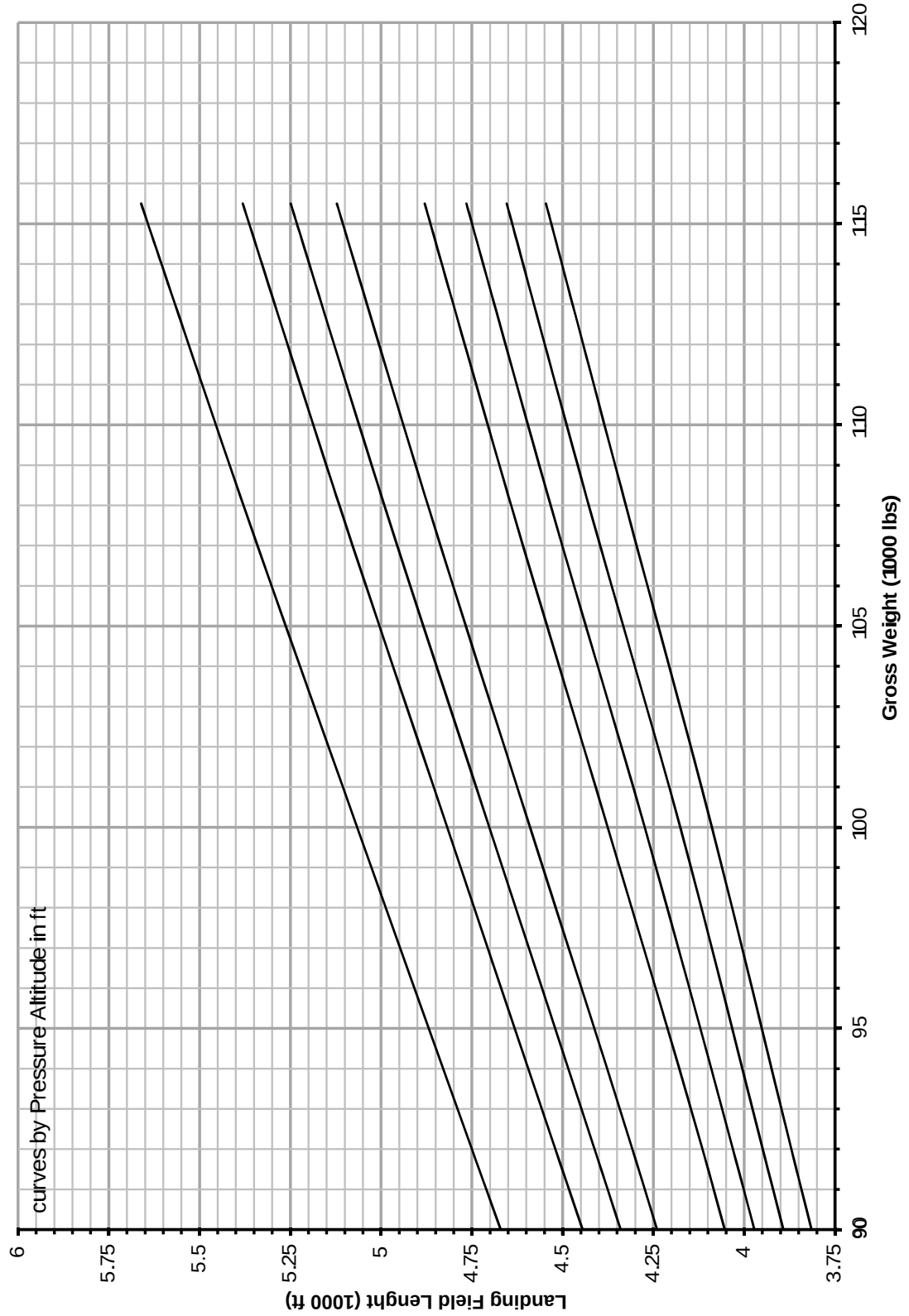
ICN-BD500-A-J000000-A-3AB48-29048-A-001-01

Figure 7 Takeoff field length ISA +15°C - PW1524G

4 Landing field length requirements

For more information about landing field, refer to the AFM BD500-3AB48-22200-00.

For landing field length requirements refer to Fig. 8 .

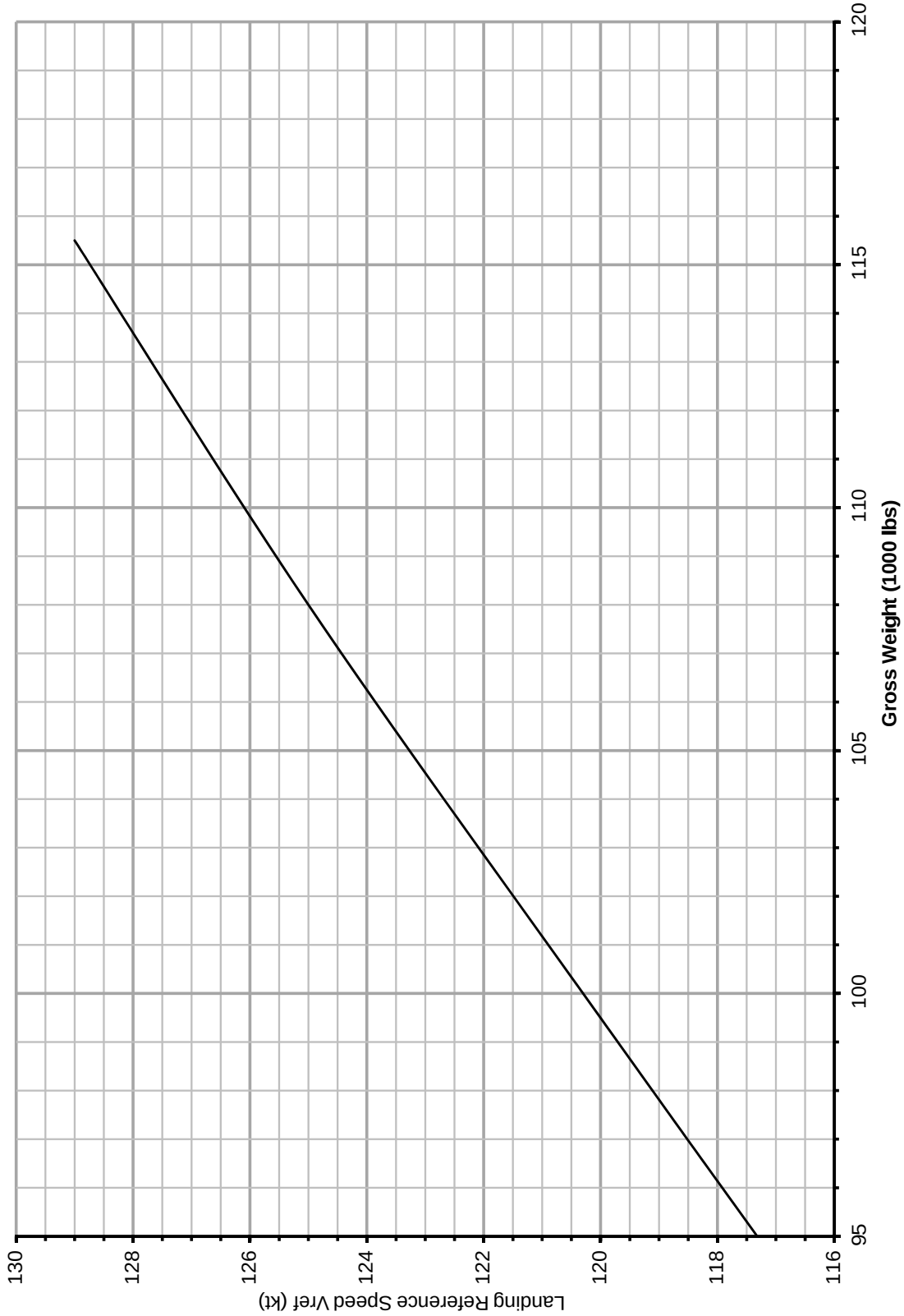


ICN-BD500-A-J000000-A-3AB48-01757-A-002-01

Figure 8 Landing field length - Dry runway

5 Landing reference speed

This section gives information about the landing reference speed.



ICN-BD500-A-J000000-A-3AB48-23901-A-002-01

Figure 9 Landing reference speed

A220

Aircraft performance - Technical data

Applicability: 55001-59999

Table of contents

Page

Aircraft performance - Technical data 1
References 1
Description 1
1 Introduction 1
2 Payload/Range 2
3 Takeoff field length requirements 4
4 Landing field length requirements 9
5 Landing reference speed 11

List of tables

Page

1 References 1
2 Standard day temperature chart 2

List of figures

Page

1 Zero Fuel Weight (ZFW) vs Range ISA 3
2 Takeoff field length ISA - PW1521G 5
3 Takeoff field length ISA +15°C - PW1521G 6
4 Takeoff field length ISA - PW1524G 7
5 Takeoff field length ISA +15°C - PW1524G 8
6 Landing field length - Dry runway 10
7 Landing reference speed 12

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This section gives data about:

- Payload/Range
- Takeoff field length requirements
- Landing field length requirements
- Landing reference speed

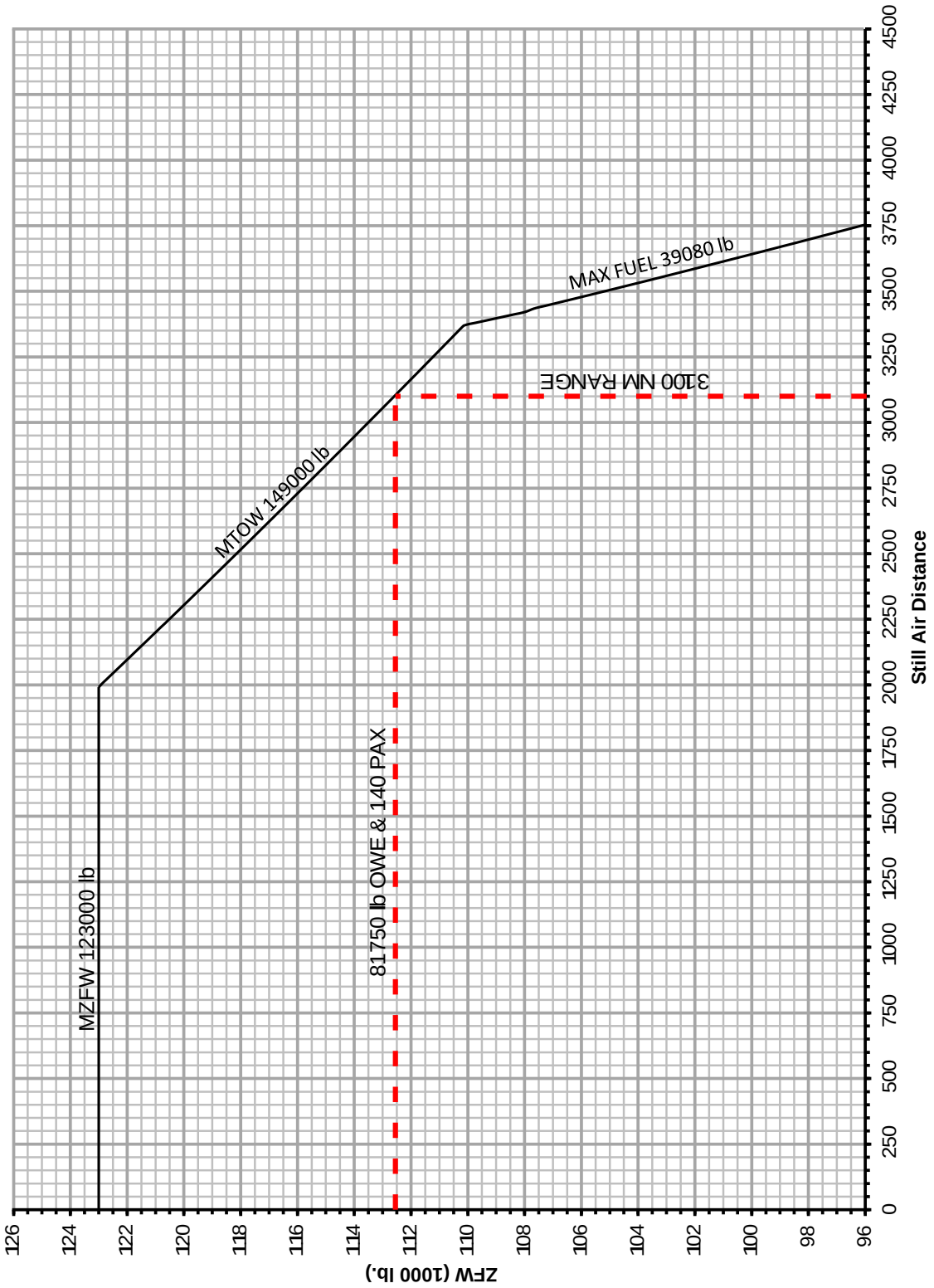
The table below provides standard day temperature for pressure altitudes.

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6000	1830	37.6	3.1
8000	2440	30.5	-0.8
10000	3050	23.3	-4.8

2 Payload/Range

This section gives information about the payload/range at ISA conditions.



ICN-BD500-A-J000000-A-3AB48-25637-A-002-01

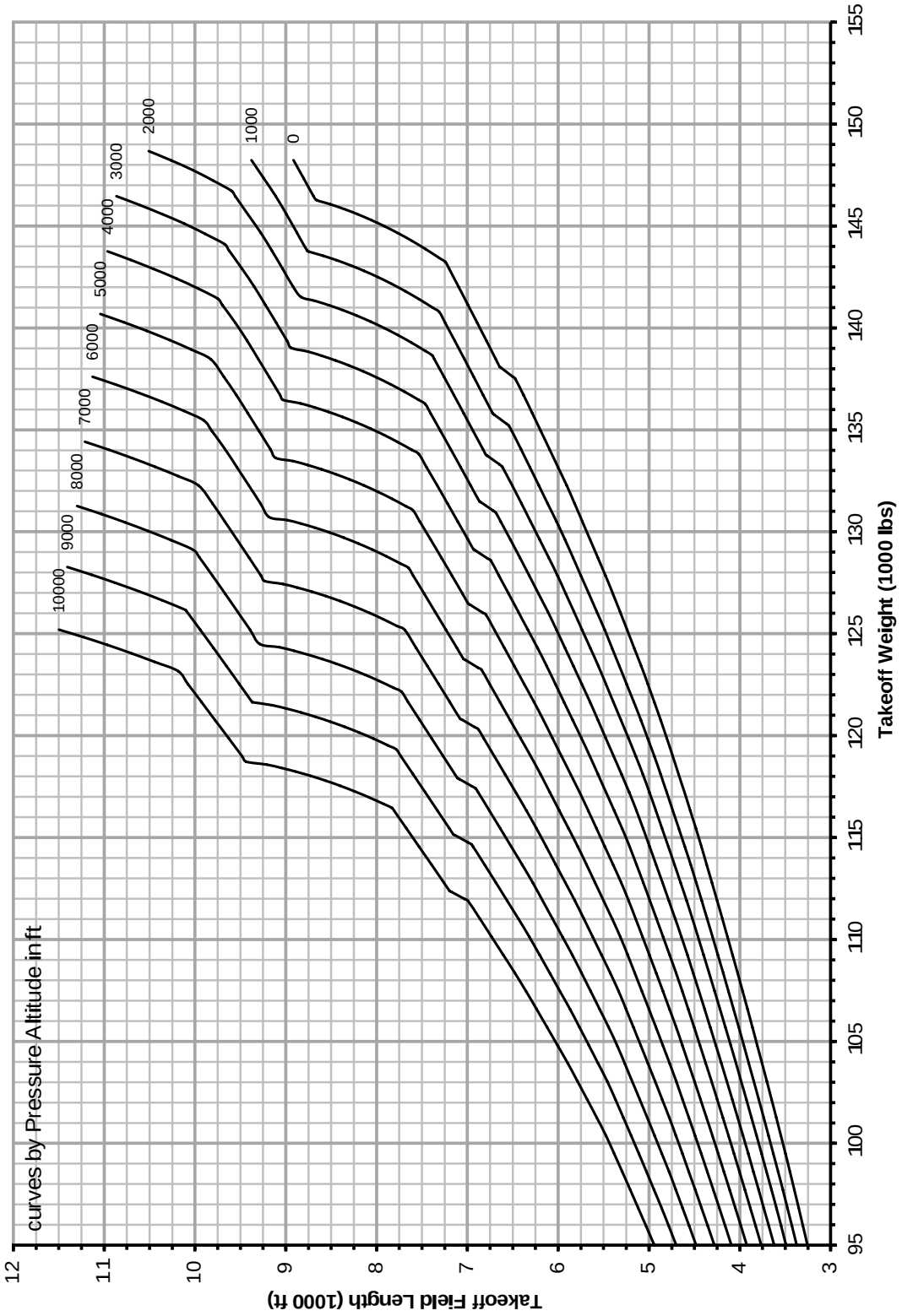
Figure 1 Zero Fuel Weight (ZFW) vs Range ISA

3 Takeoff field length requirements

For more information about aircraft performance, refer to the Aircraft Flight Manual (AFM) BD500–3AB48–32200-00.

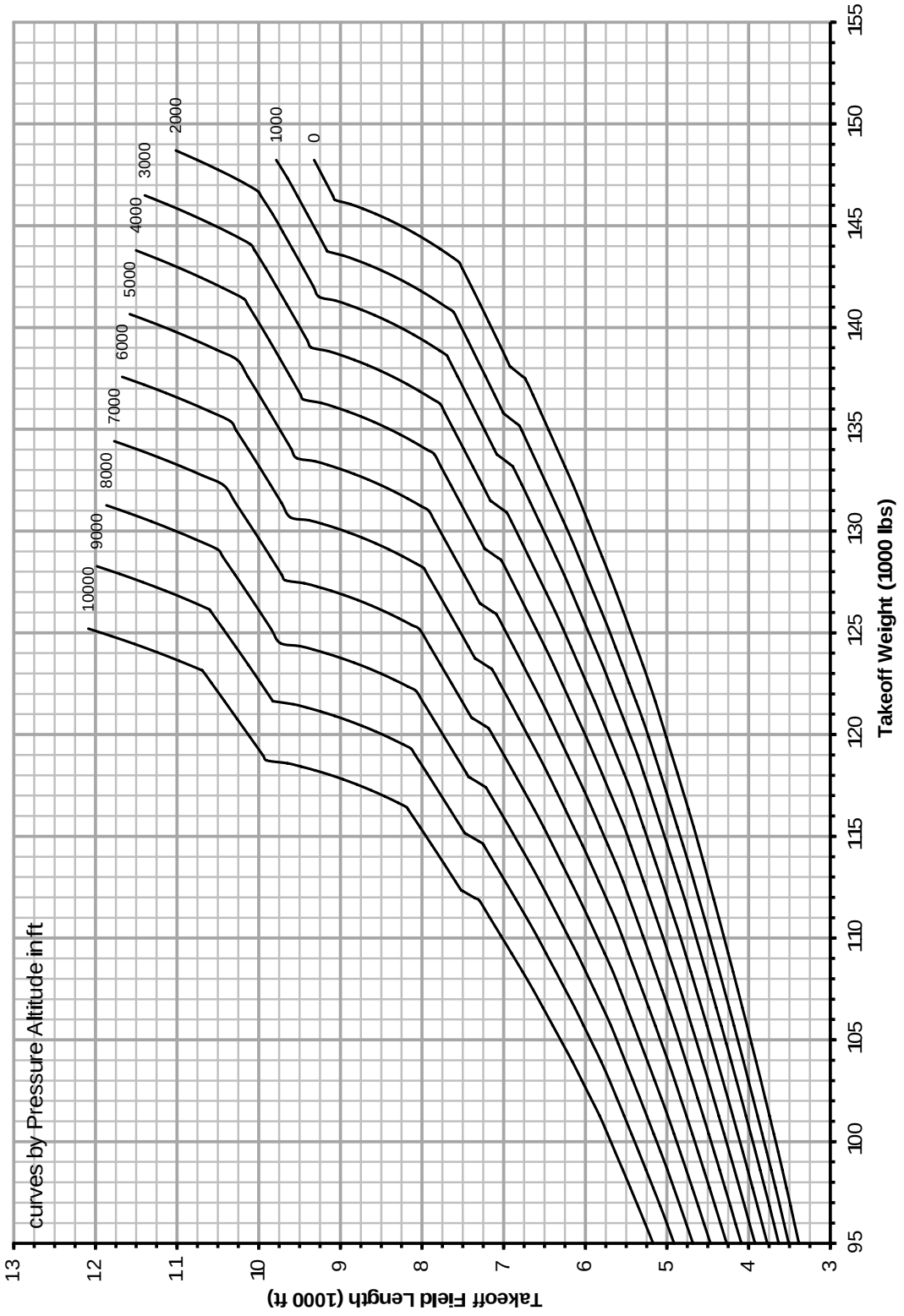
For aircraft performance and field length requirements refer to:

- Fig. 2 for the takeoff field length ISA - PW1521G.
- Fig. 3 for the takeoff field length ISA +015°C - PW1521G.
- Fig. 4 for the takeoff field length ISA - PW1524G.
- Fig. 5 for the takeoff field length ISA +015°C - PW1524G.



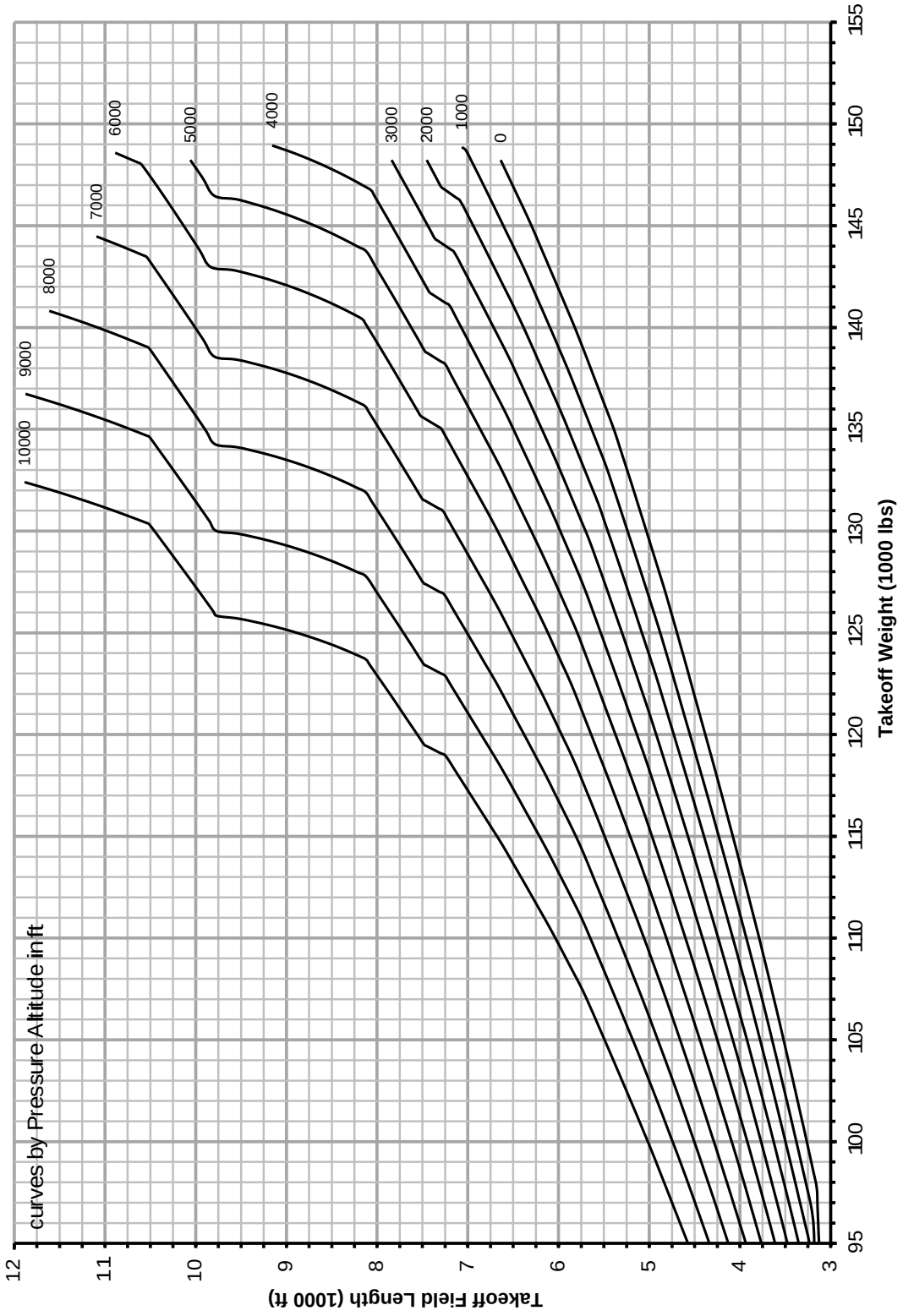
ICN-BD500-A-J000000-A-3AB48-01752-A-002-01

Figure 2 Takeoff field length ISA - PW1521G



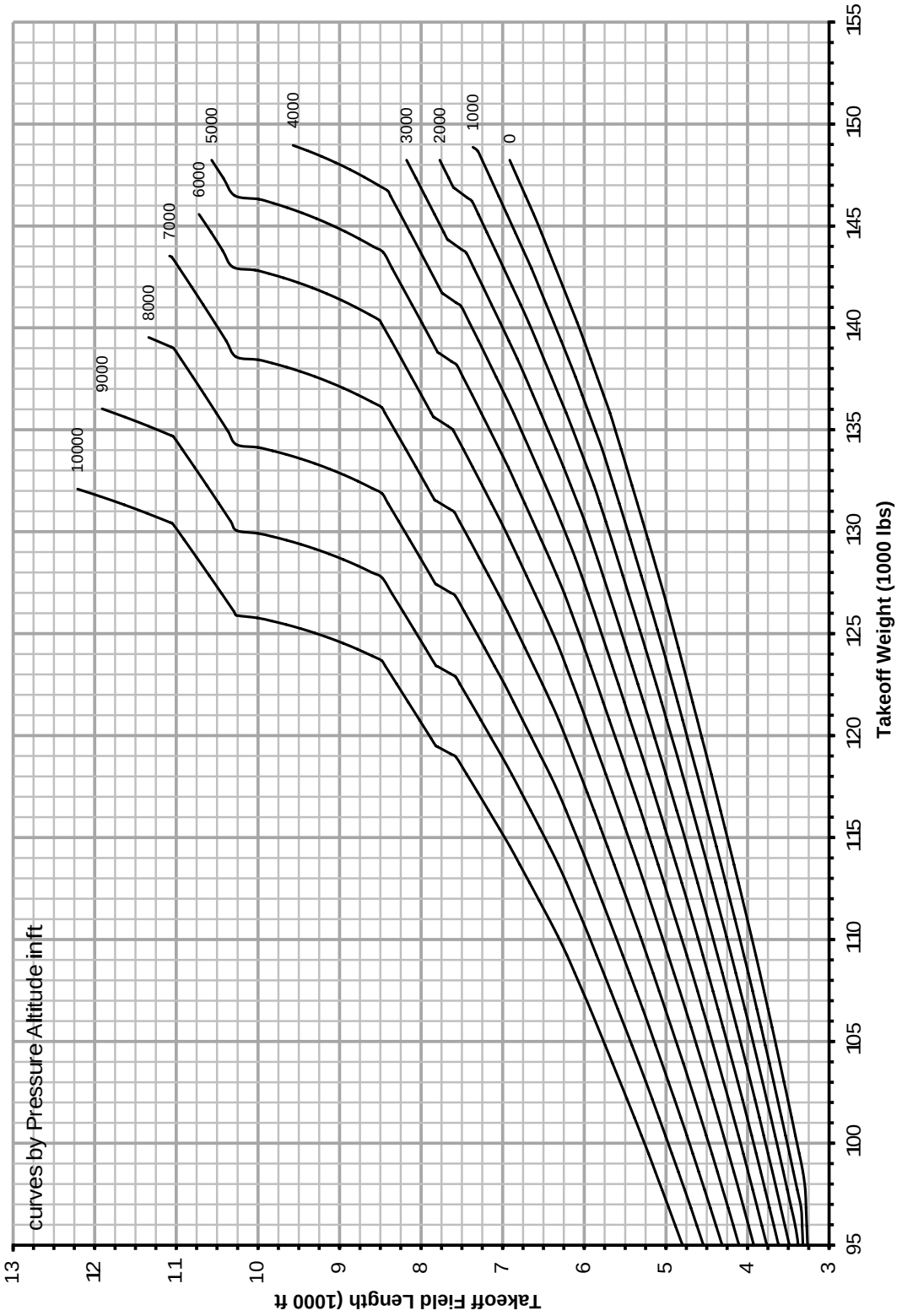
ICN-BD500-A-J000000-A-3AB48-01751-A-002-01

Figure 3 Takeoff field length ISA +15°C - PW1521G



ICN-BD500-A-J000000-A-3AB48-25638-A-001-01

Figure 4 Takeoff field length ISA - PW1524G



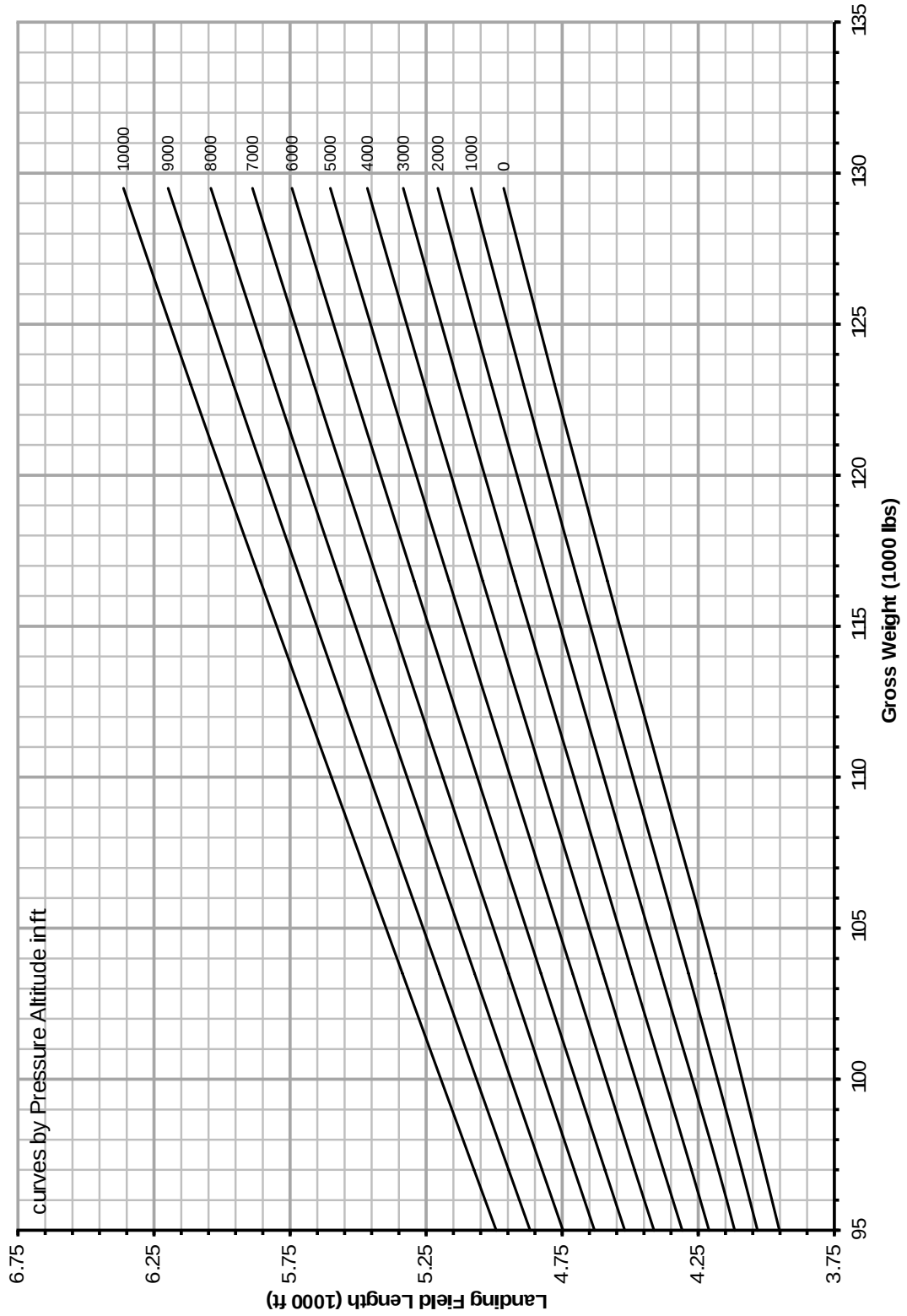
ICN-BD500-A-J000000-A-3AB48-01750-A-002-01

Figure 5 Takeoff field length ISA +15°C - PW1524G

4 Landing field length requirements

For more information about landing field, refer to the AFM BD500-3AB48-32200-00.

For landing field length requirements refer to Fig. 6 .

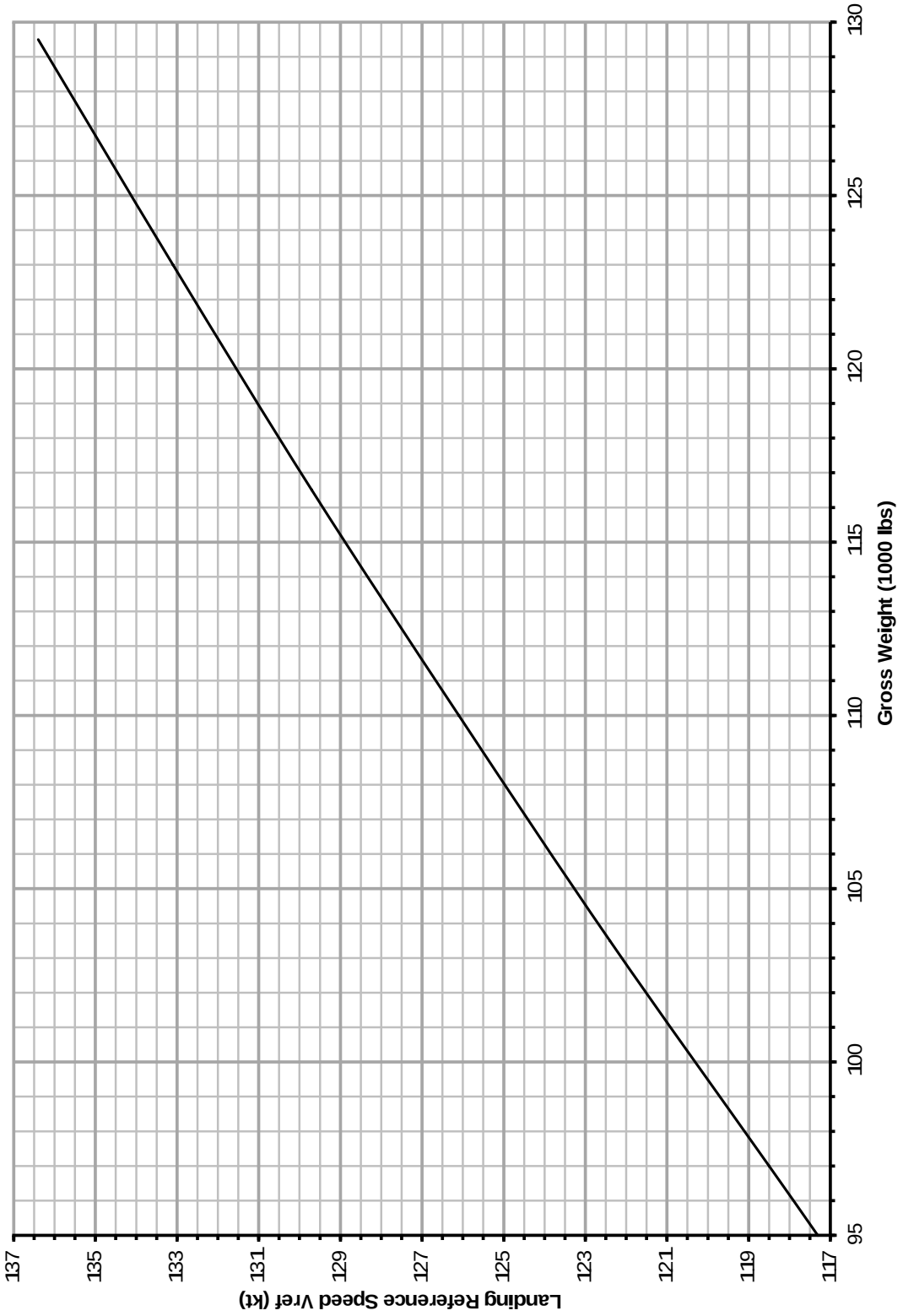


ICN-BD500-A-J000000-A-3AB48-01756-A-002-01

Figure 6 Landing field length - Dry runway

5 Landing reference speed

This section gives information about the landing reference speed.



ICN-BD500-A-J000000-A-3AB48-25639-A-002-01

Figure 7 Landing reference speed

A220

Chapter 4: Ground maneuvering

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Operating conditions - Technical data

Applicability: 50001-54999

Table of contents

Page

Operating conditions - Technical data 1
References 1
Description 1
1 Introduction 1
2 Engine dangerous areas 2
3 Engine exhaust velocities and temperatures 2
4 Auxiliary Power Unit (APU) 9
5 Engine noise levels 12

List of tables

Page

1 References 1
2 Engine noise levels 12
3 Engine noise levels 13
4 Engine noise levels 13

List of figures

Page

1 Exhaust plume velocity profile / A220-100 Break-away thrust 2970 lbf 3
2 Exhaust plume temperature profile / A220-100 Break-away thrust 2970 lbf 4
3 Exhaust plume velocity profile / Ground idle 5
4 Exhaust plume temperature profile / Ground idle 6
5 Exhaust plume velocity profile / Maximum take-off at sea level static 7
6 Exhaust plume temperature profile / Maximum take-off at sea level static 8
7 APU exhaust plume temperature 10
8 APU danger areas 11

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J71-00-00-00AAA-012A-A	Power plant - General warnings and cautions and related safety data

Description

1 Introduction

This data module gives data on the engine noise levels and the intake and exhaust dangerous areas during normal operations. This section is divided into the subsections that follow:

- Engine dangerous areas
- Engine exhaust velocities and temperatures
- Auxiliary Power Unit (APU)

- Engine noise levels

Aircraft operating conditions and noise are important to airport and community planners. While an airport is a major element in a community transportation system and is vital to it's growth, it must be a good neighbor. This can only be accomplished with proper planning. Because aircraft noise extends beyond the boundaries of the airport, it is vital to consider the impact on surroundings communities.

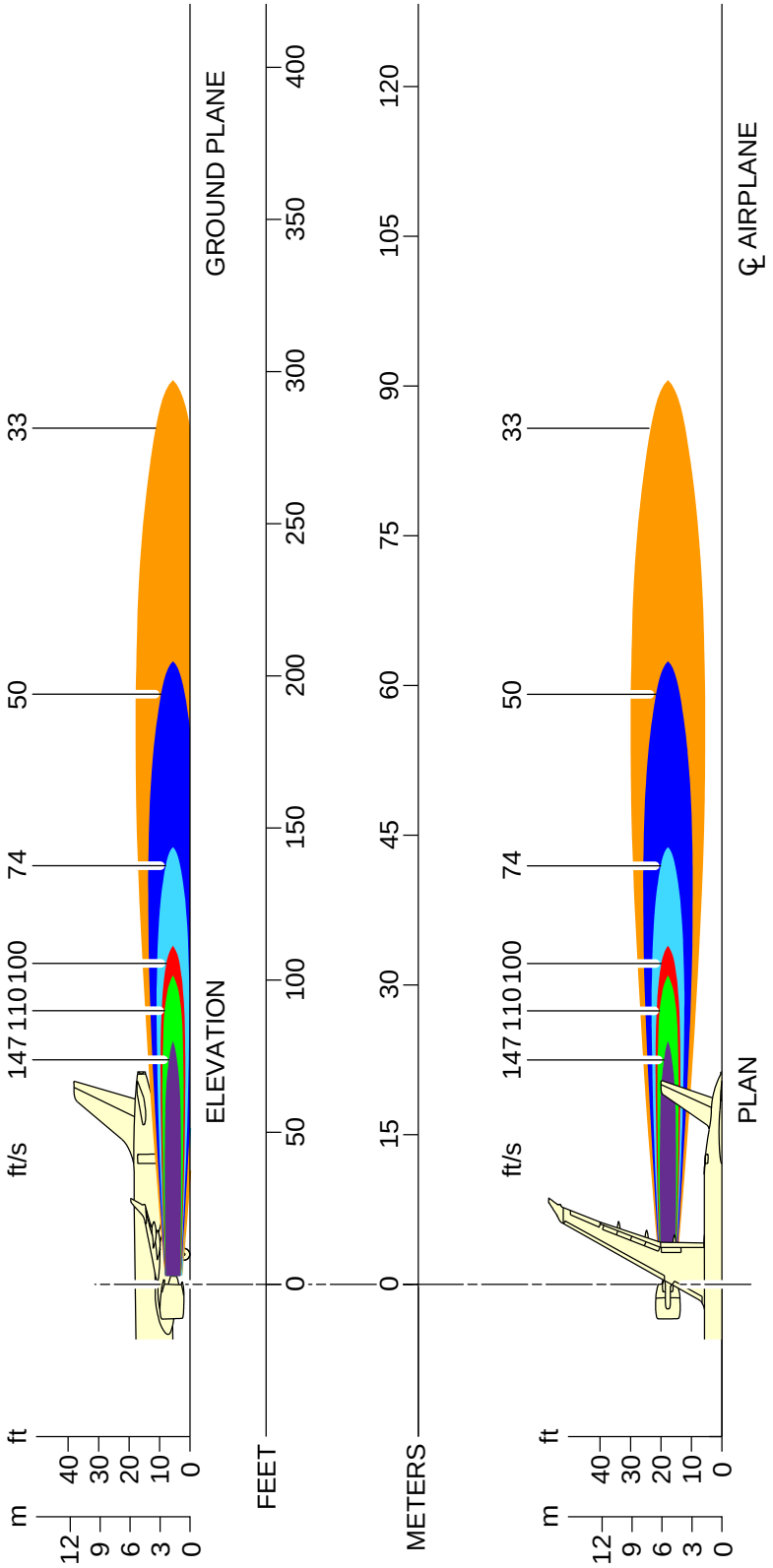
2 Engine dangerous areas

This section contains information about the danger areas of engines during a ground run up. Refer to BD500-A-J71-00-00-00AAA-012A-A for danger areas of engines.

3 Engine exhaust velocities and temperatures

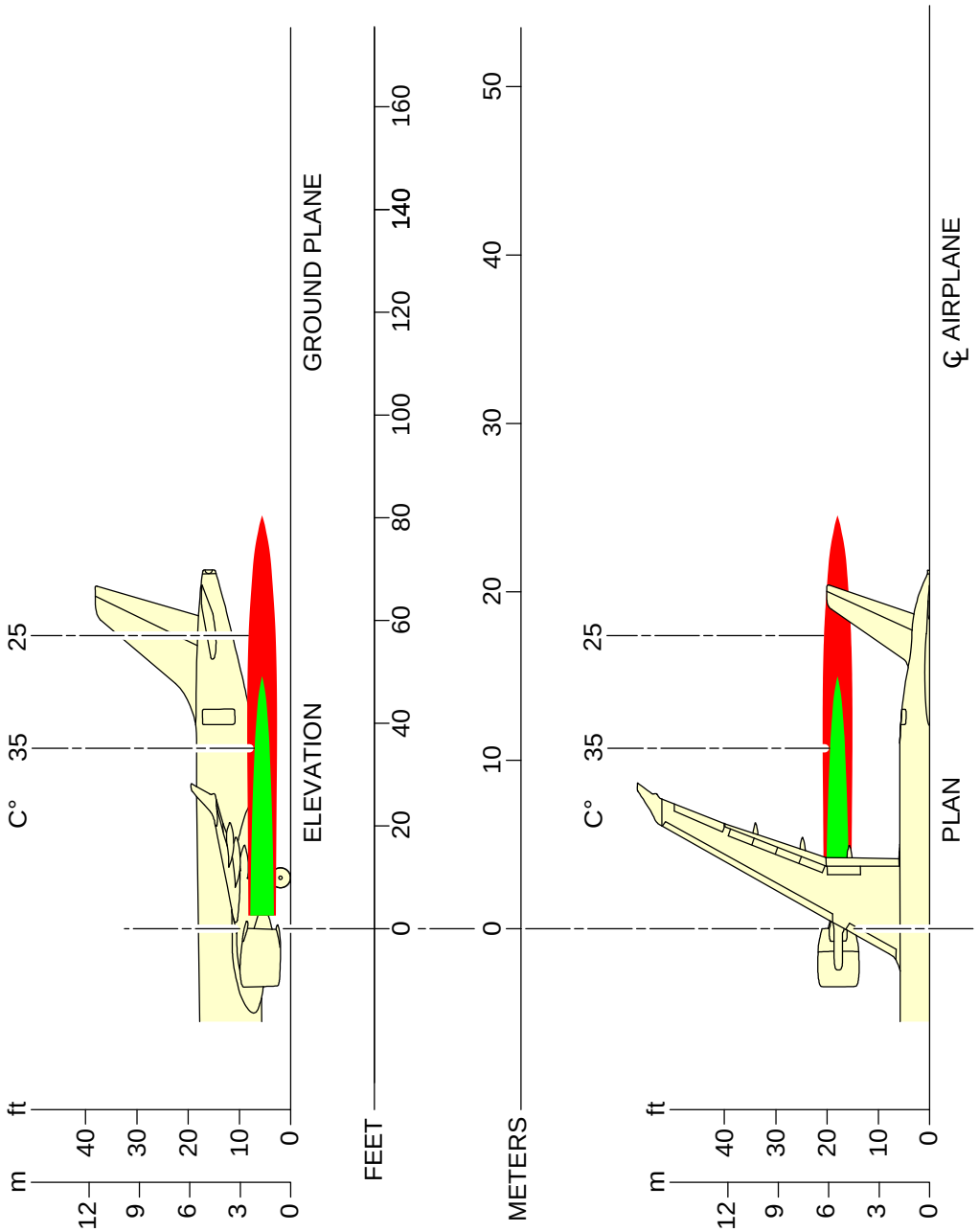
This section shows the estimated engine exhaust plume velocity and temperature profiles during idle, breakaway, and maximum takeoff conditions.

The exhaust plume profiles are provided from the engine nozzle exit plane, assuming sea level, static, ISA condition, without any wind and bleed extraction. They do not take into account an engine-to-engine variation or engine deterioration and do not account for interaction with the fuselage, ground or other engine plume. Refer to Fig. 1 thru Fig. 6 .



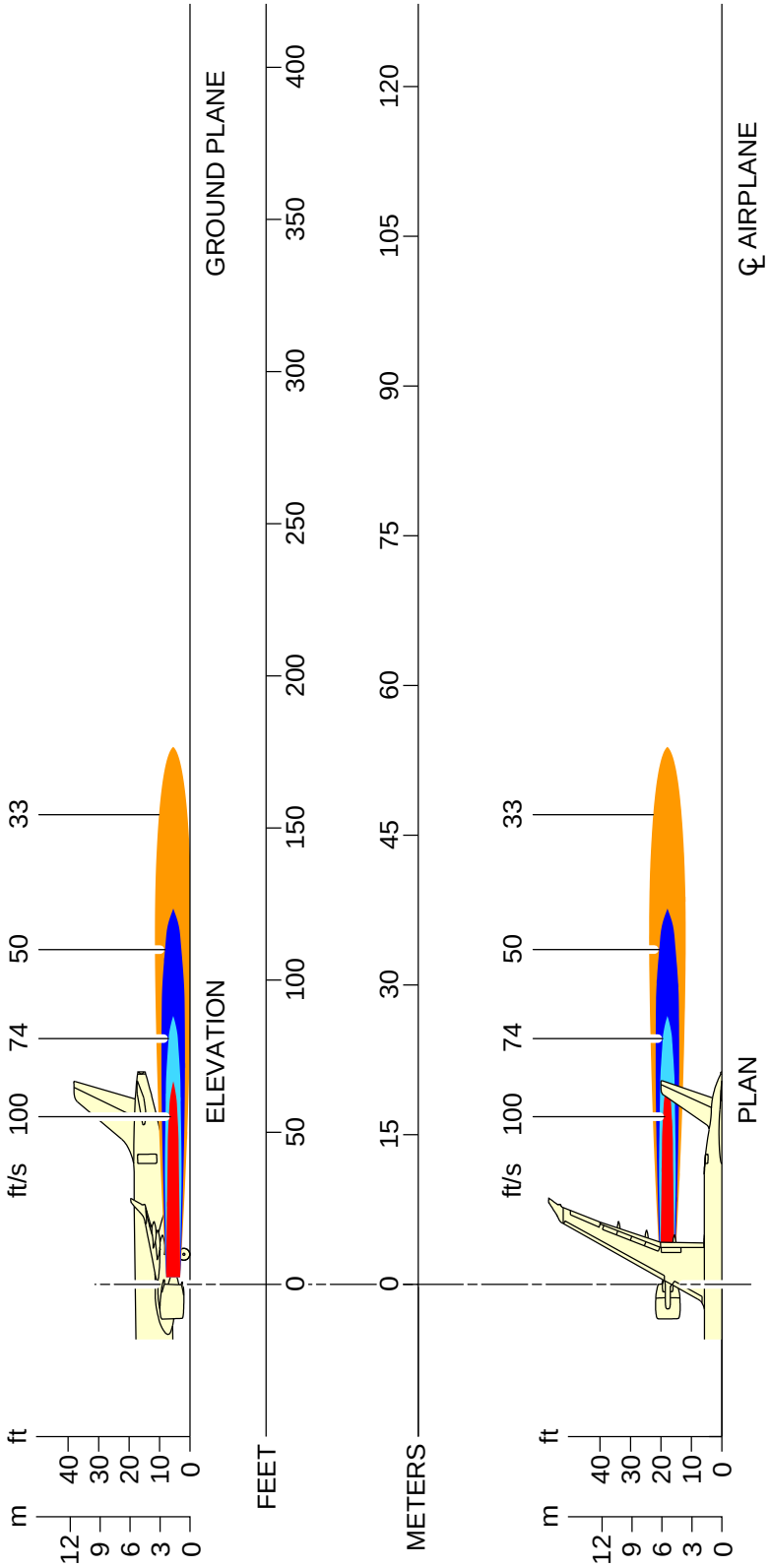
ICN-BD500-A-J000000-A-3AB48-27915-A-001-01

Figure 1 Exhaust plume velocity profile / A220-100 Break-away thrust 2970 lbf



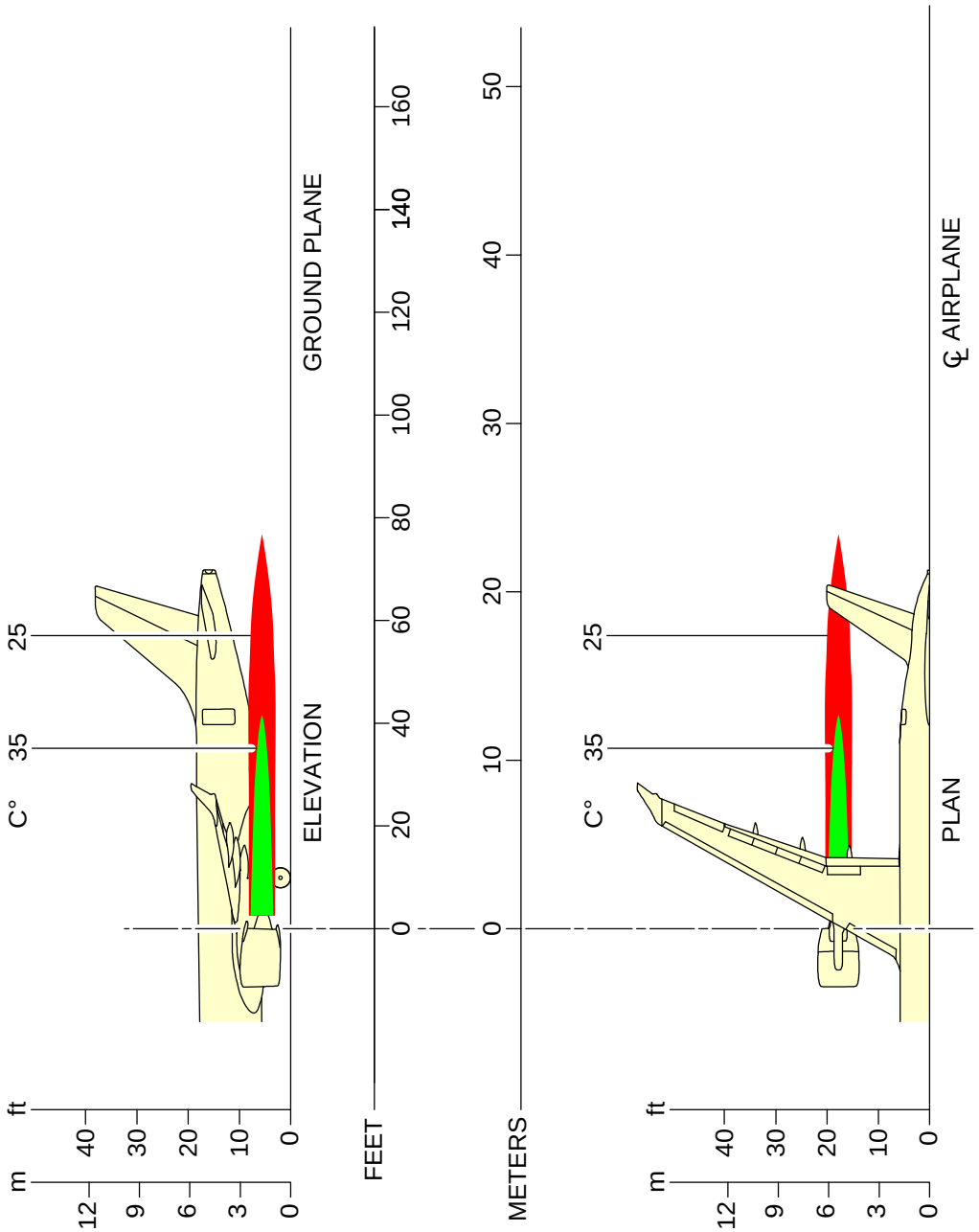
ICN-BD500-A-J000000-A-3AB48-27917-A-001-01

Figure 2 Exhaust plume temperature profile / A220-100 Break-away thrust 2970 lbf



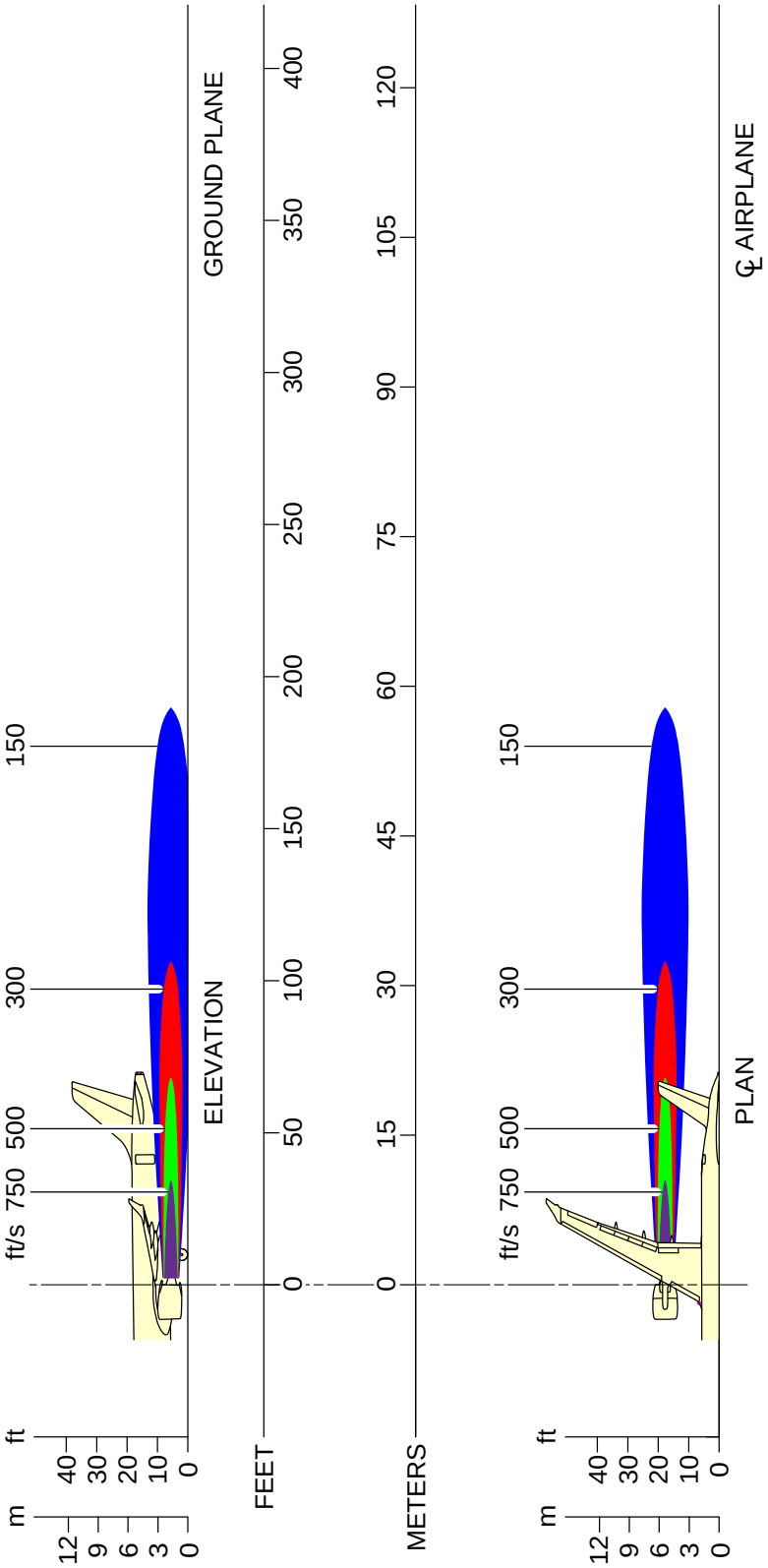
ICN-BD500-A-J000000-A-3AB48-27919-A-001-01

Figure 3 Exhaust plume velocity profile / Ground idle



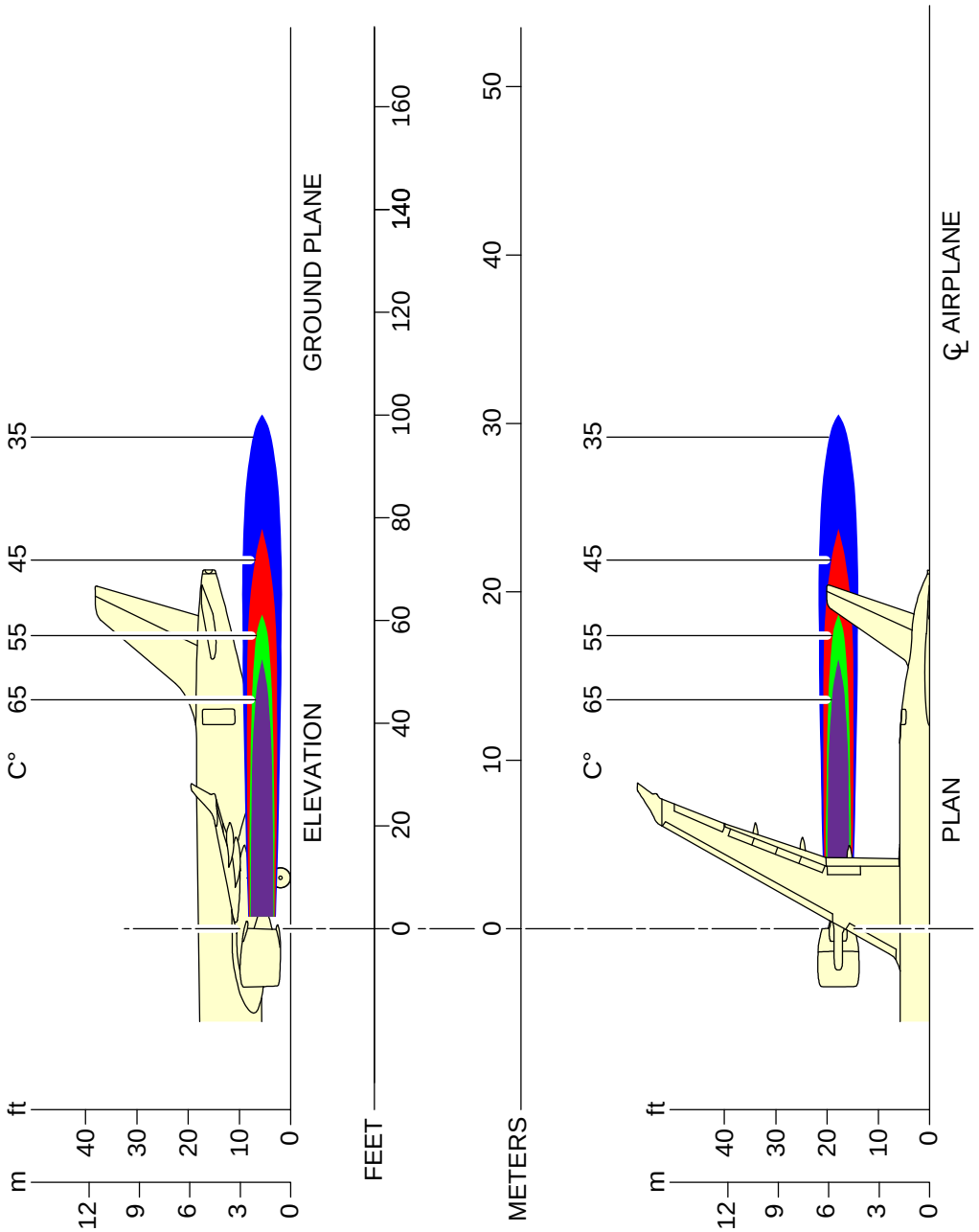
ICN-BD500-A-J000000-A-3AB48-27920-A-001-01

Figure 4 Exhaust plume temperature profile / Ground idle



ICN-BD500-A-J000000-A-3AB48-27921-A-001-01

Figure 5 Exhaust plume velocity profile / Maximum take-off at sea level static

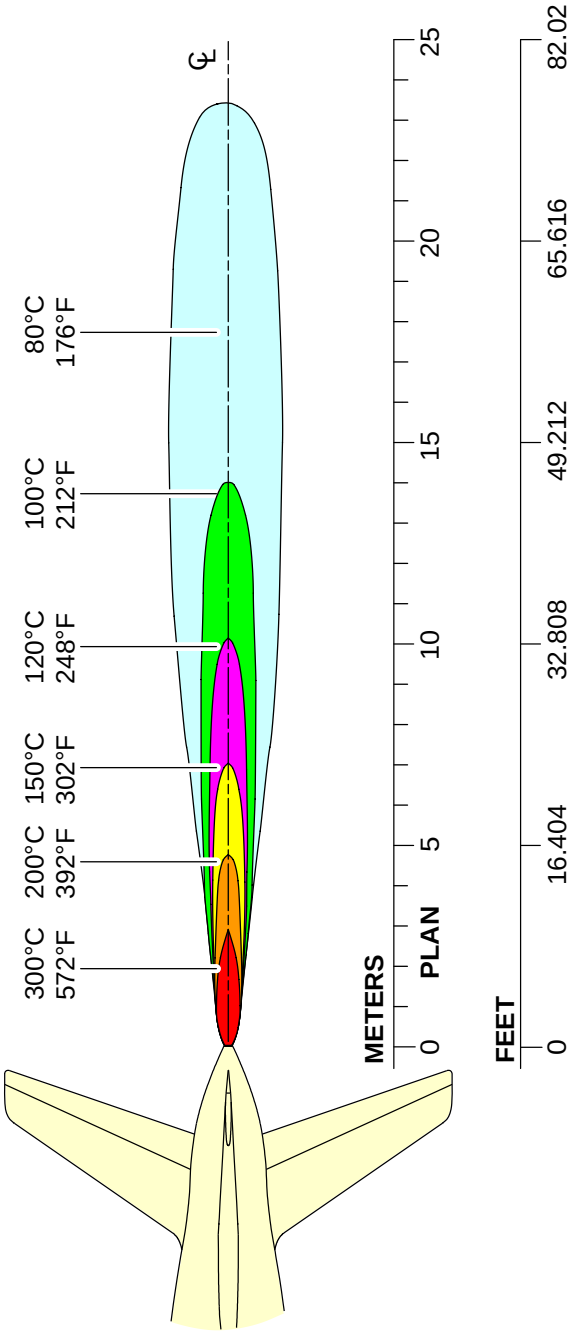


ICN-BD500-A-J000000-A-3AB48-27922-A-001-01

Figure 6 Exhaust plume temperature profile / Maximum take-off at sea level static

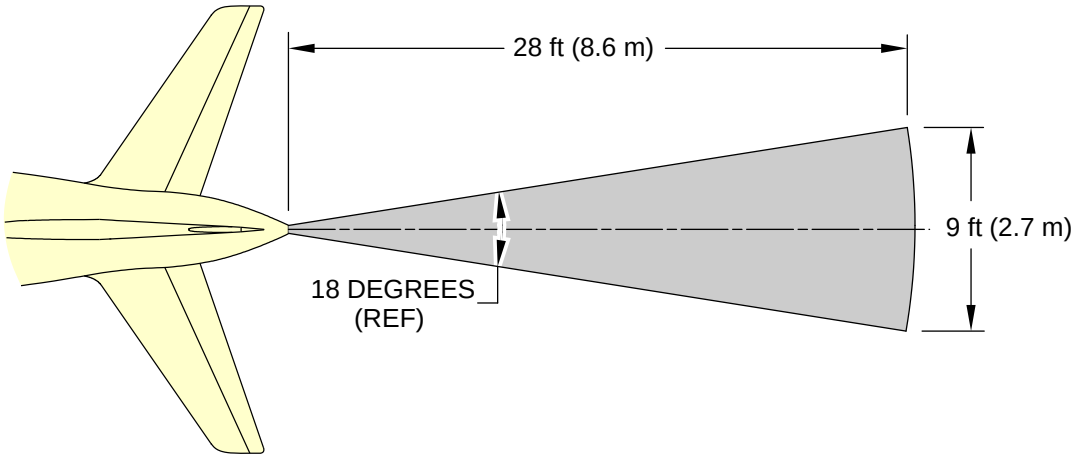
4 Auxiliary Power Unit (APU)

This section contains information about the danger areas of the APU when operated on the ground. Refer to Fig. 7 and Fig. 8 for danger areas and the exhaust plume temperature of the APU.



ICN-BD500-A-J000000-A-3AB48-47400-A-001-01

Figure 7 APU exhaust plume temperature



ICN-BD500-A-J000000-A-3AB48-47401-A-001-01

Figure 8 APU danger areas

5 Engine noise levels

The community noise levels must agree with FAR 36 Stage 3, ICAO Annex 16, Chapter 4, Chapter 516.

Refer to Table 2 for the demonstrated Effective Perceived Noise levels (EPNdB), limits, and the relative difference (margin of compliance) for the engines.

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 2 Engine noise levels

Engine <option code>	Weights		Measure-ment Points			Margins (EPNdB)	Margin Require-ment (EPNdB)
	MTOW <option code>	MLW <option code>	Description	Noise Limit (EPNdB)	Measured Level (EPNdB)		
PW1524G <72210003>	134,000 lb (60,781 kg) <13000170>	115,500 lb (52,390 kg) <1300270>	Approach	99.9	91.9	8.0	0
			Lateral	96.0	87.9	8.1	0
			Flyover	90.4	79.0	11.4	0
			Sum of smallest two individual margins:			16.1	2
			Sum of all individual margins:			27.5	10

Applicability: 50062, 50066-50067, 50069, 50071, 50077-50078, 50081

Table 3 Engine noise levels

Engine <option code>	Weights		Measure-ment Points			Margins (EPNdB)	Margin Require-ment (EPNdB)
	MTOW <option code>	MLW <option code>	Description	Noise Limit (EPNdB)	Measured Level (EPNdB)		
PW1524G <72210003>	134,000 lb (60,781 kg) <13000170>	112,500 lb (51,029 kg) <13000230>	Approach	99.9	91.9	8.0	0
			Lateral	96.0	87.9	8.1	0
			Flyover	90.4	79.0	11.4	0
			Sum of smallest two individual margins:			16.1	2
			Sum of all individual margins:			27.5	10

Applicability: 50069, 50071, 50078

Table 4 Engine noise levels

Engine <option code>	Weights		Measure-ment Points			Margins (EPNdB)	Margin Require-ment (EPNdB)
	MTOW <option code>	MLW <option code>	Description	Noise Limit (EPNdB)	Measured Level (EPNdB)		
PW1524G <72210003>	138,000 lb (62,595 kg) <13000040>	112,500 lb (51,029 kg) <13000230>	Approach	99.9	91.9	8.0	0
			Lateral	96.0	87.9	8.1	0

Engine <option code>	Weights		Measure-ment Points			Margins (EPNdB)	Margin Require-ment (EPNdB)
	MTOW <option code>	MLW <option code>	Description	Noise Limit (EPNdB)	Measured Level (EPNdB)		
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			Sum of smallest two individual margins:			16.1	2
			Sum of all individual margins:			27.5	10

A220

Operating conditions - Technical data

Applicability: 55001-59999

Table of contents

Page

Operating conditions - Technical data 1
References 1
Description 1
1 Introduction 1
2 Engine dangerous areas 2
3 Engine exhaust velocities and temperatures 2
4 Auxiliary Power Unit (APU) 9
5 Engine noise levels 12

List of tables

Page

1 References 1
2 Engine noise levels 12

List of figures

Page

1 Exhaust plume velocity profile / A220-300 Break-away thrust 3300 lbf 3
2 Exhaust plume temperature profile / A220-300 Break-away thrust 3300 lbf 4
3 Exhaust plume velocity profile / Ground idle 5
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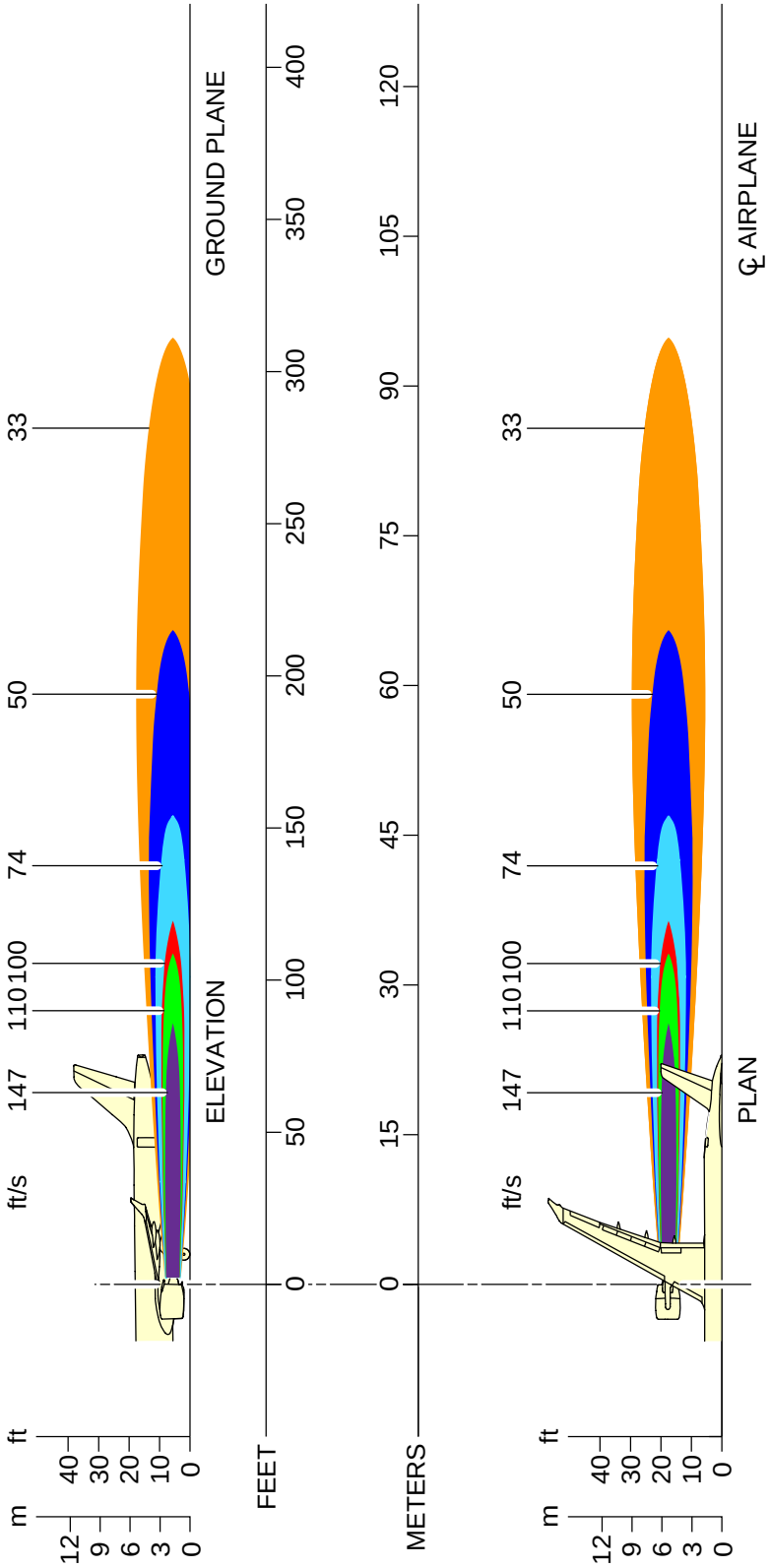
2 Engine dangerous areas

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3 Engine exhaust velocities and temperatures

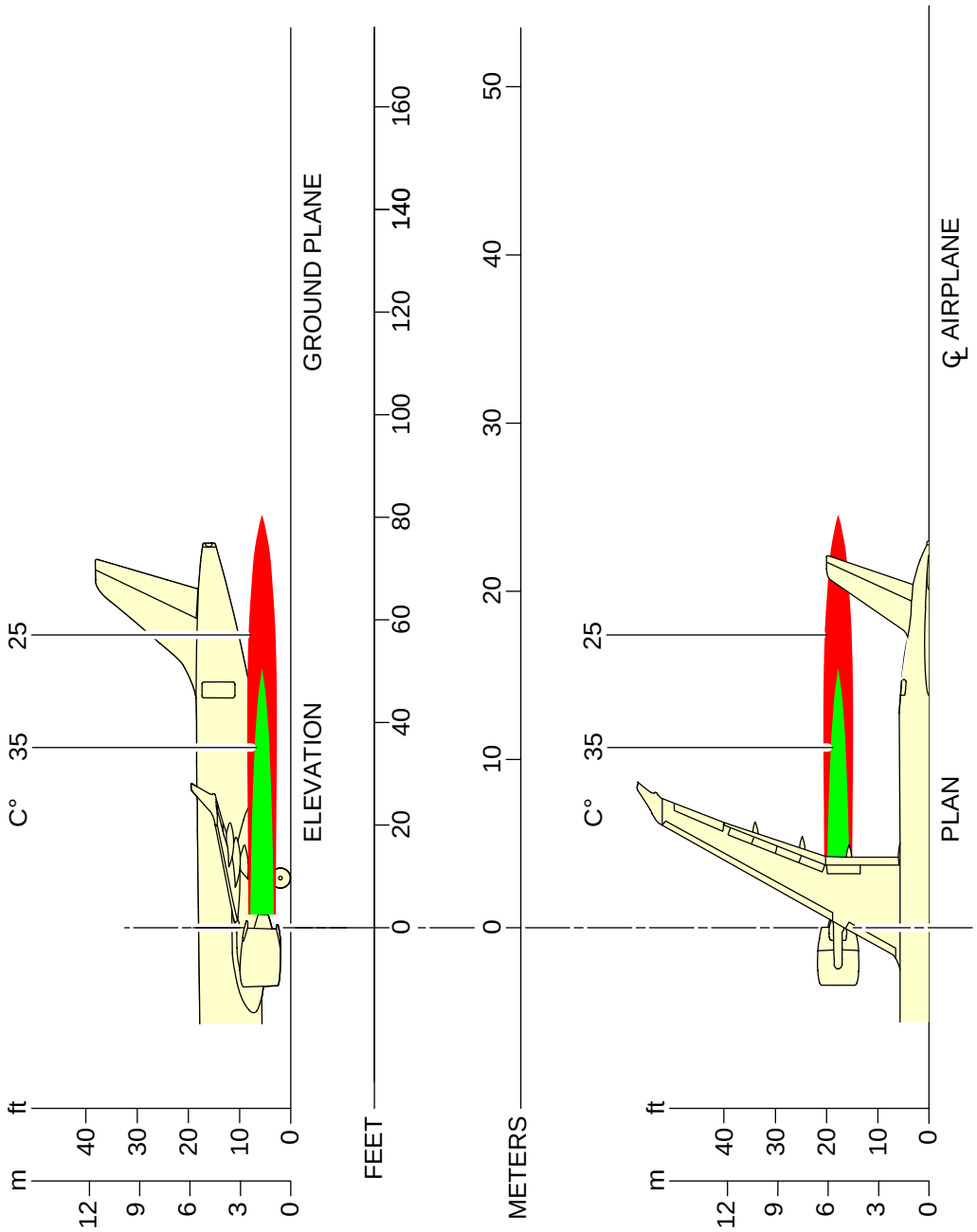
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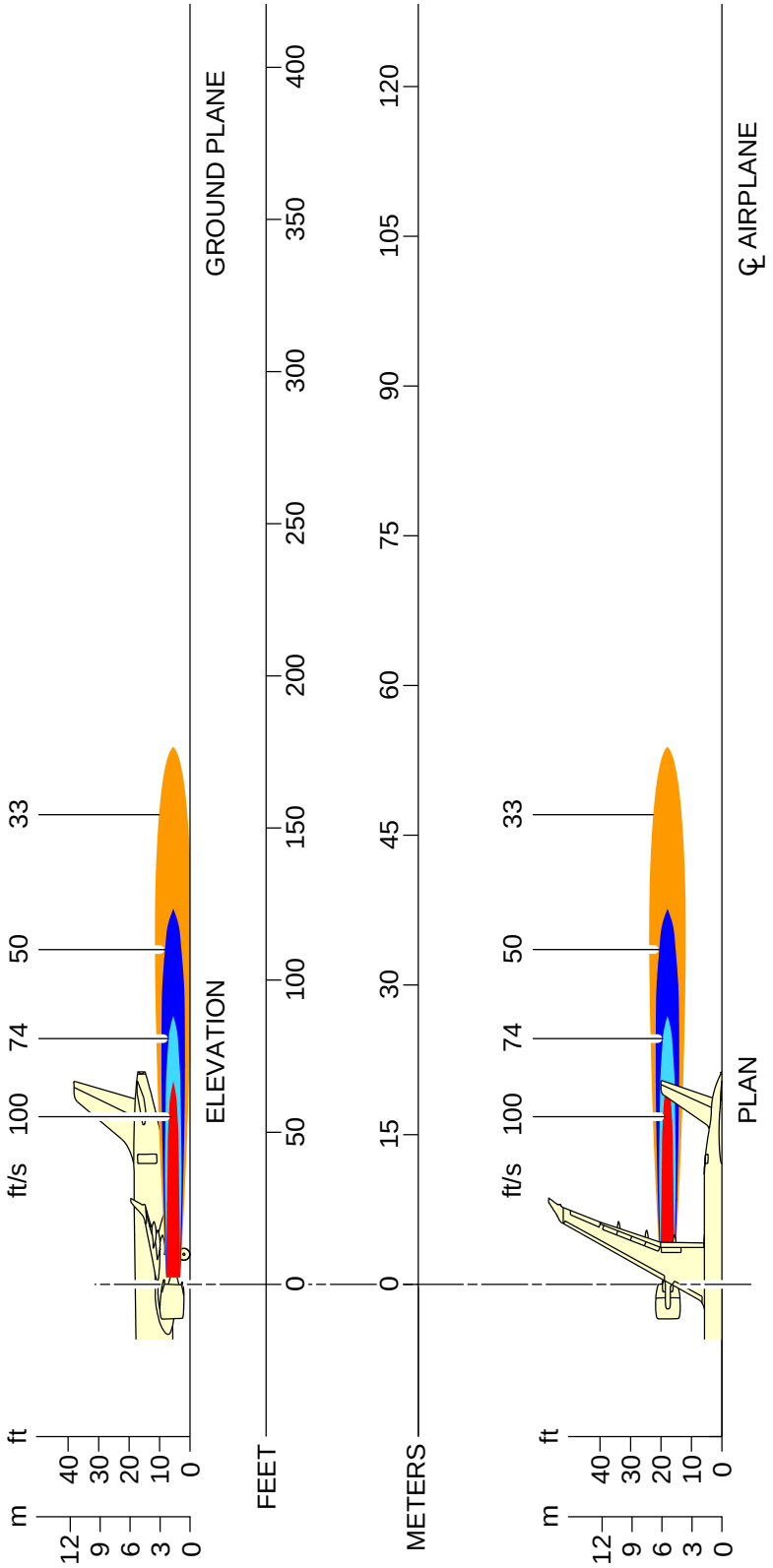
ICN-BD500-A-J000000-A-3AB48-27916-A-001-01

Figure 1 Exhaust plume velocity profile / A220-300 Break-away thrust 3300 lbf



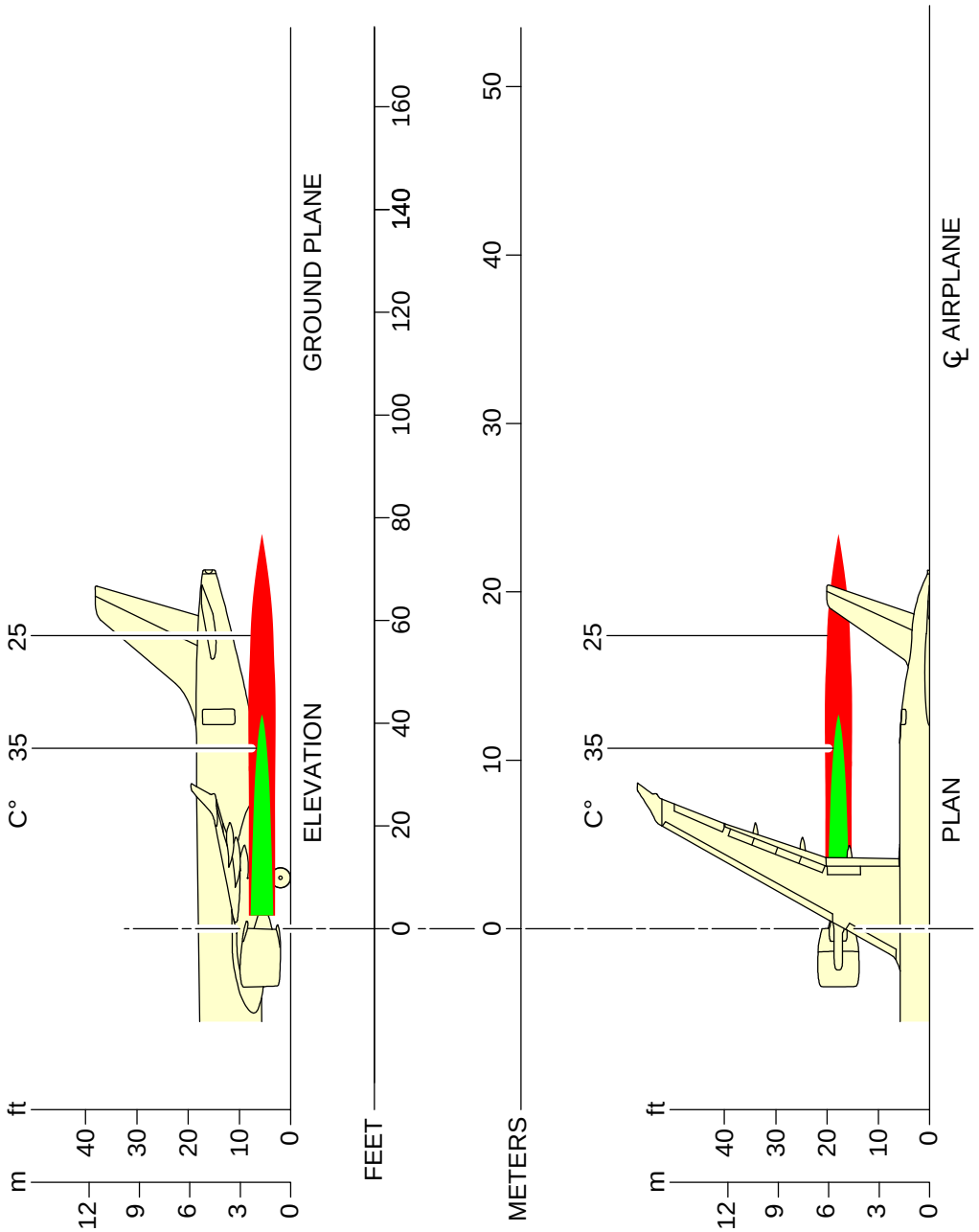
ICN-BD500-A-J000000-A-3AB48-27918-A-001-01

Figure 2 Exhaust plume temperature profile / A220-300 Break-away thrust 3300 lbf



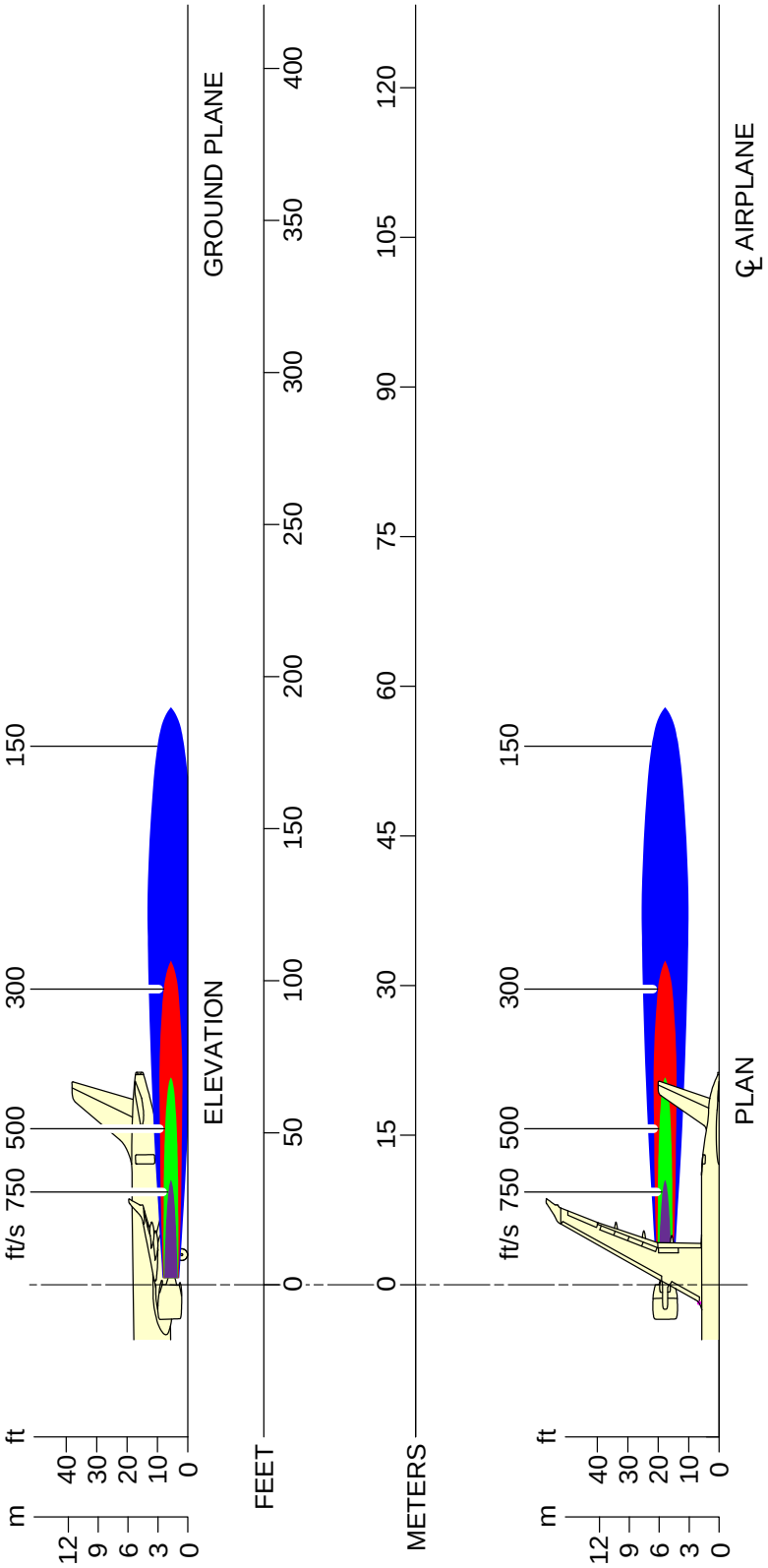
ICN-BD500-A-J000000-A-3AB48-27919-A-001-01

Figure 3 Exhaust plume velocity profile / Ground idle



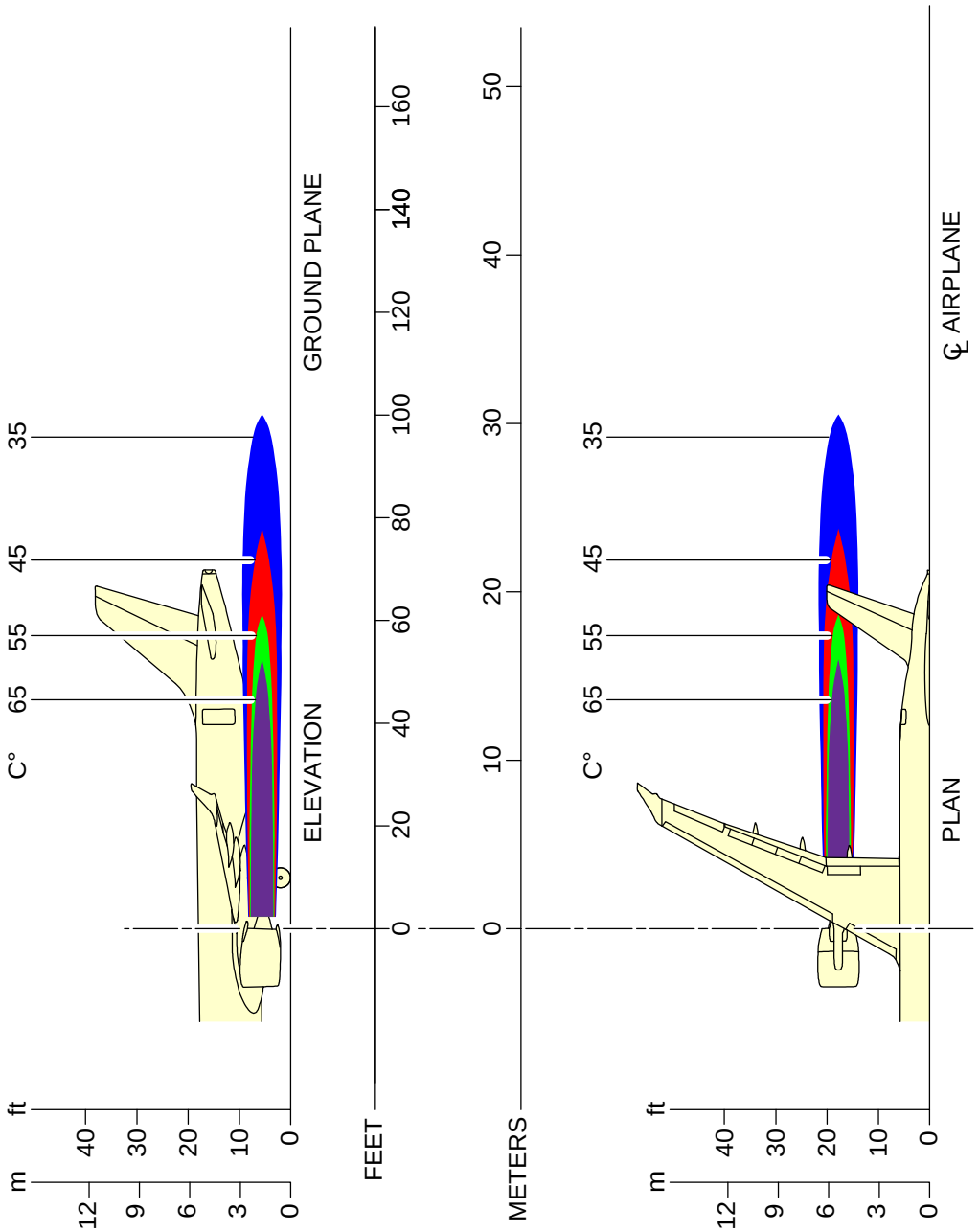
ICN-BD500-A-J000000-A-3AB48-27920-A-001-01

Figure 4 Exhaust plume temperature profile / Ground idle



ICN-BD500-A-J000000-A-3AB48-27921-A-001-01

Figure 5 Exhaust plume velocity profile / Maximum take-off at sea level static

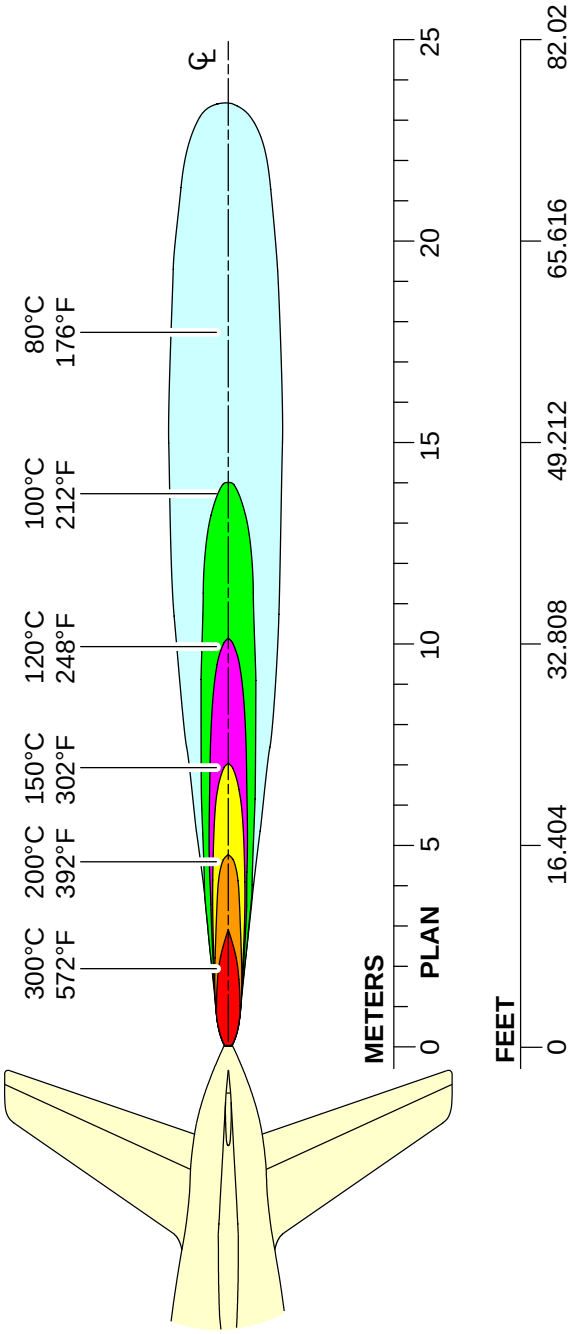


ICN-BD500-A-J000000-A-3AB48-27922-A-001-01

Figure 6 Exhaust plume temperature profile / Maximum take-off at sea level static

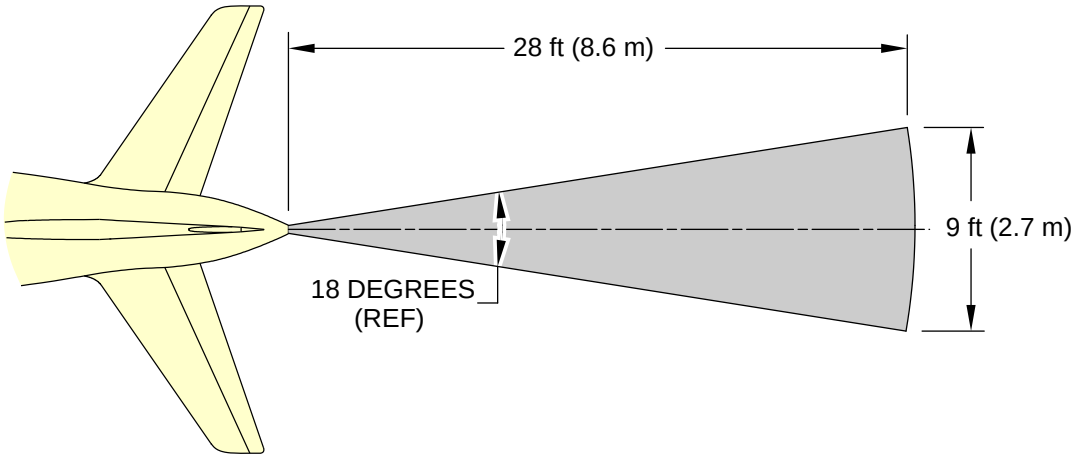
4 Auxiliary Power Unit (APU)

This section contains information about the danger areas of the APU when operated on the ground. Refer to Fig. 7 and Fig. 8 for danger areas and the exhaust plume temperature of the APU.



ICN-BD500-A-J000000-A-3AB48-47400-A-001-01

Figure 7 APU exhaust plume temperature



ICN-BD500-A-J000000-A-3AB48-47401-A-001-01

Figure 8 APU danger areas

5 Engine noise levels

The community noise levels must agree with FAR 36 Stage 3, ICAO Annex 16, Chapter 4, Chapter 516.

Refer to Table 2 for the demonstrated Effective Perceived Noise levels (EPNdB), limits, and the relative difference (margin of compliance) for the engines.

Table 2 Engine noise levels

Engine <option code>	Weights		Measure-ment Points			Margins (EPNdB)	Margin Require-ment (EPNdB)
	MTOW <option code>	MLW <option code>	Description	Noise Limit (EPNdB)	Measured Level (EPNdB)		
PW1524G <72210003>	149,000 lb (67,585 kg) <13000170>	129,500 lb (58,740 kg) <1300270>	Approach	99.9	91.9	8.0	0
			Lateral	96.0	87.9	8.1	0
			Flyover	90.4	79.0	11.4	0
			Sum of smallest two individual margins:			16.1	2
			Sum of all individual margins:			27.5	10

Ground maneuvering - Technical data

Applicability: 50001-54999

Table of contents

Page

Ground maneuvering - Technical data 1
References 1
Description 1
1 Turning radii 1
1.1 Introduction 1
1.2 Landing gear turning radii, including minimum turning radii 2

List of tables

Page

1 References 1
2 A220-100 turning radii for various nose wheel angles 3

List of figures

Page

1 Turn radii 5
2 Visibility from cockpit in static position 7
3 Clear areas of vision 9
4 A220 Clear areas of vision 10
5 More than 90° turn - Runway to taxiway - Cockpit over centerline method 12
6 More than 90° turn - Runway to taxiway - Oversteering method 14
7 90° turn - Runway to taxiway - Cockpit over centerline method 16
8 90° turn - Runway to taxiway - Oversteering method 18
9 More than 90° turn - Taxiway to taxiway - Cockpit over centerline method 20
10 More than 90° turn - Taxiway to taxiway - Oversteering method 22
11 90° turn - Taxiway to taxiway - Cockpit over centerline method 24
12 90° turn - Taxiway to taxiway - Oversteering method 26
13 Runway holding bay (Apron) 28
14 Techniques when using a Hammerhead Turnaround 30
15 Techniques when using a Hammerhead Turnaround 31
16 180 Degree (Pivot) Turns in Less than 147.6 feet / 45 m 33

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Turning radii

1.1 Introduction

This data module contains data about the aircraft turning capability and maneuvering characteristics on the ground. The data is based on aircraft performance in good conditions of operation.

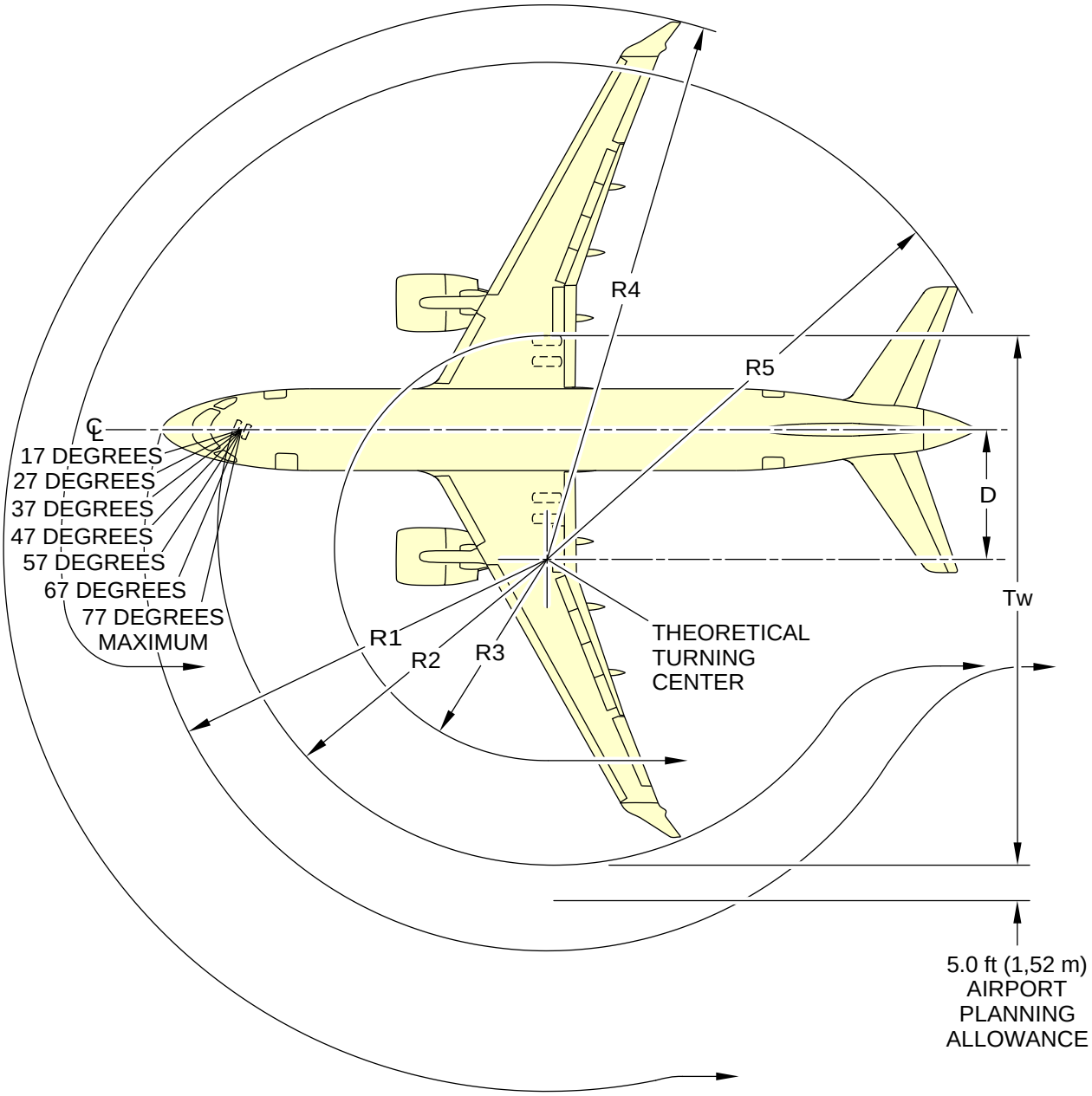
Thus, the values must be considered theoretical and used only as an aid. Refer to Table 2 for the values to use with Fig. 1 for the turn radii with 3 degree slip angle.

1.2 Landing gear turning radii, including minimum turning radii

Table 2 A220-100 turning radii for various nose wheel angles

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+R3)
17	1686.8 in. (42844.72 mm)	1807.5 in. (45910.50 mm)	1776.3 in. (45118.02 mm)	1845.6 in. (46878.24 mm)	2385.4 in. (60589.16 mm)	2046.7 in. (51986.18 mm)	3621.9 in. (91996.26 mm)
27	1012.1 in. (25707.34 mm)	1202.7 in. (30548.58 mm)	1148.4 in. (29169.36 mm)	1171 in. (29743.40 mm)	1715 in. (43561 mm)	1430.1 in. (36324.54 mm)	2319.4 in (58912.76 mm)
37	684.4 in. (17383.76 mm)	943.6 in (23967.44 mm)	869.3 in. (22080.22 mm)	843.2 in. (21417.28 mm)	1390.8 in. (35326.32 mm)	1154.2 in. (29316.68 mm)	1712.6 in. (43500.04 mm)
47	480.9 in. (12214.86 mm)	808.3 in (20530.82 mm)	717.6 in. (18227.04 mm)	639.8 in. (16250.92 mm)	1190.6 in. (30241.24 mm)	998.9 in. (25372.06 mm)	1357.3 in. (34475.42 mm)
57	334.9 in. (8506.46 mm)	730.9 in. (18564.86 mm)	627.9 in. (15948.66 mm)	493.2 in. (12527.28 mm)	1047.6 in. (26609.04 mm)	899.3 in. (22842.22 mm)	1121.1 in. (28475.94 mm)
67	218.9 in. (5560.06 mm)	685.5 in. (17411.70 mm)	572.7 in. (14546.58 mm)	377.8 in. (9596.12 mm)	934.7 in. (23741.38 mm)	830.1 in. (21084.54 mm)	950.4 in. (24140.16 mm)
77	119.1 in. (3025.14 mm)	660.4 in. (16774.16 mm)	541.7 in. (13759.18 mm)	277.9 in. (7058.66 mm)	838.2 in. (21290.28 mm)	779.4 in. (19796.76 mm)	819.6 in. (20817.84 mm)

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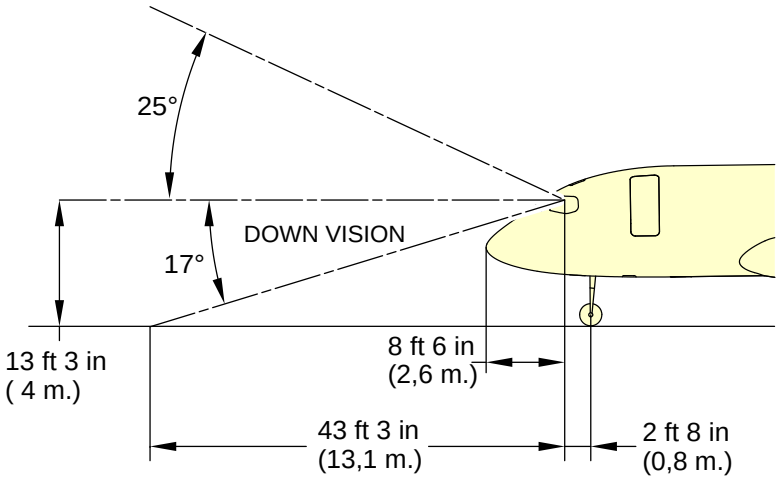
ICN-BD500-A-J092001-A-3AB48-00068-A-001-01

Figure 1 Turn radii

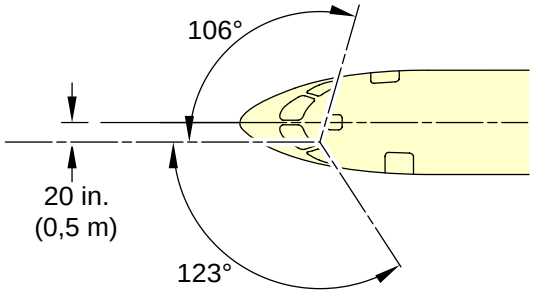
2 Visibility from cockpit in static position

This section contains data about the visibility from cockpit in static position.

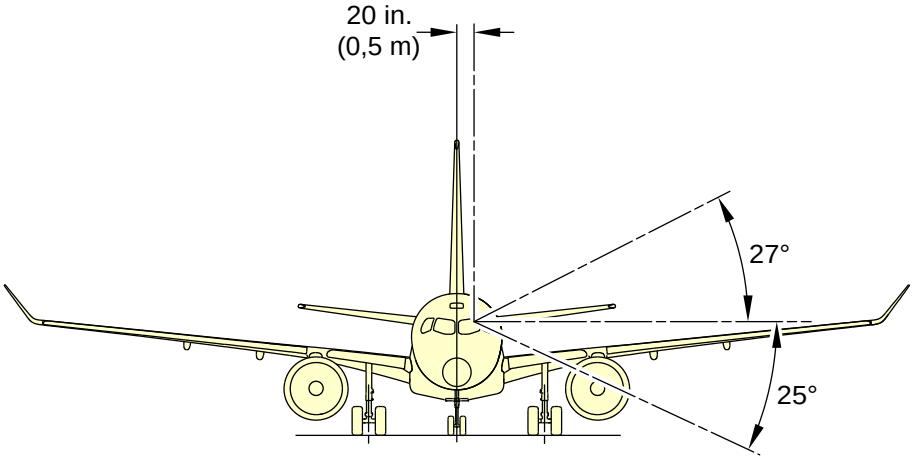
To see the diagram, refer to Fig. 2 .



VISUAL ANGLES IN VERTICAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLES IN HORIZONTAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLE IN A PLANE PERPEDNDICULAR TO LONGITUDINAL AXIS THROUGH PILOT'S EYE POSITION

NOTES

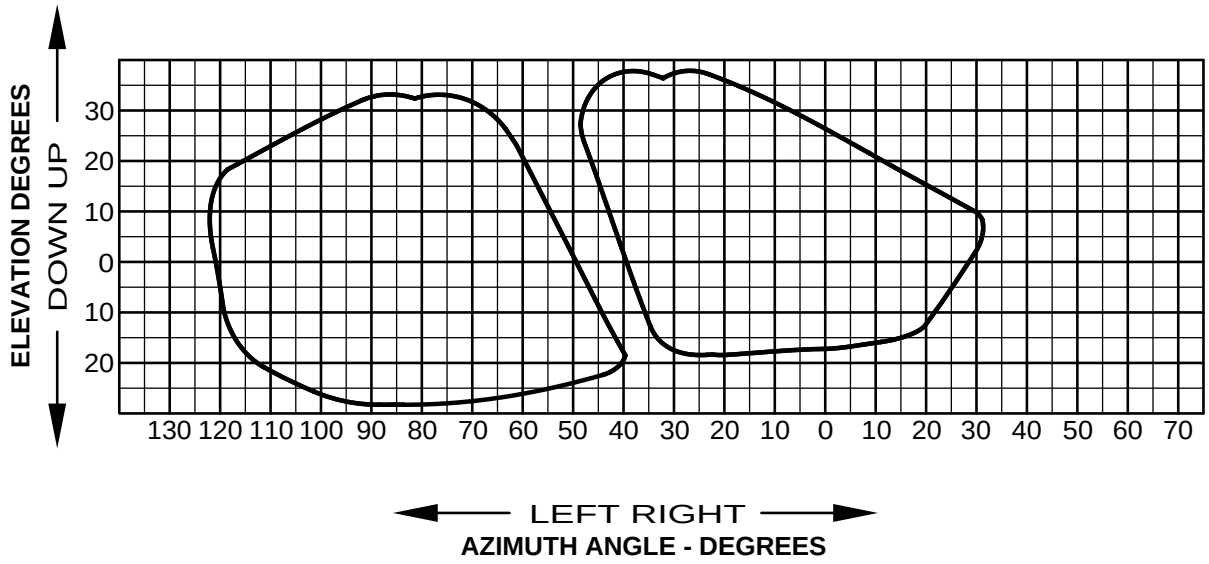
1. Not to be used for landing approach visibility.
2. Not scale.

ICN-BD500-A-J000000-A-3AB48-22579-A-001-01

Figure 2 Visibility from cockpit in static position

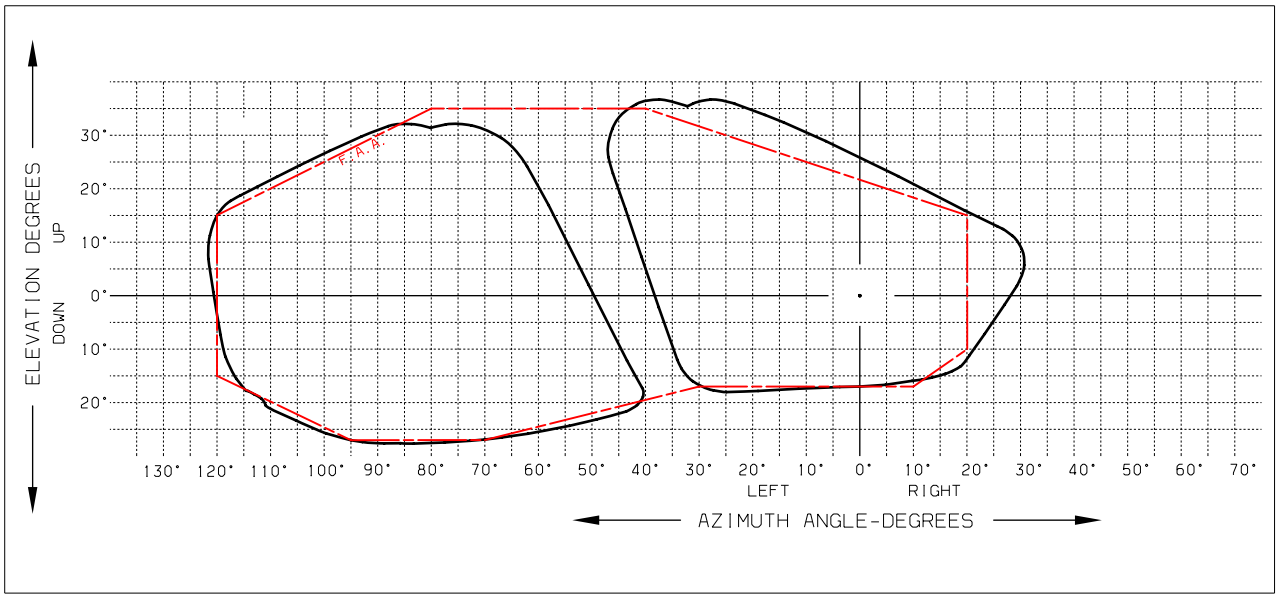
2.1 Clear areas of vision

To see the diagram, refer to Fig. 3 and Fig. 4 .



ICN-BD500-A-J092001-A-3AB48-00119-A-001-01

Figure 3 Clear areas of vision



ICN-BD500-A-J000000-A-3AB48-45615-A-001-01

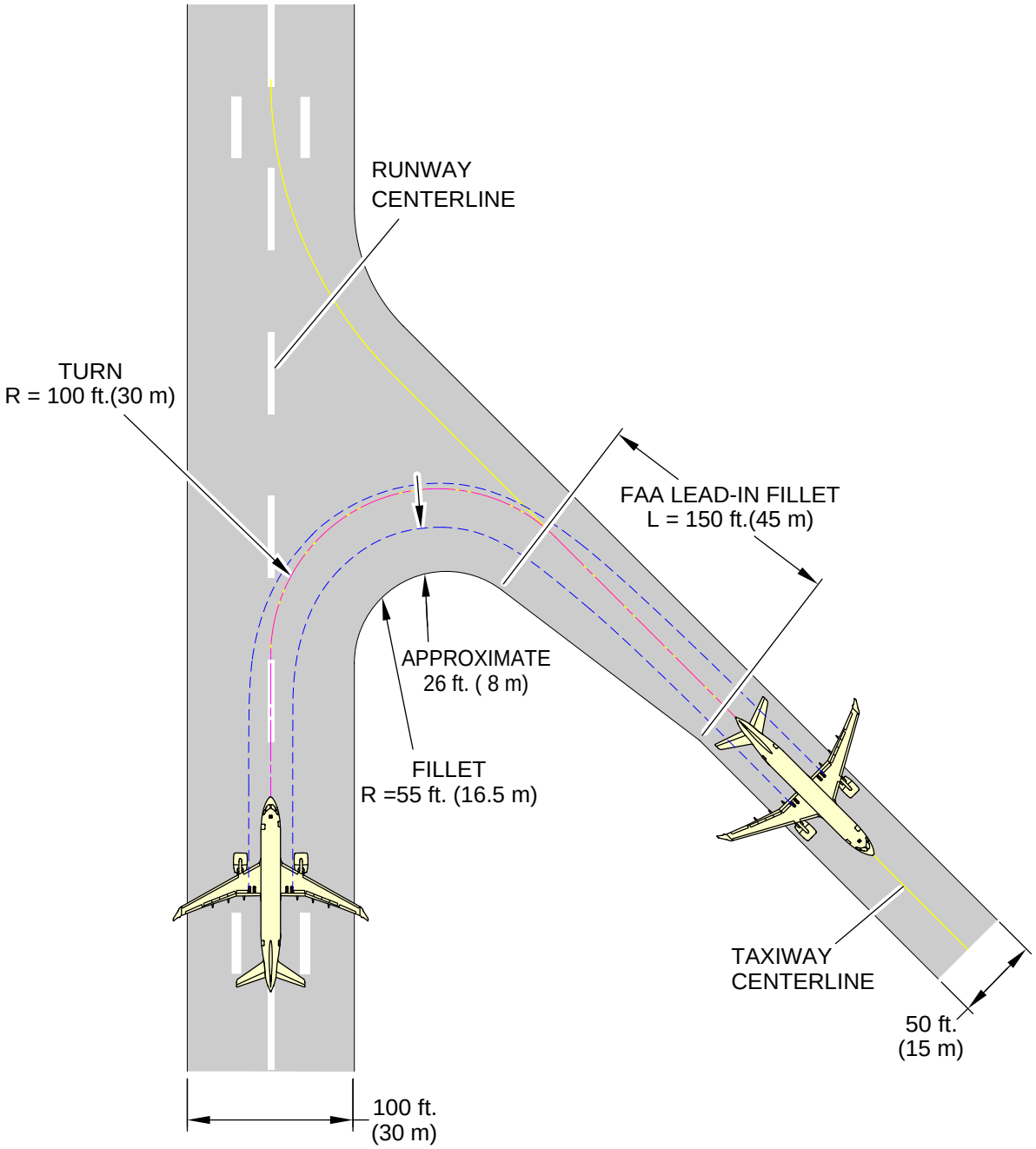
Figure 4 A220 Clear areas of vision

3 Runways and taxiways turn paths

This section contains data about the runways and taxiways turn paths.

3.1 More than 90° turn - Runway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 5 .



LEGEND

Nose gear.
Main gear.

NOTE

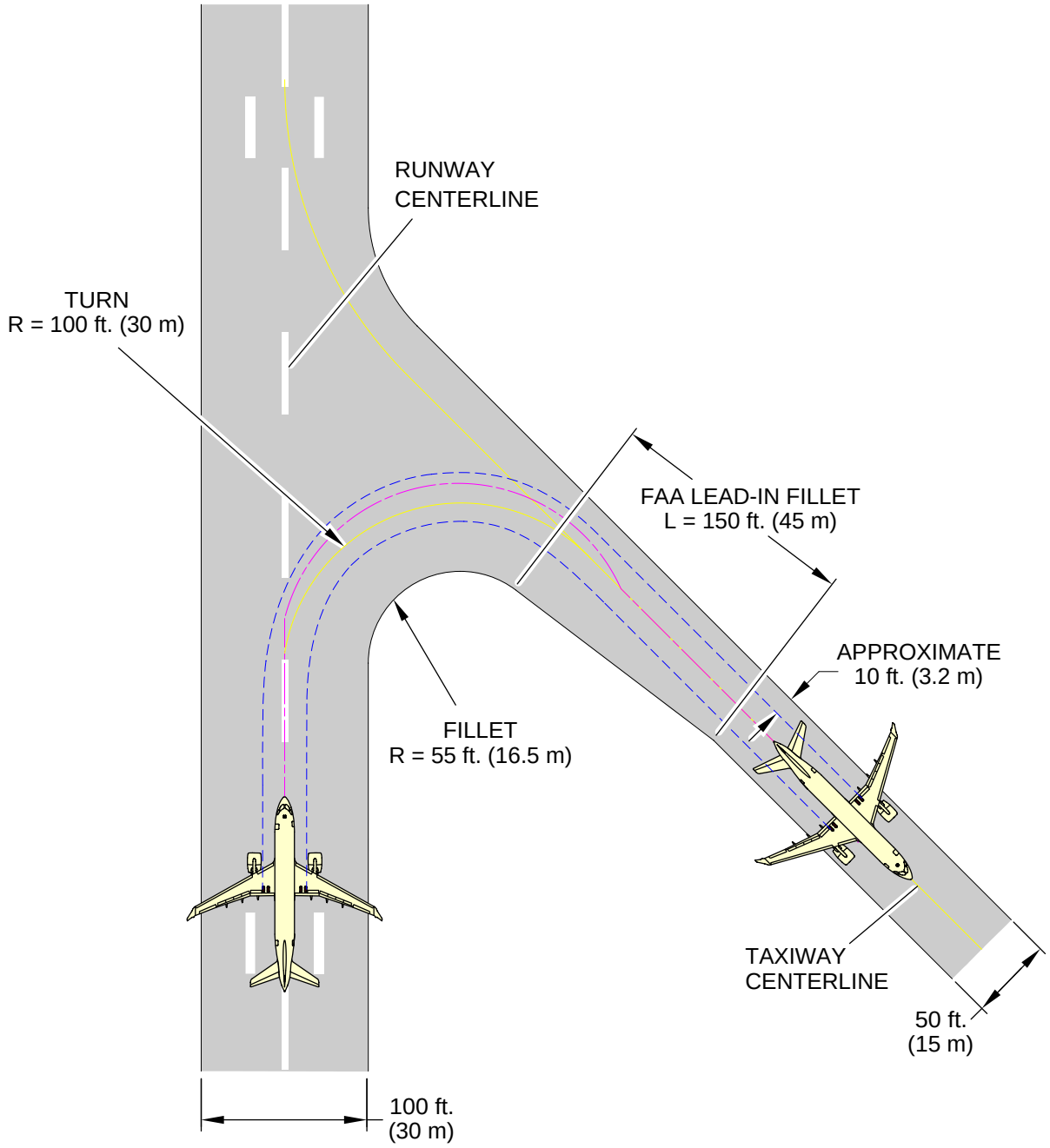
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22068-A-001-01

Figure 5 More than 90° turn - Runway to taxiway - Cockpit over centerline method

3.2 More than 90° turn - Runway to taxiway - Oversteering method

To see the diagram, refer to Fig. 6 .



LEGEND

Nose gear.
Main gear.

NOTE

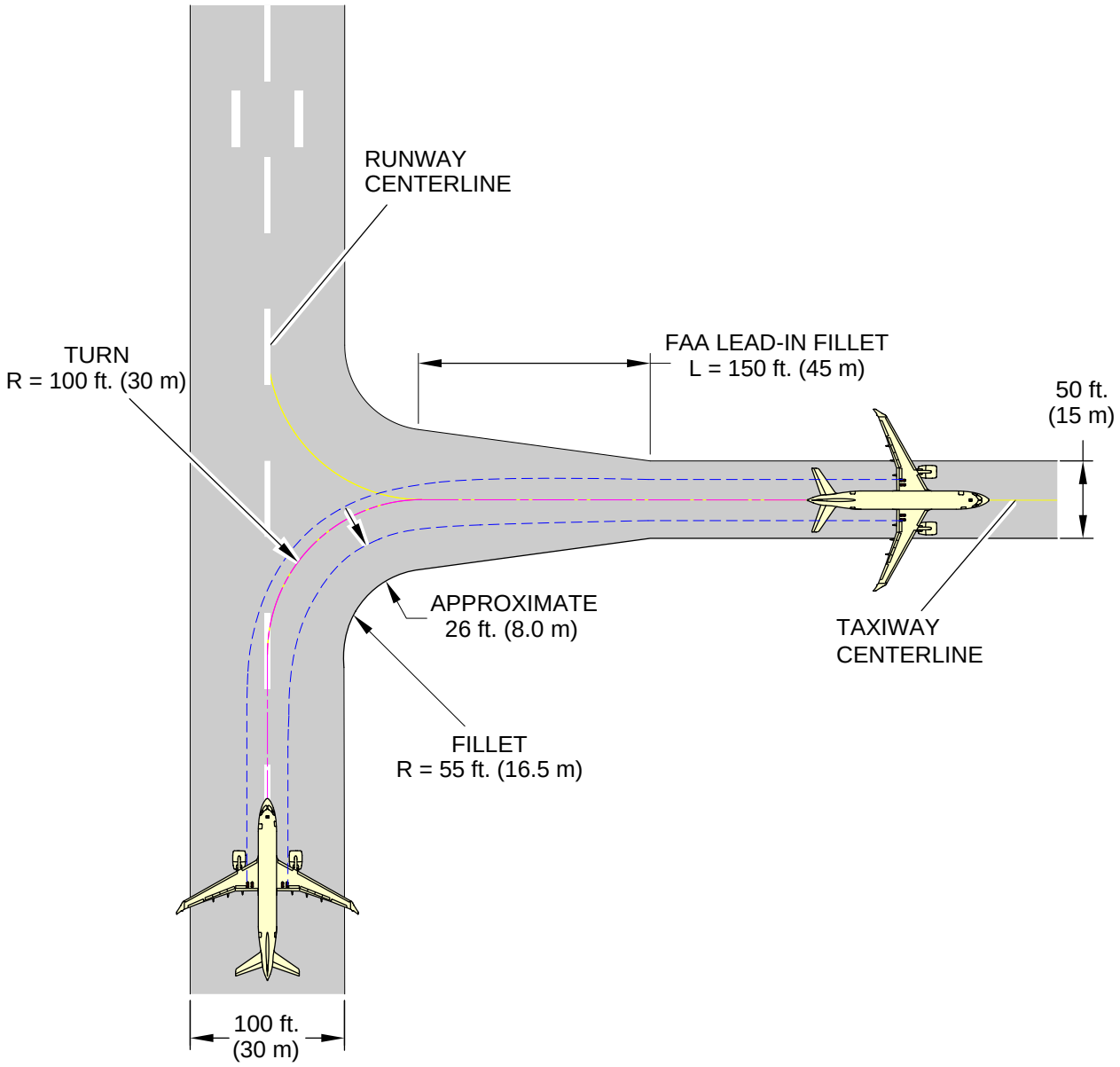
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22553-A-001-01

Figure 6 More than 90° turn - Runway to taxiway - Oversteering method

3.3 90° turn - Runway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 7 .



LEGEND

Nose gear.
Main gear.

NOTE

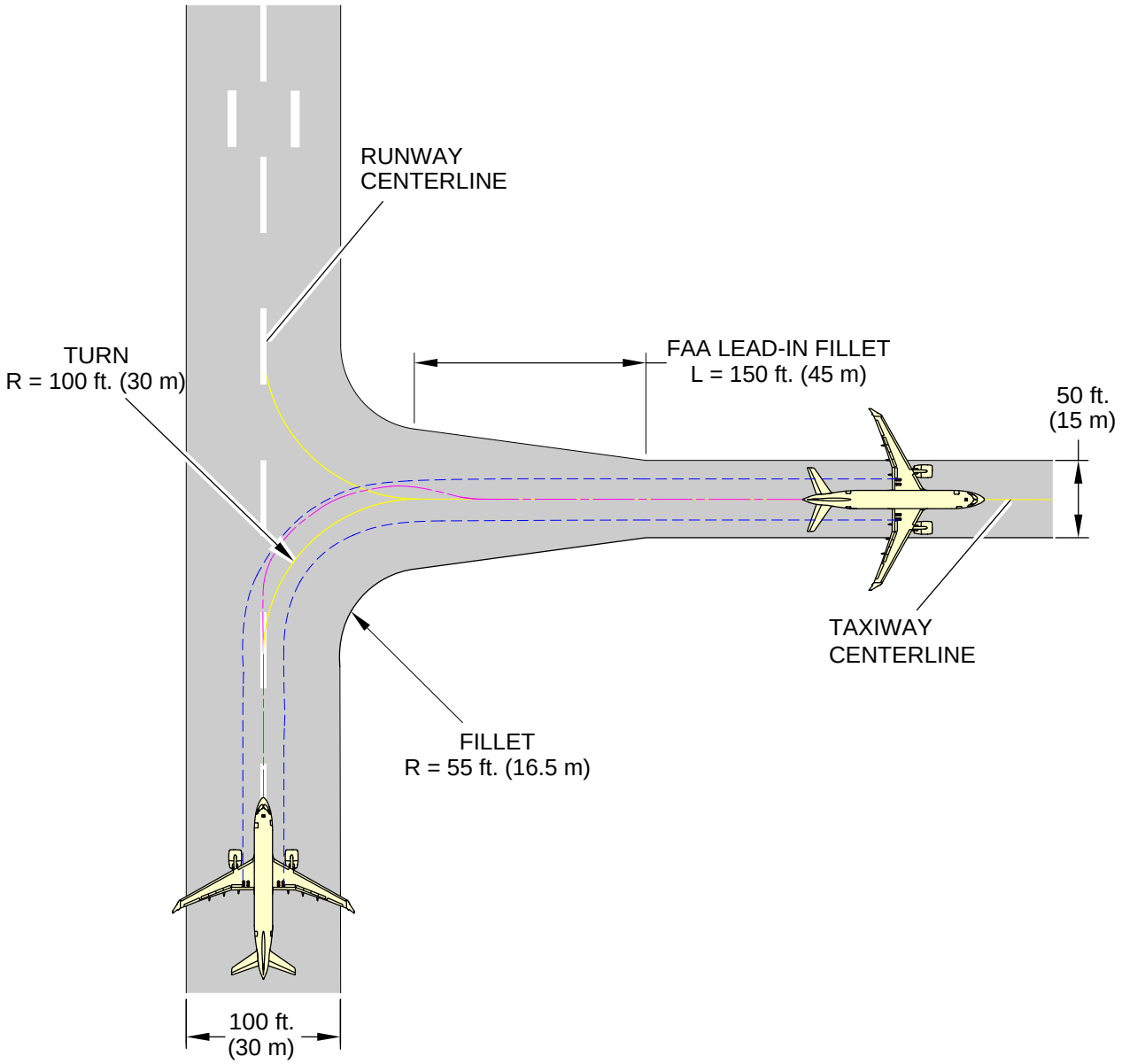
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22065-A-001-01

Figure 7 90° turn - Runway to taxiway - Cockpit over centerline method

3.4 90° turn - Runway to taxiway - Oversteering method

To see the diagram, refer to Fig. 8 .



LEGEND

Nose gear.
Main gear.

NOTE

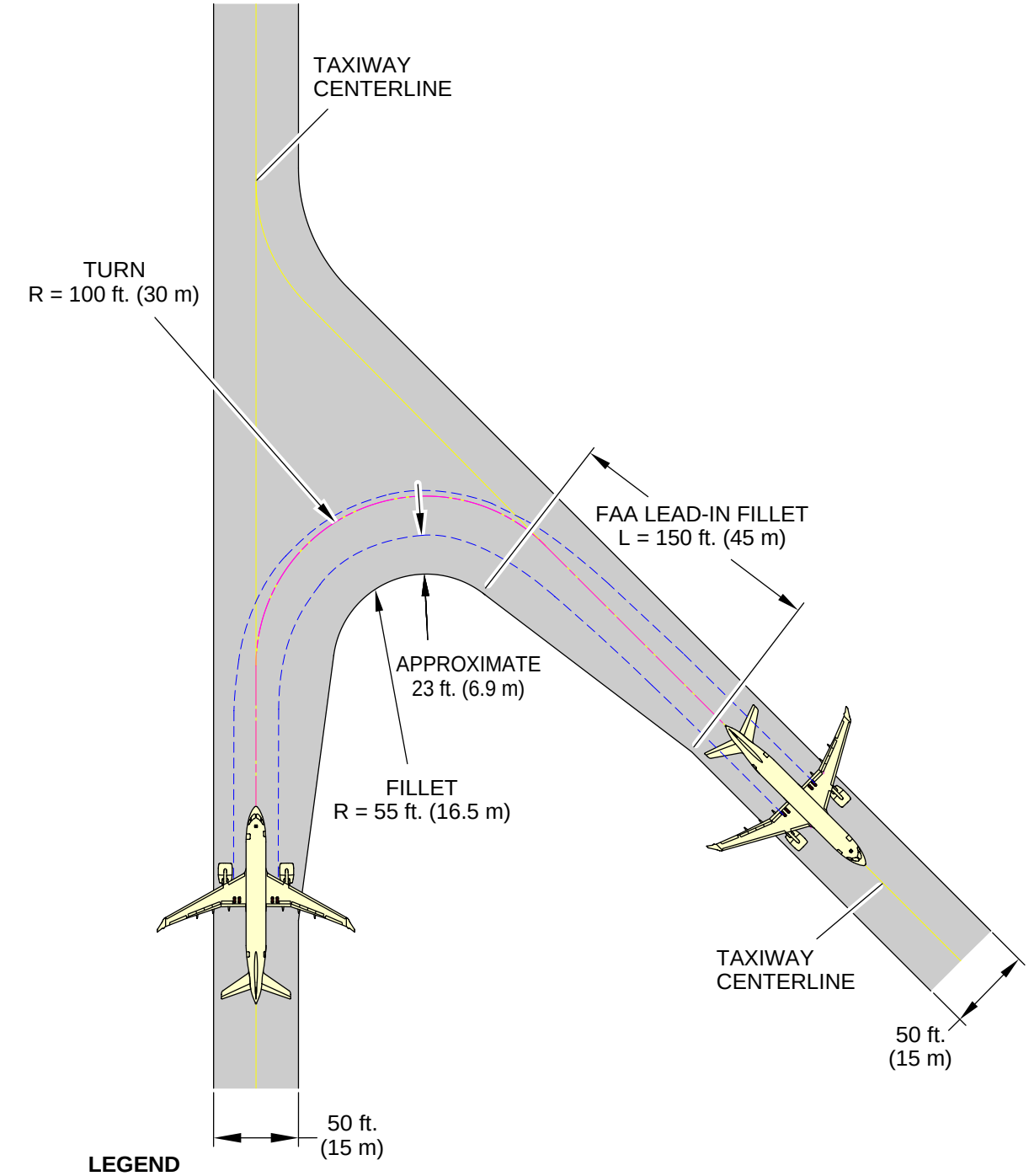
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22555-A-001-01

Figure 8 90° turn - Runway to taxiway - Oversteering method

3.5 More than 90° turn - Taxiway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 9 .



LEGEND

Nose gear.
Main gear.

NOTE

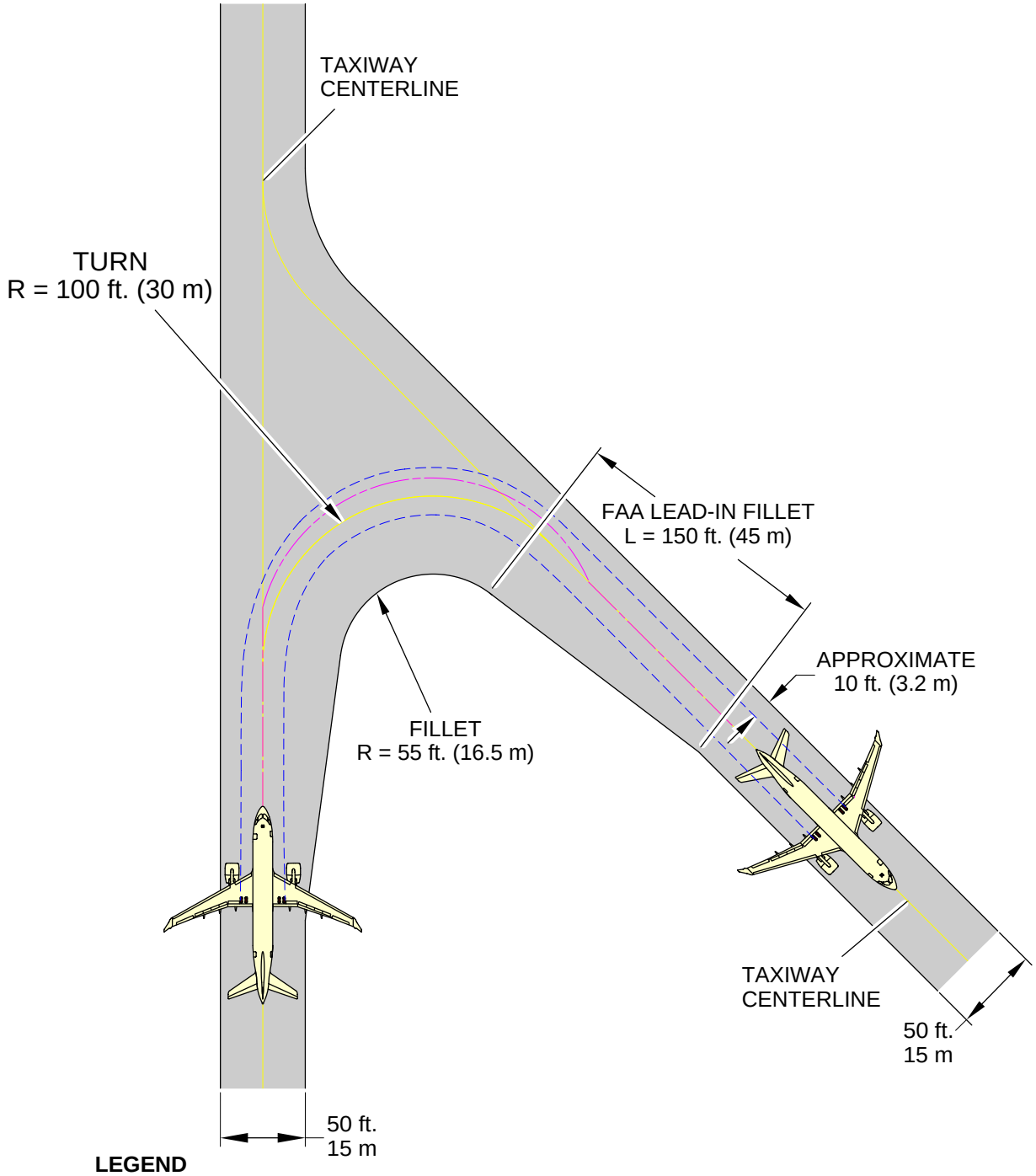
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22069-A-001-01

Figure 9 More than 90° turn - Taxiway to taxiway - Cockpit over centerline method

3.6 More than 90° turn - Taxiway to taxiway - Oversteering method

To see the diagram, refer to Fig. 10 .



LEGEND

Nose gear.
Main gear.

NOTE

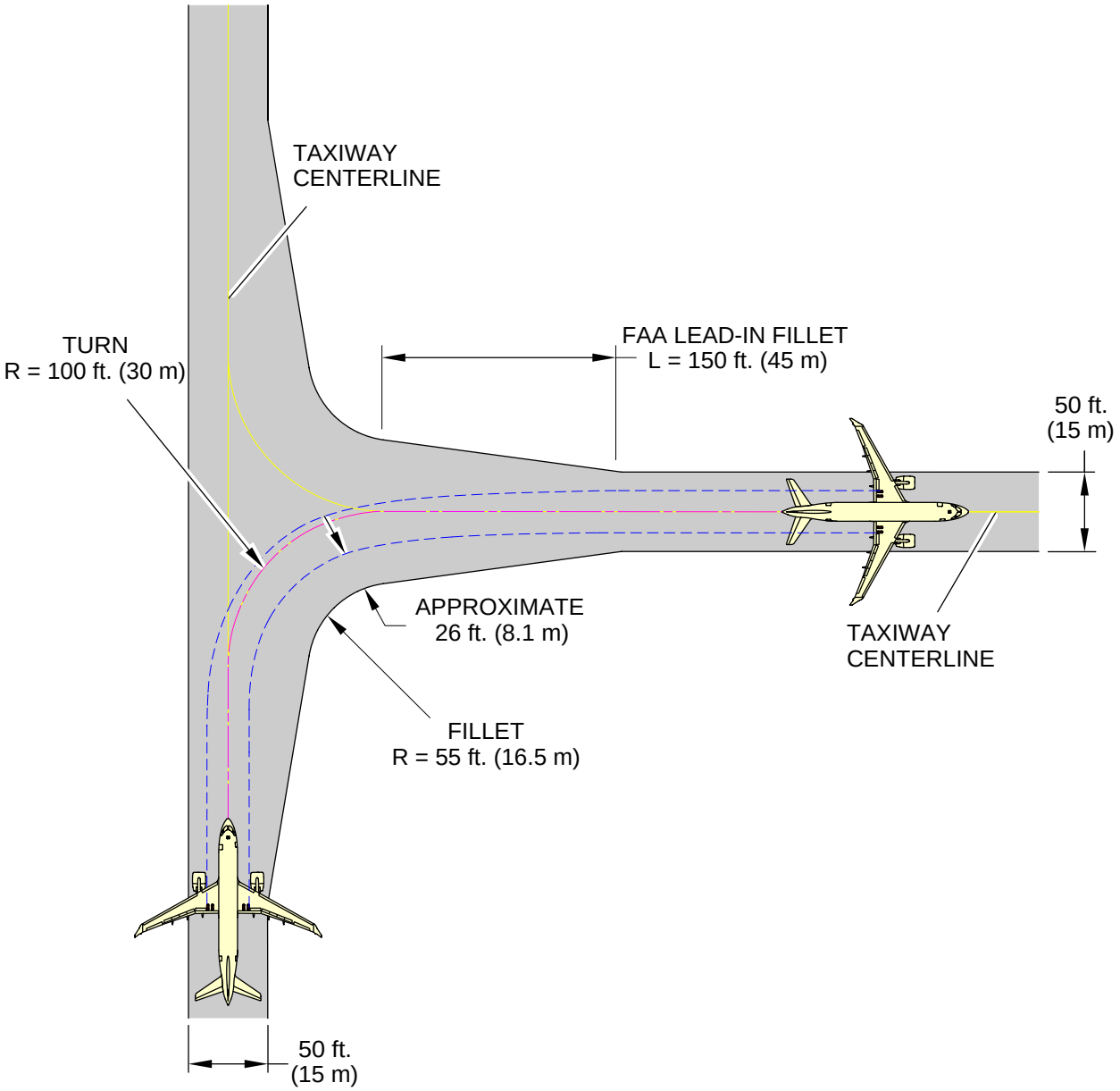
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22552-A-001-01

Figure 10 More than 90° turn - Taxiway to taxiway - Oversteering method

3.7 90° turn - Taxiway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 11 .



LEGEND

Nose gear.
Main gear.

NOTE

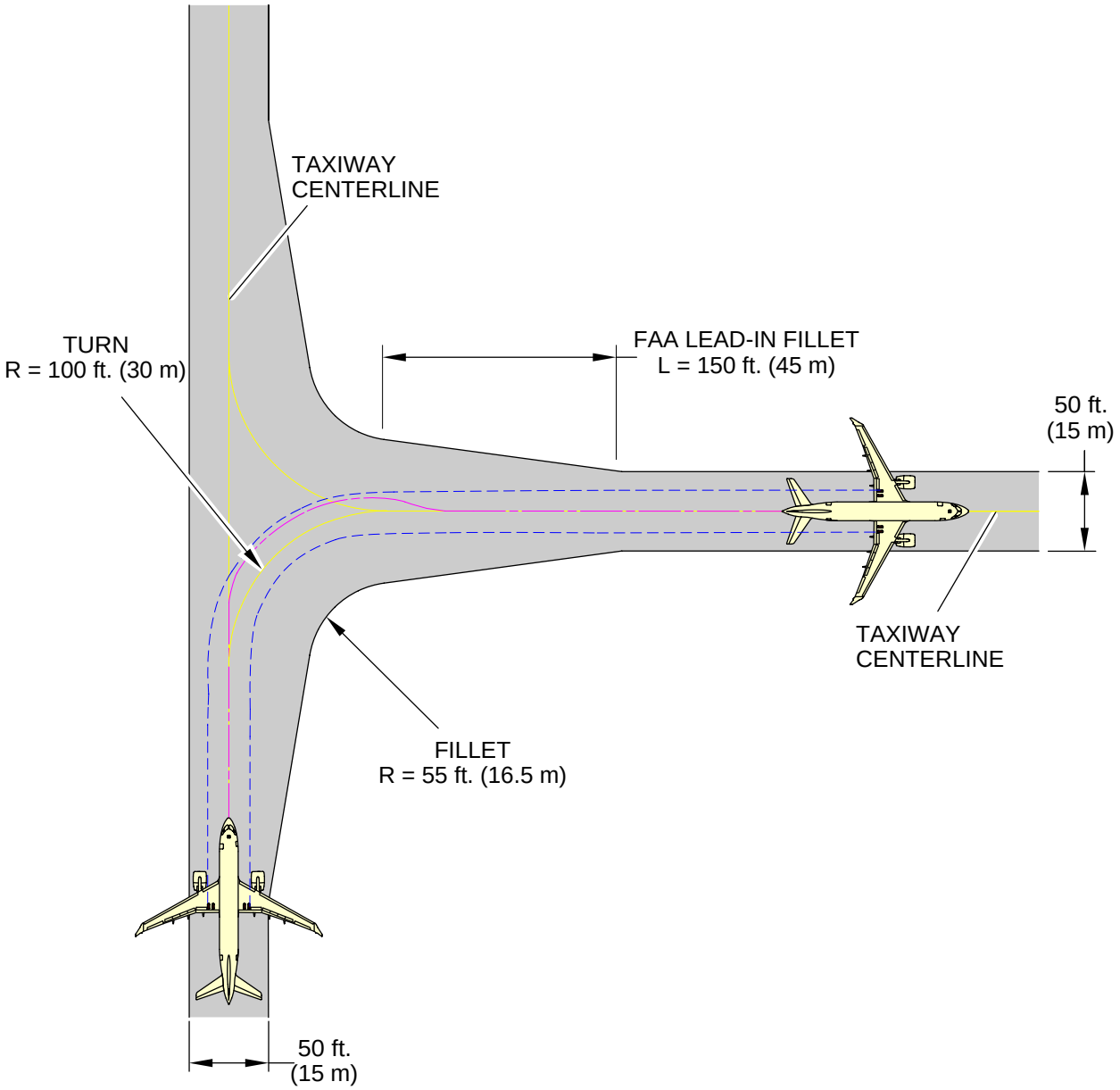
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22066-A-001-01

Figure 11 90° turn - Taxiway to taxiway - Cockpit over centerline method

3.8 90° turn - Taxiway to taxiway - Oversteering method

To see the diagram, refer to Fig. 12



LEGEND

Nose gear.
Main gear.

NOTE

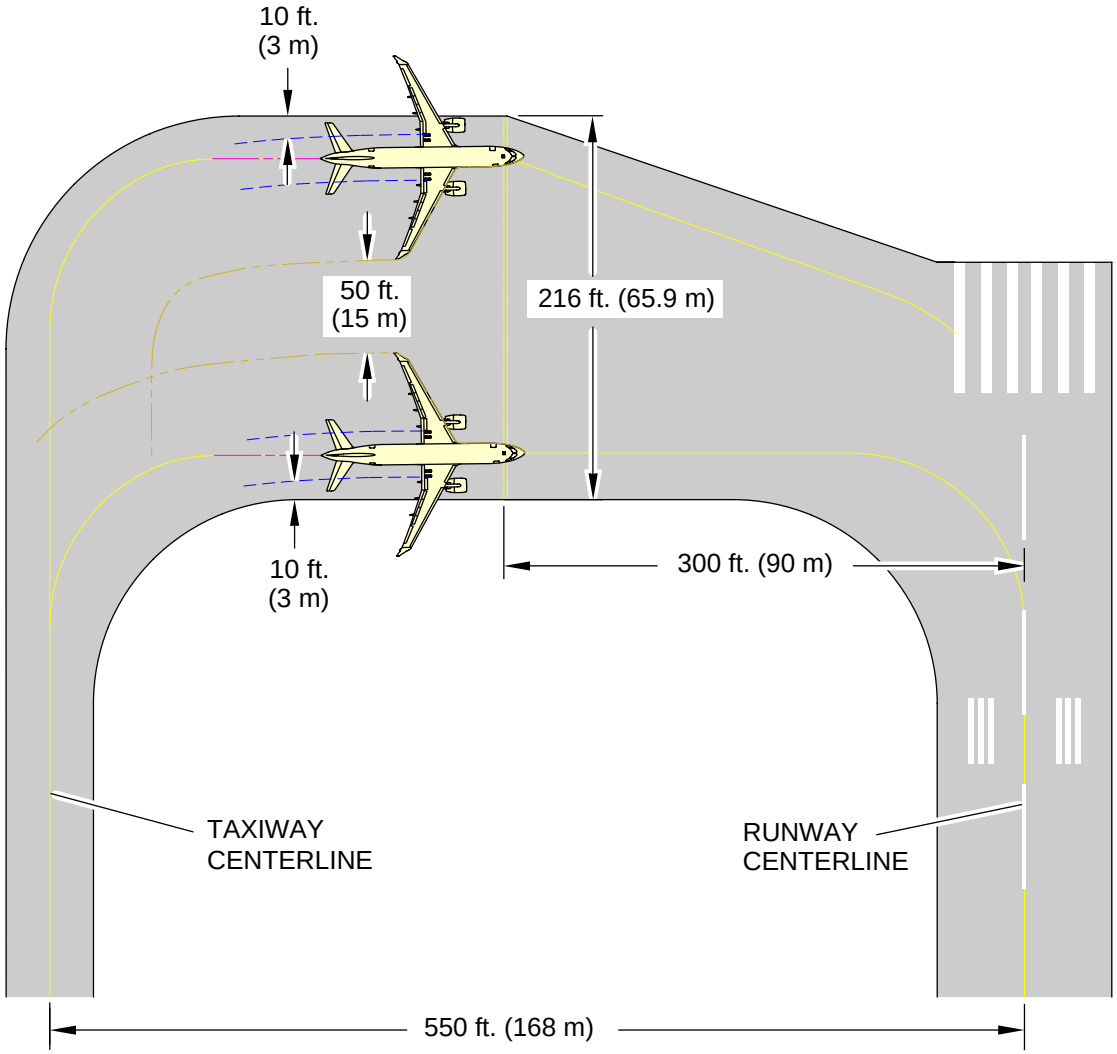
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22554-A-001-01

Figure 12 90° turn - Taxiway to taxiway - Oversteering method

3.9 Runway holding bay (Apron)

To see the diagram, refer to Fig. 13 .



LEGEND

Nose gear.
Main gear.

NOTE

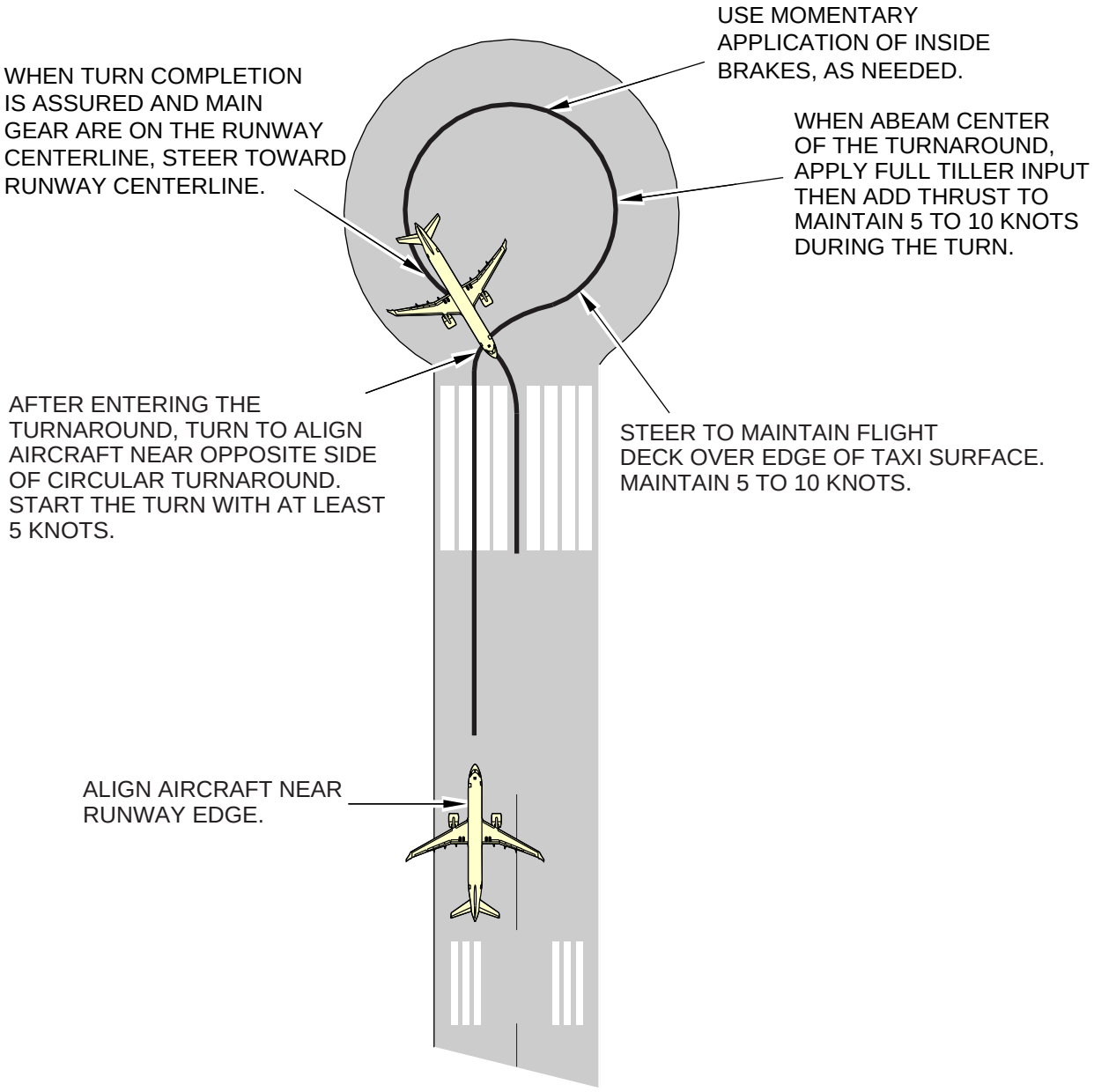
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-22067-A-001-01

Figure 13 Runway holding bay (Apron)

3.10 Hammerhead Turnaround

To see the diagrams, refer to Fig. 14 and Fig. 15 .

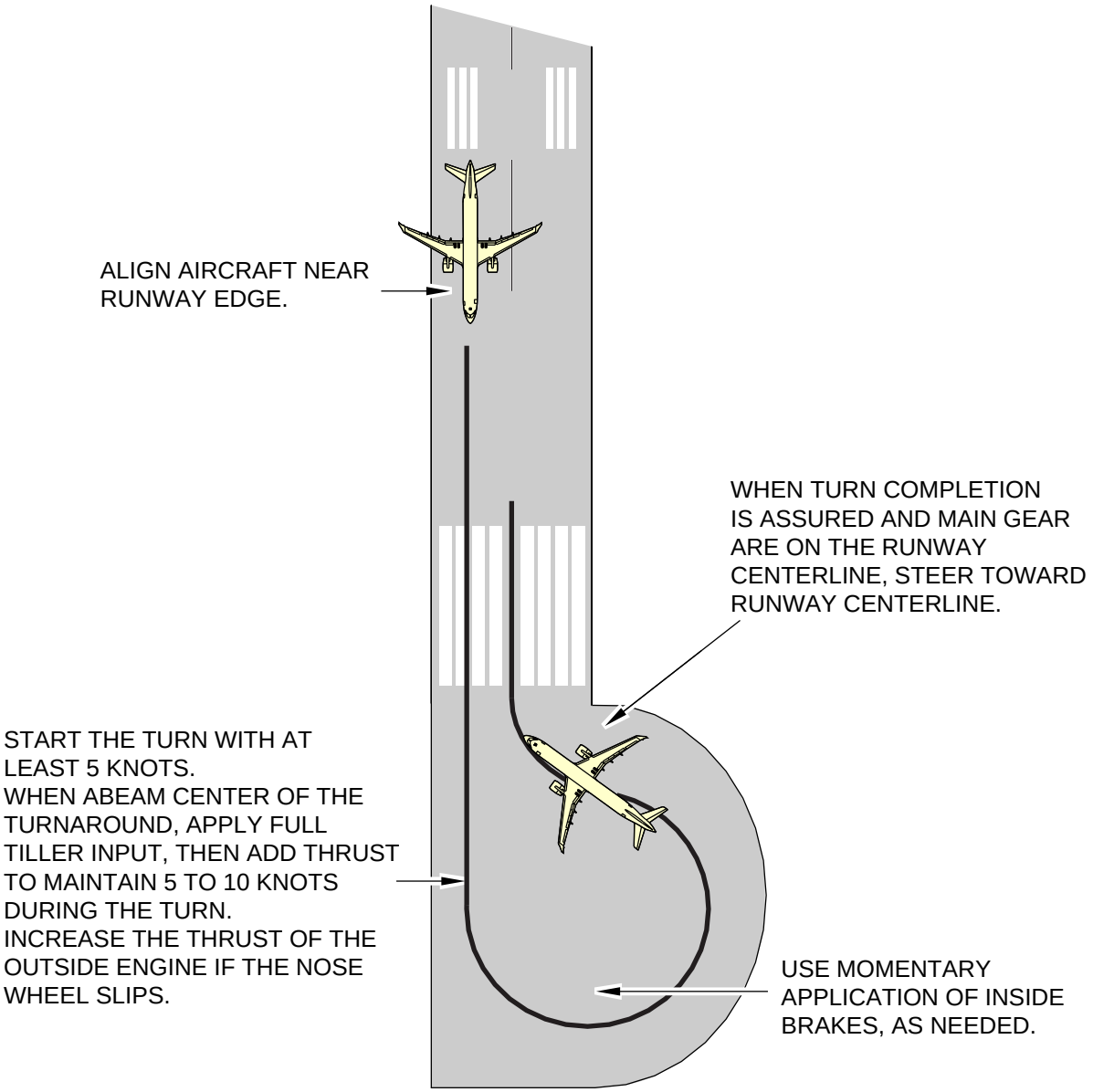


NOTE

Follow turnaround steering guidance cues if available.

ICN-BD500-A-J000000-A-3AB48-45728-A-001-01

Figure 14 Techniques when using a Hammerhead Turnaround



NOTE

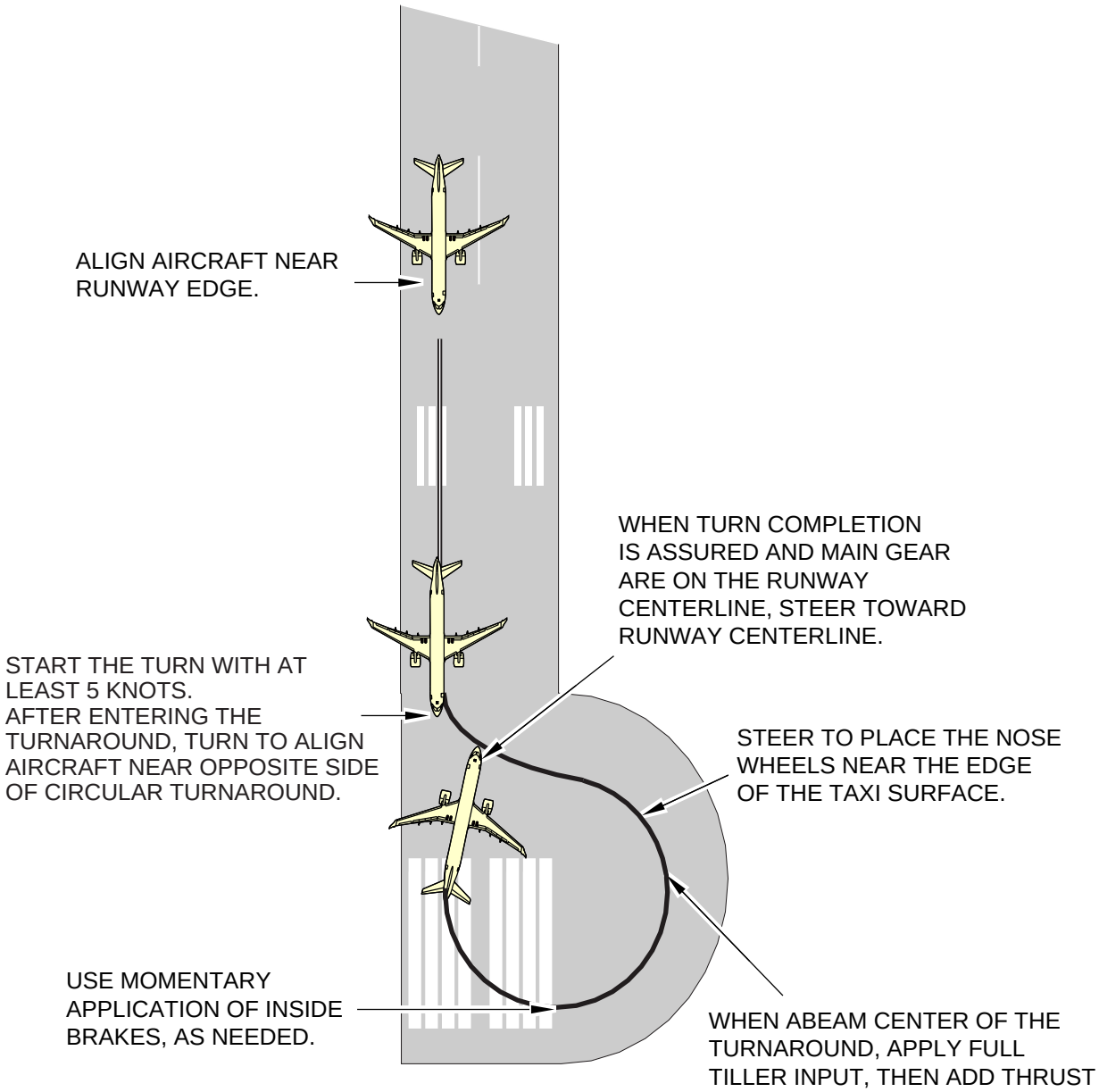
Follow turnaround steering guidance cues if available.

ICN-BD500-A-J000000-A-3AB48-45729-A-001-01

Figure 15 Techniques when using a Hammerhead Turnaround

3.11 180 Degree (Pivot) Turns in Less than 147.6 feet (45 m)

To see the diagram, refer to Fig. 16 .



NOTE

Follow turnaround steering guidance cues if available.

ICN-BD500-A-J000000-A-3AB48-45730-A-001-01

Figure 16 180 Degree (Pivot) Turns in Less than 147.6 feet / 45 m

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Ground maneuvering - Technical data

Applicability: 55001-59999

Table of contents

Page

Ground maneuvering - Technical data 1
References 1
Description 1
1 Turning radii 1
1.1 Introduction 1
1.2 Landing gear turning radii, including minimum turning radii 2

List of tables

Page

1 References 1
2 A220-300 turning radii for various nose wheel angles 3

List of figures

Page

1 Turn radii 5
2 Visibility from cockpit in static position 7
3 Clear areas of vision 9
4 A220 Clear areas of vision 10
5 More than 90° turn - Runway to taxiway - Cockpit over centerline method 12
6 More than 90° turn - Runway to taxiway - Oversteering method 14
7 90° turn - Runway to taxiway - Cockpit over centerline method 16
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13 Runway holding bay (Apron) 28
14 Techniques when using a Hammerhead Turnaround 30
15 Techniques when using a Hammerhead Turnaround 31
16 180 Degree (Pivot) Turns in Less than 147.6 feet / 45 m 33

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Turning radii

1.1 Introduction

This data module contains data about the aircraft turning capability and maneuvering characteristics on the ground. The data is based on aircraft performance in good conditions of operation.

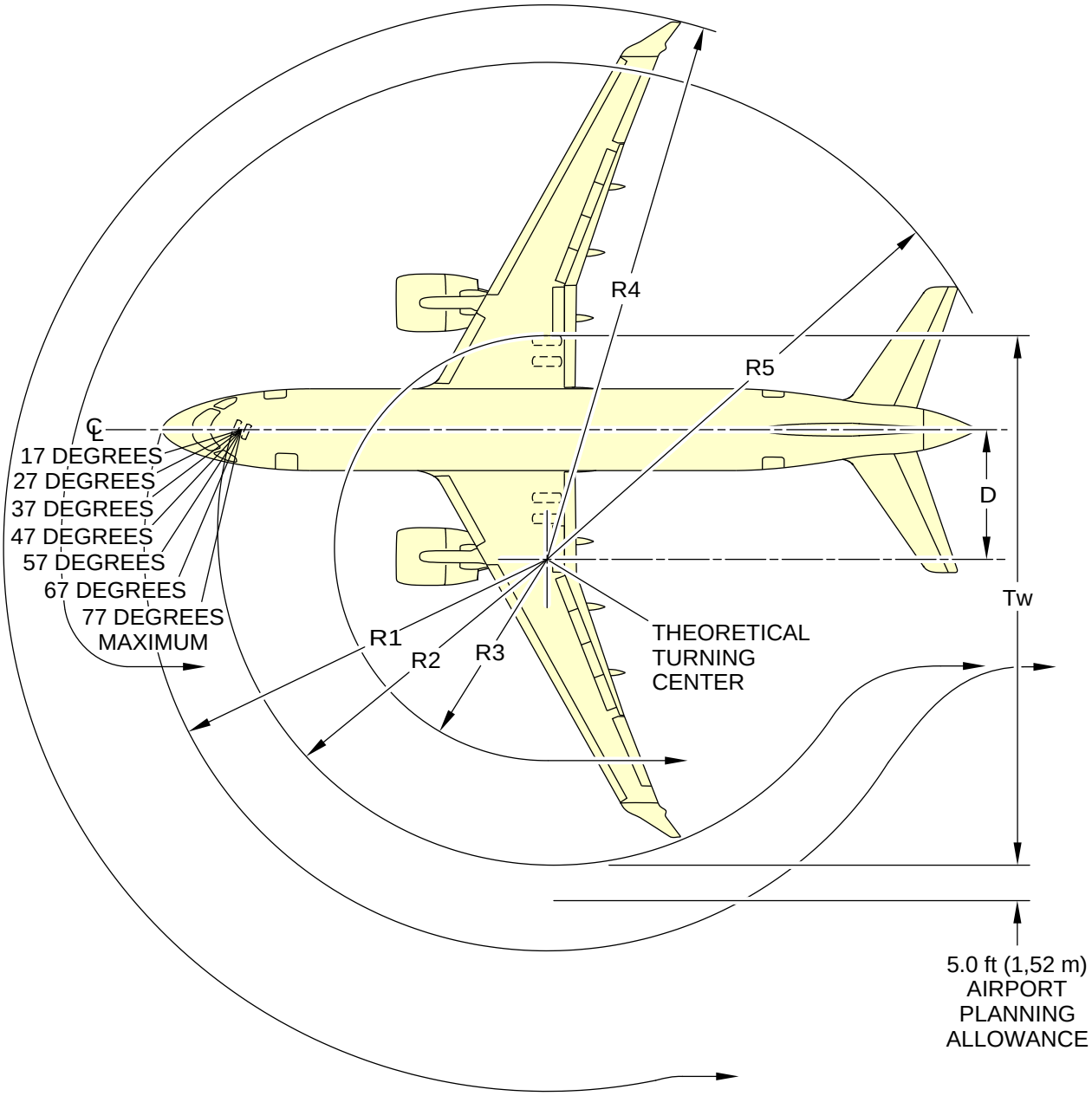
Thus, the values must be considered theoretical and used only as an aid. Refer to Table 2 for the values to use with Fig. 1 for the turn radii with 3 degree slip angle.

1.2 Landing gear turning radii, including minimum turning radii

Table 2 A220-300 turning radii for various nose wheel angles

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+R3)
17	1961.5 in. (49822.10 mm)	2094.2 in. (53192.68 mm	2063.6 in. (52415.44 mm	2120.4 in. (53858.16 mm)	2659 in. (67538.60 mm)	2307.1 in. (58600.34 mm	4148 in. (105359.20 mm)
27	1177 in. (29895.80 mm)	1386.9 in. (35227.26 mm	1333.4 in. (33868.36 mm)	1335.8 in. (33929.32 mm)	1878.6 in. (47716.44 mm)	1576.4 in. (40040.56 mm	2669.2 in (67797.68 mm)
37	795.8 in. (20213.32 mm)	1082.4 in. (27492.96 mm	1008.9 in. (25626.06 mm)	954.7 in. (24249.38 mm)	1500.9 in. (38122.86 mm)	1245.2 in. (31628.08 mm	1963.6 in. (49875.44 mm)
47	559.2 in. (14203.68 mm)	922.5 in. (23431.5 mm)	832.4 in. (21142.96 mm)	718.1 in. (18239.74 mm)	1267.5 in. (32194.50 mm)	1056.8 in. (26842.72 mm	1550.5 in. (39382.70 mm)
57	389.4 in. (9890.76 mm)	830.6 in. (21097.24 mm	727.5 in. (18478.50 mm)	548.3 in. (13926.82 mm)	1100.9 in. (27962.86 mm)	935.1 in. (23751.54 mm	1275.8 in. (32405.32 mm)
67	254.6 in. (6466.84 mm)	776.5 in. (19723.10 mm)	663.9 in. (16863.06 mm)	413.4 in. (10500.36 mm)	969.4 in. (24622.76 mm)	850.3 in. (21597.60 mm)	1077.4 in. (27365.96 mm)
77	138.5 in. (3517.90 mm)	746.6 in. (18963.64 mm	627.9 in. (15948.66 mm	297.3 in. (7551.42 mm)	856.9 in. (21765.26 mm)	788.5 in. (20027.90 mm)	925.4 in. (23505.16 mm)

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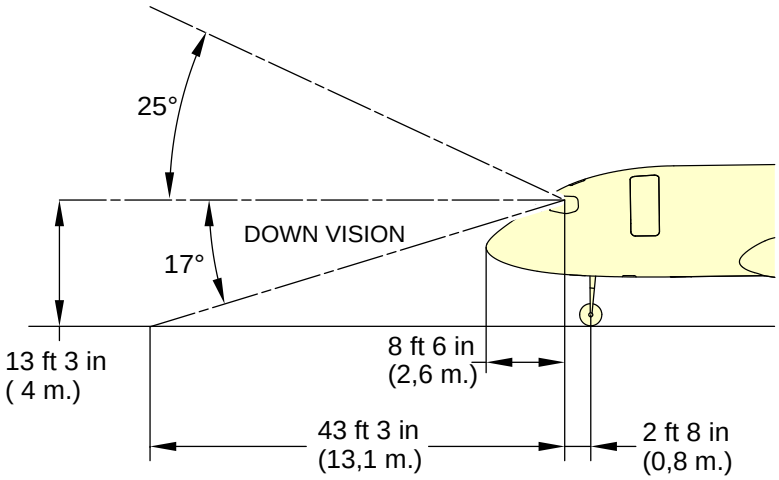
ICN-BD500-A-J092001-A-3AB48-00068-A-001-01

Figure 1 Turn radii

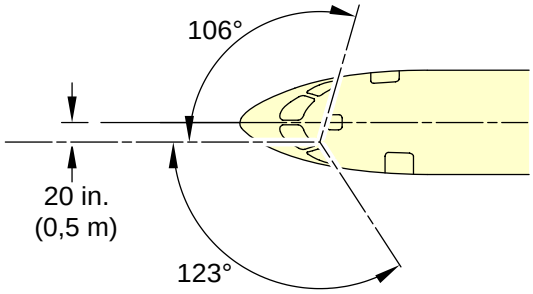
2 Visibility from cockpit in static position

This section contains data about the visibility from cockpit in static position for.

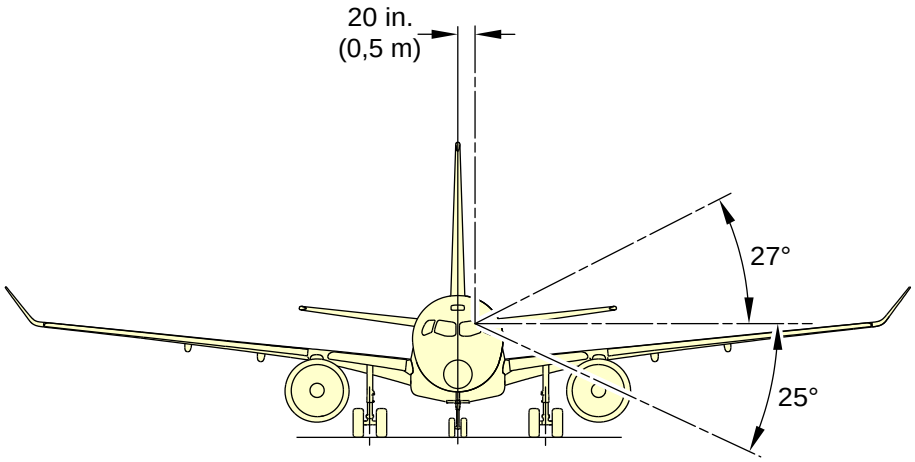
To see the diagram, refer to Fig. 3 .



VISUAL ANGLES IN VERTICAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLES IN HORIZONTAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLE IN A PLANE PERPEDNDICULAR TO LONGITUDINAL AXIS THROUGH PILOT'S EYE POSITION

NOTES

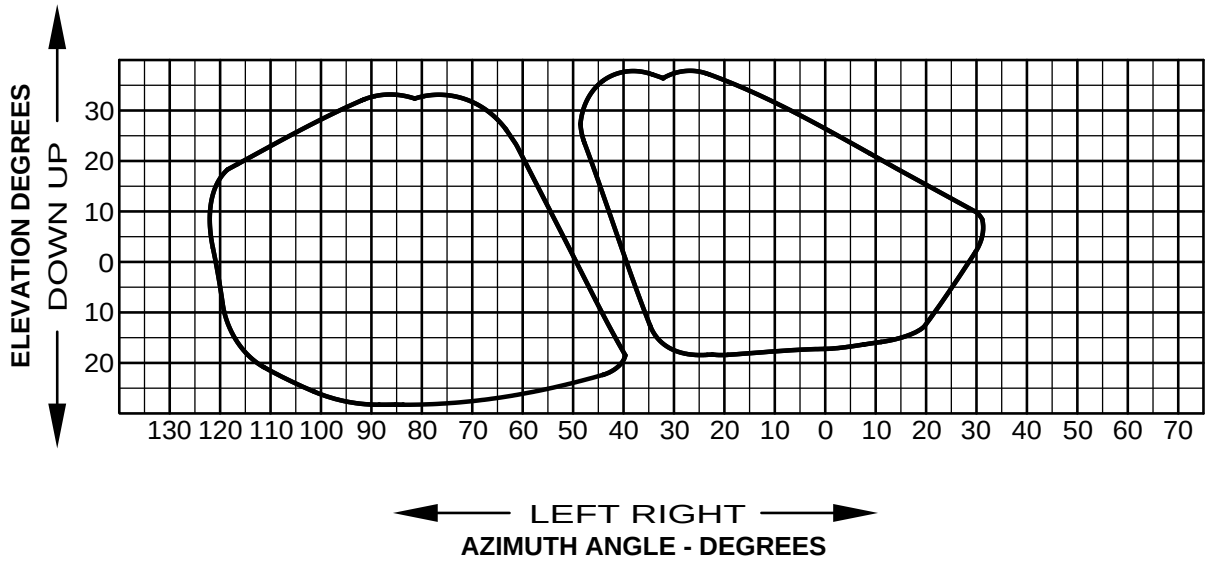
1. Not to be used for landing approach visibility.
2. Not scale.

ICN-BD500-A-J000000-A-3AB48-22579-A-001-01

Figure 2 Visibility from cockpit in static position

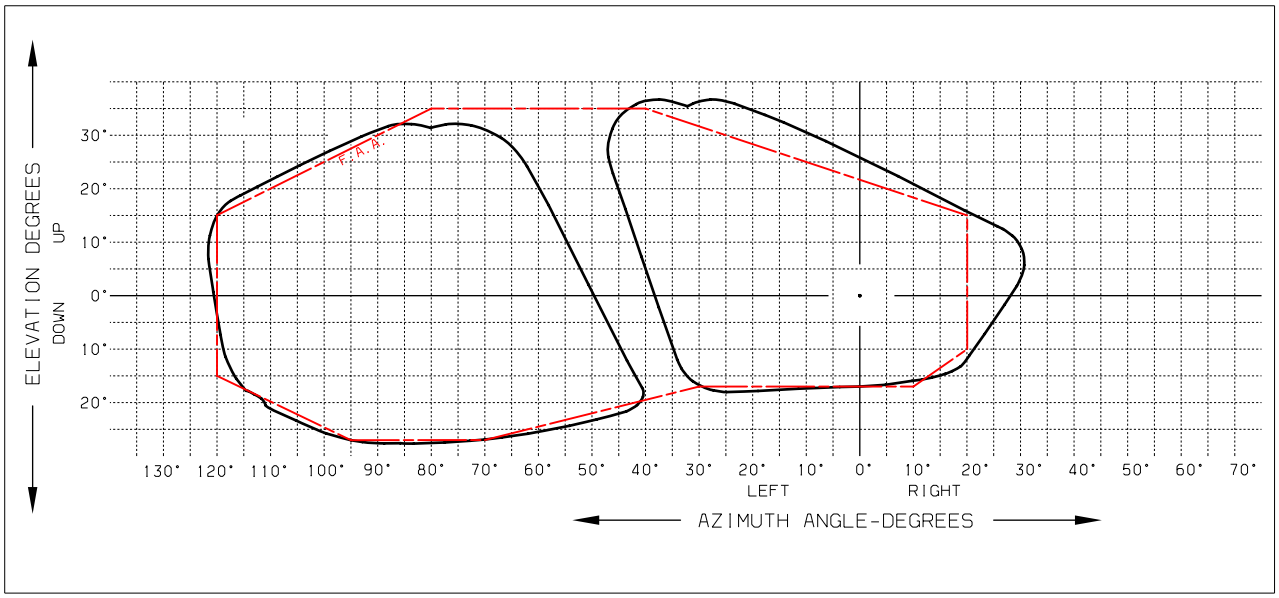
2.1 Clear areas of vision

To see the diagram, refer to Fig. 2 and Fig. 4 .



ICN-BD500-A-J092001-A-3AB48-00119-A-001-01

Figure 3 Clear areas of vision



ICN-BD500-A-J000000-A-3AB48-45615-A-001-01

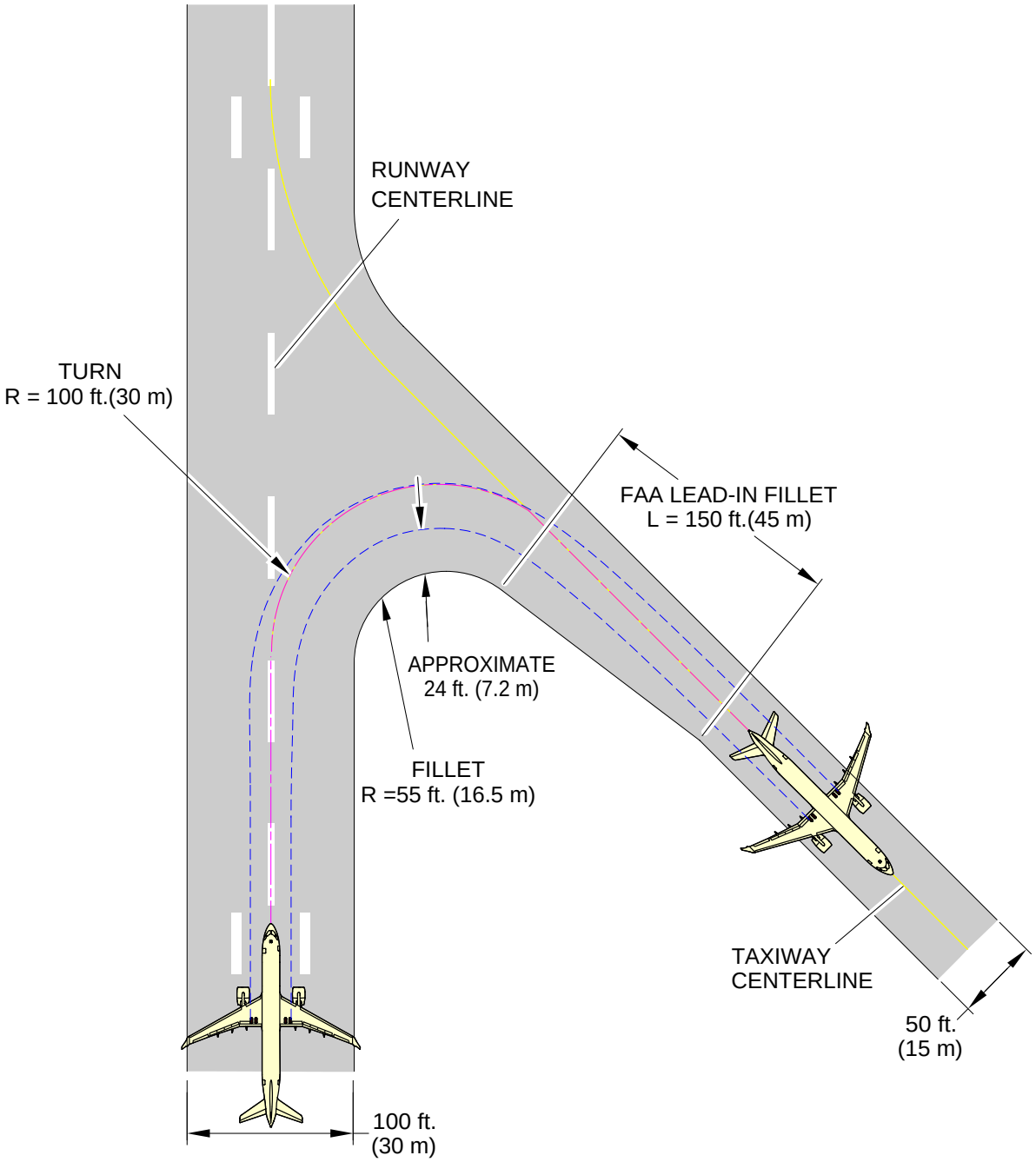
Figure 4 A220 Clear areas of vision

3 Runways and taxiways turn paths

This section contains data about the runways and taxiways turn paths.

3.1 More than 90° turn - Runway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 5 .



LEGEND

Nose gear.
Main gear.

NOTE

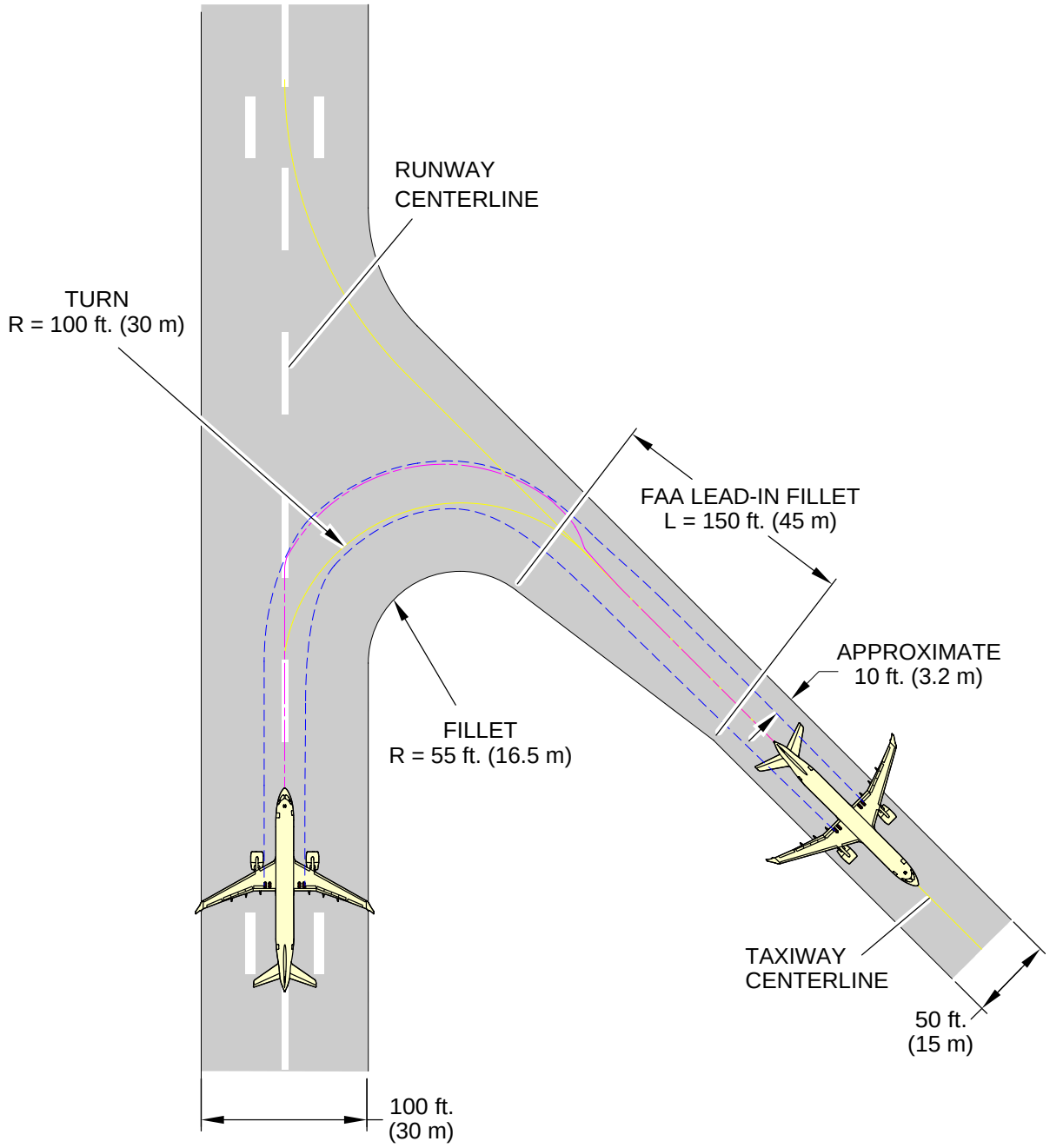
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25563-A-001-01

Figure 5 More than 90° turn - Runway to taxiway - Cockpit over centerline method

3.2 More than 90° turn - Runway to taxiway - Oversteering method

To see the diagram, refer to Fig. 6 .



LEGEND

Nose gear.
Main gear.

NOTE

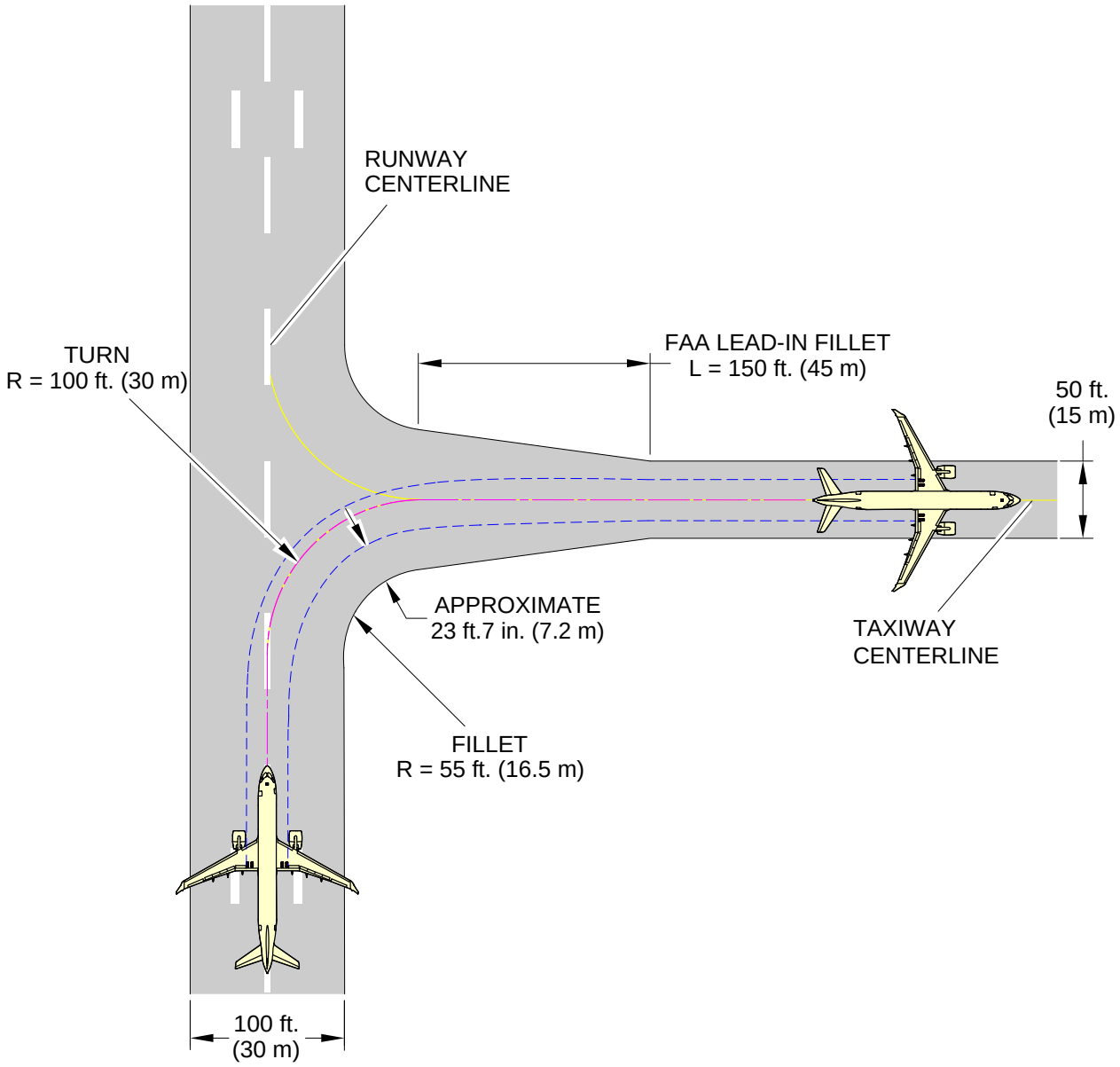
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25564-A-001-01

Figure 6 More than 90° turn - Runway to taxiway - Oversteering method

3.3 90° turn - Runway to taxiway - Cockpit over centerline method

To see diagram, refer to Fig. 7 .



LEGEND

Nose gear.
Main gear.

NOTE

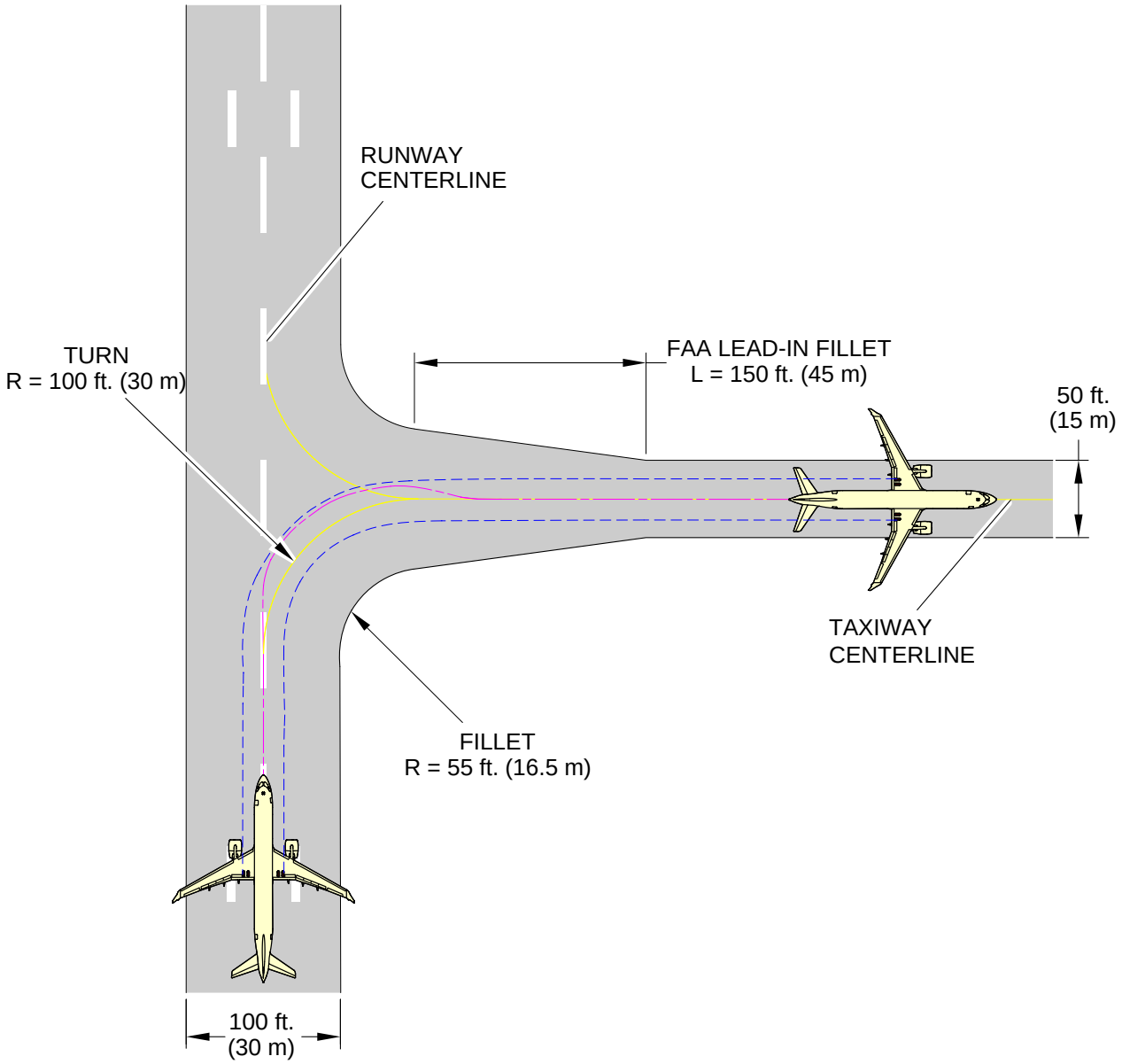
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25565-A-001-01

Figure 7 90° turn - Runway to taxiway - Cockpit over centerline method

3.4 90° turn - Runway to taxiway - Oversteering method

To see the diagram, refer to Fig. 8 .



LEGEND

Nose gear.
Main gear.

NOTE

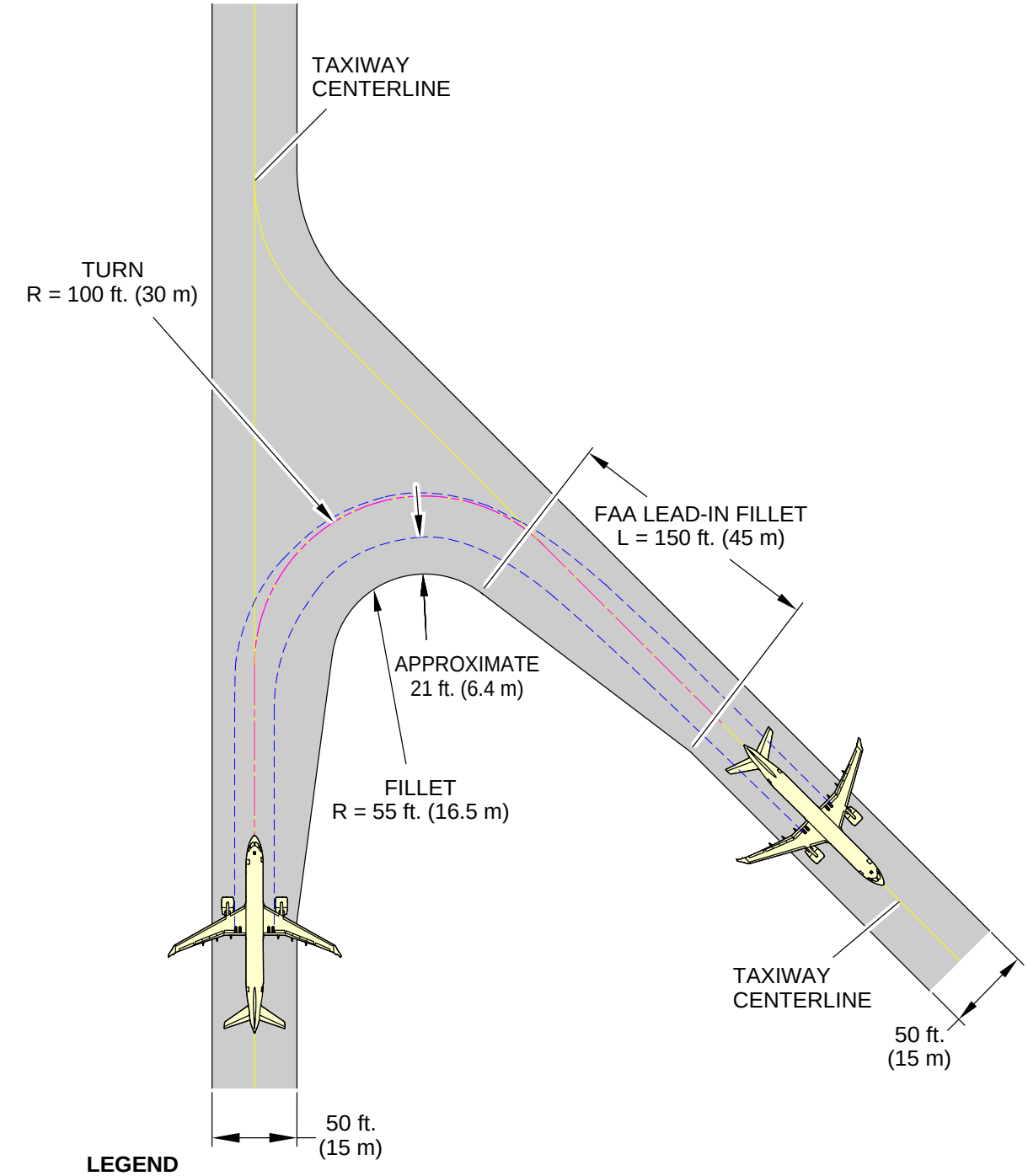
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25566-A-001-01

Figure 8 90° turn - Runway to taxiway - Oversteering method

3.5 More than 90° turn - Taxiway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 9 .



LEGEND

Nose gear.
Main gear.

NOTE

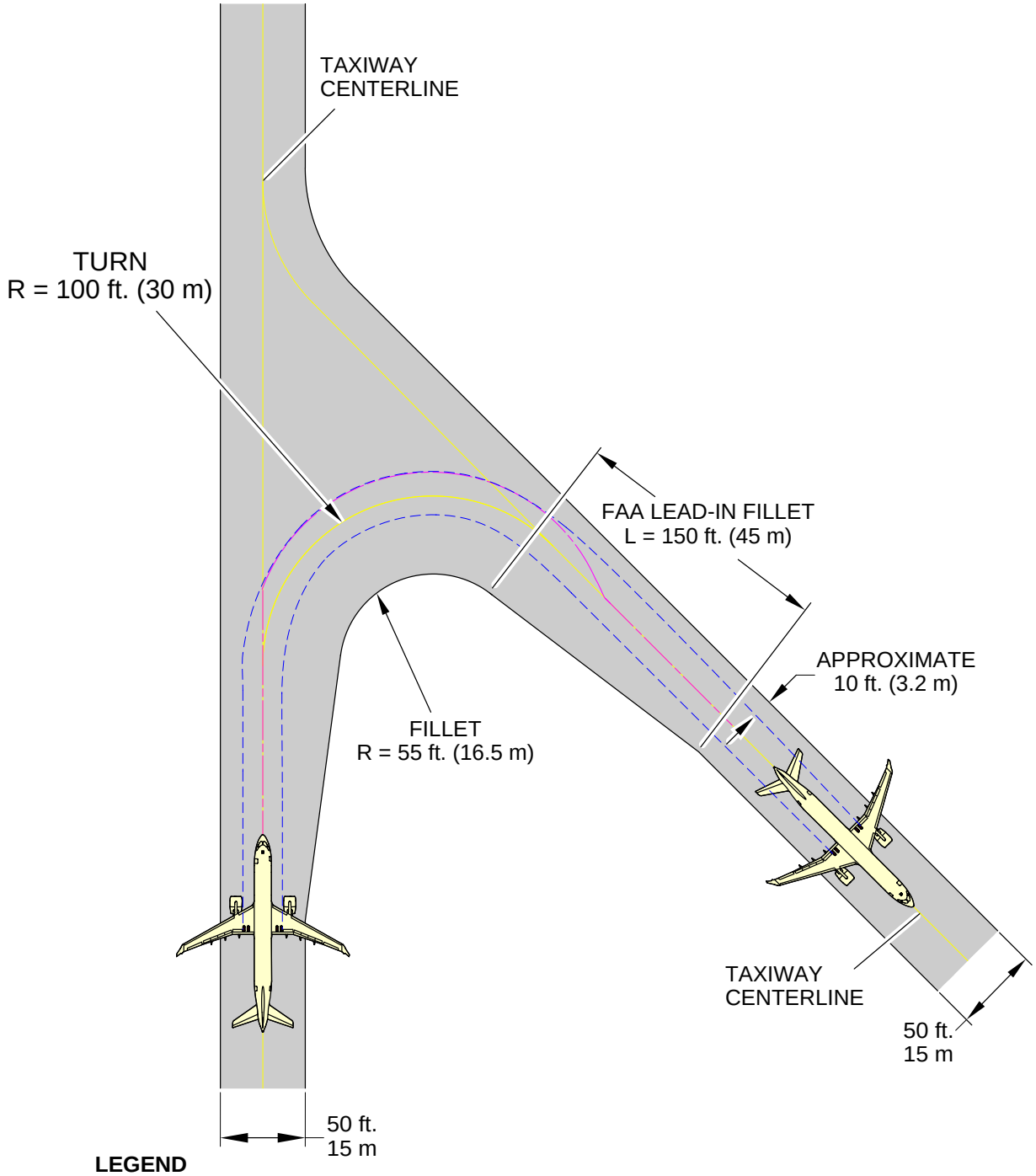
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25567-A-001-01

Figure 9 More than 90° turn - Taxiway to taxiway - Cockpit over centerline method

3.6 More than 90° turn - Taxiway to taxiway - Oversteering method

To see the diagram, refer to Fig. 10 .



LEGEND

Nose gear.
Main gear.

NOTE

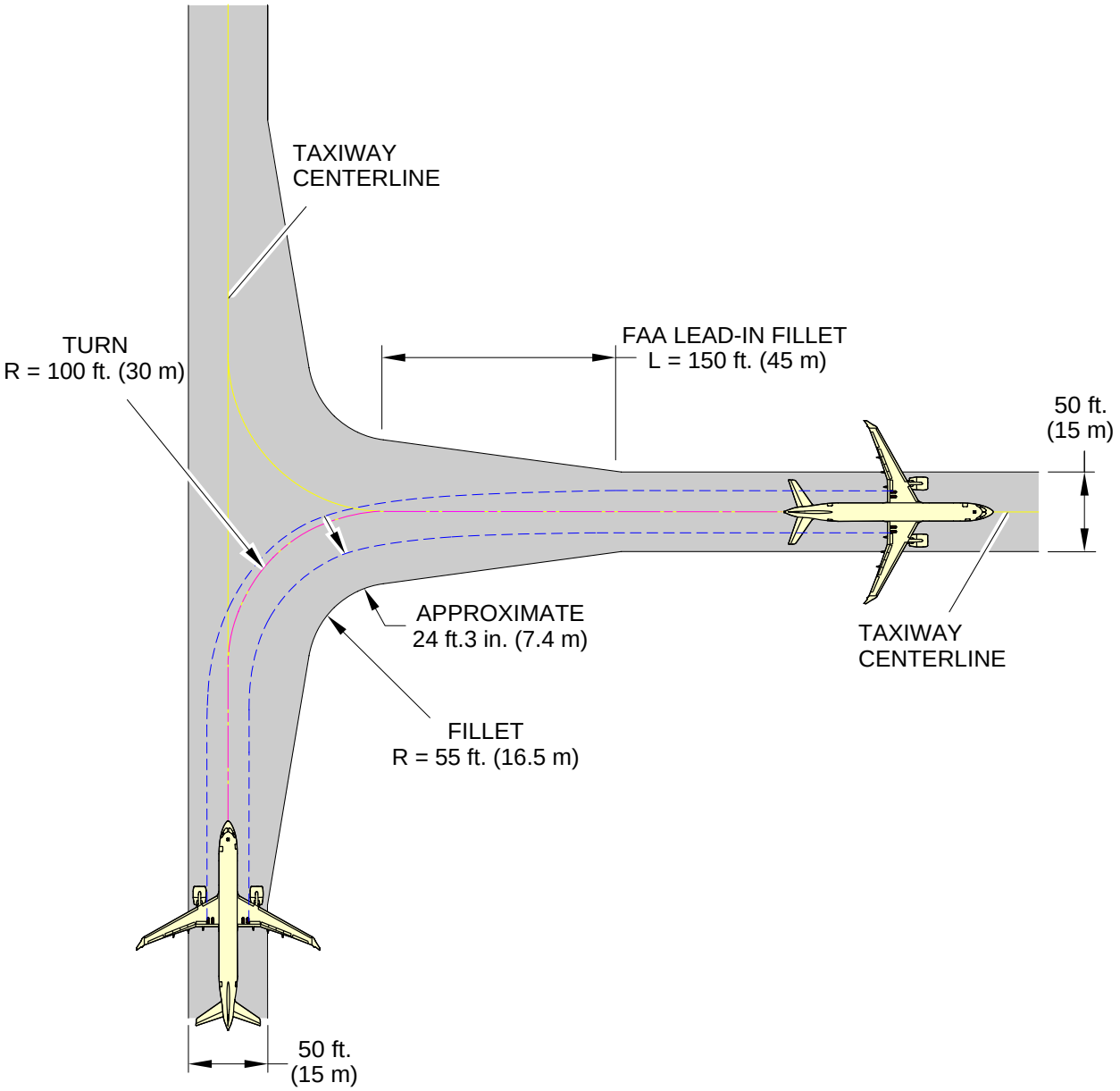
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25568-A-001-01

Figure 10 More than 90° turn - Taxiway to taxiway - Oversteering method

3.7 90° turn - Taxiway to taxiway - Cockpit over centerline method

To see the diagram, refer to Fig. 11 .



LEGEND

Nose gear.
Main gear.

NOTE

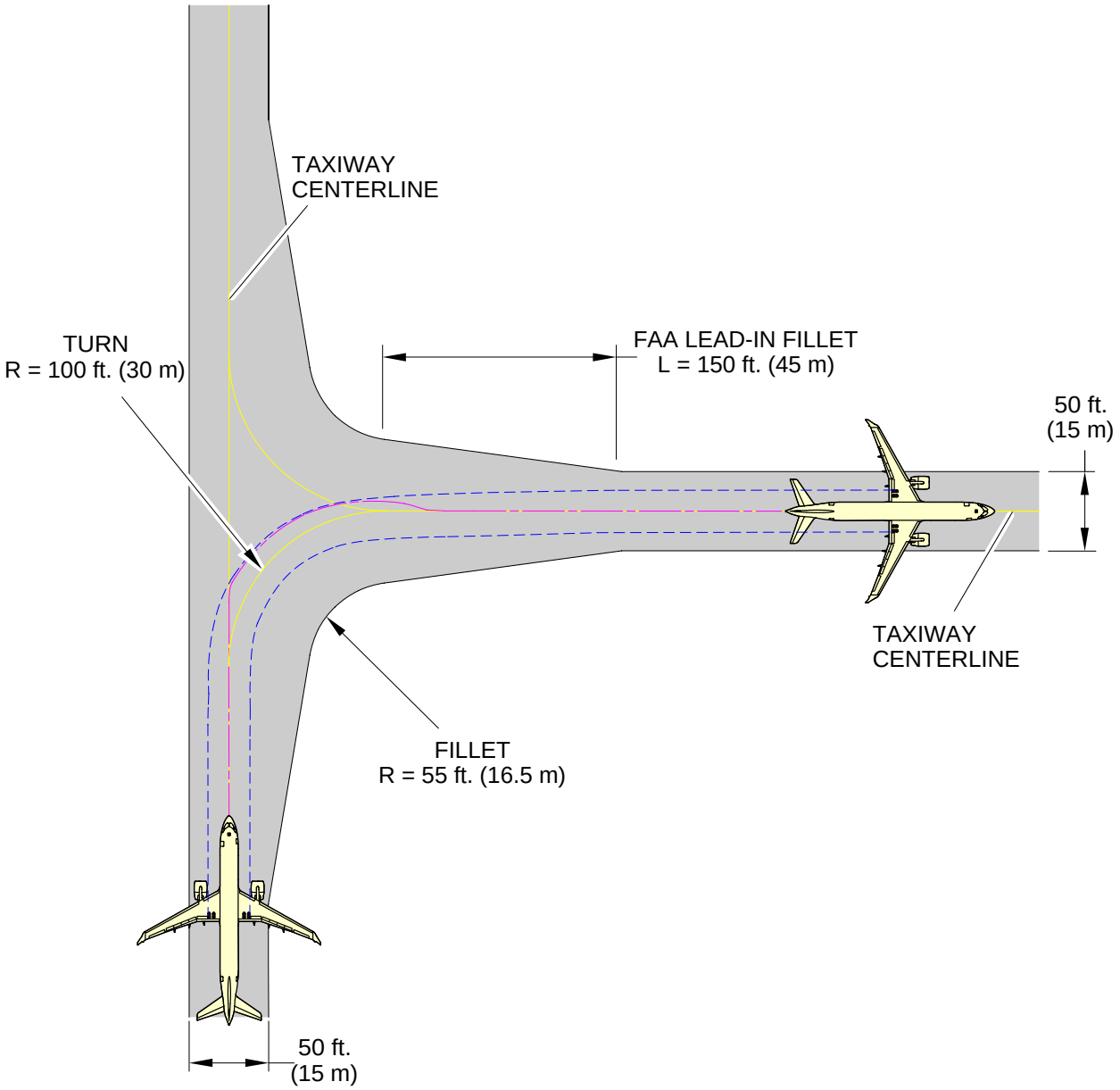
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25569-A-001-01

Figure 11 90° turn - Taxiway to taxiway - Cockpit over centerline method

3.8 90° turn - Taxiway to taxiway - Oversteering method

To see the diagram, refer to Fig. 12 .



LEGEND

Nose gear.
Main gear.

NOTE

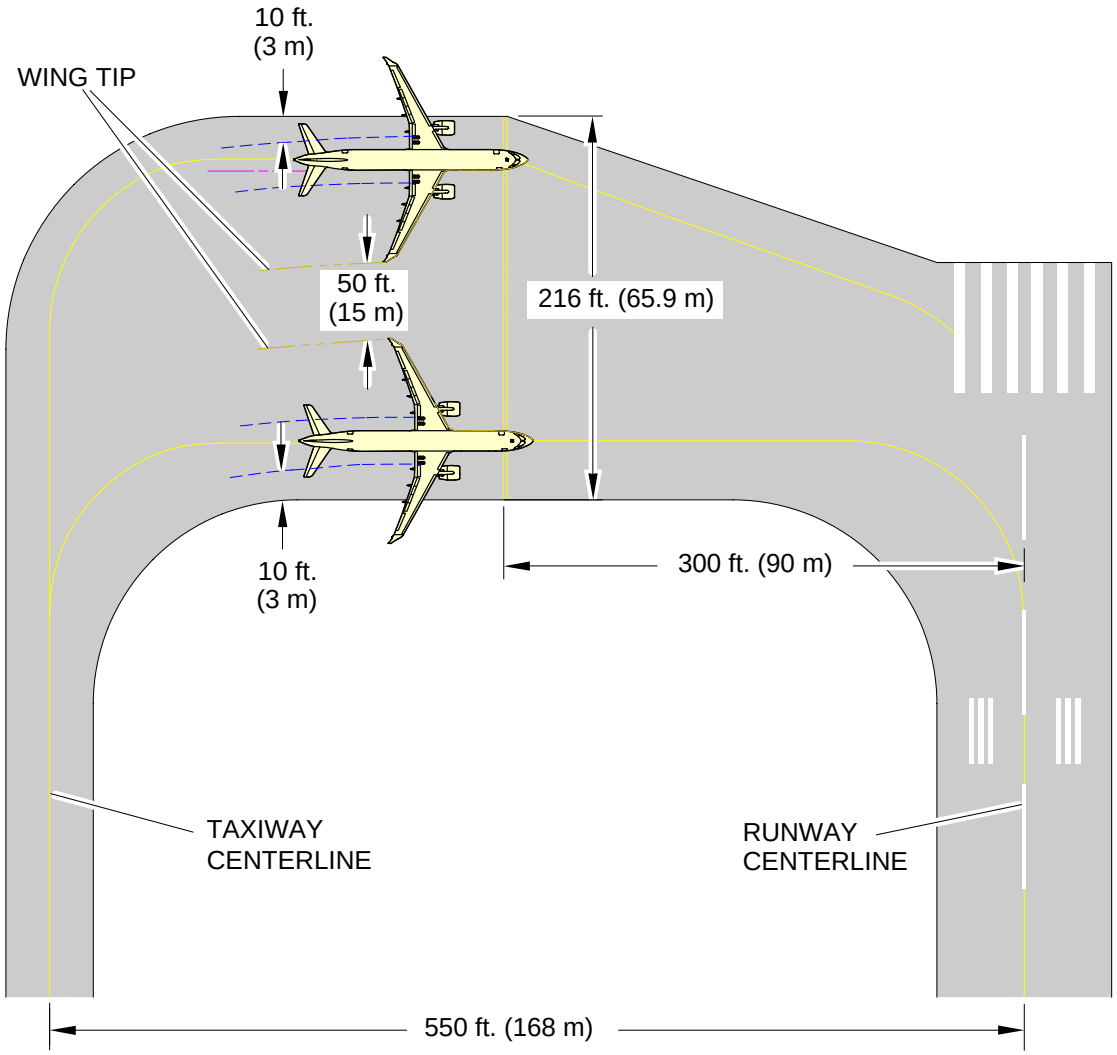
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25570-A-001-01

Figure 12 90° turn - Taxiway to taxiway - Oversteering method

3.9 Runway holding bay (Apron)

To see the diagram, refer to Fig. 13



LEGEND

Nose gear.
Main gear.

NOTE

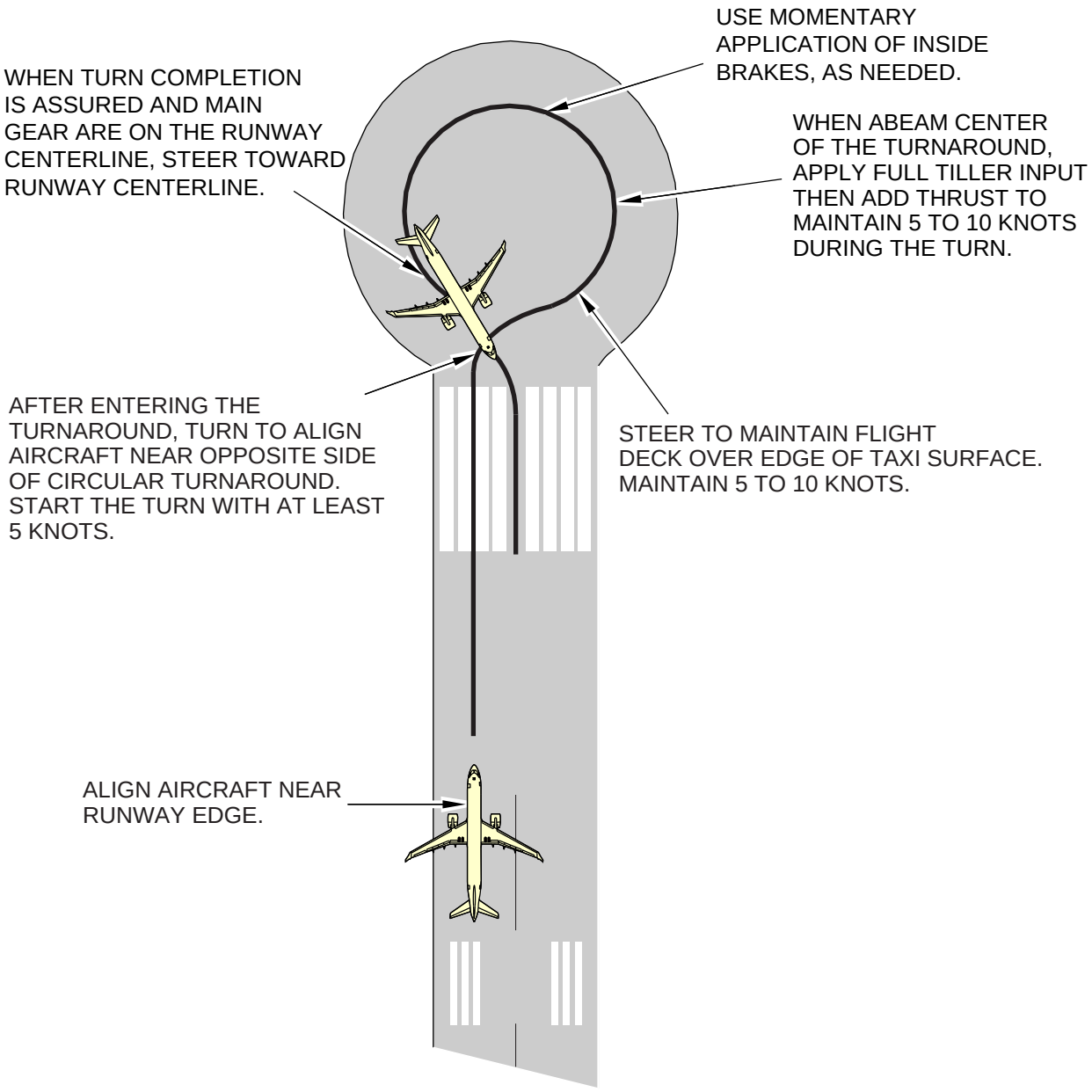
Coordinate with airline operator for the specific planned operating procedure.

ICN-BD500-A-J000000-A-3AB48-25571-A-001-01

Figure 13 Runway holding bay (Apron)

3.10 Hammerhead Turnaround

To see the diagrams, refer to Fig. 14 and Fig. 15 .

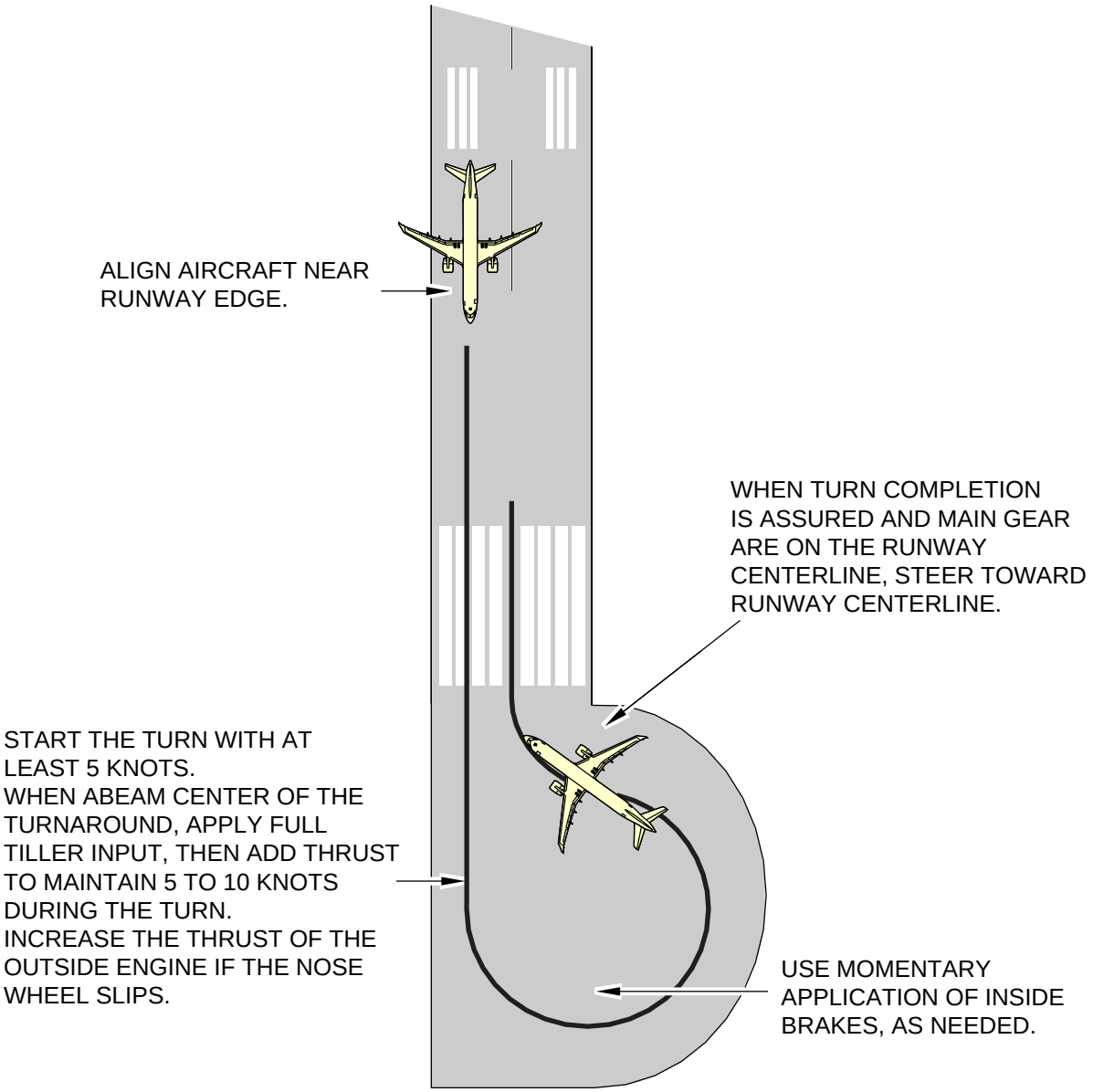


NOTE

Follow turnaround steering guidance cues if available.

ICN-BD500-A-J000000-A-3AB48-45728-A-001-01

Figure 14 Techniques when using a Hammerhead Turnaround



NOTE

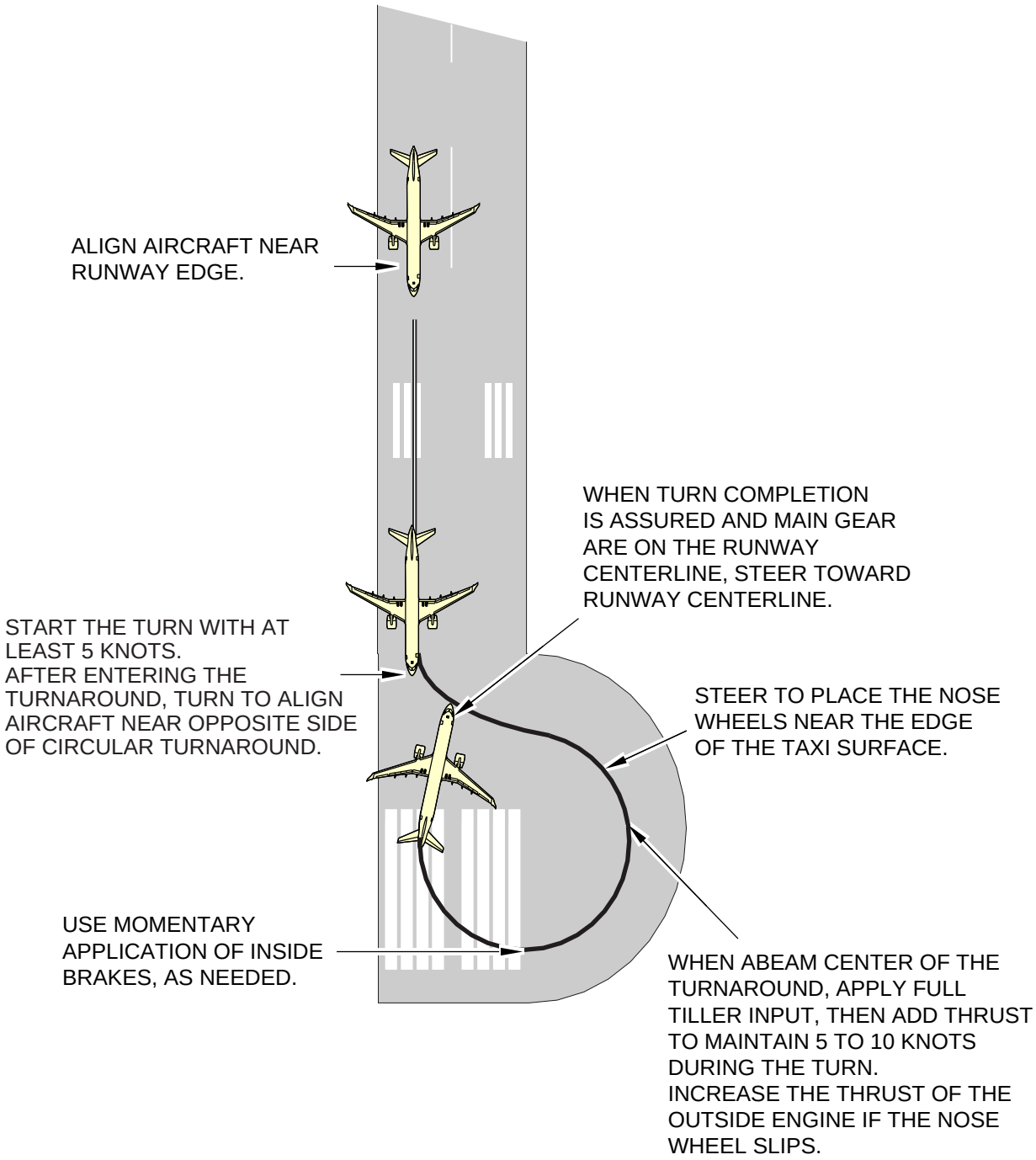
Follow turnaround steering guidance cues if available.

ICN-BD500-A-J000000-A-3AB48-45729-A-001-01

Figure 15 Techniques when using a Hammerhead Turnaround

3.11 180 Degree (Pivot) Turns in Less than 147.6 feet (45 m)

To see the diagram, refer to Fig. 16 .



NOTE

Follow turnaround steering guidance cues if available.

ICN-BD500-A-J000000-A-3AB48-45730-A-001-01

Figure 16 180 Degree (Pivot) Turns in Less than 147.6 feet / 45 m

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Ground maneuvering, turning radii - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Ground maneuvering, turning radii - Technical data 1
References 1
Description 1
1 Introduction 1
2 Landing gear turning radii, including minimum turning radii 2

List of tables

Page

1 References 1
2 Turning radii for various nose wheel angles 2
3 Turning radii for various nose wheel angles 2

List of figures

Page

1 Ground maneuvering, turning radii - Technical data 4

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data about the aircraft turning capability and maneuvering characteristics on the ground. The data is based on aircraft performance in good conditions of operation. Thus, the values must be considered theoretical and used only as an aid. Refer to Table 2 and Table 3 for the values to use with Fig. 1 for the turn radii with 3 degree slip angle.

2 Landing gear turning radii, including minimum turning radii

Applicability: 50001-54999

Table 2 Turning radii for various nose wheel angles

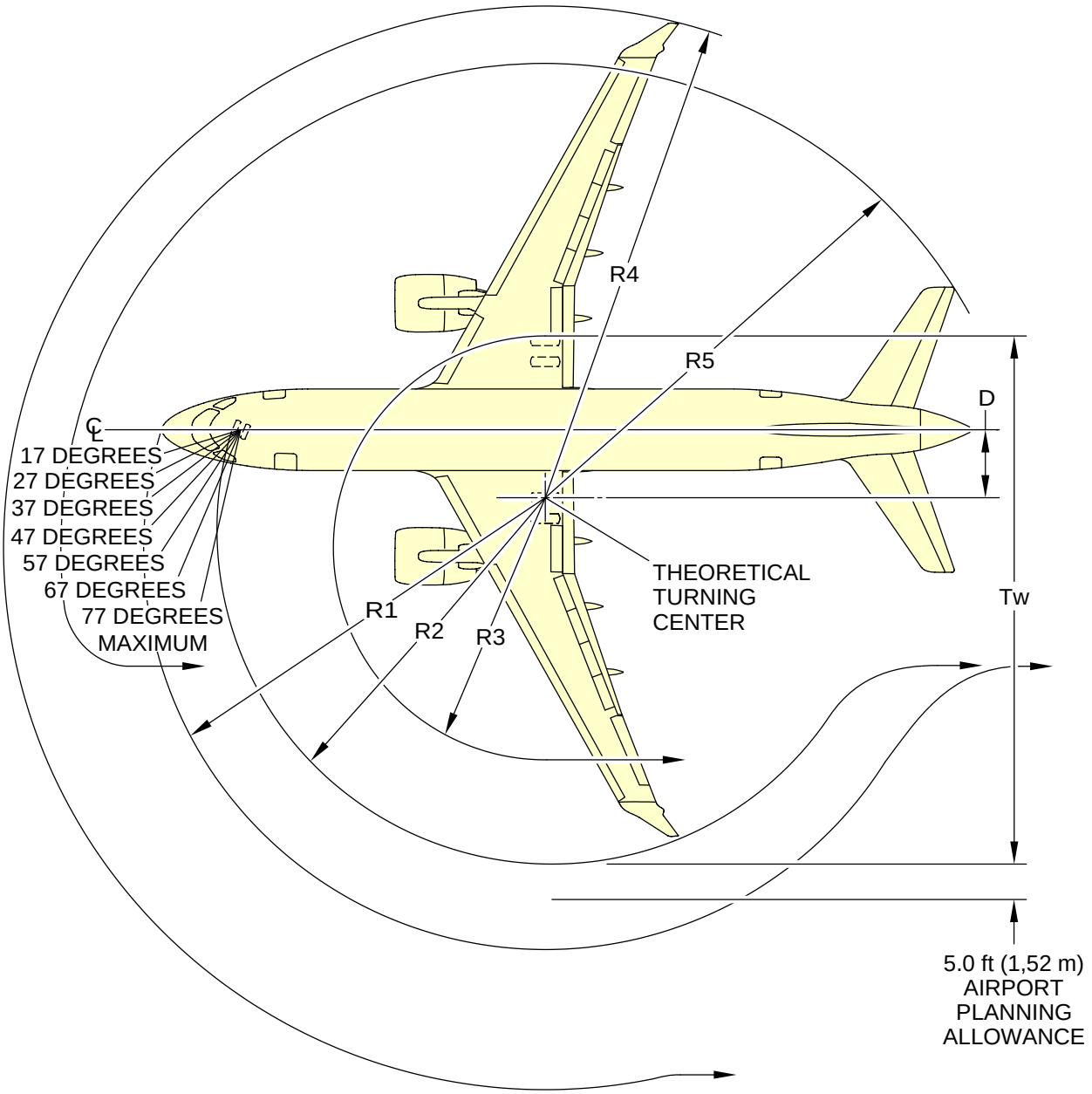
Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
17	1686.8 in. (4284.47 cm)	1807.5 in. (4591.05 cm)	1776.3 in. (4511.80 cm)	1845.6 in. (4687.82 cm)	2385.4 in. (6058.91 cm)	2046.7 in. (5198.61 cm)	3621.9 in. (9199.62 cm)
27	1012.1 in. (2570.73 cm)	1202.7 in. (3054.85 cm)	1148.4 in. (2916.93 cm)	1171.0 in. (2974.34 cm)	1715.0 in. (4356.1 cm)	1430.1 in. (3632.45 cm)	2319.4 in. (5891.27 cm)
37	684.4 in. (1738.37 cm)	943.6 in. (2396.74 cm)	869.3 in. (2208.02 cm)	843.2 in. (2141.72 cm)	1390.8 in. (3532.63 cm)	1154.2 in. (2931.66 cm)	1712.6 in. (4350.00 cm)
47	480.9 in. (1221.48 cm)	808.3 in. (2053.08 cm)	717.6 in. (1822.70 cm)	639.8 in. (1625.09 cm)	1190.6 in. (3024.12 cm)	998.9 in. (2537.20 cm)	1357.3 in. (3447.54 cm)
57	334.9 in. (850.64 cm)	730.9 in. (1856.48 cm)	627.9 in. (1594.86 cm)	493.2 in. (1252.72 cm)	1047.6 in. (2660.90 cm)	899.3 in. (2284.22 cm)	1121.1 in. (2847.59 cm)
67	218.9 in. (556.00 cm)	685.5 in. (1741.17 cm)	572.7 in. (1454.65 cm)	377.8 in. (959.61 cm)	934.7 in. (2374.13 cm)	830.1 in. (2108.45 cm)	950.4 in. (2414.01 cm)
77	119.1 in. (302.51 cm)	660.04 in. (1667.41 cm)	541.7 in. (1375.91 cm)	277.9 in. (705.86 cm)	838.2 in. (2129.02 cm)	779.4 in. (1979.67 cm)	819.6 in. (2081.78 cm)

Applicability: 55001-59999

Table 3 Turning radii for various nose wheel angles

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
17	1961.5 in. (4982.21 cm)	2094.2 in. (5319.26 cm)	2063.6 in. (5241.54 cm)	2120.4 in. (5385.81 cm)	2659.0 in. (6753.86 cm)	2307.1 in. (5860.03 cm)	4148.0 in. (10535.92 cm)

Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
27	1177.0 in. (2989.58 cm)	1386.9 in. (3522.72 cm)	1333.4 in. (3386.83 cm)	1335.8 in. (3392.93 cm)	1878.6 in. (4771.64 cm)	1576.4 in. (4004.05 cm)	2669.2 in. (6779.76 cm)
37	795.8 in. (2021.33 cm)	1082.4 in. (2749.29 cm)	1008.9 in. (2562.60 cm)	954.7 in. (2424.93 cm)	1500.9 in. (3812.28 cm)	1245.2 in. (3162.80 cm)	1963.6 in. (4987.54 cm)
47	559.2 in. (1420.36 cm)	922.5 in. (2343.15 cm)	832.4 in. (2114.29 cm)	718.1 in. (1823.97 cm)	1267.5 in. (3219.45 cm)	1056.8 in. (2684.27 cm)	1550.5 in. (3938.27 cm)
57	389.4 in. (989.07 cm)	830.6 in. (2109.72 cm)	727.5 in. (1847.85 cm)	548.3 in. (1392.68 cm)	1100.9 in. (2796.28 cm)	935.1 in. (2375.15 cm)	1275.8 in. (3240.53 cm)
67	254.6 in. (646.68 cm)	776.5 in. (1971.04 cm)	663.9 in. (1686.30 cm)	413.4 in. (1050.03 cm)	969.4 in. (2462.27 cm)	850.3 in. (2159.76 cm)	1077.4 in. (2736.59 cm)
77	138.5 in. (351.79 cm)	746.6 in. (1896.36 cm)	627.9 in. (1594.86 cm)	297.3 in. (755.14 cm)	856.9 in. (2176.52 cm)	788.5 in. (2002.79 cm)	925.2 in. (2350.00 cm)



ICN-BD500-A-J092001-C-3AB48-45815-A-001-01

Figure 1 Ground maneuvering, turning radii - Technical data

A220

Ground maneuvering, visibility from flight compartment - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Ground maneuvering, visibility from flight compartment - Technical data 1
References 1
Description 1
1 Introduction 1
2 Clear areas of vision 1
3 Visibility from cockpit in static position 1

List of tables

Page

1 References 1

List of figures

Page

1 Clear areas of vision 2
2 Visibility from cockpit in static position 3

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

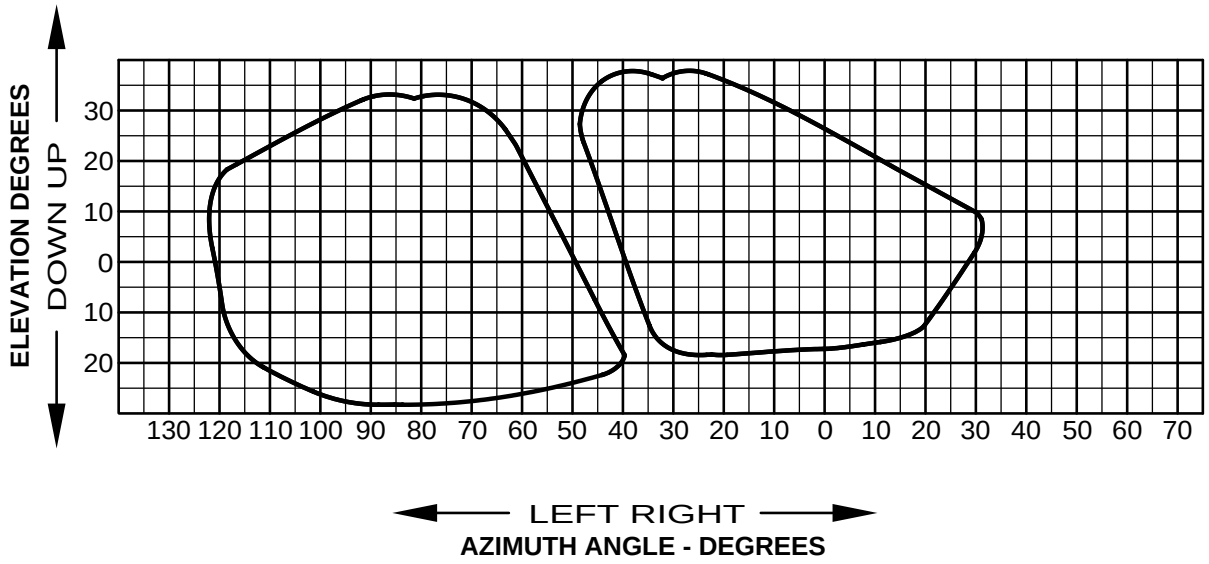
This data module contains data about the visibility from the flight compartment.

2 Clear areas of vision

To see the diagram, refer to Fig. 1

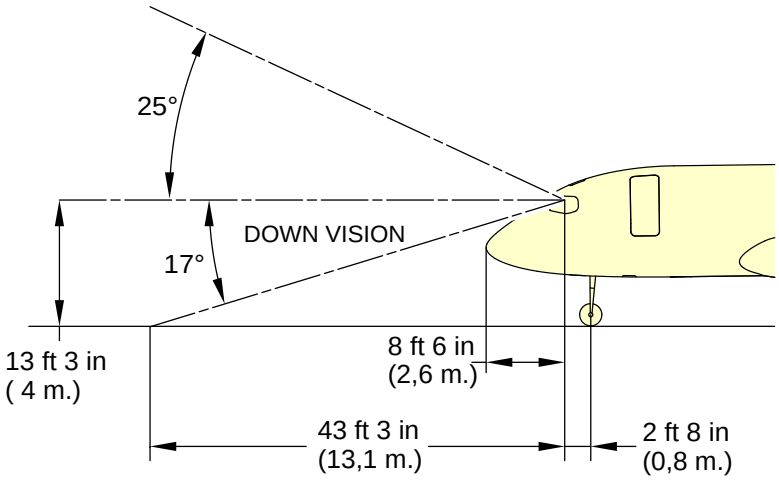
3 Visibility from cockpit in static position

This section contains data about the visibility from cockpit in static position. Refer toFig. 2

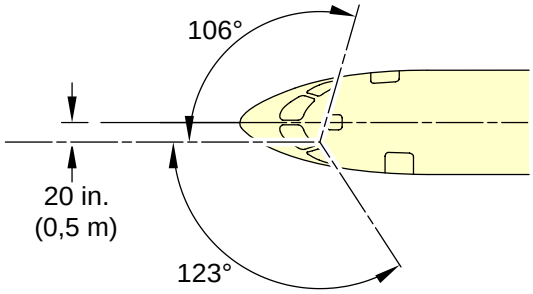


ICN-BD500-A-J092001-A-3AB48-00119-A-001-01

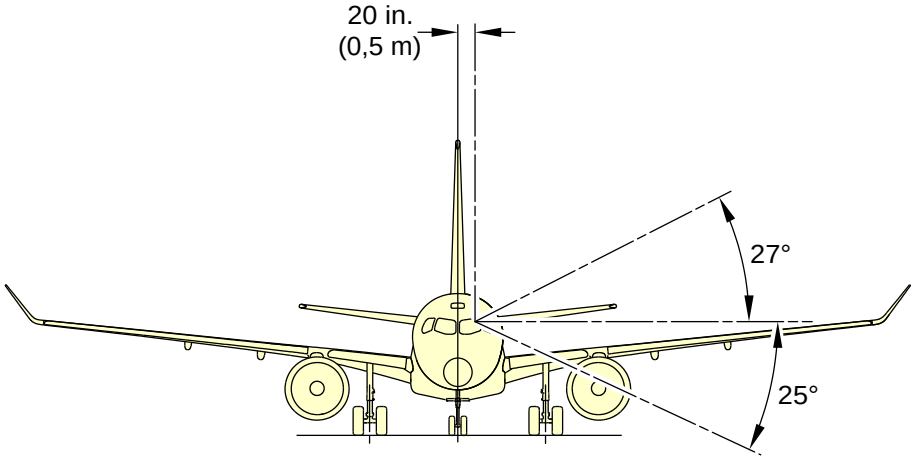
Figure 1 Clear areas of vision



VISUAL ANGLES IN VERTICAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLES IN HORIZONTAL PLANE THROUGH PILOT'S EYE POSITION



VISUAL ANGLE IN A PLANE PERPEDNDICULAR TO LONGITUDINAL AXIS THROUGH PILOT'S EYE POSITION

NOTES

1. Not to be used for landing approach visibility.
2. Not scale.

ICN-BD500-A-J000000-A-3AB48-22579-A-001-01

Figure 2 Visibility from cockpit in static position

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A220

Chapter 5: Terminal servicing

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Terminal servicing - Technical data

Applicability: 50001-54999

Table of contents

		Page
Terminal servicing - Technical data		1
References		2
Description		2
1	Introduction	2
1.1	Aircraft servicing arrangement	2
1.2	Terminal operations	4
1.3	Ground servicing connections	6
1.4	Ground electrical power requirements	31
1.5	Engine starting pneumatic power requirements	32
1.6	Ground pneumatic power requirements	33
1.6.1	Heating	33
1.6.2	Cooling	35
1.7	Preconditioned airflow requirements	37
1.8	Ground towing requirements	37
1.9	Aircraft	37
1.10	Towbar design guidelines	38

List of tables

		Page
1	References	2
2	Hydraulic system	8
3	Hydraulic system - Accumulator charging	10
4	Waste system	12
5	Potable water system	14
6	Pneumatic system	16
7	Electrical System	19
8	Oxygen system	21
9	Grounding points	23
10	Fuel system Refuel/Defuel adapter	25
11	Fuel system control panel	27
12	Oil system	29
13	External AC power requirements	31
14	External power quality limitations	31
15	Overcurrent protection ampere versus time delay	32
16	Overvoltage protection versus time delay	32
17	Ground pneumatic power requirements – Engine starting	33
18	Ground air supply requirements for heating (Pull up)	33
19	Ground air supply requirements for heating at a steady state	35
20	Ground air supply requirements for cooling (Pull down)	35
21	Ground air supply requirements for cooling at a steady state	37
22	Preconditioned airflow requirements	37

List of figures

		Page
1	Aircraft servicing arrangement	3
2	Turnaround time analysis	5
3	Ground servicing connections	7
4	Ground servicing system	9
5	Accumulator charging valves	11

6 Waste system access panel..... 13
7 Potable water system service panel..... 15
8 Low pressure ground system..... 17
9 High pressure ground system..... 18
10 Electrical service panel..... 20
11 Crew oxygen system..... 22
12 Landing gears grounding points..... 24
13 Refuel adapter and grounding point..... 26
14 Refuel/Defuel system..... 28
15 Oil storage system..... 30
16 Ground pneumatic requirements - Heating..... 34
17 Ground pneumatic requirements - Cooling..... 36
18 Ground towing requirements (imperial unit)..... 39
19 Ground towing requirements (metric unit)..... 40

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data related to the preparation of an aircraft for flight from a terminal. This data is provided to show the general types of tasks involved in terminal operations. Each airline has different operating conditions and practices, which can result in changes in the operating procedures and time intervals to do the tasks specified. Because of this, requirements for ground operations should be approved with the specified airline(s) before ramp planning is started. This section presents the following topics:

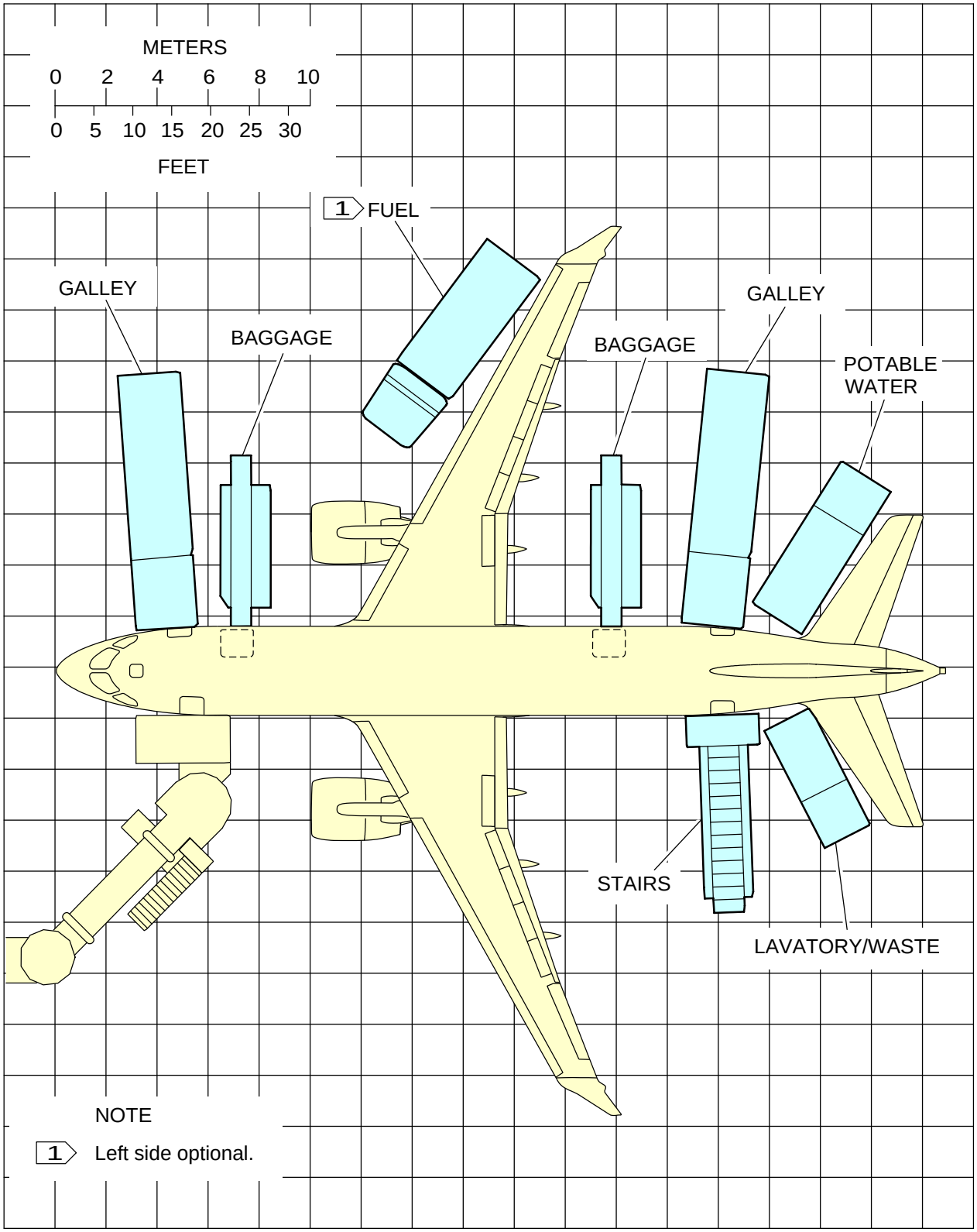
- Aircraft servicing arrangement
- Terminal operations
- Ground servicing connections
- Ground electrical power requirements
- Ground pneumatic power requirements – Engine starting
- Preconditioned airflow requirements – Air conditioning
- Ground towing requirements.

Note

All applicable procedures and limitations are provided in the Aircraft Maintenance Publication (AMP) BD500-3AB48-10200-00.

1.1 Aircraft servicing arrangement

Refer to Fig. 1 for the aircraft servicing arrangement.



ICN-BD500-A-J000000-A-3AB48-21739-A-001-01

Figure 1 Aircraft servicing arrangement

1.2 Terminal operations

Refer to Fig. 2 for the turnaround station operations.

The turnaround time analysis is based on the following parameters:

- 100% Pax/baggage exchange
- 94 passengers (85% load factor) / 1 class / 1 door
- 2 Galley service trucks
- Water/Waste servicing is sequential
- Cabin servicing during available time
- Passenger deplane rate is 18 per minute per door
- Passenger boarding rate is 12 per minute per door
- 2 bulk-loading belt-loaders
- 45 bags forward, 67 bags aft (1.2 x 4 ft^3 (1.2 X 0.11 m^3) per passenger)
- Bag loading/unloading rates are 10 and 15 bags per minute
- Fuel loaded via one refuel/defuel adapter
- Refuel adapter rate at 50 psi (344.74 kPa) is as follows:

  1 When refueling tree (3) tanks simultaneously (the center tank and two wing tanks), the refuel rate is 260 gpm (984 L/min).

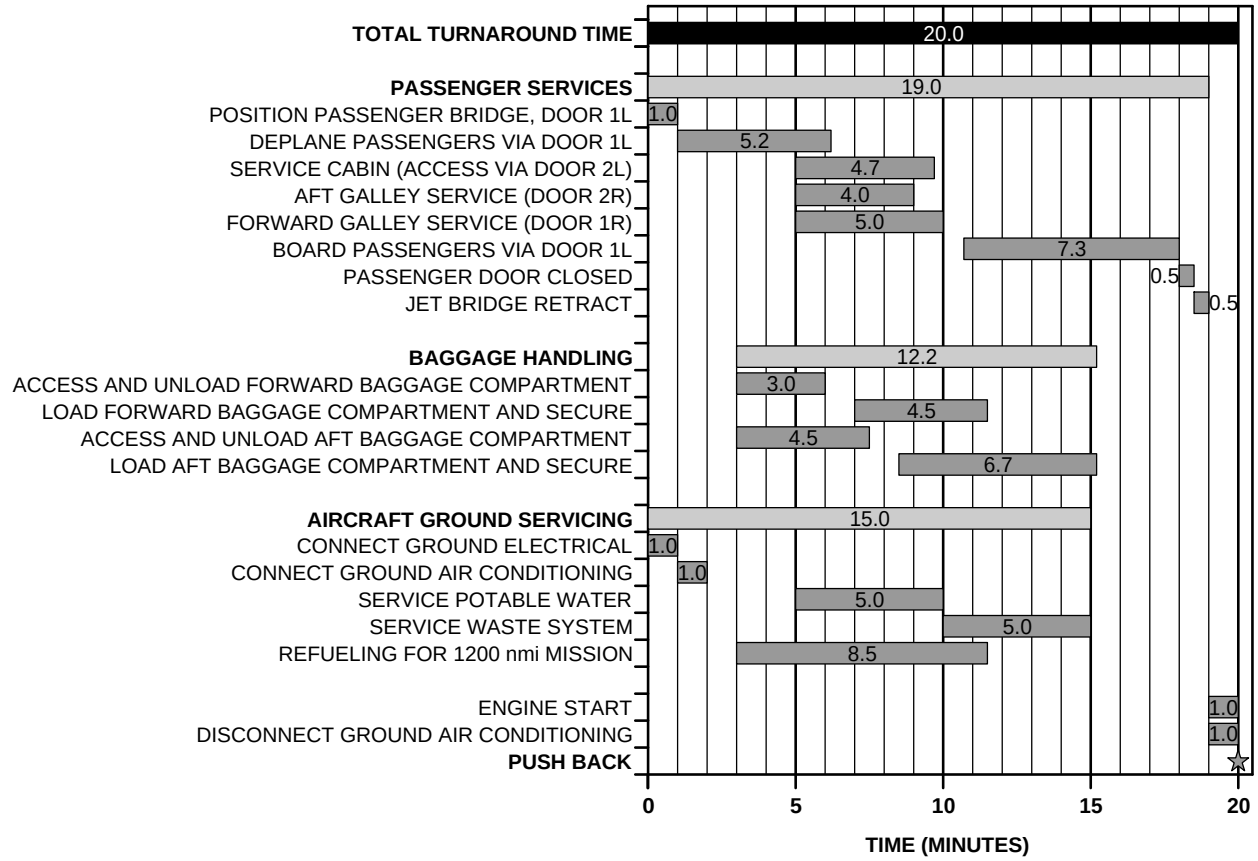
  2 When refueling two (2) wing tanks, the refuel rate is 140 gpm (530 L/min).

  3 When refueling the center tank only, the refuel rate is 140 gpm (530 L/min).

- Mission range is 1200 NM (2222.4 km)
- Refueling performed while deplaning/boarding.

Note

All equipment is assumed to function properly and weather condition to be normal. This data is provided to illustrate the general scope and type of operations involved in a terminal gate environment. Varying operating practices and circumstances may result in different task sequences and durations.



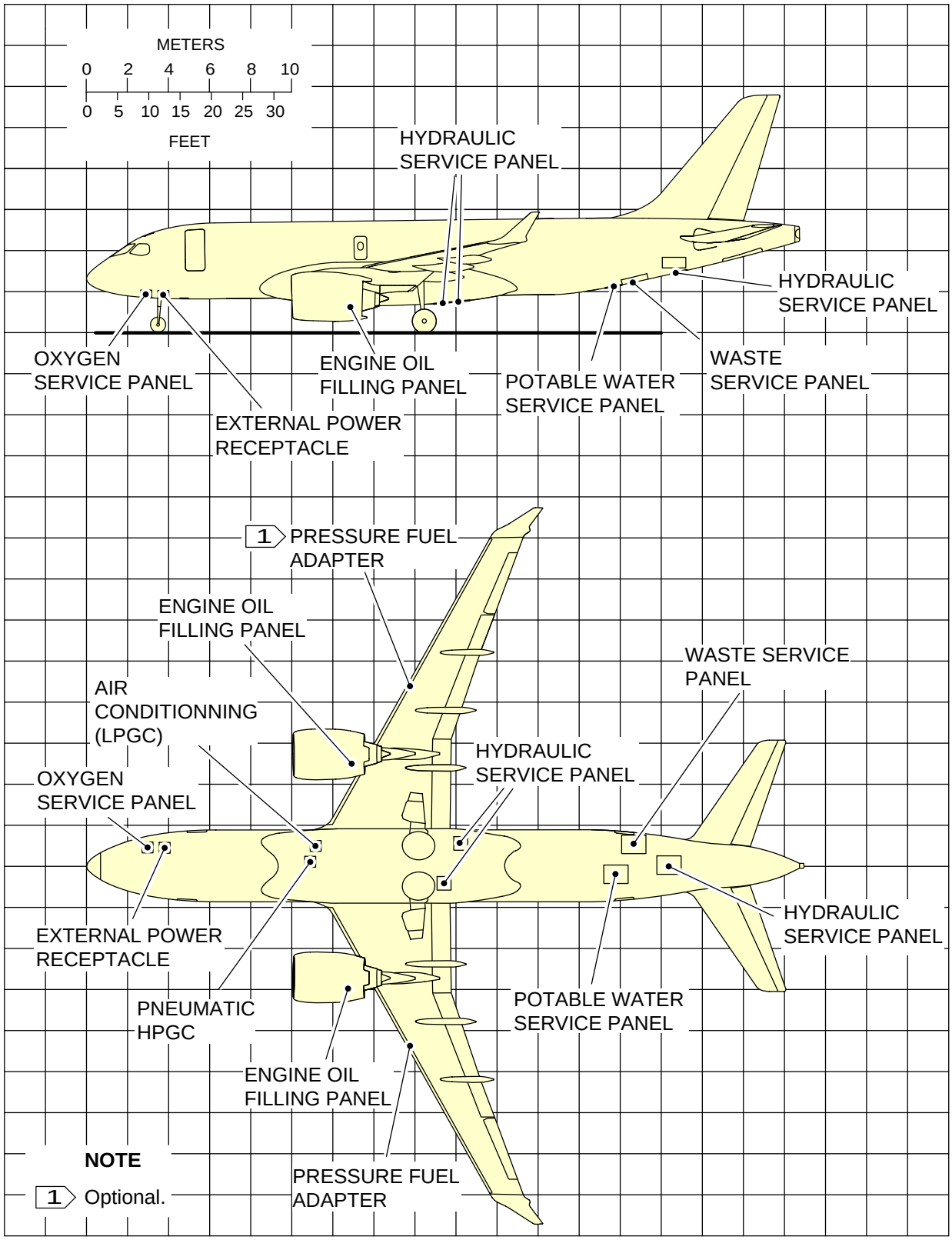
ICN-BD500-A-J000005-A-3AB48-00066-A-001-01

Figure 2 Turnaround time analysis

1.3 Ground servicing connections

Refer to Fig. 3 for the ground servicing connection points. For servicing procedures, refer to the AMP.

All servicing points are designed and positioned to consider accessibility and compatibility with industry standard vehicles and other Ground Support Equipment (GSE). All applicable procedures and limitations are provided in the AMP.



ICN-BD500-A-J000000-A-3AB48-21914-A-001-01

Figure 3 Ground servicing connections

Table 2 Hydraulic system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
System # 1 Access door 195CB	60.96 (18.58)	-	3.93 (8.20)	5.82 (1.77)
System # 2 Access door 195AB	58.543 (17.84)	2.795 (0.85)	-	5.57 (1.70)
System # 3 Aft equipment bay door	95.12 (28.99)	On centerline of the aircraft		8.77 (2.67)

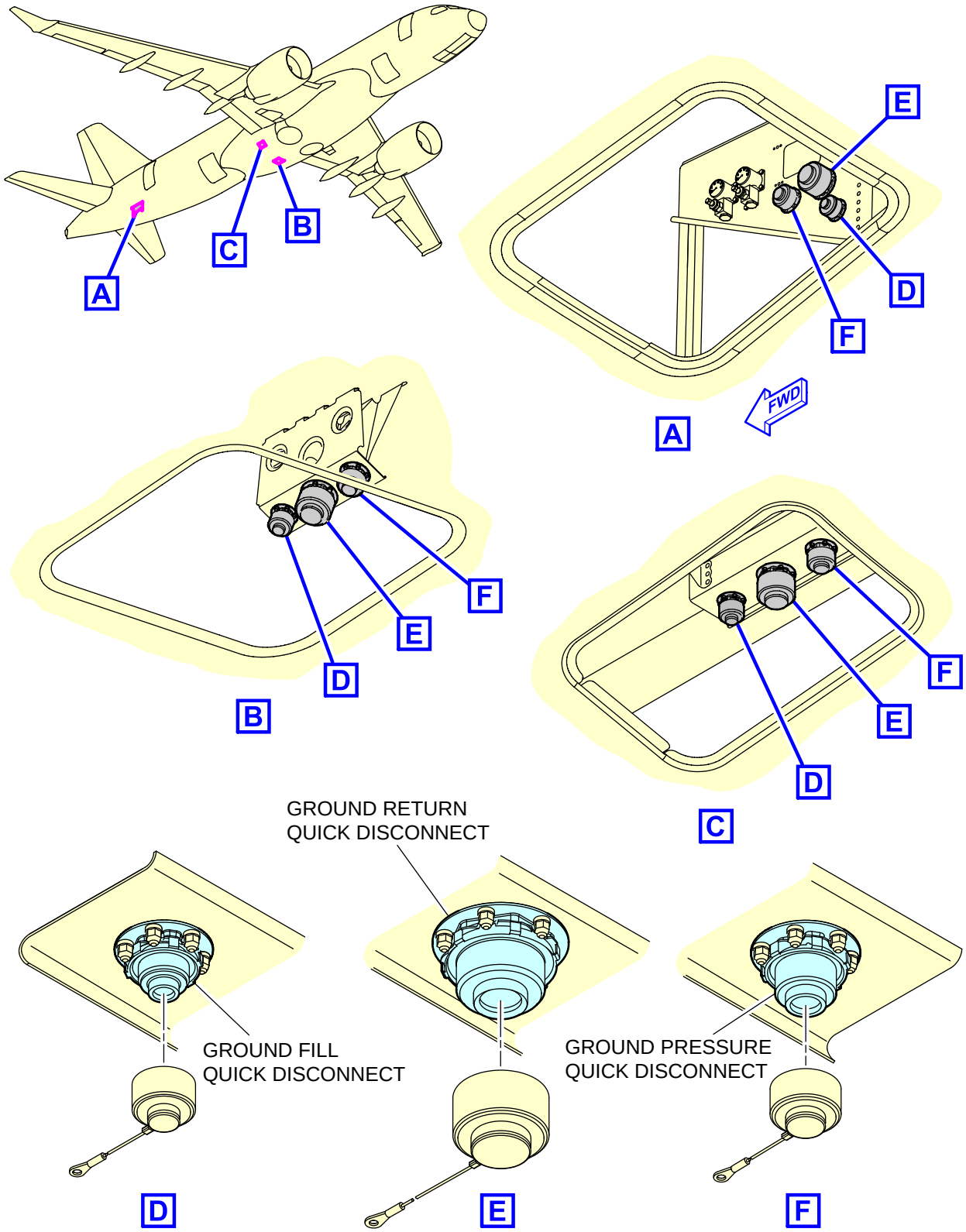
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Nominal pressure: 3000 psi (206.84 bar)
- Fitting connectors
  - Fitting dimension: Draining: 4 in. (10.16 cm)
  - Fitting dimension: Rinsing: 1 in. (2.54 cm)



ICN-BD500-A-J000000-A-3AB48-23353-A-001-01

Figure 4 Ground servicing system

Table 3 Hydraulic system - Accumulator charging

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Aft equipment bay door	95.12 (28.99)	On centerline of the aircraft		8.77 (2.67)

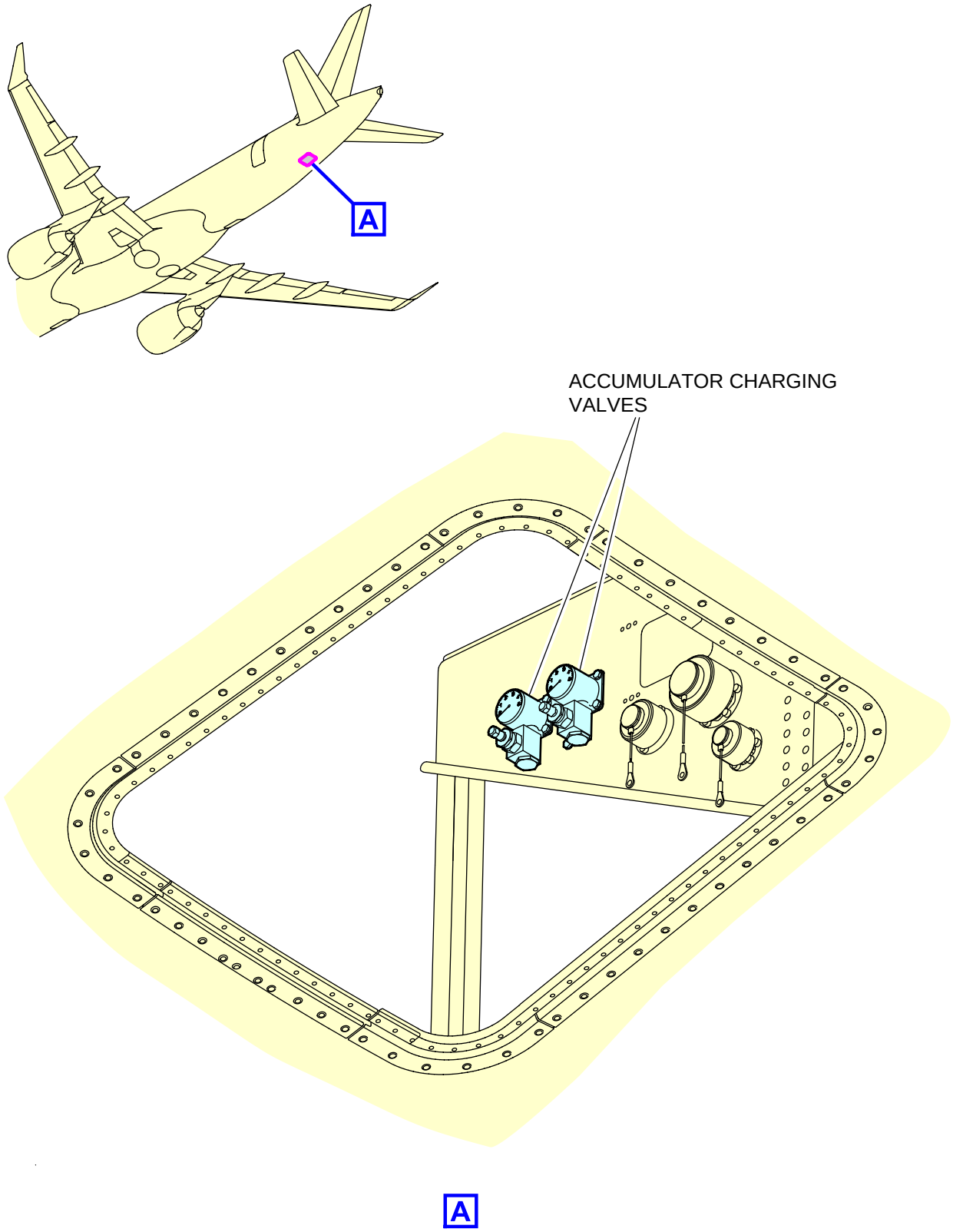
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Operating pressure: 3000 psig (206.84 bar)
- Accumulator pressure gauge range: 0 to 5000 psig (344.74 bar)
- Gauge accuracy: ±75 psig (5.17 bar)



ICN-BD500-A-J000000-A-3AB48-22071-A-001-01

Figure 5 Accumulator charging valves

Table 4 Waste system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 146BR	86.80 (26.46)	-	1.21 (0.37)	7.14 (2.18)

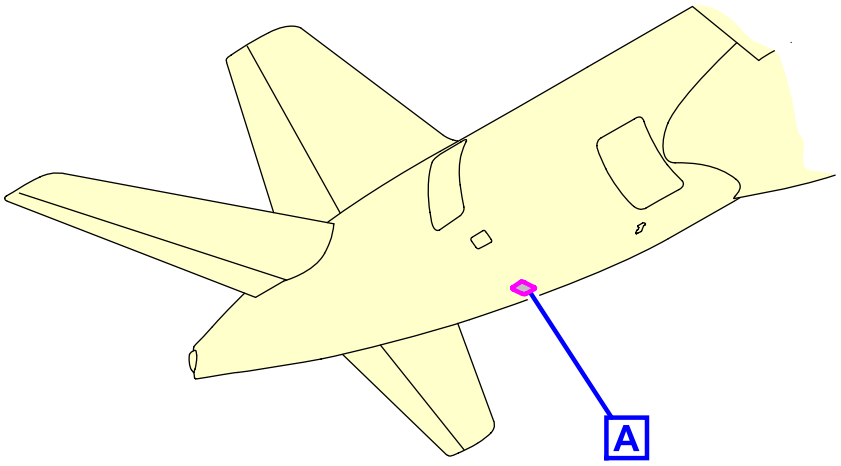
Note

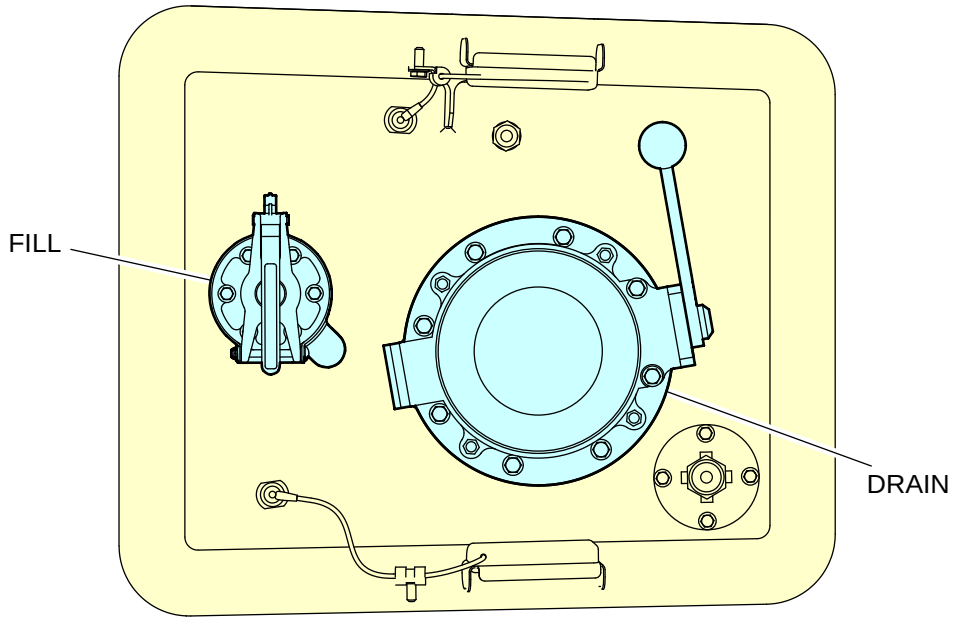
All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Usable volume: 38 U.S. gal (143.85 L)
- Fitting connectors
  - Fitting dimension: Draining: 4 in. (10.16 cm)
  - Fitting dimension: Rinsing: 1 in. (2.54 cm)





WASTE ACCESS PANEL

A

ICN-BD500-A-J000000-A-3AB48-22008-A-001-01

Figure 6 Waste system access panel

Table 5 Potable water system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 146CR	84.75 (25.83)	3.661 (1.11)	-	7.75 (2.36)

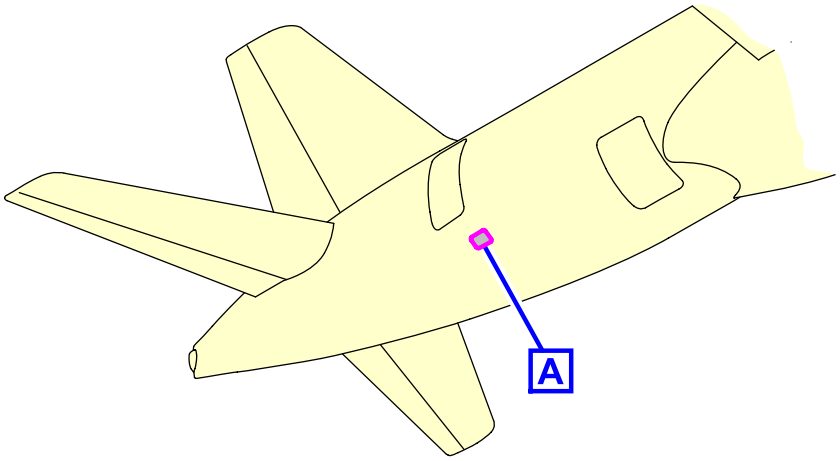
Note

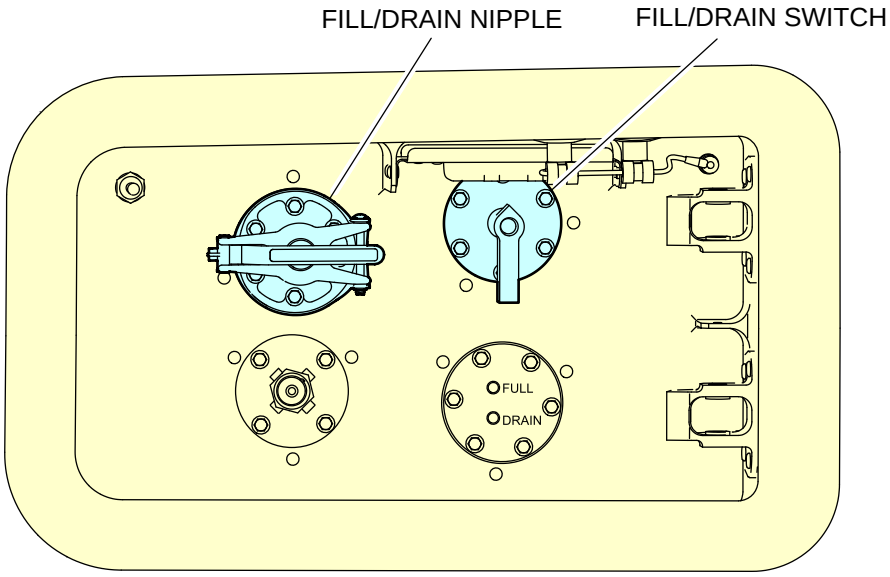
All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Usable volume: 42 U.S. gal (158.99 L)
- Fitting dimension: Filling/Draining: 3/4 in. (1.905 cm)





POTABLE WATER SERVICE PANEL

A

ICN-BD500-A-J000000-A-3AB48-22007-A-001-01

Figure 7 Potable water system service panel

Table 6 Pneumatic system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Low Pressure Ground Connection (LPGC) Access door 191BB	37.76 (11.51)	-	4.33 (1.32)	5.30 (1.61)
High Pressure Ground Connection (HPGC) Access door 191AB	37.38 (11.39)	-	1.30 (0.40)	4.62 (1.41)

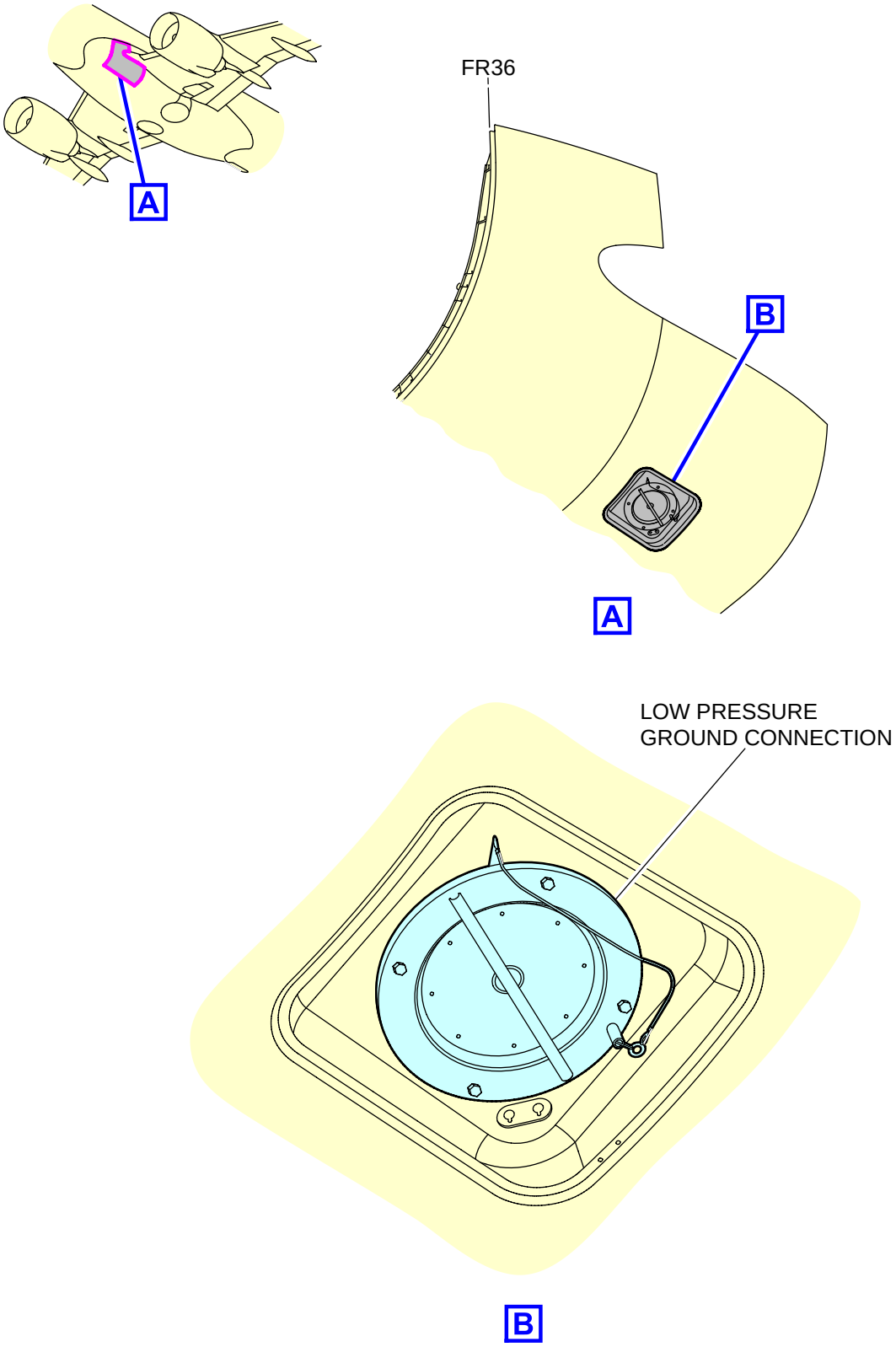
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

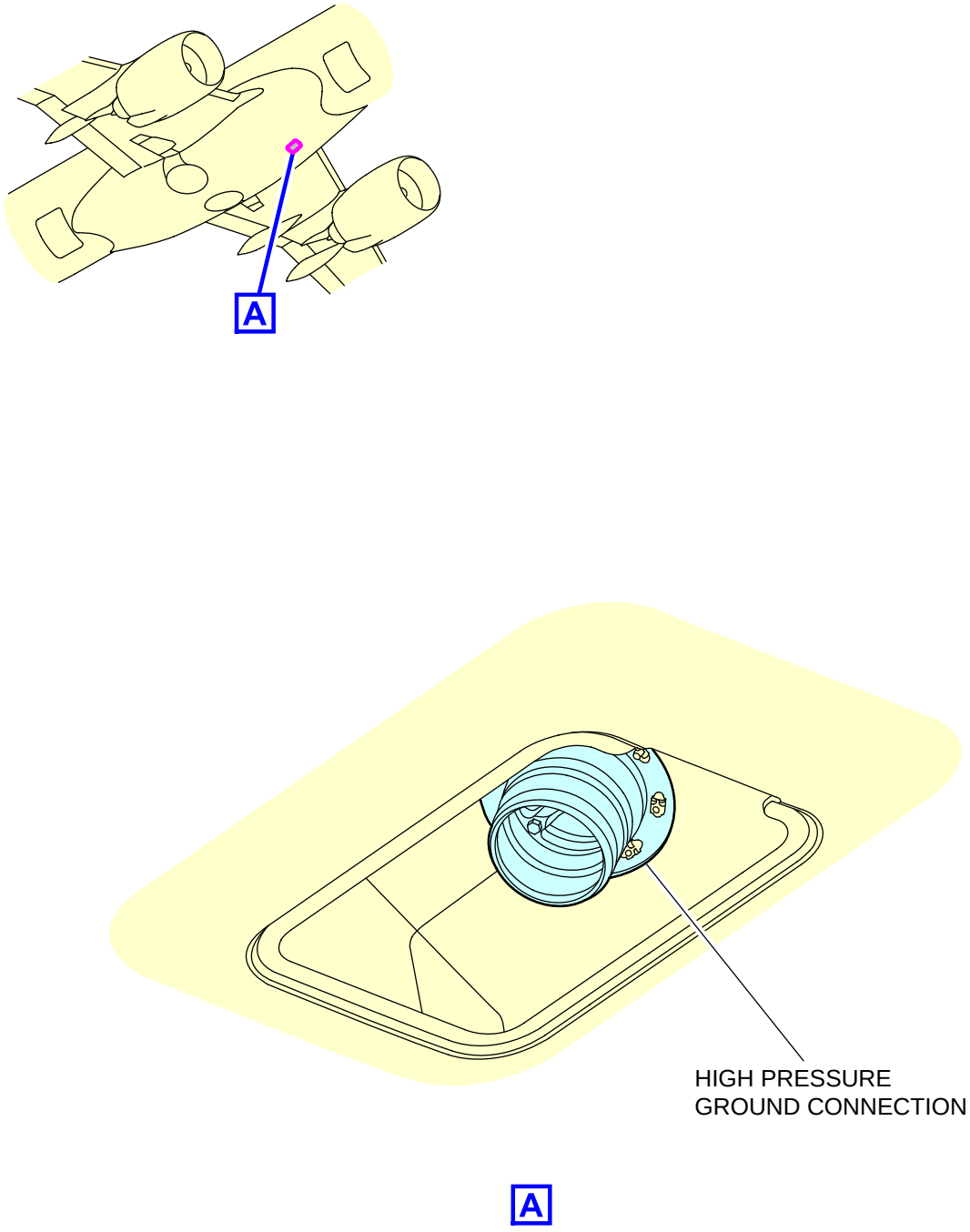
Technical specifications

- **LPGC Spec**
  - Discharge pressure range: 0.7 to 1.0 psig maximum (0.05 to 0.07 bar maximum)
  - Temp range: 41 to 122 °F maximum (5 to 50 °C maximum)
  - Max airflow: 125 lb/min
  - Fitting dimension: 8 in. (20.32 cm)
  - LP Ground Cart Standard pneumatic connection per ISO 1034 or MS 33562
- **HPGC Spec**
  - Bleed pressure range: 30 to 45 psig maximum (2.07 to 3.10 bar maximum)
  - Bleed temperature range: 338 to 450 °F (170 to 232 °C)
  - Airflow range: 100 to 140 lb/min
  - Fitting dimension: 3 in. (7.62 cm)
  - HP Ground Cart Standard pneumatic connection per ISO 2026 or MS 33740



ICN-BD500-A-J212100-C-3AB48-19016-A-002-01

Figure 8 Low pressure ground system



ICN-BD500-A-J361500-C-3AB48-15114-A-001-01

Figure 9 High pressure ground system

Table 7 Electrical System

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 115DL	11.71 (3.57)	-	2.68 (0.82)	6.37 (1.94)

Note

All distances are approximate.

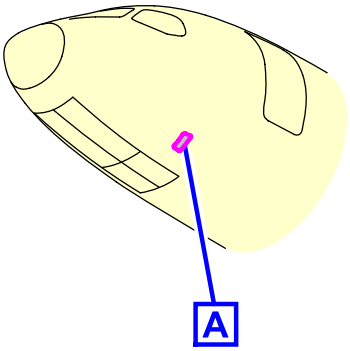
All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

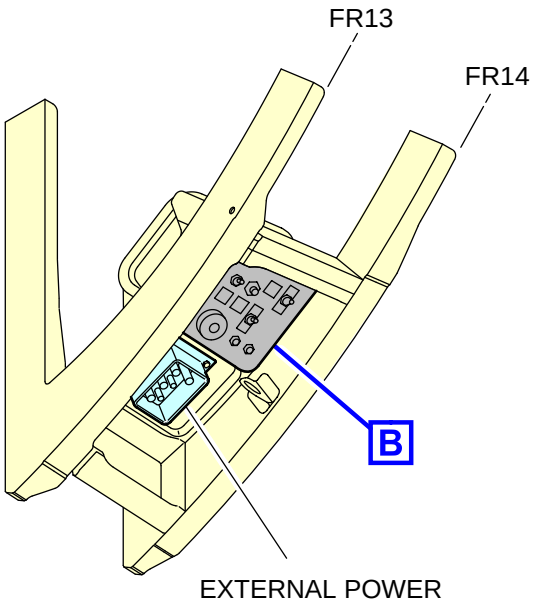
Technical specifications

- Power supply: 115 V Alternating Current (AC) External Power Receptacle

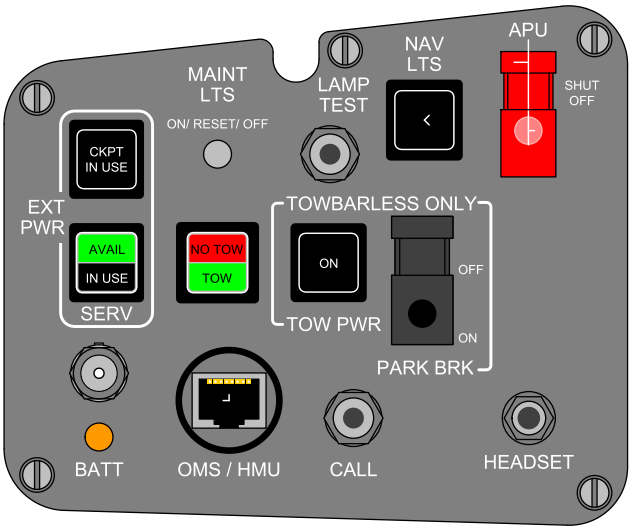
Note

For more specification about the electrical system, refer to Para. 1.4 .





A



ELECTRICAL/TOWING SERVICE PANEL

B

ICN-BD500-A-J000000-A-3AB48-22070-A-001-01

Figure 10 Electrical service panel

Table 8 Oxygen system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 115CL	10.20 (3.11)	-	2.60 (0.79)	6.44 (1.96)

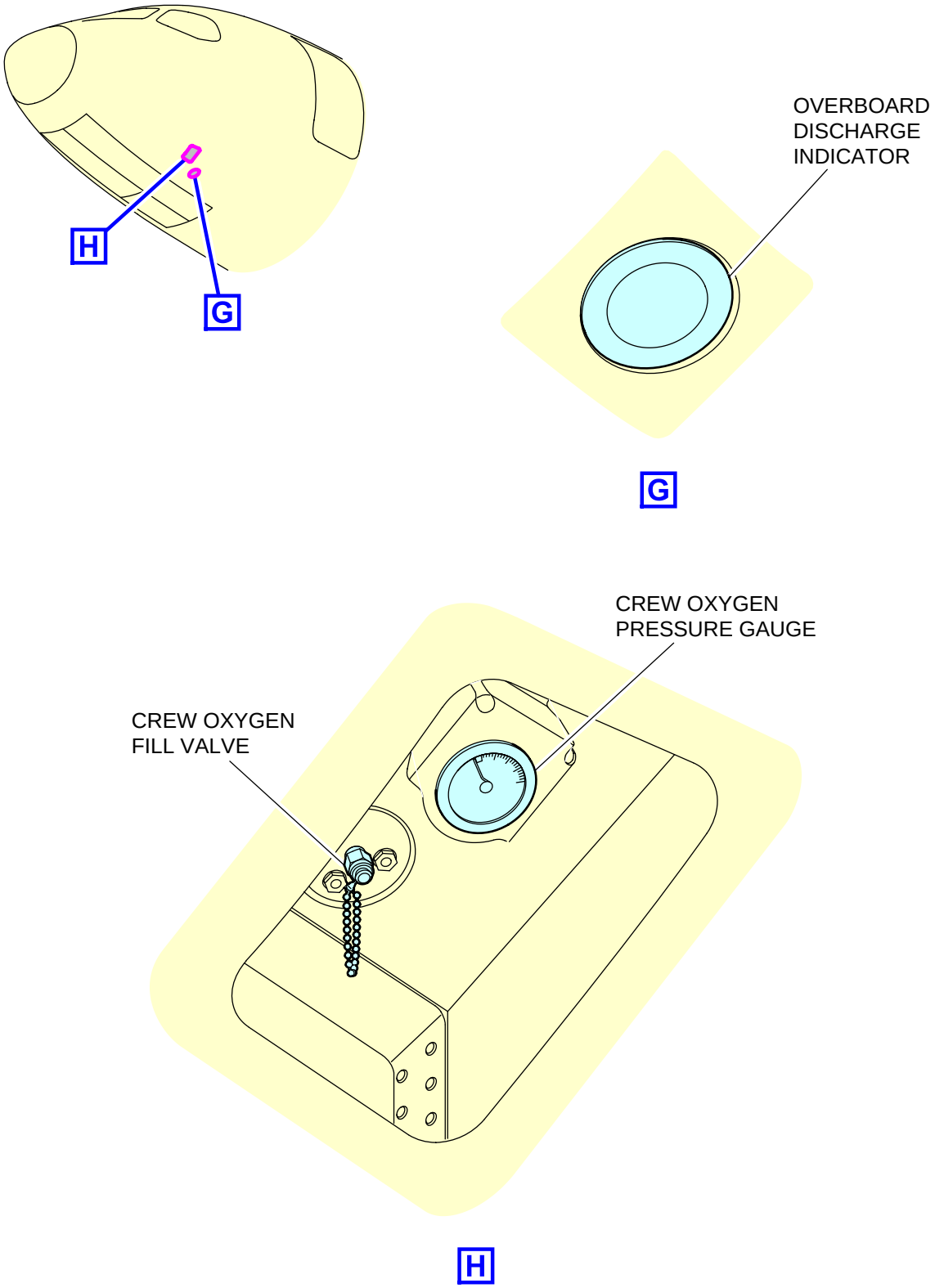
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Nominal working pressure: 1850 psig (128 bar)
- Capacity: 77 ft³ (2180 L)



ICN-BD500-A-J351100-C-3AB48-20623-A-002-01

Figure 11 Crew oxygen system

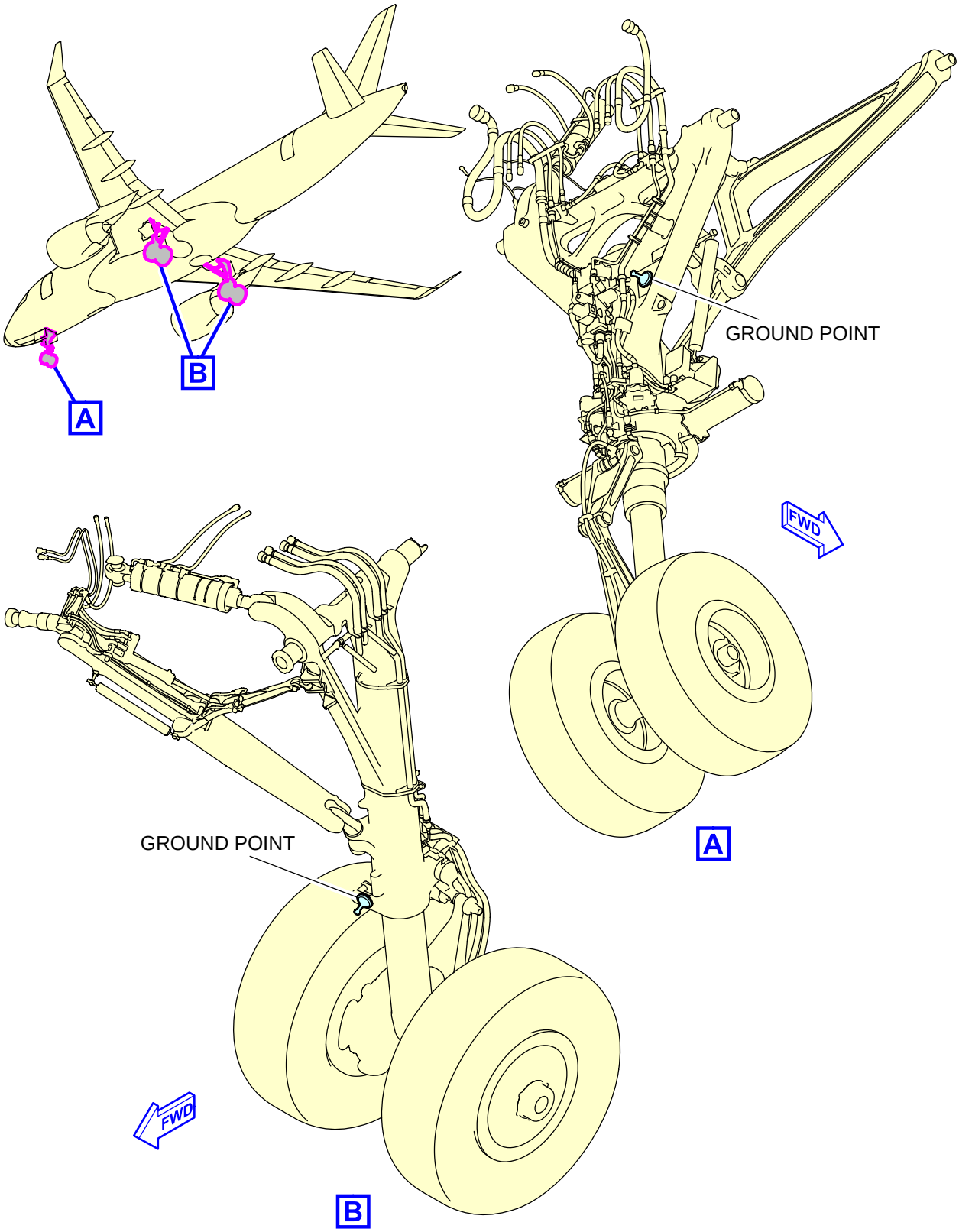
Table 9 Grounding points

Access	Aft of nose ft (m)	Position from aircraft Centerline RH side ft (m)	Mean height from ground ft (m)	LH side ft (m)
Nose Landing Gear (NLG) leg	11.73 (3.58)	On aircraft centerline	5.00 (1.51)	
Left Main Landing Gear (MLG) leg	53.23 (16.23)	-	10.75 (3.27)	2.85 (0.87)
Right MLG leg	53.23 (16.23)	10.75 (3.27)	-	2.85 (0.87)
Right MLG leg LH Refuel/Defuel Access door 621FB (Optional)	53.23 (16.23) 51.32 (15.64)	10.75 (3.27) -	- 27.31 (8.32)	2.85 (0.87) 10.93 (3.33)
RH Refuel/Defuel Access door 521FB Fig. 13	51.32 (15.64)	27.31 (8.32)	-	10.93 (3.33)

Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.



ICN-BD500-A-J000000-A-3AB48-22049-A-002-01

Figure 12 Landing gears grounding points

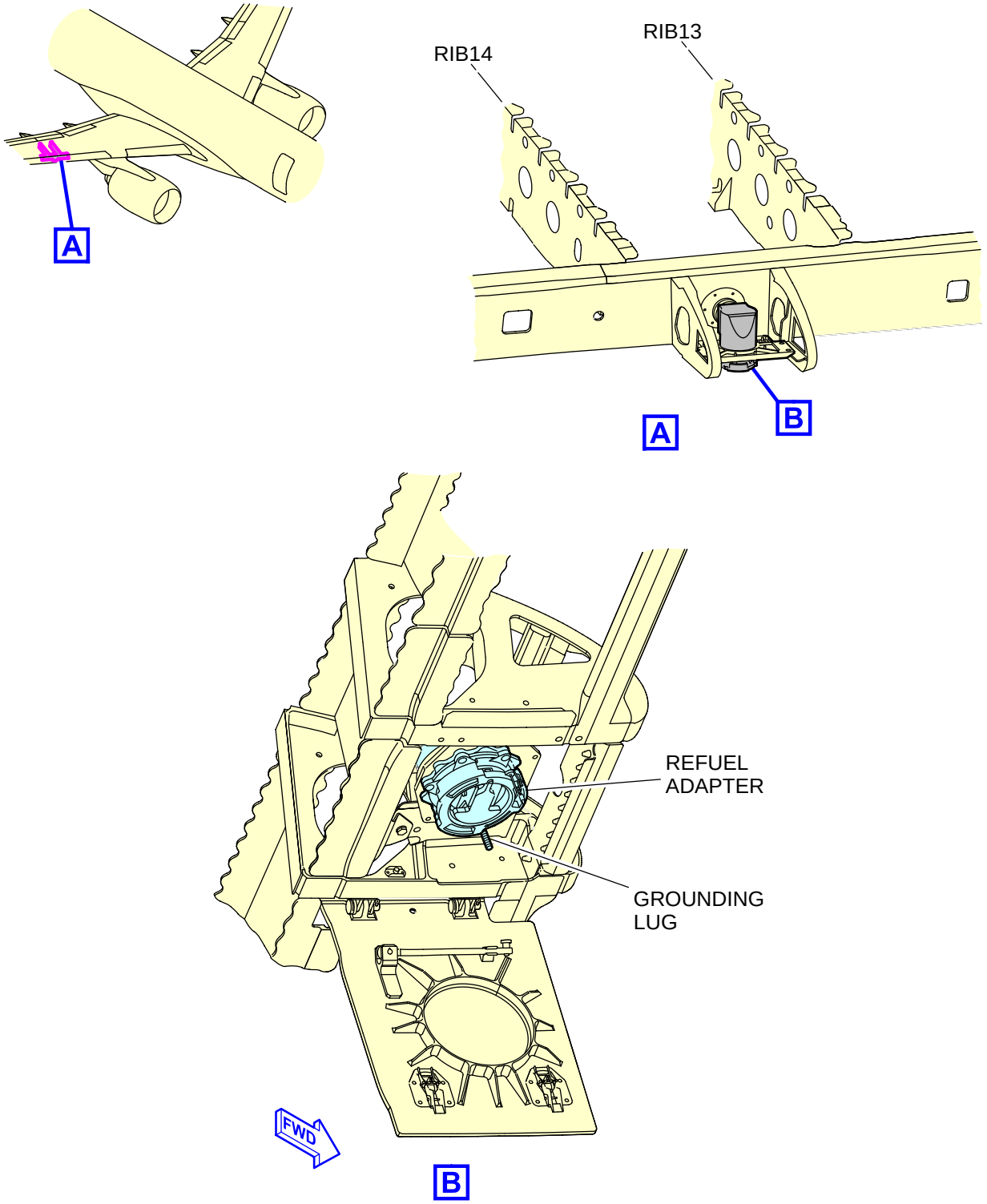
Table 10 Fuel system Refuel/Defuel adapter

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
LH Refuel/Defuel Access door 621FB (Optional)	51.32 (15.64)	-	27.31 (8.32)	10.93 (3.33)
RH Refuel/Defuel Access door 521FB	51.32 (15.64)	27.31 (8.32)	-	10.93 (3.33)

Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.



NOTES

1. Refuel adapter is optional on the left side.

ICN-BD500-A-J000000-A-3AB48-22099-A-002-01

Figure 13 Refuel adapter and grounding point

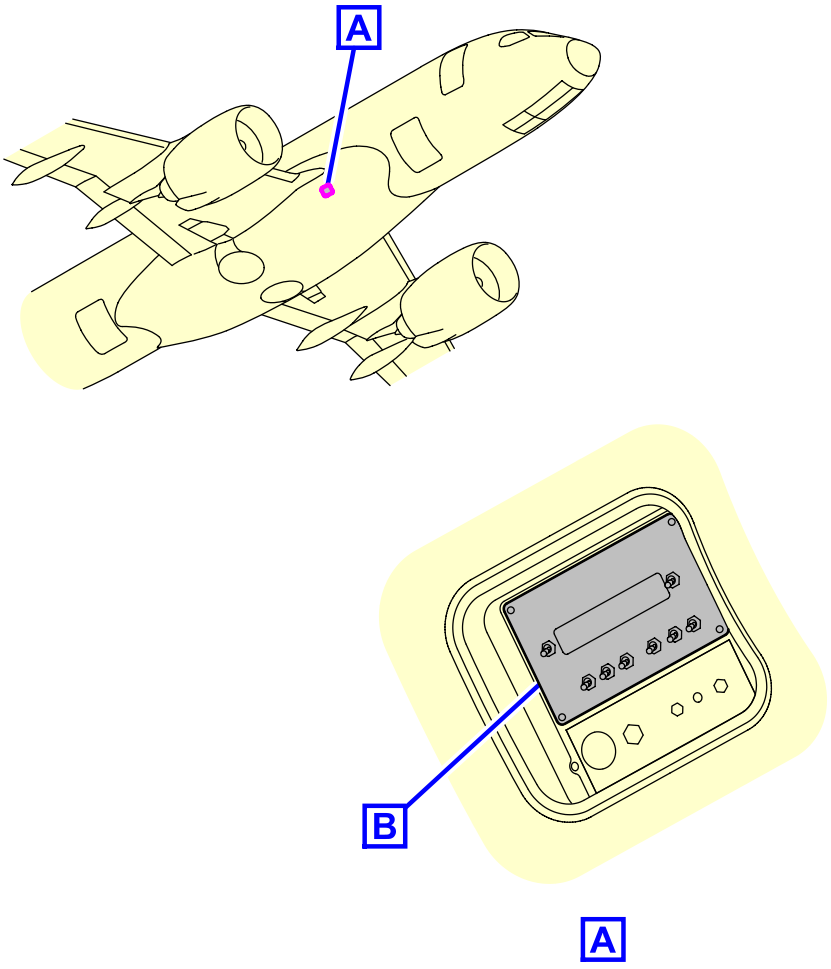
Table 11 Fuel system control panel

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 192AB	35.76 (10.9)	4.98 (1.52)	-	6.12 (1.86)

Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.



REFUEL/DEFUEL CONTROL PANEL

ICN-BD500-A-J282300-C-3AB48-12260-A-001-01

Figure 14 Refuel/Defuel system

Table 12 Oil system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Engine Oil Filling Cap Access door (LH) 475CR (RH) 485CR	35.76 (10.9)	19.60 (5.97)	16.16 (4.93)	5.50 (1.68)

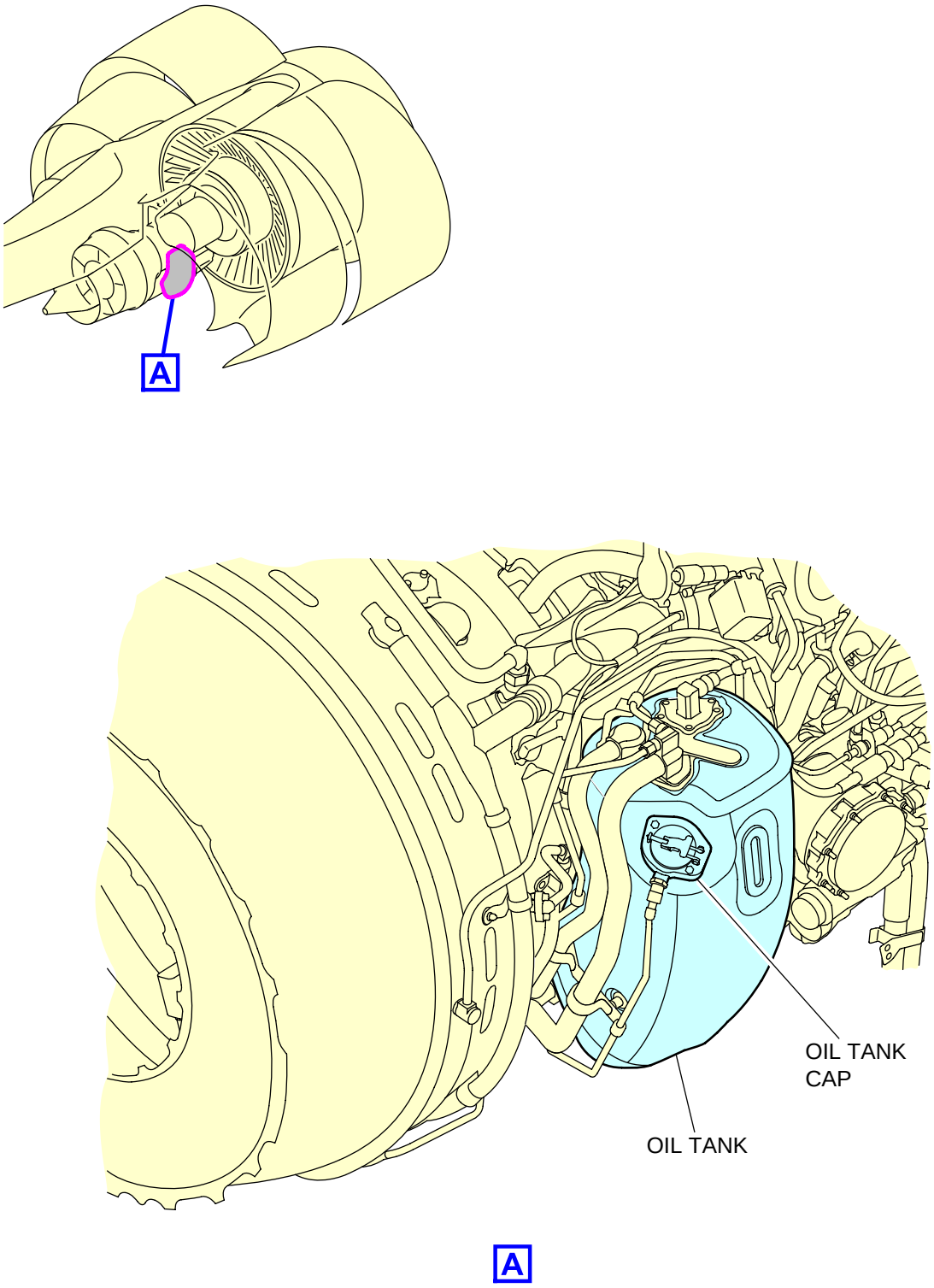
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Oil tank capacity: 6.8 U.S. gal (25.7 L)



ICN-BD500-A-J791100-C-3AB48-09787-A-001-01

Figure 15 Oil storage system

1.4 Ground electrical power requirements

The external power system is used to connect AC electrical power from a ground cart. There are no provisions to connect DC power from an external ground cart. External AC can be used to power the complete AC distribution system or only those buses that provide power to the passenger compartment.

Note

It is recommended to use ground cart standard 75 KVA and higher. Using ground cart 60 KVA standard can lead to the EICAS nuisance messages.

When the external AC power is connected to the aircraft, both the AVAIL light on the electrical panel and on the electrical/towing service panel illuminate. The Bus Power Control Unit (BPCU) 1 energizes the External Line Contactor (ELC) to connect external power to the aircraft when the EXT PWR PBA in the flight compartment electrical panel is selected ON. The BPCU 1 also provides protection features to protect aircraft systems from potential permanent damage. Following aircraft power-up, several critical systems (Fly-By-Wire, Electrical and others) run their Power-Up Built-In Test (PBIT). The main purpose of PBITis to reduce the complexity of systems on-aircraft testing and removed failure dormancy, thereby decreasing the overall maintenance cost and reducing reliance upon external (pattern-programmed) test equipment for the operators. Any power interruption (Ground Power Unit (GPU) going offline or GPU power quality not meeting requirements) occurring during this critical phase may cause PBIT interruption and latch system failures which will require maintenance actions to clear. Depending on the latched faults, these power interruption events may potentially cause lengthy delays or flight cancellations which can negatively impact operators.

Refer to Table 13 for the external AC power requirements data.

Refer to Table 14 for the external power quality limitations data.

Refer to Table 15 for overcurrent protection ampere versus time delay.

Refer to Table 16 for overvoltage protection versus time delay.

Table 13 External AC power requirements

Voltage	Frequency
115 ±5 V	400 ±15 Hz

Table 14 External power quality limitations

Parameter	Setting limit	Response time
Overcurrent	Table 15	
Overvoltage (highest phase)	Table 16	
Redundant Overvoltage (highest phase)	130 ±3.3 V	0.75 ±0.055 sec
Undervoltage	107 ±2.0 V (lowest phase) or 108.5 ±2.0 V (3-phase average)	4.5 ±0.5 sec
Overfrequency	418 ±2 Hz	4.5 ±0.5 sec

Parameter	Setting limit	Response time
Underfrequency	382 ±2 Hz	4 ±0.5 sec
Phase sequence	A-B-C	0.1 sec
Open sequence	Lowest phase 15 ±5 A and other phase greater than 30 ±5 A	2.0 ±0.5 sec

Table 15 Overcurrent protection ampere versus time delay

Current (A)	Time (s)
230 ±12	300
336 ±12	11.75
337 ±12	11.05
346 ±12	9.4
355 ±12	8.2
370 ±12	6.75
380 ±12	6.1

Table 16 Overvoltage protection versus time delay

Voltage (V)	Time (s)
123	0.6
124	0.5
132	0.3
141	0.14
146	0.1
151	0.05

1.5 Engine starting pneumatic power requirements

The ground air supply requirements for engine starting are shown in Table 17 .

Conditions:

- Time allowed during start (to starter cutout) is 90 seconds
- Time-to-IDLE on ground is 45 seconds minimum
- No bleed air extraction is permitted during start sequence

Table 17 Ground pneumatic power requirements – Engine starting

ATS requirements	Inlet Pressure	Airflow
ISA day	45 psig 45 psia	150 lb/min 68.04 kg/min

1.6 Ground pneumatic power requirements

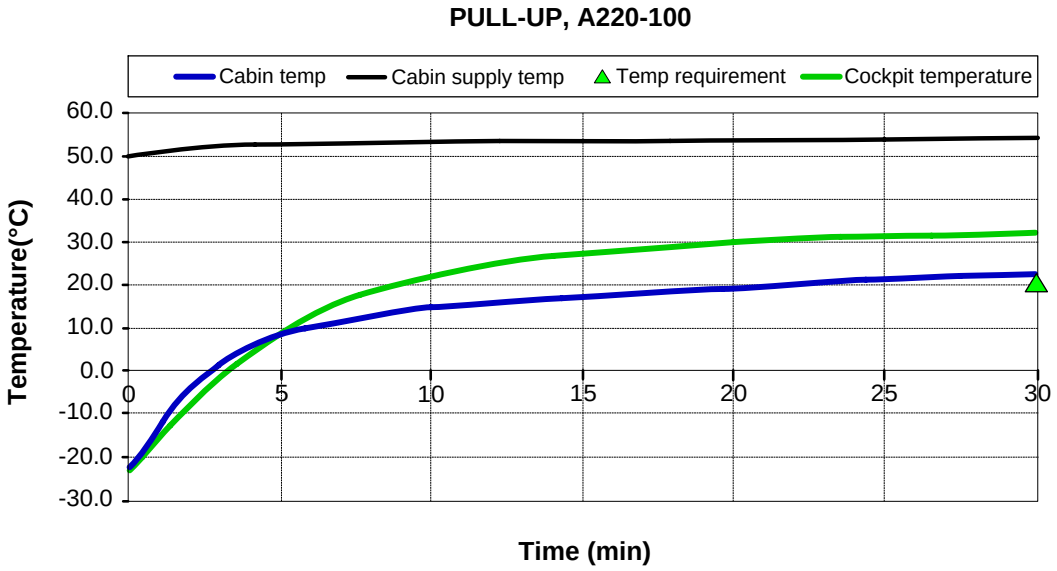
1.6.1 Heating

This section provides the ground pneumatic power requirements for heating the cabin with specific conditions.

Refer to Fig. 16 for heating pull-up graphic.

Table 18 Ground air supply requirements for heating (Pull up)

Requirements	Pressure	Airflow	Temperature
To heat cabin to 69.8 °F (21 °C) in 30 minutes Conditions - Outside air temperature: -40 °F (-40 °C) - Initial cabin and cockpit temperature: -9.4 °F (-23 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Full Hot (86 °F (30 °C)) - Recirculation fan: On - Trim air: On - No passenger	31 psig (45.7 psia)	203 lb/min (92.1 kg/min)	280 ºF (138 ºC)



ICN-BD500-A-J000000-A-3AB48-22378-A-002-01

Figure 16 Ground pneumatic requirements - Heating

Table 19 Ground air supply requirements for heating at a steady state

Requirements	Pressure	Airflow	Temperature
Conditions - Outside air temperature: -40 °F (-40 °C) - Steady state Cockpit & Cabin temperature: 75.2 °F (24 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Mid selection (75.2 °F (24 °C)) - Recirculation fan: On - Trim air: On - 15 passengers	25.4 psig (40.1 psia)	166 lb/min (73.3 kg/min)	253 ºF (123 ºC)

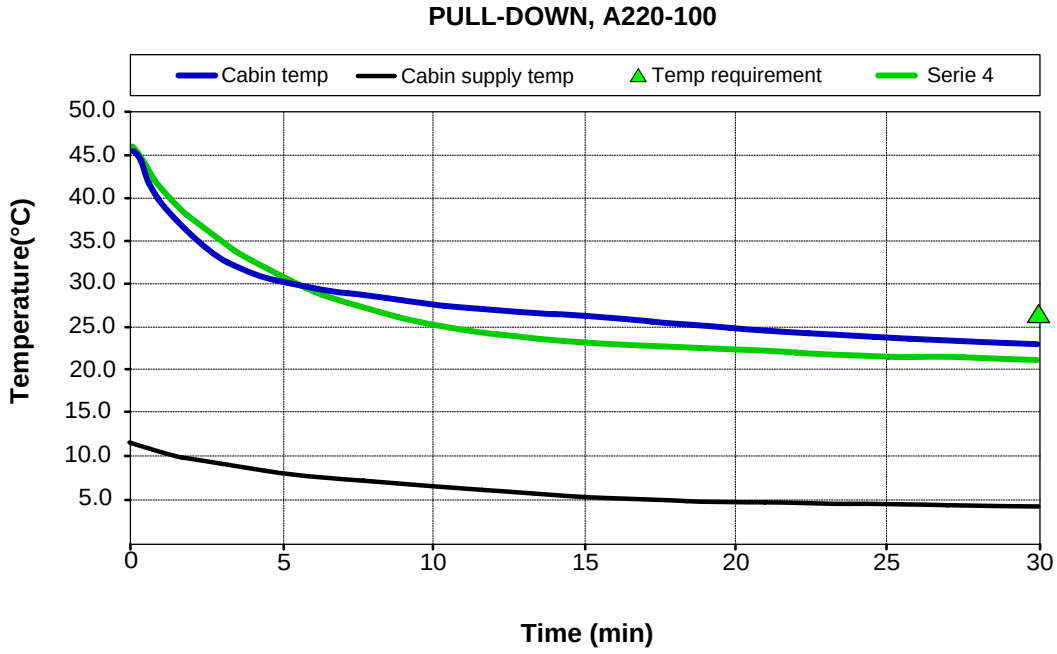
1.6.2 Cooling

This section provides the ground pneumatic power requirements for cooling the cabin with specific conditions.

Refer to Fig. 17 for the cooling pull-down graphic.

Table 20 Ground air supply requirements for cooling (Pull down)

Requirements	**Pressure**	**Airflow**	**Temperature**
To cool cabin to 80.6 °F (27 °C) in 30 minutes Conditions - Outside air temperature: 104 °F (40 C) - Initial cabin and cockpit temperature: 114.8 °F (46 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Full Cold (64.4 °F (18 °C)) - Recirculation fan: On - Trim air: On - No passenger	38 psig (52.7 psia)	140 lb/min (63.5 kg/min)	437 ºF (225 ºC)



ICN-BD500-A-J000000-A-3AB48-22379-A-002-01

Figure 17 Ground pneumatic requirements - Cooling

Table 21 Ground air supply requirements for cooling at a steady state

Requirements	Pressure	Airflow	Temperature
Conditions - Outside air temperature: 104 °F (40 °C) - Steady state Cockpit & Cabin temperature: 75.2 °F (24 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Mid selection (75.2 °F (24 °C)) - Recirculation fan: On - Trim air: On - 130 passengers	31 psig (45.7 psia)	203 lb/min (92.1 kg/min)	280 ºF (138 ºC)

1.7 Preconditioned airflow requirements

The ground air supply requirements for air conditioning and airflow requirements are shown in Table 22 for the LPGC.

Table 22 Preconditioned airflow requirements

Requirements	**Pressure**	**Airflow**	**Temperature**
To cool cabin to 75.2 °F (24 °C) Conditions - Outside air temperature is 104 °F (40 °C) - Recirculation fan is on - 130 passenger	0.6 psig (15.2 psia) (4.1 kPa)	125 lb/min (54.4 kg/min)	41 ºF (5 ºC)
To heat cabin to 75.2 °F (24 °C) Conditions - Outside air temperature is -40 °F (-40 °C) - Recirculation fan is on - 15 passenger	0.6 psig (15.2 psia) (4.1 kPa)	125 lb/min (54.4 kg/min)	104 ºF (40 ºC)

1.8 Ground towing requirements

The aircraft is designed with means for conventional or towbarless towing. Information and procedures can be found for both in the Aircraft Maintenance Manual (AMM) 09.

Status on towbarless towing equipment qualification can be found in CS-SL-09-10-0001.

1.9 Aircraft

This section shows the chart to determine the draw bar pull and tow tractor mass requirement as a function of the following physical characteristics:

- Model: A220-100
- Number of engines at idle

- Slope

The chart is based on the engine type with the highest idle thrust level. Refer to Fig. 18 and Fig. 19 .

1.10 Towbar design guidelines

The towbar shall comply with the standards that follow:

- SAE AS 1614 - Main Line Aircraft Towbar Attach Fitting Interface
- ISO 8267-1 - Aircraft - Towbar Attachment Fitting - Interface Requirements - Part 1: Main Line Aircraft
- ISO 9667 - Aircraft Ground Support Equipment - Towbar
- SAE ARP 1915 - Aircraft Towbar

Recommended references

- IATA Airport Handling Manual AHM 958 - Functional Specification for an Aircraft Towbar
- EN 12312-7, Aircraft Ground Support Equipment - Specific Requirements - Part 7 Aircraft movement Equipment

A conventional type towbar is required which should be equipped with a damping system (to protect the nose gear against jerks) and with towing shear pins:

- A traction shear pin calibrated at 17,400 lbs (77 394 N),
- - A torsion pin calibrated at 59 940 In-lbs (6 772 N-m)

The towing head is designed according to SAE AS 1614, cat I.

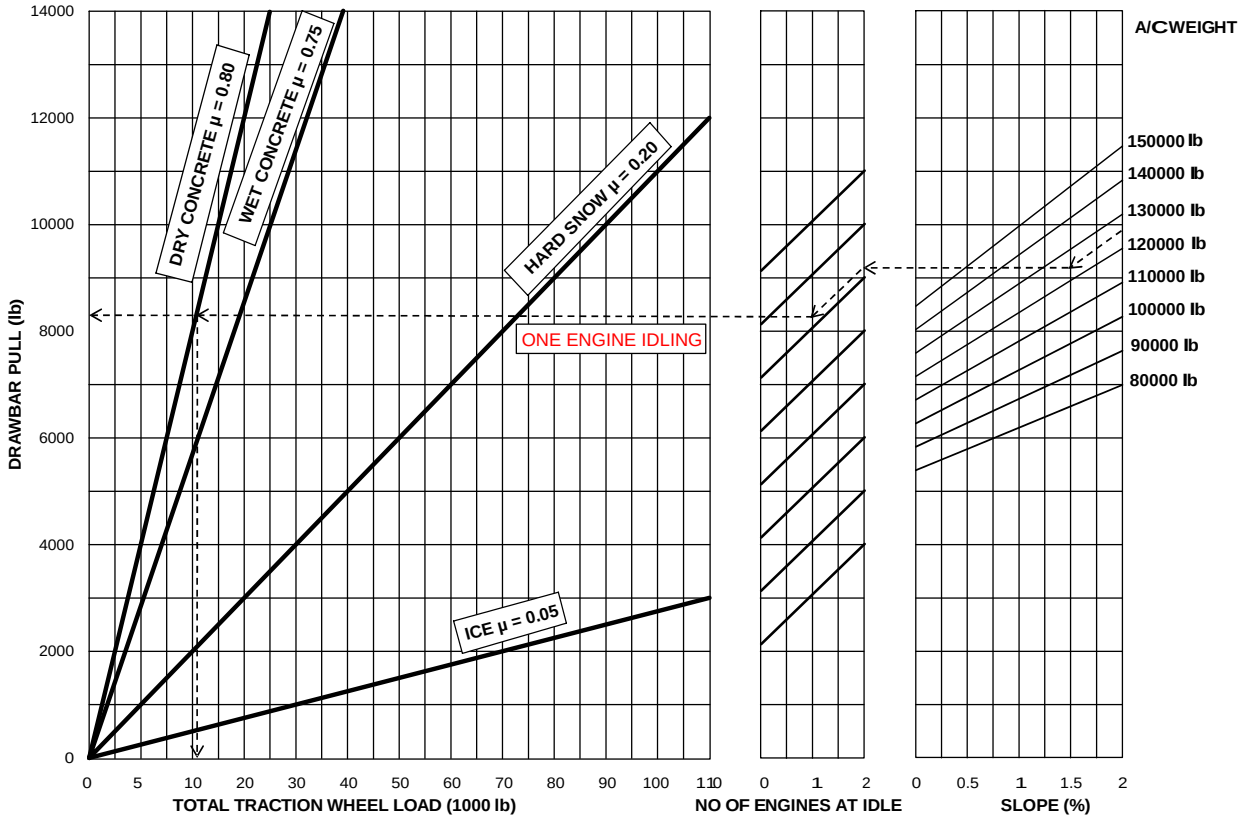
For towing and pushing operations, controls are provided to accommodate the following conditions:

- Aircraft not powered (see note below):
  A control panel is provided on the left side of the aircraft by the nose NLG. A push-button on the control panel can be toggled to engage power to begin the towing sequence (Navigation lights are lit automatically). The parking brake can be deactivated by way of a switch located on this panel. Annunciation lights on the NLG indicate when the parking brake is deactivated and the aircraft is ready for towing.

  Note

  Availability of the controls to facilitate towing the aircraft with the flight deck vacant does not constitute an approval to conduct such operations.

- Aircraft powered, and flight deck occupied:
  Two separate controls, one to deactivate the nose wheel steering, and one to deactivate the parking brake, are located in both the flight deck and on the control panel located in the vicinity of the nose landing gear. Headset jacks are provided on this control panel to allow for communication between personnel on the flight deck and on the ground. Annunciation lights on the control panel indicate when the aircraft is ready for towing.
  With the torque links connected, towing up to ±130 degrees nose wheel angle is possible.
  The ground towing requirements are described in the illustration below.
  For more information related to towing, refer to the AMP.

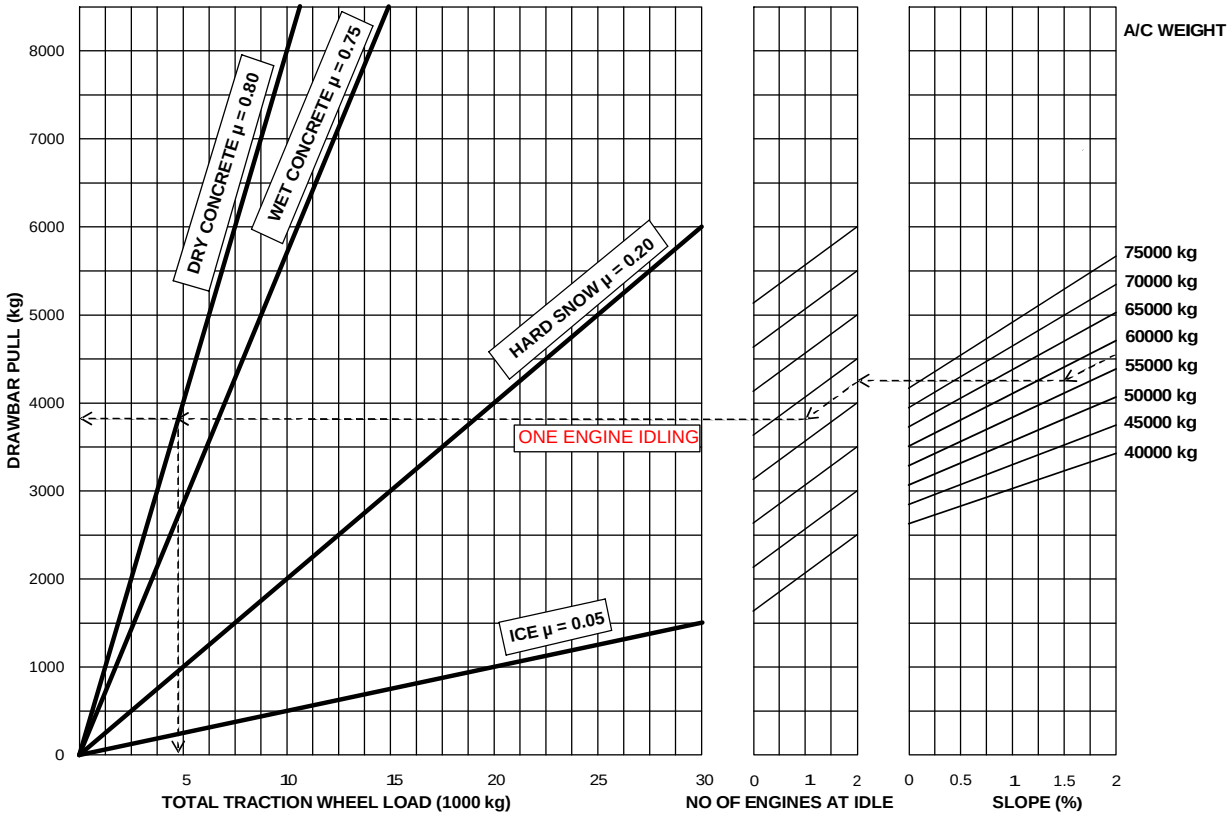


NOTES

1. Unusual breakaway conditions not reflected.
2. Estimated for rubber - tired tow vehicles.
3. Coefficient of friction (μ) approximate.
4. Example: At an aircraft gross weight of 125000lbs (56699 Kg), an uphill slope of 1.5%, with one engine ON and with a dry concrete surface, the corresponding draw bar pull or push required is 8000 lb (35.6 kN) and the total tractor weight of approximately 10 500 lbs (4762 Kg).

ICN-BD500-A-J000000-A-3AB48-22839-A-001-01

Figure 18 Ground towing requirements (imperial unit)



NOTES

1. Unusual breakaway conditions not reflected.
2. Estimated for rubber - tired tow vehicles.
3. Coefficient of friction (μ) approximate.
4. Example: At an aircraft gross weight of 125000lbs (56699 Kg), an uphill slope of 1.5%, with one engine ON and with a dry concrete surface, the corresponding draw bar pull or push required is 8000 ll (35.6 kN) and the total tractor weight of approximately 10 500 lbs (4762 Kg).

ICN-BD500-A-J000000-A-3AB48-22840-A-001-01

Figure 19 Ground towing requirements (metric unit)

A220

Terminal servicing - Technical data

Applicability: 55001-59999

Table of contents

		Page
Terminal servicing - Technical data		1
References		2
Description		2
1	Introduction	2
1.1	Aircraft servicing arrangement	2
1.2	Terminal operations	4
1.3	Ground servicing connections	6
1.4	Ground electrical power requirements	31
1.5	Engine starting pneumatic power requirements	32
1.6	Ground pneumatic power requirements	33
1.6.1	Heating	33
1.6.2	Cooling	35
1.7	Preconditioned airflow requirements	37
1.8	Ground towing requirements	37
1.9	Aircraft	37
1.10	Towbar design guidelines	37

List of tables

		Page
1	References	2
2	Hydraulic system	8
3	Hydraulic system - Accumulator charging	10
4	Waste system	12
5	Potable water system	14
6	Pneumatic system	16
7	Electrical System	19
8	Oxygen system	21
9	Grounding points	23
10	Fuel system Refuel/Defuel adapter	25
11	Fuel system control panel	27
12	Oil system	29
13	External AC power requirements	31
14	External power quality limitations	31
15	Overcurrent protection ampere versus time delay	32
16	Overvoltage protection versus time delay	32
17	Ground pneumatic power requirements – Engine starting	33
18	Ground air supply requirements for heating (Pull-up)	33
19	Ground air supply requirements for heating at a steady state	35
20	Ground air supply requirements for cooling (Pull down)	35
21	Ground air supply requirements for cooling at a steady state	37
22	Preconditioned airflow requirements	37

List of figures

		Page
1	Aircraft servicing arrangement	3
2	Turnaround time analysis	5
3	Ground servicing connections	7
4	Ground servicing system	9
5	Accumulator charging valves	11

6 Waste system access panel..... 13
7 Potable water system service panel..... 15
8 Low pressure ground system..... 17
9 High pressure ground system..... 18
10 Electrical service panel..... 20
11 Crew oxygen system..... 22
12 Landing gears grounding points..... 24
13 Refuel adapter..... 26
14 Refuel/Defuel system..... 28
15 Oil storage system..... 30
16 Ground pneumatic requirements - Heating..... 34
17 Ground Pneumatic Requirements - Cooling..... 36
18 Ground towing requirements (imperial unit)..... 39
19 Ground towing requirements (metric unit)..... 40

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data related to the preparation of an aircraft for flight from a terminal. This data is provided to show the general types of tasks involved in terminal operations. Each airline has different operating conditions and practices, which can result in changes in the operating procedures and time intervals to do the tasks specified. Because of this, requirements for ground operations should be approved with the specified airline(s) before ramp planning is started. This section presents the following topics:

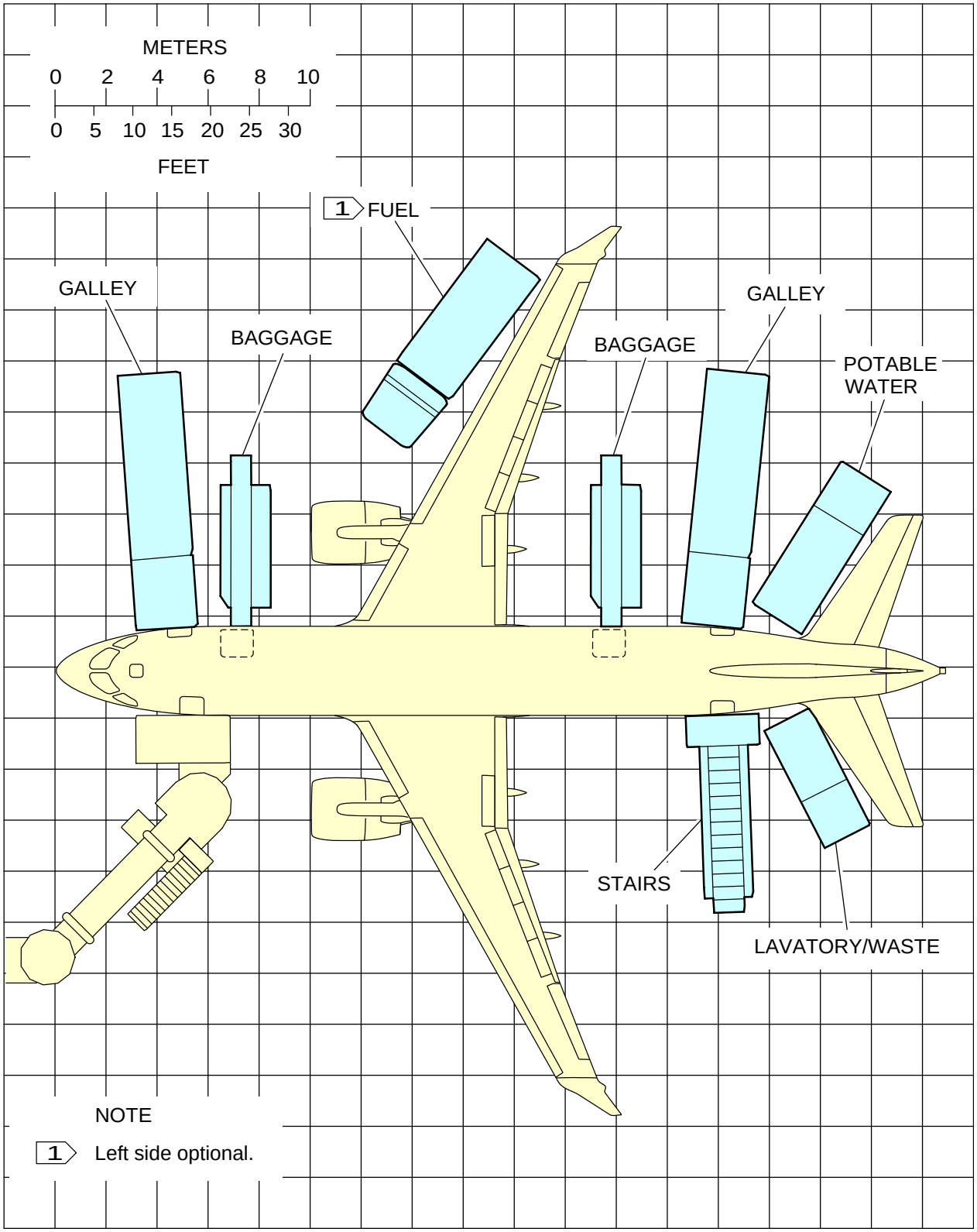
- Aircraft servicing arrangement
- Terminal operations
- Ground servicing connections
- Ground electrical power requirements
- Ground pneumatic power requirements – Engine starting
- Preconditioned airflow requirements – Air conditioning
- Ground towing requirements.

Note

All applicable procedures and limitations are provided in the Aircraft Maintenance Publication (AMP) BD500-3AB48-10200-00.

1.1 Aircraft servicing arrangement

Refer to Fig. 1 for the aircraft servicing arrangement.



ICN-BD500-A-J000000-A-3AB48-21739-A-001-01

Figure 1 Aircraft servicing arrangement

1.2 Terminal operations

Refer to refer to Fig. 2 for the turnaround station operations.

The turnaround time analysis is based on the following parameters:

- 100% Pax/baggage exchange
- 115 passengers (A220-300) (85% load factor) / 1 class / 1 door
- 2 Galley service trucks
- Water/Waste servicing is sequential
- Cabin servicing during available time
- Passenger deplane rate is 18 per minute per door
- Passenger boarding rate is 12 per minute per door
- 2 bulk-loading belt-loaders
- 59 bags forward / 79 bags aft (1.2 x 4 ft^3 (1.2 X 0.11 m^3) per passenger)
- Bag loading/unloading rates are 10 and 15 bags per minute
- Fuel loaded via one refuel/defuel adapter
- Refuel adapter rate at 50 psi (344.74 kPa) is as follows:

  1 When refueling tree (3) tanks simultaneously (the center tank and two wing tanks), the refuel rate is 260 gpm (984 L/min).

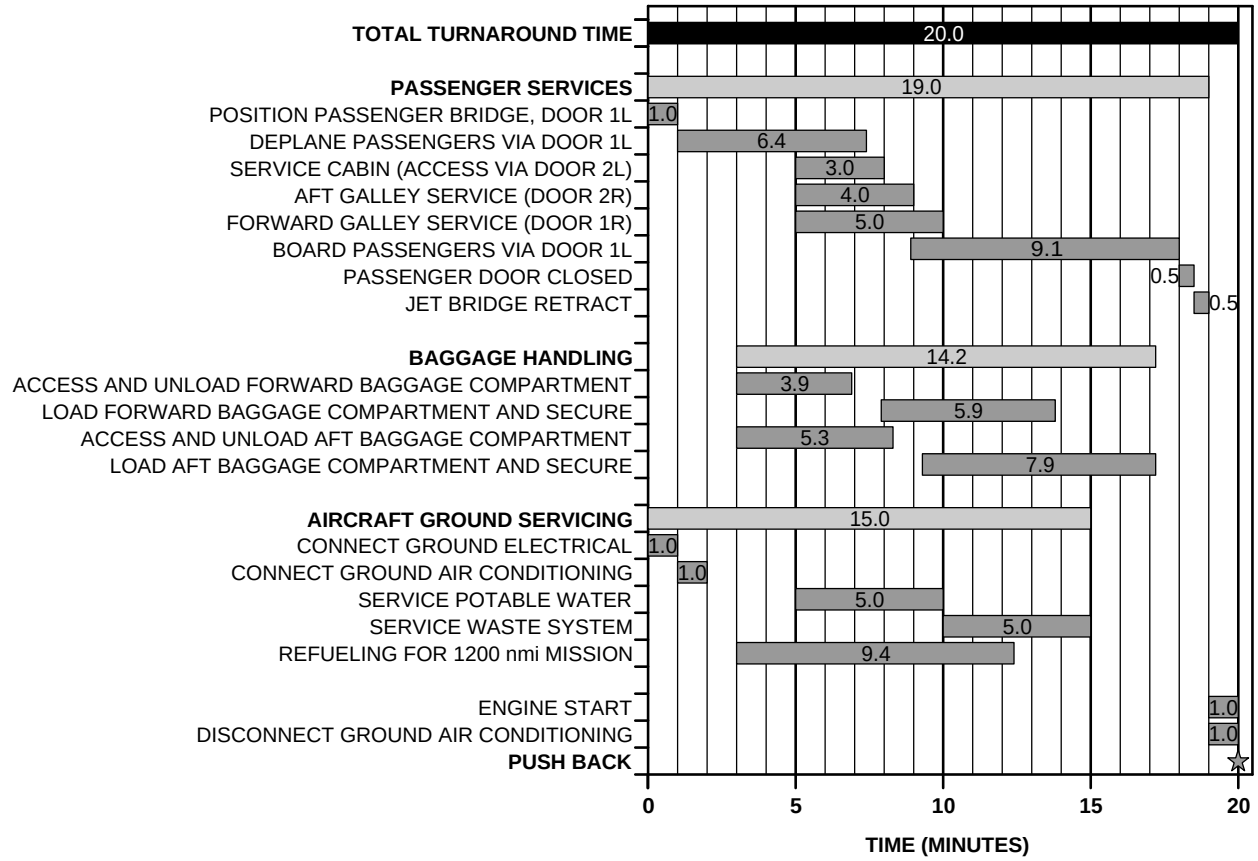
  2 When refueling two (2) wing tanks, the refuel rate is 140 gpm (530 L/min).

  3 When refueling the center tank only, the refuel rate is 140 gpm (530 L/min).

- Mission range is 1200 NM (2222.4 km)
- Refueling performed while deplaning/boarding.

Note

All equipment is assumed to function properly and weather condition to be normal. This data is provided to illustrate the general scope and type of operations involved in a terminal gate environment. Varying operating practices and circumstances may result in different task sequences and durations.



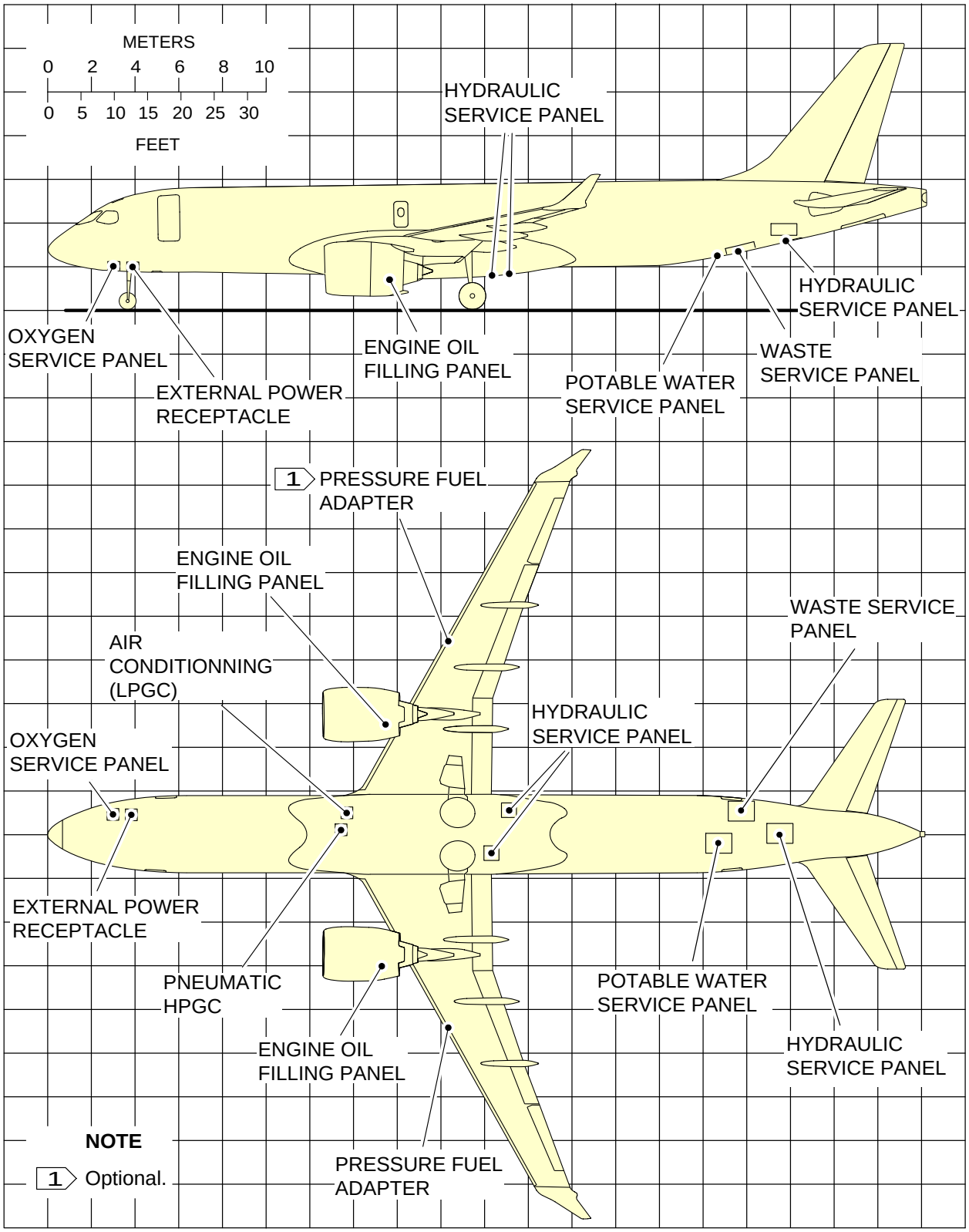
ICN-BD500-A-J000005-A-3AB48-00067-A-001-01

Figure 2 Turnaround time analysis

1.3 Ground servicing connections

Refer to Fig. 3 for the ground servicing connection points. For servicing procedures, refer to the AMP.

All servicing points are designed and positioned to consider accessibility and compatibility with industry standard vehicles and other Ground Support Equipment (GSE). All applicable procedures and limitations are provided in the AMP.



ICN-BD500-A-J000000-A-3AB48-25644-A-001-01

Figure 3 Ground servicing connections

Table 2 Hydraulic system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
System # 1 Access door 195CB	67.96 (20.71)	-	3.93 (8.20)	5.82 (1.77)
System # 2 Access door 195AB	65.543 (19.98)	2.795 (0.85)	-	5.57 (1.70)
System # 3 Aft equipment bay door	107.42 (32.74)	On centerline of the aircraft		8.77 (2.67)

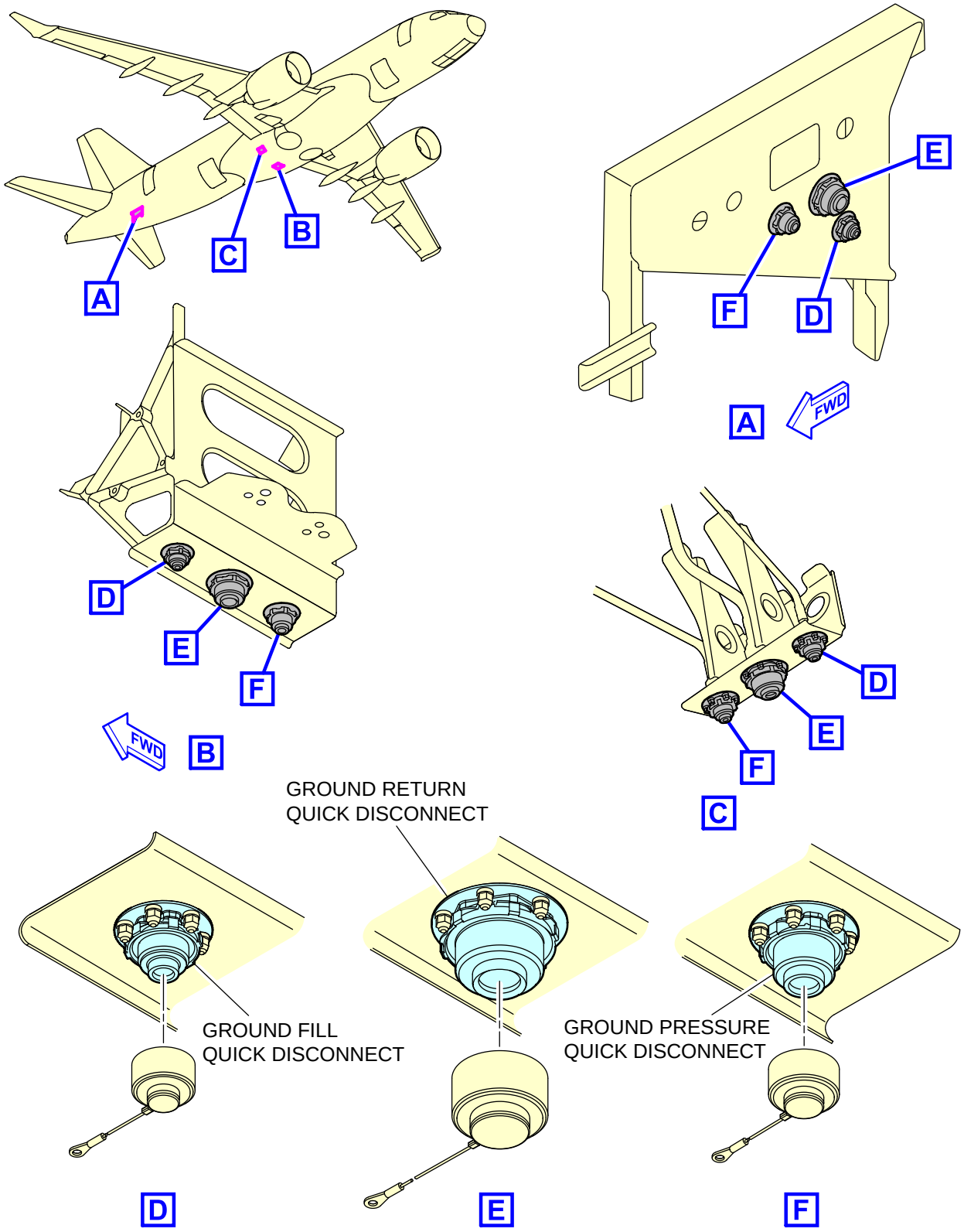
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Nominal pressure: 3000 psig (206.84 bar)
- Fitting connectors
  - Fitting dimension: Draining: 4 in. (10.16 cm)
  - Fitting dimension: Rinsing: 1 in. (2.54 cm)



ICN-BD500-A-J291400-C-3AB48-15827-A-001-01

Figure 4 Ground servicing system

Table 3 Hydraulic system - Accumulator charging

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Aft equipment bay door	107.42 (32.74)	On centerline of the aircraft		8.77 (2.67)

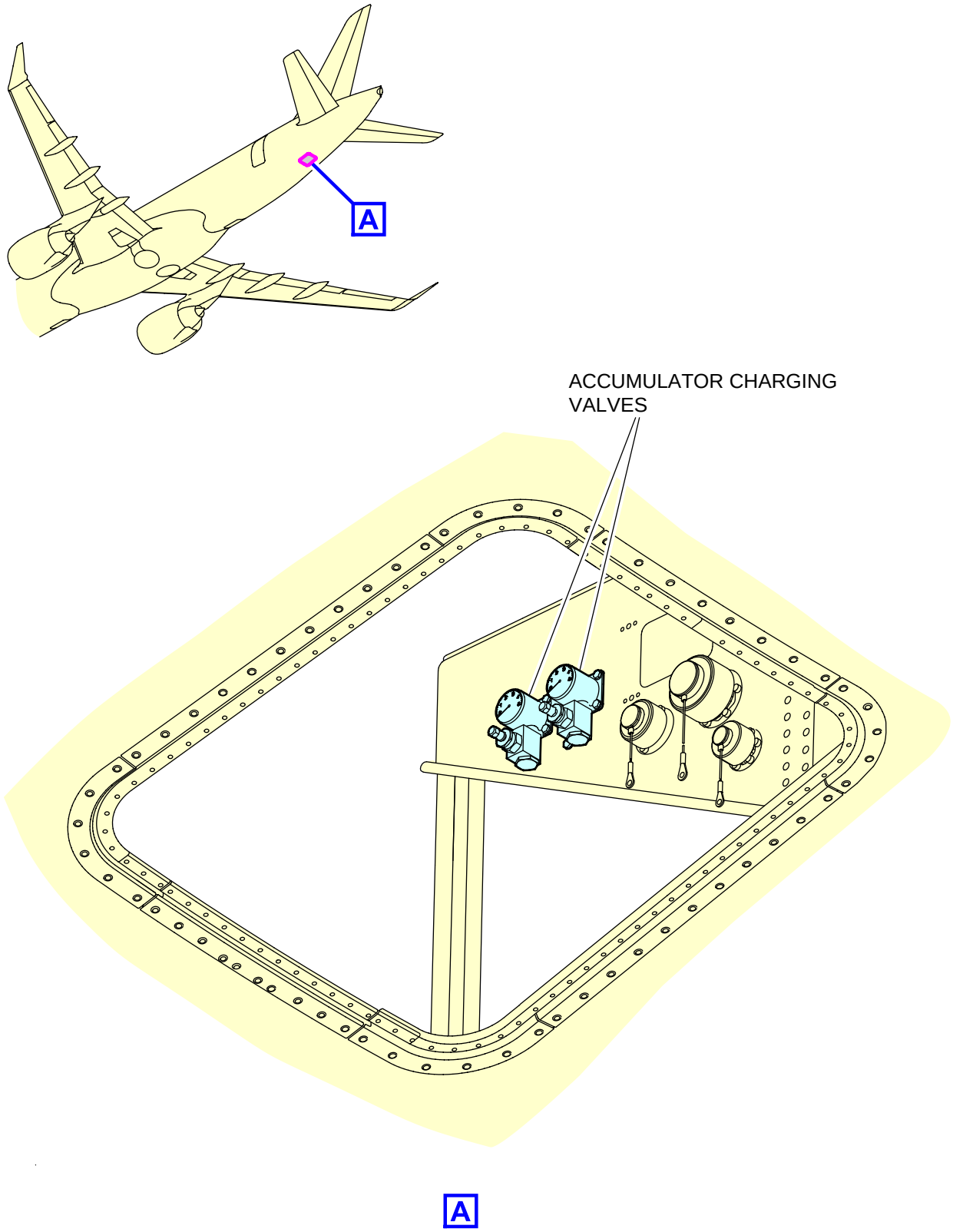
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Operating pressure: 3000 psig (206.84 bar)
- Accumulator pressure gauge range: 0 to 5000 psig (344.74 bar)
- Gauge accuracy: ±75 psig (5.17 bar)



ICN-BD500-A-J000000-A-3AB48-22071-A-001-01

Figure 5 Accumulator charging valves

Table 4 Waste system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 146BR	99.10 (30.21)	-	1.21 (0.37)	7.14 (2.18)

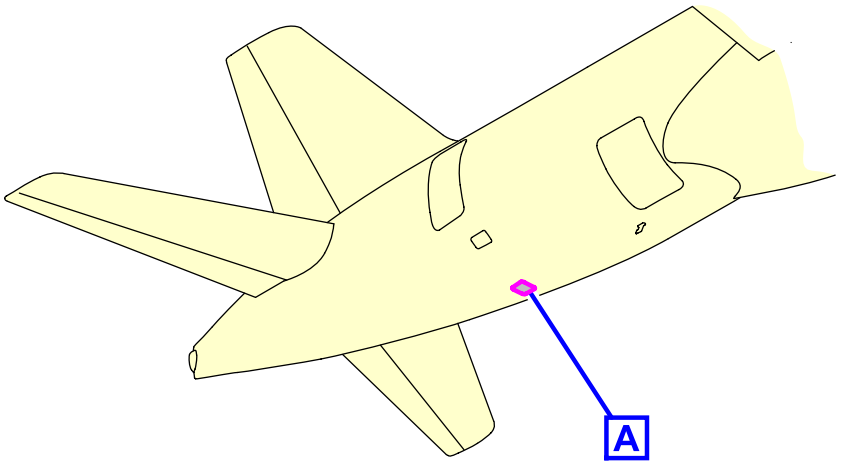
Note

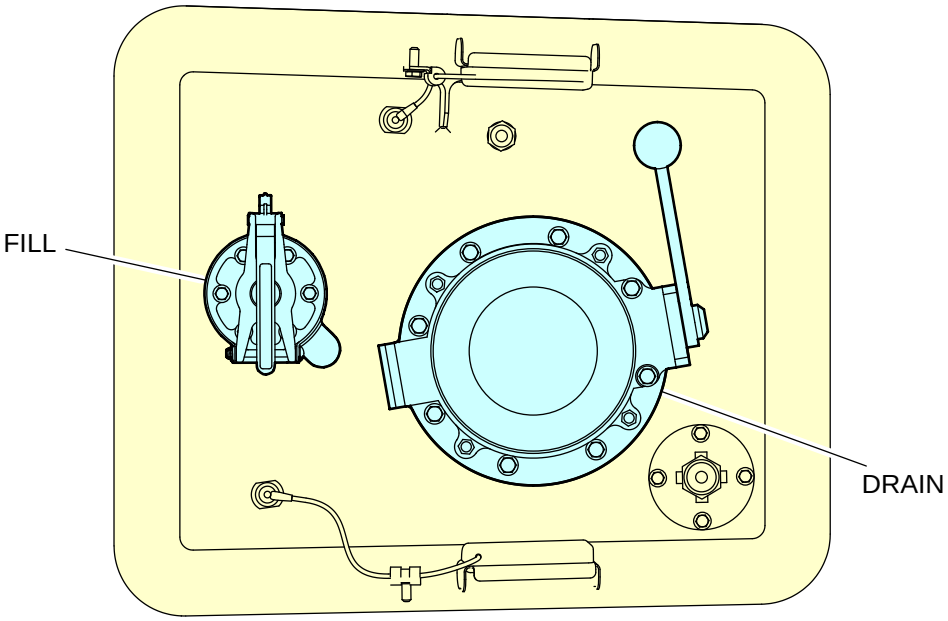
All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Usable volume: 38 U.S. gal (143.85 L)
- Fitting connectors
  - Fitting dimension: Draining: 4 in. (10.16 cm)
  - Fitting dimension: Rinsing: 1 in. (2.54 cm)





WASTE ACCESS PANEL

A

ICN-BD500-A-J000000-A-3AB48-22008-A-001-01

Figure 6 Waste system access panel

Table 5 Potable water system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 146CR	97.05 (29.58)	3.661 (1.11)	-	7.75 (2.36)

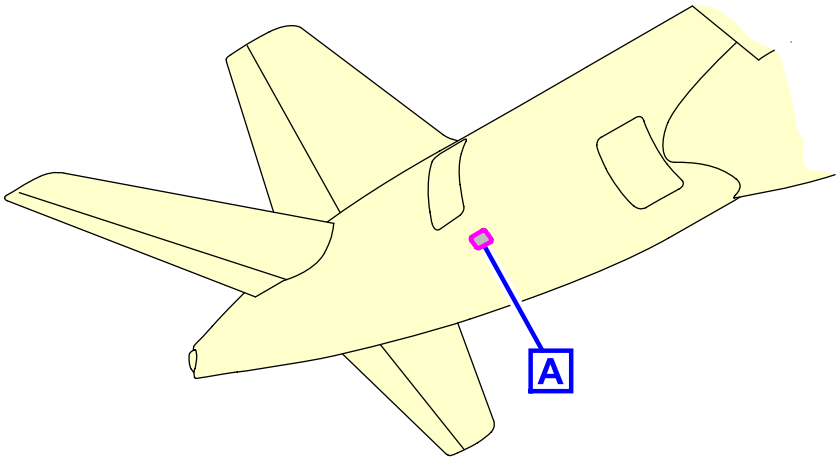
Note

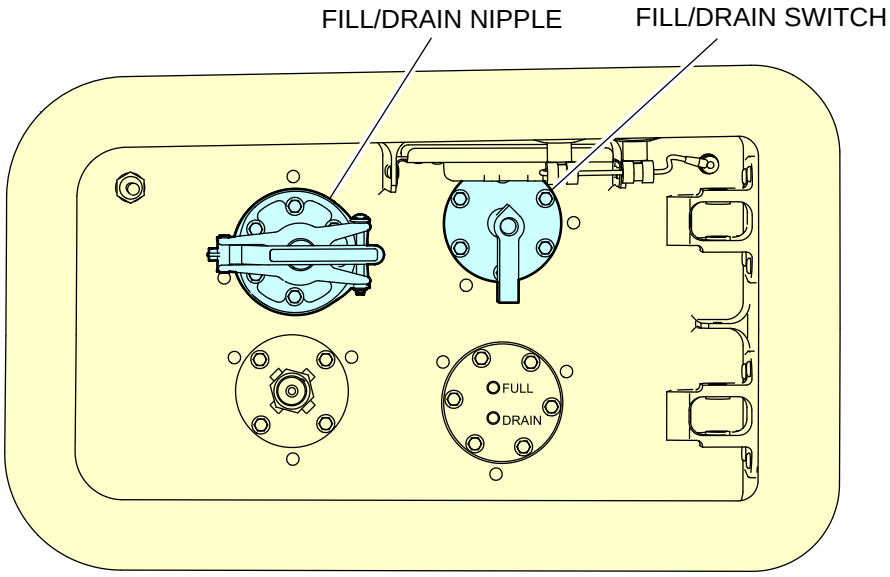
All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical specifications

- Usable volume: 42 U.S. gal (158.99 L)
- Fitting dimension: Filling/Draining: 3/4 in. (1.905 cm)





POTABLE WATER SERVICE PANEL

A

ICN-BD500-A-J000000-A-3AB48-22007-A-001-01

Figure 7 Potable water system service panel

Table 6 Pneumatic system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
LPGC Access door 191BB	44.76 (13.64)	-	4.33 (1.32)	5.30 (1.61)
HPGC Access door 191AB	44.38 (13.53)	-	1.30 (0.40)	4.62 (1.41)

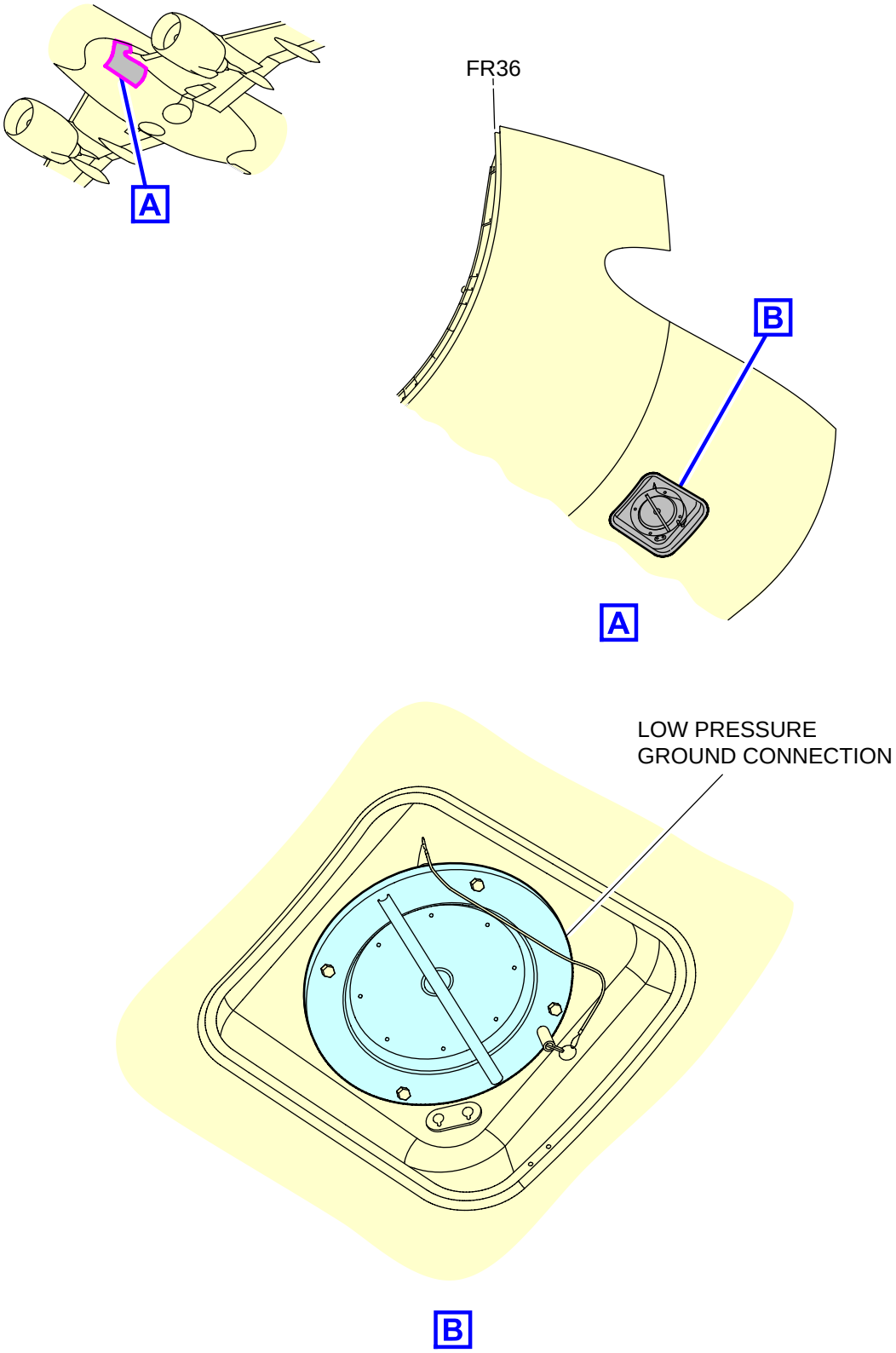
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

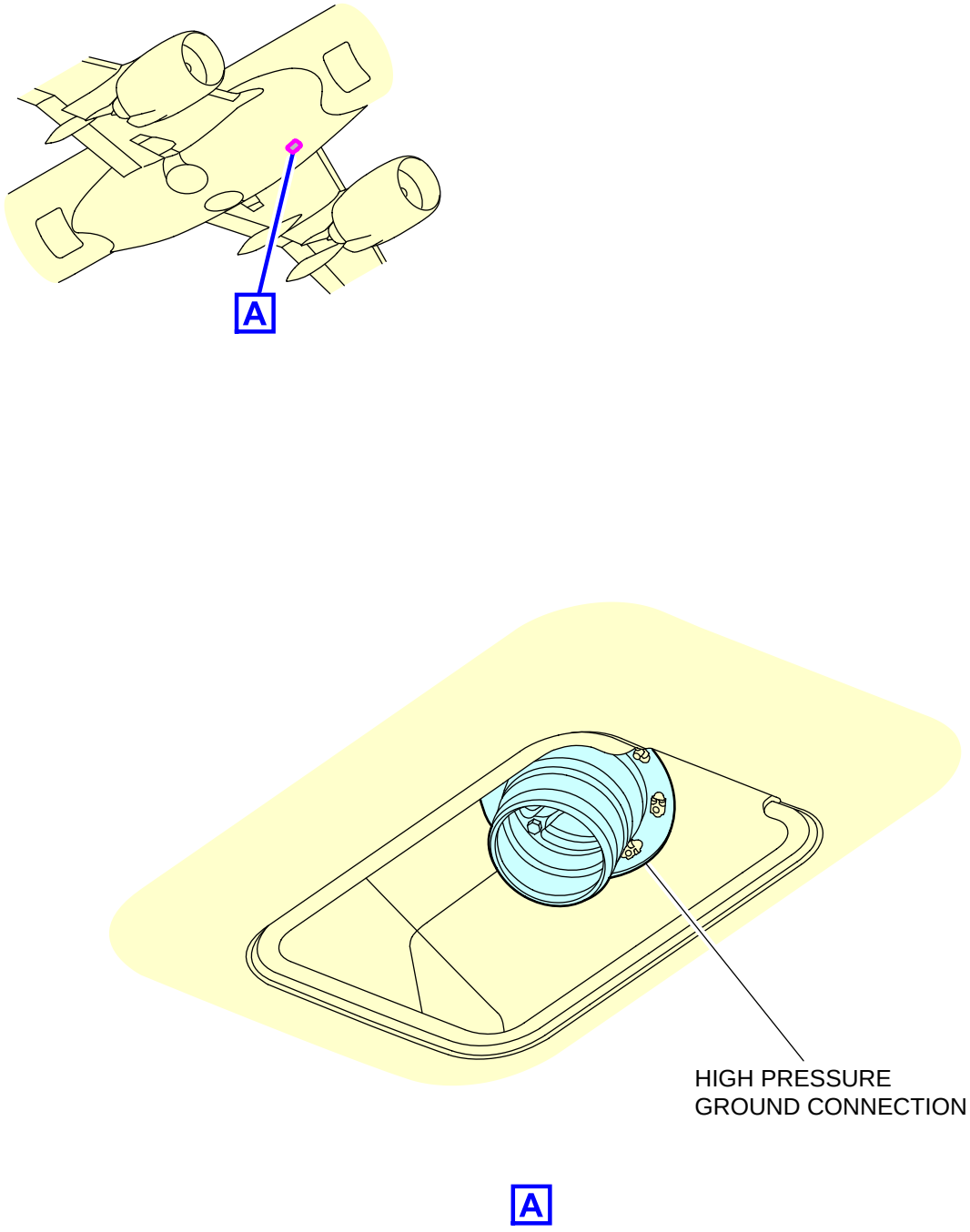
Technical specifications

- **Low Pressure Ground Connection (LPGC) Spec**
  - Discharge pressure range: 0.7 to 1.0 psig maximum (0.05 to 0.07 bar maximum)
  - Temp range: 41 to 122 °F maximum (5 to 50 °C maximum)
  - Max airflow: 140 lb/min
  - Fitting dimension: 8 in. (20.32 cm)
  - LP Ground Cart Standard pneumatic connection per ISO 1034 or MS 33562
- **High Pressure Ground Connection (HPGC) Spec**
  - Bleed pressure range: 30 to 45 psig maximum (2.07 to 3.10 bar maximum)
  - Bleed temperature range: 338 to 450 °F (170 to 232 °C)
  - Airflow range: 100 to 140 lb/min
  - Fitting dimension: 3 in. (7.62 cm)
  - HP Ground Cart Standard pneumatic connection per ISO 2026 or MS 33740



ICN-BD500-A-J212100-C-3AB48-19016-A-001-01

Figure 8 Low pressure ground system



ICN-BD500-A-J361500-C-3AB48-15114-A-001-01

Figure 9 High pressure ground system

Table 7 Electrical System

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door Access door 115DL	11.71 (3.57)	-	2.68 (0.82)	6.37 (1.94)

Note

All distances are approximate.

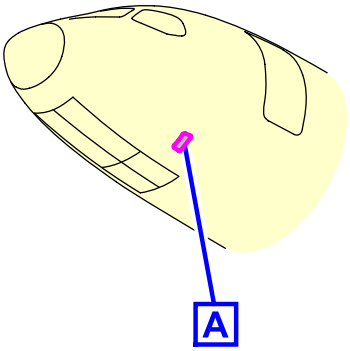
All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

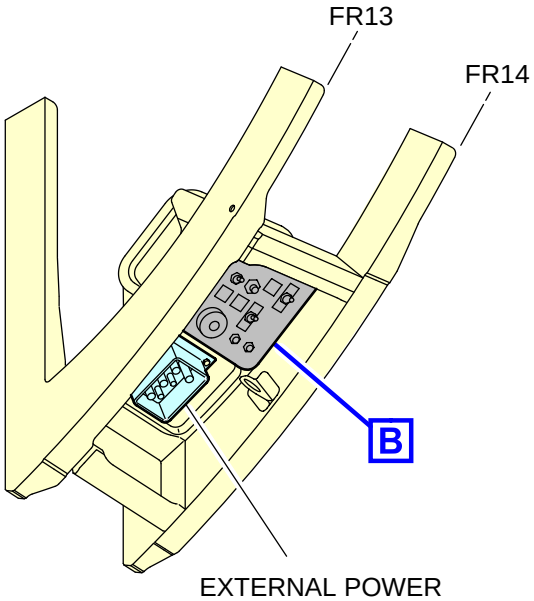
Technical specifications

- Power supply: 115 V Alternating Current (AC) External Power Receptacle

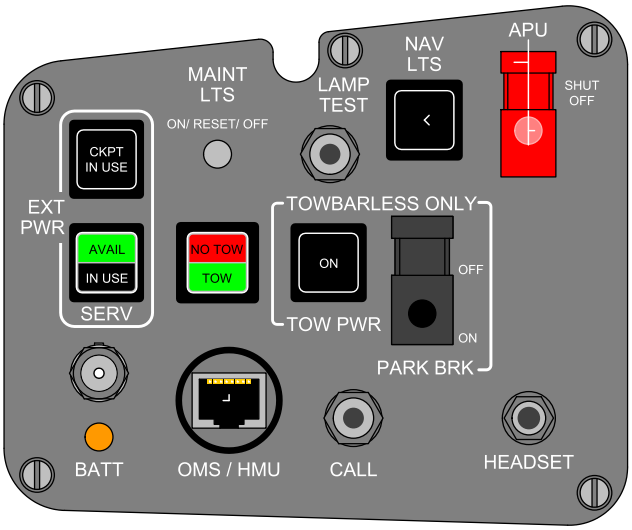
Note

For more specification about the electrical system, refer to Para. 1.4 .





A



ELECTRICAL/TOWING SERVICE PANEL

B

ICN-BD500-A-J000000-A-3AB48-22070-A-001-01

Figure 10 Electrical service panel

Table 8 Oxygen system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 115CL	10.20 (3.11)	-	2.60 (0.79)	6.44 (1.96)

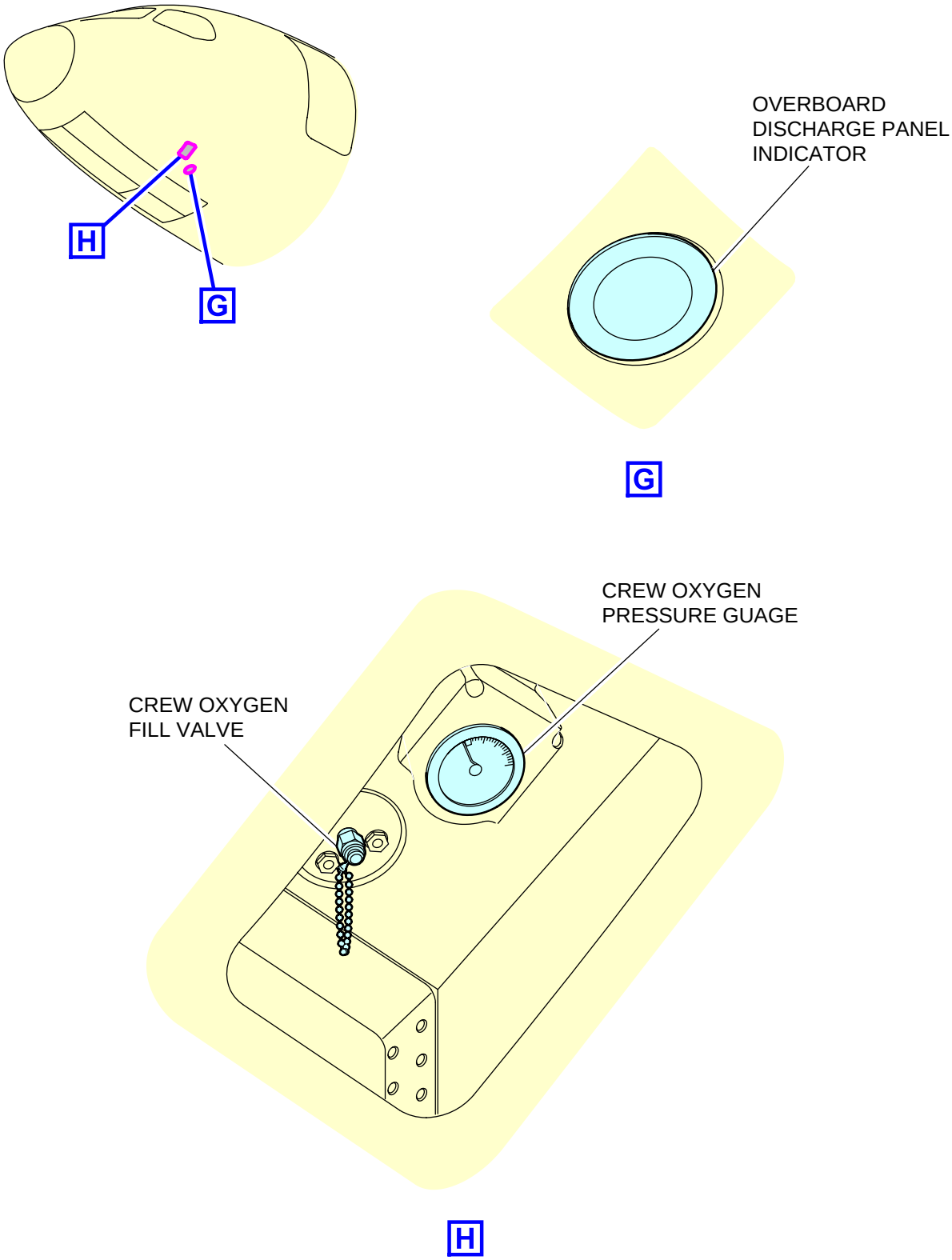
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical Specifications

- Nominal working pressure: 1850 psig (128 bar)
- Capacity: 77 ft³ (2180 L)



ICN-BD500-A-J351100-C-3AB48-20623-A-001-01

Figure 11 Crew oxygen system

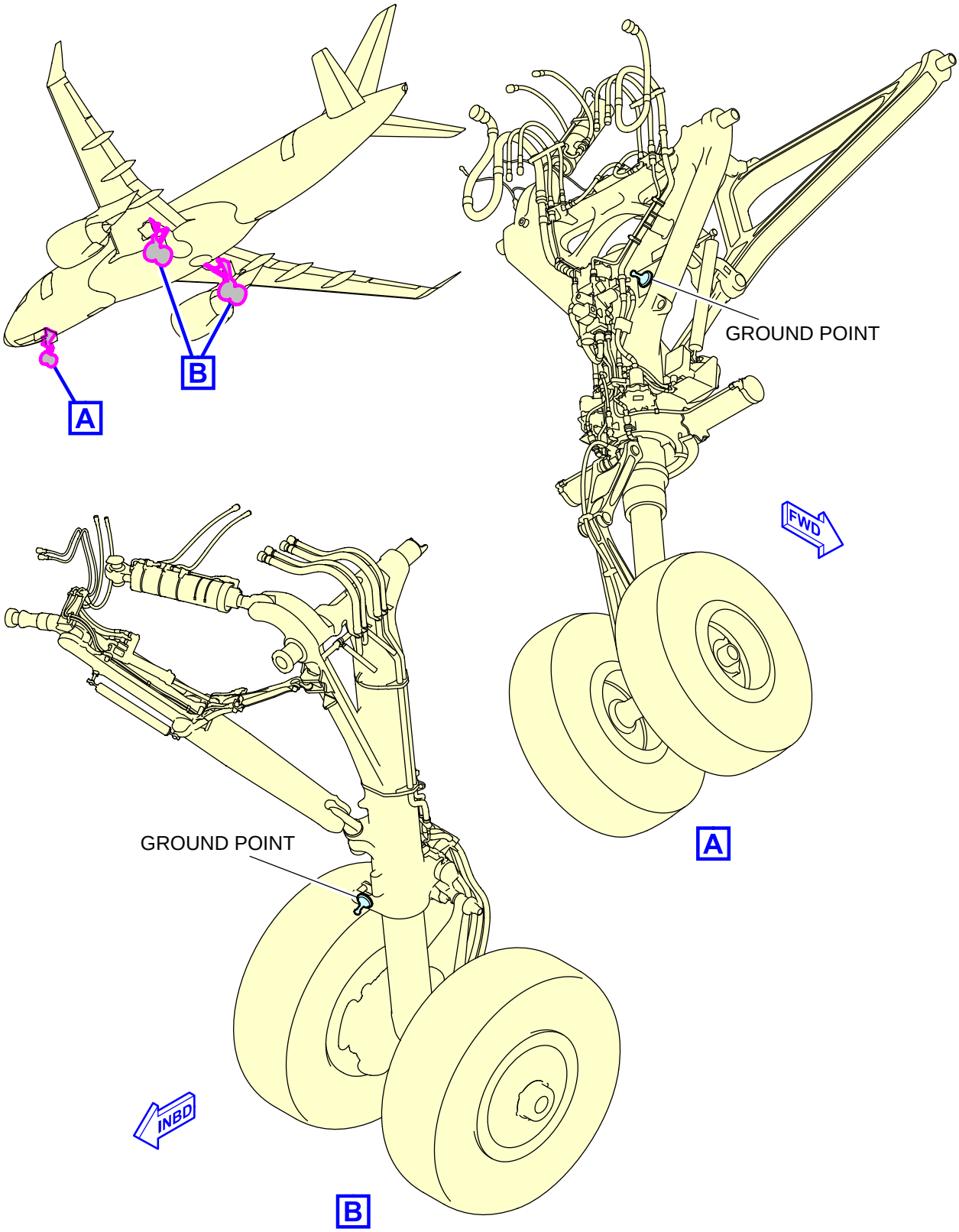
Table 9 Grounding points

Access	Aft of nose ft (m)	Position from aircraft Centerline RH side ft (m)	Mean height from ground ft (m)	LH side ft (m)
NLG leg	11.73 (3.58)	On aircraft centerline	5.00 (1.51)	
Left MLG leg	60.23 (18.36)	-	10.75 (3.27)	2.85 (0.87)
Right MLG leg	60.23 (18.36)	10.75 (3.27)	-	2.85 (0.87)
LH Refuel/Defuel Access door 621FB (Optional)	58.32 (17.78)	-	27.31 (8.32)	10.93 (3.33)
RH Refuel/Defuel Access door 521FB Fig. 13	58.32 (17.78)	27.31 (8.32)	-	10.93 (3.33)

Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.



ICN-BD500-A-J000000-A-3AB48-22049-A-001-01

Figure 12 Landing gears grounding points

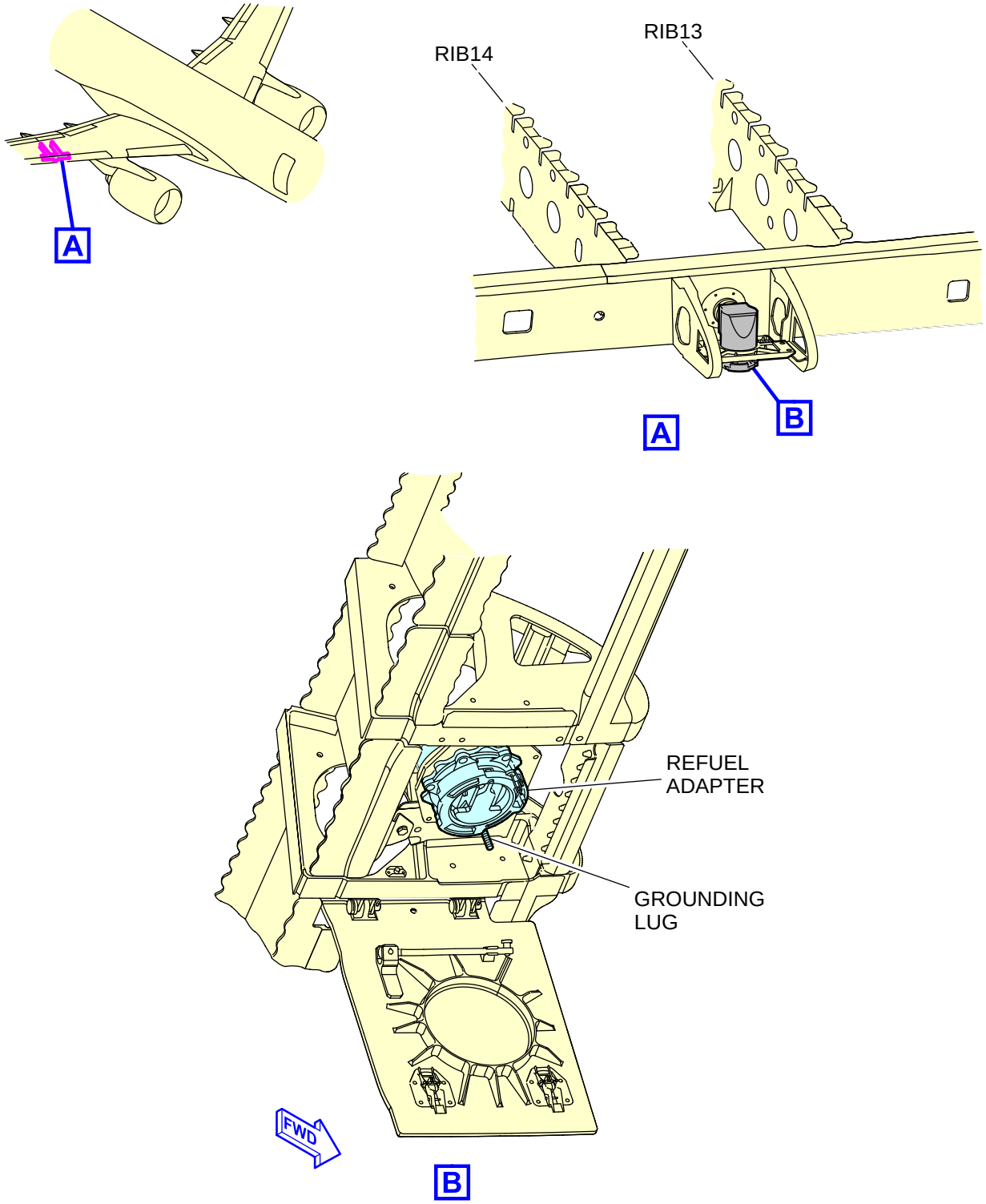
Table 10 Fuel system Refuel/Defuel adapter

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
LH Refuel/Defuel Access door 621FB (Optional)	58.32 (17.78)	-	27.31 (8.32)	10.93 (3.33)
RH Refuel/Defuel Access door 521FB	58.32 (17.78)	27.31 (8.32)	-	10.93 (3.33)

Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.



NOTES

1. Refuel adapter is optional on the left side.

ICN-BD500-A-J000000-A-3AB48-22099-A-002-01

Figure 13 Refuel adapter

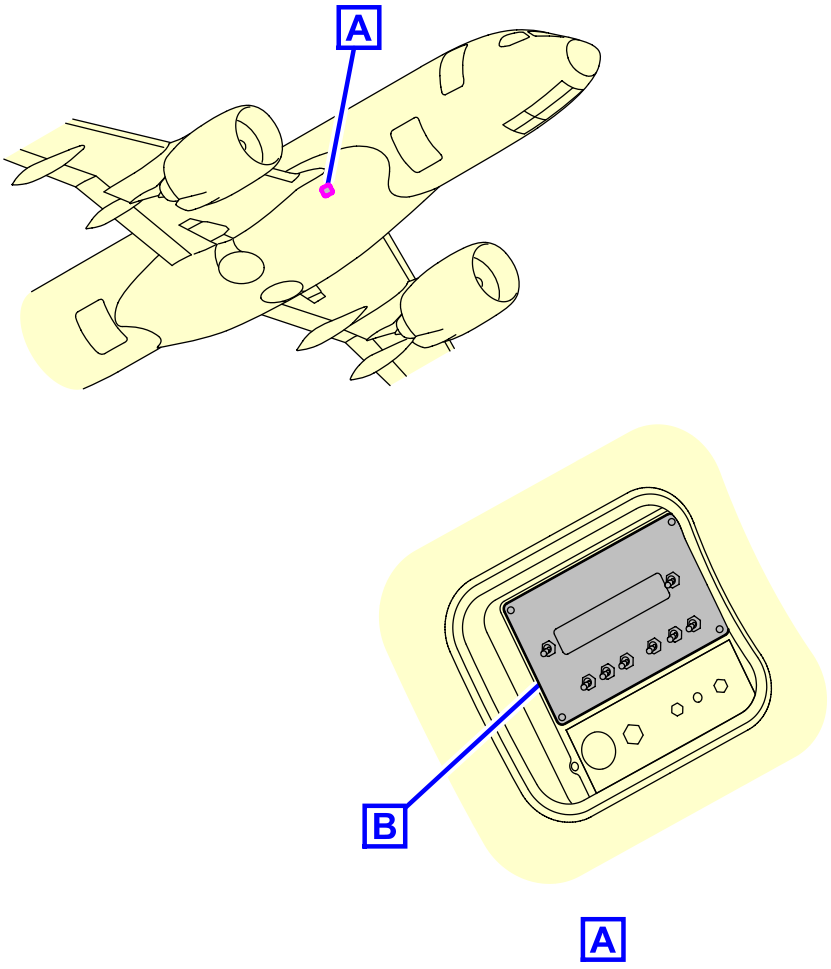
Table 11 Fuel system control panel

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 192AB	42.76 (13.03)	4.98 (1.52)	-	6.12 (1.86)

Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.



REFUEL/DEFUEL CONTROL PANEL

ICN-BD500-A-J282300-C-3AB48-12260-A-001-01

Figure 14 Refuel/Defuel system

Table 12 Oil system

Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Engine Oil Filling Cap Access door (LH) 475CR (RH) 485CR	42.76 (13.03)	19.60 (5.97)	16.16 (4.93)	5.50 (1.68)

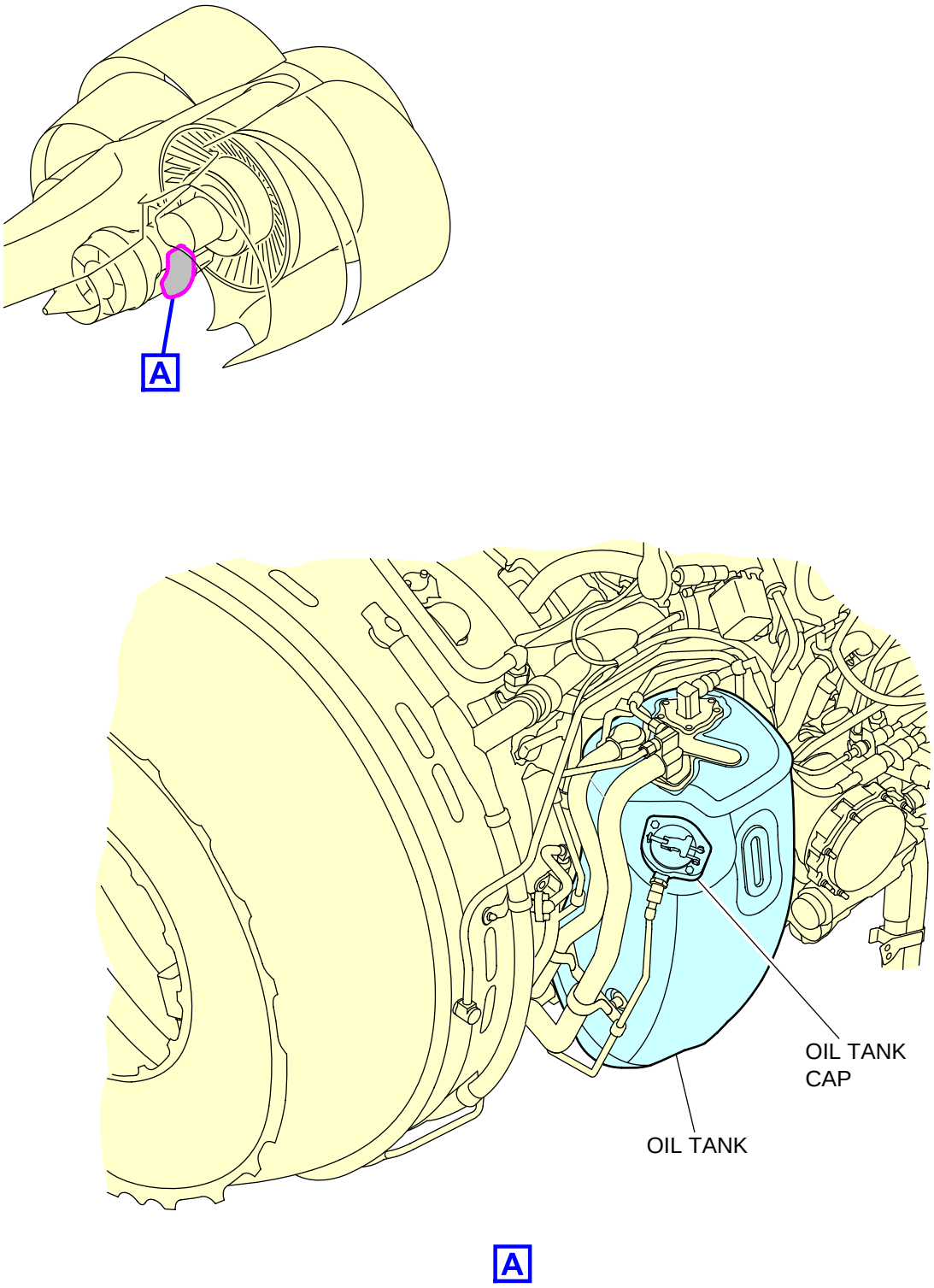
Note

All distances are approximate.

All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

Technical Specifications

- Oil tank capacity: 6.8 U.S. gal (25.7 L)



ICN-BD500-A-J791100-C-3AB48-09787-A-001-01

Figure 15 Oil storage system

1.4 Ground electrical power requirements

The external power system is used to connect AC electrical power from a ground cart. There are no provisions to connect DC power from an external ground cart. External AC can be used to power the complete AC distribution system or only those buses that provide power to the passenger compartment.

Note

It is recommended to use ground cart standard 75 KVA and higher. Using ground cart 60 KVA standard can lead to the EICAS nuisance messages.

Note

When the external AC power is connected to the aircraft, both the AVAIL light on the electrical panel and on the electrical/towing service panel illuminate. The Bus Power Control Unit (BPCU) 1 energizes the External Line Contactor (ELC) to connect external power to the aircraft when the EXT PWR PBA in the flight compartment electrical panel is selected ON. The BPCU 1 also provides protection features to protect aircraft systems from potential permanent damage. Following aircraft power-up, several critical systems (Fly-By-Wire, Electrical and others) run their Power-Up Built-In Test (PBIT). The main purpose of PBITis to reduce the complexity of systems on-aircraft testing and removed failure dormancy, thereby decreasing the overall maintenance cost and reducing reliance upon external (pattern-programmed) test equipment for the operators. Any power interruption (Ground Power Unit (GPU) going offline or GPU power quality not meeting requirements) occurring during this critical phase may cause PBIT interruption and latch system failures which will require maintenance actions to clear. Depending on the latched faults, these power interruption events may potentially cause lengthy delays or flight cancellations which can negatively impact operators.

Refer to Table 13 for the external AC power requirements data.

Refer to Table 14 for the external power quality limitations data.

Refer to Table 15 for overcurrent protection ampere versus time delay.

Refer to Table 16 for overvoltage protection versus time delay.

Table 13 External AC power requirements

Voltage	Frequency
115 ±5 V	400 ±15 Hz

Table 14 External power quality limitations

Parameter	Setting limit	Response time
Overcurrent	Table 15	
Overvoltage (highest phase)	Table 16	
Redundant Overvoltage (highest phase)	130 ±3.3 V	0.75 ±0.055 sec
Undervoltage	107 ±2.0 V (lowest phase) or 108.5 ±2.0 V (3-phase average)	4.5 ±0.5 sec

Parameter	Setting limit	Response time
Overfrequency	418 ±2 Hz	4.5 ±0.5 sec
Underfrequency	382 ±2 Hz	4 ±0.5 sec
Phase sequence	A-B-C	0.1 sec
Open sequence	Lowest phase 15 ±5 A and other phase greater than 30 ±5 A	2.0 ±0.5 sec

Table 15 Overcurrent protection ampere versus time delay

Current (A)	Time (s)
230 ±12	300
336 ±12	11.75
337 ±12	11.05
346 ±12	9.4
355 ±12	8.2
370 ±12	6.75
380 ±12	6.1

Table 16 Overvoltage protection versus time delay

Voltage (V)	Time (s)
123	0.6
124	0.5
132	0.3
141	0.14
146	0.1
151	0.05

1.5 Engine starting pneumatic power requirements

The ground air supply requirements for engine starting are shown in Table 17 .

Conditions:

- Time allowed during start (to starter cutout) is 90 seconds
- Time-to-IDLE on ground is 45 seconds minimum
- No bleed air extraction is permitted during start sequence

Table 17 Ground pneumatic power requirements – Engine starting

ATS requirements	Inlet Pressure	Airflow
ISA day	45 psig 45 psia	150 lb/min 68.04 kg/min

1.6 Ground pneumatic power requirements

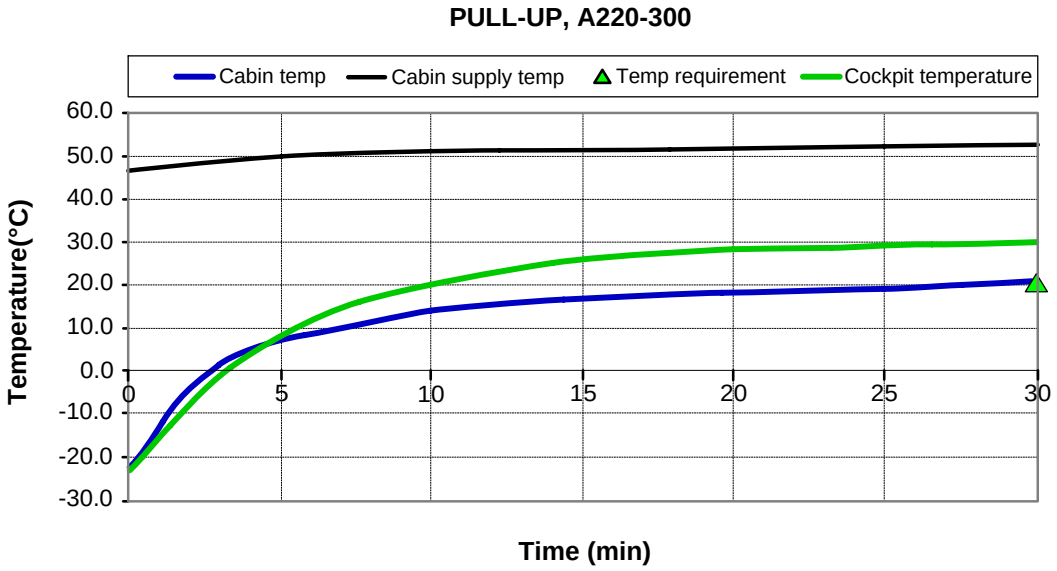
1.6.1 Heating

This section provides the ground pneumatic power requirements for heating the cabin

Refer to Fig. 16 for heating pull-up graphic.

Table 18 Ground air supply requirements for heating (Pull-up)

Requirements	Pressure	Airflow	Temperature
To cool cabin to 69.8 °F (21 °C) after 30 minutes Conditions - Outside air temperature: -104 °F (-40 °C) - Initial cabin and cockpit temperature: -9.4 °F (-23 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Full Hot (86 °F (30 °C)) - Recirculation fan: On - No passenger	31 psig (45.7 psia)	203 lb/min (92.1 kg/min)	280 ºF (138 ºC)



ICN-BD500-A-J000000-A-3AB48-22775-A-002-01

Figure 16 Ground pneumatic requirements - Heating

Table 19 Ground air supply requirements for heating at a steady state

Requirements	Pressure	Airflow	Temperature
Conditions - Outside air temperature: -40 °F (-40 °C) - Steady state Cockpit & Cabin temperature: 75.2 °F (24 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Mid selection (75.2 °F (24 °C)) - Recirculation fan: On - Trim air: On - 15 passengers	25.4 psig (40.1 psia)	166 lb/min (73.3 kg/min)	253 ºF (123 ºC)

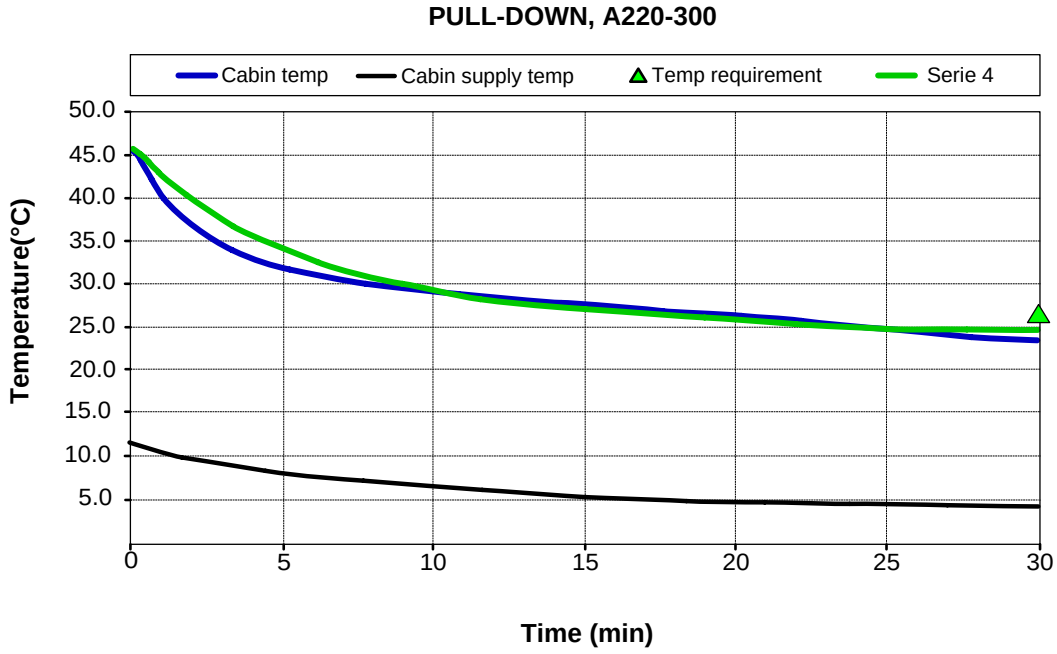
1.6.2 Cooling

This section provides the ground pneumatic power requirements for cooling the cabin

Refer to Fig. 17 for the cooling pull-down graphic.

Table 20 Ground air supply requirements for cooling (Pull down)

Requirements	**Pressure**	**Airflow**	**Temperature**
To cool cabin to 80.6 °F (27 °C) after 30 minutes Conditions - Outside air temperature: 104 °F (40 °C) - Initial cabin and cockpit temperature: 114.8 °F (46 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Full Cold (64.4 °F (18 °C)) - Recirculation fan: On - No passenger	38 psig (52.7 psia)	140 lb/min (63.5 kg/min)	437 ºF (225 ºC)



ICN-BD500-A-J000000-A-3AB48-22776-A-002-01

Figure 17 Ground Pneumatic Requirements - Cooling

Table 21 Ground air supply requirements for cooling at a steady state

Requirements	Pressure	Airflow	Temperature
Conditions - Outside air temperature: 104 °F (40 °C) - Steady state Cockpit & Cabin temperature: 75.2 °F (24 °C) - Cockpit, FWD & AFT CABIN Temp Selector: Mid selection (75.2 °F (24 °C)) - Recirculation fan: On - Trim air: On - 130 passengers	31 psig (45.7 psia)	203 lb/min (92.1 kg/min)	280 ºF (138 ºC)

1.7 Preconditioned airflow requirements

The ground air supply requirements for air conditioning and airflow requirements are shown in Table 22 for the for the LPGC.

Table 22 Preconditioned airflow requirements

Requirements	**Pressure**	**Airflow**	**Temperature**
To cool cabin to 75.2 °F (24 °C) (recirculation fan on)	0.6 psig (4.1 kPa)	135 lb/min (61 kg/min)	41 ºF (5 ºC)
To heat cabin to 75.2 °F (24 °C) (recirculation fan on)	0.9 psig (6.2 kPa)	135 lb/min (61 kg/min)	104 ºF (40 ºC)

1.8 Ground towing requirements

The aircraft is designed with means for conventional or towbarless towing. Information and procedures can be found for both in the Aircraft Maintenance Manual (AMM) 09.

Status on towbarless towing equipment qualification can be found in CS-SL-09-10-0001.

1.9 Aircraft

This section shows the chart to determine the draw bar pull and tow tractor mass requirement as a function of the following physical characteristics:

- Model: A220-100
- Number of engines at idle
- Slope

The chart is based on the engine type with the highest idle thrust level. Refer to Fig. 18 and Fig. 19 .

1.10 Towbar design guidelines

The towbar shall comply with the standards that follow:

- SAE AS 1614 - Main Line Aircraft Towbar Attach Fitting Interface

- ISO 8267-1 - Aircraft - Towbar Attachment Fitting - Interface Requirements - Part 1: Main Line Aircraft
- ISO 9667 - Aircraft Ground Support Equipment - Towbar
- SAE ARP 1915 - Aircraft Towbar

Recommended references

- IATA Airport Handling Manual AHM 958 - Functional Specification for an Aircraft Towbar
- EN 12312-7, Aircraft Ground Support Equipment - Specific Requirements - Part 7 Aircraft movement Equipment

A conventional type towbar is required which should be equipped with a damping system (to protect the nose gear against jerks) and with towing shear pins:

- A traction shear pin calibrated at 17,400 lbs (77 394 N),
- - A torsion pin calibrated at 59 940 In-lbs (6 772 N-m)

The towing head is designed according to SAE AS 1614, cat I.

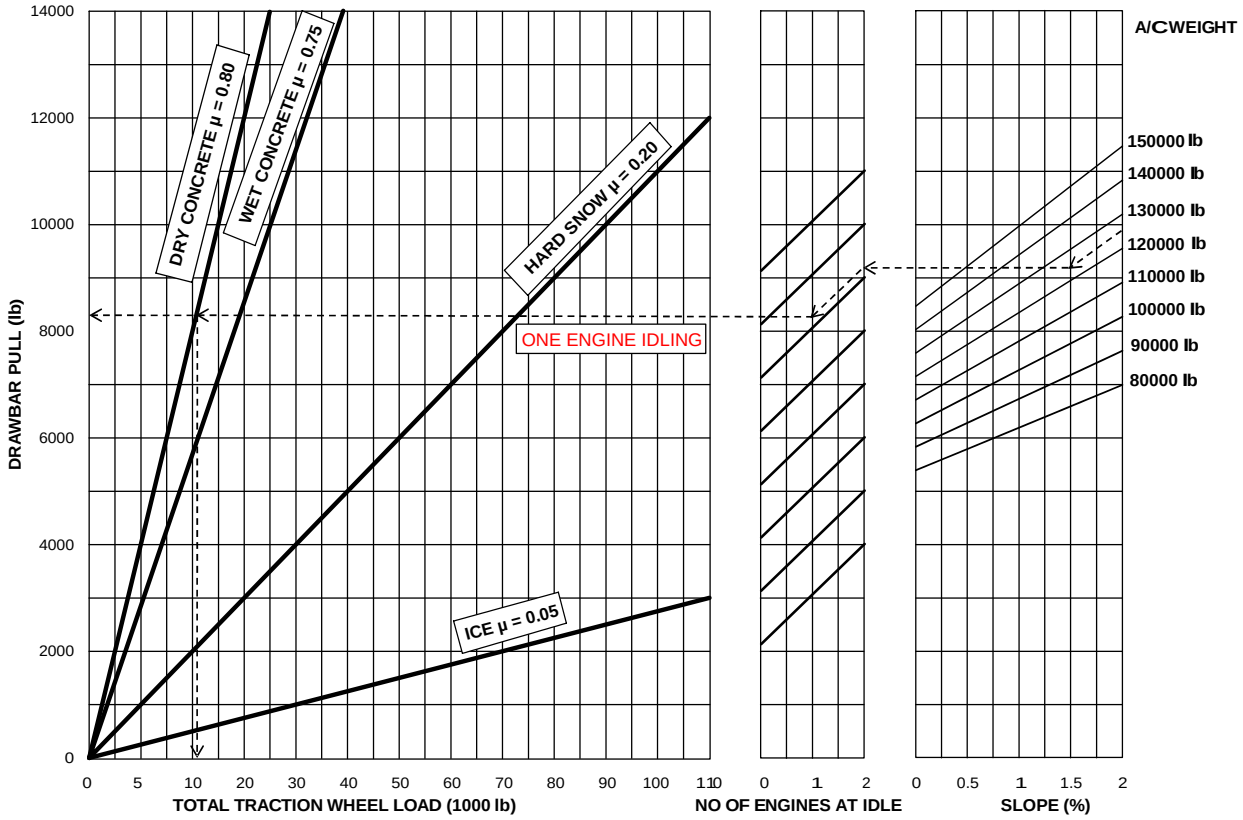
For towing and pushing operations, controls are provided to accommodate the following conditions:

- Aircraft not powered (see note below):
  A control panel is provided on the left side of the aircraft by the nose Nose Landing Gear (NLG). A push-button on the control panel can be toggled to engage power to begin the towing sequence (Navigation lights are lit automatically). The parking brake can be deactivated by way of a switch located on this panel. Annunciation lights on the NLG indicate when the parking brake is deactivated and the aircraft is ready for towing.

  Note

  Availability of the controls to facilitate towing the aircraft with the flight deck vacant does not constitute an approval to conduct such operations.

- Aircraft powered, and flight deck occupied:
  Two separate controls, one to deactivate the nose wheel steering, and one to deactivate the parking brake, are located in both the flight deck and on the control panel located in the vicinity of the nose landing gear. Headset jacks are provided on this control panel to allow for communication between personnel on the flight deck and on the ground. Annunciation lights on the control panel indicate when the aircraft is ready for towing.
  With the torque links connected, towing up to ±130 degrees nose wheel angle is possible.
  The ground towing requirements are described in the illustration below.
  For more information related to towing, refer to the AMP.

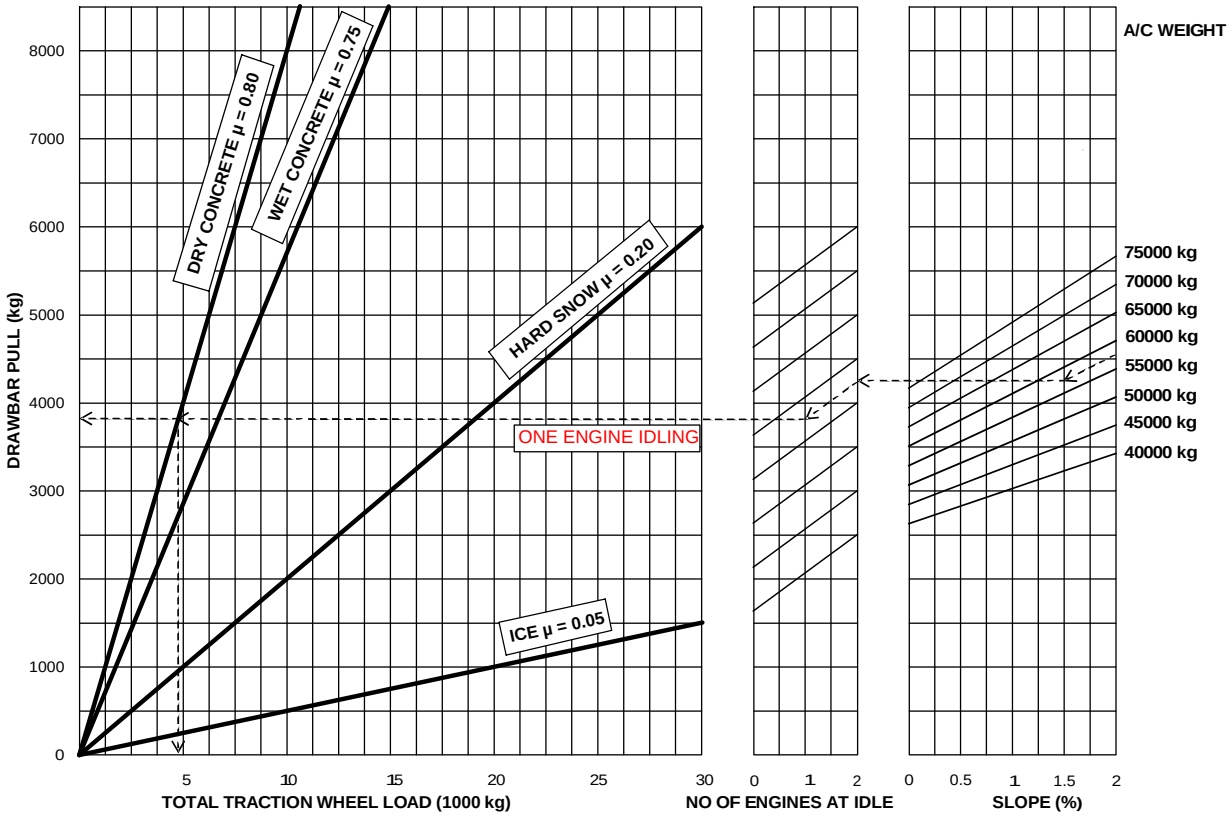


NOTES

1. Unusual breakaway conditions not reflected.
2. Estimated for rubber - tired tow vehicles.
3. Coefficient of friction (μ) approximate.
4. Example: At an aircraft gross weight of 125000lbs (56699 Kg), an uphill slope of 1.5%, with one engine ON and with a dry concrete surface, the corresponding draw bar pull or push required is 8000 lb (35.6 kN) and the total tractor weight of approximately 10 500 lbs (4762 Kg).

ICN-BD500-A-J000000-A-3AB48-22839-A-001-01

Figure 18 Ground towing requirements (imperial unit)



NOTES

1. Unusual breakaway conditions not reflected.
2. Estimated for rubber - tired tow vehicles.
3. Coefficient of friction (μ) approximate.
4. Example: At an aircraft gross weight of 125000lbs (56699 Kg), an uphill slope of 1.5%, with one engine ON and with a dry concrete surface, the corresponding draw bar pull or push required is 8000 ll (35.6 kN) and the total tractor weight of approximately 10 500 lbs (4762 Kg).

ICN-BD500-A-J000000-A-3AB48-22840-A-001-01

Figure 19 Ground towing requirements (metric unit)

Refueling - rate and time - Technical data

Applicability: 55001-59999

Table of contents

Page

Refueling - rate and time - Technical data 1
References 1
Description 1

List of tables

Page

1 References 1

List of figures

Page

1 1,850 lbs per wing to full - Refueling time versus quantity 3
2 1,850 lbs per wing to full - Refueling time versus refueling nozzle pressure 4
3 0 lbs per wing to full - Refueling time versus quantity 5
4 0 lbs - Refueling time versus refueling nozzle pressure 6

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J12-10-28-02AAA-211A-A	Automatic - Refuel
BD500-A-J12-10-28-01AAA-211A-A	Manual - Refuel

Description

This data module shows the estimated refuel rate and time in graphic information to support the automatic refueling procedure, refer to BD500-A-J12-10-28-02AAA-211A-A and manual refueling procedure, refer to BD500-A-J12-10-28-01AAA-211A-A.

This data module shows the estimated refueling time in specific conditions and the graphics take into account the assumptions that follow:

- 70 F° fuel temperature
- 50 psig available at the refuel adaptor
- A fuel density of 0.803 kg/l. (0.803 kg/l = 0.029010215 lbs/in3)
- No head pressure effect considered on the fuel
- The maximum fuel quantities are based on 17 646 Kg. (17 646 Kg x 2.2046 lb/kg = 38,902 lbs) Could be different than the current Airport Flight Manual.

Note

Data presented in these graphs are based on the test data collected with the mentioned conditions listed above. Varying conditions such as the hose length, the diameter, the pressure drop, the gauge location and the fuel density, not measuring the nozzle pressure

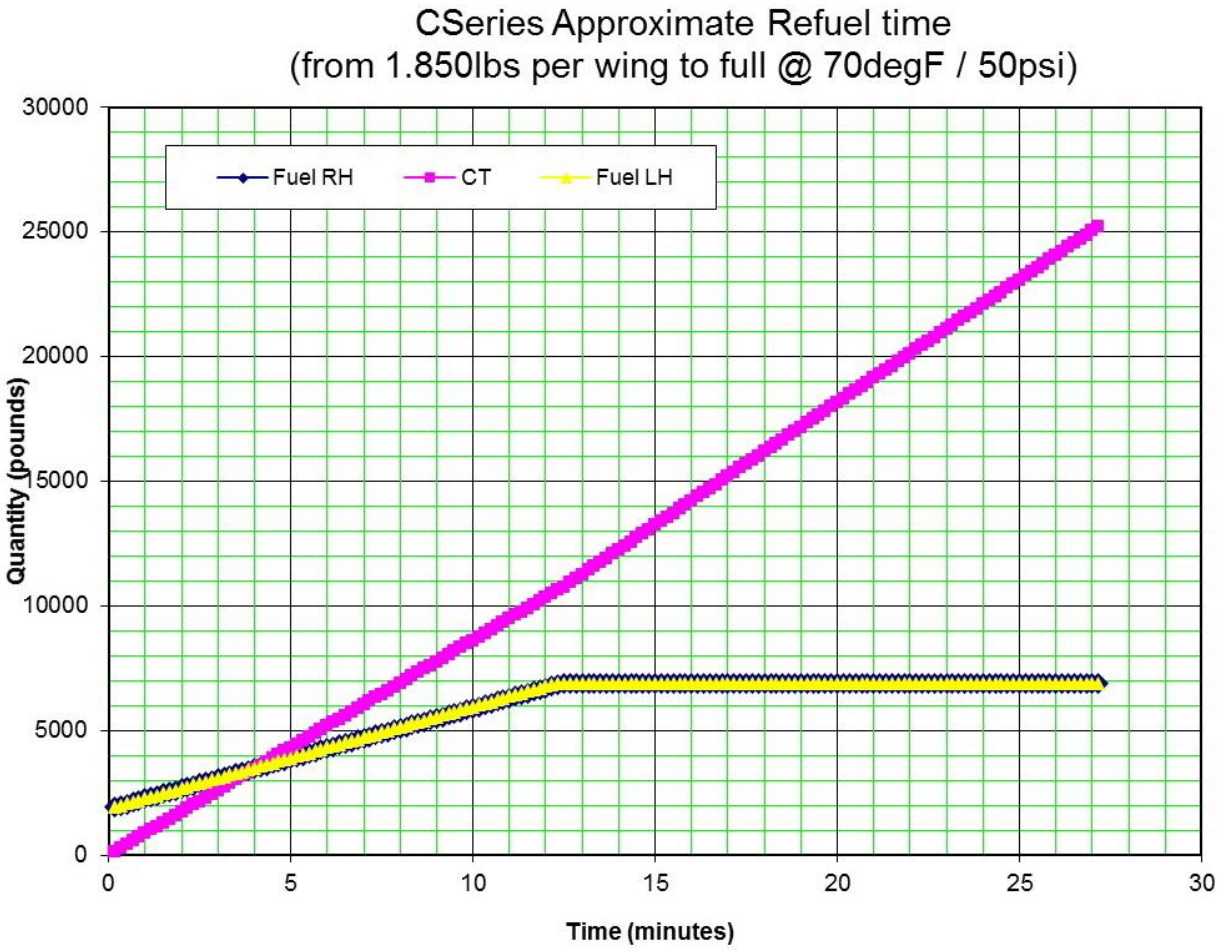
during the flowing conditions and atmospheric conditions can all impact the results. Use of these graphs are for REFERENCE ONLY as the actual results may vary.

The first graphic shows the estimation of the refueling time and the evolution of the fuel quantity when the refuel starts with a fuel reserve of 1,850 lbs in each of the wing tank for a total fuel reserve of 3,700 lbs at the time of 0 second. Refer to Fig. 1

The second graphic shows the refueling time estimated from 1,850 lbs of fuel reserve in each of the wing tank to full fuel in all three tanks using various refuel pressures at the refuel adaptor. Refer to Fig. 2

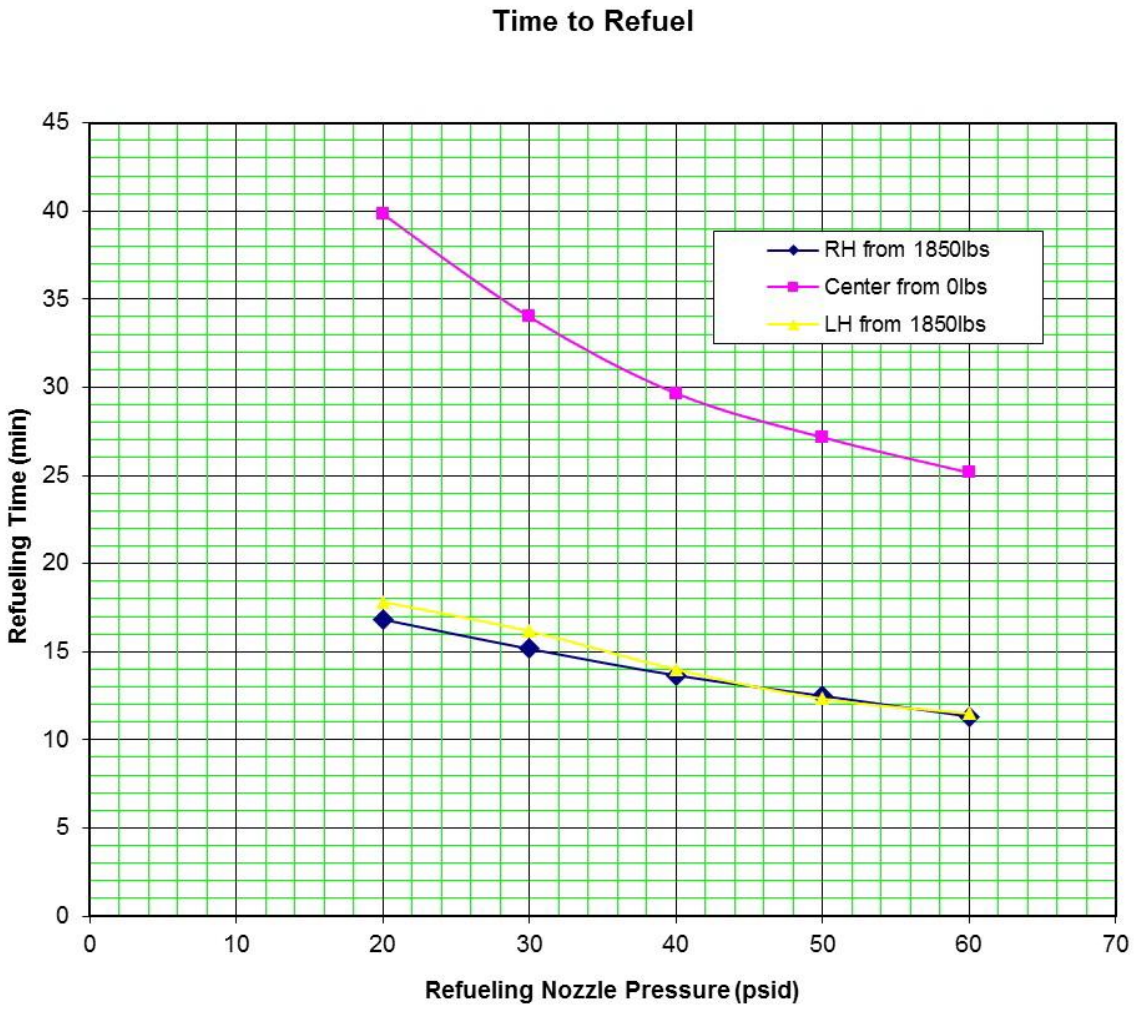
The third graphic shows the estimation of the refueling time and the evolution of the fuel quantity when the refuel starts from empty in all three tanks. Refer to Fig. 3

The fourth graphic shows the refueling time estimated from empty to full using various refueling pressures at the refuel adaptor. Refer to Fig. 4 .



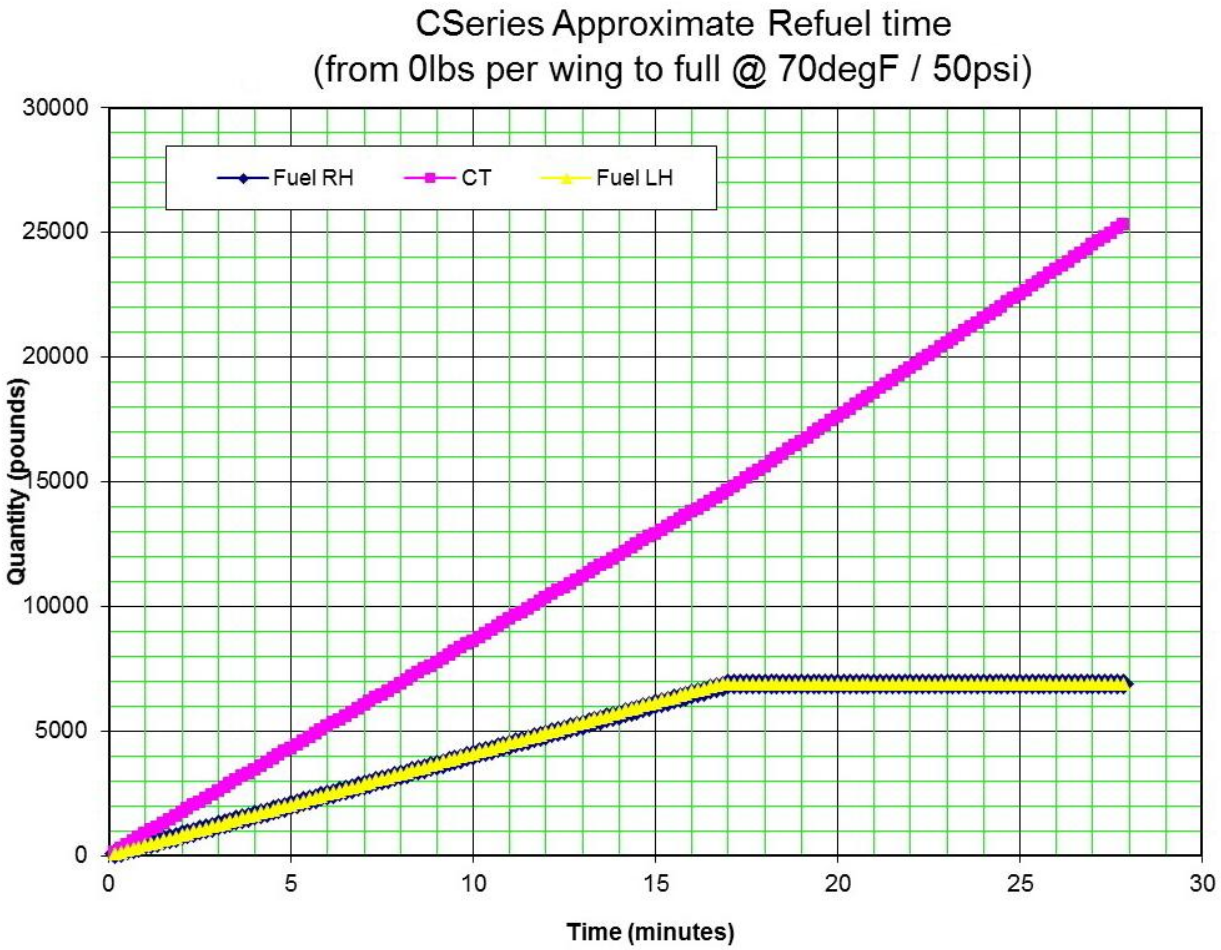
ICN-BD500-A-J121028-A-3AB48-40429-A-002-01

Figure 1 1,850 lbs per wing to full - Refueling time versus quantity



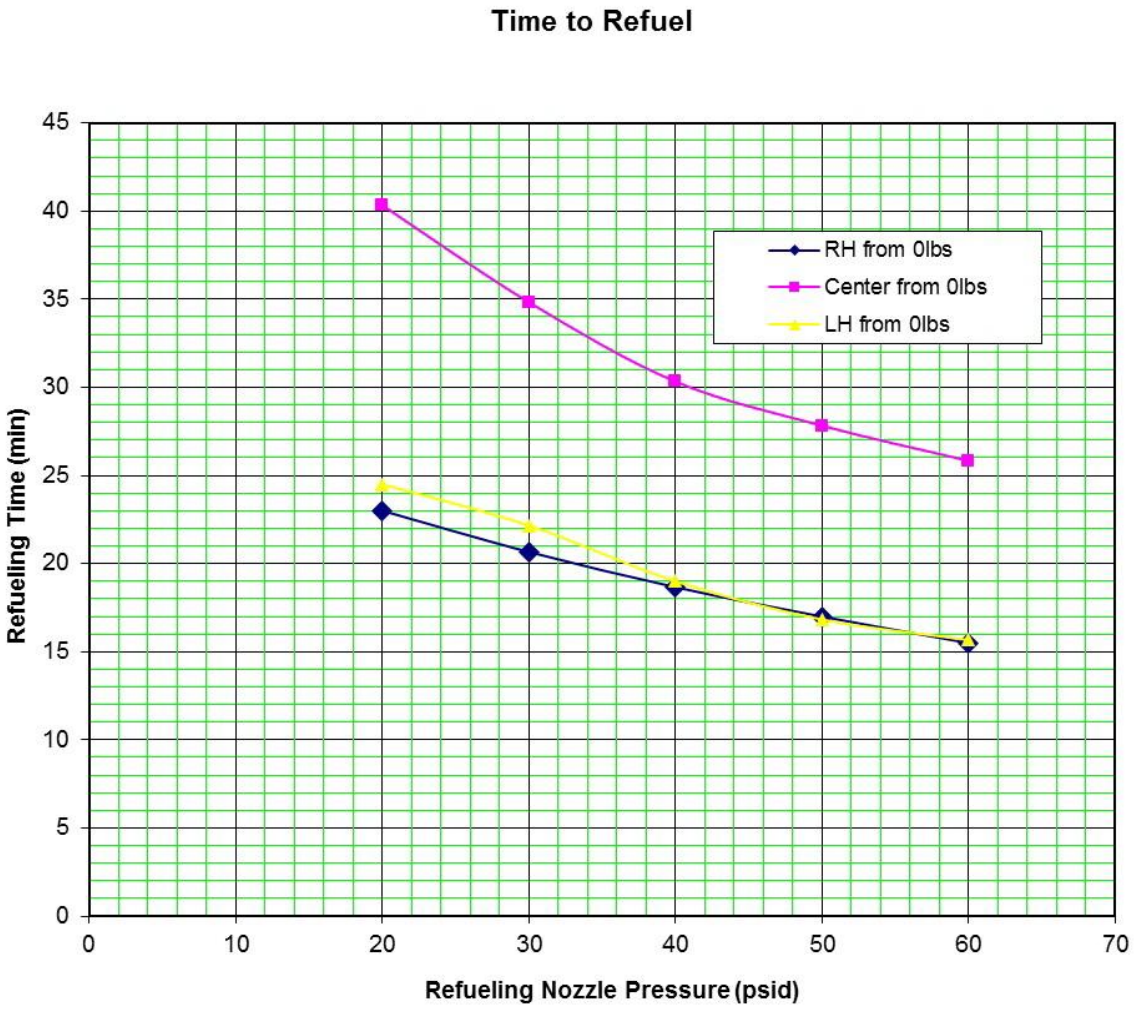
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Figure 2 1,850 lbs per wing to full - Refueling time versus refueling nozzle pressure



ICN-BD500-A-J121028-A-3AB48-40431-A-003-01

Figure 3 0 lbs per wing to full - Refueling time versus quantity



ICN-BD500-A-J121028-A-3AB48-40773-A-001-01

Figure 4 0 lbs - Refueling time versus refueling nozzle pressure

Deicing/Anti-icing - Remove ice

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Deicing/Anti-icing - Remove ice 1
References 1
Common information 2
Preliminary requirements 7
Procedure 8
Requirements after job completion 42

List of tables

Page

1 References 1
2 Required conditions 7
3 Support equipment 8
4 Consumables, materials, and expendables 8
5 Spares 8
6 Active frost - Holdover guidelines for fluid Type I 12
7 Active frost - Holdover guidelines for fluid Type II, Type III, and Type IV 12
8 SAE TYPE I - Fluid holdover guidelines on critical aircraft surfaces composed predominantly of aluminum 1 14
9 SAE TYPE I - Fluid holdover guidelines on composite wing surfaces 1 15
10 SAE TYPE I - Deicing / anti-icing fluid application procedures 16
11 SAE TYPE II, TYPE III and TYPE IV - Deicing / anti-icing fluid application procedures 17
12 Visibility in snow vs. snowfall intensity chart 18
13 SAE TYPE II - Fluid holdover time guidelines 19
14 SAE TYPE IV - Fluid holdover time guidelines 21
15 SAE TYPE III - Fluid ice pellet and small hail allowance times 22
16 SAE TYPE IV - Fluid ice pellet and small hail allowance times 23
17 Required conditions 42

List of figures

Page

1 Park break panel 25
2 Wiper control switch 26
3 APU control panel 27
4 Slats/flaps panel 28
5 Throttle control system 29
6 Ignition system 30
7 Composite materials 31
8 Deicing/Anti- icing fluids application and non-application areas 32
9 Deicing fluids non-application areas 34
10 Deicing fluids non-application areas 35

References

Table 1 References

Data Module/Technical Publication	Title
None	

Common information

GENERAL

This data module gives the procedure for the deicing of the aircraft before takeoff.

Deicing is the removal of snow, ice or frost from the airplane critical surfaces by mechanical means, hot water or a hot mixture of water and deicing/anti-icing fluid. Anti-icing is the procedure to apply deicing/anti-icing fluid with holdover time sufficient to prevent that snow, ice or frost stays on airplane surfaces after deicing, before the takeoff.

Note

Removal of contaminants on runway surfaces, taxiways, aprons, holding bays and other areas, is the responsibility of the administration of the airports concerned, based on flight safety and schedule considerations.

The pilot-in-command is ultimately responsible to make sure that the airplane is in a safe condition for flight. Use the Automatic Terminal Information Service (ATIS) or other means to acquire accurate ambient temperature and other pertinent meteorological conditions. Outside Air Temperature (OAT) or Total Air Temperature (TAT) does not read accurately on the ground due to probe heating.

The procedures described in this document ensures an aerodynamically clean airplane before takeoff.

When operating in such conditions, these procedures account for operational hazards associated with frozen contamination. In all cases, it is assumed that the decision to operate is based on the general rules of good airmanship applicable in cold weather operations and on the assurance that the operational and system limitations will not be exceeded. Under these provisions, the procedures given in this data module have been provided to supplement the normal operating procedures with the goal of enhancing flight safety and assisting in obtaining maximum performance from the airplane. In no circumstances, however, do they warrant operations in conditions imposing demands beyond the capabilities of the airplane or its flight crew.

DEFINITIONS:

1 *Cold weather operations*
Cold weather operations refers to ground handling, takeoffs, and landings conducted on surface conditions where frozen moisture is present or conditions are conducive to moisture freezing. These conditions are commonly encountered when the surface temperature is at or below 0°C (32°F), although frozen moisture can be present and stay for a significant time at higher temperatures.

2 *Critical surfaces*
The critical surfaces of the airplane are defined as the wings, horizontal stabilizer, vertical stabilizer, control surfaces and engine inlets. If the upper surface of the fuselage is contaminated with ice, snow, or frost, and surface features and markings cannot be distinguished, the surface must be cleaned or deiced.
The fuselage is not considered a critical surface, but snow and ice on such a large surface could have considerable effect on drag and weight. Due diligence is required and consideration should be given to snow clearing and/or deicing the fuselage.

3 *Holdover time*
Holdover time is the published estimated time that an application of an approved deicing/anti-icing fluid is effective in preventing frost, ice, or snow from adhering to treated surfaces. Holdover time begins at the start of the final application of an approved deicing fluid, after

this time the fluid is no longer effective. After the holdover time is exceeded the aircraft must be re-inspected and another deice procedure may be required.
The tables presented in this document are extracted from: *Transport Canada Holdover Time (HOT) Guidelines*. These tables do not account for all factors that influence holdover time. Diverse and individually variable factors such as fluid temperature, relative humidity, wind direction and speed, can significantly shorten the holdover times shown in these tables.

4 *Contaminants*

4.1 Slush: is snow saturated with water which displaces with a splatter when stepped on firmly. It is encountered at temperatures up to 5°C (41°F).

4.2 Wet snow: it will easily stick together and tends to form a snowball if compacted by hand.

4.3 Dry snow: is loose and can easily be blown. If compacted by hand, it will readily fall apart again.

4.4 Frost: it forms from the slow deposition of ice crystals on cold surfaces, directly from water vapor in the air.
The frost forming surface must be below freezing temperatures for frost to form even though the ambient temperature may be above freezing. Frost appears as a white crystalline deposit that usually develops uniformly on exposed surfaces during below-freezing, calm and cloudless nights with a high ambient dewpoint. The deposit is thin enough for surface features underneath, such as paint lines, markings and lettering, to be distinguished.

4.5 Ice: two types of ice, rime ice and clear ice, commonly affect airplane operations:

- Rime ice
  Although rime ice is more commonly found in flight, it may occur on the ground when conditions are favorable. Rime ice may occur on the ground in low temperatures with a low concentration of small super-cooled water droplets and moderate winds. It appears as an opaque and rough ice surface that adheres to surfaces exposed to wind. It can easily be detected and is easily removed by application of deicing/anti-icing fluids.
- Clear ice
  Clear ice can occur in flight or on the ground. It forms at temperatures at or just below 0°C (32°F) with a high concentration of large super-cooled water droplets. Clear ice is hard, and appears as a smooth and glassy coating that can be very difficult to detect without a tactile inspection. Clear ice may not be seen during a walkaround, particularly if the wing is wet or during night time operations. Clear ice adheres firmly to surfaces and is difficult to remove, requiring special care during deicing/anti-icing.

4.6 Dehydrated deicing/anti-icing fluids: if deicing/anti-icing fluid is allowed to dry on airplane surfaces, this same fluid can become a contaminant.
Deicing, and especially anti-icing fluids are designed to adhere to airplane surfaces and shear off at speeds approaching takeoff speeds. If left on airplane surfaces for long periods of time (overnight), they may dehydrate and form a gel or dried deposit that will not shear off, even at high speeds. This contaminant will severely affect airplane performance and lift.

Note

Only approved personnel must do the deicing procedure to make sure that local regulations are followed.

These procedures are available for the deicing procedure:

- **Mechanical removal of loose contamination**
  If a significant amount of loose snow is on the airplane, the expenditure of a relatively large amount of deicing fluid can be avoided if the snow is removed mechanically. Using the wing broom to remove contamination does not always mean that the wing surface is clean and safe for flight. Every time a broom is used to remove contamination, a tactile inspection must be performed. Subject to the results of an inspection as outlined below (*Removal of loose contamination*), this may achieve complete deicing of the airplane.
- **One-step deicing/anti-icing**
  Fluid is applied in one step to remove frozen contamination and apply limited anti-ice protection. In this process, the residual fluid film, regardless of the type of fluid used, will provide only a very limited duration of anti-ice protection.
- **Two-step deicing/anti-icing**
  The two-step procedure is accomplished by first applying deicing fluid, consisting of heated pure water or a heated mixture of water and *Type I* fluid, and then applying undiluted *Type I* fluid. This method ensures extended anti-icing holdover time is available.

  1 The freezing point of a fluid used for the first step must not be more than 3°C above ambient temperature. The freezing point of an SAE *Type I* fluid used for a one-step process, or as the second step of a two-step.
  The freezing point of an SAE *Type I* fluid used for a one-step process, or as the second step of a two-step operation, must be at least 10°C (50 °F) below the ambient temperature. The second step is to be performed before the first step freezes, typically within 3 minutes. This time may be higher than 3 minutes in some conditions, but potentially lower in heavy precipitation, colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area. When deicing fluid is used in one-step deicing/anti-icing, the application of the second step fluid will flush away the first step fluid and leave a film of anti-icing fluid, which is designed to be of adequate thickness. If freezing of the deicing fluid has occurred, one-step deicing/anti-icing must be repeated. This short period makes it necessary to deice/anti-ice relatively small areas of the airplane successively.

  2 Considering the nature of the precipitation present and the likely duration of the delay between the completion of the anti-icing step and takeoff, use the tables provided in this document.

DEICING FLUIDS:

The application of deicing/anti-icing fluid is the most common means of ground deicing and anti-ice protection. Anti-icing fluids are similar in composition except that they also contain polymeric thickeners. They are formulated to prevent formation of unabsorbed frozen contamination for a longer period of time than deicing fluids; however, the protection is still for a limited period of time. Although *Type I* fluids may be used for anti- icing, *Type II, III* and *Type IV* fluids are typically used in the anti-icing role because they can last for a significantly longer period of time than the *Type I* fluids.

The acceptable fluids are water/glycol solutions, classified as *Type I, II, III* and *Type IV*. The operator is ultimately responsible for ensuring that only fluids tested to SAE AMS 1424 or SAE AMS 1428 are applied when the HOT Guidelines will be utilized operationally. The Transport Canada Holdover Time Guidelines document, published on an annual basis, contains lists of

fluids that have been tested with respect to anti-icing performance (SAE AMS 1424 or SAE AMS 1428) and aerodynamic acceptance (SAE AMS 1424 or SAE AMS 1428) only.

- **Type I fluid:**
  In concentrated form, these fluids contain glycols to a minimum concentration of 80%, but with no thickening agents. Their resulting low viscosity and very short holdover times provide very limited anti-icing protection.
  It is apparent, that except for the case of frost or freezing fog, the duration of anti-icing protection provided by *Type I* fluid is inadequate unless takeoff can be made almost immediately after deicing. Therefore, if conditions require effective ground anti-icing, it is imperative that *Type II, III* and *Type IV* fluids.
- **Type II, III, and IV fluids:**
  Anti-icing fluids are similar in composition except that they also contain polymeric thickeners. They are formulated to prevent formation of unabsorbed frozen contamination for a longer period of time than deicing fluids; however, the protection is still for a limited period of time. Although *Type I* fluids may be used for anti- icing, *Type II, III* and *Type IV* fluids are typically used in the anti-icing role because they can last for a significantly longer period of time than the *Type I* fluids.

AIRFRAME CONTAMINATION:

Clean airplane concept

The clean airplane concept (aerodynamically clean) prohibits takeoff when frost, ice, snow, or other contaminants are present on the airplanes critical surfaces. The performance data for this airplane are based on the clean airplane concept. This means that all performance values are based on the airplane being aerodynamically clean prior to takeoff. Failure to remove contaminants will result in adverse effects on airplane performance and flight characteristics. These adverse effects can include the following:

- Decreased thrust
- Decreased lift
- Increased drag
- Increased stall speeds
- Trim changes
- Altered stall characteristics
- Altered handling qualities.

The removal procedures for frost, ice and snow from the surfaces of the airplane prior to takeoff, as described herein, depend upon the deicing facilities, methods and types of fluid available at the airports involved. Deicing must be accomplished at the last possible time prior to takeoff to maximize the time that will be able to provide protection (holdover time).

The general rule for ground icing procedures is that the deicing and anti-icing processes must be done symmetrically. That is, whatever final treatment (i.e. same brand name fluid) is administered on one wing must be applied to the other wing for aerodynamic symmetry reasons.

1 General precautions to be observed in cold weather operations:

  1.1 It must never be assumed that an apparently dry and loose form of frozen moisture, for example, dry snow, will be removed by the slipstream during the initial takeoff roll. For instance, on an airplane removed from a warm hangar, a dry snowfall that remains free and uncompacted on the ground may melt and later refreeze to form ice that sticks to the surface of the airplane.

1.2 Before each flight, a thorough inspection of critical surfaces must be made to determine the extent of contamination on them. This inspection must be made by the pilot-in-command or by other trained and approved personnel qualified to report its results directly to the pilot-in-command. Deicing is part of flight operations and remains under the authority of the pilot-in-command.

1.3 After deicing, another inspection, subject to the same qualifications mentioned in paragraph above, must be made to confirm that all contamination is removed.

1.4 If during the period between the completion of deicing and takeoff there is the possibility that the airplane may again be contaminated, re-application of deicing *Type I* fluid must be provided. The period of effective anti-icing, known as holdover time, must be longer than the period between deicing and takeoff.
Holdover times start at the beginning of the deicing procedure.

1.5 If during the conditions described in paragraph above, takeoff cannot be started prior to the expiration of the holdover time; the airplane must again be inspected and deiced again if necessary, before attempting takeoff. If ice, snow or frost is found on the airplane, accomplishing a one-step deicing procedure will remove the contamination and provide limited anti-ice protection. When visible precipitation continues to fall, additional deicing application will be required. In such cases, the application of deicing fluid must be accomplished in two separate steps which will provide adequate protection in most environmental conditions.

2 Wet airplane and temperatures greater than 0°C (32°F) but less than 5°C (41°F)
Consideration of the following should be made as to whether a wet airplane should be deiced:

2.1 Conditions such as wind and forecast temperature. If temperatures are dropping or are forecast to drop, treatment with *Type I* fluid should be considered.

2.2 When an airplane is wet due to light rain or mist and the POP icing definition of visible moisture and less than 5°C (41°F) is satisfied. In such a situation, the airplane must be deiced before takeoff.

2.3 If the airplane is wet because it has been cleaned with hot water but there is no visible moisture in the air, then the wing is at the same risk of being contaminated as if the aircraft was taxiing in slush or pooled water on taxiways/runways. The use of wing deicing fluid is required for such conditions.

3 Clear ice due to cold fuel
Crew must be aware of the effect that cold fuel in the tanks may have on moisture present on the wing upper and lower surfaces. If fuel temperature is 0°C (32°F) or below, it is possible to have clear ice on the wing with the outside air temperature above freezing. If center tank fuel quantity exceeds 9525 kg (21000 lbs), or left or right wing fuel quantity exceeds 907 kg (2000 lbs), the fuel will be in contact with the upper wing skin.
If the fuel temperature is 0°C (32°F) or below and a high humidity condition exists or visible moisture in any form is present, pilots must ensure that the wing upper and lower surfaces are free of clear ice by means of a tactile check. Clear ice must be removed.

4 Frost due to cold soaked fuel
Wing frost caused by cold soaked fuel can form on the upper and lower surfaces of the wing even at outside air temperatures significantly above freezing. Frost on the upper and lower surfaces of the wing must be removed.

ENGINE CONTAMINATION:

Pre-flight considerations

A thorough and vigilant pre-flight inspection of the engines is required during cold weather operations. Engine cowl covers and inlet plugs should be used to protect from ice, sleet and snow contamination. While the use of covers and plugs is recommended, this equipment does not totally eliminate contamination of the engine inlet. Seepage from ice or snow melting on a warm but otherwise protected engine can cause contamination to form inside the inlet or on the fan blades once the ambient temperature causes the water to freeze again. The procedures that follow are designed to complement both regulatory and operational procedures during cold weather operations.

A thorough pre-flight should also include examination of the ramp conditions and whether or not deicing procedures are in effect. The flight crew should determine if ramp conditions permit engine starting while parked (at the gate) or during push back.

Note

Free fan rotation must be confirmed before engine start (manual rotation of the fan or engine dry motoring). Water may freeze in the area of the lower intake, jamming the adjacent fan blades. Only heated air shall be used to remove ice from the spinner, fan, inlet or other engine components.

Under no circumstance is it permissible to use deicing fluid to remove frozen precipitation from the spinner, fan, inlet or other engine components.

Do not remove ice and snow by chipping and scraping. The only acceptable practice is the use of heated air on engine components or deicing fluid on the exterior engine cowling only.

Note

Deicing/anti-icing fluids that are ingested into the engine can have a corrosive and contaminating effect. This effect may degrade fan blade lubricants (causing increased Nf vibrations), resulting in increased maintenance costs. Other potential effects include impeding the correct operation of bleed valves by forming a sticky residue, clogging engine probes and creating noxious fumes. Care should be exercised when applying deicing fluid in the vicinity of the engine inlet. Consideration should be given to reducing engine water (compressor) wash intervals during cold weather operations.

Should deicing/anti-icing be inadvertently applied into the engine inlet area, it should be communicated to Pratt and Whitney prior to engine start. If the engine was running when the fluid was sprayed directly into the inlet, the engine should be shut down normally.

For ice removal on other engine surfaces, for personal safety, engines should not be operating. However, if necessary, this may be accomplished with the engines operating at IDLE speed using a low pressure stream of glycol-based deicing fluid exercising care to avoid spraying fluids directly into the engine inlet (use indirect method).

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
Make sure that all protective covers are removed.	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
None			

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

CAUTIONS

- **Deicing with the APU operating is not recommended. Ingestion of fluid can contaminate the air conditioning system and cause fumes and odors to go into the airplane. This can cause throat irritation to personnel and irregular operation and possible damage to the APU.**
- **On flight control surfaces, always apply fluid from the leading edge to the trailing edge and from the outer panels to the inner panels. The spray can push contamination not melted into hinge mechanisms and below the control shrouds. This contamination can refreeze in these areas.**
- **Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.**

1 **Removal of loose contamination:**

If significant amounts of loose snow are on the airplane.

1.1 Keep the slats/flaps lever (Fig. 4) in the current position.

Note

If you move the slats/flaps it can contaminate the actuators.

Note

Remove the snow for a clear view of the areas to be examined.

Note

During snowfall, freezing rain and drifting snow, it is possible for snow and melting ice to penetrate into hinges, operating linkages, drainage openings and vents, and then refreeze. The mentioned areas should be checked with diligence.

1.2 Examine the areas that follow for adherence ice, frost or snow:

- Wings - leading edges, upper and lower surfaces, winglets
- Upper fuselage
- Vertical and horizontal stabilizers - leading edges, upper/lower surfaces, and side panels
- Flaps, flap tracks, and flap drives
- Slats, slat tracks, and slat drives
- Ailerons, elevators, rudder, spoilers
- Air data probes/sensors, Angle of Attack (AOA) vanes and surrounding areas within a distance of 61 cm (2 ft.)
- Antennas
- Fuel drains and National Advisory Committee for Aeronautics (NACA) vent scoops
- Engine and Auxiliary Power Unit (APU) intakes, APU exhaust
- Landing gear and landing gear bays
- Windshield, wipers, windows, door sills, and surrounds.

1.3 Touch the surfaces with bare hands to make sure that there is no ice formation (tactile check).

1.4 Do the one-step, or two-steps, deicing/anti-icing procedure if you find frozen contamination in critical surfaces.

2 **Preparation for deicing/anti-icing:**

2.1 Before fluid is applied:

2.1.1 Accomplish all items in the “After start procedure“, except **DO NOT** extend flaps or check flight controls.

2.1.2 Park the airplane with the nose into the wind, if possible.

2.1.3 Set the park brake (Fig. 1) to the ON position.

2.1.4 Put the thrust levers (Fig. 4) in idle position.

Note

It is recommended that the application of deicing fluid be carried out with the engines and APU OFF. If not possible, the APU and engine bleed shutoff valves must be closed.

Make sure that the personnel that apply the deicing fluid know the location of the APU air intake to prevent contamination by the fluid.

2.1.5 Set the engine run switches (Fig. 6) to the OFF position (for engines off).
2.1.5.1 If engines are on, close the engines shutoff valves.
2.1.6 Set the APU switch to the OFF position, if required.
2.1.6.1 If the APU is on, close the APU shutoff valve.
2.1.7 Make sure that the APU door is closed (if APU is off).
2.1.8 On the air control panel, set the systems below to the OFF position:

- Left (side) (L) pack
- Right (side) (R) pack
- L bleed
- R bleed
- APU bleed.

2.1.9 On the anti-ice control panel, set the systems below to the OFF position:

- L cowl
- Wing
- R cowl.

2.1.10 Set the wipers (Fig. 2) to the OFF position.
2.1.11 Stab trim - set to 5 units.
2.1.12 Set the slats/flaps (Fig. 4) in released position.

3 **Deicing/anti-icing:**

CAUTION

If ice pellet precipitation occurs after the application of deicing fluid, the deicing fluid dilutes and cause wing contamination.

3.1 Do not apply the deicing fluid jet directly on these areas:
Refer to Fig. 8 , Fig. 9 , and Fig. 10.

- Windshields, Flight Crew Emergency Escape (FCEE) hatch, side windows, and cabin windows
- Smart probes and TAT probes
- AOA vanes
- Engine air intake (to prevent ingestion), engine exhaust, engine thrust reverser, engine bleed ducts
- APU inlet and APU exhaust (Especially important with APU ON)
- Antennas
- Vents and drains
- Wheels and brakes.

3.2 Application of fluid should follow the sequence below:

1 Vertical stabilizer

2 Horizontal stabilizer

3 Top of fuselage

4 Wings.

4 **After deicing spraying:**

4.1 Inspect the areas listed below, to confirm complete deicing:

- Wings - upper and lower surfaces, pay particular attention to the leading edges
- Upper fuselage
- Vertical and horizontal stabilizers - leading edges, upper/lower surfaces, and side panels
- Flaps, flap tracks, and flap drives
- Slats, slat tracks, and slat drives
- Ailerons, elevators, rudder, spoilers
- Air data probes/sensors, AOA vanes and surrounding areas within a distance of 2 feet
- Antennas
- Fuel drains and NACA vent scoops
- Engine and APU intakes, APU exhaust
- Landing gear and landing gear bays
- Windshields, windows, door sills, and surrounds.

4.2 At least 1 minute following deicing:

4.2.1 On the air control panel, set the systems below to the AUTO position:

- L bleed
- R bleed
- APU bleed.

4.2.2 Set wipers as required. Refer to Fig. 2 .

4.2.3 Check flight controls.

4.2.4 Set SLAT/FLAP lever (Fig. 4) for takeoff configuration.

4.2.5 Set STAB TRIM for takeoff configuration.

4.3 At least 3 minutes following deicing:

4.3.1 Start the APU (or confirm it is ON), as applicable. Refer to Fig. 3 .

4.3.2 On the air control panel, set the systems below to the AUTO position:

- L pac
- R pack.

4.3.3 On the anti-ice control panel, set the systems below as required:

- L cowl
- Wing
- R cowl.

4.3.4 Check for takeoff configuration.

4.3.5 Complete the “Before Takeoff Check“.

5 **Tables:**

Table 6 Active frost - Holdover guidelines for fluid Type I

Outside air temperature [1, 2] °C (°F)	**Approximate holdover times (hours:minutes)**
	Active frost
	Type I
-1 (30) and above	0:45 (0:35) [3]
below -1 (30) to -3 (27)	
below -3 (27) to -10 (14)	
below -10 (14) to -14 (7)	
below -14 (7) to -21 (-6)	
below -21 (-6) to LOUT	

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.

2 Ensure that the Lowest Operational Use Temperature (LOUT) is respected.

3 Value in parenthesis is for composite surfaces

Table 7 Active frost - Holdover guidelines for fluid Type II, Type III, and Type IV

Outside air temperature [1] °C (°F)	**Concentration neat fluid/water (Volume % / %)**	**Approximate holdover times (hours:minutes)**		
		Active frost		
		Type II	**Type III**	**Type IV**
-1 (30) and above	100/0	8:00	2:00	12:00
	75/25	5:00	1:00	5:00
	50/50	3:00	0:30	3:00
below -1 (30) and -3 (27)	100/0	8:00	2:00	12:00

Outside air temperature [1] °C (°F)	Concentration neat fluid/water (Volume % / %)	Approximate holdover times (hours:minutes)		
		Active frost		
		Type II	Type III	Type IV
	75/25	5:00	1:00	5:00
	50/50	1:30	0:30	3:00
below -3 (27) and -10 (14)	100/0	8:00	2:00	10:00
	75/25	5:00	1:00	5:00
below -10 (14) and -14 (7)	100/0	6:00	2:00	6:00
	75/25	1:00	1:00	1:00
below -14 (7) and -21 (-6)	100/0	6:00	2:00	6:00
below -21 (-6) and -25 (-13)	100/0	2:00	2:00	4:00
below -25 (-13)	100/0	No holdover time guidelines exist		

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

1 Ensure that the LOUT is respected.

Table 8 SAE TYPE I - Fluid holdover guidelines on critical aircraft surfaces composed predominantly of aluminum [1]

This table applies to aircraft with critical surfaces constructed predominantly or entirely of aluminum materials that have demonstrated satisfactory use of these holdover times.

Outside air temperature [2] °C (°F)	Approximate holdover times under various weather conditions (minutes)							
	Freezing fog or ice crystals	Snow, snow grains or snow pellets [3]			Freezing drizzle [4]	Light freezing rain	Rain on cold soaked wing [5]	Other [6]
		Very light [7]	Light [8]	Moderate				
-3 (27) and above	11 - 17	18	11 - 18	6 - 11	9 - 13	4 - 6	2 - 5	
below -3 (27) to -6 (21)	8 - 13	14	8 - 14	5 - 8	5 - 9	4 - 6	**CAUTION:** No holdover time guidelines exist	
below -6 (21) to -10 (14)	6 - 10	11	6 - 11	4 - 6	4 - 7	2 - 5		
below -10 (14)	5 - 9	7	4 - 7	2 - 4				

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

Note

The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable holdover time table cell.

1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.

2 Ensure that the LOUT is respected.

3 To determine snowfall intensity, the visibility in snow vs. snowfall intensity table (Table 12) is required.

4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

5 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.

8 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.

Table 9 SAE TYPE I - Fluid holdover guidelines on composite wing surfaces [1]

These holdover times apply to newer aircraft with critical surfaces constructed predominantly or entirely of composite materials.

Outside air temperature [2] °C (°F)	Approximate holdover times under various weather conditions (minutes)							
	Freezing fog or ice crystals	Snow, snow grains or snow pellets [3]			Freezing drizzle [4]	Light freezing rain	Rain on cold soaked wing [5]	Other [6]
		Very light [7]	Light [7]	Moderate				
-3 (27) and above	9 - 16	12	6 - 12	3 - 6	8 - 13	4 - 6	1 - 5	
below -3 (27) to -6 (21)	6 - 8	11	5 - 11	2 - 5	5 - 9	4 - 6	**CAUTION:** No holdover time guidelines exist	
below -6 (21) to -10 (14)	4 - 8	9	5 - 9	2 - 5	4 - 7	2 - 5		
below -10 (14)	4 - 7	7	4 - 7	2 - 4				

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

Note

The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable holdover time table cell.

1 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.

2 Ensure that the LOUT is respected.

3 To determine snowfall intensity, the visibility in snow vs. snowfall intensity table (Table 12) is required.

4 Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

5 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

7 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.

Table 10 SAE TYPE I - Deicing / anti-icing fluid application procedures

Guidelines for the application of SAE Type I fluid mixtures at minimum concentrations for the prevailing outside air temperature (OAT)			
OAT [1] °C (°F)	**One-step procedure deicing/anti-icing**	**Two-step procedure**	
		First step: Deicing	**Second step: Anti-icing [2]**
-3 (27) and above	Heated mix of fluid and water with a freezing point of at least 10°C (18°F) below OAT	Heated water or heated mix of fluid and water	Heated mix of fluid and water with a freezing point of at least 10°C (18°F) below OAT
below -3 (27)		Freezing point of heated fluid mixture shall not be more than 3°C (5°F) above OAT	

Note

Temperature of water or fluid/water mixtures shall be at least 60°C (140°F) at the nozzle. Upper temperature limit shall not exceed fluid and aircraft manufactures' recommendations.

Note

To use Type I holdover time guidelines in all conditions including active frost, at least 1 litre/m² (2 gal / 100 sq.ft.) shall be applied to the deiced surface.

Note

This table is applicable for the use of Type I holdover time guidelines in all conditions including active frost. If holdover times are not required, a temperature of 60°C (140°F) at the nozzle is desirable.

Note

The LOUT for given Type II/III/IV fluid is higher of:

a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or

b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F).

Note

Wing skin temperatures may differ and, in some conditions, can be below the OAT. Use a stronger fluid mixture (more glycol) in this condition.

1 Fluids must be used at temperatures below their LOUT

2 To be applied before first step fluid freezes, typically within 3 minutes. (this time may be higher than 3 minutes in some conditions, but potentially lower in heavy precipitation, colder temperatures, or critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.)

Table 11 SAE TYPE II, TYPE III and TYPE IV - Deicing / anti-icing fluid application procedures

Guidelines for the application of SAE Type II, III and IV fluid mixtures at minimum concentrations for the prevailing outside air temperature (OAT)			
OAT [1] °C (°F)	**One-step procedure deicing/anti-icing**	**Two-step procedure**	
		First step: Deicing	**Second step: Anti-icing [2]**
-3 (27) and above	50/50 Heated[3] Type II/III/IV	Heated water or heated mix of Type I, II, III or IV with water	50/50 Type II/III/IV
-14 (7) and above	75/25 Heated[3] Type II/III/IV	Heated suitable mix of Type I, Type II/III/IV and water with FP not more than 3°C (5°F) above actual OAT.	75/25 Type II/III/IV
-25 (13) and above	100/0 Heated[3] Type II/III/IV	Heated suitable mix of Type I, Type II/III/IV and water with FP not more than 3°C (5°F) above actual OAT.	100/0 Type II/III/IV
below -25 (13)	Type II/III/IV fluid may be used below -25°C (-13°F) provided that the OAT is at or above the LOUT. Consider the use of Type I when Type II/III/IV fluid cannot be used.		

Guidelines for the application of SAE Type II, III and IV fluid mixtures at minimum concentrations for the prevailing outside air temperature (OAT)			
OAT [1] °C (°F)	One-step procedure deicing/anti-icing	Two-step procedure	
		First step: Deicing	Second step: Anti-icing [2]
Note For heated fluids, a fluid temperature not less than 60°C (140°F) at the nozzle is desirable. When the first step is performed using a fluid/water mix with a freezing point above OAT, the temperature at the nozzle shall be at least 60°C and at least 1 litre/m² (2 gal / 100 sq.ft.) shall be applied to the surfaces to be deiced. For fluids which require a heated application to obtain holdover times (this is stated in the applicable holdover time table), the temperature at the nozzle shall be at least 60°C and at least 1 litre/m² (2 gal / 100 sq.ft.) shall be applied. **Note** Upper temperature limit shall not exceed fluid and aircraft manufactures' recommendations. **Note** The LOUT for given Type II/III/IV fluid is higher of: a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F). **Note** Wing skin temperatures may differ and, in some conditions, can be below the OAT. Use a stronger fluid mixture (more glycol) in this condition. **Note** Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold soaked wing, the 50/50 dilution of Type II, III or IV shall not be used for the anti-icing step because fluid freezing may occur. **Note** An insufficient amount of anti-icing fluid, especially in the second step of a two-step procedure, may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid for the first step.			
1 Fluids must be used at temperatures below their LOUT 2 To be applied before first step fluid freezes, typically within 3 minutes. (this time may be higher than 3 minutes in some conditions, but potentially lower in heavy precipitation, colder temperatures, or critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area.) 3 Clean aircraft may be anti-iced with unheated fluid, unless the related holdover time table requires a heated application to obtain holdover times.			

Table 12 Visibility in snow vs. snowfall intensity chart

Lighting	Temperature range	Visibility in snow (statute miles)			
	°C (°F)	Heavy	Moderate	Light	Very light
Darkness	-1 (30) and above	= 1	> 1 to 2½	> 2½ to 4	> 4

	Below -1 (30)	= 3/4	> 3/4 to 1½	> 1½ to 3	> 3
Daylight	-1 (30) and above	= 1/2	>½ to 1½	> 1½ to 3	> 3
	Below -1 (30)	= 3/8	> 3/8 to 7/8	> 7/8 to 2	> 2
HOW TO READ THE TABLE: Assume that the daytime visibility in snowfall is 1 statute mile and the temperature is -7°C. Based on these conditions, the snowfall intensity is light. This snowfall intensity is used to determine which holdover time guideline value is appropriate for the fluid in use.					

Table 13 SAE TYPE II - Fluid holdover time guidelines

Outside air temperature [1] °C (°F)	**Type II fluid concentration neat Fluid/Water Volume %/ Volume %**	**Approximate holdover times under various weather conditions (hours:minutes)**					
		Freezing fog or ice crystals	**Snow, snow grains or snow pellets [2, 3]**	**Freezing drizzle [4]**	**Light freezing rain**	**Rain on cold soaked wing [5]**	**Other [6]**
-3 (27) and above	100/0	0:35 - 1:30	0:20 - 0:45	0:30 - 1:00	0:15 - 0:30	0:07 - 0:40	
	75/25	0:25 - 1:00	0:15 - 0:30	0:20 - 0:45	0:10 - 0:25	0:05 - 0:25	
	50/50	0:15 - 0:30	0:05 - 0:15	0:10 - 0:20	0:05 - 0:10		
below -3 (27) to -14 (7)	100/0	0:20 - 1:05	0:15 - 0:30	0:20 - 0:45 [7]	0:10 - 0:20 [7]		
	75/25	0:25 - 0:50	0:08 - 0:20	0:15 - 0:30 [7]	0:08 - 0:15 [7]		**CAUTION:** No holdover time guidelines exist
below -14 (7) to LOUT	100/0	0:15 - 0:35 [8]	0:15 - 0:30 [8]				

Outside air temperature [1] °C (°F)	Type II fluid concentration neat Fluid/Water Volume %/ Volume %	Approximate holdover times under various weather conditions (hours:minutes)					
		Freezing fog or ice crystals	Snow, snow grains or snow pellets [2, 3]	Freezing drizzle [4]	Light freezing rain	Rain on cold soaked wing [5]	Other [6]

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

Note

The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable holdover time table cell.

1	Ensure that the LOUT is respected.
2	To determine snowfall intensity, the visibility in snow vs. snowfall intensity table (Table 12) is required.
3	Use light freezing rain holdover times in condition of very light or light snow mixed with light rain.
4	Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
5	No holdover time guidelines exist for this condition for 0°C (32°F) and below.
6	Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
7	No holdover time guidelines exist for this condition below -10°C (14°F).
8	If the LOUT is unknown, no holdover time guidelines exist below -25°C (-13°F).

Table 14 SAE TYPE IV - Fluid holdover time guidelines

Outside air temperature [1] °C (°F)	Type II fluid concentration neat Fluid/Water Volume %/ Volume %	Approximate holdover times under various weather conditions (hours:minutes)					
		Freezing fog or ice crystals	Snow, snow grains or snow pellets [2, 3]	Freezing drizzle [4]	Light freezing rain	Rain on cold soaked wing [5]	Other [6]
-3 (27) and above	100/0	1:30 - 2:25	0:35 - 1:10	0:50 - 1:30	0:35 - 0:50	0:10 - 1:25	
	75/25	1:25 - 2:40	0:30 - 1:05	0:50 - 1:15	0:30 - 0:45	0:09 - 1:15	
	50/50	0:25 - 0:40	0:09 - 0:15	0:15 - 0:25	0:09 - 0:15		
below -3 (27) to -14 (7)	100/0	0:20 - 1:20	0:25 - 0:50	0:25 - 1:10 [7]	0:15 - 0:25 [7]		
	75/25	0:25 - 0:50 [8]	0:20 - 0:40 [8]	0:15 - 1:05 [, 8]	0:15 - 0:25 [, 8]		**CAUTION:** No holdover time guidelines exist
below -14 (7) to LOUT	100/0	0:15 - 0:40 [9]	0:15 - 0:30 [9]				

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

Note

The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable holdover time table cell.

1 Ensure that the LOUT is respected.

2 To determine snowfall intensity, the visibility in snow vs. snowfall intensity table (Table 12) is required.

3 Use light freezing rain holdover times in condition of very light or light snow mixed with light rain.

4	Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
5	No holdover time guidelines exist for this condition for 0°C (32°F) and below.
6	Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
7	No holdover time guidelines exist for this condition below -10°C (14°F).
8	If the LOUT is unknown, no holdover time guidelines exist below -5.5°C (-22.1°F).
9	If the LOUT is unknown, no holdover time guidelines exist below -23.5°C (-10.3°F).

Table 15 SAE TYPE III - Fluid ice pellet and small hail allowance times

This table is for use with SAE Type III undiluted (100/0) fluids applied unheated only1

Precipitation type	**Outside Air Temperature**		
	-5°C and above	**Below -5 to -10°C**	**Below -10°C 2**
Light ice pellets	**10 minutes**	**10 minutes**	
Moderate ice pellets or small hail 3	5 minutes	5 minutes	
Light ice pellets mixed with light or moderate freezing drizzle	7 minutes	5 minutes	
Light ice pellets mixed with light rain	7 minutes 4	**CAUTION:** No allowance times currently exist	
Light ice pellets mixed with moderate rain			
Light ice pellets mixed with light snow	10 minutes	10 minutes	
Light ice pellets mixed with moderate snow	10 minutes	10 minutes	

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

Note

The holdover time can be lower in these conditions:

- Heavy weather conditions, heavy precipitation rates or high moisture contents.
- When the airplane skin temperature is lower than OAT.
- With high wind velocity or jet blast.

Note

The only acceptable decision-making criterion, for takeoff without a pre-takeoff contamination inspection, is the shorter time within the applicable holdover time table cell.

1	No allowance times exist for AllClear AeroClear MAX.
2	Ensure that the lowest operational use temperature (LOUT) is respected.

3	If no intensity is reported with small hail, moderate ice pellets allowance times apply. However, if an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. light small hail = light ice pellets, moderate small hail = moderate ice pellets.
4	No allowance times exist in this condition for temperatures below 0°C; consider use of light ice pellets mixed with light freezing rain.

Table 16 SAE TYPE IV - Fluid ice pellet and small hail allowance times

This table is for use with SAE Type IV undiluted (100/0) fluids only. All Type IV fluids are propylene glycol based with the exception of Dow EG106 and LNT Solutions E450 which are ethylene glycol based.

Precipitation type	Outside Air Temperature		
	-5°C and above	Below -5 to -10°C	Below -10°C [1]
Light ice pellets	**50 minutes**	**30 minutes**	**30 minutes** [2]
Moderate ice pellets or small hail [3]	25 minutes [4]	10 minutes	10 minutes [2, 5]
Light ice pellets mixed with light or moderate freezing drizzle	25 minutes	10 minutes	
Light ice pellets mixed with light freezing rain	25 minutes	10 minutes	
Light ice pellets mixed with light rain	25 minutes [6]	**CAUTION:** No allowance times currently exist	
Light ice pellets mixed with moderate rain	25 minutes [7]		
Light ice pellets mixed with light snow	25 minutes	15 minutes	
Light ice pellets mixed with moderate snow	10 minutes	7 minutes	

CAUTION

Fluids used during ground deicing/anti-icing do not supply in-flight icing protection.

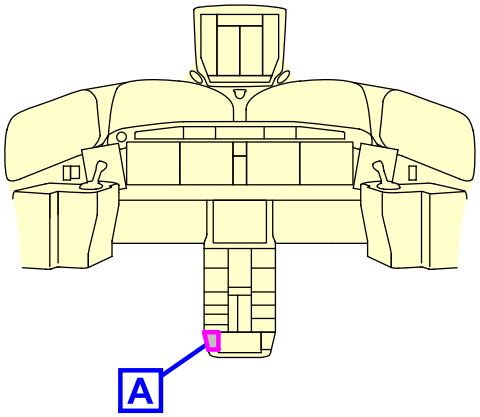
Note

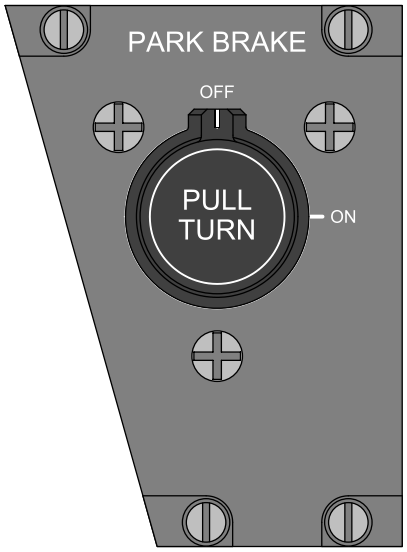
Allowance time cannot be extended by an inspection of the aircraft critical surfaces.

Note

Takeoff is allowed up to 90 minutes after start of fluid application if the precipitation stops at or before the allowance time expires and does not restart. The OAT must not decrease during the 90 minutes to use this guidance in conditions of light ice pellets mixed with either: light or moderate freezing drizzle, light freezing rain, light rain, or moderate rain.

1	Ensure that the lowest operational use temperature (LOUT) is respected.
2	No allowance times exist for propylene glycol (PG) fluids when used on aircraft with rotation speeds less than 115 knots. (For these aircraft, if the fluid type is not known, assume zero allowance time.)
3	If no intensity is reported with small hail, moderate ice pellets allowance times apply. However, if an intensity is reported with small hail, the ice pellet condition with the equivalent intensity can be used, e.g. light small hail = light ice pellets, moderate small hail = moderate ice pellets.
4	Allowance time is 15 minutes for propylene glycol (PG) fluids or when the fluid type is unknown.
5	No allowance times exist for propylene glycol (PG) fluids in this condition for temperatures below -16°C.
6	No allowance times exist in this condition for temperatures below 0°C; consider use of light ice pellets mixed with light freezing rain.
7	No allowance times exist in this condition for temperatures below 0°C.



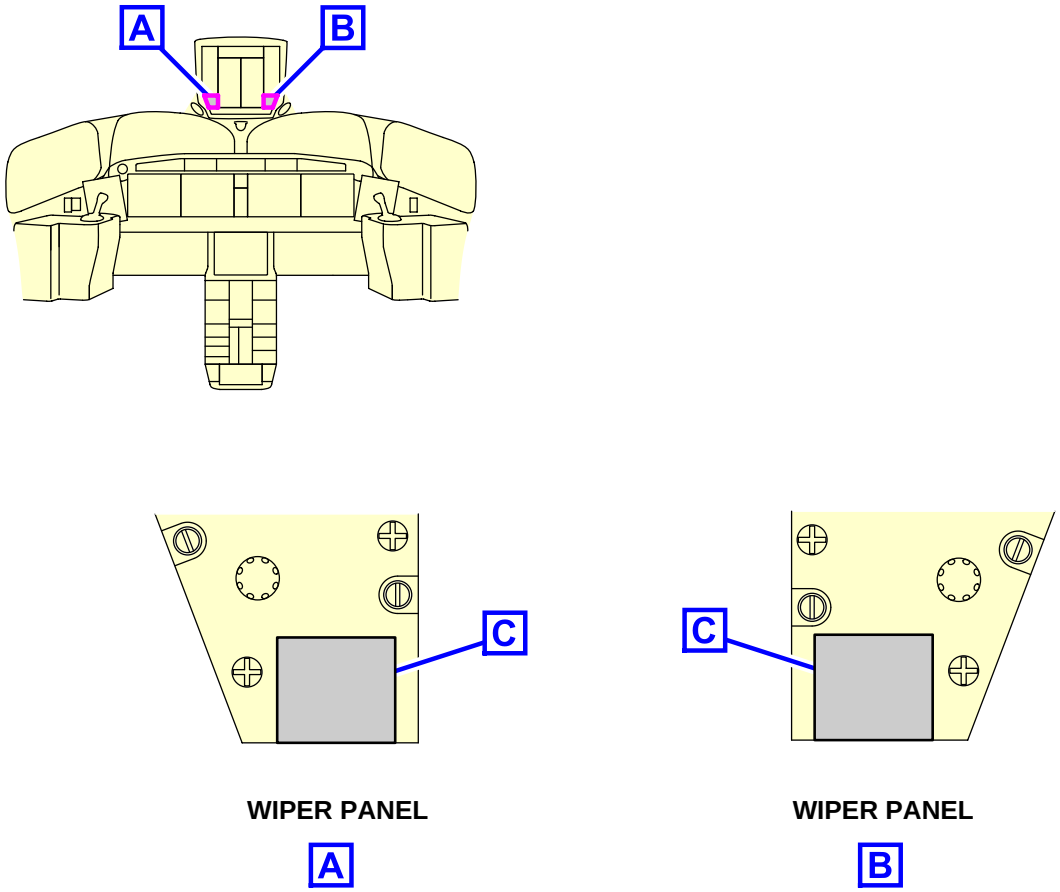


PARKING BRAKE PANEL

A

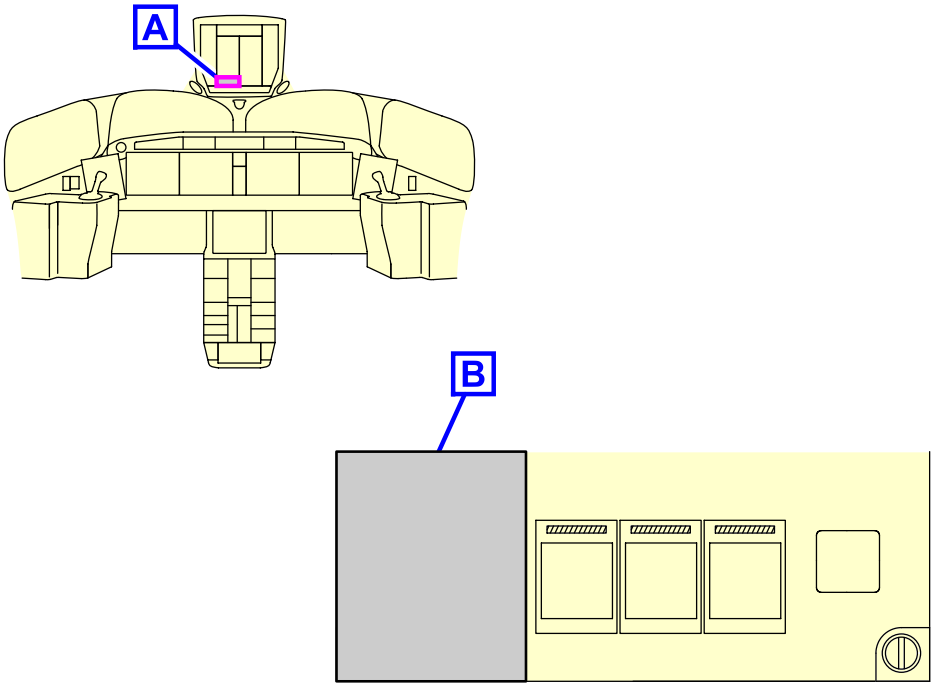
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Figure 1 Park break panel



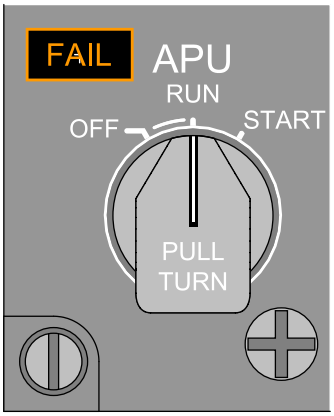
ICN-BD500-A-J300000-C-3AB48-06163-A-003-01

Figure 2 Wiper control switch



APU AND TAWS CONTROL PANEL

A

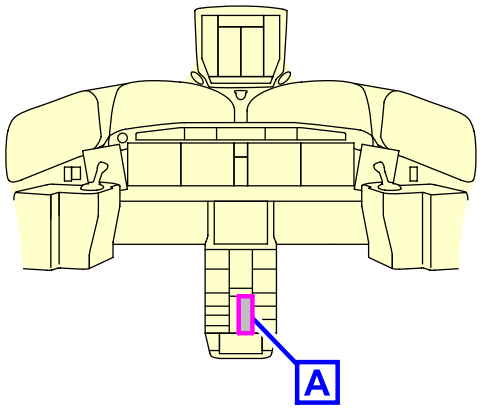


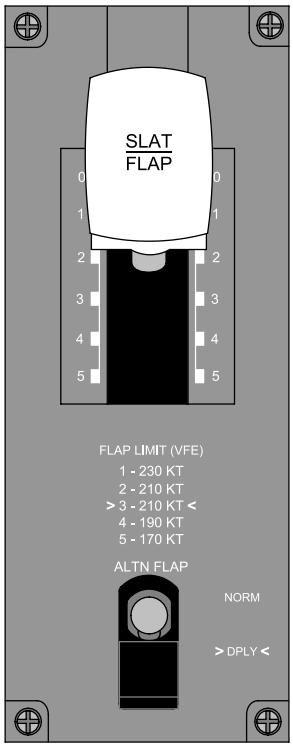
APU SWITCH

B

ICN-BD500-A-J490000-C-3AB48-06181-A-002-01

Figure 3 APU control panel



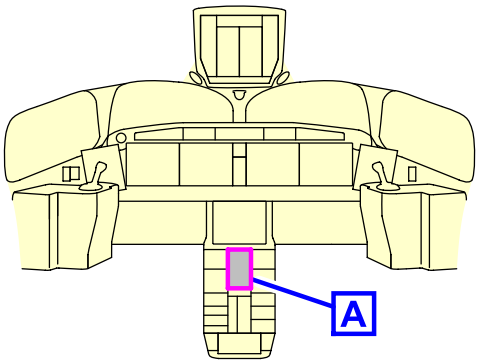


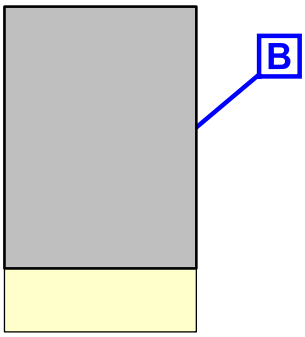
SLAT/FLAP CONTROL PANEL

A

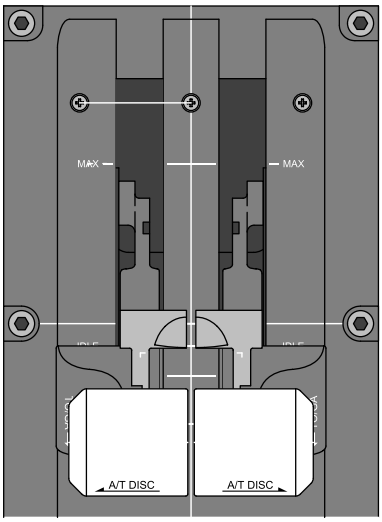
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Figure 4 Slats/flaps panel





A

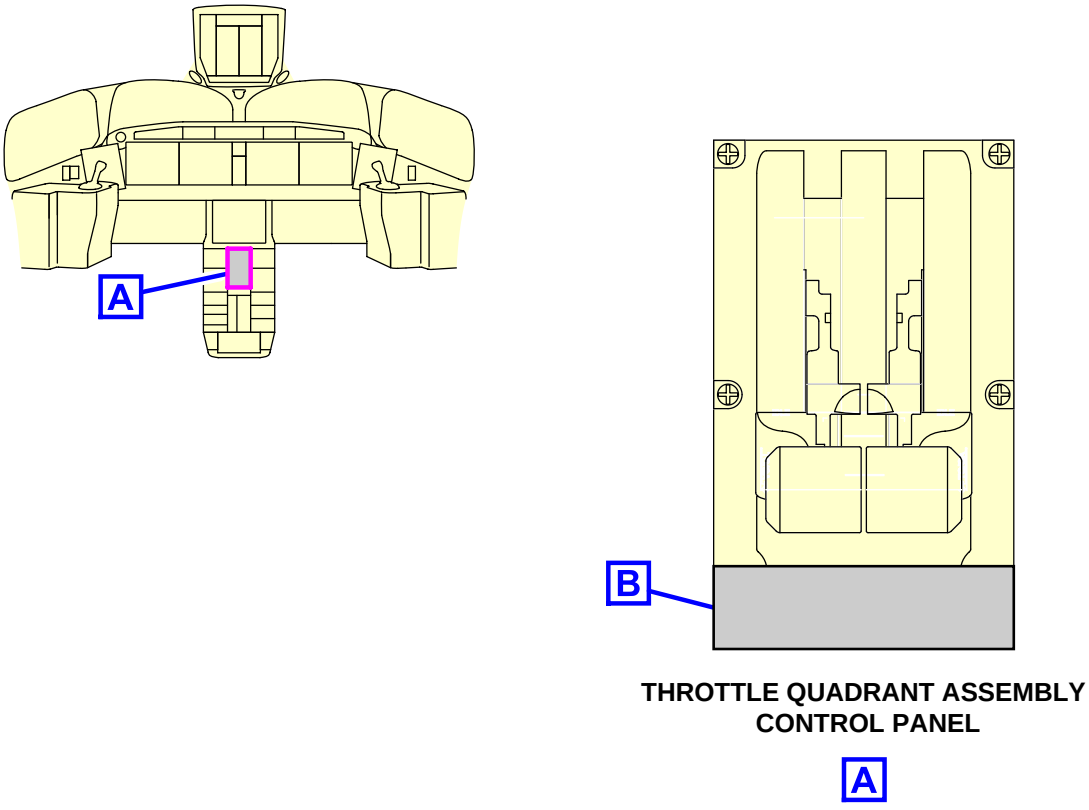


THROTTLE QUADRANT

B

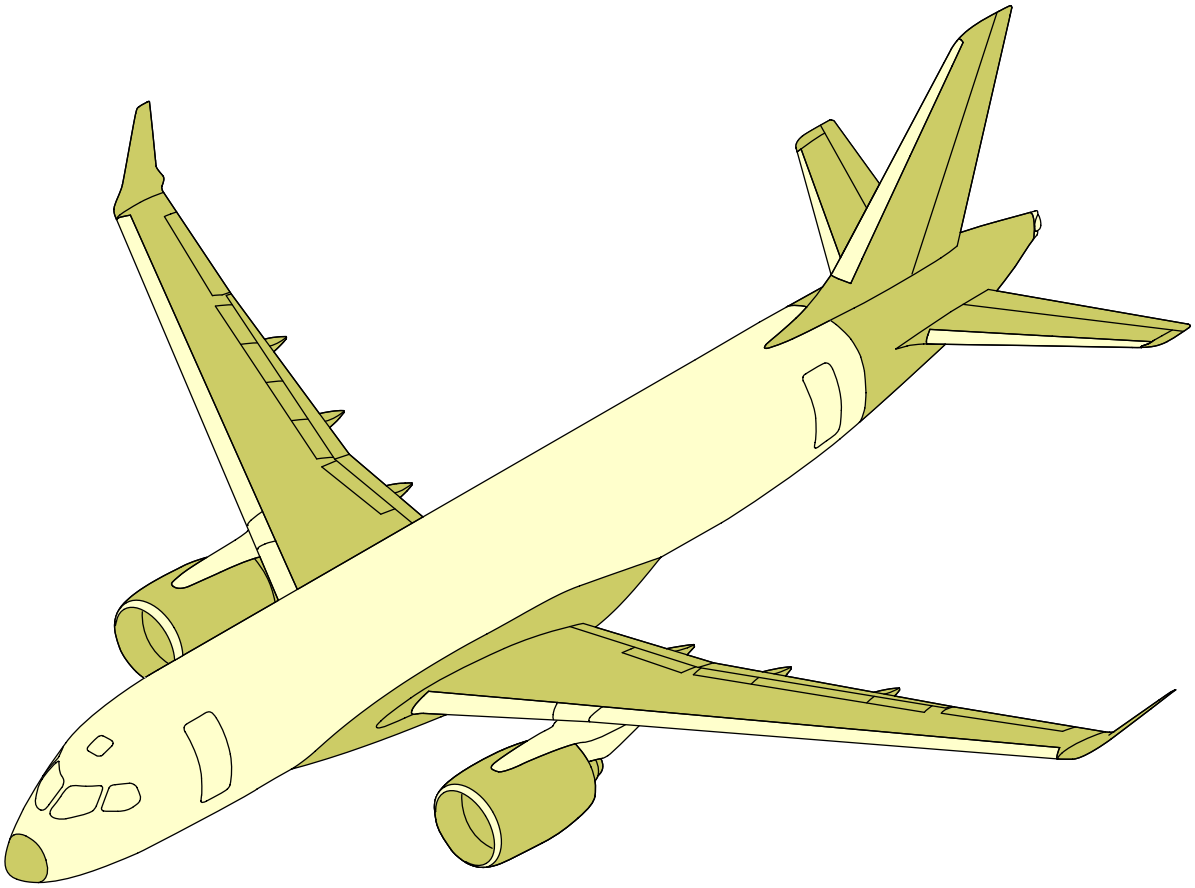
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Figure 5 Throttle control system



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Figure 6 Ignition system

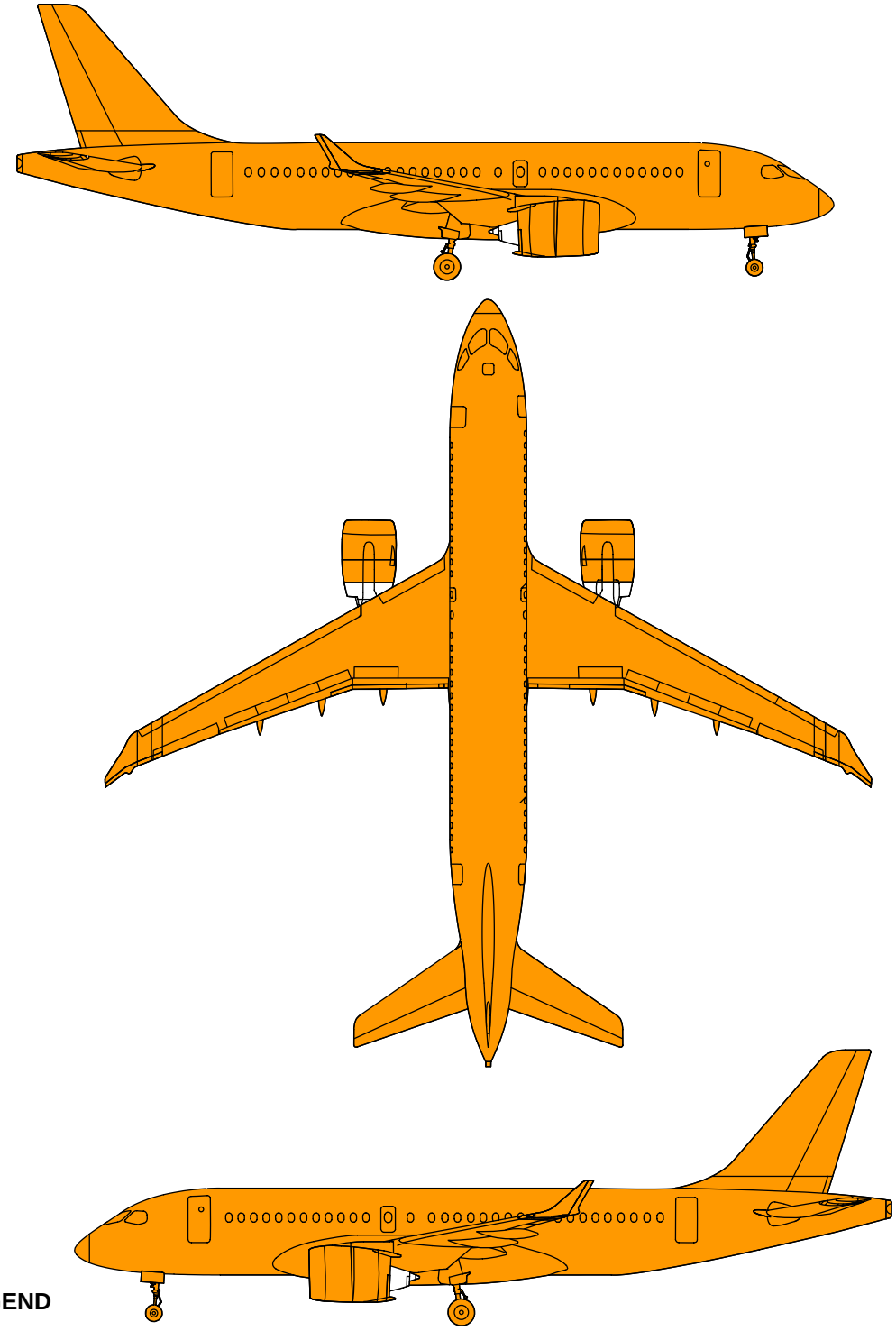


LEGEND

Composite.

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Figure 7 Composite materials



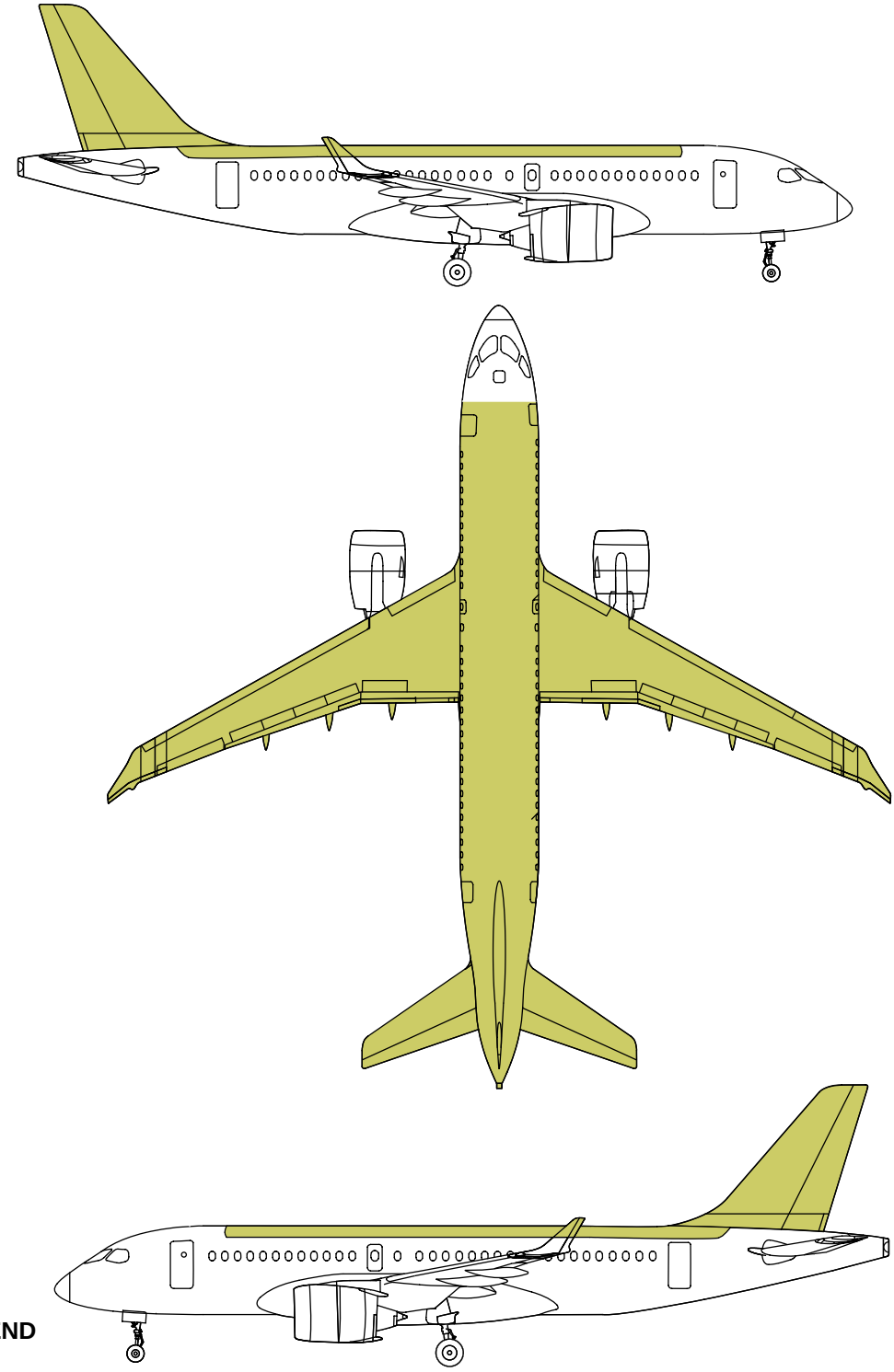
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Deicing Fluid Application Areas.

Deicing Fluid Non-Application Areas.

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Figure 8 Deicing/Anti- icing fluids application and non-application areas - (Sheet 1 of 2)



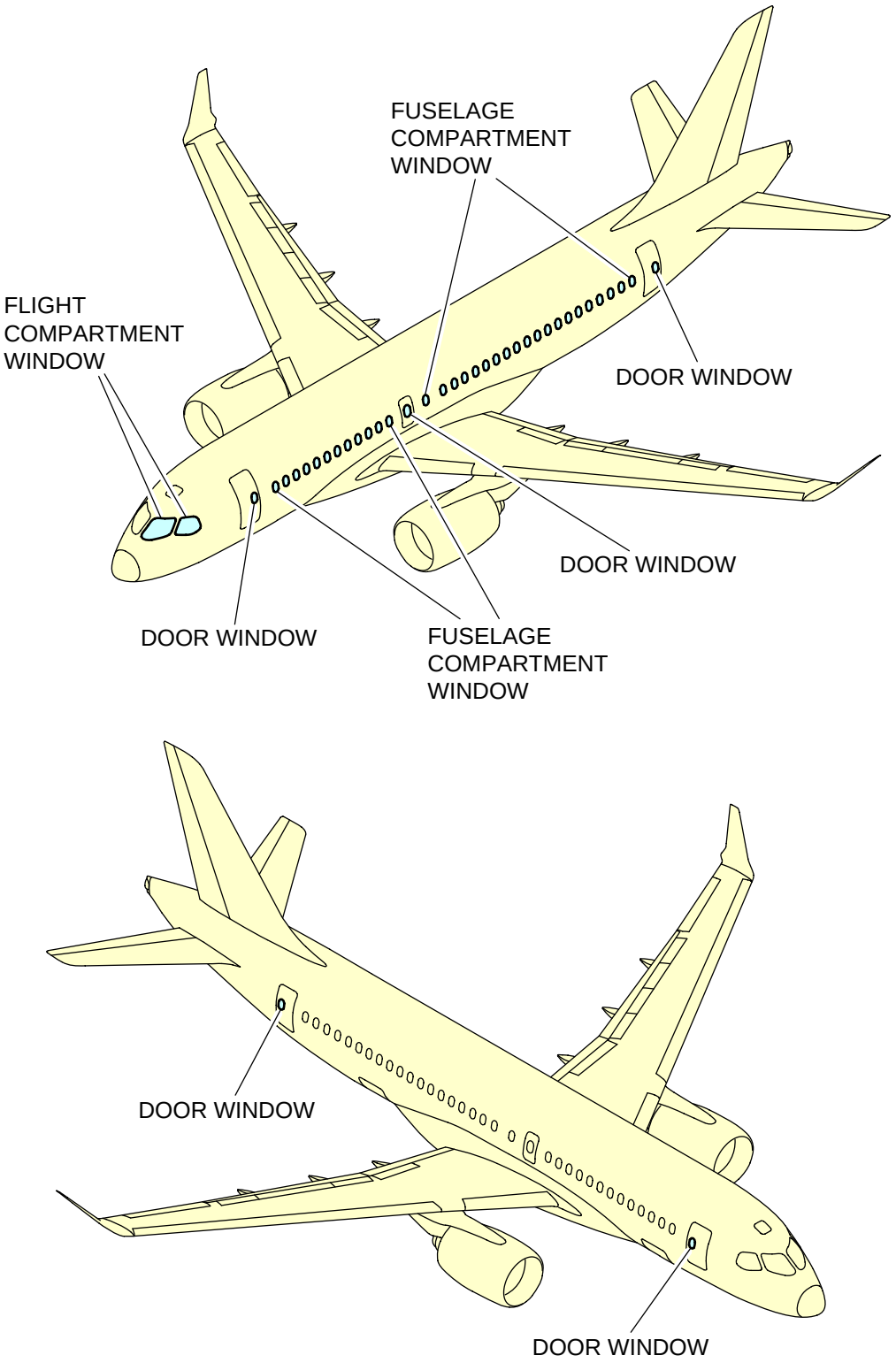
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Anti-icing Fluid Application Areas.

Anti-icing Fluid Non-Application Areas.

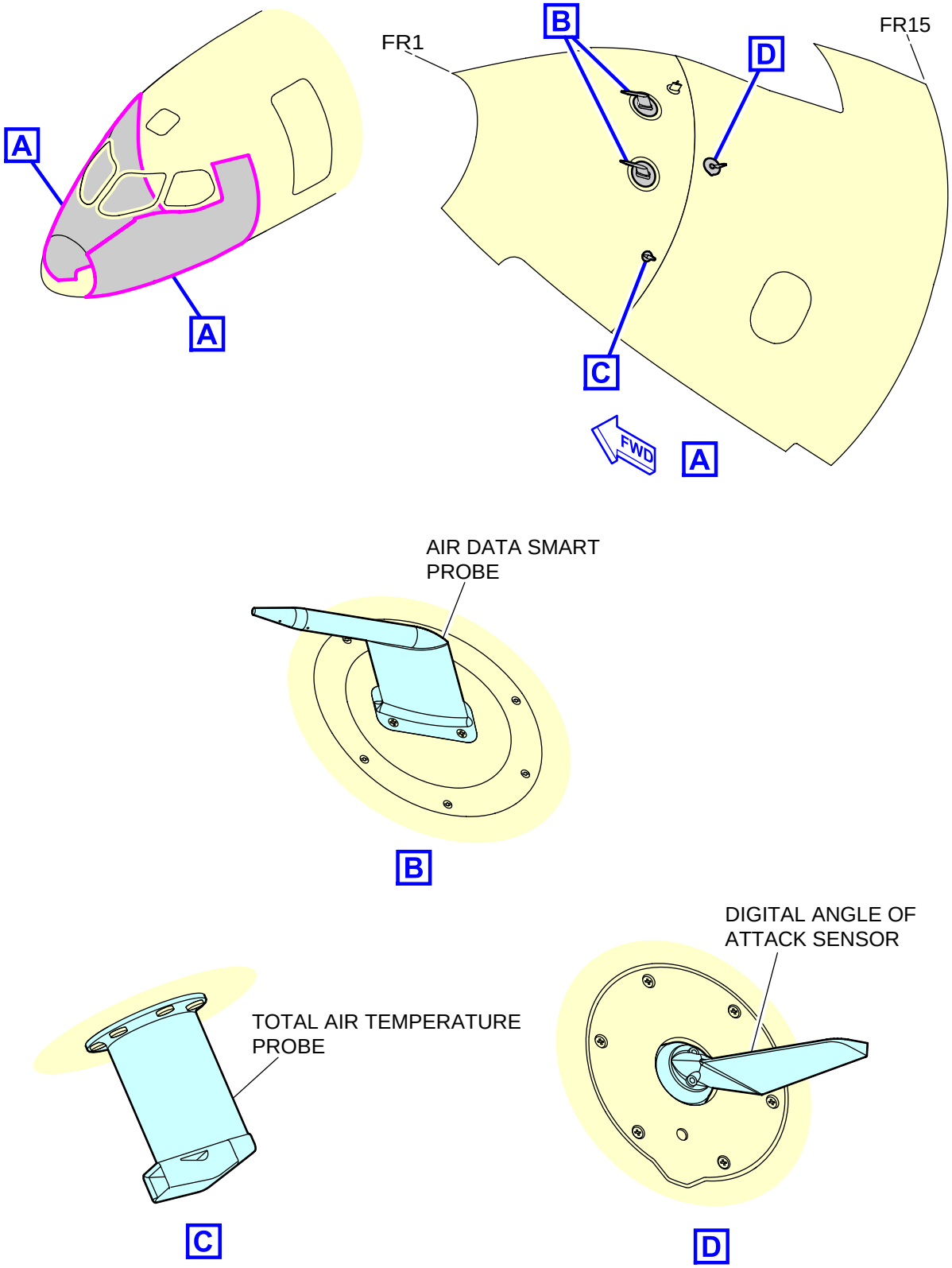
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Figure 8 Deicing/Anti- icing fluids application and non-application areas - (Sheet 2 of 2)



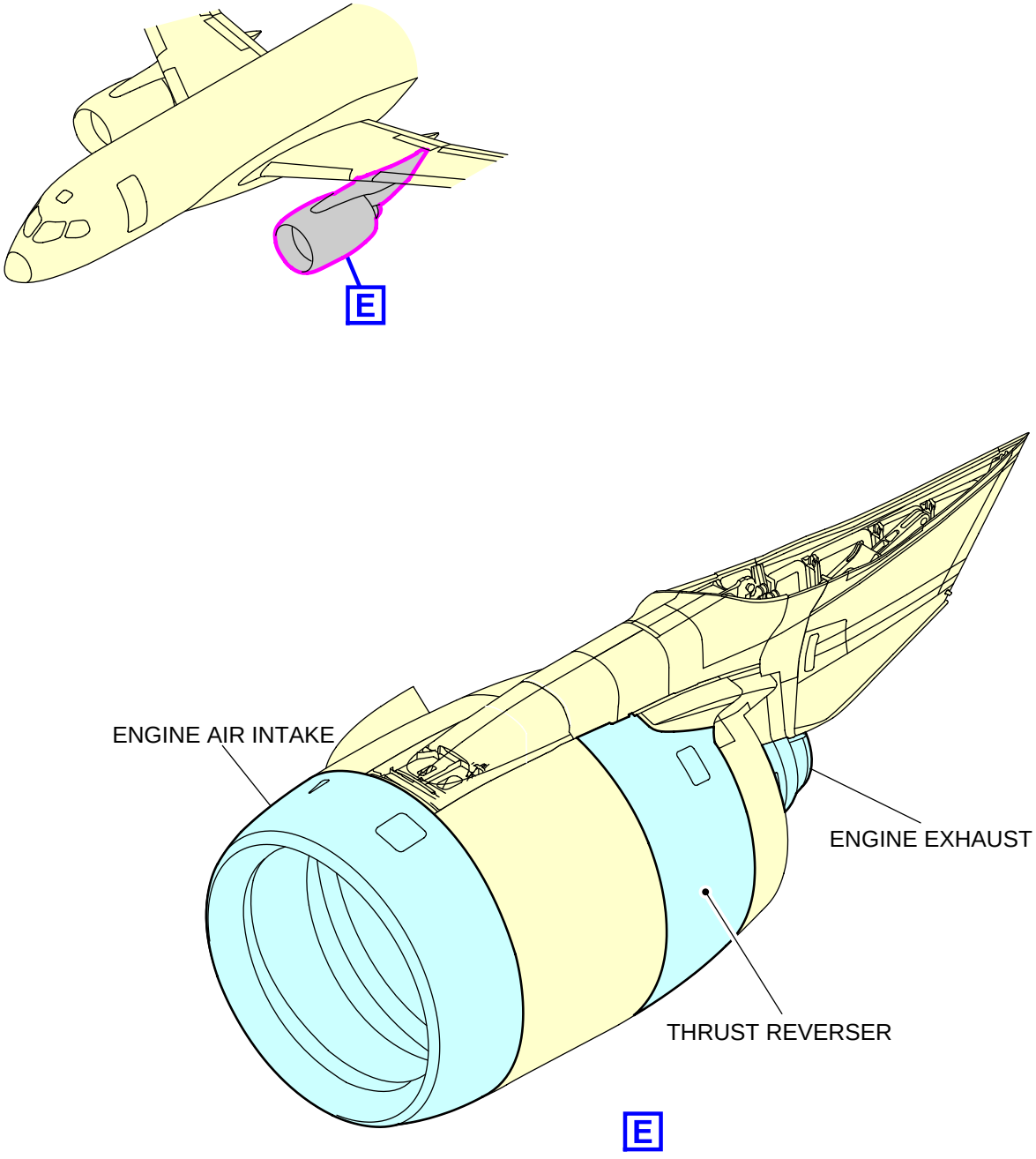
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Figure 9 Deicing fluids non-application areas



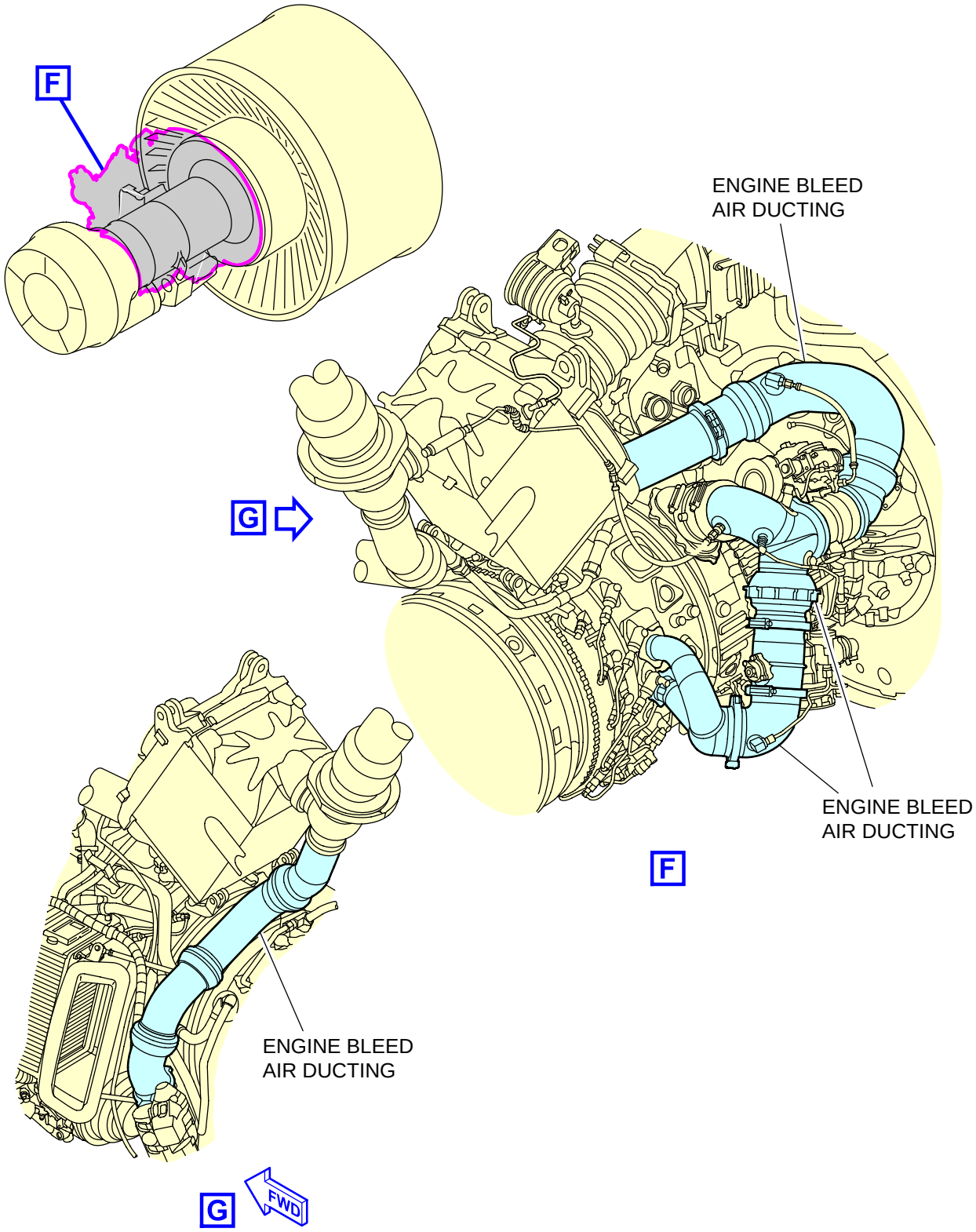
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Figure 10 Deicing fluids non-application areas - (Sheet 1 of 7)



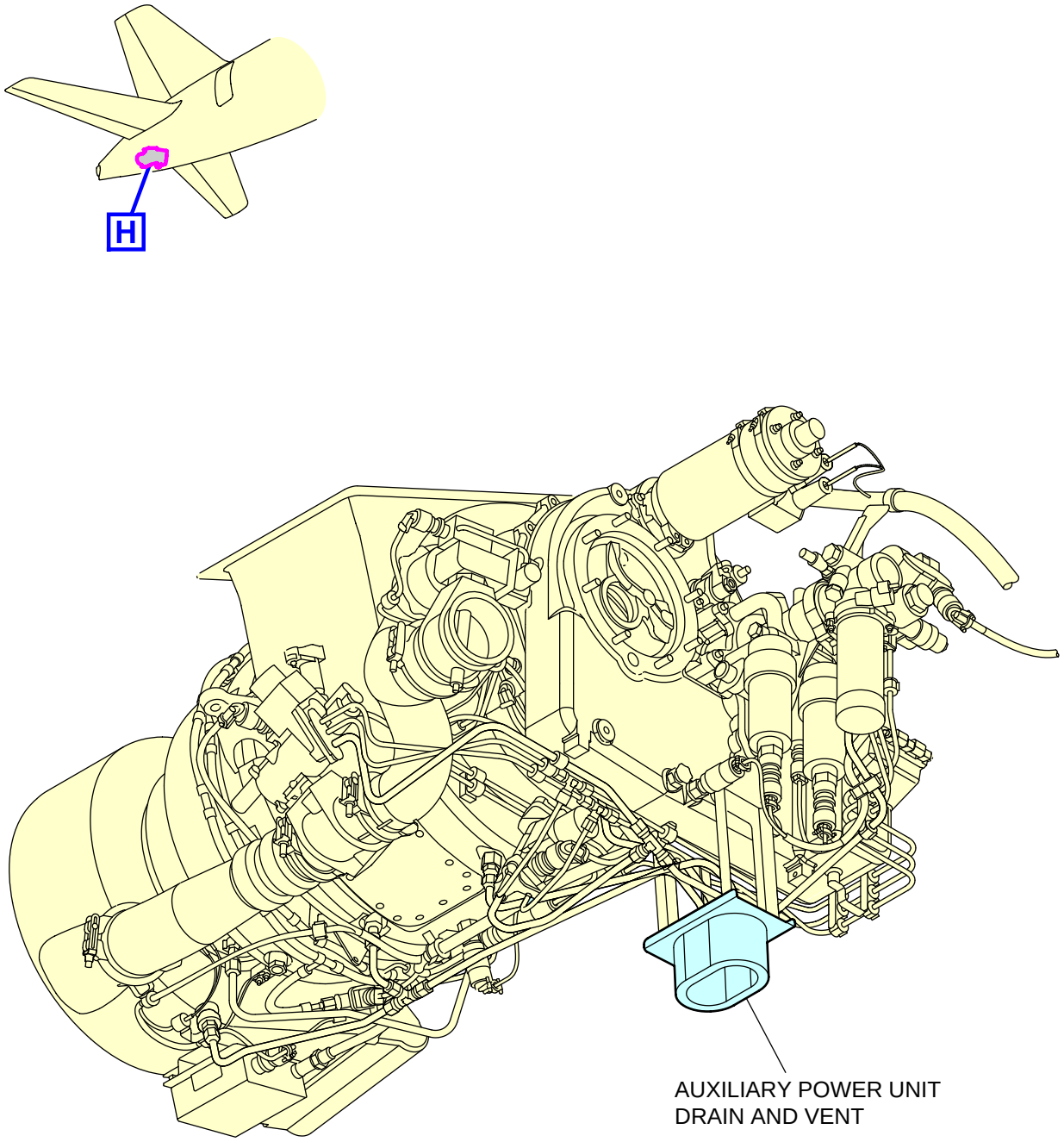
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Figure 10 Deicing fluids non-application areas - (Sheet 2 of 7)



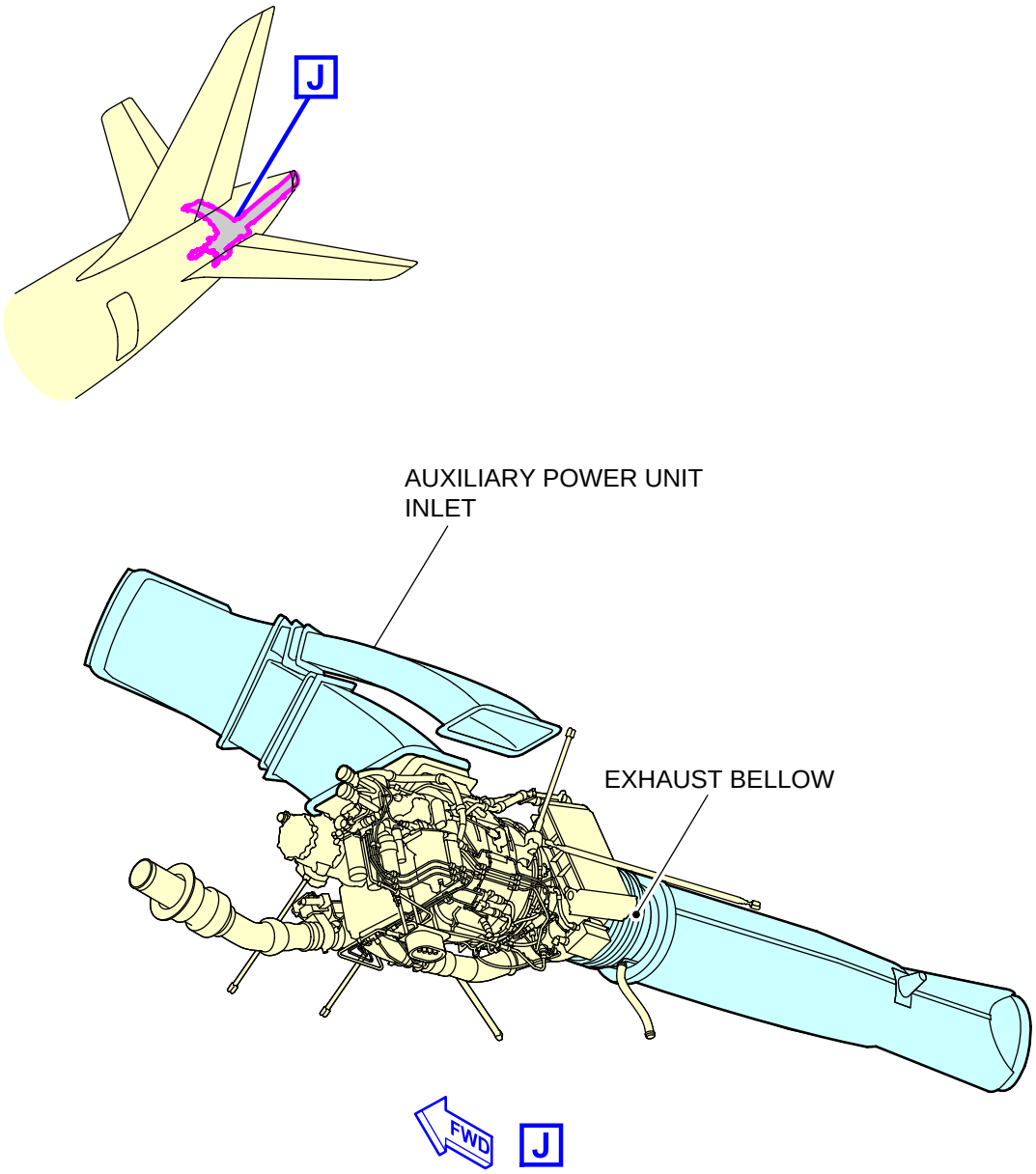
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Figure 10 Deicing fluids non-application areas - (Sheet 3 of 7)



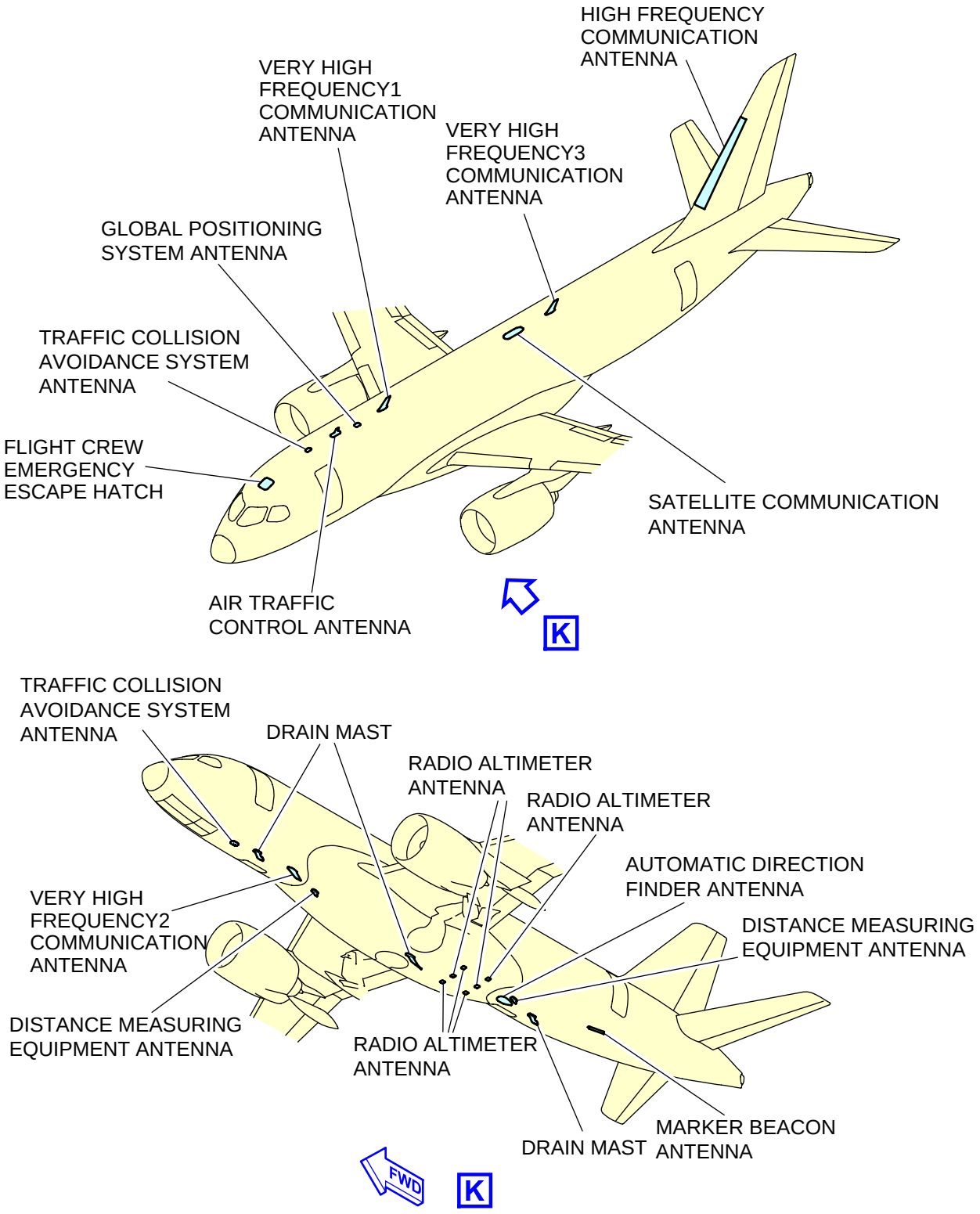
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Figure 10 Deicing fluids non-application areas - (Sheet 4 of 7)



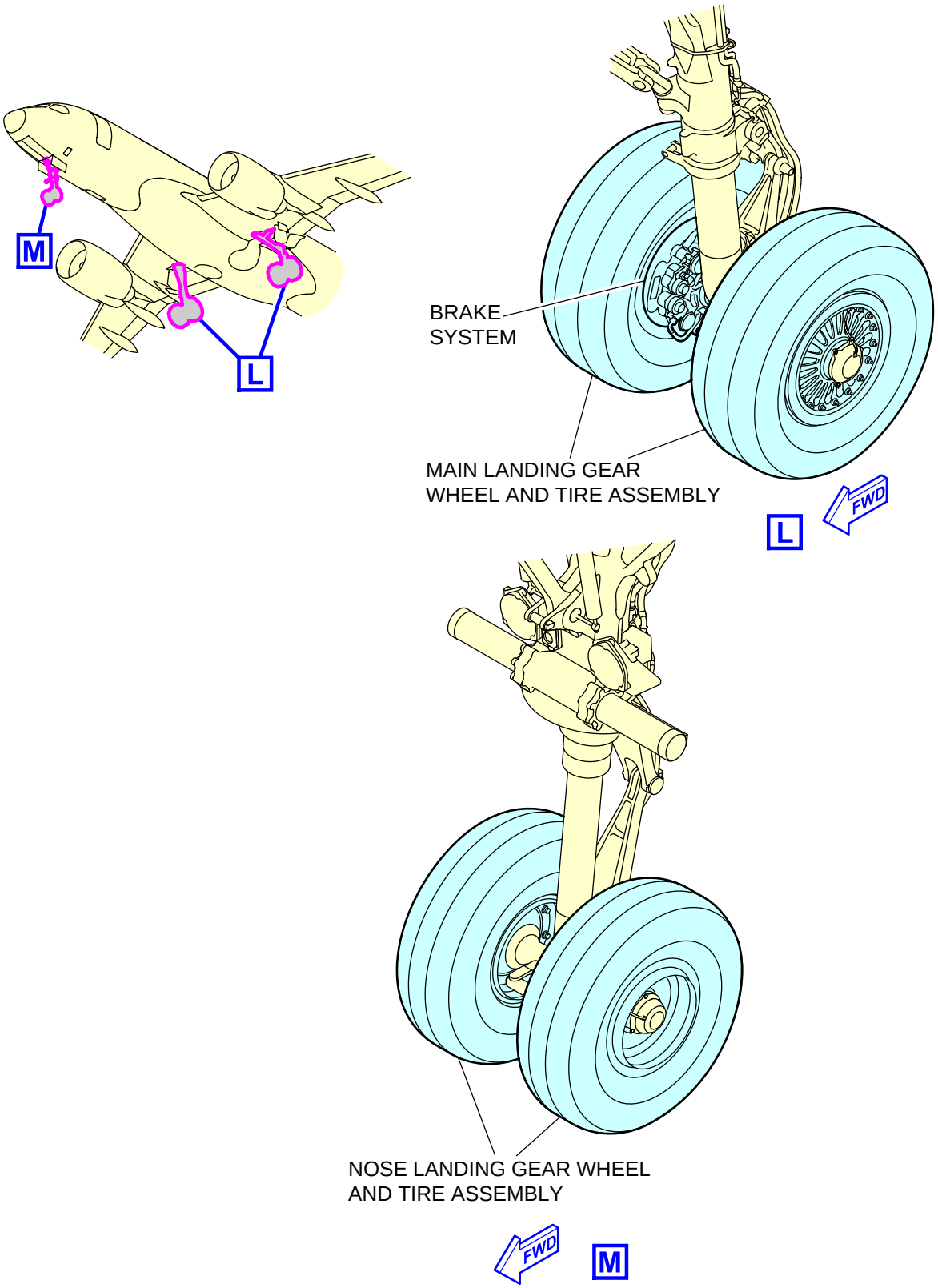
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Figure 10 Deicing fluids non-application areas - (Sheet 5 of 7)



ICN-BD500-A-J123100-C-3AB48-58610-A-002-01

Figure 10 Deicing fluids non-application areas - (Sheet 6 of 7)



ICN-BD500-A-J123100-C-3AB48-58611-A-001-01

Figure 10 Deicing fluids non-application areas - (Sheet 7 of 7)

Requirements after job completion

Required conditions

Table 17 Required conditions

Action/Condition	Data Module/Technical publication
None	

A220

Chapter 6: Operating conditions

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A220

Crew safety precautions - dangerous areas - Technical data

Applicability: 50001-54999

Table of contents

Page

Crew safety precautions - dangerous areas - Technical data 1
References 1
Description 1
1 Information 1
2 Weather radar dangerous area 1
3 Engine intake and engine exhaust dangerous areas 2

List of tables

Page

1 References 1

List of figures

Page

1 Weather radar area 3

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J71-00-00-00AAA-012A-A	Power plant - General warnings and cautions and related safety data

Description

1 Information

This data module identifies, for the crew, the aircraft dangerous areas around the weather radar, the engine intake and the engine exhaust.

2 Weather radar dangerous area

WARNING

Make sure the Weather Radar is in STBY at all times when Ground mapping or WXMode is not required. Make sure non-personnel are within scan radius of antenna when the Weather Radar is ON and not in STBY or TEST. Transmission of microwave radiation can be harmful to personnel and potential fire hazards (for flammable materials) up to 3 ft. (1 m) from antenna array.

Refer to Fig. 1.

3 Engine intake and engine exhaust dangerous areas

WARNINGS

- **Stay away from the exhaust nozzle of the engine. When an engine operates, the engine exhaust is hot and of sufficiently high velocity to cause injury. Immediately after the engine is stopped, the engine exhaust parts are hot and can cause burns.**

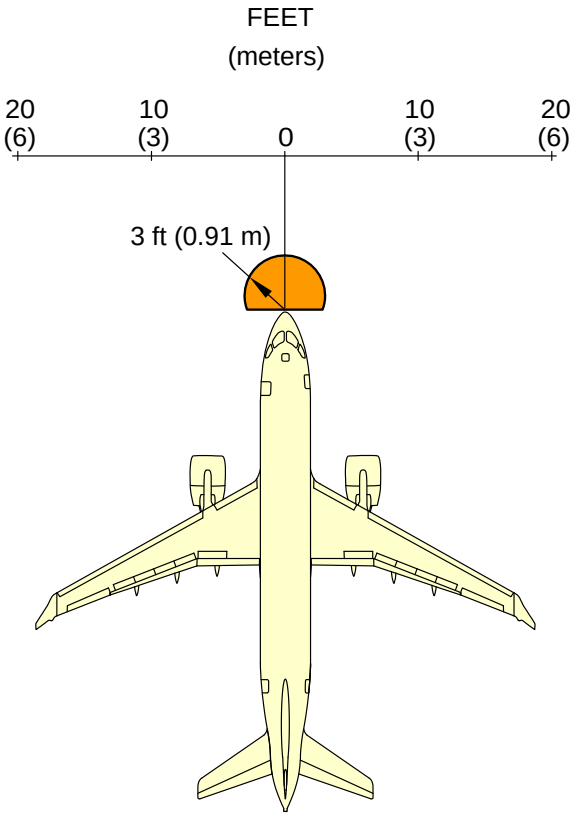
- **Stay away from the engine exhaust area when the engine starts or operates. Do not breathe the exhaust gas or let the exhaust gas go into the eyes. The exhaust gas can injure the lungs and eyes in areas of high concentration.**

Do not operate engine with persons, vehicles, other aircraft or buildings in engine exhaust (jet wake) dangerous area. Refer to BD500-A-J71-00-00-00AAA-012A-A.

Do not go near an operating engine without ear protection. Be aware of engine noise dangerous areas.

1 Loud noise from a jet engine can cause temporary or permanent damage to a person's ability to hear. This damage can occur in a very short time, if ears are not protected, and results in hearing loss decreased sense of balance.

2 Risk of ear damage increases with nearness to engine when ears are not protected.



ICN-BD500-A-J153010-A-3AB48-31148-A-002-01

Figure 1 Weather radar area

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A220

Chapter 7: Pavement data

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Pavement data - Technical data

Applicability: 50001-54999

Table of contents

Page

Pavement data - Technical data 1
References 2
Description 2
1 Introduction 2
1.1 Aircraft Classification Number (ACN) / Pavement Classification Number (PCN) Introduction 3
1.1.1 Aircraft Classification Number (ACN) 3
1.1.2 Pavement Classification Number (PCN) 3
1.1.3 Load Classification Number (LCN) 4
2 Aircraft Classification Number (ACN) results for most aft C.G. position 4
3 Aircraft Classification Number (ACN) results for most forward C.G. positions 23
4 Load Classification Number (LCN) results for most aft C.G. positions 42
5 Required Pavement Thickness 60
6 Landing gear footprint 63
7 Maximum pavement loads 65

List of tables

Page

1 References 2
2 Airport method to show Pavement Classification Number (PCN) 3
3 Subgrade strength categories 3
4 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT 4
5 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT 7
6 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT 10
7 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT 14
8 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT 16
9 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT 19
10 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT 23
11 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT 26
12 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT 28
13 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT 33
14 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT 35
15 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT 38
16 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT 42

17 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT 44
18 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT 47
19 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT 51
20 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT 53
21 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT 56
22 Landing gear footprint 63

List of figures

Page

1 ACN results - Rigid pavement 13
2 ACN results - Flexible pavement 22
3 ACN results - Rigid pavement 32
4 ACN results - Flexible pavement 41
5 LCN results - Rigid pavement 50
6 LCN results - Flexible pavement 59
7 Flexible pavement required thickness 61
8 Rigid pavement required thickness 62
9 Landing gear footprint 64
10 Maximum Pavement Load 66

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data related to the pavement design specifications, including aircraft footprints, pavement loading during standard operations, and aircraft/pavement rating systems. Also given are the flotation classification for different weights, fixed tire pressure, and aft Center of Gravity (CG), with the Aircraft Classification Number (ACN) methods.

This section is divided into the subsections that follow:

- ACN
- Landing gear footprint
- Maximum pavement load
- Landing gear loading on pavement

Note

Runway strength data shown in this publication is derived from available information and is a realistic estimate of capability at an average level of activity. It is not intended as a

maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of published figures. Permissible operating weight, insofar as runway strengths are concerned, are a matter of agreement between the owner and user.

For more information about the Pavement Classification Number (PCN), please contact the concerned airport authority.

1.1 Aircraft Classification Number (ACN) / Pavement Classification Number (PCN) Introduction

1.1.1 Aircraft Classification Number (ACN)

The ACN value is a number which expresses the relative structural effect of an aircraft on different pavement types for specified standard subgrade strengths in terms of a standard single wheel load.

An aircraft will have eight (8) ACN numbers for any given aircraft weight and tire pressure: four (4) for flexible pavement and four (4) for rigid pavement.

1.1.2 Pavement Classification Number (PCN)

The PCN value is a number which expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load.

An airport determined and published PCN can be compared with an aircraft's ACN. An aircraft that has an ACN equal to or less than the PCN of a given pavement can operate without restriction on the pavement. (Ref. International Civil Aviation Organization (ICAO) State Letter AN411.1.17−8019. Ref. US FAA Advisory Circular 150153355 15/06/83).

For example, if the published airport PCN is 52/R/B/Y/T, it means that the aircraft ACN must be less than 52 for rigid pavement type, with medium subgrade strenght, and the tire pressure of the aircraft must be less than 145 psi (1.0 MPa). The PCN also shows that the value was arrived at through a technical review.

Table 2 Airport method to show Pavement Classification Number (PCN).

Pavement type	Pavement type	Tire pressure category psi (MPa)	Evaluation
R = Rigid F = Flexible	A = High B = Medium C = Low D = Ultra Low	W = No limit X = To 254 (1.75) Y = To 181 (1.25) Z = To 73 (0.5)	T = Technical U = Using aircraft

Table 3 Subgrade strength categories

Subgrade categories	Flexible pavement		Rigid pavement	
	Characterization	CBR range	Characterization	k-Value Range
A	CBR 15	Above 13	k = 150MN/m3 (550 pci)	Above 120MN/m3 (442pci)

Sub-grade cate-gories	Flexible pavement		Rigid pavement	
B	CBR 10	From 8 to 13	k = 80MN/m3 (300 pci)	From 60 to 120 MN/ m3 (221 to 442pci)
C	CBR 6	From 4 to 8	k = 80MN/m3 (300 pci)	From 25 to 60 MN/ m3 (92 to 221pci)
D	CBR 3	Below 4	k=20MN/m3 (75pci)	Below 25 MN/ m3 (92pci)

1.1.3 Load Classification Number (LCN)

The Load Classification Number (LCN) is a method of flotation analysis by the ICAO.

An aircraft will have two (2) LCN numbers for any given aircraft weight and tire pressure: one (1) for rigid pavement usually concrete and second (2) for flexible pavement usually layered asphalt.

2 Aircraft Classification Number (ACN) results for most aft C.G. position

Refer to Table 4 for tabular format and Fig. 1 for graphical format for the ACN results for rigid pavement and Table 7 for tabular format and Fig. 2 for graphical format for the ACN results for flexible pavement.

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 4 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Low Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
141500	64183	131518	59655	37	39	41	43
140500	63729	130750	59307	37	39	41	43
140000	63502	130406	59151	37	39	41	43
139000	63049	129719	58839	37	39	41	42
138000	62595	129031	58527	36	38	40	42
137000	62142	128343	58215	36	38	40	42
136000	61688	127655	57903	36	38	40	42
135000	61234	126967	57591	36	38	40	41
134000	60781	126280	57279	35	37	39	41

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
133000	60327	125592	56967	35	37	39	41
132000	59874	124904	56655	35	37	39	41
131000	59420	124216	56343	35	37	39	40
130000	58967	123528	56031	34	36	38	40
129000	58513	122840	55719	34	36	38	40
128000	58059	122153	55407	34	36	38	40
127000	57606	121465	55095	34	36	38	39
126000	57152	120777	54783	34	36	37	39
125000	56699	120089	54471	33	35	37	39
124000	56245	119401	54159	33	35	37	38
123000	55791	118713	53847	33	35	37	38
122000	55338	118026	53535	33	35	36	38
121000	54884	117338	53223	32	34	36	38
120500	54657	116994	53067	32	34	36	38
120000	54431	116539	52861	32	34	36	37
119000	53977	115629	52448	32	34	36	37
118000	53523	114720	52036	32	33	35	37
117000	53070	113810	51623	31	33	35	36
116000	52616	112901	51210	31	33	35	36
115000	52163	111828	50724	31	32	34	36
114000	51709	110756	50238	30	32	34	35
113000	51255	109683	49751	30	32	33	35
112000	50802	108610	49264	30	31	33	35
111000	50348	107538	48778	29	31	33	34
110000	49895	106465	48291	29	31	32	34
109000	49441	105393	47805	29	30	32	33

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
108000	48987	104320	47318	28	30	32	33
107000	48534	103248	46832	28	30	31	33
106000	48080	102175	46345	28	29	31	32
105000	47627	101103	45859	27	29	31	32
104000	47173	100030	45372	27	29	30	32
103000	46720	98958	44886	27	28	30	31
102000	46266	97885	44399	26	28	29	31
101000	45812	96813	43913	26	28	29	30
100000	45359	95740	43426	26	27	29	30
99000	44905	94668	42940	25	27	28	30
98000	44452	93595	42453	25	26	28	29
97000	43998	92523	41967	25	26	28	29
96000	43544	91450	41480	24	26	27	28
95000	43091	90378	40994	24	25	27	28
94000	42637	89305	40508	24	25	26	28
93000	42184	88232	40021	23	25	26	27
92000	41730	87160	39535	23	24	26	27
91000	41276	86087	39048	23	24	25	27
90000	40823	85015	38562	22	24	25	26
89000	40369	83942	38075	22	23	25	26
88000	39916	82870	37589	22	23	24	25
87000	39462	81797	37102	21	23	24	25
86000	39008	80725	36616	21	22	24	25
85000	38555	79652	36129	21	22	23	24
84000	38101	78580	35643	20	22	23	24
83000	37648	77507	35156	20	21	22	23

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
82000	37194	76435	34670	20	21	22	23
81000	36740	75362	34183	19	21	22	23
80000	36287	74290	33697	19	20	21	22
79000	35833	73217	33210	19	20	21	22
78000	35380	72145	32724	18	19	21	22
77000	34926	71072	32237	18	19	20	21

Applicability: 50010-50017, 50020-50067

Table 5 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
135000	61234	126967	57591	36	38	40	41
134000	60781	126280	57279	35	37	39	41
133000	60327	125592	56967	35	37	39	41
132000	59874	124904	56655	35	37	39	41
131000	59420	124216	56343	35	37	39	40
130000	58967	123528	56031	34	36	38	40
129000	58513	122840	55719	34	36	38	40
128000	58059	122153	55407	34	36	38	40
127000	57606	121465	55095	34	36	38	39
126000	57152	120777	54783	34	36	37	39
125000	56699	120089	54471	33	35	37	39
124000	56245	119401	54159	33	35	37	38
123000	55791	118713	53847	33	35	37	38
122000	55338	118026	53535	33	35	36	38

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
121000	54884	117338	53223	32	34	36	38
120500	54657	116994	53067	32	34	36	38
120000	54431	116539	52861	32	34	36	37
119000	53977	115629	52448	32	34	36	37
118000	53523	114720	52036	32	33	35	37
117000	53070	113810	51623	31	33	35	36
116000	52616	112901	51210	31	33	35	36
115000	52163	111828	50724	31	32	34	36
114000	51709	110756	50238	30	32	34	35
113000	51255	109683	49751	30	32	33	35
112000	50802	108610	49264	30	31	33	35
111000	50348	107538	48778	29	31	33	34
110000	49895	106465	48291	29	31	32	34
109000	49441	105393	47805	29	30	32	33
108000	48987	104320	47318	28	30	32	33
107000	48534	103248	46832	28	30	31	33
106000	48080	102175	46345	28	29	31	32
105000	47627	101103	45859	27	29	31	32
104000	47173	100030	45372	27	29	30	32
103000	46720	98958	44886	27	28	30	31
102000	46266	97885	44399	26	28	29	31
101000	45812	96813	43913	26	28	29	30
100000	45359	95740	43426	26	27	29	30
99000	44905	94668	42940	25	27	28	30
98000	44452	93595	42453	25	26	28	29
97000	43998	92523	41967	25	26	28	29

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
96000	43544	91450	41480	24	26	27	28
95000	43091	90378	40994	24	25	27	28
94000	42637	89305	40508	24	25	26	28
93000	42184	88232	40021	23	25	26	27
92000	41730	87160	39535	23	24	26	27
91000	41276	86087	39048	23	24	25	27
90000	40823	85015	38562	22	24	25	26
89000	40369	83942	38075	22	23	25	26
88000	39916	82870	37589	22	23	24	25
87000	39462	81797	37102	21	23	24	25
86000	39008	80725	36616	21	22	24	25
85000	38555	79652	36129	21	22	23	24
84000	38101	78580	35643	20	22	23	24
83000	37648	77507	35156	20	21	22	23
82000	37194	76435	34670	20	21	22	23
81000	36740	75362	34183	19	21	22	23
80000	36287	74290	33697	19	20	21	22
79000	35833	73217	33210	19	20	21	22
78000	35380	72145	32724	18	19	21	22
77000	34926	71072	32237	18	19	20	21

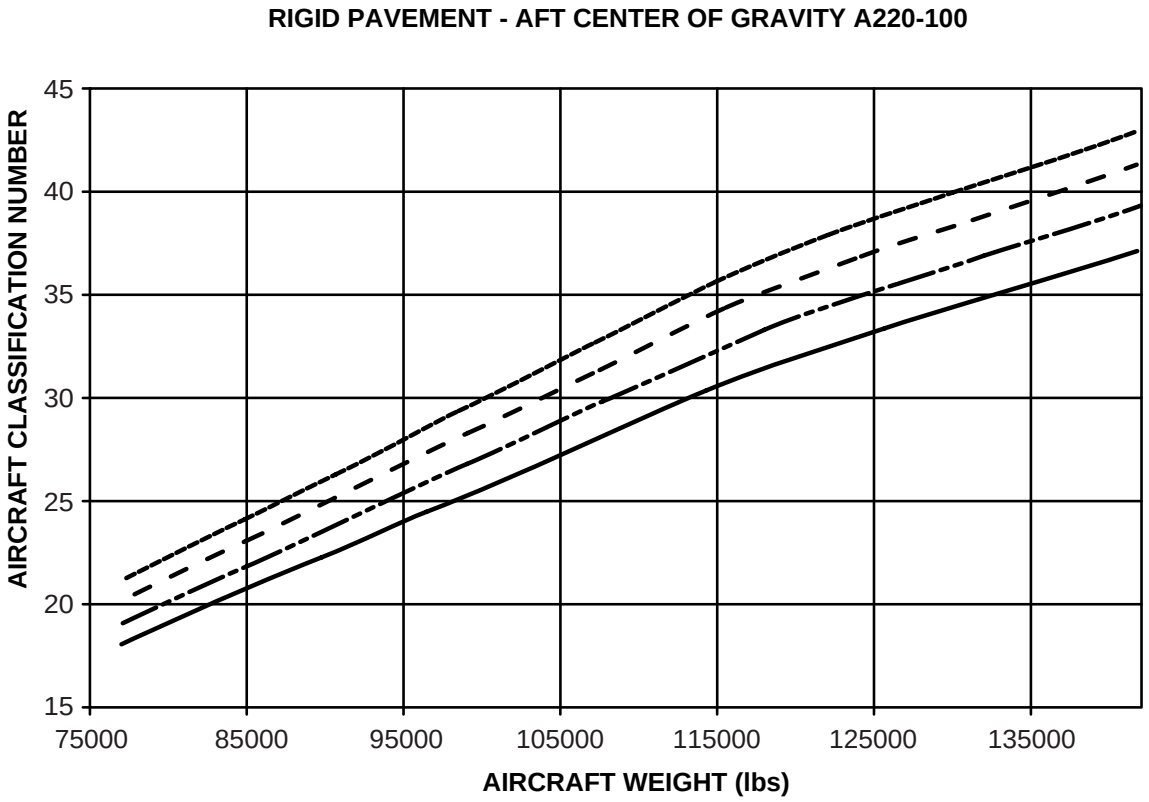
Applicability: 50069, 50071, 50078

Table 6 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
139000	63049	129719	58839	37	39	41	42
138000	62595	129031	58527	36	38	40	42
137000	62142	128343	58215	36	38	40	42
136000	61688	127655	57903	36	38	40	42
135000	61234	126967	57591	36	38	40	41
134000	60781	126280	57279	35	37	39	41
133000	60327	125592	56967	35	37	39	41
132000	59874	124904	56655	35	37	39	41
131000	59420	124216	56343	35	37	39	40
130000	58967	123528	56031	34	36	38	40
129000	58513	122840	55719	34	36	38	40
128000	58059	122153	55407	34	36	38	40
127000	57606	121465	55095	34	36	38	39
126000	57152	120777	54783	34	36	37	39
125000	56699	120089	54471	33	35	37	39
124000	56245	119401	54159	33	35	37	38
123000	55791	118713	53847	33	35	37	38
122000	55338	118026	53535	33	35	36	38
121000	54884	117338	53223	32	34	36	38
120500	54657	116994	53067	32	34	36	38
120000	54431	116539	52861	32	34	36	37
119000	53977	115629	52448	32	34	36	37
118000	53523	114720	52036	32	33	35	37
117000	53070	113810	51623	31	33	35	36

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
116000	52616	112901	51210	31	33	35	36
115000	52163	111828	50724	31	32	34	36
114000	51709	110756	50238	30	32	34	35
113000	51255	109683	49751	30	32	33	35
112000	50802	108610	49264	30	31	33	35
111000	50348	107538	48778	29	31	33	34
110000	49895	106465	48291	29	31	32	34
109000	49441	105393	47805	29	30	32	33
108000	48987	104320	47318	28	30	32	33
107000	48534	103248	46832	28	30	31	33
106000	48080	102175	46345	28	29	31	32
105000	47627	101103	45859	27	29	31	32
104000	47173	100030	45372	27	29	30	32
103000	46720	98958	44886	27	28	30	31
102000	46266	97885	44399	26	28	29	31
101000	45812	96813	43913	26	28	29	30
100000	45359	95740	43426	26	27	29	30
99000	44905	94668	42940	25	27	28	30
98000	44452	93595	42453	25	26	28	29
97000	43998	92523	41967	25	26	28	29
96000	43544	91450	41480	24	26	27	28
95000	43091	90378	40994	24	25	27	28
94000	42637	89305	40508	24	25	26	28
93000	42184	88232	40021	23	25	26	27
92000	41730	87160	39535	23	24	26	27
91000	41276	86087	39048	23	24	25	27

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Low Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
90000	40823	85015	38562	22	24	25	26
89000	40369	83942	38075	22	23	25	26
88000	39916	82870	37589	22	23	24	25
87000	39462	81797	37102	21	23	24	25
86000	39008	80725	36616	21	22	24	25
85000	38555	79652	36129	21	22	23	24
84000	38101	78580	35643	20	22	23	24
83000	37648	77507	35156	20	21	22	23
82000	37194	76435	34670	20	21	22	23
81000	36740	75362	34183	19	21	22	23
80000	36287	74290	33697	19	20	21	22
79000	35833	73217	33210	19	20	21	22
78000	35380	72145	32724	18	19	21	22
77000	34926	71072	32237	18	19	20	21



LEGEND

- Ultra low strength k=20 mn/m³.
- Low strength k=40 mn/m³.
- Medium strength k=80 mn/m³.
- High strength k=150 mn/m³.

ICN-BD500-A-J000000-C-3AB48-57663-A-003-01

Figure 1 ACN results - Rigid pavement

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 7 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
141500	64183	131518	59655	33	34	38	43
140500	63729	130750	59307	33	34	37	43
140000	63502	130406	59151	33	34	37	42
139000	63049	129719	58839	32	33	37	42
138000	62595	129031	58527	32	33	37	42
137000	62142	128343	58215	32	33	36	42
136000	61688	127655	57903	32	33	36	41
135000	61234	126967	57591	32	33	36	41
134000	60781	126280	57279	31	32	36	41
133000	60327	125592	56967	31	32	35	41
132000	59874	124904	56655	31	32	35	40
131000	59420	124216	56343	31	32	35	40
130000	58967	123528	56031	31	32	35	40
129000	58513	122840	55719	30	31	34	40
128000	58059	122153	55407	30	31	34	39
127000	57606	121465	55095	30	31	34	39
126000	57152	120777	54783	30	31	34	39
125000	56699	120089	54471	30	31	33	38
124000	56245	119401	54159	29	30	33	38
123000	55791	118713	53847	29	30	33	38
122000	55338	118026	53535	29	30	33	38
121000	54884	117338	53223	29	30	33	37
120500	54657	116994	53067	29	30	32	37
120000	54431	116539	52861	28	30	32	37

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
119000	53977	115629	52448	28	29	32	37
118000	53523	114720	52036	28	29	32	36
117000	53070	113810	51623	28	29	31	36
116000	52616	112901	51210	27	29	31	36
115000	52163	111828	50724	27	28	31	35
114000	51709	110756	50238	27	28	30	35
113000	51255	109683	49751	27	28	30	35
112000	50802	108610	49264	26	27	30	34
111000	50348	107538	48778	26	27	29	34
110000	49895	106465	48291	26	27	29	33
109000	49441	105393	47805	25	26	29	33
108000	48987	104320	47318	25	26	28	33
107000	48534	103248	46832	25	26	28	32
106000	48080	102175	46345	25	25	28	32
105000	47627	101103	45859	24	25	27	31
104000	47173	100030	45372	24	25	27	31
103000	46720	98958	44886	24	25	27	31
102000	46266	97885	44399	23	24	26	30
101000	45812	96813	43913	23	24	26	30
100000	45359	95740	43426	23	24	26	29
99000	44905	94668	42940	23	23	25	29
98000	44452	93595	42453	22	23	25	29
97000	43998	92523	41967	22	23	25	28
96000	43544	91450	41480	22	22	24	28
95000	43091	90378	40994	21	22	24	27
94000	42637	89305	40508	21	22	23	27

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
93000	42184	88232	40021	21	21	23	27
92000	41730	87160	39535	21	21	23	26
91000	41276	86087	39048	20	21	22	26
90000	40823	85015	38562	20	21	22	25
89000	40369	83942	38075	20	20	22	25
88000	39916	82870	37589	20	20	21	25
87000	39462	81797	37102	19	20	21	24
86000	39008	80725	36616	19	19	21	24
85000	38555	79652	36129	19	19	20	23
84000	38101	78580	35643	18	19	20	23
83000	37648	77507	35156	18	18	20	23
82000	37194	76435	34670	18	18	19	22
81000	36740	75362	34183	18	18	19	22
80000	36287	74290	33697	17	17	19	21
79000	35833	73217	33210	17	17	18	21
78000	35380	72145	32724	17	17	18	21
77000	34926	71072	32237	16	17	18	20

Applicability: 50010-50017, 50020-50067

Table 8 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
135000	61234	126967	57591	32	33	36	41
134000	60781	126280	57279	31	32	36	41
133000	60327	125592	56967	31	32	35	41
132000	59874	124904	56655	31	32	35	40

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
131000	59420	124216	56343	31	32	35	40
130000	58967	123528	56031	31	32	35	40
129000	58513	122840	55719	30	31	34	40
128000	58059	122153	55407	30	31	34	39
127000	57606	121465	55095	30	31	34	39
126000	57152	120777	54783	30	31	34	39
125000	56699	120089	54471	30	31	33	38
124000	56245	119401	54159	29	30	33	38
123000	55791	118713	53847	29	30	33	38
122000	55338	118026	53535	29	30	33	38
121000	54884	117338	53223	29	30	33	37
120500	54657	116994	53067	29	30	32	37
120000	54431	116539	52861	28	30	32	37
119000	53977	115629	52448	28	29	32	37
118000	53523	114720	52036	28	29	32	36
117000	53070	113810	51623	28	29	31	36
116000	52616	112901	51210	27	29	31	36
115000	52163	111828	50724	27	28	31	35
114000	51709	110756	50238	27	28	30	35
113000	51255	109683	49751	27	28	30	35
112000	50802	108610	49264	26	27	30	34
111000	50348	107538	48778	26	27	29	34
110000	49895	106465	48291	26	27	29	33
109000	49441	105393	47805	25	26	29	33
108000	48987	104320	47318	25	26	28	33
107000	48534	103248	46832	25	26	28	32

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
106000	48080	102175	46345	25	25	28	32
105000	47627	101103	45859	24	25	27	31
104000	47173	100030	45372	24	25	27	31
103000	46720	98958	44886	24	25	27	31
102000	46266	97885	44399	23	24	26	30
101000	45812	96813	43913	23	24	26	30
100000	45359	95740	43426	23	24	26	29
99000	44905	94668	42940	23	23	25	29
98000	44452	93595	42453	22	23	25	29
97000	43998	92523	41967	22	23	25	28
96000	43544	91450	41480	22	22	24	28
95000	43091	90378	40994	21	22	24	27
94000	42637	89305	40508	21	22	23	27
93000	42184	88232	40021	21	21	23	27
92000	41730	87160	39535	21	21	23	26
91000	41276	86087	39048	20	21	22	26
90000	40823	85015	38562	20	21	22	25
89000	40369	83942	38075	20	20	22	25
88000	39916	82870	37589	20	20	21	25
87000	39462	81797	37102	19	20	21	24
86000	39008	80725	36616	19	19	21	24
85000	38555	79652	36129	19	19	20	23
84000	38101	78580	35643	18	19	20	23
83000	37648	77507	35156	18	18	20	23
82000	37194	76435	34670	18	18	19	22
81000	36740	75362	34183	18	18	19	22

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
80000	36287	74290	33697	17	17	19	21
79000	35833	73217	33210	17	17	18	21
78000	35380	72145	32724	17	17	18	21
77000	34926	71072	32237	16	17	18	20

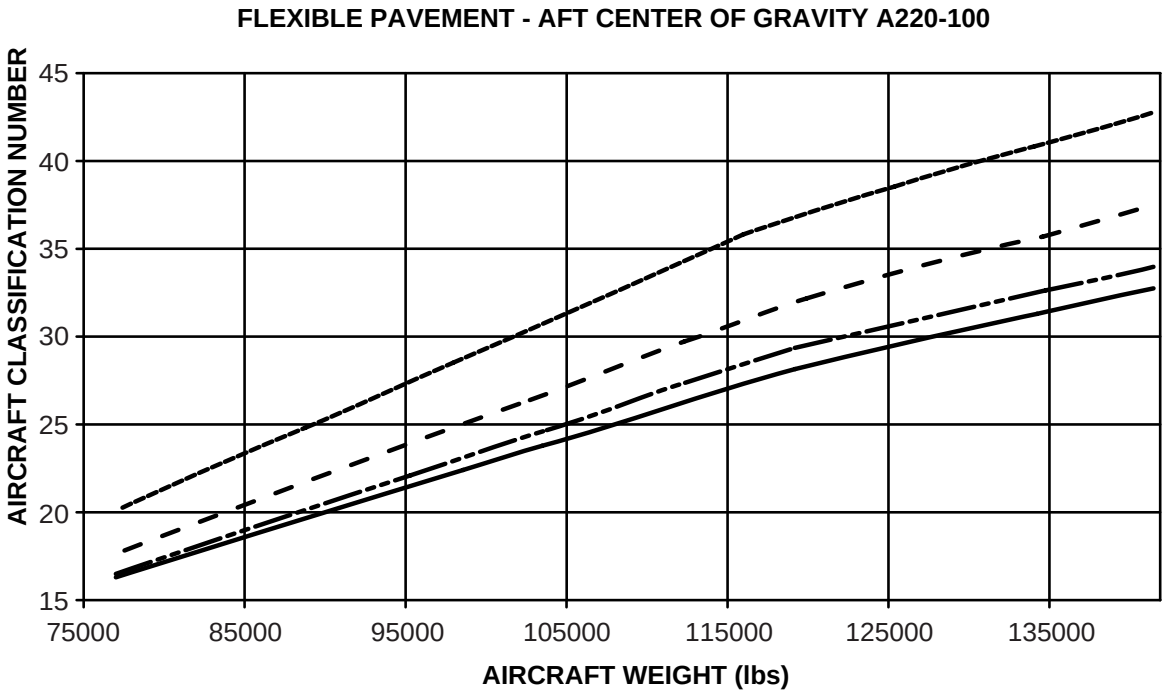
Applicability: 50069, 50071, 50078

Table 9 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
139000	63049	129719	58839	32	33	37	42
138000	62595	129031	58527	32	33	37	42
137000	62142	128343	58215	32	33	36	42
136000	61688	127655	57903	32	33	36	41
135000	61234	126967	57591	32	33	36	41
134000	60781	126280	57279	31	32	36	41
133000	60327	125592	56967	31	32	35	41
132000	59874	124904	56655	31	32	35	40
131000	59420	124216	56343	31	32	35	40
130000	58967	123528	56031	31	32	35	40
129000	58513	122840	55719	30	31	34	40
128000	58059	122153	55407	30	31	34	39
127000	57606	121465	55095	30	31	34	39
126000	57152	120777	54783	30	31	34	39
125000	56699	120089	54471	30	31	33	38
124000	56245	119401	54159	29	30	33	38
123000	55791	118713	53847	29	30	33	38

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
122000	55338	118026	53535	29	30	33	38
121000	54884	117338	53223	29	30	33	37
120500	54657	116994	53067	29	30	32	37
120000	54431	116539	52861	28	30	32	37
119000	53977	115629	52448	28	29	32	37
118000	53523	114720	52036	28	29	32	36
117000	53070	113810	51623	28	29	31	36
116000	52616	112901	51210	27	29	31	36
115000	52163	111828	50724	27	28	31	35
114000	51709	110756	50238	27	28	30	35
113000	51255	109683	49751	27	28	30	35
112000	50802	108610	49264	26	27	30	34
111000	50348	107538	48778	26	27	29	34
110000	49895	106465	48291	26	27	29	33
109000	49441	105393	47805	25	26	29	33
108000	48987	104320	47318	25	26	28	33
107000	48534	103248	46832	25	26	28	32
106000	48080	102175	46345	25	25	28	32
105000	47627	101103	45859	24	25	27	31
104000	47173	100030	45372	24	25	27	31
103000	46720	98958	44886	24	25	27	31
102000	46266	97885	44399	23	24	26	30
101000	45812	96813	43913	23	24	26	30
100000	45359	95740	43426	23	24	26	29
99000	44905	94668	42940	23	23	25	29
98000	44452	93595	42453	22	23	25	29

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
97000	43998	92523	41967	22	23	25	28
96000	43544	91450	41480	22	22	24	28
95000	43091	90378	40994	21	22	24	27
94000	42637	89305	40508	21	22	23	27
93000	42184	88232	40021	21	21	23	27
92000	41730	87160	39535	21	21	23	26
91000	41276	86087	39048	20	21	22	26
90000	40823	85015	38562	20	21	22	25
89000	40369	83942	38075	20	20	22	25
88000	39916	82870	37589	20	20	21	25
87000	39462	81797	37102	19	20	21	24
86000	39008	80725	36616	19	19	21	24
85000	38555	79652	36129	19	19	20	23
84000	38101	78580	35643	18	19	20	23
83000	37648	77507	35156	18	18	20	23
82000	37194	76435	34670	18	18	19	22
81000	36740	75362	34183	18	18	19	22
80000	36287	74290	33697	17	17	19	21
79000	35833	73217	33210	17	17	18	21
78000	35380	72145	32724	17	17	18	21
77000	34926	71072	32237	16	17	18	20



LEGEND

- Ultra low strength california bearing ratio=3.
- Low strength california bearing ratio=6.
- Medium strength california bearing ratio=10.
- High strength california bearing ratio=15.

ICN-BD500-A-J000000-C-3AB48-57664-A-003-01

Figure 2 ACN results - Flexible pavement

3 Aircraft Classification Number (ACN) results for most forward C.G. positions

Refer to Table 10 for tabular format and Fig. 3 for graphical format for the ACN results for rigid pavement and Table 13 for tabular format and Fig. 4 for graphical format for the ACN results for flexible pavement.

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 10 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
141500	64183	128471	58273	36	38	40	42
140500	63729	127450	57810	36	38	40	42
140000	63502	127008	57609	36	38	40	41
139000	63049	126123	57208	35	37	39	41
138000	62595	125238	56806	35	37	39	41
137000	62142	124353	56405	35	37	39	40
136000	61688	123469	56004	34	36	38	40
135000	61234	122584	55603	34	36	38	40
134000	60781	121699	55201	34	36	38	39
133000	60327	120814	54800	34	36	37	39
132000	59874	119929	54398	33	35	37	39
131000	59420	119044	53997	33	35	37	38
130000	58967	118160	53596	33	35	36	38
129000	58513	117275	53195	32	34	36	38
128000	58059	116390	52793	32	34	36	37
127000	57606	115505	52392	32	34	36	37
126000	57152	114620	51990	32	33	35	37
125000	56699	113736	51589	31	33	35	36
124000	56245	112851	51188	31	33	35	36
123000	55791	111966	50786	31	32	34	36

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
122000	55338	111081	50385	30	32	34	35
121000	54884	110196	49984	30	32	34	35
120500	54657	109754	49783	30	32	34	35
120000	54431	109267	49562	30	32	33	35
119000	53977	108292	49120	30	31	33	34
118000	53523	107318	48678	29	31	33	34
117000	53070	106344	48236	29	31	32	34
116000	53070	105370	47794	29	30	32	33
115000	52616	104400	47355	28	30	32	33
114000	52163	103429	46914	28	30	31	33
113000	51255	102459	46474	28	29	31	32
112000	50802	101489	46034	27	29	31	32
111000	50348	100519	45594	27	29	30	32
110000	49895	99548	45154	27	28	30	31
109000	49441	98578	44714	27	28	30	31
108000	48987	97608	44274	26	28	29	31
107000	48534	96638	43834	26	27	29	30
106000	48080	95668	43394	26	27	29	30
105000	47627	94697	42953	25	27	28	30
104000	47173	93727	42513	25	27	28	29
103000	46720	92757	42073	25	26	28	29
102000	46266	91787	41633	24	26	27	29
101000	45812	90816	41193	24	26	27	28
100000	45359	89846	40753	24	25	27	28
99000	44905	88876	40313	24	25	26	28
98000	44452	87906	39873	23	25	26	27

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
97000	43998	86935	39433	23	24	26	27
96000	43544	85965	38993	23	24	25	26
95000	43091	84995	38553	22	24	25	26
94000	42637	84025	38113	22	23	25	26
93000	42184	83055	37673	22	23	24	25
92000	41730	82084	37232	21	23	24	25
91000	41276	81114	36792	21	22	24	25
90000	40823	80144	36352	21	22	23	24
89000	40369	79174	35912	21	22	23	24
88000	39916	78203	35472	20	21	23	24
87000	39462	77233	35032	20	21	22	23
86000	39008	76263	34592	20	21	22	23
85000	38555	75293	34152	19	21	22	23
84000	38101	74322	33711	19	20	21	22
83000	37648	73352	33271	19	20	21	22
82000	37194	72382	32831	18	20	21	22
81000	36740	71412	32391	18	19	20	21
80000	36287	70442	31951	18	19	20	21
79000	35833	69471	31511	18	19	20	21
78000	35380	68501	31071	17	18	19	20
77000	34926	67531	30631	17	18	19	20

Applicability: 50010-50017, 50020-50067

Table 11 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
135000	61234	122584	55603	34	36	38	40
134000	60781	121699	55201	34	36	38	39
133000	60327	120814	54800	34	36	37	39
132000	59874	119929	54398	33	35	37	39
131000	59420	119044	53997	33	35	37	38
130000	58967	118160	53596	33	35	36	38
129000	58513	117275	53195	32	34	36	38
128000	58059	116390	52793	32	34	36	37
127000	57606	115505	52392	32	34	36	37
126000	57152	114620	51990	32	33	35	37
125000	56699	113736	51589	31	33	35	36
124000	56245	112851	51188	31	33	35	36
123000	55791	111966	50786	31	32	34	36
122000	55338	111081	50385	30	32	34	35
121000	54884	110196	49984	30	32	34	35
120500	54657	109754	49783	30	32	34	35
120000	54431	109267	49562	30	32	33	35
119000	53977	108292	49120	30	31	33	34
118000	53523	107318	48678	29	31	33	34
117000	53070	106344	48236	29	31	32	34
116000	53070	105370	47794	29	30	32	33
115000	52616	104400	47355	28	30	32	33
114000	52163	103429	46914	28	30	31	33
113000	51255	102459	46474	28	29	31	32

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
112000	50802	101489	46034	27	29	31	32
111000	50348	100519	45594	27	29	30	32
110000	49895	99548	45154	27	28	30	31
109000	49441	98578	44714	27	28	30	31
108000	48987	97608	44274	26	28	29	31
107000	48534	96638	43834	26	27	29	30
106000	48080	95668	43394	26	27	29	30
105000	47627	94697	42953	25	27	28	30
104000	47173	93727	42513	25	27	28	29
103000	46720	92757	42073	25	26	28	29
102000	46266	91787	41633	24	26	27	29
101000	45812	90816	41193	24	26	27	28
100000	45359	89846	40753	24	25	27	28
99000	44905	88876	40313	24	25	26	28
98000	44452	87906	39873	23	25	26	27
97000	43998	86935	39433	23	24	26	27
96000	43544	85965	38993	23	24	25	26
95000	43091	84995	38553	22	24	25	26
94000	42637	84025	38113	22	23	25	26
93000	42184	83055	37673	22	23	24	25
92000	41730	82084	37232	21	23	24	25
91000	41276	81114	36792	21	22	24	25
90000	40823	80144	36352	21	22	23	24
89000	40369	79174	35912	21	22	23	24
88000	39916	78203	35472	20	21	23	24
87000	39462	77233	35032	20	21	22	23

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
86000	39008	76263	34592	20	21	22	23
85000	38555	75293	34152	19	21	22	23
84000	38101	74322	33711	19	20	21	22
83000	37648	73352	33271	19	20	21	22
82000	37194	72382	32831	18	20	21	22
81000	36740	71412	32391	18	19	20	21
80000	36287	70442	31951	18	19	20	21
79000	35833	69471	31511	18	19	20	21
78000	35380	68501	31071	17	18	19	20
77000	34926	67531	30631	17	18	19	20

Applicability: 50069, 50071, 50078

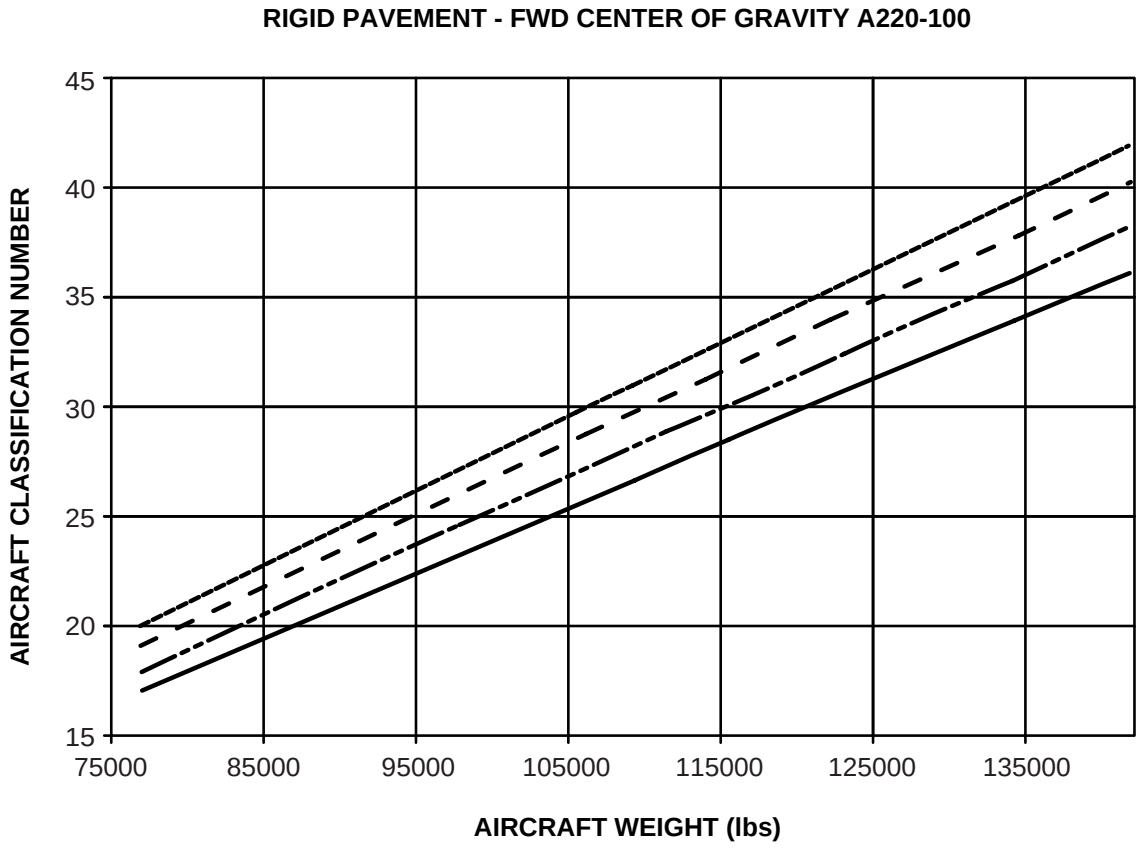
Table 12 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
139000	63049	126123	57208	35	37	39	41
138000	62595	125238	56806	35	37	39	41
137000	62142	124353	56405	35	37	39	40
136000	61688	123469	56004	34	36	38	40
135000	61234	122584	55603	34	36	38	40
134000	60781	121699	55201	34	36	38	39
133000	60327	120814	54800	34	36	37	39
132000	59874	119929	54398	33	35	37	39
131000	59420	119044	53997	33	35	37	38
130000	58967	118160	53596	33	35	36	38

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
129000	58513	117275	53195	32	34	36	38
128000	58059	116390	52793	32	34	36	37
127000	57606	115505	52392	32	34	36	37
126000	57152	114620	51990	32	33	35	37
125000	56699	113736	51589	31	33	35	36
124000	56245	112851	51188	31	33	35	36
123000	55791	111966	50786	31	32	34	36
122000	55338	111081	50385	30	32	34	35
121000	54884	110196	49984	30	32	34	35
120500	54657	109754	49783	30	32	34	35
120000	54431	109267	49562	30	32	33	35
119000	53977	108292	49120	30	31	33	34
118000	53523	107318	48678	29	31	33	34
117000	53070	106344	48236	29	31	32	34
116000	53070	105370	47794	29	30	32	33
115000	52616	104400	47355	28	30	32	33
114000	52163	103429	46914	28	30	31	33
113000	51255	102459	46474	28	29	31	32
112000	50802	101489	46034	27	29	31	32
111000	50348	100519	45594	27	29	30	32
110000	49895	99548	45154	27	28	30	31
109000	49441	98578	44714	27	28	30	31
108000	48987	97608	44274	26	28	29	31
107000	48534	96638	43834	26	27	29	30
106000	48080	95668	43394	26	27	29	30
105000	47627	94697	42953	25	27	28	30

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Low Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
104000	47173	93727	42513	25	27	28	29
103000	46720	92757	42073	25	26	28	29
102000	46266	91787	41633	24	26	27	29
101000	45812	90816	41193	24	26	27	28
100000	45359	89846	40753	24	25	27	28
99000	44905	88876	40313	24	25	26	28
98000	44452	87906	39873	23	25	26	27
97000	43998	86935	39433	23	24	26	27
96000	43544	85965	38993	23	24	25	26
95000	43091	84995	38553	22	24	25	26
94000	42637	84025	38113	22	23	25	26
93000	42184	83055	37673	22	23	24	25
92000	41730	82084	37232	21	23	24	25
91000	41276	81114	36792	21	22	24	25
90000	40823	80144	36352	21	22	23	24
89000	40369	79174	35912	21	22	23	24
88000	39916	78203	35472	20	21	23	24
87000	39462	77233	35032	20	21	22	23
86000	39008	76263	34592	20	21	22	23
85000	38555	75293	34152	19	21	22	23
84000	38101	74322	33711	19	20	21	22
83000	37648	73352	33271	19	20	21	22
82000	37194	72382	32831	18	20	21	22
81000	36740	71412	32391	18	19	20	21
80000	36287	70442	31951	18	19	20	21
79000	35833	69471	31511	18	19	20	21

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
78000	35380	68501	31071	17	18	19	20
77000	34926	67531	30631	17	18	19	20



LEGEND

- Ultra low strength k=20 mn/m³.
- Low strength k=40 mn/m³.
- Medium strength k=80 mn/m³.
- High strength k=150 mn/m³.

ICN-BD500-A-J000000-C-3AB48-57665-A-003-01

Figure 3 ACN results - Rigid pavement

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 13 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
141500	64183	128471	58273	32	33	36	42
140500	63729	127450	57810	32	33	36	41
140000	63502	127008	57609	32	33	36	41
139000	63049	126123	57208	31	32	36	41
138000	62595	125238	56806	31	32	35	40
137000	62142	124353	56405	31	32	35	40
136000	61688	123469	56004	31	32	35	40
135000	61234	122584	55603	30	31	34	39
134000	60781	121699	55201	30	31	34	39
133000	60327	120814	54800	30	31	34	39
132000	59874	119929	54398	29	31	33	38
131000	59420	119044	53997	29	30	33	38
130000	58967	118160	53596	29	30	33	38
129000	58513	117275	53195	29	30	32	37
128000	58059	116390	52793	28	29	32	37
127000	57606	115505	52392	28	29	32	37
126000	57152	114620	51990	28	29	32	36
125000	56699	113736	51589	28	29	31	36
124000	56245	112851	51188	27	28	31	36
123000	55791	111966	50786	27	28	31	35
122000	55338	111081	50385	27	28	30	35
121000	54884	110196	49984	27	28	30	35
120500	54657	109754	49783	27	28	30	35
120000	54431	109267	49562	26	27	30	34

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
119000	54204	108292	49120	26	27	29	34
118000	53533	107318	48678	26	27	29	34
117000	53070	106344	48236	26	26	29	33
116000	52389	105370	47794	25	26	28	33
115000	52163	104400	47355	25	26	28	33
114000	51709	103429	46914	25	26	28	32
113000	51255	102459	46474	25	25	28	32
112000	50802	101489	46034	24	25	27	31
111000	50348	100519	45594	24	25	27	31
110000	49895	99548	45154	24	24	27	31
109000	49441	98578	44714	24	24	26	30
108000	48987	97608	44274	23	24	26	30
107000	48534	96638	43834	23	24	26	30
106000	48080	95668	43394	23	23	25	29
105000	47627	94697	42953	23	23	25	29
104000	47173	93727	42513	22	23	25	29
103000	46720	92757	42073	22	23	25	28
102000	46266	91787	41633	22	22	24	28
101000	45812	90816	41193	22	22	24	28
100000	45359	89846	40753	21	22	24	27
99000	44905	88876	40313	21	22	23	27
98000	44452	87906	39873	21	21	23	26
97000	43998	86935	39433	21	21	23	26
96000	43544	85965	38993	20	21	22	26
95000	43091	84995	38553	20	20	22	25
94000	42637	84025	38113	20	20	22	25

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
93000	42184	83055	37673	20	20	22	25
92000	41730	82084	37232	19	20	21	24
91000	41276	81114	36792	19	19	21	24
90000	40823	80144	36352	19	19	21	24
89000	40369	79174	35912	19	19	20	23
88000	39916	78203	35472	18	19	20	23
87000	39462	77233	35032	18	18	20	22
86000	39008	76263	34592	18	18	19	22
85000	38555	75293	34152	18	18	19	22
84000	38101	74322	33711	17	17	19	21
83000	37648	73352	33271	17	17	19	21
82000	37194	72382	32831	17	17	18	21
81000	36740	71412	32391	17	17	18	20
80000	36287	70442	31951	16	16	18	20
79000	35833	69471	31511	16	16	17	20
78000	35380	68501	31071	16	16	17	19
77000	34926	67531	30631	16	16	17	19

Applicability: 50010-50017, 50020-50067

Table 14 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
135000	61234	122584	55603	30	31	34	39
134000	60781	121699	55201	30	31	34	39
133000	60327	120814	54800	30	31	34	39
132000	59874	119929	54398	29	31	33	38

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
131000	59420	119044	53997	29	30	33	38
130000	58967	118160	53596	29	30	33	38
129000	58513	117275	53195	29	30	32	37
128000	58059	116390	52793	28	29	32	37
127000	57606	115505	52392	28	29	32	37
126000	57152	114620	51990	28	29	32	36
125000	56699	113736	51589	28	29	31	36
124000	56245	112851	51188	27	28	31	36
123000	55791	111966	50786	27	28	31	35
122000	55338	111081	50385	27	28	30	35
121000	54884	110196	49984	27	28	30	35
120500	54657	109754	49783	27	28	30	35
120000	54431	109267	49562	26	27	30	34
119000	54204	108292	49120	26	27	29	34
118000	53533	107318	48678	26	27	29	34
117000	53070	106344	48236	26	26	29	33
116000	52389	105370	47794	25	26	28	33
115000	52163	104400	47355	25	26	28	33
114000	51709	103429	46914	25	26	28	32
113000	51255	102459	46474	25	25	28	32
112000	50802	101489	46034	24	25	27	31
111000	50348	100519	45594	24	25	27	31
110000	49895	99548	45154	24	24	27	31
109000	49441	98578	44714	24	24	26	30
108000	48987	97608	44274	23	24	26	30
107000	48534	96638	43834	23	24	26	30

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
106000	48080	95668	43394	23	23	25	29
105000	47627	94697	42953	23	23	25	29
104000	47173	93727	42513	22	23	25	29
103000	46720	92757	42073	22	23	25	28
102000	46266	91787	41633	22	22	24	28
101000	45812	90816	41193	22	22	24	28
100000	45359	89846	40753	21	22	24	27
99000	44905	88876	40313	21	22	23	27
98000	44452	87906	39873	21	21	23	26
97000	43998	86935	39433	21	21	23	26
96000	43544	85965	38993	20	21	22	26
95000	43091	84995	38553	20	20	22	25
94000	42637	84025	38113	20	20	22	25
93000	42184	83055	37673	20	20	22	25
92000	41730	82084	37232	19	20	21	24
91000	41276	81114	36792	19	19	21	24
90000	40823	80144	36352	19	19	21	24
89000	40369	79174	35912	19	19	20	23
88000	39916	78203	35472	18	19	20	23
87000	39462	77233	35032	18	18	20	22
86000	39008	76263	34592	18	18	19	22
85000	38555	75293	34152	18	18	19	22
84000	38101	74322	33711	17	17	19	21
83000	37648	73352	33271	17	17	19	21
82000	37194	72382	32831	17	17	18	21
81000	36740	71412	32391	17	17	18	20

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
80000	36287	70442	31951	16	16	18	20
79000	35833	69471	31511	16	16	17	20
78000	35380	68501	31071	16	16	17	19
77000	34926	67531	30631	16	16	17	19

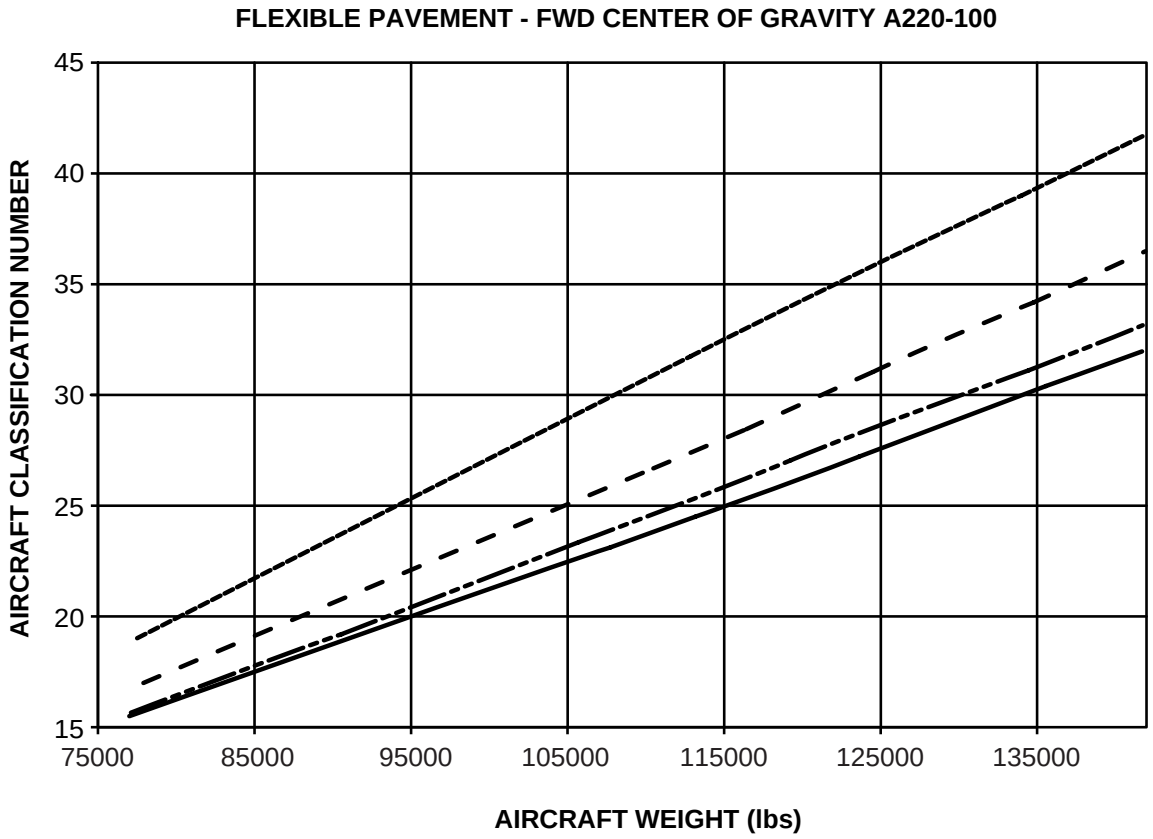
Applicability: 50069, 50071, 50078

Table 15 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
139000	63049	126123	57208	31	32	36	41
138000	62595	125238	56806	31	32	35	40
137000	62142	124353	56405	31	32	35	40
136000	61688	123469	56004	31	32	35	40
135000	61234	122584	55603	30	31	34	39
134000	60781	121699	55201	30	31	34	39
133000	60327	120814	54800	30	31	34	39
132000	59874	119929	54398	29	31	33	38
131000	59420	119044	53997	29	30	33	38
130000	58967	118160	53596	29	30	33	38
129000	58513	117275	53195	29	30	32	37
128000	58059	116390	52793	28	29	32	37
127000	57606	115505	52392	28	29	32	37
126000	57152	114620	51990	28	29	32	36
125000	56699	113736	51589	28	29	31	36
124000	56245	112851	51188	27	28	31	36
123000	55791	111966	50786	27	28	31	35

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
122000	55338	111081	50385	27	28	30	35
121000	54884	110196	49984	27	28	30	35
120500	54657	109754	49783	27	28	30	35
120000	54431	109267	49562	26	27	30	34
119000	54204	108292	49120	26	27	29	34
118000	53533	107318	48678	26	27	29	34
117000	53070	106344	48236	26	26	29	33
116000	52389	105370	47794	25	26	28	33
115000	52163	104400	47355	25	26	28	33
114000	51709	103429	46914	25	26	28	32
113000	51255	102459	46474	25	25	28	32
112000	50802	101489	46034	24	25	27	31
111000	50348	100519	45594	24	25	27	31
110000	49895	99548	45154	24	24	27	31
109000	49441	98578	44714	24	24	26	30
108000	48987	97608	44274	23	24	26	30
107000	48534	96638	43834	23	24	26	30
106000	48080	95668	43394	23	23	25	29
105000	47627	94697	42953	23	23	25	29
104000	47173	93727	42513	22	23	25	29
103000	46720	92757	42073	22	23	25	28
102000	46266	91787	41633	22	22	24	28
101000	45812	90816	41193	22	22	24	28
100000	45359	89846	40753	21	22	24	27
99000	44905	88876	40313	21	22	23	27
98000	44452	87906	39873	21	21	23	26

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
97000	43998	86935	39433	21	21	23	26
96000	43544	85965	38993	20	21	22	26
95000	43091	84995	38553	20	20	22	25
94000	42637	84025	38113	20	20	22	25
93000	42184	83055	37673	20	20	22	25
92000	41730	82084	37232	19	20	21	24
91000	41276	81114	36792	19	19	21	24
90000	40823	80144	36352	19	19	21	24
89000	40369	79174	35912	19	19	20	23
88000	39916	78203	35472	18	19	20	23
87000	39462	77233	35032	18	18	20	22
86000	39008	76263	34592	18	18	19	22
85000	38555	75293	34152	18	18	19	22
84000	38101	74322	33711	17	17	19	21
83000	37648	73352	33271	17	17	19	21
82000	37194	72382	32831	17	17	18	21
81000	36740	71412	32391	17	17	18	20
80000	36287	70442	31951	16	16	18	20
79000	35833	69471	31511	16	16	17	20
78000	35380	68501	31071	16	16	17	19
77000	34926	67531	30631	16	16	17	19



LEGEND

- Ultra low strength california bearing ratio=3.
- Low strength california bearing ratio=6.
- Medium strength california bearing ratio=10.
- High strength california bearing ratio=15.

ICN-BD500-A-J000000-C-3AB48-57666-A-003-01

Figure 4 ACN results - Flexible pavement

4 Load Classification Number (LCN) results for most aft C.G. positions

Refer to Table 16 for tabular format and Fig. 5 for graphical format for the LCN results for rigid pavement and Table 19 for tabular format and Fig. 6 for graphical format for the LCN results for flexible pavement.

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 16 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
77000	34926	200	22634	38	23691	40	24850	43
78000	35380	200	23013	39	24081	41	25254	44
79000	35833	200	23391	39	24472	41	25659	44
80000	36287	200	23769	40	24863	42	26063	45
81000	36740	200	24147	40	25254	42	26467	45
82000	37194	200	24525	41	25645	43	26871	46
83000	37648	200	24904	42	26035	44	27275	47
84000	38101	200	25282	42	26426	44	27679	47
85000	38555	200	25660	43	26817	45	28083	48
86000	39008	200	26038	44	27208	46	28488	49
87000	39462	200	26416	44	27599	46	28892	49
88000	39916	200	26795	45	27989	47	29296	50
89000	40369	200	27173	45	28380	47	29700	50
90000	40823	200	27551	46	28771	48	30104	51
91000	41276	200	27929	47	29162	49	30508	52
92000	41730	200	28307	47	29552	49	30912	52
93000	42184	200	28686	48	29943	50	31317	53
94000	42637	200	29064	48	30334	50	31721	53
95000	43091	200	29442	49	30725	51	32125	54
96000	43544	200	29820	50	31116	52	32529	55
97000	43998	200	30198	50	31506	52	32933	55

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
98000	44452	200	30577	51	31897	53	33337	56
99000	44905	200	30955	52	32288	54	33741	57
100000	45359	200	31333	52	32679	54	34146	57
101000	45812	200	31711	53	33069	55	34550	58
102000	46266	200	32089	53	33460	55	34954	58
103000	46719	200	32468	54	33851	56	35358	59
104000	47173	200	32846	55	34242	57	35762	60
105000	47627	200	33224	55	34633	57	36166	60
106000	48080	200	33602	56	35023	58	36570	61
107000	48534	200	33980	56	35414	58	36974	61
108000	48987	200	34359	57	35805	59	37379	62
109000	49441	200	34737	58	36196	60	37783	63
110000	49895	200	35115	58	36587	60	38187	63
111000	50348	200	35493	59	36977	61	38591	64
112000	50802	200	35871	60	37368	62	38995	65
113000	51255	200	36250	60	37759	62	39399	65
114000	51709	200	36628	61	38150	63	39803	66
115000	52163	200	37006	61	38540	63	40208	66
116000	52616	200	37384	62	38931	64	40612	67
117000	53070	200	37686	62	39245	65	40939	67
118000	53523	200	37987	63	39559	65	41266	67
119000	53977	200	38288	63	39872	66	41593	68
120000	54431	200	38589	64	40186	67	41921	68
120500	54657	200	38740	64	40343	67	42084	68
121000	54884	200	38868	64	40477	67	42216	68
122000	55338	200	39125	65	40746	67	42481	69
123000	55791	200	39382	65	41015	68	42745	69

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
124000	56245	200	39639	65	41283	68	43010	69
125000	56699	200	39895	66	41552	68	43274	70
126000	57152	200	40152	66	41821	69	43539	70
127000	57606	200	40409	66	42089	69	43803	70
128000	58059	200	40666	67	42358	69	44068	71
129000	58513	200	40923	67	42627	70	44332	71
130000	58966	200	41179	67	42895	70	44596	71
131000	59420	200	41436	68	43164	70	44861	72
132000	59874	200	41693	68	43433	70	45125	72
133000	60327	200	41950	68	43702	71	45390	72
134000	60781	200	42207	69	43970	71	45654	73
135000	61234	200	42463	69	44239	71	45919	73
136000	61688	200	42720	69	44508	72	46183	73
137000	62142	200	42977	70	44776	72	46448	74
138000	62595	200	43234	70	45045	72	46712	74
139000	63049	200	43491	70	45314	73	46977	74
140000	63502	200	43748	71	45583	73	47241	75
140500	63729	200	43876	71	45717	73	47373	75
141500	64183	200	44134	71	45985	73	47651	75

Applicability: 50010-50017, 50020-50067

Table 17 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
77000	34926	200	22634	38	23691	40	24850	43
78000	35380	200	23013	39	24081	41	25254	44
79000	35833	200	23391	39	24472	41	25659	44

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
80000	36287	200	23769	40	24863	42	26063	45
81000	36740	200	24147	40	25254	42	26467	45
82000	37194	200	24525	41	25645	43	26871	46
83000	37648	200	24904	42	26035	44	27275	47
84000	38101	200	25282	42	26426	44	27679	47
85000	38555	200	25660	43	26817	45	28083	48
86000	39008	200	26038	44	27208	46	28488	49
87000	39462	200	26416	44	27599	46	28892	49
88000	39916	200	26795	45	27989	47	29296	50
89000	40369	200	27173	45	28380	47	29700	50
90000	40823	200	27551	46	28771	48	30104	51
91000	41276	200	27929	47	29162	49	30508	52
92000	41730	200	28307	47	29552	49	30912	52
93000	42184	200	28686	48	29943	50	31317	53
94000	42637	200	29064	48	30334	50	31721	53
95000	43091	200	29442	49	30725	51	32125	54
96000	43544	200	29820	50	31116	52	32529	55
97000	43998	200	30198	50	31506	52	32933	55
98000	44452	200	30577	51	31897	53	33337	56
99000	44905	200	30955	52	32288	54	33741	57
100000	45359	200	31333	52	32679	54	34146	57
101000	45812	200	31711	53	33069	55	34550	58
102000	46266	200	32089	53	33460	55	34954	58
103000	46719	200	32468	54	33851	56	35358	59
104000	47173	200	32846	55	34242	57	35762	60
105000	47627	200	33224	55	34633	57	36166	60
106000	48080	200	33602	56	35023	58	36570	61

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
107000	48534	200	33980	56	35414	58	36974	61
108000	48987	200	34359	57	35805	59	37379	62
109000	49441	200	34737	58	36196	60	37783	63
110000	49895	200	35115	58	36587	60	38187	63
111000	50348	200	35493	59	36977	61	38591	64
112000	50802	200	35871	60	37368	62	38995	65
113000	51255	200	36250	60	37759	62	39399	65
114000	51709	200	36628	61	38150	63	39803	66
115000	52163	200	37006	61	38540	63	40208	66
116000	52616	200	37384	62	38931	64	40612	67
117000	53070	200	37686	62	39245	65	40939	67
118000	53523	200	37987	63	39559	65	41266	67
119000	53977	200	38288	63	39872	66	41593	68
120000	54431	200	38589	64	40186	67	41921	68
120500	54657	200	38740	64	40343	67	42084	68
121000	54884	200	38868	64	40477	67	42216	68
122000	55338	200	39125	65	40746	67	42481	69
123000	55791	200	39382	65	41015	68	42745	69
124000	56245	200	39639	65	41283	68	43010	69
125000	56699	200	39895	66	41552	68	43274	70
126000	57152	200	40152	66	41821	69	43539	70
127000	57606	200	40409	66	42089	69	43803	70
128000	58059	200	40666	67	42358	69	44068	71
129000	58513	200	40923	67	42627	70	44332	71
130000	58966	200	41179	67	42895	70	44596	71
131000	59420	200	41436	68	43164	70	44861	72
132000	59874	200	41693	68	43433	70	45125	72

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
133000	60327	200	41950	68	43702	71	45390	72
134000	60781	200	42207	69	43970	71	45654	73
135000	61234	200	42463	69	44239	71	45919	73

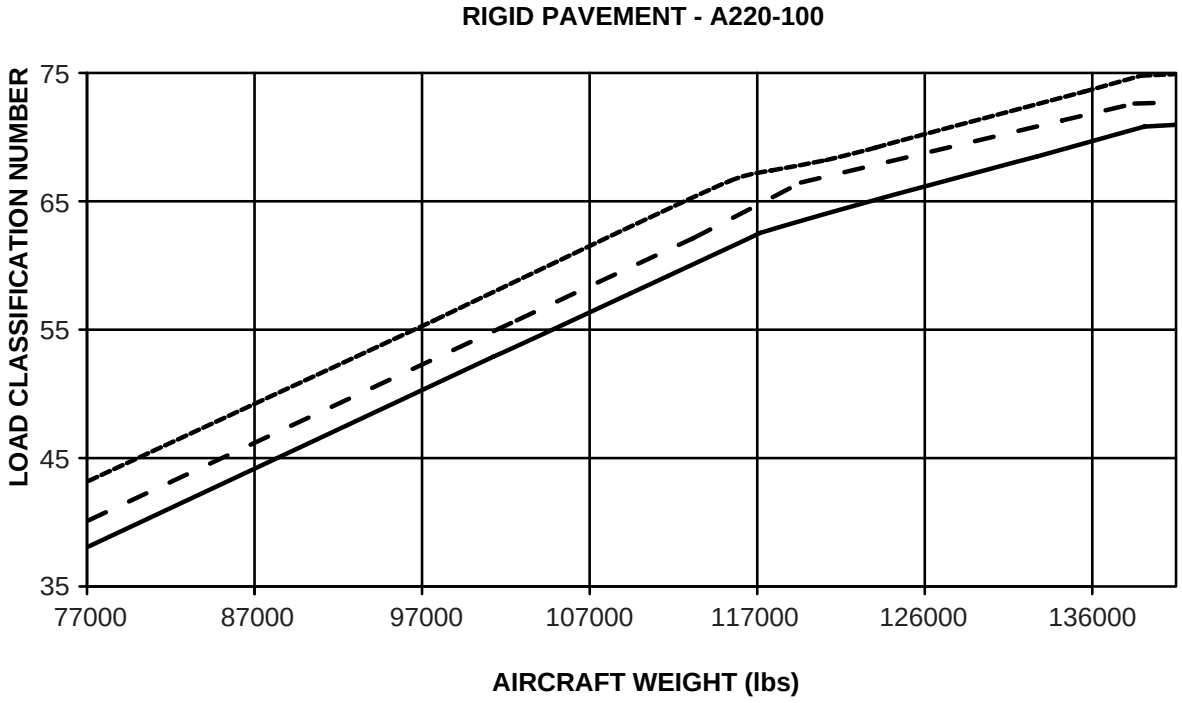
Applicability: 50069, 50071, 50078

Table 18 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
77000	34926	200	22634	38	23691	40	24850	43
78000	35380	200	23013	39	24081	41	25254	44
79000	35833	200	23391	39	24472	41	25659	44
80000	36287	200	23769	40	24863	42	26063	45
81000	36740	200	24147	40	25254	42	26467	45
82000	37194	200	24525	41	25645	43	26871	46
83000	37648	200	24904	42	26035	44	27275	47
84000	38101	200	25282	42	26426	44	27679	47
85000	38555	200	25660	43	26817	45	28083	48
86000	39008	200	26038	44	27208	46	28488	49
87000	39462	200	26416	44	27599	46	28892	49
88000	39916	200	26795	45	27989	47	29296	50
89000	40369	200	27173	45	28380	47	29700	50
90000	40823	200	27551	46	28771	48	30104	51
91000	41276	200	27929	47	29162	49	30508	52
92000	41730	200	28307	47	29552	49	30912	52
93000	42184	200	28686	48	29943	50	31317	53
94000	42637	200	29064	48	30334	50	31721	53
95000	43091	200	29442	49	30725	51	32125	54

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
96000	43544	200	29820	50	31116	52	32529	55
97000	43998	200	30198	50	31506	52	32933	55
98000	44452	200	30577	51	31897	53	33337	56
99000	44905	200	30955	52	32288	54	33741	57
100000	45359	200	31333	52	32679	54	34146	57
101000	45812	200	31711	53	33069	55	34550	58
102000	46266	200	32089	53	33460	55	34954	58
103000	46719	200	32468	54	33851	56	35358	59
104000	47173	200	32846	55	34242	57	35762	60
105000	47627	200	33224	55	34633	57	36166	60
106000	48080	200	33602	56	35023	58	36570	61
107000	48534	200	33980	56	35414	58	36974	61
108000	48987	200	34359	57	35805	59	37379	62
109000	49441	200	34737	58	36196	60	37783	63
110000	49895	200	35115	58	36587	60	38187	63
111000	50348	200	35493	59	36977	61	38591	64
112000	50802	200	35871	60	37368	62	38995	65
113000	51255	200	36250	60	37759	62	39399	65
114000	51709	200	36628	61	38150	63	39803	66
115000	52163	200	37006	61	38540	63	40208	66
116000	52616	200	37384	62	38931	64	40612	67
117000	53070	200	37686	62	39245	65	40939	67
118000	53523	200	37987	63	39559	65	41266	67
119000	53977	200	38288	63	39872	66	41593	68
120000	54431	200	38589	64	40186	67	41921	68
120500	54657	200	38740	64	40343	67	42084	68
121000	54884	200	38868	64	40477	67	42216	68

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
122000	55338	200	39125	65	40746	67	42481	69
123000	55791	200	39382	65	41015	68	42745	69
124000	56245	200	39639	65	41283	68	43010	69
125000	56699	200	39895	66	41552	68	43274	70
126000	57152	200	40152	66	41821	69	43539	70
127000	57606	200	40409	66	42089	69	43803	70
128000	58059	200	40666	67	42358	69	44068	71
129000	58513	200	40923	67	42627	70	44332	71
130000	58966	200	41179	67	42895	70	44596	71
131000	59420	200	41436	68	43164	70	44861	72
132000	59874	200	41693	68	43433	70	45125	72
133000	60327	200	41950	68	43702	71	45390	72
134000	60781	200	42207	69	43970	71	45654	73
135000	61234	200	42463	69	44239	71	45919	73
136000	61688	200	42720	69	44508	72	46183	73
137000	62142	200	42977	70	44776	72	46448	74
138000	62595	200	43234	70	45045	72	46712	74
139000	63049	200	43491	70	45314	73	46977	74



LEGEND

- Radius of relative stiffness L=50.00 in. (1270.00 mm).
- Radius of relative stiffness L=40.00 in. (1016.00 mm).
- Radius of relative stiffness L=30.00 in. (762.00 mm).

ICN-BD500-A-J000000-C-3AB48-57667-A-003-01

Figure 5 LCN results - Rigid pavement

Applicability: 50001-50061, 50063-50065, 50068, 50070, 50072-50077, 50079-54999

Table 19 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
77000	34926	200	17768	31	18843	34	21213	39	25068	45
78000	35380	200	18036	31	19154	34	21557	40	25466	46
79000	35833	200	18304	32	19464	35	21901	40	25863	46
80000	36287	200	18572	32	19775	35	22246	41	26261	47
81000	36740	200	18841	33	20086	36	22590	41	26658	47
82000	37194	200	19109	33	20396	36	22934	42	27055	48
83000	37648	200	19377	34	20707	37	23278	42	27453	48
84000	38101	200	19645	34	21018	37	23622	43	27850	49
85000	38555	200	19913	35	21328	38	23966	43	28247	49
86000	39008	200	20181	35	21639	38	24310	44	28645	50
87000	39462	200	20449	36	21949	39	24654	44	29042	50
88000	39916	200	20717	36	22260	39	24998	45	29440	51
89000	40369	200	20986	37	22571	40	25342	45	29837	51
90000	40823	200	21254	37	22881	40	25687	46	30234	52
91000	41276	200	21522	37	23192	41	26031	46	30632	53
92000	41730	200	21790	38	23503	41	26375	47	31029	53
93000	42184	200	22058	38	23813	42	26719	47	31426	54
94000	42637	200	22326	39	24124	42	27063	48	31824	54
95000	43091	200	22594	39	24434	43	27407	48	32221	55
96000	43544	200	22863	40	24745	43	27751	49	32619	55
97000	43998	200	23131	40	25056	44	28095	49	33016	56
98000	44452	200	23399	41	25366	44	28439	50	33413	56
99000	44905	200	23667	41	25677	45	28783	50	33811	57
100000	45359	200	23935	42	25988	45	29128	51	34208	57

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
101000	45812	200	24203	42	26298	46	29472	51	34605	58
102000	46266	200	24471	43	26609	46	29816	52	35003	58
103000	46719	200	24739	43	26919	47	30160	52	35400	59
104000	47173	200	25008	43	27230	47	30504	53	35798	60
105000	47627	200	25276	44	27541	48	30848	53	36195	60
106000	48080	200	25544	44	27851	48	31192	54	36592	61
107000	48534	200	25812	45	28162	49	31536	54	36990	61
108000	48987	200	26080	45	28473	49	31880	55	37387	62
109000	49441	200	26348	46	28783	50	32224	55	37784	62
110000	49895	200	26616	46	29094	50	32568	56	38182	63
111000	50348	200	26884	47	29404	51	32913	56	38579	63
112000	50802	200	27153	47	29715	51	33257	57	38977	64
113000	51255	200	27421	48	30026	52	33601	57	39374	64
114000	51709	200	27689	48	30336	52	33945	58	39771	65
115000	52163	200	27957	49	30647	53	34289	58	40169	65
116000	52616	200	28225	49	30958	53	34633	59	40566	66
117000	53070	200	28453	49	31228	53	34931	59	40908	66
118000	53523	200	28680	49	31498	53	35229	60	41250	67
119000	53977	200	28907	50	31768	54	35527	60	41591	67
120000	54431	200	29135	50	32038	54	35825	61	41933	68
120500	54657	200	29248	50	32173	54	35974	61	42104	68
121000	54884	200	29334	50	32276	54	36087	61	42234	68
122000	55338	200	29506	50	32482	55	36314	61	42494	69
123000	55791	200	29678	51	32689	55	36541	62	42753	69
124000	56245	200	29850	51	32895	55	36768	62	43013	69
125000	56699	200	30022	51	33101	56	36995	62	43273	70

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
126000	57152	200	30194	52	33307	56	37222	62	43532	70
127000	57606	200	30366	52	33513	56	37448	63	43792	71
128000	58059	200	30538	52	33719	57	37675	63	44052	71
129000	58513	200	30710	53	33925	57	37902	63	44312	71
130000	58966	200	30882	53	34131	57	38129	63	44571	72
131000	59420	200	31054	53	34337	58	38356	64	44831	72
132000	59874	200	31226	53	34544	58	38583	64	45091	73
133000	60327	200	31398	54	34750	58	38810	64	45350	73
134000	60781	200	31570	54	34956	59	39037	64	45610	73
135000	61234	200	31742	54	35162	59	39264	65	45870	74
136000	61688	200	31914	55	35368	59	39491	65	46130	74
137000	62142	200	32086	55	35574	60	39717	65	46389	75
138000	62595	200	32258	55	35780	60	39944	65	46649	75
139000	63049	200	32430	56	35986	60	40171	66	46909	75
140000	63502	200	32602	56	36192	61	40398	66	47168	76
140500	63729	200	32688	56	36295	61	40512	66	47298	76
141500	64183	200	32880	56	36527	61	40766	66	47589	76

Applicability: 50010-50017, 50020-50067

Table 20 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
77000	34926	200	17768	31	18843	34	21213	39	25068	45
78000	35380	200	18036	31	19154	34	21557	40	25466	46
79000	35833	200	18304	32	19464	35	21901	40	25863	46

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
80000	36287	200	18572	32	19775	35	22246	41	26261	47
81000	36740	200	18841	33	20086	36	22590	41	26658	47
82000	37194	200	19109	33	20396	36	22934	42	27055	48
83000	37648	200	19377	34	20707	37	23278	42	27453	48
84000	38101	200	19645	34	21018	37	23622	43	27850	49
85000	38555	200	19913	35	21328	38	23966	43	28247	49
86000	39008	200	20181	35	21639	38	24310	44	28645	50
87000	39462	200	20449	36	21949	39	24654	44	29042	50
88000	39916	200	20717	36	22260	39	24998	45	29440	51
89000	40369	200	20986	37	22571	40	25342	45	29837	51
90000	40823	200	21254	37	22881	40	25687	46	30234	52
91000	41276	200	21522	37	23192	41	26031	46	30632	53
92000	41730	200	21790	38	23503	41	26375	47	31029	53
93000	42184	200	22058	38	23813	42	26719	47	31426	54
94000	42637	200	22326	39	24124	42	27063	48	31824	54
95000	43091	200	22594	39	24434	43	27407	48	32221	55
96000	43544	200	22863	40	24745	43	27751	49	32619	55
97000	43998	200	23131	40	25056	44	28095	49	33016	56
98000	44452	200	23399	41	25366	44	28439	50	33413	56
99000	44905	200	23667	41	25677	45	28783	50	33811	57
100000	45359	200	23935	42	25988	45	29128	51	34208	57
101000	45812	200	24203	42	26298	46	29472	51	34605	58
102000	46266	200	24471	43	26609	46	29816	52	35003	58
103000	46719	200	24739	43	26919	47	30160	52	35400	59
104000	47173	200	25008	43	27230	47	30504	53	35798	60
105000	47627	200	25276	44	27541	48	30848	53	36195	60

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
106000	48080	200	25544	44	27851	48	31192	54	36592	61
107000	48534	200	25812	45	28162	49	31536	54	36990	61
108000	48987	200	26080	45	28473	49	31880	55	37387	62
109000	49441	200	26348	46	28783	50	32224	55	37784	62
110000	49895	200	26616	46	29094	50	32568	56	38182	63
111000	50348	200	26884	47	29404	51	32913	56	38579	63
112000	50802	200	27153	47	29715	51	33257	57	38977	64
113000	51255	200	27421	48	30026	52	33601	57	39374	64
114000	51709	200	27689	48	30336	52	33945	58	39771	65
115000	52163	200	27957	49	30647	53	34289	58	40169	65
116000	52616	200	28225	49	30958	53	34633	59	40566	66
117000	53070	200	28453	49	31228	53	34931	59	40908	66
118000	53523	200	28680	49	31498	53	35229	60	41250	67
119000	53977	200	28907	50	31768	54	35527	60	41591	67
120000	54431	200	29135	50	32038	54	35825	61	41933	68
120500	54657	200	29248	50	32173	54	35974	61	42104	68
121000	54884	200	29334	50	32276	54	36087	61	42234	68
122000	55338	200	29506	50	32482	55	36314	61	42494	69
123000	55791	200	29678	51	32689	55	36541	62	42753	69
124000	56245	200	29850	51	32895	55	36768	62	43013	69
125000	56699	200	30022	51	33101	56	36995	62	43273	70
126000	57152	200	30194	52	33307	56	37222	62	43532	70
127000	57606	200	30366	52	33513	56	37448	63	43792	71
128000	58059	200	30538	52	33719	57	37675	63	44052	71
129000	58513	200	30710	53	33925	57	37902	63	44312	71
130000	58966	200	30882	53	34131	57	38129	63	44571	72

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
131000	59420	200	31054	53	34337	58	38356	64	44831	72
132000	59874	200	31226	53	34544	58	38583	64	45091	73
133000	60327	200	31398	54	34750	58	38810	64	45350	73
134000	60781	200	31570	54	34956	59	39037	64	45610	73
135000	61234	200	31742	54	35162	59	39264	65	45870	74

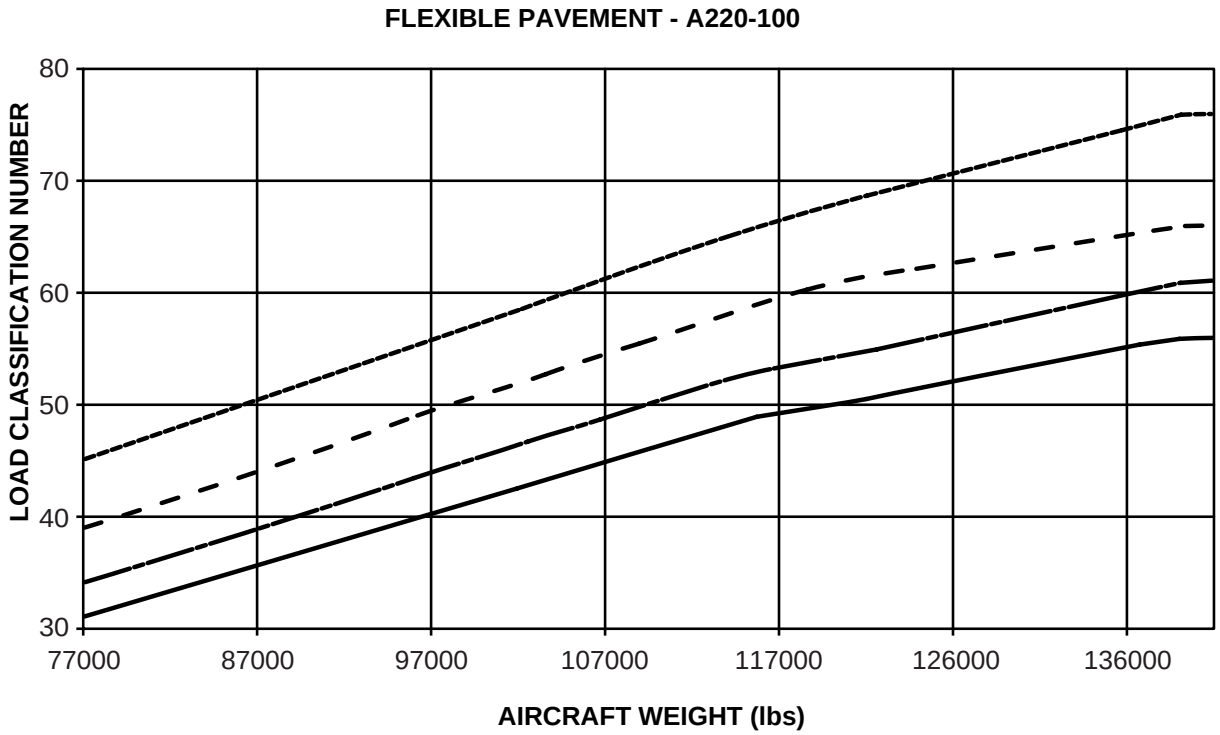
Applicability: 50069, 50071, 50078

Table 21 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
77000	34926	200	17768	31	18843	34	21213	39	25068	45
78000	35380	200	18036	31	19154	34	21557	40	25466	46
79000	35833	200	18304	32	19464	35	21901	40	25863	46
80000	36287	200	18572	32	19775	35	22246	41	26261	47
81000	36740	200	18841	33	20086	36	22590	41	26658	47
82000	37194	200	19109	33	20396	36	22934	42	27055	48
83000	37648	200	19377	34	20707	37	23278	42	27453	48
84000	38101	200	19645	34	21018	37	23622	43	27850	49
85000	38555	200	19913	35	21328	38	23966	43	28247	49
86000	39008	200	20181	35	21639	38	24310	44	28645	50
87000	39462	200	20449	36	21949	39	24654	44	29042	50
88000	39916	200	20717	36	22260	39	24998	45	29440	51
89000	40369	200	20986	37	22571	40	25342	45	29837	51
90000	40823	200	21254	37	22881	40	25687	46	30234	52
91000	41276	200	21522	37	23192	41	26031	46	30632	53

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
92000	41730	200	21790	38	23503	41	26375	47	31029	53
93000	42184	200	22058	38	23813	42	26719	47	31426	54
94000	42637	200	22326	39	24124	42	27063	48	31824	54
95000	43091	200	22594	39	24434	43	27407	48	32221	55
96000	43544	200	22863	40	24745	43	27751	49	32619	55
97000	43998	200	23131	40	25056	44	28095	49	33016	56
98000	44452	200	23399	41	25366	44	28439	50	33413	56
99000	44905	200	23667	41	25677	45	28783	50	33811	57
100000	45359	200	23935	42	25988	45	29128	51	34208	57
101000	45812	200	24203	42	26298	46	29472	51	34605	58
102000	46266	200	24471	43	26609	46	29816	52	35003	58
103000	46719	200	24739	43	26919	47	30160	52	35400	59
104000	47173	200	25008	43	27230	47	30504	53	35798	60
105000	47627	200	25276	44	27541	48	30848	53	36195	60
106000	48080	200	25544	44	27851	48	31192	54	36592	61
107000	48534	200	25812	45	28162	49	31536	54	36990	61
108000	48987	200	26080	45	28473	49	31880	55	37387	62
109000	49441	200	26348	46	28783	50	32224	55	37784	62
110000	49895	200	26616	46	29094	50	32568	56	38182	63
111000	50348	200	26884	47	29404	51	32913	56	38579	63
112000	50802	200	27153	47	29715	51	33257	57	38977	64
113000	51255	200	27421	48	30026	52	33601	57	39374	64
114000	51709	200	27689	48	30336	52	33945	58	39771	65
115000	52163	200	27957	49	30647	53	34289	58	40169	65
116000	52616	200	28225	49	30958	53	34633	59	40566	66
117000	53070	200	28453	49	31228	53	34931	59	40908	66

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pres-sure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
118000	53523	200	28680	49	31498	53	35229	60	41250	67
119000	53977	200	28907	50	31768	54	35527	60	41591	67
120000	54431	200	29135	50	32038	54	35825	61	41933	68
120500	54657	200	29248	50	32173	54	35974	61	42104	68
121000	54884	200	29334	50	32276	54	36087	61	42234	68
122000	55338	200	29506	50	32482	55	36314	61	42494	69
123000	55791	200	29678	51	32689	55	36541	62	42753	69
124000	56245	200	29850	51	32895	55	36768	62	43013	69
125000	56699	200	30022	51	33101	56	36995	62	43273	70
126000	57152	200	30194	52	33307	56	37222	62	43532	70
127000	57606	200	30366	52	33513	56	37448	63	43792	71
128000	58059	200	30538	52	33719	57	37675	63	44052	71
129000	58513	200	30710	53	33925	57	37902	63	44312	71
130000	58966	200	30882	53	34131	57	38129	63	44571	72
131000	59420	200	31054	53	34337	58	38356	64	44831	72
132000	59874	200	31226	53	34544	58	38583	64	45091	73
133000	60327	200	31398	54	34750	58	38810	64	45350	73
134000	60781	200	31570	54	34956	59	39037	64	45610	73
135000	61234	200	31742	54	35162	59	39264	65	45870	74
136000	61688	200	31914	55	35368	59	39491	65	46130	74
137000	62142	200	32086	55	35574	60	39717	65	46389	75
138000	62595	200	32258	55	35780	60	39944	65	46649	75
139000	63049	200	32430	56	35986	60	40171	66	46909	75



LEGEND

- Radius of relative stiffness L=30.00 in. (762.00 mm).
- Radius of relative stiffness L=20.00 in. (508.00 mm).
- Radius of relative stiffness L=15.00 in. (381.00 mm).
- Radius of relative stiffness L=10.00 in. (254.00 mm).

ICN-BD500-A-J000000-C-3AB48-57668-A-003-01

Figure 6 LCN results - Flexible pavement

5 Required Pavement Thickness

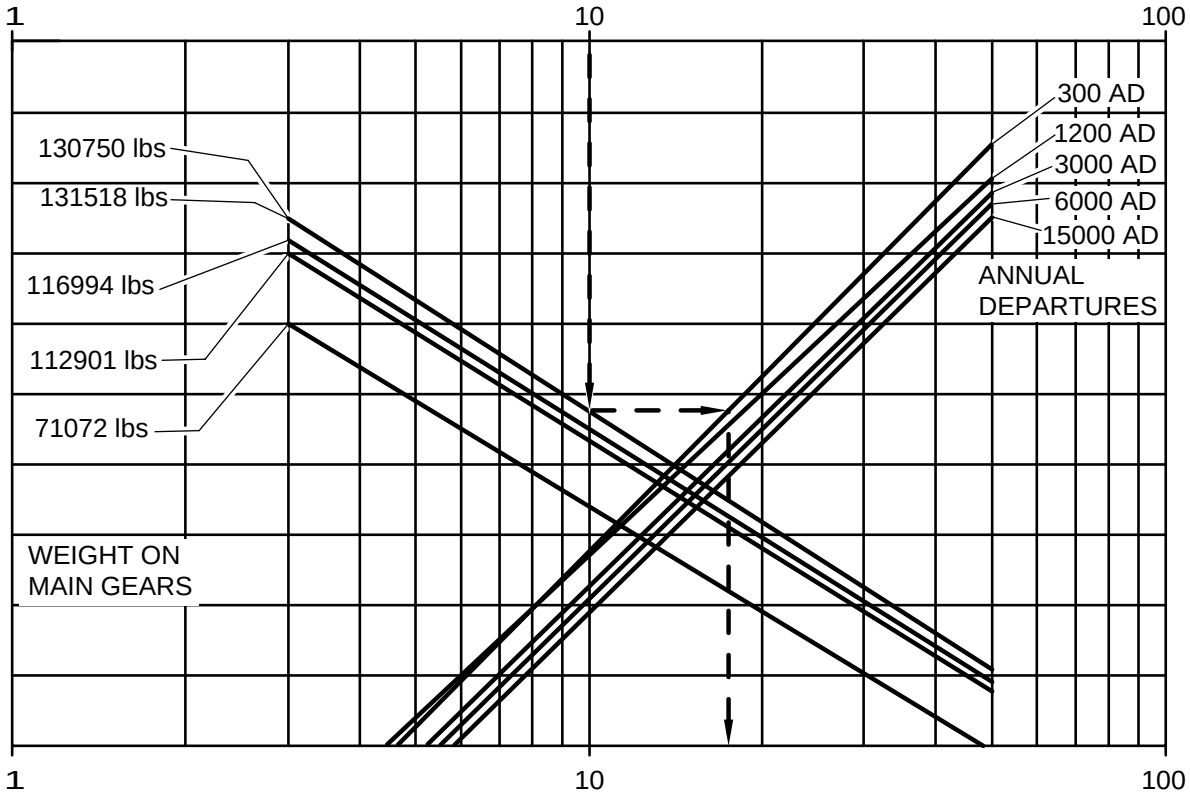
An essential parameter to calculate the PCN is the required pavement thickness.Fig. 7 and Fig. 8. provide a graphical way to determine the required rigid or flexible pavement thickness based on the pavement strength, aircraft load applied to the pavement, and the annual departure rate. Normally, each airport calculates the PCN based on the different aircraft types which operate to and from that airport considering the number of annual departure for each aircraft type. Using the graphs in this section, one can conclude on the impact of annual departure on required pavement thickness. This material gives the user another mean to evaluate the considered airport for operating the A220 more realistically based on more realistic number of annual departure.

Note

Number of annual departure starts from 300 (close to 1 flight per day). In fact, this gives the reader a better idea about required pavement thickness on those small airports that might not have a very high usage rate.

A220-100, AFT CENTER OF GRAVITY, REQUIRED FLEXIBLE PAVEMENT THICKNESS

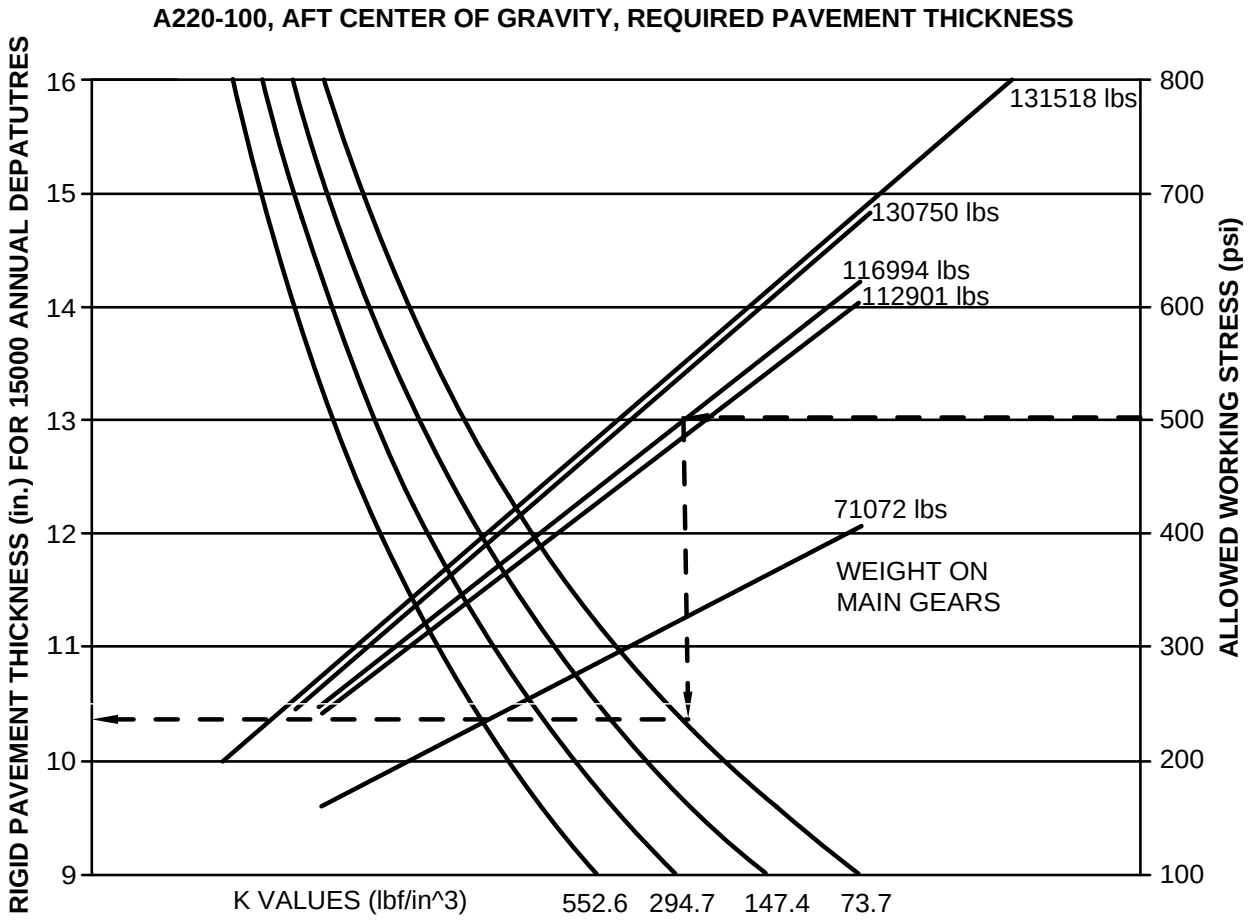
SUBGRADE STRENGTH - CALIFORNIA BEARING RATIO



FLEXIBLE PAVEMENT THICKNESS (in.)

ICN-BD500-A-J000000-C-3AB48-57669-A-003-01

Figure 7 Flexible pavement required thickness



ICN-BD500-A-J000000-C-3AB48-57670-A-003-01

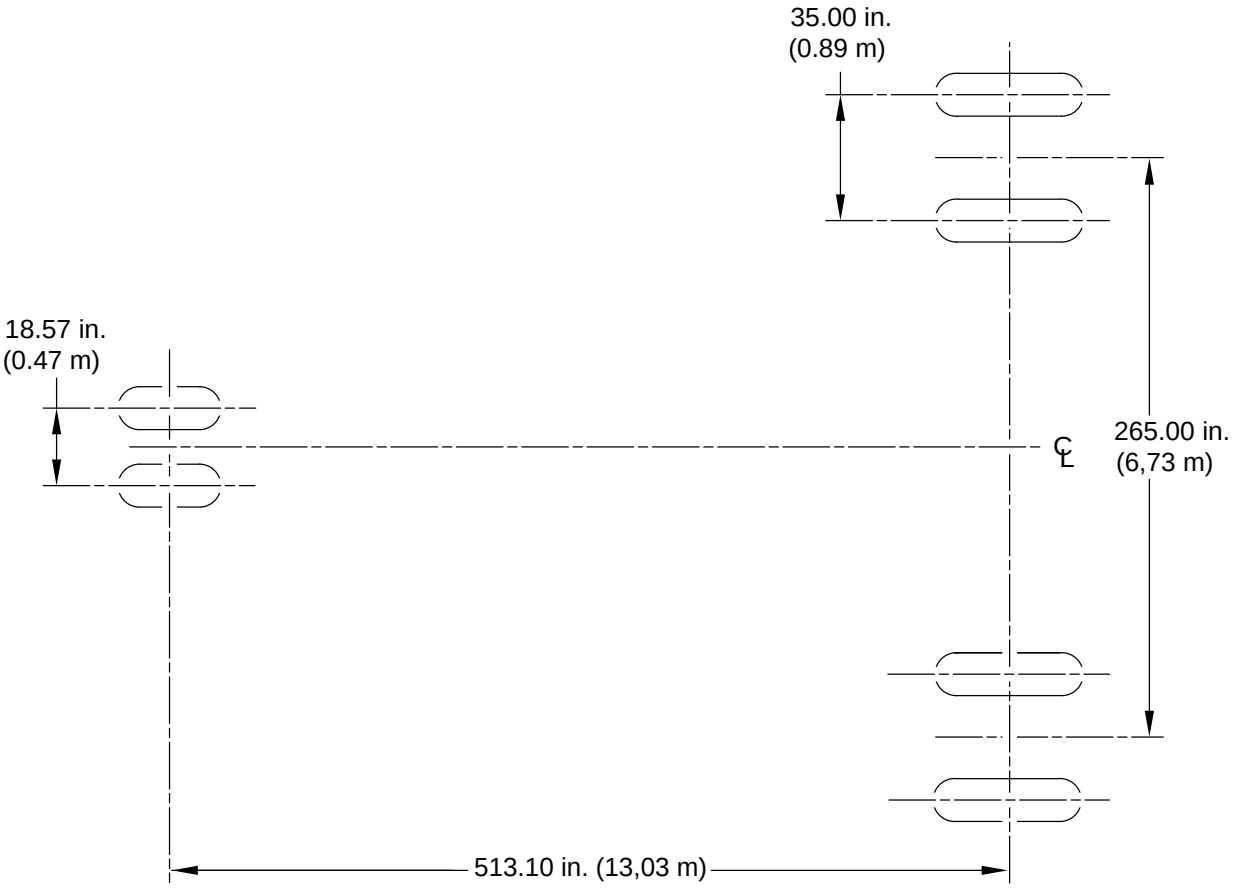
Figure 8 Rigid pavement required thickness

6 Landing gear footprint

Refer to Fig. 9 for the landing gear footprint.

Table 22 Landing gear footprint

Aircraft (A/C) code	A-B-C-D-E-F-G-H-I-J-K-L-M-N
Percentage of weight on main gear group	Refer to section 4
Nose gear tire size	27 x 8.5 R12 16 PR
Nose gear tire pressure	146 PSIG (10 Bar)
Main gear tire size	H42 x 15.0 R21 26 PR
Main gear tire pressure	189 PSIG (13.0 Bar)



NOTE

Not to scale.

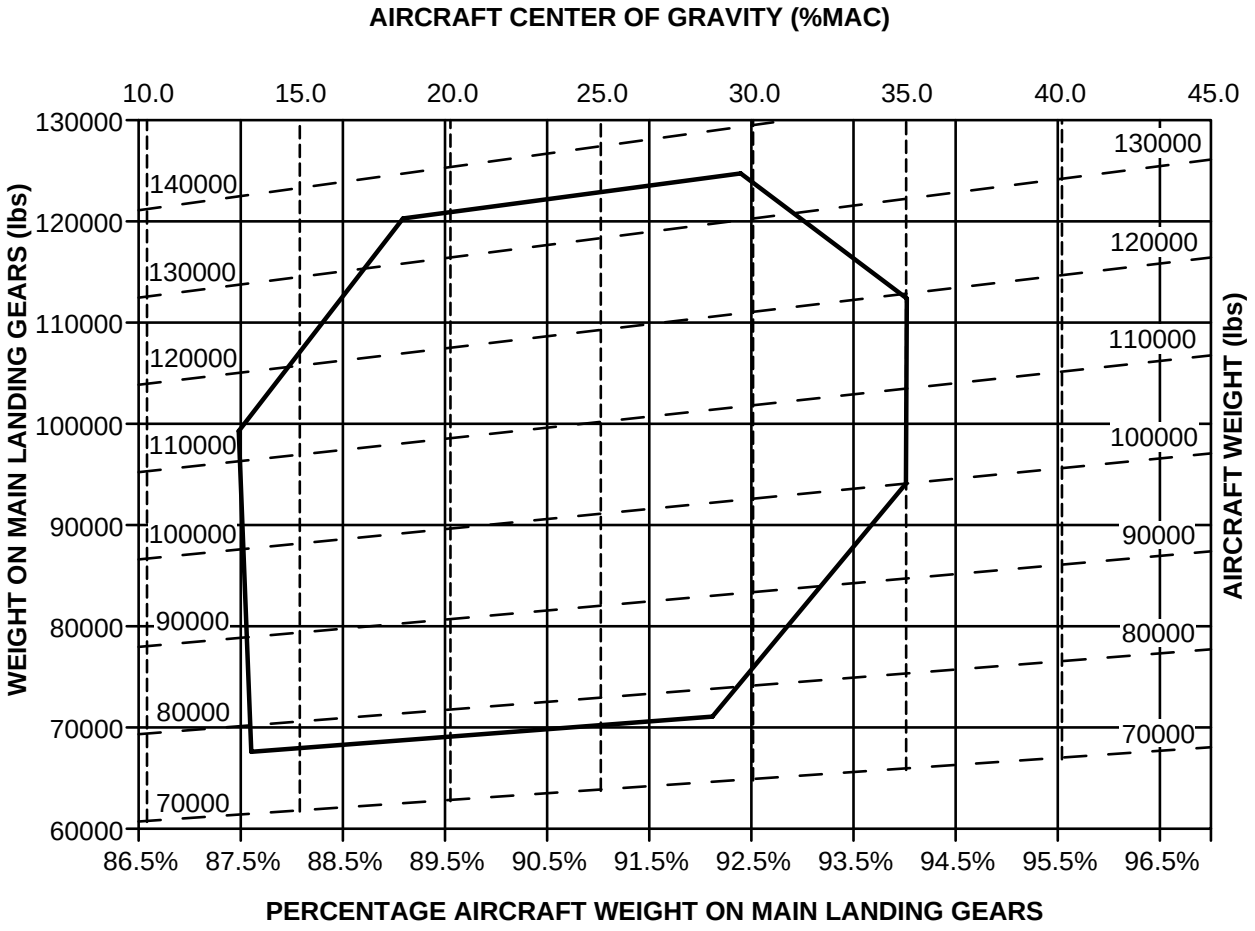
ICN-BD500-A-J000000-A-3AB48-21628-A-002-01

Figure 9 Landing gear footprint

7 Maximum pavement loads

The maximum pavement load is given at aircraft CG,weight on Main Landing Gear (MLG) and aircraft weight.

Refer to Fig. 10 for graphical format.



LEGEND

- – – – Aircraft center of gravity.
- — — Aircraft weight.
- ——— A220-100 ground center of gravity envelope.

ICN-BD500-A-J000000-C-3AB48-58656-A-001-01

Figure 10 Maximum Pavement Load

A220

Pavement data - Technical data

Applicability: 55001-59999

Table of contents

		Page
Pavement data - Technical data		1
References		2
Description		2
1	Introduction	2
1.1	Aircraft Classification Number (ACN) / Pavement Classification Number (PCN) Introduction	3
1.1.1	Aircraft Classification Number (ACN)	3
1.1.2	Pavement Classification Number (PCN)	3
1.1.3	Load Classification Number (LCN)	4
2	Aircraft Classification Number (ACN) results for most aft C.G. position	4
3	Aircraft Classification Number (ACN) results for most forward C.G. positions	14
4	Load Classification Number (LCN) results for most aft C.G. positions	24
5	Required Pavement Thickness	34
6	Landing gear footprint	37
7	Maximum pavement loads	39

List of tables

		Page
1	References	2
2	Airport method to show Pavement Classification Number (PCN)	3
3	Subgrade strength categories	3
4	Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT	4
5	Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT	9
6	Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT	14
7	Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT	19
8	Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT	24
9	Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT	29
10	Landing gear footprint	37

List of figures

		Page
1	ACN results - Rigid pavement	8
2	ACN results - Flexible pavement	13
3	ACN results - Rigid pavement	18
4	ACN results - Flexible pavement	23
5	LCN results - Rigid pavement	28
6	LCN results - Flexible pavement	33
7	Flexible pavement required thickness	35
8	Rigid pavement required thickness	36
9	Landing gear footprint	38
10	Maximum pavement load	40

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This section contains data related to the pavement design specifications, including aircraft footprints, pavement loading during standard operations, and aircraft/pavement rating systems. Also given are the flotation classification for different weights, fixed tire pressure, and aft Center of Gravity (CG), with the Aircraft Classification Number (ACN) methods.

This section is divided into the subsections that follow:

- ACN
- Landing gear footprint
- Maximum pavement load
- Landing gear loading on pavement

Note

Runway strength data shown in this publication is derived from available information and is a realistic estimate of capability at an average level of activity. It is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of published figures. Permissible operating weight, insofar as runway strengths are concerned, are a matter of agreement between the owner and user.

For more information about the Pavement Classification Number (PCN), please contact the concerned airport authority.

Note

- If the aircraft take-off weight is less than or equal to 67 585 kg (149 000 lb), the aircraft is classified as code 3C as perInternational Civil Aviation Organization (ICAO) Aerodrome Reference Code

- If the aircraft take-off weight is more than 67 585 kg (149 000 lb), the aircraft is classified as code 4C as per ICAO Aerodrome Reference Code.

1.1 Aircraft Classification Number (ACN) / Pavement Classification Number (PCN) Introduction

1.1.1 Aircraft Classification Number (ACN)

The ACN value is a number, which expresses the relative structural effect of an aircraft on different pavement types for specified standard subgrade strengths in terms of a standard single wheel load.

An aircraft will have eight (8) ACN numbers for any given aircraft weight and tire pressure: four (4) for flexible pavement and four (4) for rigid pavement.

1.1.2 Pavement Classification Number (PCN)

The PCN value is a number, which expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load.

An airport determined and published PCN can be compared with an aircraft's ACN. An aircraft that has an ACN equal to or less than the PCN of a given pavement can operated without restriction on the pavement. (Ref. ICAO State Letter AN411.1.17−8019. Ref. US FAA Advisory Circular 150153355 15/06/83).

For example, if the published airport PCN is 52/R/B/Y/T, it means that the aircraft ACN must be less than 52 for rigid pavement type, with medium subgrade strenght, and the tire pressure of the aircraft must be less than 145 psi (1.0 MPa). The PCN also shows that the value was arrived at through a technical review.

Table 2 Airport method to show Pavement Classification Number (PCN)

Pavement type	Subgrade category	Tire pressure category psi (MPa)	Evaluation
R = Rigid F = Flexible	A = High B = Medium C = Low D = Ultra Low	W = No limit X = To 254 (1.75) Y = To 181 (1.25) Z = To 73 (0.5)	T = Technical U = Using aircraft

Table 3 Subgrade strength categories

Subgrade Categories	Flexible pavement		Rigid pavement	
	Characterization	CBR range	Characterization	k-Value Range
A	CBR 15	Above 13	k = 150MN/m3 (550 pci)	Above 120MN/m3 (442pci)
B	CBR 10	From 8 to 13	k = 80MN/m3 (300 pci)	From 60 to 120 MN/m3 (221 to 442pci)
C	CBR 6	From 4 to 8	k = 80MN/m3 (300 pci)	From 25 to 60 MN/m3 (92 to 221pci)
D	CBR 3	Below 4	k=20MN/m3 (75pci)	Below 25 MN/m3 (92pci)

1.1.3 Load Classification Number (LCN)

The Load Classification Number (LCN) is a method of flotation analysis by the ICAO.

An aircraft will have two (2) LCN numbers for any given aircraft weight and tire pressure: one (1) for rigid pavement usually concrete and second (2) for flexible pavement usually layered asphalt.

2 Aircraft Classification Number (ACN) results for most aft C.G. position

Refer to Table 4 for tabular format and Fig. 1 for graphical format for the ACN results for rigid pavement and Table 5 for tabular format and Fig. 2 for graphical format for the ACN results for flexible pavement.

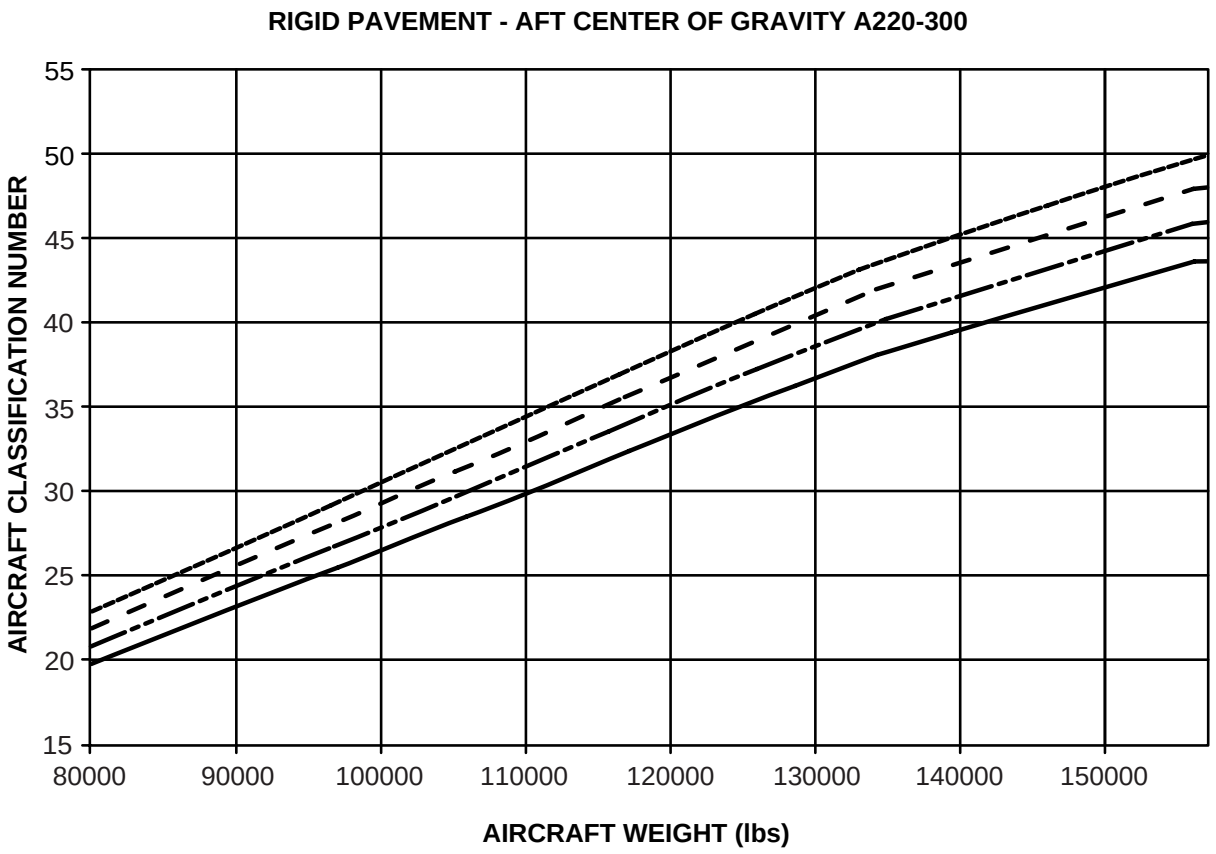
Table 4 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Medium Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
157000	71213	146872	66619	44	46	48	50
156300	70896	146853	66611	44	46	48	50
156000	70760	146640	66514	44	46	48	50
155000	70306	145929	66192	43	46	48	49
154000	69853	145219	65870	43	45	47	49
153000	69399	144509	65548	43	45	47	49
152000	68945	143798	65225	43	45	47	49
151000	68492	143088	64903	42	45	47	48
150000	68038	142378	64581	42	44	46	48
149000	67585	141667	64259	42	44	46	48
148000	67131	140957	63936	42	44	46	48
147000	66678	140247	63614	41	44	46	47
146000	66224	139537	63292	41	43	45	47
145000	65770	138826	62970	41	43	45	47
144000	65317	138116	62648	41	43	45	46
143000	64863	137406	62326	40	42	44	46
142000	64410	136695	62003	40	42	44	46

A/C Gross Weight (lb)	A/C Gross weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Medium Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
141000	63956	135985	61681	40	42	44	46
140000	63502	135275	61359	40	42	44	45
139000	63049	134564	61037	39	41	43	45
138000	62595	133854	60715	39	41	43	45
137000	62142	133144	60393	39	41	43	44
136000	61688	132434	60071	39	41	43	44
135000	61234	131723	59748	38	40	42	44
134500	61008	131368	59587	38	40	42	44
134000	60781	130898	59374	38	40	42	44
133000	60327	129958	58947	38	40	42	43
132000	59874	129017	58521	37	39	41	43
131000	59420	128077	58094	37	39	41	43
130000	58966	127137	57668	37	39	41	42
129000	58513	126197	57241	37	38	40	42
128000	58059	125256	56815	36	38	40	42
127000	57606	124202	56337	36	38	40	41
126000	57152	123147	55858	36	37	39	41
125000	56699	122092	55379	35	37	39	40
124000	56245	121037	54901	35	37	38	40
123000	55791	119983	54423	34	36	38	40
122000	55338	118928	53944	34	36	38	39
121000	54884	117873	53466	34	36	37	39
120000	54431	116819	52988	33	35	37	38
119000	53977	115764	52509	33	35	37	38
118000	53523	114709	52031	33	34	36	38
117000	53070	113655	51552	32	34	36	37

A/C Gross Weight (lb)	A/C Gross weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Medium Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
116000	52616	112600	51074	32	34	35	37
115000	52163	111545	50595	32	33	35	36
114000	51709	110490	50117	31	33	35	36
113000	51255	109436	49639	31	33	34	36
112000	50802	108381	49160	31	32	34	35
111000	50348	107326	48682	30	32	34	35
110000	49895	106272	48204	30	32	33	35
109000	49441	105217	47725	30	31	33	34
108000	48987	104162	47247	29	31	32	34
107000	48534	103107	46768	29	31	32	33
106000	48080	102053	46290	29	30	32	33
105000	47627	100998	45811	28	30	31	33
104000	47173	99943	45333	28	29	31	32
103000	46719	98889	44855	28	29	31	32
102000	46266	97834	44376	27	29	30	31
101000	45812	96779	43898	27	28	30	31
100000	45359	95725	43420	27	28	29	31
99000	44905	94670	42941	26	28	29	30
98000	44452	93615	42463	26	27	29	30
97000	43998	92560	41984	26	27	28	29
96000	43544	91506	41506	25	27	28	29
95000	43091	90451	41027	25	26	28	29
94000	42637	89396	40549	25	26	27	28
93000	42184	88342	40071	24	25	27	28
92000	41730	87287	39592	24	25	26	28
91000	41276	86232	39114	24	25	26	27

A/C Gross Weight (lb)	A/C Gross weight (Kg)	MLG Load (lb)	MLG Load (Kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Medium Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
90000	40823	85177	38635	23	24	26	27
89000	40369	84123	38157	23	24	25	26
88000	39916	83068	37678	23	24	25	26
87000	39462	82013	37200	22	23	25	26
86000	39008	80959	36722	22	23	24	25
85000	38555	79904	36243	22	23	24	25
84000	38101	78849	35765	21	22	23	24
83000	37648	77795	35287	21	22	23	24
82000	37194	76740	34808	20	22	23	24
81000	36740	75685	34330	20	21	22	23
80000	36287	74630	33851	20	21	22	23



LEGEND

- Ultra low strength k=20 mn/m³.
- Low strength k=40 mn/m³.
- Medium strength k=80 mn/m³.
- High strength k=150 mn/m³.

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Figure 1 ACN results - Rigid pavement

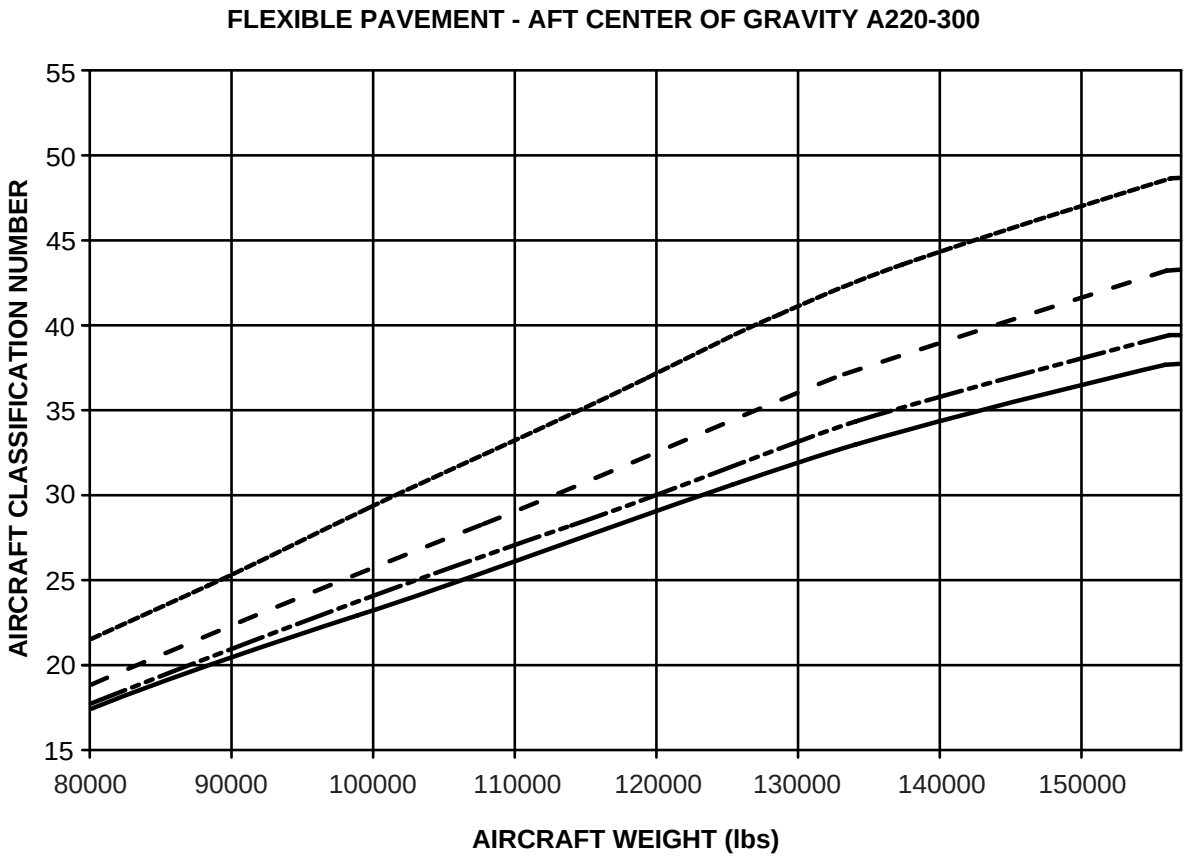
Table 5 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
157000	71213	146872	66619	38	40	43	49
156300	70896	146853	66611	38	40	43	49
156000	70760	146640	66514	38	39	43	49
155000	70306	145929	66192	38	39	43	48
154000	69853	145219	65870	37	39	43	48
153000	69399	144509	65548	37	39	42	48
152000	68945	143798	65225	37	39	42	48
151000	68492	143088	64903	37	38	42	47
150000	68038	142378	64581	36	38	42	47
149000	67585	141667	64259	36	38	41	47
148000	67131	140957	63936	36	38	41	46
147000	66678	140247	63614	36	37	41	46
146000	66224	139537	63292	36	37	41	46
145000	65770	138826	62970	35	37	40	46
144000	65317	138116	62648	35	37	40	45
143000	64863	137406	62326	35	37	40	45
142000	64410	136695	62003	35	36	40	45
141000	63956	135985	61681	35	36	39	45
140000	63502	135275	61359	34	36	39	44
139000	63049	134564	61037	34	36	39	44
138000	62595	133854	60715	34	35	39	44
137000	62142	133144	60393	34	35	38	44
136000	61688	132434	60071	34	35	38	43
135000	61234	131723	59748	33	35	38	43
134500	61008	131368	59587	33	35	38	43
134000	60781	130898	59374	33	34	37	43

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
133000	60327	129958	58947	33	34	37	42
132000	59874	129017	58521	33	34	37	42
131000	59420	128077	58094	32	34	36	42
130000	58966	127137	57668	32	33	36	41
129000	58513	126197	57241	32	33	36	41
128000	58059	125256	56815	31	33	35	41
127000	57606	124202	56337	31	32	35	40
126000	57152	123147	55858	31	32	35	40
125000	56699	122092	55379	31	32	34	39
124000	56245	121037	54901	30	31	34	39
123000	55791	119983	54423	30	31	34	39
122000	55338	118928	53944	30	31	33	38
121000	54884	117873	53466	29	31	33	38
120000	54431	116819	52988	29	30	33	37
119000	53977	115764	52509	29	30	32	37
118000	53523	114709	52031	29	30	32	37
117000	53070	113655	51552	28	29	32	36
116000	52616	112600	51074	28	29	31	36
115000	52163	111545	50595	28	29	31	35
114000	51709	110490	50117	27	28	31	35
113000	51255	109436	49639	27	28	30	35
112000	50802	108381	49160	27	28	30	34
111000	50348	107326	48682	26	27	30	34
110000	49895	106272	48204	26	27	29	33
109000	49441	105217	47725	26	27	29	33
108000	48987	104162	47247	26	26	29	33

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
107000	48534	103107	46768	25	26	28	32
106000	48080	102053	46290	25	26	28	32
105000	47627	100998	45811	25	26	27	31
104000	47173	99943	45333	24	25	27	31
103000	46719	98889	44855	24	25	27	31
102000	46266	97834	44376	24	25	26	30
101000	45812	96779	43898	24	24	26	30
100000	45359	95725	43420	23	24	26	29
99000	44905	94670	42941	23	24	25	29
98000	44452	93615	42463	23	23	25	29
97000	43998	92560	41984	22	23	25	28
96000	43544	91506	41506	22	23	24	28
95000	43091	90451	41027	22	22	24	27
94000	42637	89396	40549	22	22	24	27
93000	42184	88342	40071	21	22	23	27
92000	41730	87287	39592	21	22	23	26
91000	41276	86232	39114	21	21	23	26
90000	40823	85177	38635	20	21	22	25
89000	40369	84123	38157	20	21	22	25
88000	39916	83068	37678	20	20	22	25
87000	39462	82013	37200	20	20	21	24
86000	39008	80959	36722	19	20	21	24
85000	38555	79904	36243	19	19	21	23
84000	38101	78849	35765	19	19	20	23
83000	37648	77795	35287	18	19	20	23
82000	37194	76740	34808	18	18	20	22

A/C Gross Weight (lb)	A/C Gross Weight (kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
81000	36740	75685	34330	18	18	19	22
80000	36287	74630	33851	18	18	19	22



LEGEND

- Ultra low strength california bearing ratio=3.
- Low strength california bearing ratio=6.
- Medium strength california bearing ratio=10.
- High strength california bearing ratio=15.

ICN-BD500-A-J000000-C-3AB48-57656-A-003-01

Figure 2 ACN results - Flexible pavement

3 Aircraft Classification Number (ACN) results for most forward C.G. positions

Refer to Table 6 for tabular format and Fig. 3 for graphical format for the ACN results for rigid pavement and Table 7 for tabular format and Fig. 4 for graphical format for the ACN results for flexible pavement.

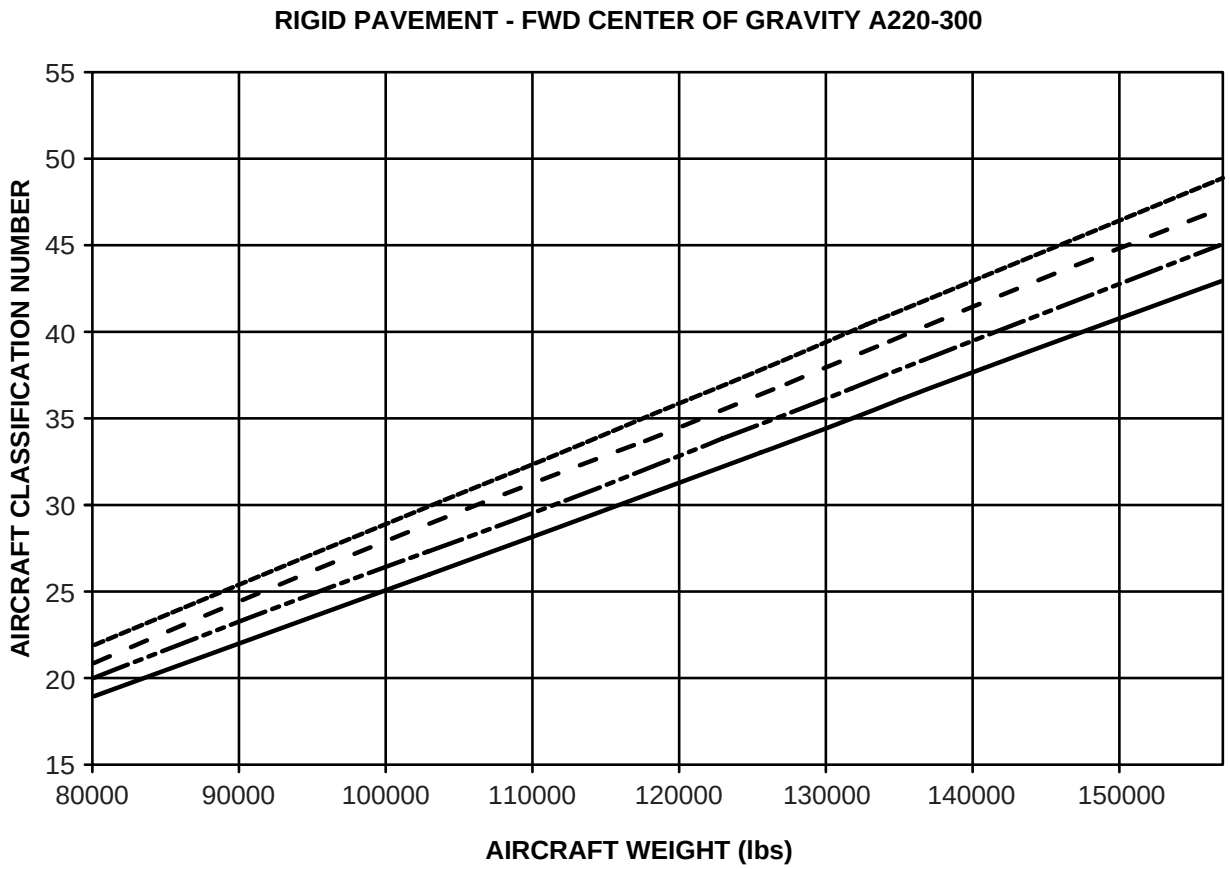
Table 6 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. RIGID PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
157000	71213	144570	65575	43	45	47	49
156300	70896	143858	65252	43	45	47	49
156000	70760	143589	65130	43	45	47	48
155000	70306	142695	64725	42	44	46	48
154000	69853	141801	64319	42	44	46	48
153000	69399	140907	63914	42	44	46	47
152000	68945	140013	63508	41	43	45	47
151000	68492	139119	63103	41	43	45	47
150000	68038	138225	62697	41	43	45	46
149000	67585	137331	62292	40	42	44	46
148000	67131	136437	61886	40	42	44	46
147000	66678	135543	61481	40	42	44	45
146000	66224	134649	61075	39	41	43	45
145000	65770	133755	60670	39	41	43	45
144000	65317	132860	60264	39	41	43	44
143000	64863	131966	59858	39	41	42	44
142000	64410	131072	59453	38	40	42	44
141000	63956	130178	59047	38	40	42	43
140000	63502	129284	58642	38	40	41	43
139000	63049	128390	58236	37	39	41	43
138000	62595	127496	57831	37	39	41	42

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
137000	62142	126602	57425	37	39	40	42
136000	61688	125708	57020	36	38	40	42
135000	61234	124814	56614	36	38	40	41
134500	61008	124367	56411	36	38	40	41
134000	60781	123535	56034	36	37	39	41
133000	60327	122624	55621	35	37	39	40
132000	59874	121713	55208	35	37	39	40
131000	59420	120801	54794	35	36	38	40
130000	58966	119890	54381	34	36	38	39
129000	58513	118979	53967	34	36	38	39
128000	58059	118067	53554	34	36	37	39
127000	57606	117099	53115	33	35	37	38
126000	57152	116130	52675	33	35	37	38
125000	56699	115162	52236	33	35	36	38
124000	56245	114193	51797	33	34	36	37
123000	55791	113225	51357	32	34	36	37
122000	55338	112256	50918	32	34	35	37
121000	54884	111287	50478	32	33	35	36
120000	54431	110319	50039	31	33	35	36
119000	53977	109350	49600	31	33	34	36
118000	53523	108382	49161	31	32	34	35
117000	53070	107413	48721	30	32	34	35
116000	52616	106445	48282	30	32	33	35
115000	52163	105476	47843	30	31	33	34
114000	51709	104507	47403	29	31	33	34
113000	51255	103539	46964	29	31	32	33

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/ m3	ACN Medium Strength K=80 MN/ m3	ACN Low Strength K=40 MN/ m3	ACN Ultra-Low Strength K=20 MN/ m3
112000	50802	102570	46524	29	30	32	33
111000	50348	101602	46085	29	30	31	33
110000	49895	100633	45646	28	30	31	32
109000	49441	99664	45206	28	29	31	32
108000	48987	98696	44767	28	29	30	32
107000	48534	97727	44328	27	29	30	31
106000	48080	96759	43889	27	28	30	31
105000	47627	95790	43449	27	28	29	31
104000	47173	94822	43010	26	28	29	30
103000	46719	93853	42570	26	27	29	30
102000	46266	92884	42131	26	27	28	30
101000	45812	91916	41692	25	27	28	29
100000	45359	90947	41252	25	26	28	29
99000	44905	89979	40813	25	26	27	29
98000	44452	89010	40374	24	26	27	28
97000	43998	88042	39935	24	25	27	28
96000	43544	87073	39495	24	25	26	28
95000	43091	86104	39056	24	25	26	27
94000	42637	85136	38617	23	24	26	27
93000	42184	84167	38177	23	24	25	26
92000	41730	83199	37738	23	24	25	26
91000	41276	82230	37298	22	23	25	26
90000	40823	81261	36859	22	23	24	25
89000	40369	80293	36420	22	23	24	25
88000	39916	79324	35980	21	23	24	25
87000	39462	78356	35541	21	22	23	24

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
86000	39008	77387	35102	21	22	23	24
85000	38555	76419	34663	20	22	23	24
84000	38101	75450	34223	20	21	22	23
83000	37648	74481	33783	20	21	22	23
82000	37194	73513	33344	20	21	22	23
81000	36740	72544	32905	19	20	21	22
80000	36287	71576	32466	19	20	21	22



LEGEND

- Ultra low strength k=20 mn/m³.
- Low strength k=40 mn/m³.
- Medium strength k=80 mn/m³.
- High strength k=150 mn/m³.

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Figure 3 ACN results - Rigid pavement

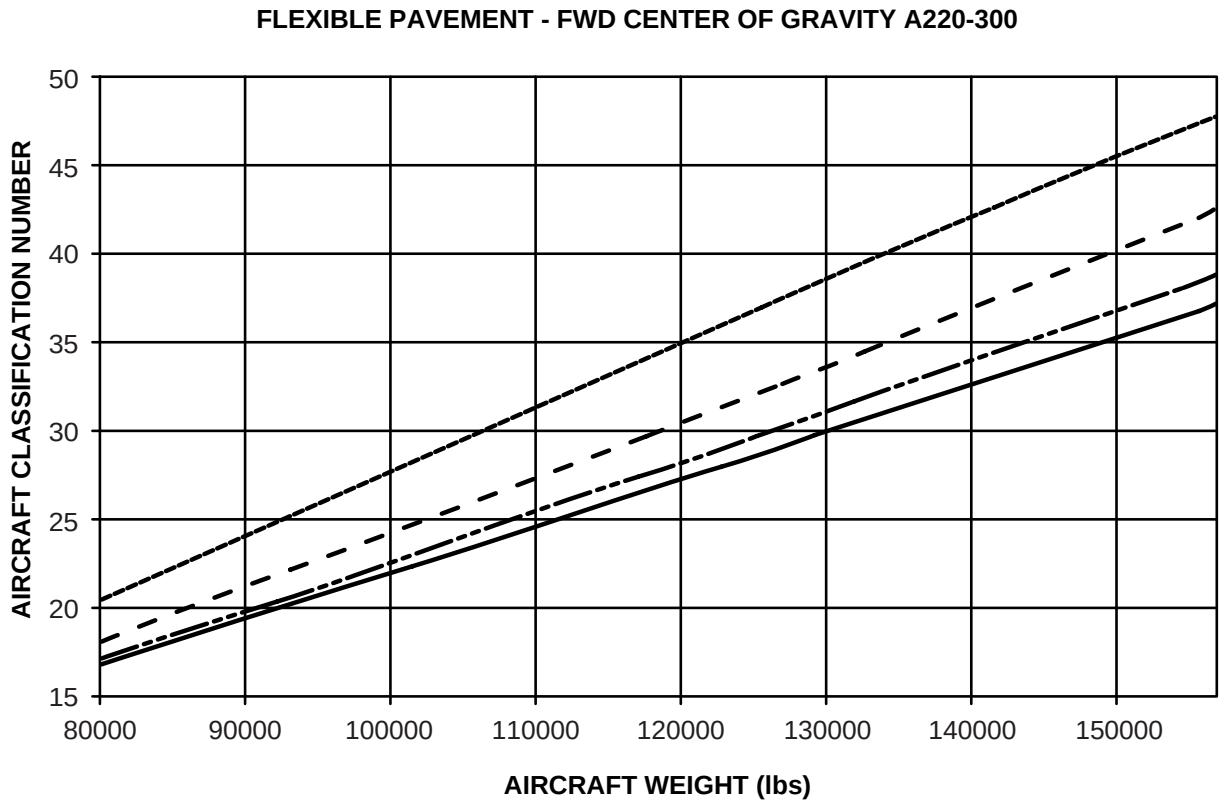
Table 7 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
157000	71213	144570	65575	37	39	43	48
156300	70896	143858	65252	37	39	42	48
156000	70760	143589	65130	37	38	42	47
155000	70306	142695	64725	37	38	42	47
154000	69853	141801	64319	36	38	41	47
153000	69399	140907	63914	36	38	41	46
152000	68945	140013	63508	36	37	41	46
151000	68492	139119	63103	36	37	40	46
150000	68038	138225	62697	35	37	40	45
149000	67585	137331	62292	35	36	40	45
148000	67131	136437	61886	35	36	39	45
147000	66678	135543	61481	34	36	39	44
146000	66224	134649	61075	34	36	39	44
145000	65770	133755	60670	34	35	39	44
144000	65317	132860	60264	34	35	38	43
143000	64863	131966	59858	33	35	38	43
142000	64410	131072	59453	33	34	38	43
141000	63956	130178	59047	33	34	37	42
140000	63502	129284	58642	33	34	37	42
139000	63049	128390	58236	32	34	37	42
138000	62595	127496	57831	32	33	36	41
137000	62142	126602	57425	32	33	36	41
136000	61688	125708	57020	32	33	36	41
135000	61234	124814	56614	31	33	35	40
134500	61008	124367	56411	31	32	35	40
134000	60781	123535	56034	31	32	35	40

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
133000	60327	122624	55621	31	32	35	40
132000	59874	121713	55208	30	32	34	39
131000	59420	120801	54794	30	31	34	39
130000	58966	119890	54381	30	31	34	38
129000	58513	118979	53967	30	31	33	38
128000	58059	118067	53554	29	31	33	38
127000	57606	117099	53115	29	30	33	37
126000	57152	116130	52675	29	30	32	37
125000	56699	115162	52236	29	30	32	37
124000	56245	114193	51797	28	29	32	36
123000	55791	113225	51357	28	29	31	36
122000	55338	112256	50918	28	29	31	36
121000	54884	111287	50478	28	29	31	35
120000	54431	110319	50039	27	28	30	35
119000	53977	109350	49600	27	28	30	35
118000	53523	108382	49161	27	28	30	34
117000	53070	107413	48721	26	27	29	34
116000	52616	106445	48282	26	27	29	33
115000	52163	105476	47843	26	27	29	33
114000	51709	104507	47403	26	27	29	33
113000	51255	103539	46964	25	26	28	32
112000	50802	102570	46524	25	26	28	32
111000	50348	101602	46085	25	26	28	32
110000	49895	100633	45646	25	25	27	31
109000	49441	99664	45206	24	25	27	31
108000	48987	98696	44767	24	25	27	31

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
107000	48534	97727	44328	24	25	26	30
106000	48080	96759	43889	24	24	26	30
105000	47627	95790	43449	23	24	26	29
104000	47173	94822	43010	23	24	25	29
103000	46719	93853	42570	23	23	25	29
102000	46266	92884	42131	23	23	25	28
101000	45812	91916	41692	22	23	25	28
100000	45359	90947	41252	22	23	24	28
99000	44905	89979	40813	22	22	24	27
98000	44452	89010	40374	21	22	24	27
97000	43998	88042	39935	21	22	23	27
96000	43544	87073	39495	21	21	23	26
95000	43091	86104	39056	21	21	23	26
94000	42637	85136	38617	20	21	22	25
93000	42184	84167	38177	20	21	22	25
92000	41730	83199	37738	20	20	22	25
91000	41276	82230	37298	20	20	21	24
90000	40823	81261	36859	19	20	21	24
89000	40369	80293	36420	19	19	21	24
88000	39916	79324	35980	19	19	20	23
87000	39462	78356	35541	19	19	20	23
86000	39008	77387	35102	18	19	20	23
85000	38555	76419	34663	18	18	20	22
84000	38101	75450	34223	18	18	19	22
83000	37648	74481	33783	17	18	19	21
82000	37194	73513	33344	17	17	19	21

A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength CBR=15	ACN Medium Strength CBR=10	ACN Low Strength CBR=6	ACN Ultra-Low Strength CBR=3
81000	36740	72544	32905	17	17	18	21
80000	36287	71576	32466	17	17	18	20



LEGEND

- Ultra low strength california bearing ratio=3.
- Low strength california bearing ratio=6.
- Medium strength california bearing ratio=10.
- High strength california bearing ratio=15.

ICN-BD500-A-J000000-C-3AB48-57658-A-003-01

Figure 4 ACN results - Flexible pavement

4 Load Classification Number (LCN) results for most aft C.G. positions

Refer to Table 8 for tabular format and Fig. 5 for graphical format for the LCN results for rigid pavement and Table 9 for tabular format and Fig. 6 for graphical format for the LCN results for flexible pavement.

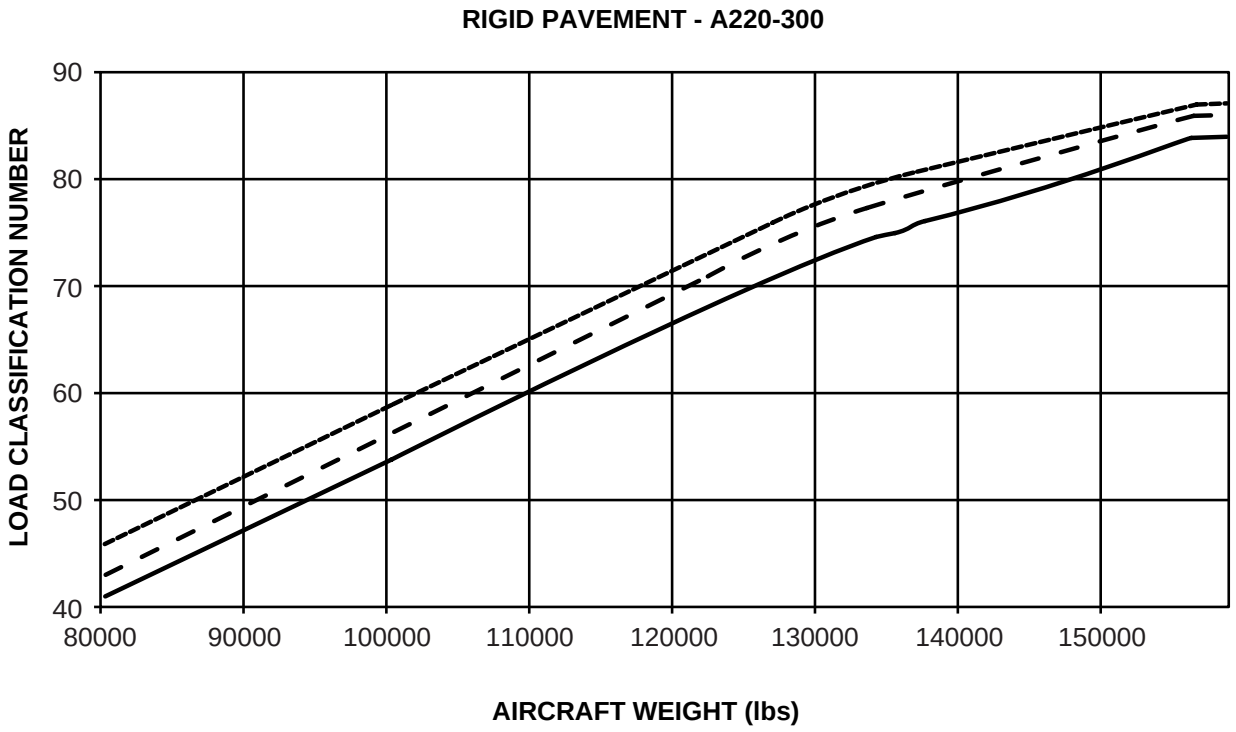
Table 8 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

Aircraft weight (Lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
80000	36287	223	23768	41	24877	43	26095	46
81000	36740	223	24131	42	25265	44	26490	47
82000	37194	223	24494	42	25652	44	26885	47
83000	37648	223	24857	43	26040	45	27280	48
84000	38101	223	25221	44	26428	46	27675	49
85000	38555	223	25584	44	26816	46	28070	49
86000	39008	223	25947	45	27204	47	28465	50
87000	39462	223	26310	46	27591	48	28860	51
88000	39916	223	26673	46	27979	48	29255	51
89000	40369	223	27037	47	28367	49	29650	52
90000	40823	223	27400	47	28755	50	30045	52
91000	41276	223	27763	48	29143	50	30440	53
92000	41730	223	28126	49	29531	51	30835	54
93000	42184	223	28490	49	29918	52	31230	54
94000	42637	223	28853	50	30306	52	31625	55
95000	43091	223	29216	51	30694	53	32020	56
96000	43544	223	29579	51	31082	54	32415	56
97000	43998	223	29943	52	31470	54	32810	57
98000	44452	223	30306	53	31857	55	33205	58
99000	44905	223	30669	53	32245	56	33600	58
100000	45359	223	31032	54	32633	56	33995	59
101000	45812	223	31395	55	33021	57	34390	60

Aircraft weight (Lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
102000	46266	223	31759	55	33409	58	34785	60
103000	46719	223	32122	56	33796	58	35180	61
104000	47173	223	32485	57	34184	59	35575	62
105000	47627	223	32848	57	34572	60	35970	62
106000	48080	223	33212	58	34960	60	36365	63
107000	48534	223	33575	58	35348	61	36760	63
108000	48987	223	33938	59	35736	62	37156	64
109000	49441	223	34301	60	36123	62	37551	65
110000	49895	223	34665	60	36511	63	37946	65
111000	50348	223	35028	61	36899	64	38341	66
112000	50802	223	35391	62	37287	64	38736	67
113000	51255	223	35754	62	37675	65	39131	67
114000	51709	223	36117	63	38062	66	39526	68
115000	52163	223	36481	64	38450	66	39921	69
116000	52616	223	36844	64	38838	67	40316	69
117000	53070	223	37207	65	39226	68	40711	70
118000	53523	223	37570	66	39614	68	41106	71
119000	53977	223	37934	66	40001	69	41501	71
120000	54431	223	38297	67	40389	70	41896	72
121000	54884	223	38660	67	40777	70	42291	72
122000	55338	223	39023	68	41165	71	42686	73
123000	55791	223	39387	69	41553	72	43081	74
124000	56245	223	39750	69	41941	72	43476	74
125000	56699	223	40113	70	42328	73	43871	75
126000	57152	223	40476	71	42716	74	44266	76
127000	57606	223	40840	71	43104	74	44661	76
128000	58059	223	41203	72	43492	75	45056	77

Aircraft weight (Lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
129000	58513	223	41601	72	43818	75	45447	77
130000	58966	223	41999	73	44145	76	45838	78
131000	59420	223	42397	73	44471	76	46229	78
132000	59874	223	42795	74	44798	77	46620	79
133000	60327	223	43192	74	45124	77	47011	79
134000	60781	223	43590	75	45451	78	47402	80
134500	61008	223	43789	75	45614	78	47597	80
136000	61688	223	44167	76	46033	79	48010	80
137000	62142	223	44419	76	46313	79	48285	81
138000	62595	223	44671	76	46592	79	48560	81
139000	63049	223	44923	77	46872	80	48835	81
140000	63502	223	45174	77	47152	80	49111	82
141000	63956	223	45426	78	47431	80	49386	82
142000	64410	223	45678	78	47711	81	49661	82
143000	64863	223	45930	79	47990	81	49936	83
144000	65317	223	46182	79	48270	81	50211	83
145000	65770	223	46434	79	48549	82	50486	83
146000	66224	223	46686	80	48829	82	50762	84
147000	66678	223	46937	80	49109	83	51037	84
148000	67131	223	47189	81	49388	83	51312	84
149000	67585	223	47441	81	49668	83	51587	85
150000	68038	223	47693	81	49947	84	51862	85
151000	68492	223	47945	82	50227	84	52137	85
152000	68945	223	48197	82	50507	84	52413	86
153000	69399	223	48448	83	50786	85	52688	86
154000	69853	223	48700	83	51066	85	52963	86
155000	70306	223	48952	83	51345	86	53238	87

Aircraft weight (Lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
156000	70760	223	49204	84	51625	86	53513	87
156300	70896	223	49279	84	51709	86	53596	87
157000	71213	223	49286	84	51715	86	53603	87



LEGEND

- Radius of relative stiffness L=50.00 in. (1270.00 mm).
- Radius of relative stiffness L=40.00 in. (1016.00 mm).
- Radius of relative stiffness L=30.00 in. (762.00 mm).

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Figure 5 LCN results - Rigid pavement

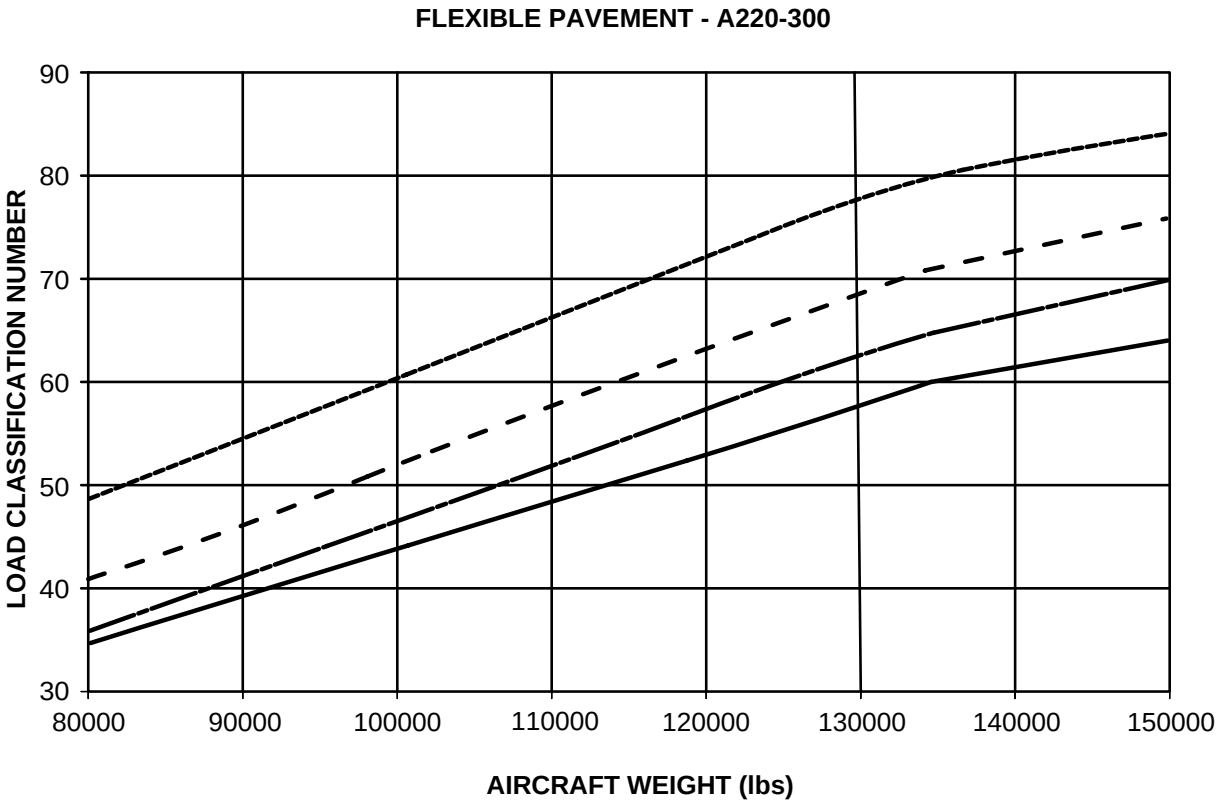
Table 9 Load Classification Number (LCN) RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
80000	36287	223	18658	35	19711	36	22206	41	26268	49
81000	36740	223	18921	35	20015	37	22543	42	26658	50
82000	37194	223	19185	36	20320	37	22881	42	27048	50
83000	37648	223	19449	36	20624	38	23218	43	27438	51
84000	38101	223	19712	37	20929	38	23556	43	27828	51
85000	38555	223	19976	37	21234	39	23894	44	28219	52
86000	39008	223	20240	38	21538	39	24231	44	28609	53
87000	39462	223	20503	38	21843	40	24569	45	28999	53
88000	39916	223	20767	39	22147	40	24906	46	29389	54
89000	40369	223	21031	39	22452	41	25244	46	29779	54
90000	40823	223	21294	40	22757	41	25582	47	30169	55
91000	41276	223	21558	40	23061	42	25919	47	30560	55
92000	41730	223	21822	41	23366	43	26257	48	30950	56
93000	42184	223	22085	41	23670	43	26595	48	31340	57
94000	42637	223	22349	41	23975	44	26932	49	31730	57
95000	43091	223	22613	42	24280	44	27270	49	32120	58
96000	43544	223	22876	42	24584	45	27607	50	32510	58
97000	43998	223	23140	43	24889	45	27945	51	32901	59
98000	44452	223	23404	43	25193	46	28283	51	33291	60
99000	44905	223	23667	44	25498	46	28620	52	33681	60
100000	45359	223	23931	44	25803	47	28958	52	34071	61
101000	45812	223	24195	45	26107	47	29295	53	34461	61
102000	46266	223	24458	45	26412	48	29633	53	34851	62
103000	46719	223	24722	46	26717	48	29971	54	35242	62
104000	47173	223	24986	46	27021	49	30308	55	35632	63

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
105000	47627	223	25250	46	27326	50	30646	55	36022	64
106000	48080	223	25513	47	27630	50	30983	56	36412	64
107000	48534	223	25777	47	27935	51	31321	56	36802	65
108000	48987	223	26041	48	28240	51	31659	57	37192	65
109000	49441	223	26304	48	28544	52	31996	57	37582	66
110000	49895	223	26568	49	28849	52	32334	58	37973	67
111000	50348	223	26832	49	29153	53	32671	58	38363	67
112000	50802	223	27095	50	29458	53	33009	59	38753	68
113000	51255	223	27359	50	29763	54	33347	60	39143	68
114000	51709	223	27623	51	30067	54	33684	60	39533	69
115000	52163	223	27886	51	30372	55	34022	61	39923	69
116000	52616	223	28150	52	30676	56	34359	61	40314	70
117000	53070	223	28414	52	30981	56	34697	62	40704	71
118000	53523	223	28677	52	31286	57	35035	62	41094	71
119000	53977	223	28941	53	31590	57	35372	63	41484	72
120000	54431	223	29205	53	31895	58	35710	64	41874	72
121000	54884	223	29468	54	32199	58	36047	64	42264	73
122000	55338	223	29732	54	32504	59	36385	65	42655	74
123000	55791	223	29996	55	32809	59	36723	65	43045	74
124000	56245	223	30259	55	33113	60	37060	66	43435	75
125000	56699	223	30523	56	33418	60	37398	66	43825	75
126000	57152	223	30787	56	33722	61	37735	67	44215	76
127000	57606	223	31050	57	34027	61	38073	67	44605	76
128000	58059	223	31314	57	34332	62	38411	68	44996	77
129000	58513	223	31549	57	34611	62	38719	68	45349	77
130000	58966	223	31784	58	34890	63	39027	69	45702	78

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
131000	59420	223	32019	58	35170	63	39335	69	46056	78
132000	59874	223	32254	59	35449	64	39643	70	46409	79
133000	60327	223	32489	59	35728	64	39950	70	46762	79
134000	60781	223	32724	60	36007	65	40258	71	47115	80
134500	61008	223	32842	60	36147	65	40412	71	47292	80
135000	61234	223	32931	60	36254	65	40530	71	47426	80
136000	61688	223	33108	60	36467	65	40764	71	47695	80
137000	62142	223	33286	61	36680	66	40999	72	47963	81
138000	62595	223	33464	61	36893	66	41233	72	48231	81
139000	63049	223	33641	61	37106	66	41468	72	48500	81
140000	63502	223	33819	62	37319	67	41702	73	48768	82
141000	63956	223	33996	62	37532	67	41937	73	49036	82
142000	64410	223	34174	62	37745	67	42171	73	49305	82
143000	64863	223	34351	62	37958	68	42406	74	49573	82
144000	65317	223	34529	63	38171	68	42640	74	49841	83
145000	65770	223	34707	63	38384	68	42874	74	50110	83
146000	66224	223	34884	63	38597	69	43109	75	50378	83
147000	66678	223	35062	63	38810	69	43343	75	50646	83
148000	67131	223	35239	64	39023	69	43578	75	50915	84
149000	67585	223	35417	64	39236	70	43812	76	51183	84
150000	68038	223	35594	64	39449	70	44047	76	51451	84
151000	68492	223	35772	65	39662	70	44281	76	51720	85
152000	68945	223	35950	65	39875	71	44516	77	51988	85
153000	69399	223	36127	65	40088	71	44750	77	52256	85
154000	69853	223	36305	65	40301	71	44985	77	52525	85
155000	70306	223	36482	66	40514	72	45219	78	52793	86

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	Pavement Thickness 10 inches		Pavement Thickness 15 inches		Pavement Thickness 20 inches		Pavement Thickness 30 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
156000	70760	223	36660	66	40727	72	45454	78	53061	86
156100	70805	223	36678	66	40749	72	45477	78	53088	86
156200	70851	223	36695	66	40770	72	45501	78	53115	86
156300	70896	223	36713	66	40791	72	45524	78	53142	86
157000	71213	223	36718	66	40797	72	45530	78	53149	86



LEGEND

- Radius of relative stiffness L=30.00 in. (762.00 mm).
- Radius of relative stiffness L=20.00 in. (508.00 mm).
- Radius of relative stiffness L=15.00 in. (381.00 mm).
- Radius of relative stiffness L=10.00 in. (254.00 mm).

ICN-BD500-A-J000000-C-3AB48-57660-A-003-01

Figure 6 LCN results - Flexible pavement

5 Required Pavement Thickness

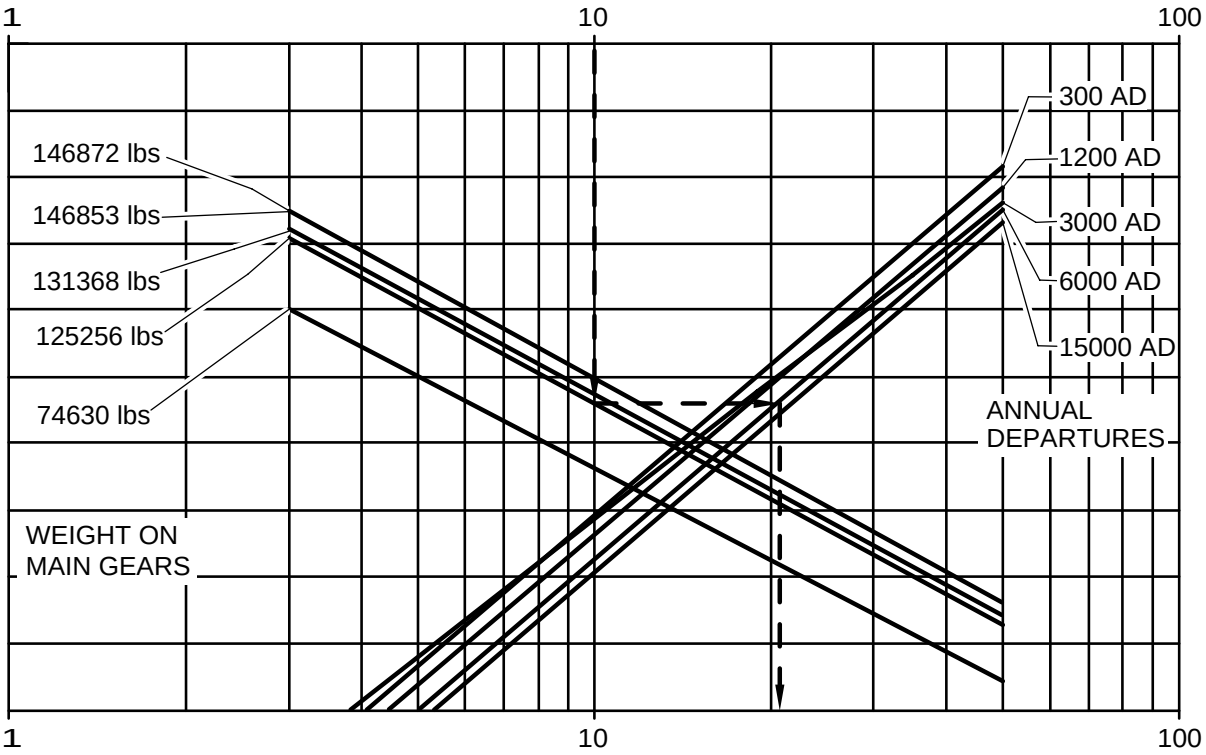
An essential parameter to calculate the PCN is the required pavement thickness.Fig. 7 and Fig. 8. provide a graphical way to determine the required rigid or flexible pavement thickness based on the pavement strength, aircraft load applied to the pavement, and the annual departure rate. Normally, each airport calculates the PCN based on the different aircraft types which operate to and from that airport considering the number of annual departure for each aircraft type. Using the graphs in this section, one can conclude on the impact of annual departure on required pavement thickness. This material gives the user another mean to evaluate the considered airport for operating the A220 more realistically based on more realistic number of annual departure.

Note

Number of annual departure starts from 300 (close to 1 flight per day). In fact, this gives the reader a better idea about required pavement thickness on those small airports that might not have a very high usage rate.

A220-300, AFT CENTER OF GRAVITY, REQUIRED FLEXIBLE PAVEMENT THICKNESS

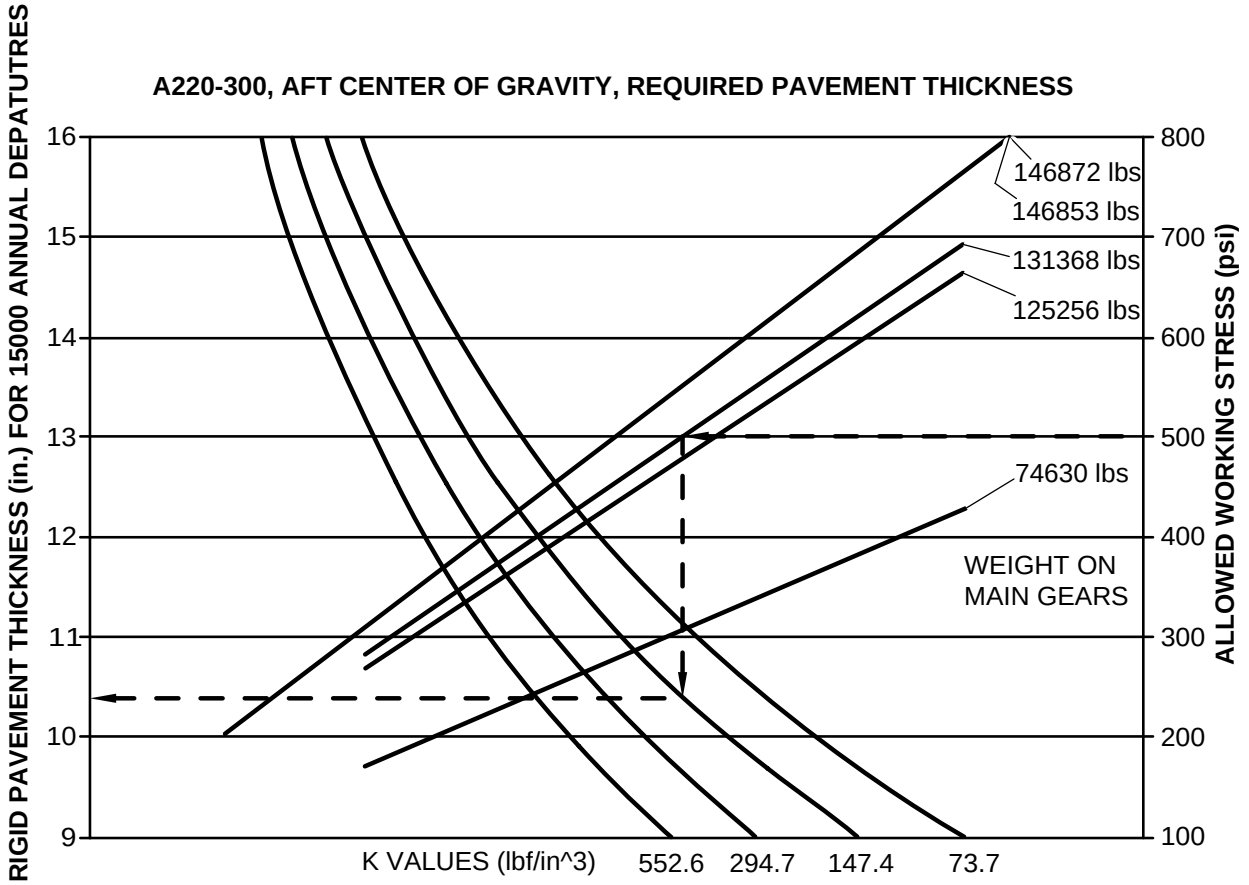
SUBGRADE STRENGTH - CALIFORNIA BEARING RATIO



FLEXIBLE PAVEMENT THICKNESS (in.)

ICN-BD500-A-J000000-C-3AB48-57661-A-003-01

Figure 7 Flexible pavement required thickness



ICN-BD500-A-J000000-C-3AB48-57662-A-003-01

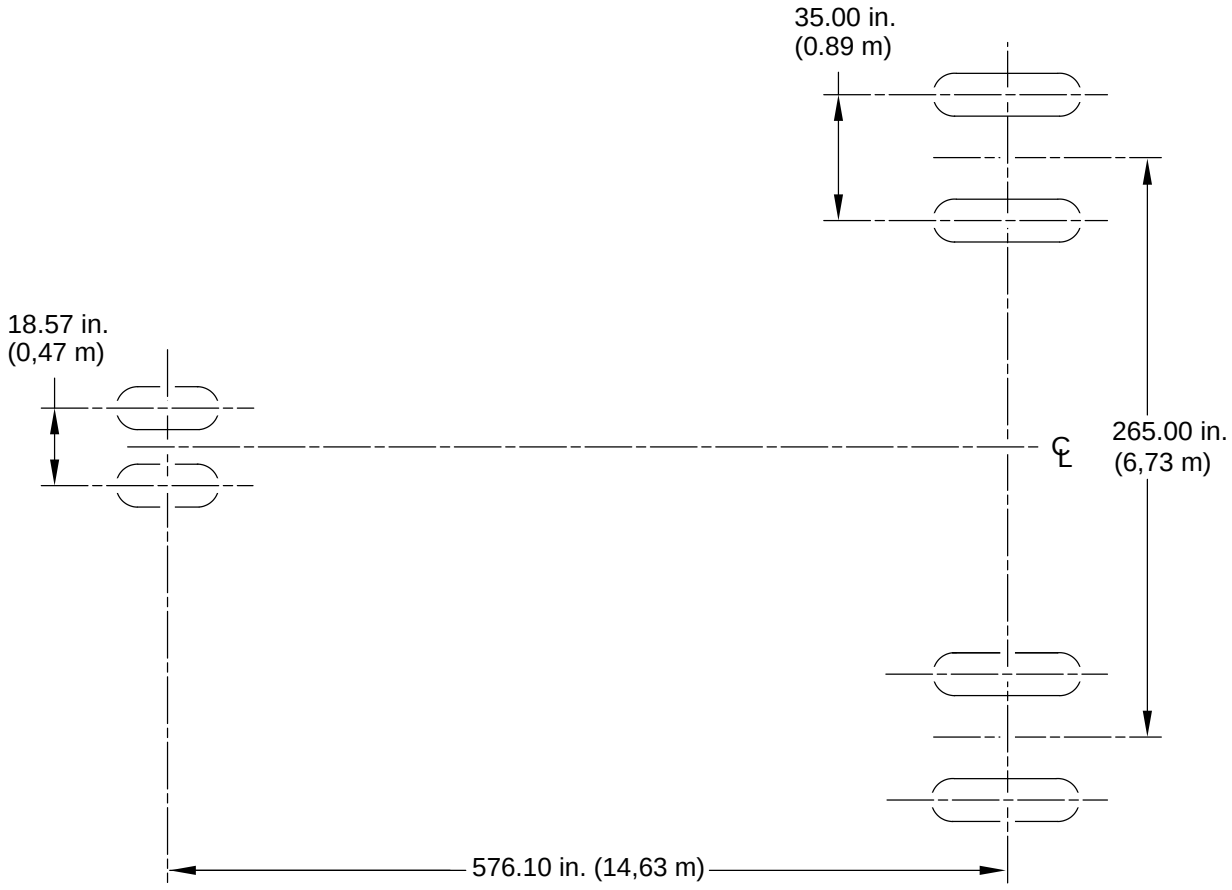
Figure 8 Rigid pavement required thickness

6 Landing gear footprint

Refer to Fig. 9 for the landing gear footprint.

Table 10 Landing gear footprint

code	A-B-C-D-E-F-G-H-I-J-K-L-M-N-O-P
Percentage of weight on main gear group	Refer to section 4
Nose gear tire size	27 x 8.5 R12 16 PR
Nose gear tire pressure	146 PSIG (10 Bar)
Main gear tire size	H42 x15.0 R21 26 PR
Main gear tire pressure	213 PSIG (14.7 Bar)



NOTE

Not to scale.

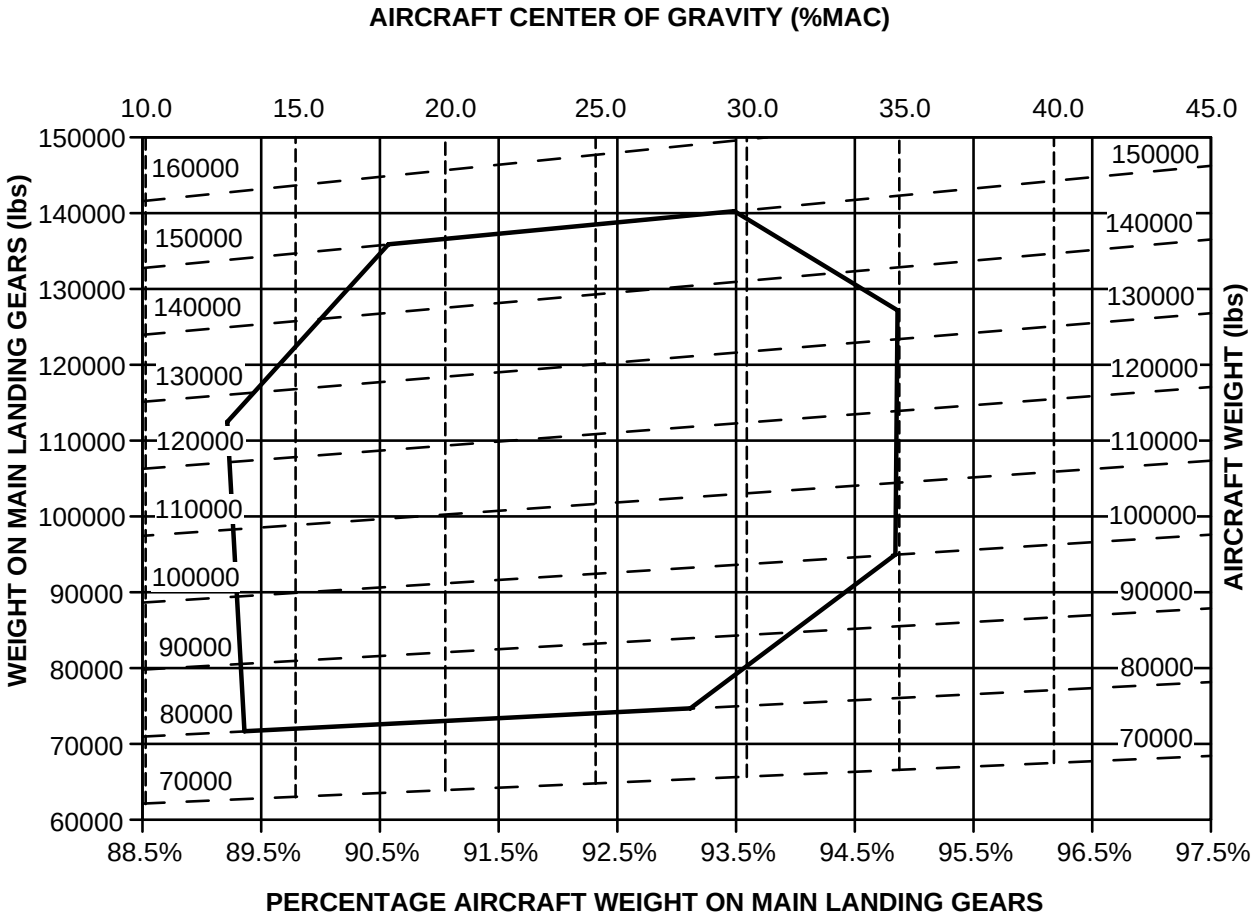
ICN-BD500-A-J000000-A-3AB48-21629-A-001-01

Figure 9 Landing gear footprint

7 Maximum pavement loads

The maximum pavement load is given at aircraft CG,weight on Main Landing Gear (MLG) and aircraft weight.

Refer to Fig. 10 for graphical format.



LEGEND

- Aircraft center of gravity.
- Aircraft weight.
- A220-300 ground center of gravity envelope.

ICN-BD500-A-J000000-C-3AB48-58657-A-001-01

Figure 10 Maximum pavement load

Principal dimensions, landing gear footprint - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Principal dimensions, landing gear footprint - Technical data 1
References 1
Description 1
1 Introduction 1

List of tables

Page

1 References 1
2 Landing gear footprint dimensions 1
3 Landing gear footprint dimensions 2

List of figures

Page

1 Landing gear footprint 3

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

This data module contains data on the landing gear footprint.

Applicability: 50001-54999

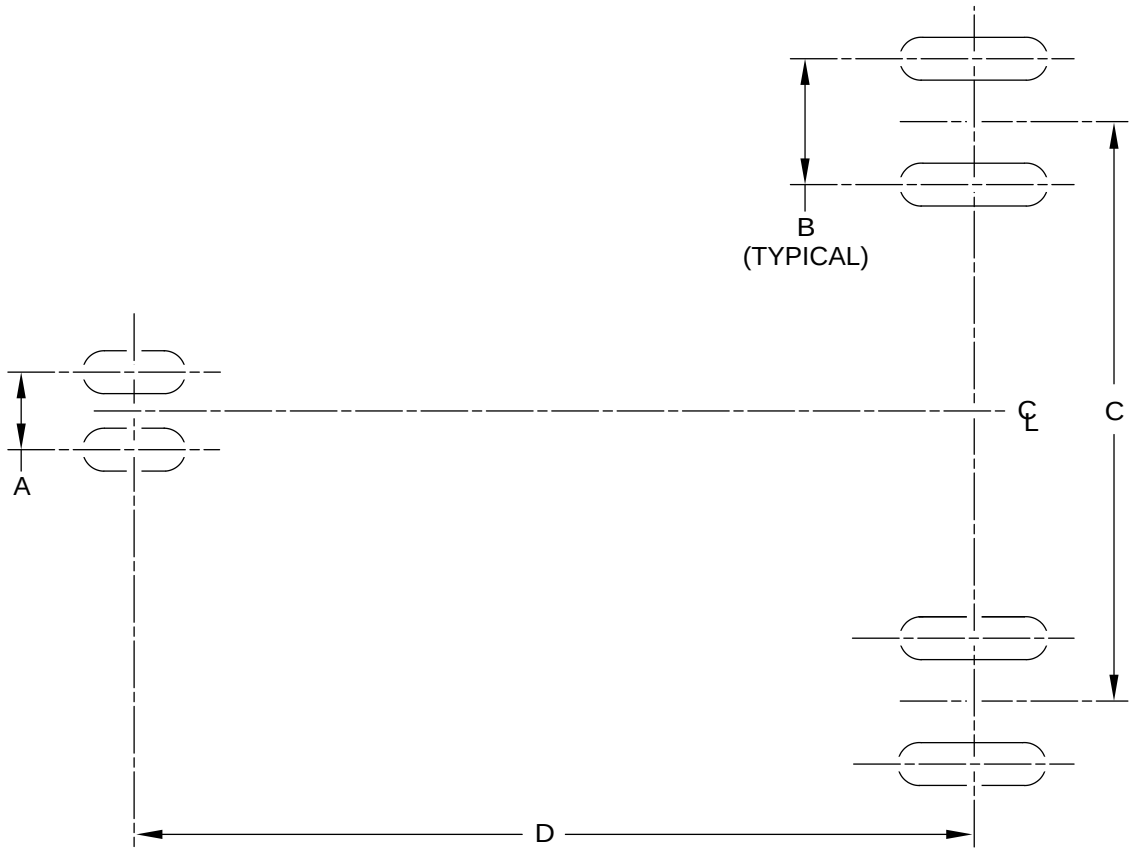
Table 2 Landing gear footprint dimensions

Locator	Value
A	18.57 in. (47.17 cm)
B	35.00 in (88.90 cm)
C	22.08 ft. (6.73 m)
D	42.98 ft (13.10 m)

Applicability: 55001-59999

Table 3 Landing gear footprint dimensions

Locator	Value
A	18.57 in. (47.17 cm)
B	35.00 in (88.90 cm)
C	22.08 ft. (6.73 m)
D	49.98 ft (15.23 m)



NOTE

Not to scale.

ICN-BD500-A-J061032-A-3AB48-00118-A-001-01

Figure 1 Landing gear footprint

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A220

Chapter 8: Scaled drawing

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Scaled drawings - Technical data

Applicability: 50001-54999

Table of contents

Page

Scaled drawings - Technical data 1
References 1
Description 1
1 Introduction 1

List of tables

Page

1 References 1

List of figures

Page

1 Scaled drawing 2

References

Table 1 References

Data Module/Technical Publication	Title
None	

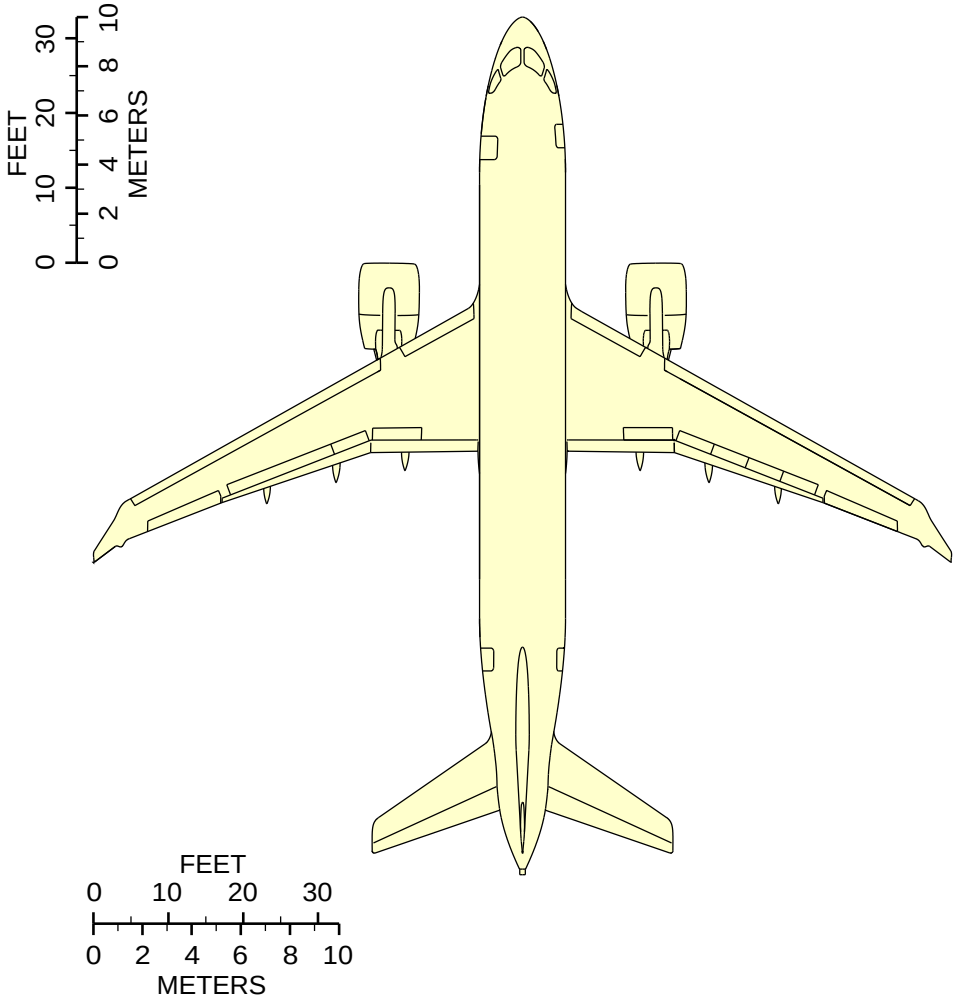
Description

1 Introduction

This data module contains the scaled drawings for the Airbus A220 BD500–1A10 (A220-100).

It can be used to plan and to verify runway, ramp, and maintenance facility layouts.

Refer to Fig. 1 for the scaled drawing.



NOTES

1. Scale: 1 in. = 25 ft (1 cm = 3 m)
2. When printing this illustration, make sure to adjust for proper scaling.

ICN-BD500-A-J000000-A-3AB48-23312-A-001-01

Figure 1 Scaled drawing

A220

Scaled drawings - Technical data

Applicability: 55001-59999

Table of contents

Page

Scaled drawings - Technical data 1
References 1
Description 1
1 Introduction 1

List of tables

Page

1 References 1

List of figures

Page

1 Scaled drawing 2

References

Table 1 References

Data Module/Technical Publication	Title
None	

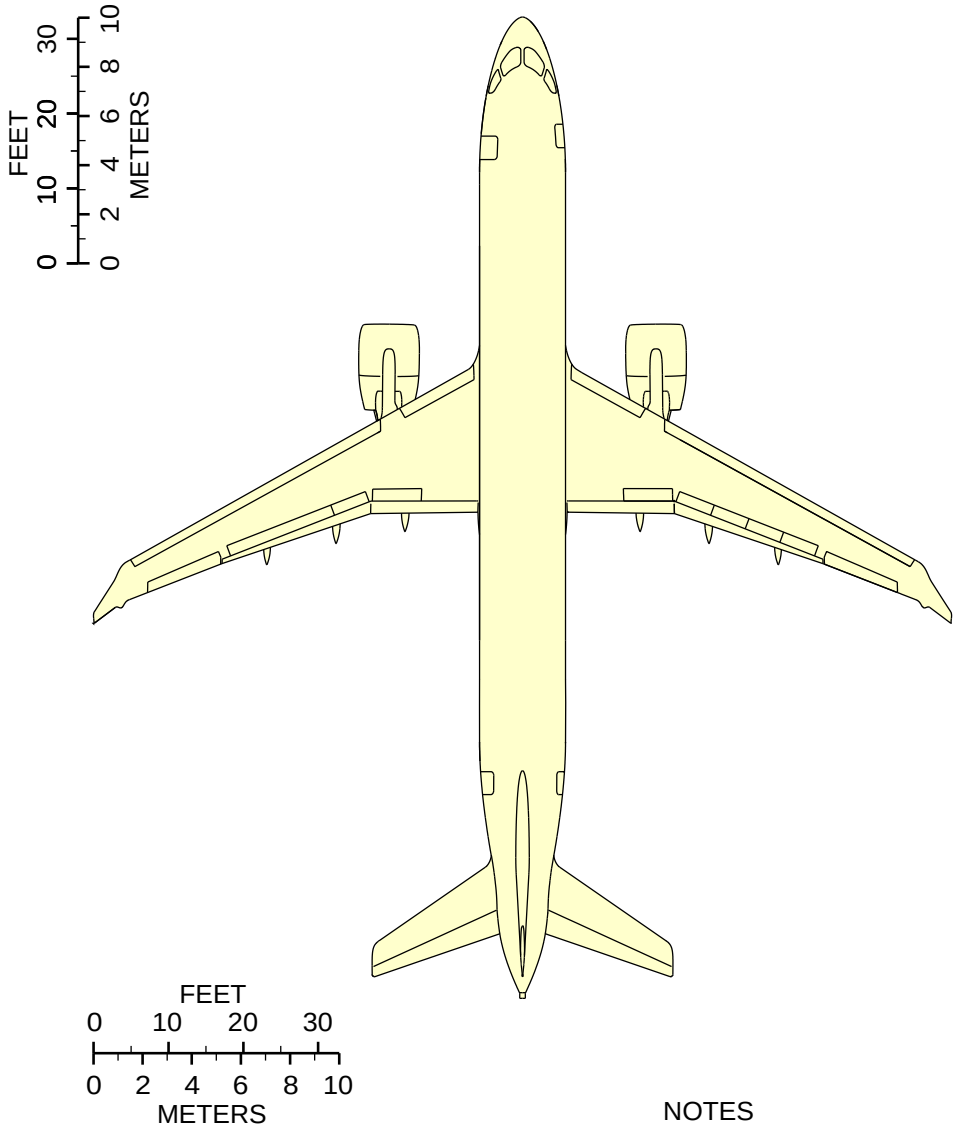
Description

1 Introduction

This data module contains the scaled drawings for the Airbus BD500–1A11 (A220-300).

It can be used to plan and to verify runway, ramp, and maintenance facility layouts.

Refer to Fig. 1 for the scaled drawing.



NOTES

1. Scale: 1 in. = 25 ft (1 cm = 3 m)
2. When printing this illustration, make sure to adjust for proper scaling.

ICN-BD500-A-J000000-A-3AB48-23263-A-001-01

Figure 1 Scaled drawing

Aircraft scaled down dimensions - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Aircraft scaled down dimensions - Technical data 1
References 1
Description 1
1 Introduction 1

List of tables

Page

1 References 1

List of figures

Page

1 Scaled drawing 2

References

Table 1 References

Data Module/Technical Publication	Title
None	

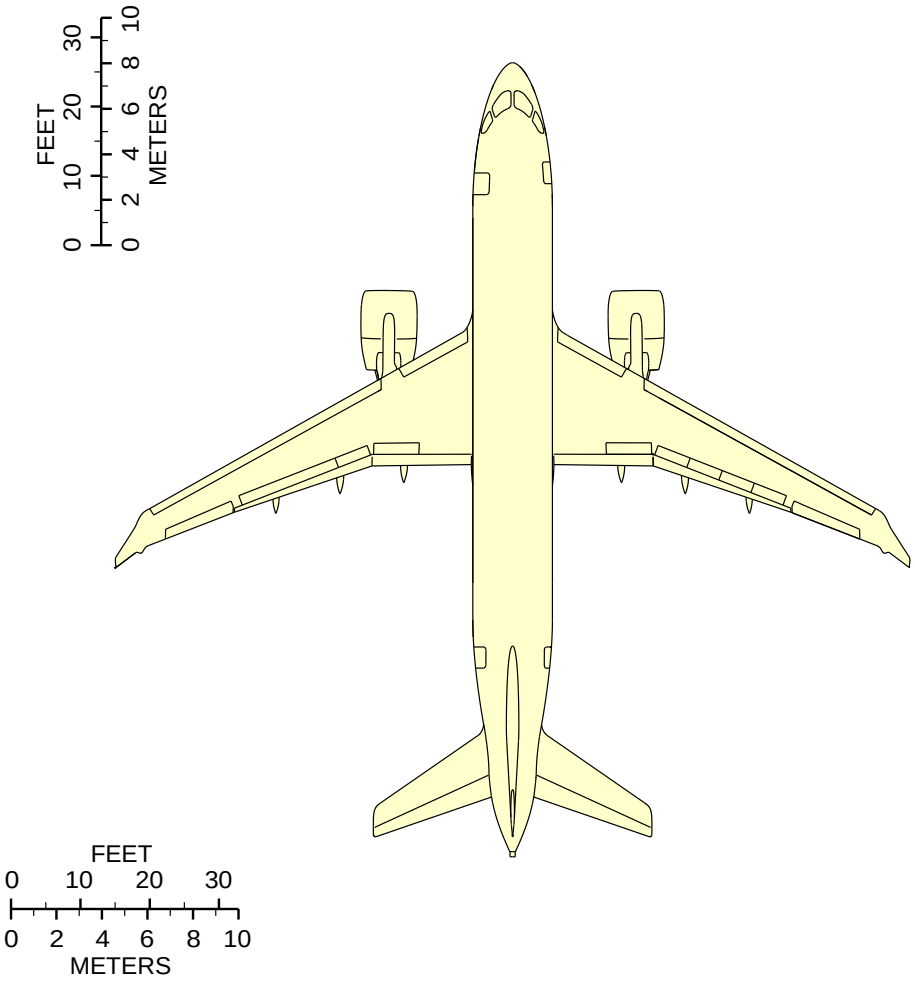
Description

1 Introduction

This data module contains the scaled drawing for the Airbus A220. It can be used to plan and to verify runway, ramp, and maintenance facility layouts.

Refer to Fig. 1 .

(Sheet) Applicability: 50001-54999



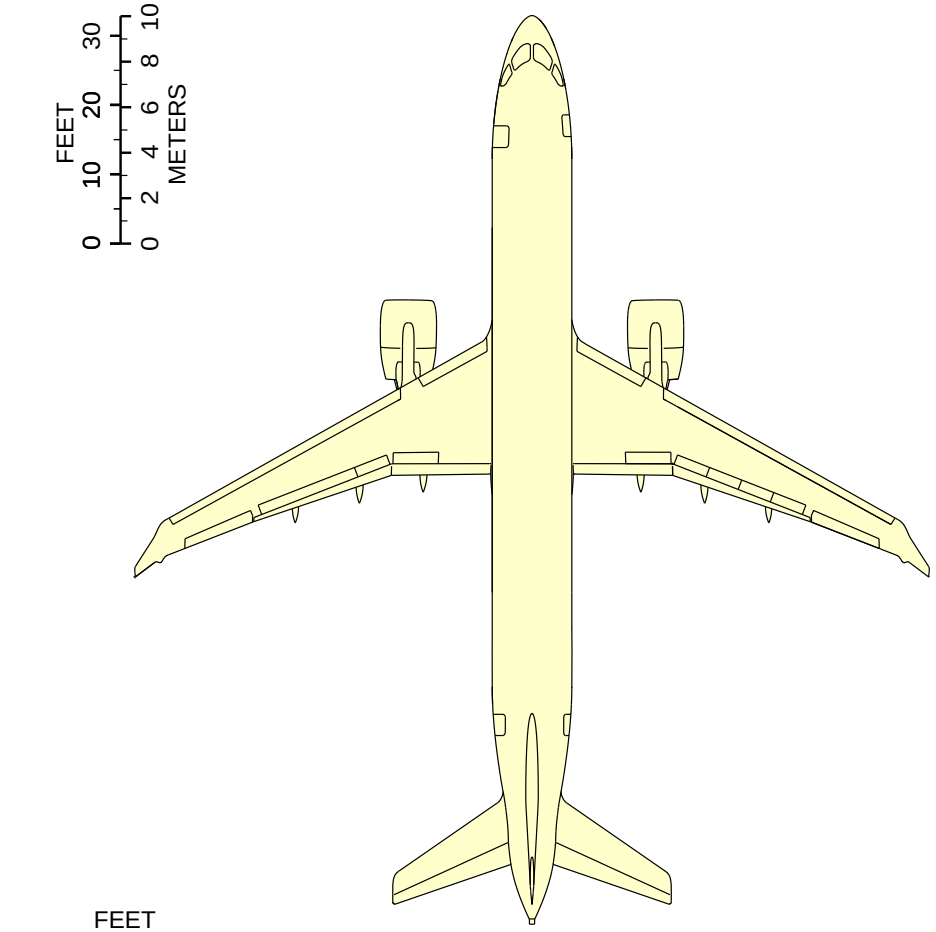
NOTES

1. Scale: 1 in. = 25 ft (1 cm = 3 m)
2. When printing this illustration, make sure to adjust for proper scaling.

ICN-BD500-A-J061000-A-3AB48-00006-A-001-01

Figure 1 Scaled drawing - (Sheet 1 of 2)

(Sheet) Applicability: 55001-59999



NOTES

1. Scale: 1 in. = 25 ft (1 cm = 3 m)
2. When printing this illustration, make sure to adjust for proper scaling.

ICN-BD500-A-J061000-A-3AB48-25078-A-001-01

Figure 1 Scaled drawing - (Sheet 2 of 2)

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A220

Chapter 10: Aircraft rescue and fire fighting

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A220

Emergency exits and evacuation - Technical data

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Emergency exits and evacuation - Technical data 1
References 1
Description 1
1 General 1
1.1 Emergency exits and evacuation 1
1.1.1 Passenger doors 2
1.1.2 Service doors 2
1.1.3 Overwing Emergency Exit Door (OWEED) 2
1.1.4 Flight Crew Emergency Escape (FCEE) door 3

List of tables

Page

1 References 1

List of figures

Page

1 Emergency exits and evacuation 4

References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This section contains general data about the BD-500-1A10 (A220-100) and BD-500-1A11 (A220-300) aircraft emergency exits and evacuation procedures.

1.1 Emergency exits and evacuation

The emergency exits give the passengers and crew more exits which let them go out of the aircraft more quickly during an emergency. Seven exits are available if an emergency occurs, as follows

- Two passenger doors (front and aft, left side of the aircraft);
- Two service doors (front and aft, right side of the aircraft);
- Two Overwing Emergency Exit Door (OWEED) (one in each side of the aircraft);
- One Flight Crew Emergency Escape (FCEE) door (flight compartment).

Refer to Fig. 1 .

1.1.1 Passenger doors

Two semi-plug type doors on the left side of the aircraft give access to the passengers and the crew. Door 1L is the primary entrance while door 2L gives a secondary entrance available for passenger and ground servicing.

Each door is classified as a type C floor level exit. Because of the sill height, each door has an emergency evacuation slide system. The door moves out from the closed position, supported by a hinged arm to stay in the open position.

The door can be operated externally or internally and has an inspection window to let the crew examine the external condition. The external handle is connected to a vent flap system to equalize the pressure between the aircraft and the ambient air.

Door opening procedure (from the external side):

Note

Before you open the doors, make sure that you fully release the pressure from the aircraft. The CABIN PRESSURE warning light panel is installed in the door window.

1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).

2 Pull the external handle (Fig. 1) up to lift the door.

3 Pull the door outwards in forward direction.

4 Make sure that the hold open mechanism locks the door in the open position.

1.1.2 Service doors

Two semi-plug type doors on the right side of the aircraft give access to the forward and aft galley servicing area.

Each door is classified as a type C floor level exit. Because of the sill height, each door has an emergency evacuation slide system. The door moves out from the closed position, supported by a hinged arm to stay in the open position.

The door can be operated externally or internally and has an inspection window to let the crew examine the external condition. The external handle is connected to a vent flap system to equalize the pressure between the aircraft and the ambient air.

Door opening procedure (from the external side):

Note

Before you open the doors, make sure that you fully release the pressure from the aircraft. The CABIN PRESSURE warning light panel is installed in the door window.

1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).

2 Pull the external handle (Fig. 1) up to open the door.

3 Pull the door outwards in forward direction.

4 Make sure that the hold open mechanism locks the door in the open position.

1.1.3 Overwing Emergency Exit Door (OWEED)

The OWEED are type III semi-plug type doors.

The exits are provided with an operating handle with removable cover and are fitted with a standard sized passenger compartment window. Each door is fully lined and insulated to meet thermal and noise performance requirements.

The door opens out and up from the closed position, supported by a hinged arm to stay in the open position. An actuator automatically helps the door opening sequence.

For emergency access to the passenger compartment, the doors can be opened from the external side. Escape ropes are available to help the evacuation.

Because of the height from the ground, an emergency evacuation slide system is given.

Note

The evacuation slide system is automatically operated when the OWEED is opened from the external side. Remove all equipment and personnel from the area where the emergency evacuation slide will be open.

OWEED opening procedure (from the external side):

1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).

2 Pull the external handle (Fig. 1) up to open the door.

3 Pull the door outwards.

4 Make sure that the hold open mechanism locks the door in the open position.

1.1.4 Flight Crew Emergency Escape (FCEE) door

The FCEE door is on the fuselage centerline at the top of the fuselage, forward of the flight compartment bulkhead. It is a plug type door that has two hook type hinges on the aft edge.

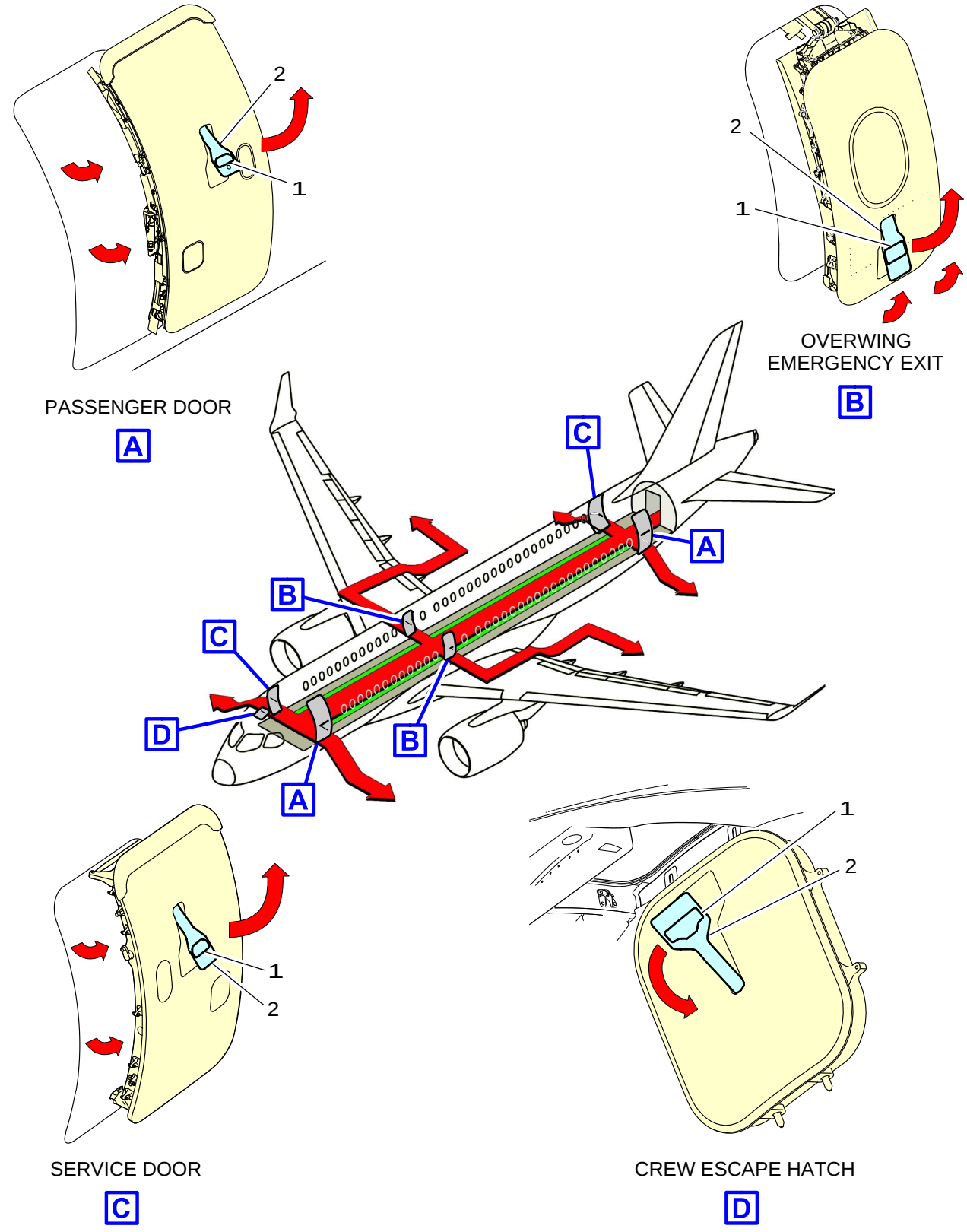
The FCEE door opens in and can be removed from its hinges when it is fully open. The door can be operated externally or internally through its inner and outer handles.. A escape rope is available in the area to help the evacuation.

FCEE door opening procedure (from the external side):

1 Push the flap (Fig. 1) to hold the external handle (Fig. 1).

2 Pull the external handle (Fig. 1) up to open the door.

3 Push the door in.



ICN-BD500-A-J154100-A-3AB48-24914-A-001-01

Figure 1 Emergency exits and evacuation

A220

Fire-fighting - Fire-fighting and rescue

Applicability: 50001-54999, 55001-59999

Table of contents

Page

Fire-fighting - Fire-fighting and rescue 1
References 1
Common information 1
Preliminary requirements 1
Procedure 2
Requirements after job completion 6

List of tables

Page

1 References 1
2 Required conditions 1
3 Support equipment 2
4 Consumables, materials, and expendables 2
5 Spares 2
6 Recommended fire fighting agents 3
7 Required conditions 6

List of figures

Page

1 Fire indication and control / Flammable material location 4
2 Fire-fighting 5

References

Table 1 References

Data Module/Technical Publication	Title
BD500-A-J25-61-00-00AAA-010A-A	Emergency equipment location - General data
BD500-A-J15-41-00-01AAA-030A-A	Emergency exits and evacuation - Technical data

Common information

This data module gives the procedure to follow if the aircraft is on fire.

Preliminary requirements

Required conditions

Table 2 Required conditions

Action/Condition	Data Module/Technical publication
None	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
None			

Consumables, materials, and expendables

Table 4 Consumables, materials, and expendables

Name	Identification/Reference	Quantity	Remark
None			

Spares

Table 5 Spares

Name	Identification/Reference	Quantity	Remark
None			

Safety conditions

None

Procedure

1 If the aircraft is on fire do as follow:

WARNING

Only trained personnel must fight the fire. Fire-fighting is dangerous and can cause injury or death.

1.1 Refer to Fig. 1 for:

- Flammable material location.
- Battery location
- Control switch location

1.2 Evacuate the aircraft, if applicable. For emergency exits and evacuation refer to BD500-A-J15-41-00-01AAA-030A-A.

1.3 If possible, move the aircraft to a safe area.

1.4 Get access to the emergency equipment available in the aircraft, if applicable. For emergency equipment location refer to BD500-A-J25-61-00-00AAA-010A-A.

1.5 In the flight deck control, use the control panels to extinguish fire in:

- Left engine
- Right engine
- Auxiliary Power Unit (APU)
- Cargo compartment

Refer to Fig. 1 .

WARNING

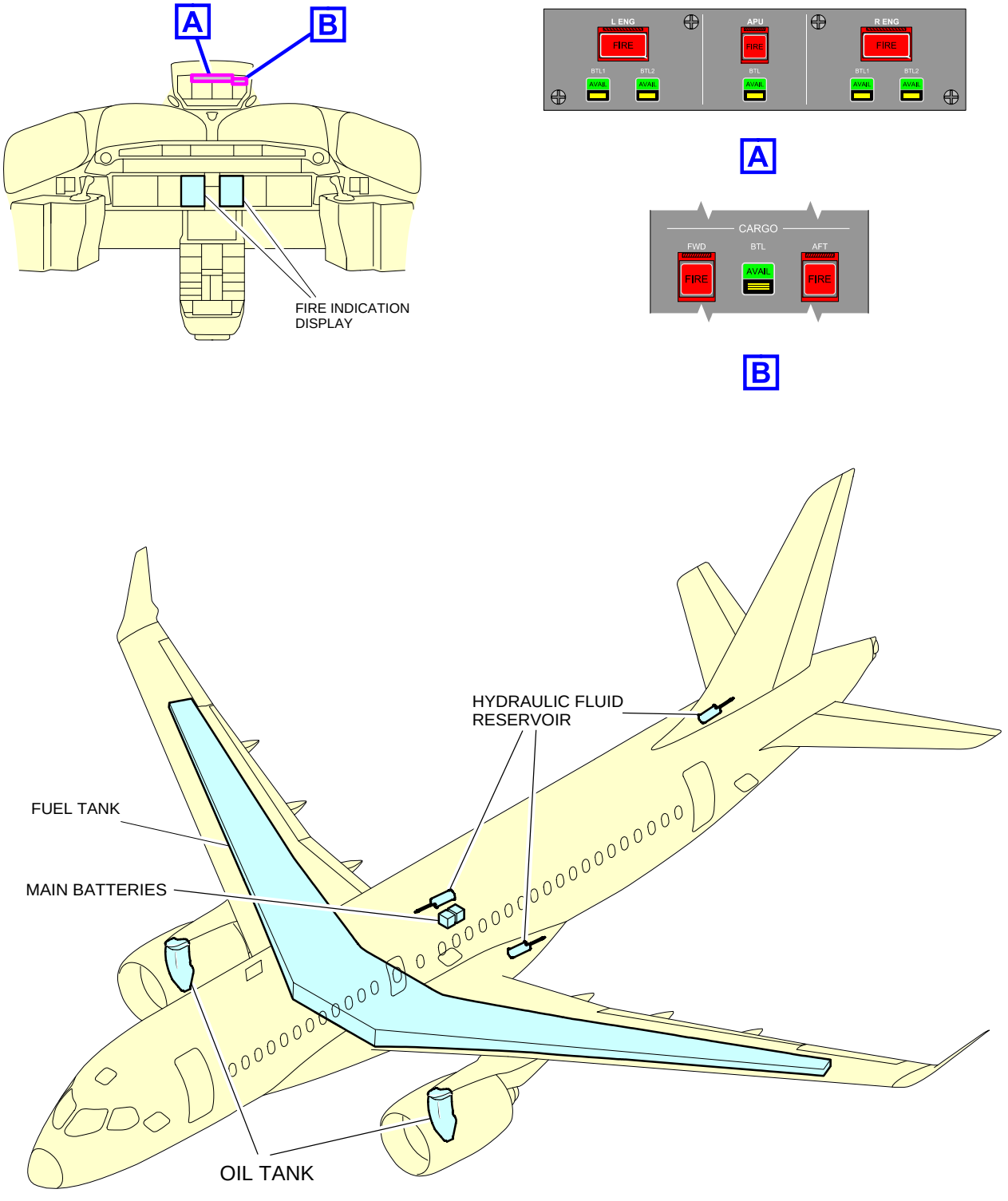
The weakest area on a tire is the sides. Go near the tire by the front or rear to prevent injuries to personnel.

1.6 If the brakes are hot, apply a water mist to decrease the temperature of the brakes. Refer to Fig. 2 .

1.7 Refer to table below for the complete list of recommended fire fight agents.

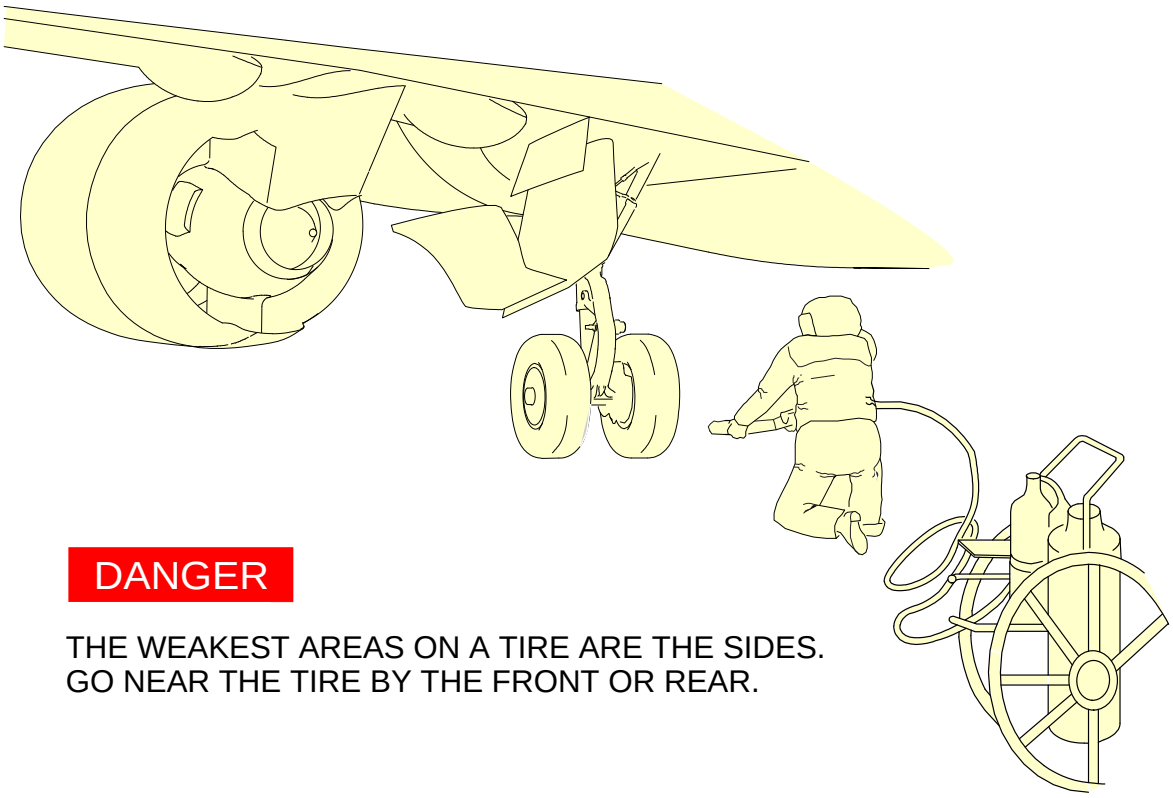
Table 6 Recommended fire fighting agents

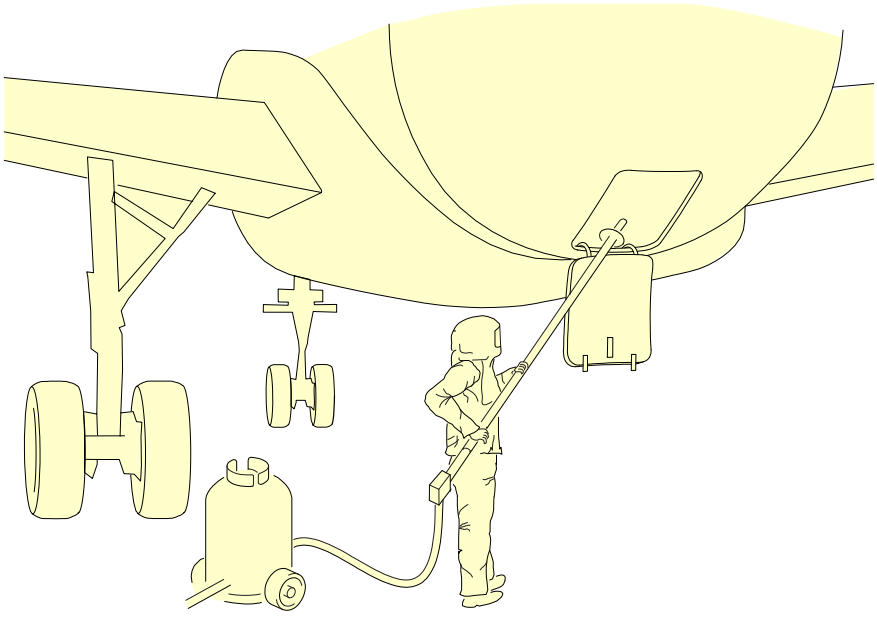
Engine fire	Clean agent or dry chemical
Exhaust nozzle fire	Clean agent or dry chemical
APU fire	Clean agent or dry chemical
Fuel fire	Dry chemical for leaking fuel and foam for ground spill area
Wheel and brake fire	Water or dry powder
Electrical fire	Clean agent or dry chemical
Flight compartment and cabin area fire	Clean agent 1211, or dry powder, or water extinguisher
Cargo compartment fire	Clean agent
Aft equipment compartment fire	Clean agent



ICN-BD500-A-J154100-A-3AB48-25025-A-001-01

Figure 1 Fire indication and control / Flammable material location





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Figure 2 Fire-fighting

Requirements after job completion

Required conditions

Table 7 Required conditions

Action/Condition	Data Module/Technical publication
None	