A220

Master

Aircraft characteristics publication ACP

BD500-3AB48-13800-00
Issue No. 005

Publication No.: BD500-3AB48-13800-00

Manufacturer:

AIRBUS

Airbus Canada Limited Partnership
Customer Services
13100 Henri-Fabre Blvd., Mirabel, Quebec
Canada J7N 3C6

Applicable to: All

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Highlights

Issue 005

The listed changes are introduced in Issue 005, dated 2024-07-18, of this publication.

Data module code	Reason for change
BD500-A-J00-00-00-03AAA-030A-A	New Data Module To do rebranding.
BD500-A-J00-00-00-05AAA-030A-A	New Data Module To add hangar proposed arrangement visual
BD500-A-J00-00-00-06AAA-030A-A	New Data Module To do rebranding.
BD500-A-J00-00-00-07AAA-030A-A	New Data Module To do rebranding.
BD500-A-J00-00-00-11AAA-030A-A	Changed Data Module To update the procedure.
BD500-A-J00-00-00-11AAB-030A-A	Changed Data Module To update the procedure

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Technical Publications Comment form

AIRBUS A220

TO: **MCR FOCAL, TECHNICAL PUBLICATIONS AIRBUS CANADA LIMITED PARTNERSHIP** **13100, BOULEVARD HENRI-FABRE** **MIRABEL, QUEBEC, CANADA, J7N 3C6** **E-MAIL ADDRESS: A220_UCFocal@abc.airbus**	**Name of airline:** **A220 reference #:** **Date:** dd-mmm-yyyy

All fields marked with an asterisk* are required

Contact information

*Name:	*Corporation name:	*Dept name/Code:
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I would like to receive notification of actions on this request. NOTE: Responses will only be sent by electronic mail

Publication information

*Aircraft type:		*Aircraft model:	*Publication Module Code (PMC):
*Publication title/Issue:	*Media Type: ☐ Paper ☐ Web	*Data Module Code (DMC):	*DMC issue date:
Data module title:		Originator's reference number:	

*Comments:

Reason for change:

Reference data provided: ☐ Yes ☐ No Description:

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Change record

Make sure that the previous issues have been incorporated.

Incorporated issues must be recorded with the date of incorporation and a signature.

Issue	Incorporated date	by (signature)	Issue	Incorporated date	by (signature)
001	Oct 19/2023	Signature on file	000		
002	Nov 16/2023	Signature on file	000		
002-01	Nov 30/2023	Signature on file	000		
003	Dec 14/2023	Signature on file	000		
003-01	May 23/2024	Signature on file	000		
004	Jun 20/2024	Signature on file	000		
004-01	Jun 27/2024	Signature on file	000		
004-02	Jul 11/2024	Signature on file	000		
005	Jul 18/2024	Signature on file	000		
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List of effective data modules

The listed documents are included in Issue 005, dated 2024-07-18, 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 Char- act eristics - Introduction	BD500-A-J00-00-00-20AAA-018A-A		2023-09-15	3	50001-54999
A220-300 Aircraft Char- act 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
Analysis of necessary equipment - Technical data	BD500-A-J00-00-00-03AAA-030A-A	N	2019-08-12	4	50001-54999, 55001-59999
Necessary hangar space - Technical data	BD500-A-J00-00-00-05AAA-030A-A	N	2016-04-14	4	50001-54999, 55001-59999
Equipment needs - Tech- nical data	BD500-A-J00-00-00-06AAA-030A-A	N	2019-08-13	24	50001-54999, 55001-59999
Utilities - Technical data	BD500-A-J00-00-00-07AAA-030A-A	N	2019-08-13	4	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		2023-11-27	35	50001-54999
Aircraft description - Technical data	BD500-A-J00-00-00-12AAB-030A-A		2023-11-27	39	55001-59999
Aircraft dimensions - Technical data	BD500-A-J06-10-00-00AAA-030A-A		2023-11-01	13	50001-54999, 55001-59999
Nacelle and pylon sta- tions - 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 - Gen- eral maintenance proce- dure	BD500-A-J10-10-02-01AAA-913A-A		2017-08-08	5	50001-54999, 55001-59999
Forward cargo compart- ment volume, weight and maximum item dimen- sions - Technical data	BD500-A-J14-20-00-01AAA-030A-A		2023-03-23	12	50001-54999, 55001-59999

Document title	Data module code		Issue date	No. of pages	Applicable to
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
Operating conditions - Technical data	BD500-A-J00-00-00-17AAA-030A-A		2023-11-24	13	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	32	50001-54999
Ground maneuvering - Technical data	BD500-A-J00-00-00-19AAB-030A-A		2019-10-22	32	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
Wheel chocks - Handling procedure	BD500-A-J10-16-01-01AAA-912A-A		2024-05-15	6	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	C	2024-06-20	66	50001-54999
Pavement data - Technical data	BD500-A-J00-00-00-11AAB-030A-A	C	2024-07-04	40	55001-59999

Document title	Data module code	Issue date	No. of pages	Applicable to
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
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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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	2023-11-24	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
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
Wheel chocks - Handling procedure	BD500-A-J10-16-01-01AAA-912A-A	2024-05-15	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	2024-06-20	50001-54999
Pavement data - Technical data	BD500-A-J00-00-00-11AAB-030A-A	2024-07-04	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

Chapter 1: Scope

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A220-100 Aircraft Characteristics - Introduction

Applicability: 50001-54999

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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.

End of data module

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A220-300 Aircraft Characteristics - Introduction

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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.

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.

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- Ground maneuvering
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Chapter 2: Aircraft description

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Aircraft characteristics - Technical data

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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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Analysis of necessary equipment - Technical data

Applicability: 50001-54999, 55001-59999

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Data Module/Technical Publication	Title
None	

Description

1 General

This section identifies and gives an analysis of the equipment necessary to do maintenance on the A220 aircraft.

Refer to the lists that follow for the equipment and facilities that you must have for aircraft maintenance and servicing. These lists show the different functions that a maintenance or service center (or an approved external subcontractor) must provide to support the operator's aircraft.

Usually, it is best for a maintenance facility to have all the shops and equipment necessary on-site to do maintenance. But, to try to lower repair costs and decrease turnaround times, it can sometimes be more cost-effective to use the facilities and services of approved external vendors as an alternative to your own service or repair facilities.

If an operator decides to use an external service or repair facility, they must first examine how much of the aircraft maintenance to keep on-site and how much to contract out to an external services facility. The operator should first identify what equipment, components, or parts are necessary to do repairs and/or an overhaul at their own maintenance facility. If some of the necessary equipment is not available, or it is not cost-effective to purchase/rent, then the operator should probably use an external (off-site) maintenance or services facility to do these maintenance functions.

During the initial planning stage, it is important that the operator look at the type of the maintenance to be done at the operator's facilities and the overhaul equipment that is necessary to do the job. After a check of the work flow processes, the operator must calculate the space allocation necessary and what equipment and supplies for the shop facilities must be purchased, in order to calculate an approximate cost estimate. As the planning stage continues, more accurate costs will become known which will give a more accurate estimate of the total costs necessary in the production of the operator's maintenance facility.

The typical maintenance facility has the areas, shops and rooms that follow, as applicable:

- Hangar areas for maintenance
- Aircraft apron
- Aircraft maintenance support shops
- Component overhaul shops
- Stock rooms
- Administrative offices and auxiliary facilities
- Utilities.

1.1 Hangar areas for maintenance

These are the areas that should be provided:

- Hangar
- Work stands and docks
- Cranes, stands and docks
- Service pits for electricity, air and fuel

1.2 Aircraft apron

These are the areas that should be provided:

- Aircraft maintenance aprons
- Aircraft parking aprons
- Taxiways
- Wash rack
- Blast fences and noise suppressors

1.3 Aircraft maintenance support shops

These are the areas that should be provided:

- Wheels, brakes and tires
- Power plant and Auxiliary Power Unit (APU) (quick engine change)
- Sheet metal/composites
- Avionics
- Interiors and seats
- Aircraft cleaners

1.4 Component overhaul shops

These are the areas that should be provided:

- Sheet metal
- Composite structures
- Parts cleaning
- Painting
- Plating
- Welding
- Heat treating
- Machining
- Engine / power plant
  - Module replacement
  - Module overhaul
  - Test cell
- Auxiliary power unit
- Hydraulic
- Pneumatic
- Mechanical accessories
- Fuel components
- Battery
- Electrical
- Landing gear
- Wheels, brakes and tires
- Avionics
  - Communications
  - Navigation
- Instruments, electrical
- Instruments, mechanical
- Bottled gas (O_2, N_2, CO_2)
- Seats and interiors
- Galley refrigeration
- Non-destructive testing and laboratories

1.5 Stock rooms

These are the areas that should be provided:

- Aircraft spares
- Consumable materials
- Combustible materials

- Tool cribs
- Receiving and shipping
- Quarantine area (for faulty or rejected items)

1.6 Administrative offices and auxiliary facilities

These are the areas that should be provided:

- Maintenance administration office
- Maintenance support office
- Quality control and reliability
- Engineering
- Manufacturer’s representatives
- Computer services
- Medical station
- Security
- Cafeteria
- Toilets, washrooms, and lockers
- Building maintenance

1.7 Utilities

These are the areas that should be provided:

- Electricity (main and emergency)
- Water
- Sewage and wastewater
- Telephone
- Heating, ventilation, and air conditioning
- Compressed air

Necessary hangar space - Technical data

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
BD500-A-J06-10-00-00AAA-030A-A	Aircraft dimensions - Technical data

Description

1 General

The first facility an operator may want to consider is the maintenance hangar. The number of hangar positions is dependant on the number of aircraft types, the number of aircraft per type, aircraft utilization, maintenance check frequency (scheduled, unscheduled, equalized), the elapsed time required to perform maintenance checks, and the number of working hours available per day.

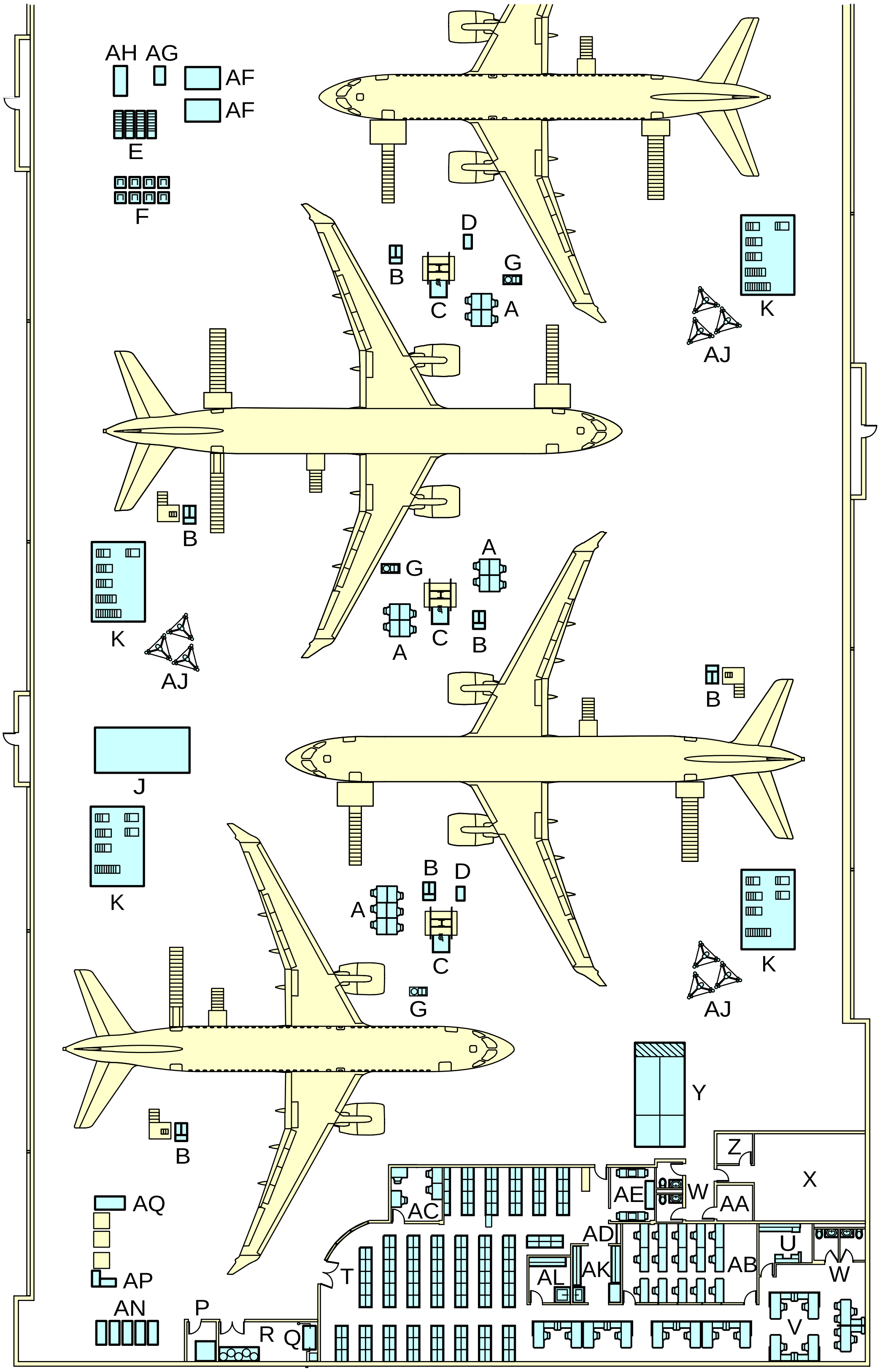
Hangar proposed arrangement is provided in Fig. 1 to assist in determining location, size, and clearance requirements for Ground Support Equipment (GSE), tools and workstands, refer to Table 2 for a legend. Aircraft parking space requirements can also be determined from Fig. 1 and to BD500-A-J06-10-00-00AAA-030A-A for aircraft dimensions.

Table 2 Hangar arrangement legend for Ground Support Equipment (GSE) and tools.

Reference letter	Description
A	Desks and reference tables
B	Tool boxes
C	Eye wash station
D	Spill kit

Reference letter	Description
E	Main Landing Gear (MLG) ladder station
F	Avionic station
G	Garbage and recycling station
H	Ladder storage/parking
J	Mule
K	Ladders parking
L	Oxygen/nitogen
M	Racks and shelves
N	Carts and charging stations
P	Sanding room
Q	Used oil tank
R	Oil warehouse
S	Store office
T	Rack and shelves
U	Kitchen
V	Office
W	Washrooms
X	Sprinkler room
Y	Nacelles parking
Z	Electrical room
AA	Conference room
AB	Avionic lab
AC	Service desk
AD	Lockers
AE	Printing room
AF	Ground Power Unit (GPU)
AG	Hydraulic cart
AH	Latchways vaccuum anchor

Reference letter	Description
AJ	Supports and jacks
AK	Coffee area
AL	Cleaning room
AM	Air conditioning room
AN	Servicing carts
AP	Drop area for parts
AQ	Oxygen and nitrogen



ICN-BD500-A-J000000-A-3AB48-29850-A-001-01

Figure 1 Hangar arrangement

A220

Equipment needs - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

This section describes the equipments you need for the hangar, with its support shops. The support shops can be divided into the three groups that follow:

- Technical group;
- Technical support group;
- Administrative group.

2 Technical group

There are certain repair and support shops which are closely related to line maintenance. Storage areas for repairable items and consumable materials as well as tool cribs are all necessary elements of the repair facilities.

The level of maintenance work to be done by the line maintenance shops and the availability of fully equipped shops to assist in the more extensive maintenance tasks are necessary when you plan the size and functions of the line maintenance shops. The line maintenance shops can be housed in the overhaul facilities if the hangar and the overhaul shops are closely attached.

Any level of maintenance facility should integrate a guide for effective and efficient workplaces and instructions to promote continued safety and efficiency. The health and safety of their employes at their respective work stations, laboratories and office space is also a factor to consider as necessary elements of the facility.

Maintenance facilities must be capable of changing avionics, components, engine/APU and wheels as necessary, with shop tasks such as the overhaul of these units or components which can be contracted to approved outside service facilities. Heat treating, plating/coating, some non-destructive testing/inspection, and other such special work is usually given to external contractors unless the maintenance facilities are sufficiently equipped or are too far from an approved external service facility.

The technical group has the shops that follow:

- Maintenance shop
- Battery shop
- Tire/Wheel shop
- Tube shop
- Refinishing shop (paint/composites)
- Avionics/Electrical laboratory/shop
- Engine build-up shop
- Hydraulic shop
- Composite clean room
- Non-destructive test shop.

2.1 Maintenance shop

The primary function of this shop is to make some parts (approved by Engineering), repairs, install pins and bearings, and to do small welding repairs.

Table 2 Maintenance shop

Nomenclature	Quantity
Work benches	3
Vises	3
Drill press	1
Cabinet for metal sheet	1
Metal shears (heavy duty)	1
Metal shears (light duty)	1
Band saw	1
Grinder/Buffer	1
Buffer	1
Disc and belt sander	1
Welder (dial arc)	1
Welder (tungsten arc)	1
Welding screen (portable)	1
Welding gas for the TIG welder	A/R
Storage cabinet (wall) for fasteners, bolts, and washers	1
Desk	1
Chair	1

Nomenclature	Quantity
Storage cabinet that is resistant to explosions	1
Alodine bath (for small parts)	1
Wash tank 20 gallons (75.70 l) capacity	1
Storage rack for sheet metal	1
Sandblaster	1
Dry ice container (to freeze bearings)	1
Smoke detector	A/R
Metal break	1
Slip roll (forming machine)	1
Small press	1
Flypress (hand)	1
Small lathe	1
Stand for lathe tools	1
Spot welder	1
Sheet metal shrinker/spreader	1
Tool box with cabinet (fully equipped for the mechanic)	1
Right angle guillotine	1
Milling machine	1
Honing machine	1
Fire extinguishers 150 lb (68.2 kg) purple K, with wheels	2
Hot and cold water supply	A/R
Drinking water fountain	1
Central vacuum line attached to the grinder and sander	1
Vacuum pump	1
Rivet guns (air-operated)	2
Hand router (air-operated)	1
Metal spreader roller	1 set
Metal stamps (numbers/letters) 1/16 in. (1.6 mm) high	1 set

Nomenclature	Quantity
Etching tool (electrical vibrator)	1
Stand for milling machine tools	1
Stand for honing machine tools	1
Garbage containers	2
Eye bath	1
First aid kit	1

Maintenance shop dimensions: 32.5 ft x 32.5 ft (10.0 m x 10.0 m). Total area 1056.25 ft² (100.0 m²)

2.2 Battery shop

WARNINGS

- **When you do maintenance on the battery, make sure that you have a good flow of air. Explosive gases can be released. A concentration of these gases can cause injury to persons and/or damage to equipment.**
- **Be careful when you do work with a Ni-Cad battery. A solution of potassium hydroxide and water makes electrolyte in Ni-Cad batteries. To make the electrolyte of a Ni-Cad battery neutral, use a 3% solution of acetic acid, vinegar, or lemon juice, or a 10% solution of boric acid. The electrolyte in a Ni-Cad battery is very corrosive and can cause burns.**

The battery shop is a part of the “Component repair and overhaul shops“. Also in the “Component repair and overhaul shops“ are the tube shop, the composite shop, and the throttle quadrant shop.

The battery shop must have a non-slip floor surface treated with epoxy. Also, it must have good airflow with no acidic fumes.

The shop does maintenance on Nickel-Cadmium (Ni-Cad) batteries. It has the necessary equipment to make an analysis of these batteries, to deep cycle and also to charge them.

Note

A solution of potassium hydroxide and water makes the electrolyte in Ni-Cad batteries. Make this electrolyte neutral with a 3% solution of acetic acid, vinegar, lemon juice, or a 10% solution of boric acid.

Make sulfuric acid neutral with baking soda before you discard unserviceable batteries. Also, obey the local environmental regulations when you discard these or other dangerous materials.

Make sure to keep lead-acid and Ni-Cad batteries isolated. The fumes from lead−acid batteries can cause contamination of Ni-Cad batteries and decrease their efficiency.

Table 3 Battery shop

Nomenclature	Quantity
Air conditioner	1
Battery wash through (alkali resistant) with hot/cold water	1
Wooden benches with cupboards (alkali resistant)	2
Portable battery chargers/analyzers	2
Wooden shelf unit to keep various parts	1
Plastic containers (with covers)	2
Container for potassium hydroxide	1
Container for sulfuric acid	1
Water filter	1
Cart to move the batteries	1
Cabinet for tool storage	1
Water heater	1
Battery charger/analyzer	1
Desk	1
Chair	1
Shelf unit to charge batteries installed in place	1
Ventilation fan	1
Plastic bottles 1 qt. US (946.3 ml)	2
Container to make potassium hydroxide neutral (3% solution of acetic acid, vinegar, lemon juice, or a 10% solution of boric acid	1
Container for baking soda (to neutralize acid)	1
Container for pure water 60 gal US (227.1 l)	1
Emergency shower	1
Eye bath	1
First aid kit	1

Battery shop dimensions: 19.5 ft x 9.75 ft (6.0 m x 3.0 m). Total area 190.12 ft^2 (18.0 m^2)

2.3 Tire/Wheel shop

The tire/wheel shop replaces tires and does the maintenance, servicing and repairs to aircraft wheels and brakes. To do an overhaul of brake assemblies, refer to the brake manufacturer's procedures.

Table 4 Tire/Wheel shop

Nomenclature	Quantity
Steel work bench	1
Vise	1
Safety cage to inflate tires	1
3–shelf racks	2
Fire extinguisher	1
Wash tank for wheel bearings	1
Work bench	1
Portable eddy current tester	1
Wall storage cabinet for tools	1
Tire bead breaker	1
Varsol wash tank	1
Nitrogen gas cart	1
Plastic containers for solvent, leak detector	A/R
Desk	1
Chair	1
Paint stripper (plastic medium)	1
Ventilation fan	1
Hydraulic press	1
Caustic or steam cleaner for brakes	1
Cart to move the wheels	1
Shop air supply (regulated)	A/R

Tire/wheel shop dimensions: 13.0 ft x 9.75 ft (4.0 m x 3.0 m). Total area 126.75 ft² (12.0 m²)

2.4 Tube shop

The tube shop can make and repair tubes and hoses for the aircraft.

It is recommended to put the tube shop near the hydraulic shop. This makes it easier to do tests on new or repaired tubes and hoses.

Table 5 Tube shop

Nomenclature	**Quantity**
Rack to hold tubes of different dimensions	1
Steel work bench 3.0 x 6.0 ft (0.92 x 1.85 m)	1
Vise	1
Tool to bend tubes	1
Tube bending/flaring machine	1
Wiggins tool to swage tubes	1
Harrison tool to swage tubes	1
Tool to bend pipes	1
Emergency Shower	1
Desk	1
Chair	1
Peg Board	1
Telephone	1
Shop air supply (regulated)	A/R
First aid kit	1

Tube shop dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

2.5 Refinishing shop (paint/composites)

WARNINGS

- **Obey the precautions that follow when you do work with composite materials:**
  - **Do the work in an area that has a good flow of clean air**
  - **Use approved eyes, mouth, and body protection. Small particles can go through usual clothing**
  - **Do not let the materials touch your eyes, mouth, or skin**
  - **If irritation occurs, get medical aid immediately**
  - **Make sure that the area has no sparks, flame, or hot surfaces**
  - **Make sure that you have sufficient fire protection available**
  - **Obey the manufacturer's instructions**
  - **Do not use chemical paint removers. To remove paint from composites that have resin, use abrasive materials**
  - **Do not use abrasive materials on composite cloth that has no resin**
  - **When you remove a glossy finish from the surface of a composite, make sure that you remove only the minimum amount necessary. You must not touch the cloth below the resin**
  - **Do not use power tools to make a surface rough.**

  Some composite materials are poisonous, flammable and/or irritating to the skin. Some procedures can make composite parts weak. If you do not follow this precautions, you can cause injury to persons or damage to equipment.

- **Obey the precautions that follow when you use resins:**
  - **use safety glasses**
  - **put on protective clothing**
  - **do not let the resins or solvents touch your skin, eyes, and mouth**
  - **work in an area that has good flow of clean air**
  - **do not work in an area that has sparks, flame, and hot surfaces**
  - **obey the manufacturer's instructions**
  - **get medical aid if irritation occurs**

  many resins are poisonous and can cause injury to persons.

- **Sanding/machining/cutting of the component will give off dust that can cause skin irritations. Do not breathe this dust.**
  - **Epoxy resins or solvents contain dangerous ingredients.**
  - **Have plenty of clean air ventilation and use respiratory protection when using these materials in a confined area.**
  - **Make sure these materials do not get into your skin, eyes or clothing.**
  - **Wear rubber gloves along with cotton gloves to protect your hands and wear protective clothing.**
  - **If skin touches with uncured resins or curing agent, clean with warm water and soap.**
  - **Do not use solvent to clean the skin.**

The refinishing shop does repairs to the painted surfaces of composite parts (fairings, flight control surfaces, or access panels) that are installed or removed from the aircraft.

The shop also does repairs to composite fairings, detail parts and sub-assemblies.

Table 6 Refinishing shop

Nomenclature	Quantity
Paint booth with regulated air, filters, and exhaust fan 8.0 x 6.0 x 8.0 ft (2.46 x 1.85 x 2.46 m)	1
Holder for paper (used to mask parts)	1
Flame-proof paint lockers	2
Holder for masking tape	1
Respirators	2
Machine to shake paint cans	1
Paint spray guns (# 3 to # 13 patterns)	2
Paint spray gun to airbrush parts	1
Air gun	1
Explosion-proof lighting	A/R
Equipment to clean paint guns	A/R
Overhead chains to hang parts	A/R
Wooden work bench on which to paint parts	1
Fire extinguishers	2
Orbital sanders	2
Flame-proof locker for flammable liquids	1
Air operated sanders to polish parts	2
Shelves 3.0 x 1.5 x 6.0 ft (0.92 x 0.46 x 1.85 m)	4
Heat lamps to cure parts	10
Vacuum dust collectors − 1 outlet for each work bench	2
Work benches	2
Vises	2
Eye bath	1
Desk	1
Chair	1
Locker to keep supplies	1

Refinishing shop dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

2.6 Avionics/Electrical laboratory shop

The avionics/electrical laboratory must have a clean room (with a controlled environment) to do repairs and tests of some instruments such as gyros and air data sensors. Also, the laboratory must have the correct equipment to touch and move Electrostatic-Discharge Sensitive (ESDS) devices.

The avionics/electrical shop does the troubleshooting of the avionics system. This shop makes, identifies, and repairs the wiring and services and inspects the avionics and electrical systems of the aircraft.

Such items as tools that crimp, heat guns, and other approved electrical equipment must be in the avionics/electrical shop's usual inventory.

Table 7 Avionics/Electrical laboratory shop

Nomenclature	**Quantity**
Work bench	1
Vent fan and filter	1
Shelves for test equipment	A/R
Fire-proof lamp	1
Lock-up cabinet	1
Filtered shop air	2 outlets
Stools	2
Protective clothing: face shield, gloves, and coveralls	2 sets
Eye bath	1
Anti−static mats	A/R
Vacuum dust collectors	2 outlets
Electrical ground facilities	A/R
Fire extinguisher	1
Work bench lights	A/R
Different types of test equipment	A/R
Bench light with magnifying glass	1
Telephone	1
Desk	1
Chair	1
Vacuum pump	1

Nomenclature	Quantity
Plastic containers (with covers)	A/R
Garbage containers	2

Avionics/Electrical laboratory/shop dimensions: 13.0 ft x 13.0 ft (4.0 m x 4.0 m). Total area 169.0 ft² (16.0 m²)

2.7 Engine Build-Up (EBU) shop

WARNING

Do the borescope inspection in an area which has protection from the weather. If a borescope inspection is done in wet conditions, use sufficient protection to prevent possible electrical shock to the operator or damage to the equipment.

CAUTION

Make sure the temperature in the engine is less than 140º f (60º c) before you install the flexible borescope in the engine. If the engine is hotter than 140º f (60º c), the flexible borescope can melt.

The shop must have a large entry door (approximately 19.5 ft (6.0 m) wide) to receive such large components as engines.

The engine build-up shop has three horizontal work stations, two engine staging areas, and the equipment area. For on−line maintenance, the shop can do servicing on the Pratt & Whitney engines, engine nacelles, and thrust reversers. Other tasks that the shop can do are as follows:

- Borescope checks
- Replace external Line Replaceable Units (LRU).

Table 8 Engine build-up shop

Nomenclature	Quantity
Engine stands	3
Work benches	3
Shipping stand	1
Vises	3
Bench light with magnifying glass	1
Overhead crane	1
Step ladders (3 step)	3
Borescope equipment	1
Regulated shop air supply	A/R

Nomenclature	Quantity
Drip trays	A/R
Solvent cleaning area	1
Fire extinguishers	3
Eye bath	1
Protective clothing (face shield, gloves, and coveralls)	2 sets
Garbage containers	3
Explosion-proof lamps	A/R
Test equipment of different types	A/R
Telephone	1
Desk	1
Chairs	2
Inspection chairs (low)	3
Storage cabinet	1
First aid kit	1

Engine build-up shop dimensions: 32.5 ft x 39.0 ft (10.0 m x 12.0 m). Total area 1267.5 ft^2 (120.0 m^2)

2.8 Hydraulic shop

WARNINGS

- **Make sure that the work area has a good flow of air. Hydraulic fumes and spray are poisonous and can cause in juryto persons and damage to equipment if used in a closed area.**
- **Do not get hydraulic fluid on your skin, in your mouth or in your eyes. Hydraulic fluid is poisonous and can go through your skin and into your body. Flush hydraulic fluid from your eyes, mouth or skin with water. Get medical aid if you get hydraulic fluid in your eyes or mouth.**
- **Do not breathe the hydraulic fluid fumes. Do not let hydraulic fluid touch your eyes or stay on your skin. Hydraulic fluid is poisonous and can cause injury to persons.**
- **Put barrier cream on your hands and arms and use protective clothing when you do work on the hydraulic systems. Hydraulic fluid on the skin is poisonous and can cause injury to persons.**

- **Catch the hydraulic fluid in a container or cloth when you disconnect the hydraulic lines. Immediately clean all surfaces that hydraulic fluid falls on. Hydraulic fluid causes damage to equipment.**

- **Clean hydraulic fluid leakage from the workarea. Hydraulic fluid is dangerous and can cause injury to personsand damage to equipment.**

CAUTION

Make sure that you always use the same typeof hydraulic fluid. If you mix hydraulic fluids, you can cause contaminationof the system and/or damage to the equipment.

The hydraulic shop does the maintenance and tests of hydraulic pumps, motors, tubes, hoses, and other hydraulic components and their related parts. The shop must be clean because you must have a clean environment to do the build-up or overhaul of hydraulic components.

Table 9 Hydraulic shop

Nomenclature	Quantity
Hydraulic test stand	1
Work bench	1
Tool board	1
Storage cabinet	1
Special tools	A/R
Filtered shop air	A/R
Desk	1
Chair	1
Telephone	1
Filing cabinet	1
Stools	2
Bench light with magnifying glass	1
Protective clothing (face shield, gloves, and coveralls)	2 sets
Solvent wash tank	1
Eye bath	1
First aid kit	1

Hydraulic shop dimensions: 13.0 ft x 16.25 ft (4.0 m x 5.0 m). Total area 211.25 ft² (20.0 m²)

2.9 Composite clean room

WARNINGS

- **Obey the precautions that follow when you do work with composite materials:**
  - **Do the work in an area that has a good flow of clean air**
  - **Use approved eyes, mouth, and body protection. Small particles can go through usual clothing**
  - **Do not let the materials touch your eyes, mouth, or skin**
  - **If irritation occurs, get medical aid immediately**
  - **Make sure that the area has no sparks, flame, or hot surfaces**
  - **Make sure that you have sufficient fire protection available**
  - **Obey the manufacturer's instructions**
  - **Do not use chemical paint removers. To remove paint from composites that have resin, use abrasive materials**
  - **Do not use abrasive materials on composite cloth that has no resin**
  - **When you remove a glossy finish from the surface of a composite, make sure that you remove only the minimum amount necessary. You must not touch the cloth below the resin**
  - **Do not use power tools to make a surface rough.**

  Some composite materials are poisonous, flammable and/or irritating to the skin. Some procedures can make composite parts weak. If you do not follow this precautions, you can cause injury to persons or damage to equipment.

- **Obey the precautions that follow when you use resins:**
  - **use safety glasses**
  - **put on protective clothing**
  - **do not let the resins or solvents touch your skin, eyes, and mouth**
  - **work in an area that has good flow of clean air**
  - **do not work in an area that has sparks, flame, and hot surfaces**
  - **obey the manufacturer's instructions**
  - **get medical aid if irritation occurs**

  many resins are poisonous and can cause injury to persons.

- **Sanding/machining/cutting of the component will give off dust that can cause skin irritations. Do not breathe this dust.**
  - **Epoxy resins or solvents contain dangerous ingredients.**
  - **Have plenty of clean air ventilation and use respiratory protection when using these materials in a confined area.**
  - **Make sure these materials do not get into your skin, eyes or clothing.**
  - **Wear rubber gloves along with cotton gloves to protect your hands and wear protective clothing.**
  - **If skin touches with uncured resins or curing agent, clean with warm water and soap.**
  - **Do not use solvent to clean the skin.**

The composite clean room must have a controlled atmosphere. This room is where technicians do the lay−up of fabric layers and mix and apply resins to the fabric layers to make composite panels and/or fairings for the aircraft.

To dispose leftovers or rolls of composite materials use the appropriate disposal bins.

Table 10 Composite clean room

Nomenclature	Quantity
Stands to hold fabric rolls	A/R
Large table	1
Tool board	1
Storage cabinet	1
Special tools	A/R
Vent fan and filter	1
Filtered and regulated shop air supply	A/R
Computer	1
Fire extinguishers	2
Desk	1
Chair	1
Telephone	1
Eye bath	1
Waste paper basket	2

Composite clean room dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft^2 (48.0 m^2)

2.10 Non-Destructive Test (NDT) shop

WARNING

Obey all the X-ray safety precautions when you use X-ray equipment. X-rays are very dangerous and can cause injury or death to personnel and/or damage to equipment.

The Non-Destructive Test (NDT) shop has the equipment to do special inspections such as prism inspections, dye-penetrant, eddy current, and ultrasonic tests and X-rays.

Put the NDT shop near the hydraulic and tire shops. That makes it easier to do Brinell and crack tests on wheels and other parts.

Note

To do NDT inspections on the engines, Pratt & Whitney can recommend more inspection equipment when you send them your inspection plans.

Table 11 Non-destructive test shop

Nomenclature	Quantity
Baths for Liquid Penetrant Inspection (LPI)	2
Solvent cleaning area	1
Vent fan and filter	1
Blackout curtain	1
Work bench	1
Light with magnifying glass	1
Stool	1
Storage cabinet	1
Filing cabinet	1
Specialized equipment	A/R
Tool board	1
Regulated shop air supply	A/R
Desk	1
Chairs	2
Telephone	1
Fire extinguisher	1
First aid kit	1
Protective clothing: face shield, gloves, and coveralls	2 sets

Composite clean room dimensions: 9.75 ft x 13.0 ft (3.0 m x 4.0 m). Total area 126.75 ft^2 (12.0 m^2)

3 Technical support group

The technical support group does not have a direct role in the service/maintenance functions of the maintenance facility. This group has the shops that follow:

- Petroleum, Oil, and Lubricants (POL) store
- Ground Support Equipment (GSE) repair shop
- Tool and GSE store
- Spare parts store (shipping/receiving).

3.1 Petroleum, Oil, and Lubricants (POL) store

The POL store has four qualities:

- Good air supply and ease of movement
- Good ventilation
- Good fire alarm/suppression system
- The POL store, and its electrical power and heating systems, must be explosion-proof.

For safety, the POL store must be isolated from the maintenance hangar.

Keep dangerous waste in safe containers before you discard them.

Table 12 Petroleum, oil, and lubricants store

Nomenclature	Quantity
Vapor-Proof Lights	3
Storage Cabinet	1
Metal Shelves (Grounded)	A/R
Ground Wire	A/R
Fire Extinguisher	1
Vapor-Proof Ventilation Fan	1

POL store dimensions: 22.75 ft x 13.0 ft (7.0 m x 4.0 m). Total area 295.75 ft² (28.0 m²)

3.2 Ground Support Equipment (GSE) repair shop

The GSE shop can do repairs to or overhaul aircraft GSE and also to hangar equipment.

Table 13 Ground support equipment repair shop

Nomenclature	Quantity
Arc welder	1
Gas welding (acetylene, mig, tig)	1
Vent fan and filter	A/R
Work bench	1
Fire extinguisher	1
Lift (1 ton capacity)	1
Vise	1
Locked area that is safe	1
Oil waste container	1
Solvent wash tank	1
Parts shelves that are divided	1 set

Nomenclature	Quantity
Drip trays	A/R
Protective clothing: face shield, gloves, and coveralls	2 sets
Eye bath	1
Welding mask	1
Welding goggles	1
Garbage container	1
Desk	1
Chairs	2
First aid kit	1
Telephone	1

GSE repair shop dimensions: 26.0 ft x 19.5 ft (8.0 m x 6.0 m). Total area 507.0 ft² (48.0 m²)

3.3 Tool and GSE store

The tool and GSE store keeps a master inventory of all the equipment in the hangar, the support shops, and the administrative departments.

The store must be able to do the functions that follow:

- Distribute, monitor, and replace lost or worn tools for the support departments
- Do the maintenance of tools and/or GSE spares.

Make sure to keep the tool and GSE store safely locked.

Table 14 Tool and GSE store

Nomenclature	Quantity
Work bench	1
Storage cabinets	A/R
Tool boards	2
Desks	2
Chairs	2
Telephone	1
Filing cabinet	1
Hardware bin	1
Holder for bubble wrap	1

Nomenclature	Quantity
Shelves	A/R
Garbage container	1
Fire extinguisher	1

Tool and GSE store dimensions: 26.0 ft x 22.75 ft (8.0 m x 7.0 m). Total area 591.5 ft² (56.0 m²)

3.4 Spare parts store (shipping/receiving)

The spare parts store receives parts, consumable items, and fasteners for aircraft maintenance.

The spare parts store keeps the spares inventory to operate the line maintenance functions for the aircraft. The spares inventory includes items for the aircraft structure, systems, power plant, and the APU.

The store also sends spare parts to customers.

Table 15 Spare parts store

Nomenclature	Quantity
Work bench	1
Storage cabinets	A/R
Shelves for parts	A/R
Desks	2
Chairs	2
Telephone	1
Filing cabinets	2
Hardware bin	1
Holders for bubble wrap	2
Shelves	A/R
Garbage containers	2
Waste paper containers	2
Photocopier	1
First aid kit	1

Spare parts store dimensions: 58.5 ft x 26.0 ft (18.0 m x 8.0 m). Total area 1521.0 ft² (144.0 m²)

4 Administrative group

The primary functions of the administrative group are to schedule the operations of the service departments. In addition, a function of the administrative group is to keep records for the maintenance facility, and to be the liaison with Airbus for technical data.

The administrative group has the offices/departments that follow:

- Human resources/administration office
- Waste management office
- Hazardous material management office
- Documentation control office
- Documentation library
- Maintenance supervisor’s office
- Quality Control (QC) inspection office
- Training classroom
- Customer service representative’s office
- Cafeteria
- Planning/scheduling
- Sales office
- Finance department
- Telecommunications/copy room
- Information service’s office
- Main entrance
- Customer lounge
- Building maintenance office.

4.1 Human resources/administration office

This office keeps personnel records, hires new employees as necessary, and administers employee benefits.

4.2 Waste management office

WARNINGS

- **Every component removed from the waste system should be considered as a biohazard. Obey the local handling procedures for biohazard. Components exposed to waste water can be poisonous and/or abrasive and can cause sickness to persons and damage to equipment.**
- **Waste water should be considered as a biohazard. Obey the local health and safety precautions when working in the waste system. Waste water can be poisonous and/or abrasive and can cause sickness to persons and damage to equipment.**
- **When you do the servicing of the waste water system, use rubber gloves. Waste water can get on your hands and cause an infection.**

CAUTIONS

- **Make sure that there is no leakage of the cleaning agent from the waste system during this procedure. To prevent leakage, a person must have access to the waste system area. Leakage of the toilet cleaning agent can cause damage to the interior of the aircraft.**

- **Make sure that the container used to collect the drained lubrication oil is 10 quarts (9,5 liters) or more, and is safety-approved for waste collection and storage.**

The waste management office has a minimum of one employee with a primary function of waste management. The tasks of the office include:

- To know and apply all the regulations that tell how to control and treat waste material
- To make sure that there is a program to recycle or safely discard all waste products (e.g. plastic sheeting, oil, fuel, and Skydrol).

4.3 Hazardous materials management office

The hazardous materials management office is considered isolated work areas. To work in one of these areas, an individual must abide by the isolated work policy of the maintenance shop.

The hazardous materials office include the following four (4) rooms:

- Chemical storage room
- Part storage room
- Storage containers
- Freezer

The hazardous materials management office has a minimum of one employee with a primary function of store and handle hazardous materials management. The tasks of these rooms include:

- To train personnel on how to treat dangerous material
- To ensure the material to be stored is tagged
- To archive laboratory reports
- To store the material in their dedicated spaces
- To ensure the requests for the retrieval of storage container is filled
- To maintain track of the products stored
- To order the products
- To update the chemical inventory list on a monthly basis
- To discard expired products.

4.4 Documentation control office

This office writes and keeps the documents that are necessary for the continued airworthiness of the aircraft. Some of the documents the documentation control office is responsible for includes:

- Service orders

- Technical reports on component conditions
- Reports on errors/omissions in technical manuals
- Service parts tags
- Daily turnover log
- Final inspection status
- Completing Airbus and vendor forms
- Flight logs and aircraft roadblock entries.

4.5 Documentation library

The primary function of the documentation library is as a storage facility, where the aircraft technicians can have fast access to reference material. The documentation library has all Airbus and vendor manuals that apply to the aircraft. There is a viewer/reproduction machine or computer terminals for the technicians to look at Engineering drawings and often printers to make hard copies of drawings and reports.

The documentation library also receives, sorts, and supplies new data to Quality Control (QC) and other sections/departments.

4.6 Maintenance supervisor’s office

The maintenance supervisor’s office has easy access to the maintenance hangar. The maintenance supervisor can keep copies of the aircraft maintenance planning documents in the office.

4.7 Quality Control (QC) inspection office

The QC supervisor and the inspector(s) share the QC inspection office. This office also has easy access to the hangar. The office has the quality documents that inspectors use to make sure that maintenance/repairs done on the aircraft are correct.

The QC supervisor also keeps records of the snags, rejected items, and repairs to the aircraft systems and equipment in the QC inspection office.

4.8 Training classroom

The training classroom is used to give refresher courses to service/maintenance technicians.

4.9 Customer service representative’s office

Three or four service representatives can use this office. They are the liaison between the maintenance facility and its customers.

4.10 Cafeteria

The employees of the maintenance facility use the cafeteria for coffee breaks and at meal times. Employees usually eat and drink only in the cafeteria. Thus, the cafeteria must have sufficient space to let all the employees on a given shift to be together at the same time.

4.11 Planning/Scheduling

The planning and scheduling department has two main functions. To control the flow of work on maintenance tasks and to make a schedule of the future maintenance tasks. The department also makes sure that the technical and non−technical groups have the correct technical forms and documentation.

4.12 Sales office

One or more salespersons use this office. Their task is to find new customers who must have maintenance work done on their aircraft.

4.13 Finance department

The finance department does the Accounts Receivable, Accounts Payable, and Payroll functions.

4.14 Telecommunications/Copy room

Put the facsimile and telecopier machines in the telecommunications/copy room.

4.15 Information service's office

This is the office of the maintenance facility's computer system administrator. The system administrator does the maintenance of the computer system and also makes sure that the system security is correct. Additional computer personnel are sometimes necessary for a larger hangar when there are many on−line computer terminals installed at various locations in the facility.

4.16 Main entrance

Customers, visitors, vendors, and other personnel come into the maintenance facility at the main entrance. The receptionist is found in this area.

4.17 Customer lounge

The customer lounge is for the aircraft operators, which can be designed to not be attached to the hangar.

The lounge has comfortable chairs, a number of tables, and two or three telephone booths for private conversations.

4.18 Building maintenance office.

The maintenance facility has a building maintenance supervisor who makes sure that the maintenance facility stays in good repair.

A220

Utilities - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

A full range of utilities are necessary to do the maintenance of the A220 aircraft. When you design a maintenance facility, it is important to include the utilities that follow:

- Electrical power
- Lighting
- Heating, ventilation, and air conditioning

- Compressed air
- Fuel
- Vacuum
- Telecommunications.

In addition to the utilities necessary to operate the maintenance facility, you should also include the fire safety, environmental and health safety concerns that follow:

- Fire protection
- Water, sewage and drainage
- Removal of hazardous waste.

1.1 Electrical power

A supply of both 115 volts AC and 220/240 volts AC, 60/50 Hz, or as locally applicable, should be made available. Portable power units in the shops should supply both 28 volts DC and 200/115 volts AC, 400 Hz aircraft power. Electrical power outlets shall be provided at all aircraft positions (voltage and current contingent upon site standards and equipment requirements) :

- One (1) quad outlet (115 VAC 60 HZ 20 amp)
- One (1) 600 VAC 60 Hz 30 amp
- One (1) 220 VAC 60 Hz 30 amp
- One 220 VAC 60 Hz 10 amp
- One (1) 220 VAC 3 phase outlet for avionics/instrumentation
- One (1) standard 200/230/460/575 volt single phase power for welding equipment

If possible, the hangars should be equipped with 200/115 volts AC, 400 Hz underground cables leading to electrical outlets in the hangar floor and/or walls. Although expensive to install, this type of setup will help keep the area clear around the aircraft.

1.2 Lighting

1.2.1 Hangar lighting

It is recommended that hangars have 75 footcandles (fc) (807 lumens/meter^2) lighting levels. The near natural color spectrum and high efficiency of the metal halide lamps makes them highly recommended. The light from high pressure sodium lamps makes it impossible to have proper color discrimination and thus the use of these lamps is not recommended. Mercury lamps are also not recommended because of their low efficiency as well as the cold color spectrum that they give.

1.2.2 Shop lighting

It is recommended that shops have 50 fc (538 lumens/meter^2) lighting levels with local lighting of 100 fc (1076 lumens/meter^2) for detailed work and inspection. An equal distribution of light (without local hot spots) is only possible with the correct lighting system.

1.3 Heating, ventilation, and air conditioning

1.3.1 Heating

Where necessary, there must be heating in the hangar and in areas where dusty conditions can occur the hangar must have a positive-pressure ventilation system.

1.3.2 Air conditioning

Air conditioning is necessary in some repair shops, such as the avionics and electronics shops, which are temperature controlled. Instrument shops also need a supply of clean, filtered air and the main entrance, the offices, and the cafeteria should also have air conditioning for employee comfort.

1.3.3 Ventilation

Instrument shops need a supply of clean, filtered air and the main entrance, the offices, and the cafeteria must also have sufficient ventilation to make sure that you keep a safe and healthy working environment. It is recommended that a composite fiber venting system be installed in the composite room, if applicable.

1.4 Fuel

The hangar must have a minimum of one fuel venting/purging system equipped with a large blower and explosimeter. It is recommended that the size of the blower outlet is a minimum of 8 in. to 14 in. (203 mm to 355 mm). It is recommended that a fuel disposal pit with the capacity for the A220 full fuel load be planned.

1.5 Compressed air

A supply of 100 psig (689.5 kPa) shop air should be provided along with 100/250 psig (689.5/1724.7 kPa) clean, dry pneumatic test air for the overhaul shops. The mass−air flow of the compressor should be sufficient to meet or exceed the air requirements of the air tools. This will depend on the rating of the tool, the quantity of tools used at any one time and the frequency of use.

1.6 Vacuum

A vacuum source of 20 inches of Mercury (Hg) (67.73 kPa) is necessary for an overhaul shop.

1.7 Telecommunications

Separate line, cable or satellite connections are usually necessary for communication equipment such as telephone, fax machines and computers.

1.8 Fire protection

The hangar, repair shops, storage areas, offices, and all other areas of the maintenance facilities must have an approved fire alarm and fire control system. The hangars should be equipped with a deluge-type of fire extinguishing system which includes under-aircraft water cannons.

1.9 Water, sewage and drainage

1.9.1 Water

A pressurized water supply is necessary for washrooms and hangar use. If kitchen facilities are also necessary, the supplied water must be potable.

1.9.2 Sewage

Oil separation and wasterwater treatment facilities are sometimes necessary to agree with the local waste management laws. Special handling procedures are necessary for the disposal of plating shop waste fluids and materials. Washrooms must have sewage disposal facilities, which usually includes a connection to the local municipal sewage system.

1.9.3 Drainage

It is recommended that floors be designed with a gentle slope to a sewer drain, usually located in the middle of a hangar. The hangar floor is usually higher than the immediate surrounding land to prevent possible flooding in the event of a heavy rain or melting snow.

1.10 Removal of hazardous waste

Discard hazardous waste material in agreement with local environmental regulations. The waste management supervisor is responsible for correct removal procedures.

A220

A220 Aircraft Characteristics - Introduction

Applicability: 50001-54999, 55001-59999

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Table 1 References

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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

CANADA J7N 3C6

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

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.

A220

Aircraft description - Technical data

Applicability: 50001-54999

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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]

Description	A220-100
Mode	Passenger
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, 50078

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)

Description	Volume	Weight
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	4.33 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.

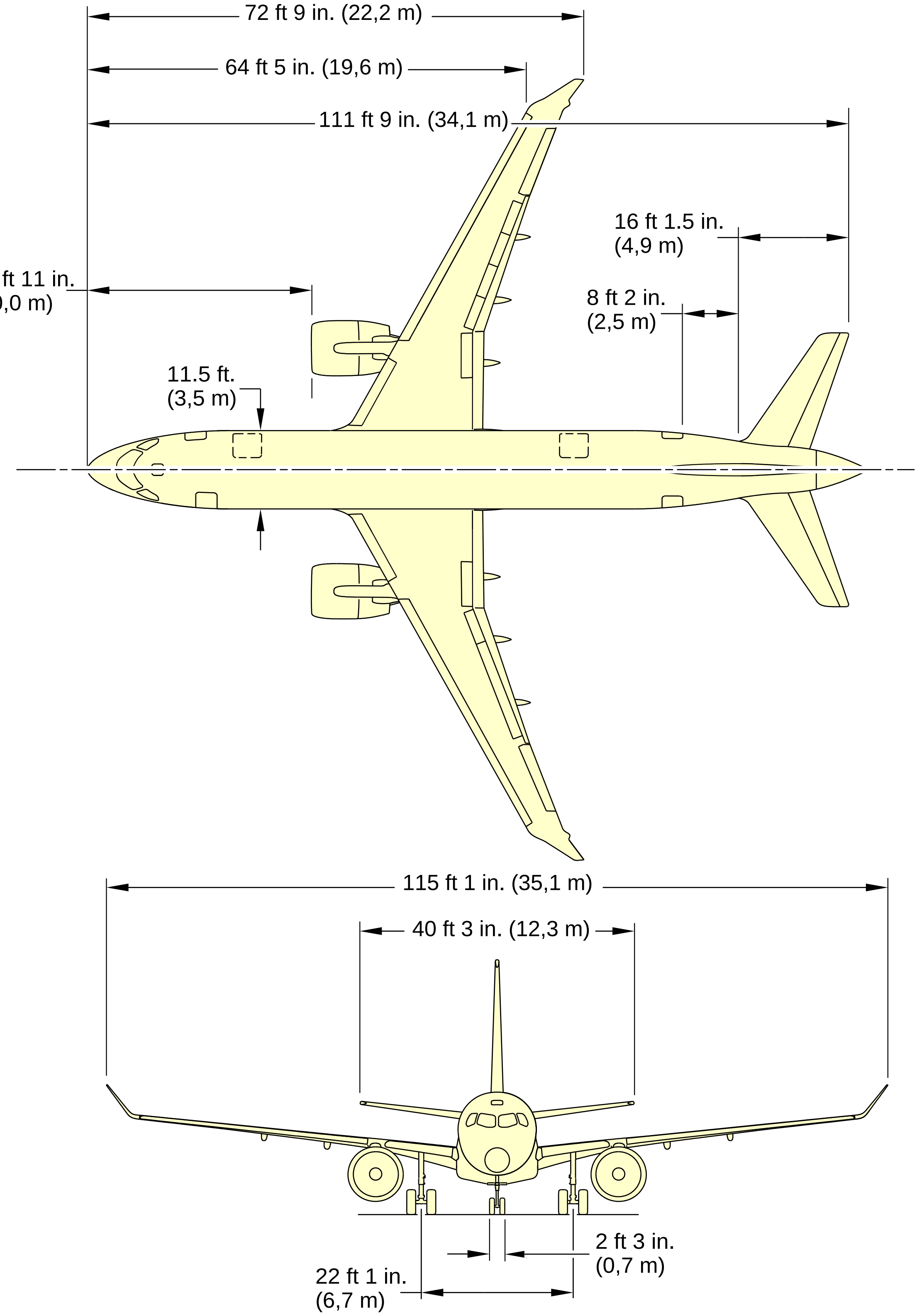

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Figure 1 General aircraft dimensions - (Sheet 1 of 2)

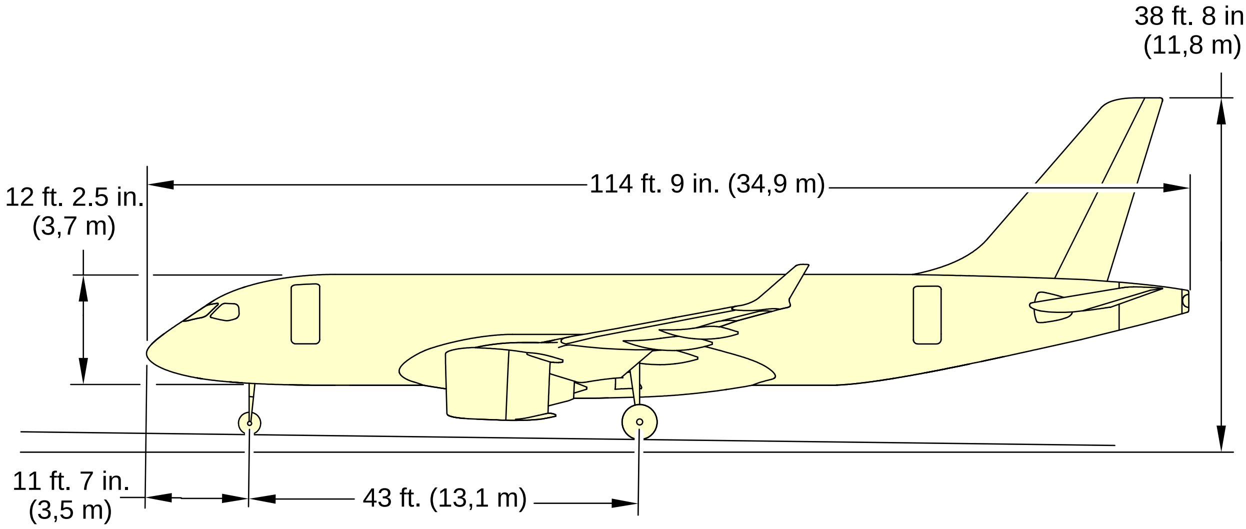

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Figure 1 General aircraft dimensions - (Sheet 2 of 2)

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

Table 7 Ground clearances

Locator	Description	Minimum	Maximum
A	Fuselage top	209.3 in. (531.62 cm)	214.4 in. (544.58 cm)
B	Pilot escape hatch	188.2 in. (478.02 cm)	193.4 in. (491.24 cm)
C	Forward avionic equipment bay door	63.2 in. (160.53 cm)	67.7 in. (171.96 cm)
D	Forward service door (RHS)	117.5 in . (298.45 cm)	122.6 in. (311.40 cm)
E	Forward passenger door (LHS)	117.8 in. (299.21 cm)	122.8 in. (311.91 cm)
F	Forward cargo compartment door (RHS)	66.8 in. (169.67 cm)	71.7 in. (182.12 cm)
G	Nacelle	19.7 in. (50.04 cm)	24.0 in. (60.96 cm)
H	Overwing emergency exit (LHS & RHS)	138.6 in. (352.04 cm)	143.1 in. (363.48 cm)
J	Mid avionic equipment bay door	56.2 in. (142.75 cm)	61.6 in. (156.46 cm)
K	Aft cargo compartment door (RHS)	72.9 in. (185.17 cm)	79.8 in. (202.70 cm)
L	Wing tip (No deflection)	229.2 in. (582.17 cm)	236.2 in. (600.20 cm)

Locator	Description	Minimum	Maximum
M	Aft service door (RHS)	126.2 in (320.55 cm)	134.7 in. (342.14 cm)
N	Aft passenger door (LHS)	126.2 in. (320.55 cm)	134.7 in. (342.14 cm)
P	Aft avionic equipment door	111.7 in. (283.72 cm)	121.3 in. (308.10 cm)
Q	APU door	140.4 in. (356.62 cm)	151.2 in. (384.05 cm)
R	Tail	452.7 in. (1149.86 cm)	463.8 in. (1178.05 cm)
S	Winglet	168 in. (426.72 cm)	176.4 in. (448.06 cm)

Note

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

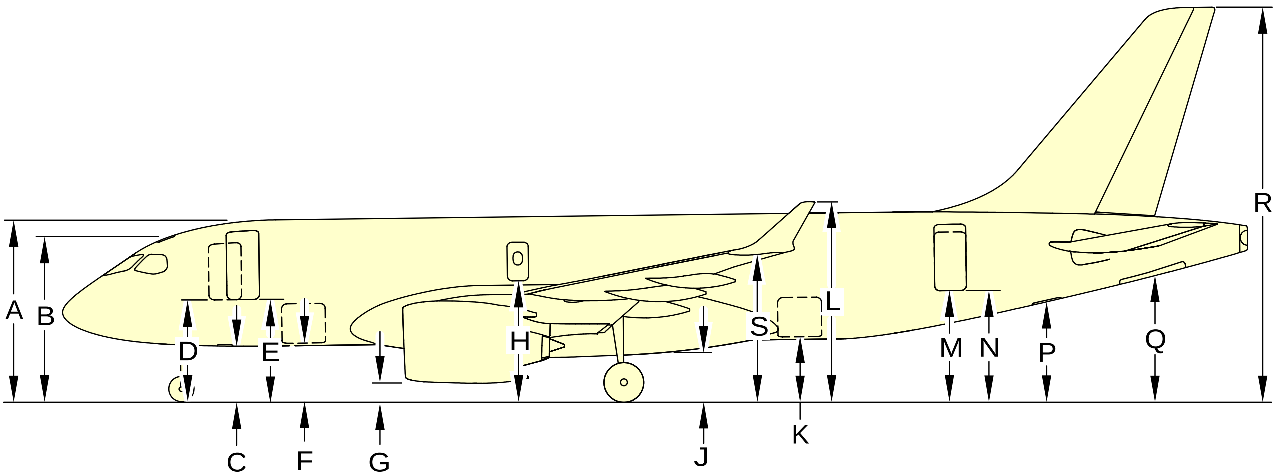

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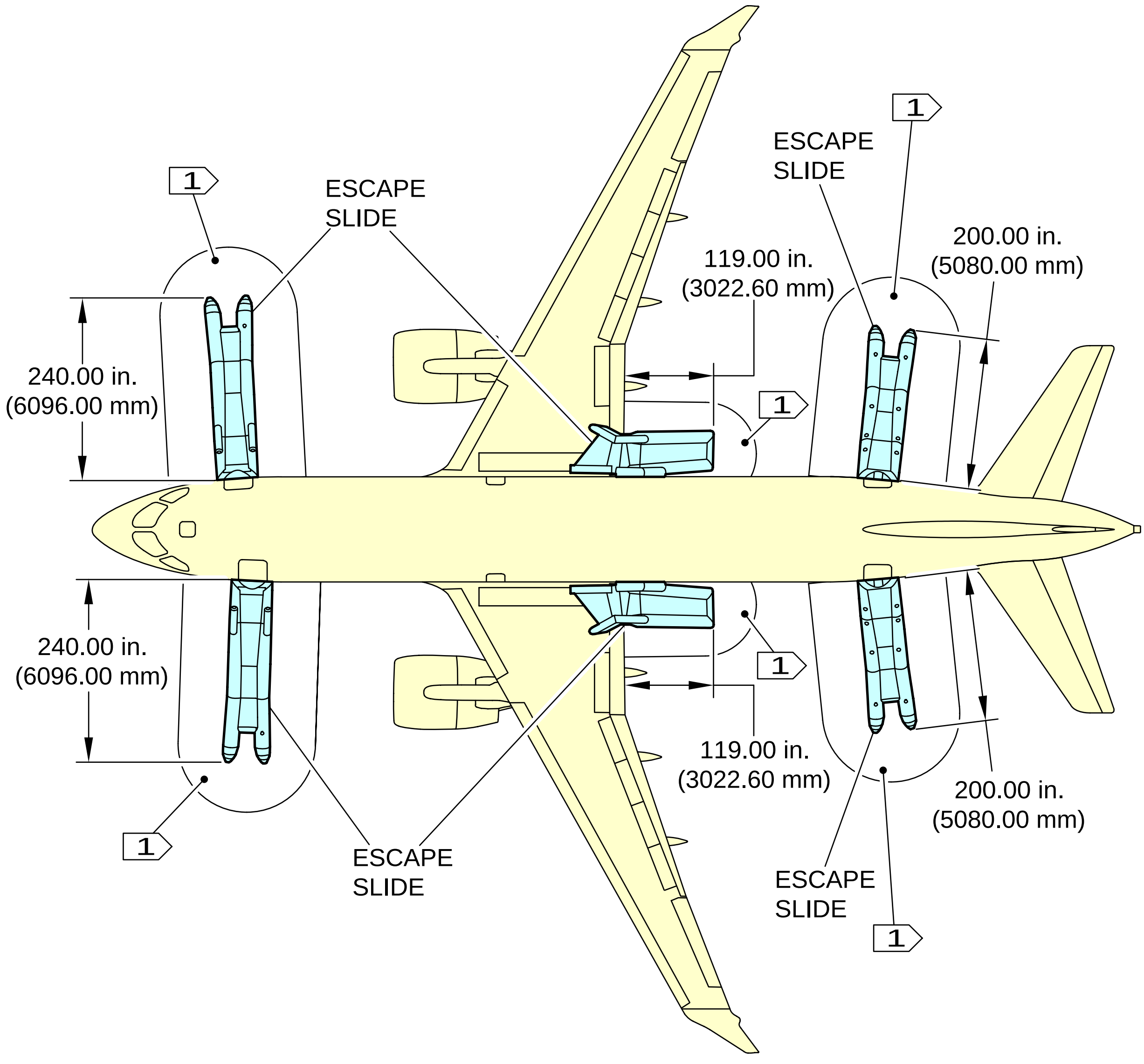
Figure 2 Ground clearances

3.2 Ground clearances for evacuation slides

This section gives ground clearances for evacuation slides. Refer to Table 8 and Fig. 3 .

Table 8 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.

ICN-BD500-A-J000000-C-3AB48-52580-A-001-01

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 .

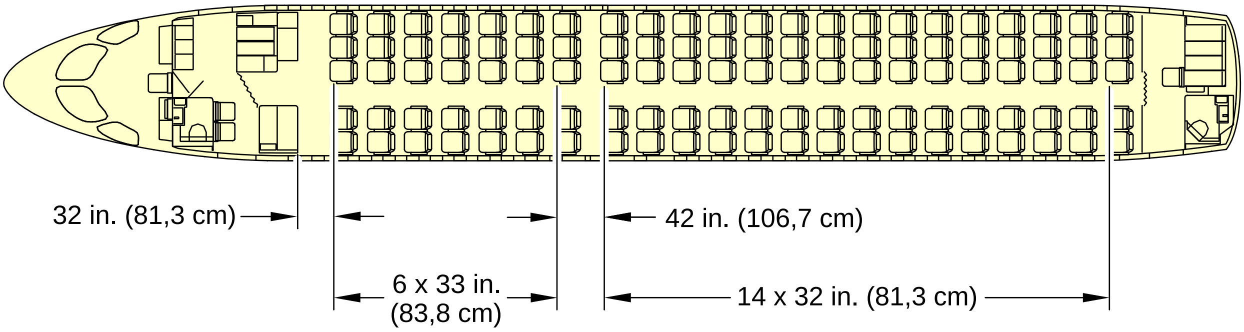


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Figure 4 Layout Of Passenger Accommodation (LOPA)

5 Passenger cross-section

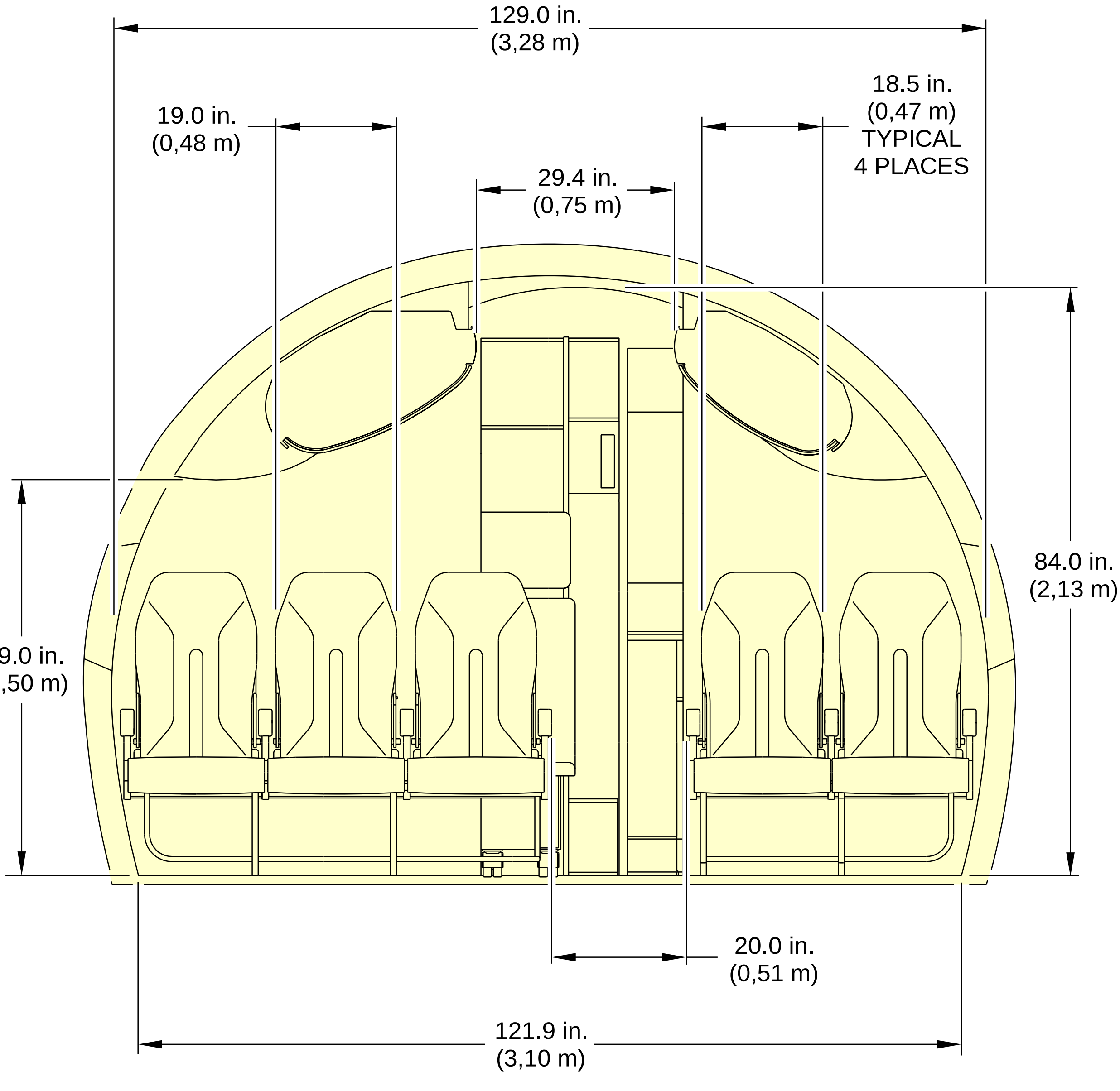

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Figure 5 Passenger cross-section (economy class)

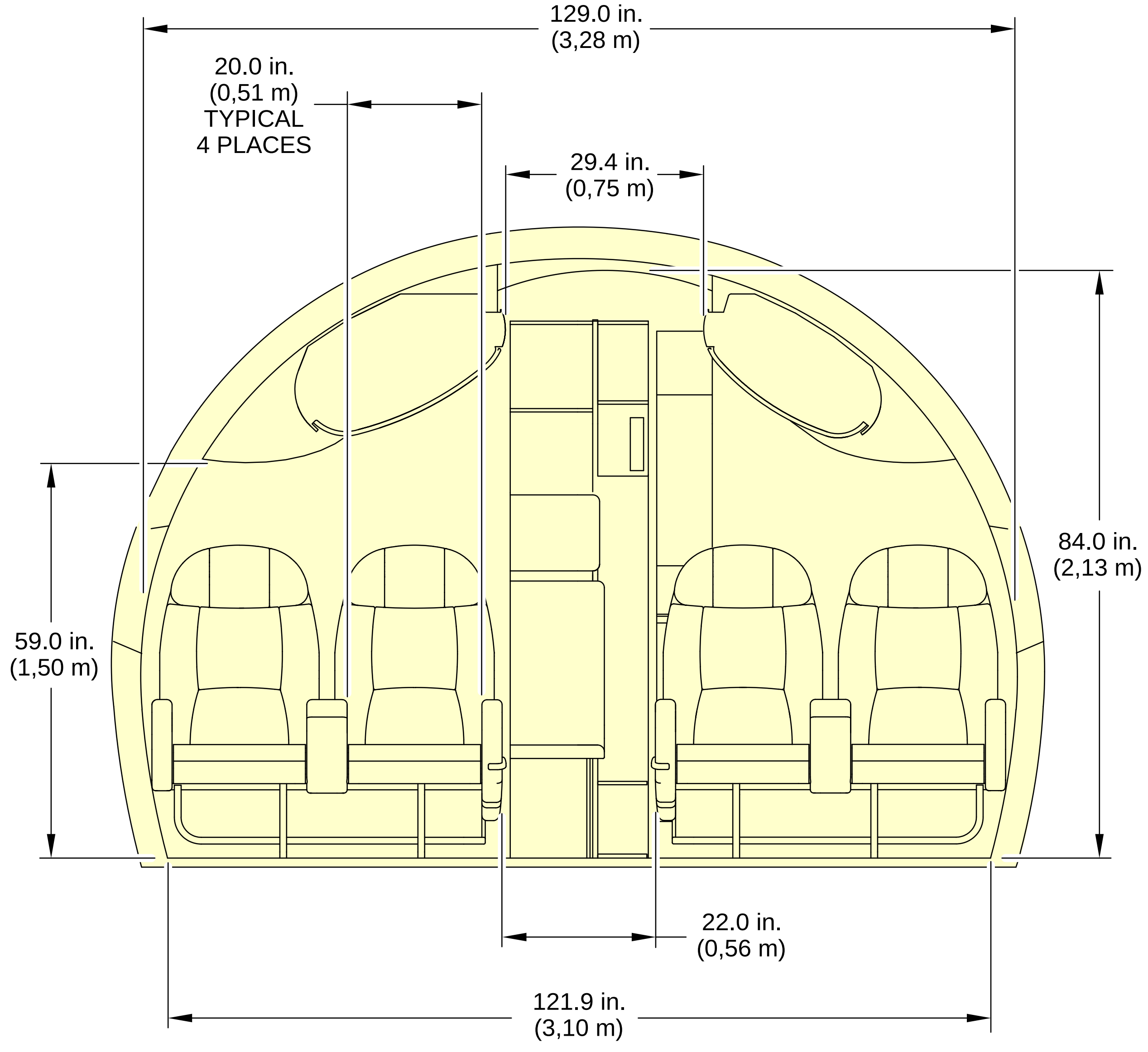

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Figure 6 Passenger cross-section (optional business class)

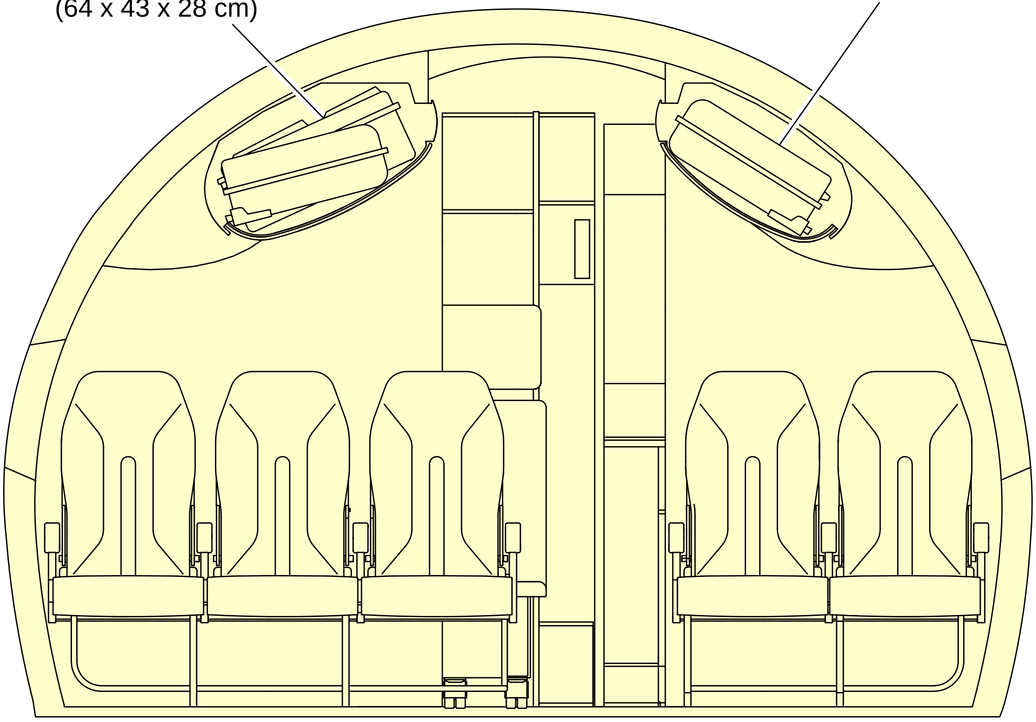

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Figure 7 Overhead stowage bins

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 9 lists the estimated wet volume of the cargo compartments.

Table 9 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

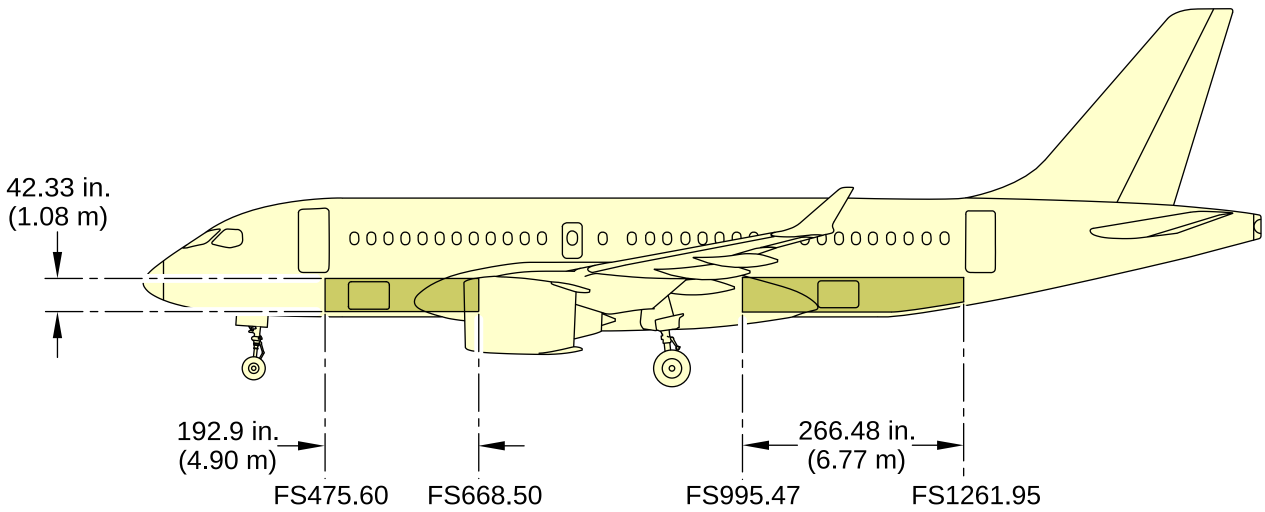

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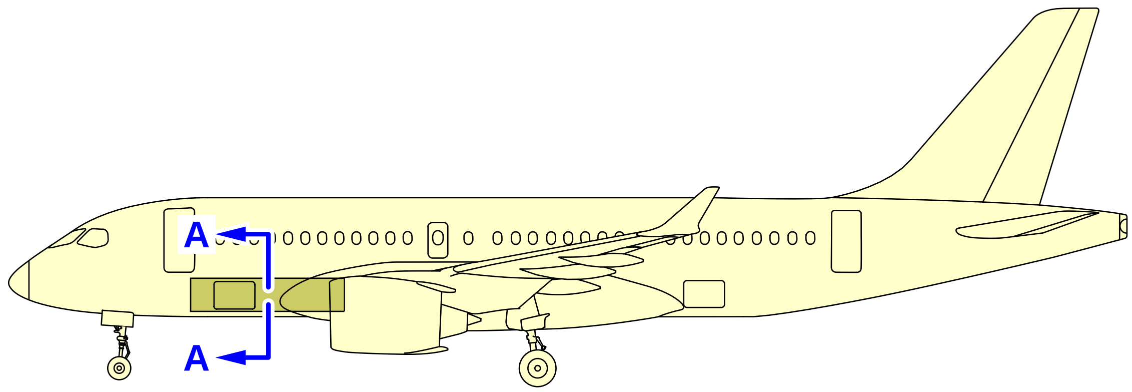
Figure 8 Aircraft cargo side view - (Sheet 1 of 3)



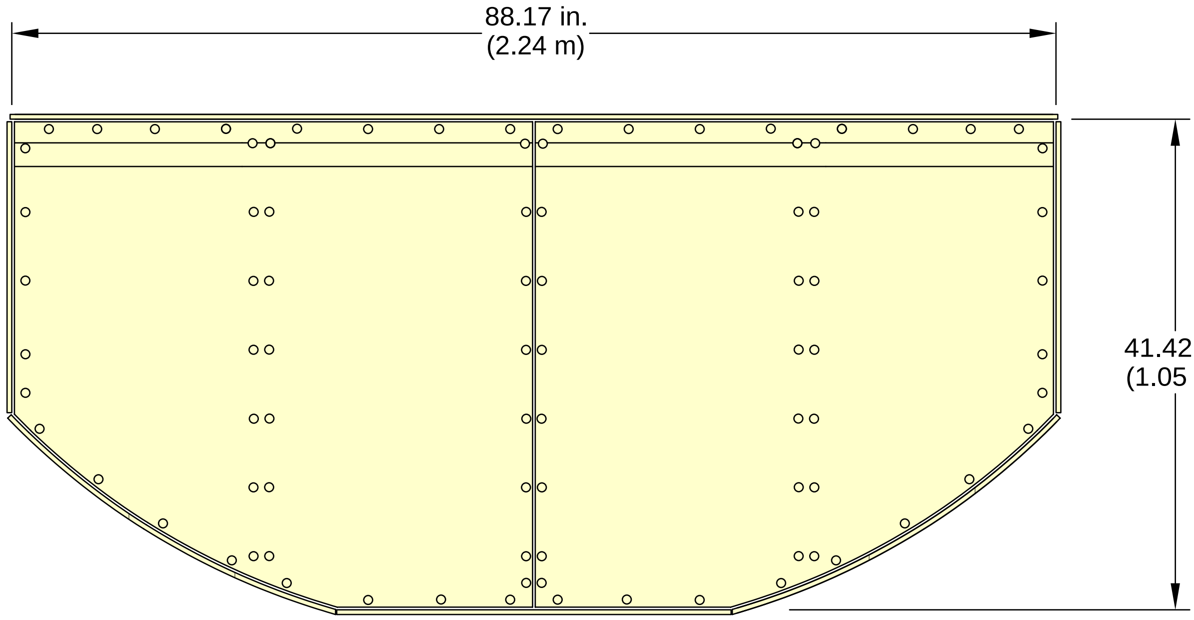


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Figure 8 Aircraft cargo side view - (Sheet 2 of 3)

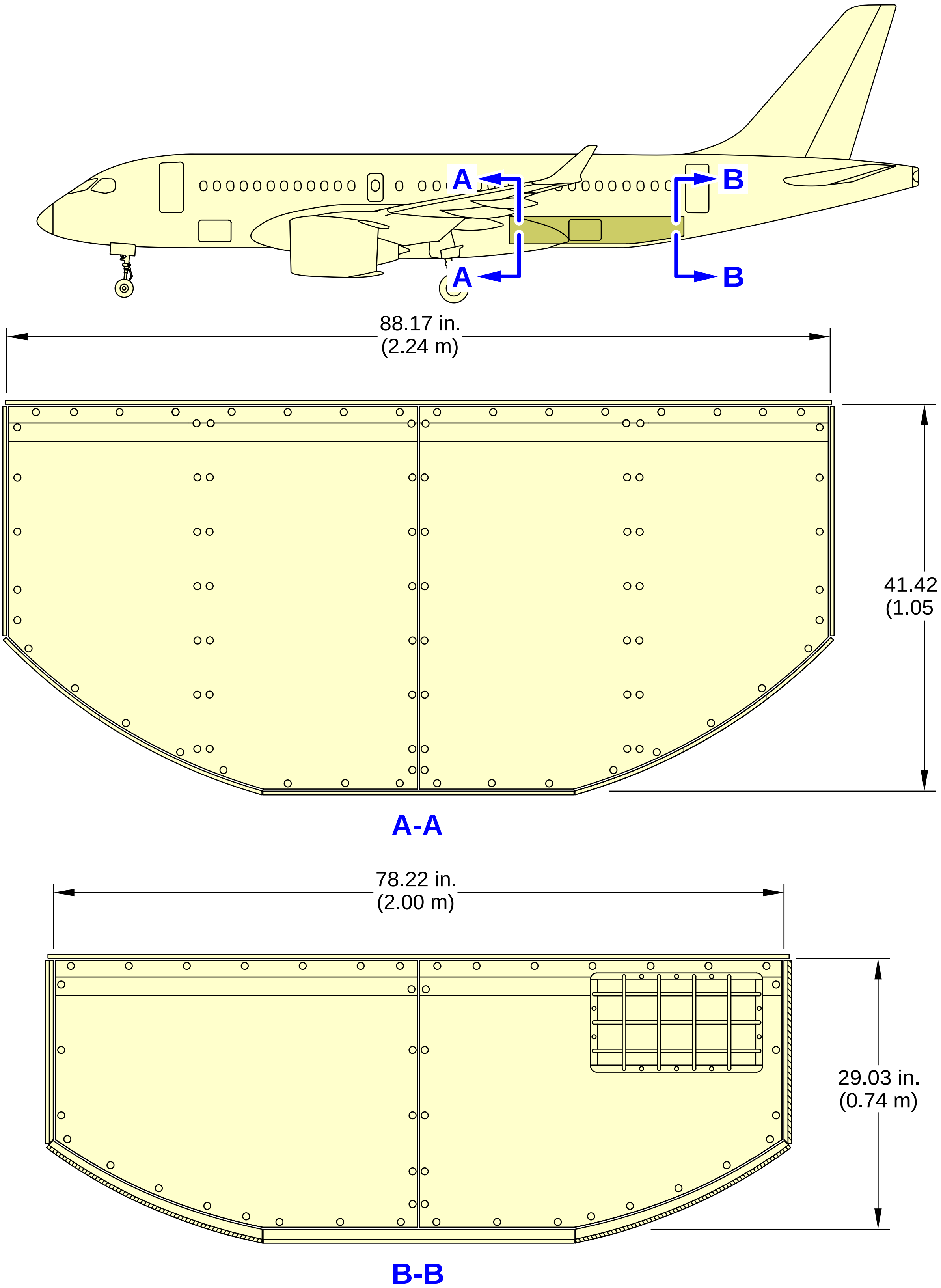

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Figure 8 Aircraft cargo side view - (Sheet 3 of 3)

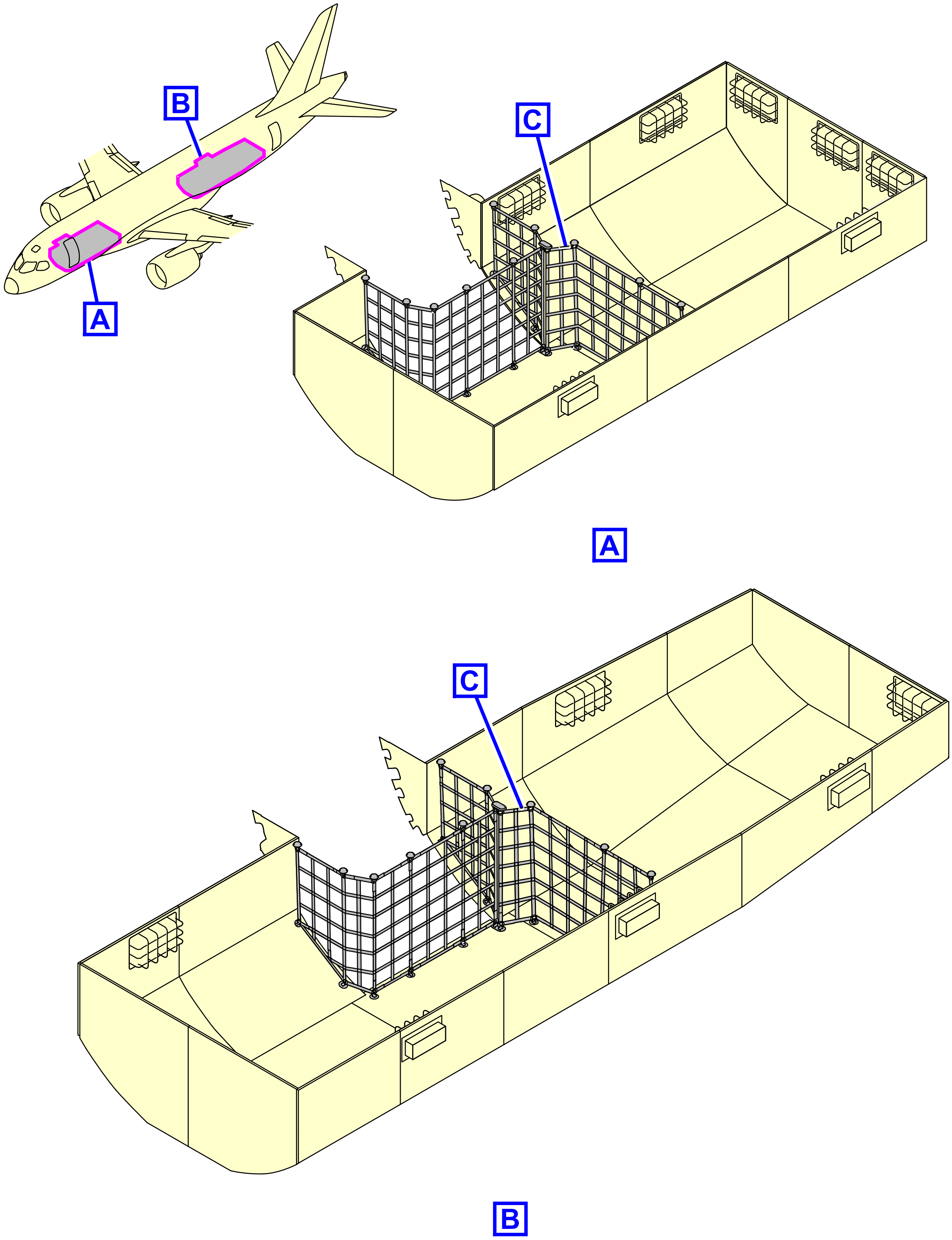

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Figure 9 Cargo nets - (Sheet 1 of 2)

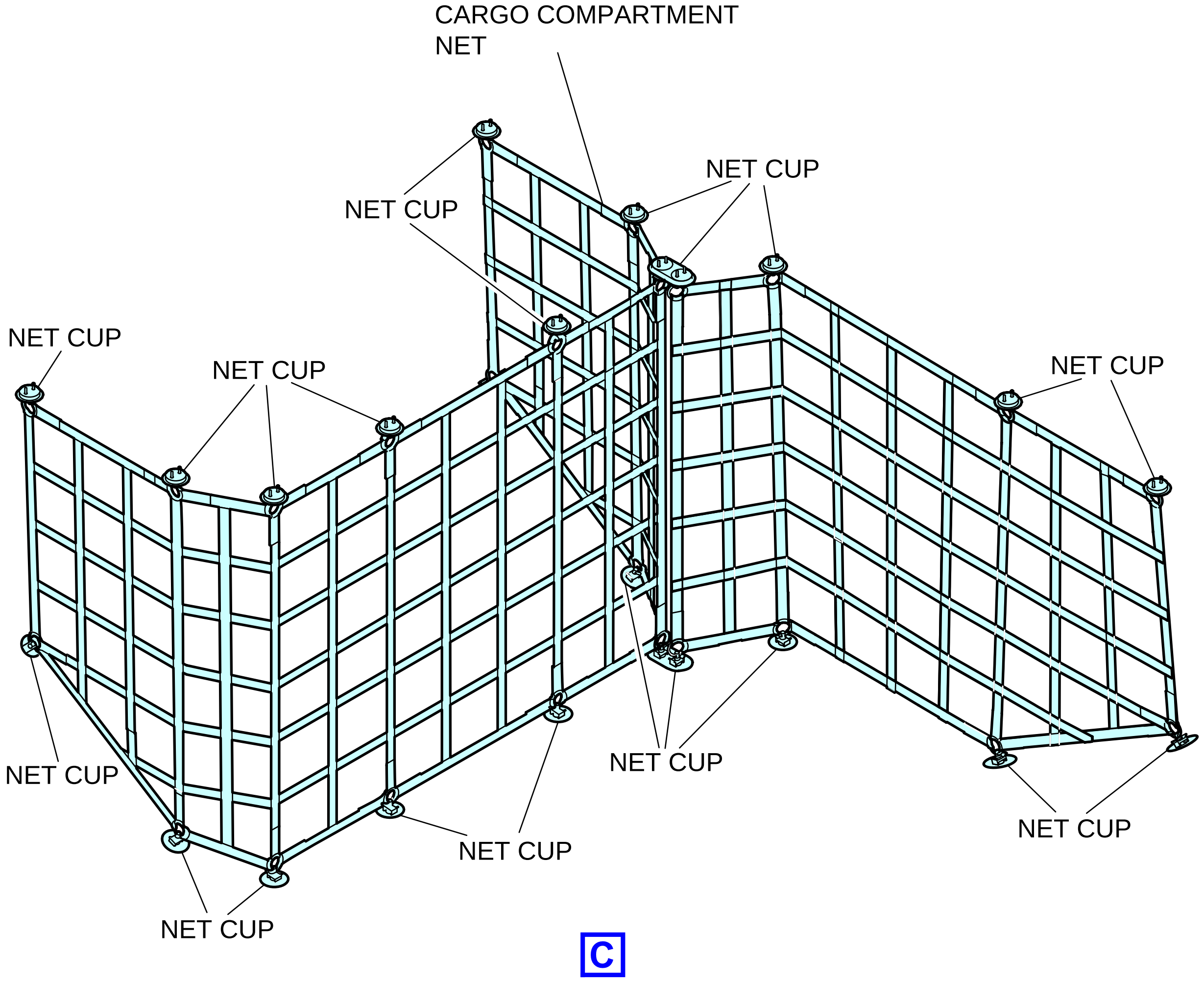

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Figure 9 Cargo nets - (Sheet 2 of 2)

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 10 .

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 10 . 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 10 . 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 10 .

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 10 .

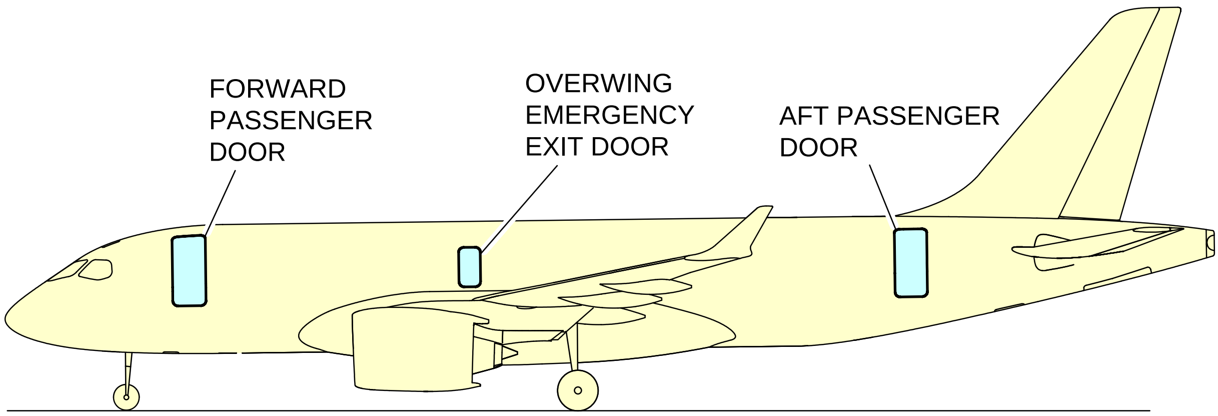
7.8 Aft equipment bay door

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 10 .

7.9 Doors identification

This section shows a general overview of the doors



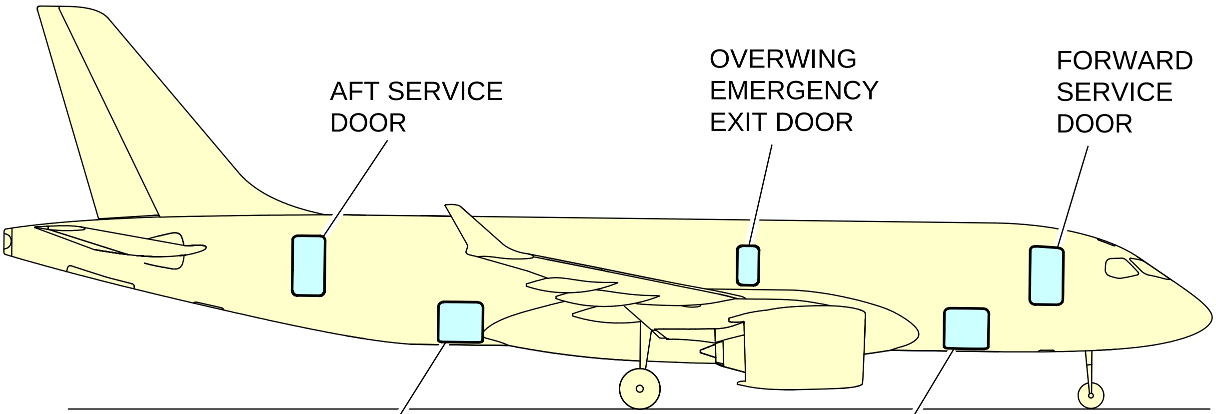


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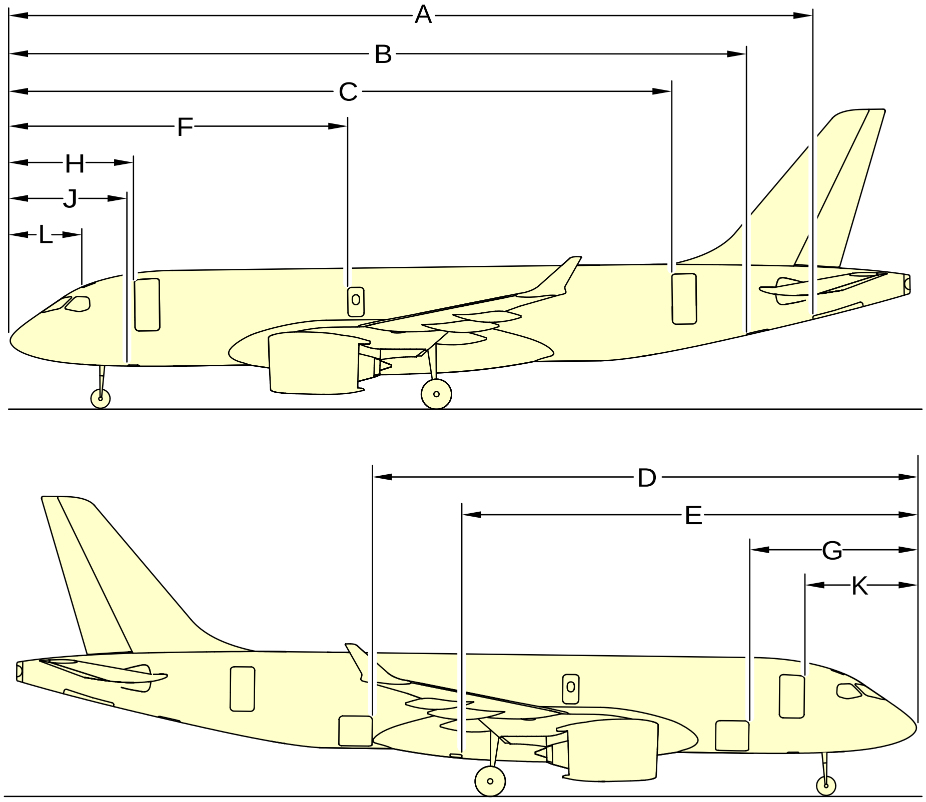
Figure 10 General door location

7.10 Access and exit doors dimensions

Table 10 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

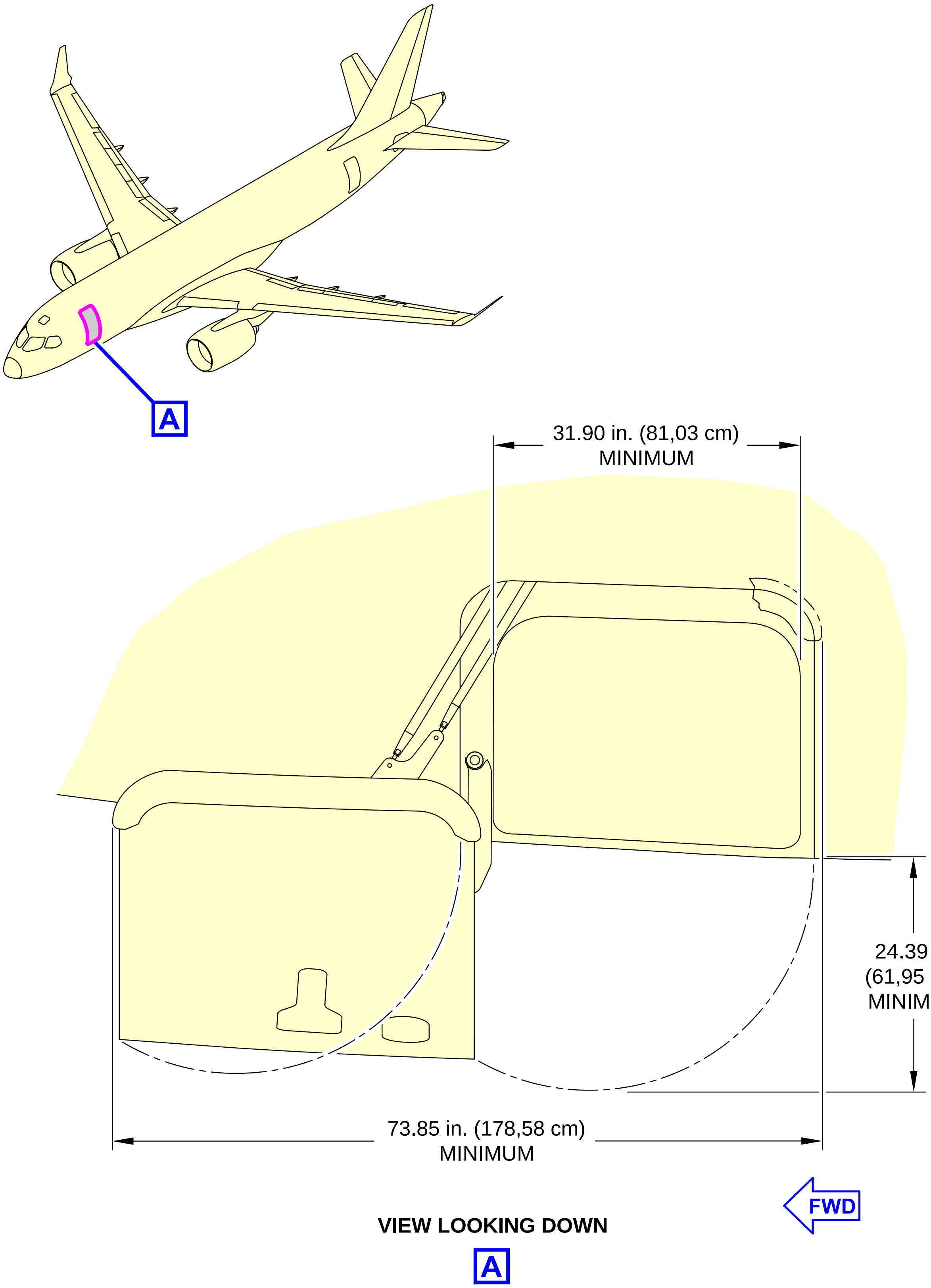

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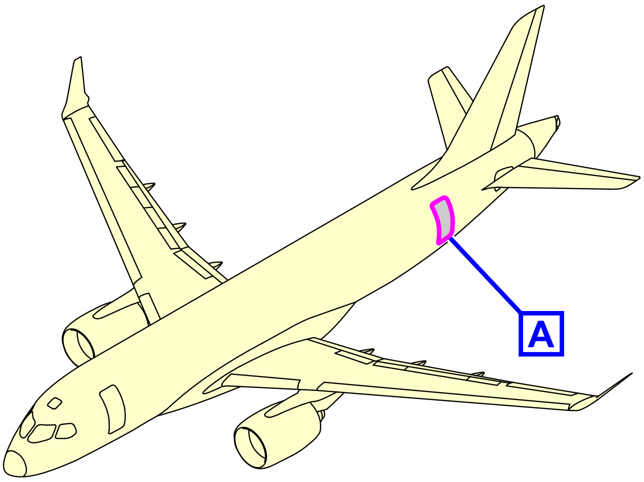
Figure 12 Forward passenger door opening and clearances



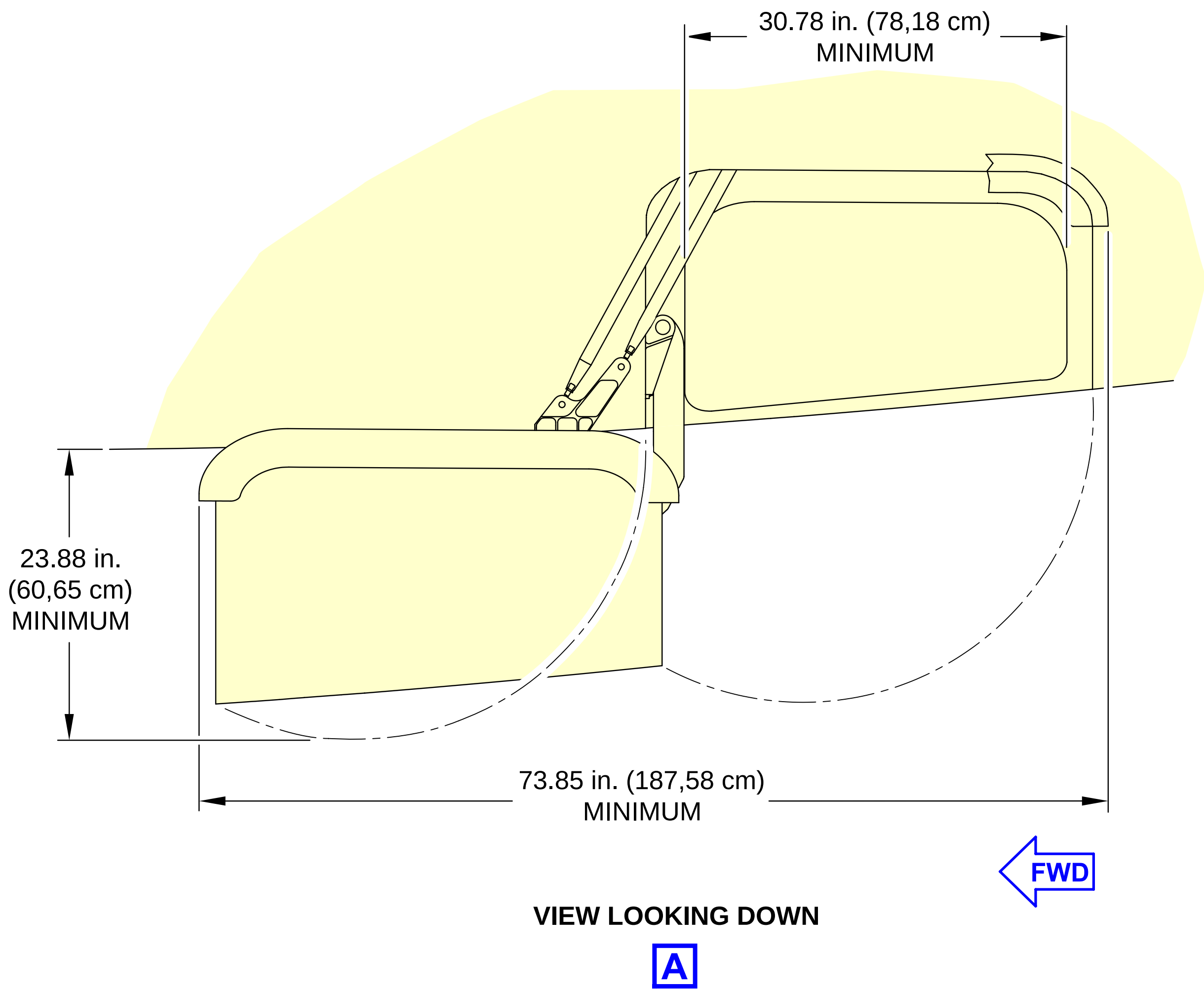


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Figure 13 Aft passenger door opening and clearances

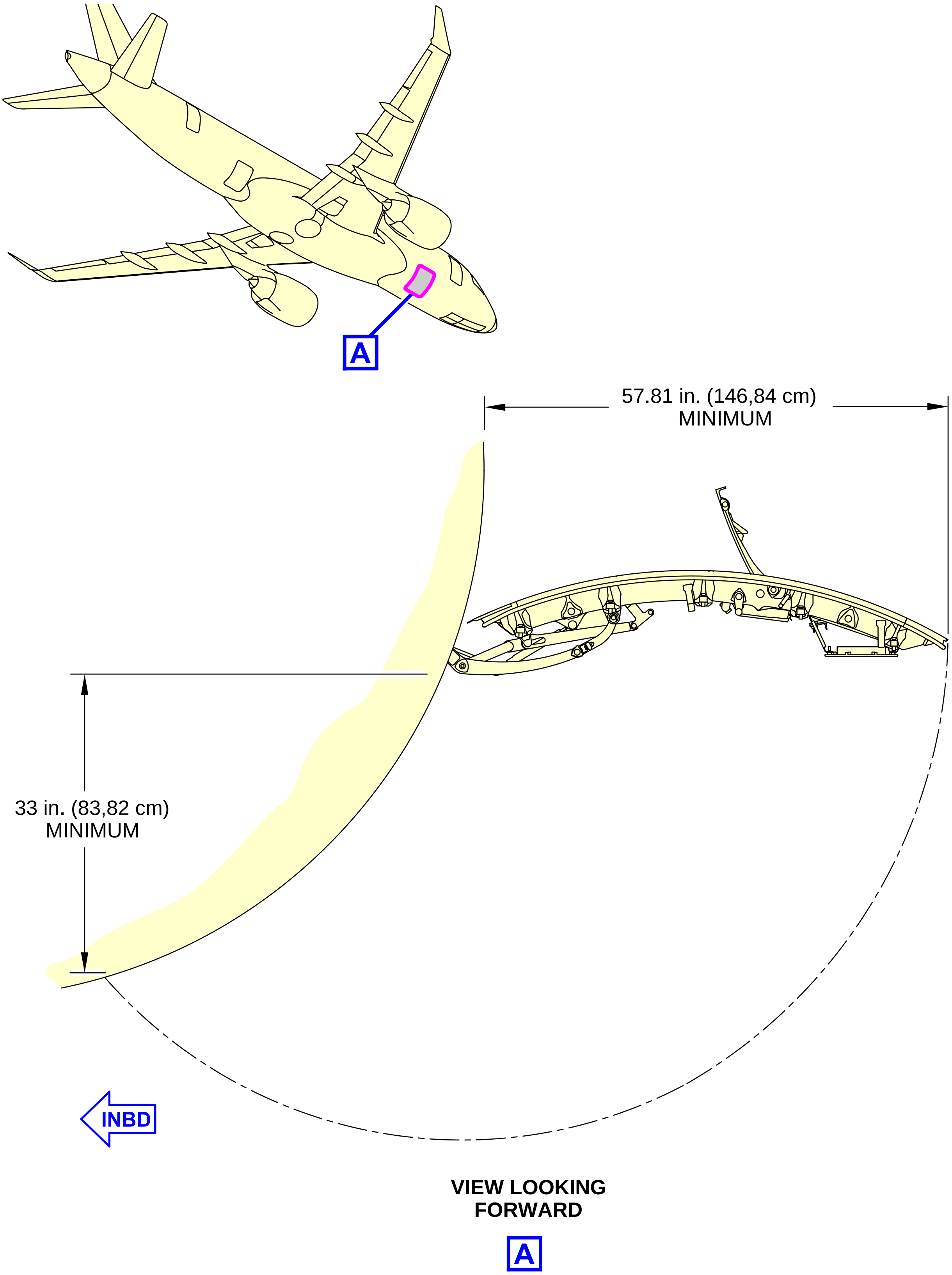

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Figure 14 Forward cargo compartment door opening and clearances

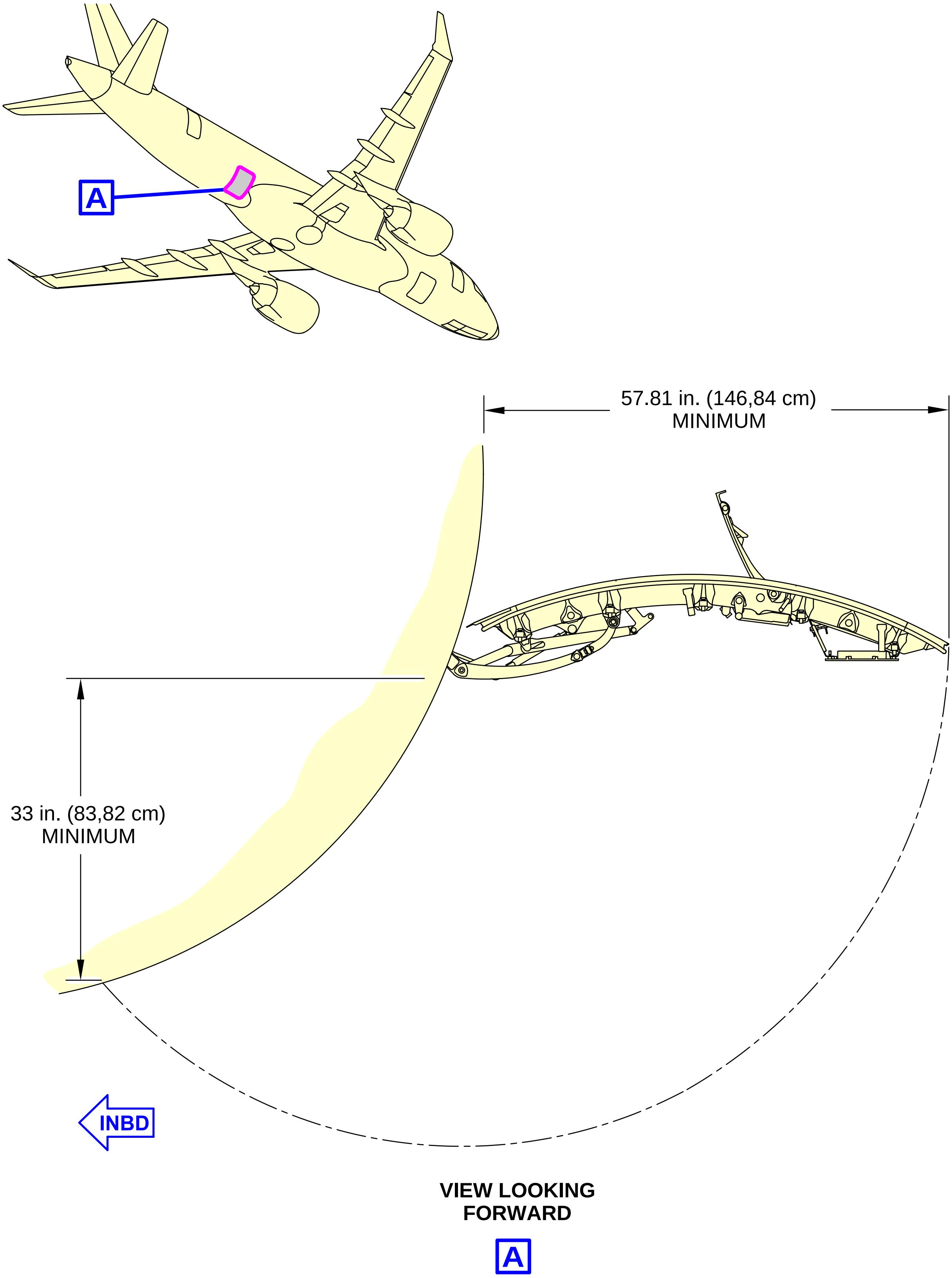

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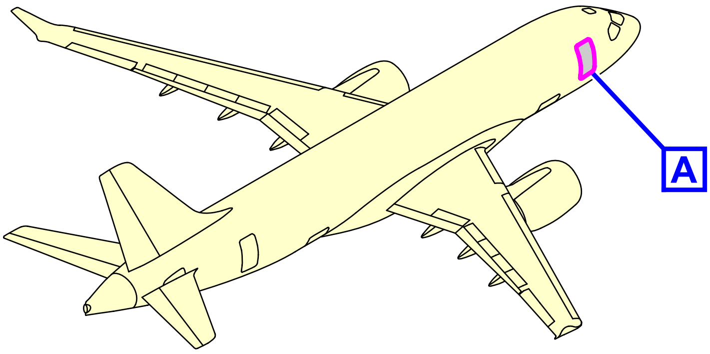
Figure 15 Aft cargo compartment door opening and clearances



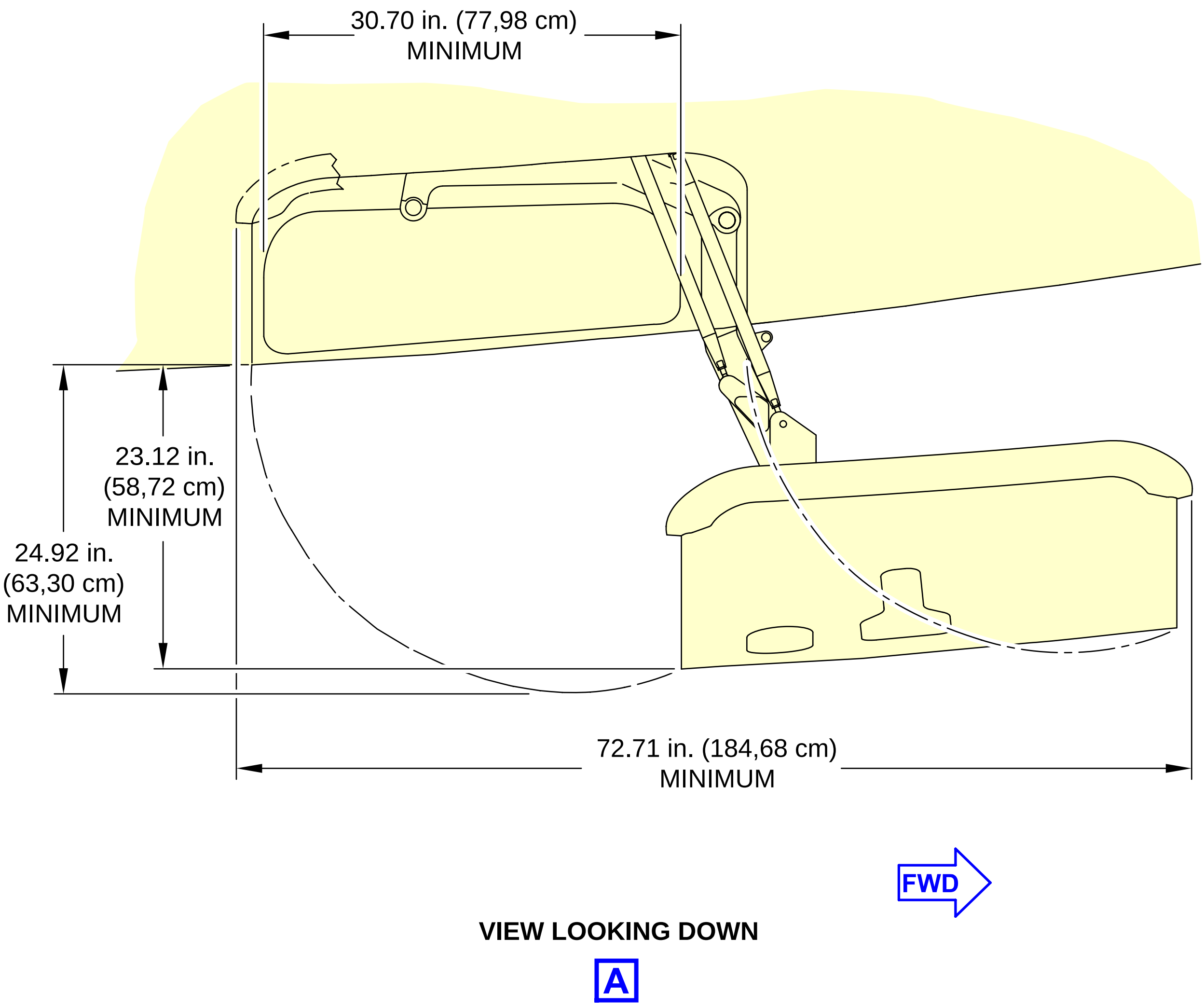


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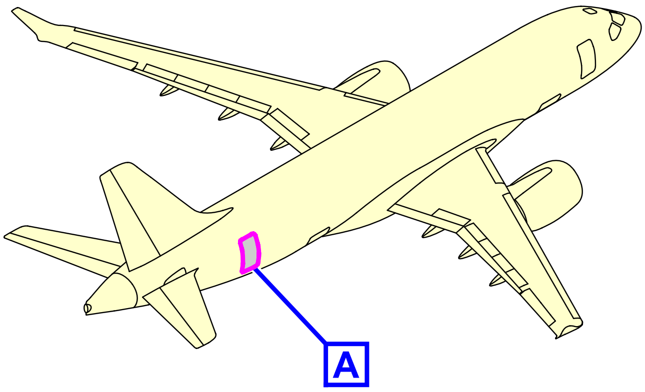
Figure 16 Forward service door opening and clearance



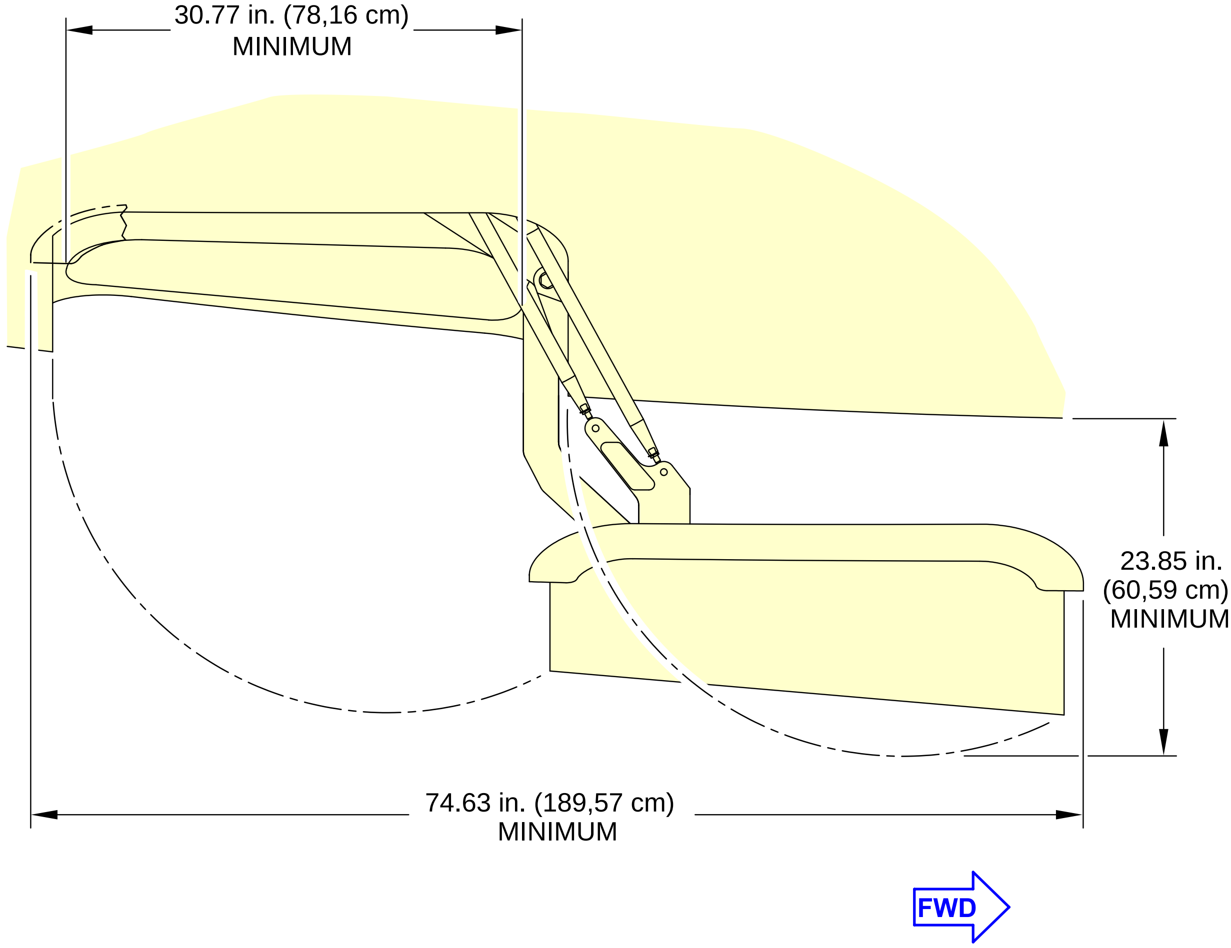


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Figure 17 Aft service door opening and clearances

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Aircraft description - Technical data

Applicability: 55001-59999

Table of contents

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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

Description	A220-300
Standard seating capacity	140
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)		

Description	Volume	Weight
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	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

Locator (refer to Fig. 1)	Value in. (cm)
	(1216.66)
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

Locator (refer to Fig. 1)	Value in. (cm)
	(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.

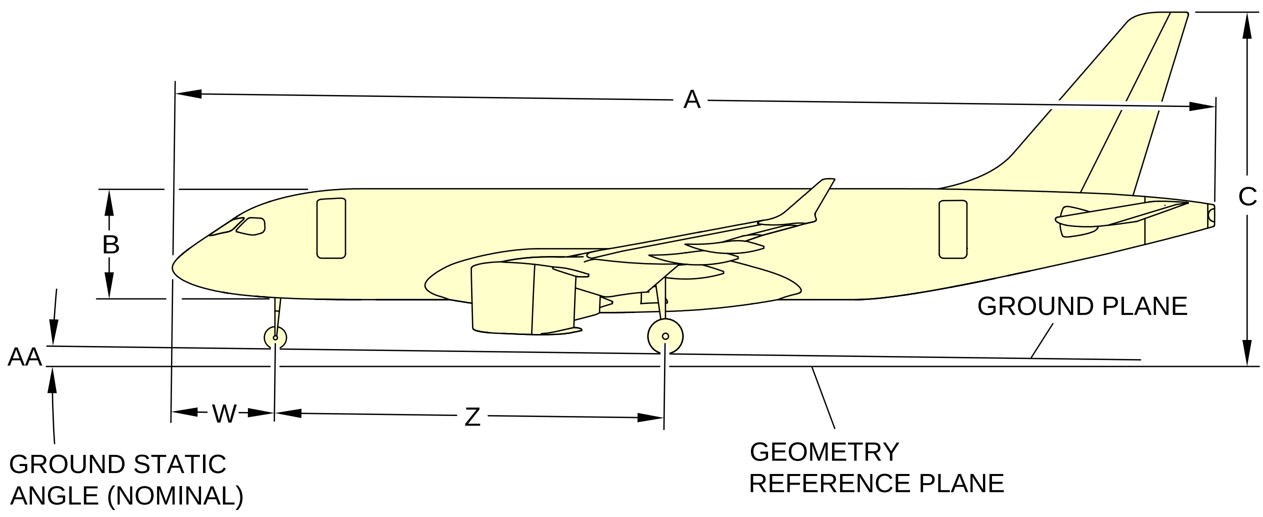

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Figure 1 General aircraft dimensions - (Sheet 1 of 2)

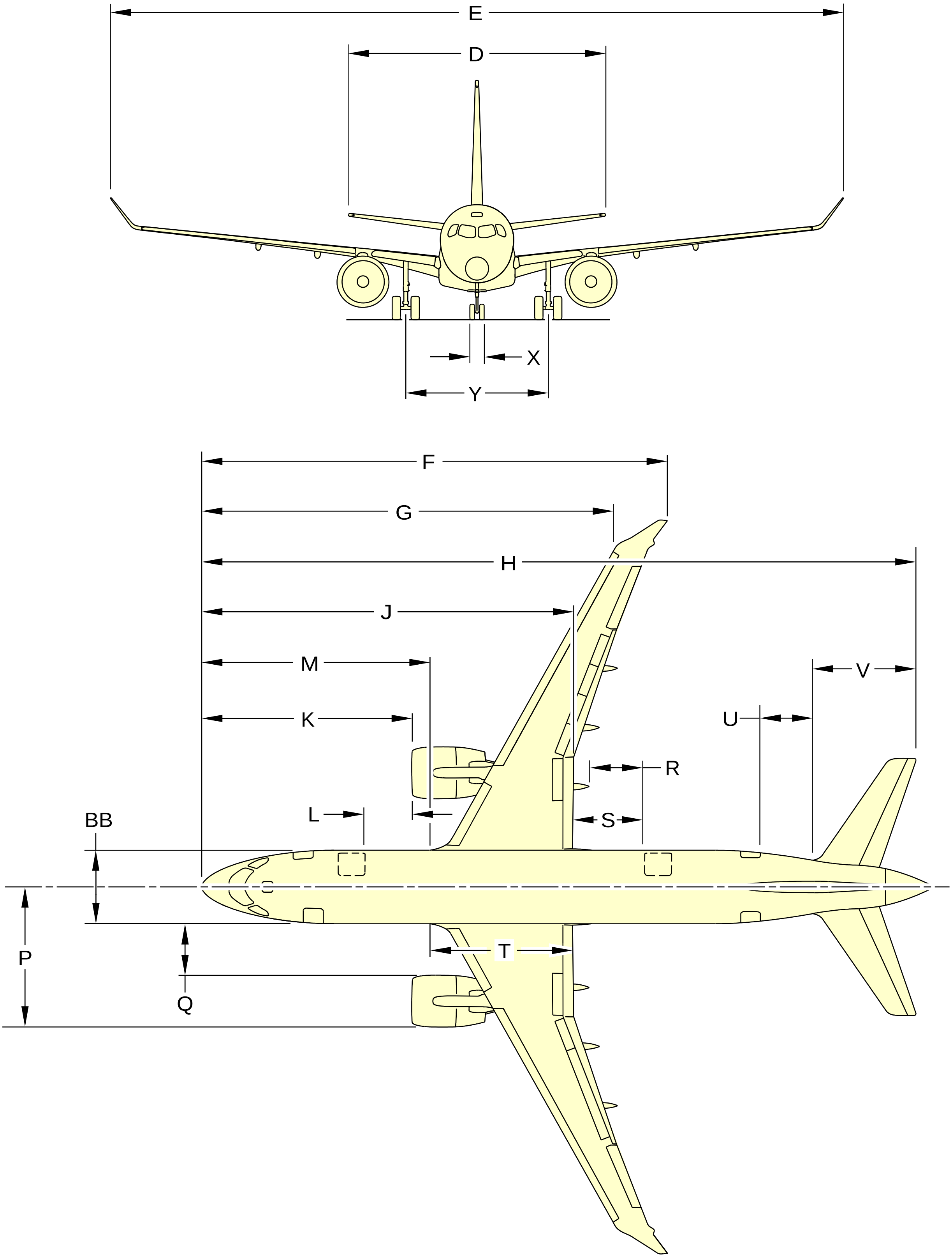

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Figure 1 General aircraft dimensions - (Sheet 2 of 2)

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

Table 7 Ground clearances

Locator	Description	Minimum	Maximum
A	Fuselage top	212.0 in. (538.48 cm)	215.7 in. (547.88 cm)
B	Pilot escape hatch	191.2 in. (485.65 cm)	195.1 in. (495.55 cm)
C	Forward avionic equipment bay door	65.3 in. (165.86 cm)	69.1 in. (175.51 cm)
D	Forward service door (RHS)	121.4 in . (308.36 cm)	125.2 in. (318.01 cm)
E	Forward passenger door (LHS)	121.5 in. (308.61 cm)	125.3 in. (318.26 cm)
F	Forward cargo compartment door (RHS)	69.2 in. (175.77 cm)	72.8 in. (184.91 cm)
G	Nacelle	22.9 in. (58.17 cm)	25.9 in. (665.79 cm)
H	Overwing emergency exit (LHS & RHS)	140.9 in. (357.89 cm)	143.8 in. (365.25 cm)
J	Mid avionic equipment bay door	58.5 in. (148.59 cm)	61.8 in. (156.97 cm)
K	Aft cargo compartment door (RHS)	75.7 in. (192.28 cm)	79.9 in. (202.95 cm)
L	Wing tip (No deflection)	230.4 in. (585.22 cm)	234.3 in. (595.12 cm)

Locator	Description	Minimum	Maximum
M	Aft service door (RHS)	128.1 in (325.37cm)	133 in. (337.82 cm)
N	Aft passenger door (LHS)	128.1 in. (325.37 cm)	133 in. (337.82 cm)
P	Aft avionic equipment door	114.6 in. (291.08 cm)	119.9 in. (304.55 cm)
Q	APU door	142.2 in. (361.19 cm)	148.0 in. (375.92 cm)
R	Tail	455.8 in. (1157.73 cm)	461.9 in. (1173.23 cm)
S	Winglet	168 in. (426.72 cm)	176.4 in. (448.06 cm)

Note

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

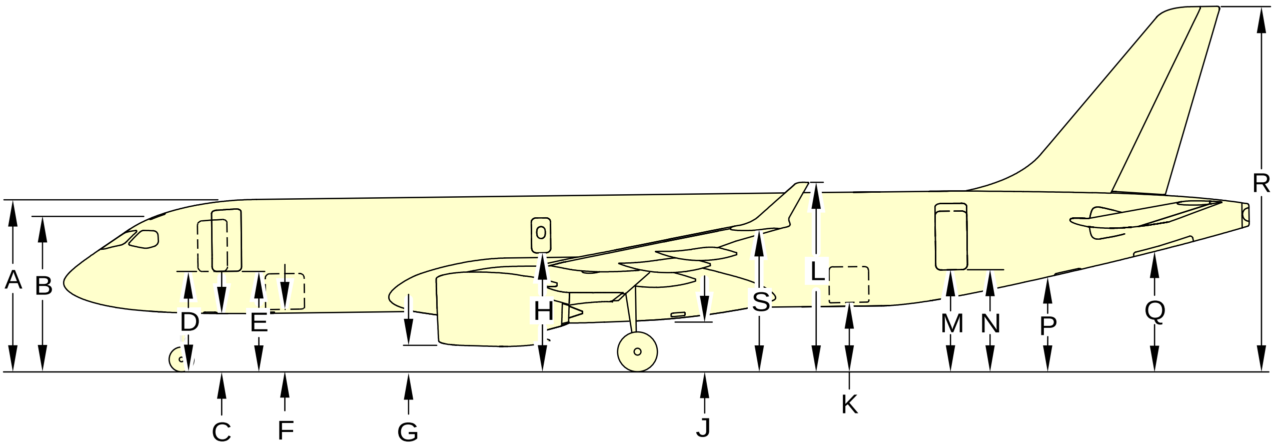

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Figure 2 Ground clearances

3.2 Ground clearances for evacuation slides

This section gives ground clearances for evacuation slides. Refer to Table 8 and Fig. 3 .

Table 8 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, 55292-55298, 55300-55301, 55303, 55306-55307, 55309-55310, 55312-55316, 55318-55322, 55325-55326, 55328, 55331-55337, 55339-55343, 55345, 55348-55349, 55351-55352, 55354-55356, 55359-55362, 55364-55366, 55369, 55372-55373, 55382-55384, 55388, 55391 and 55056-55057, 55065-55066, 55072-55073 PRE BD500-256002

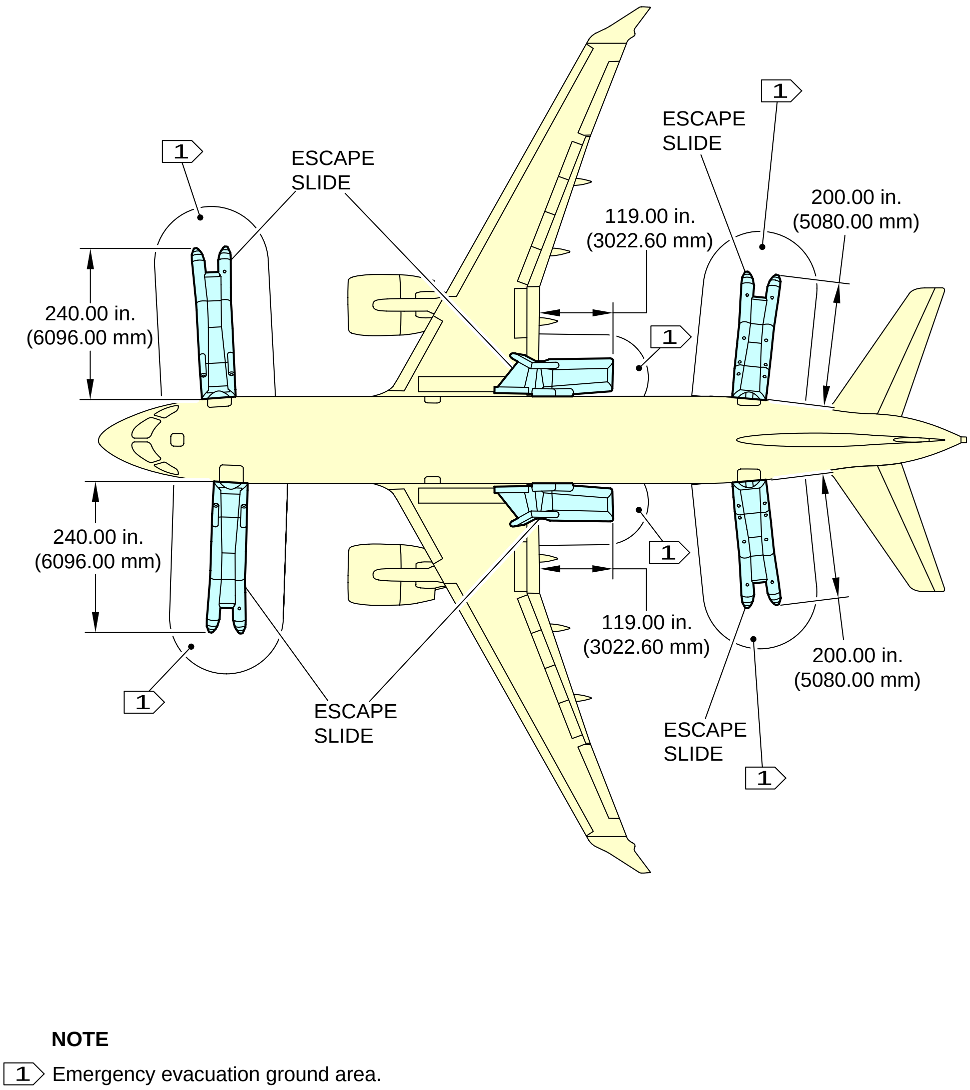

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Figure 3 Ground clearances for evacuation slides - (Sheet 1 of 2)

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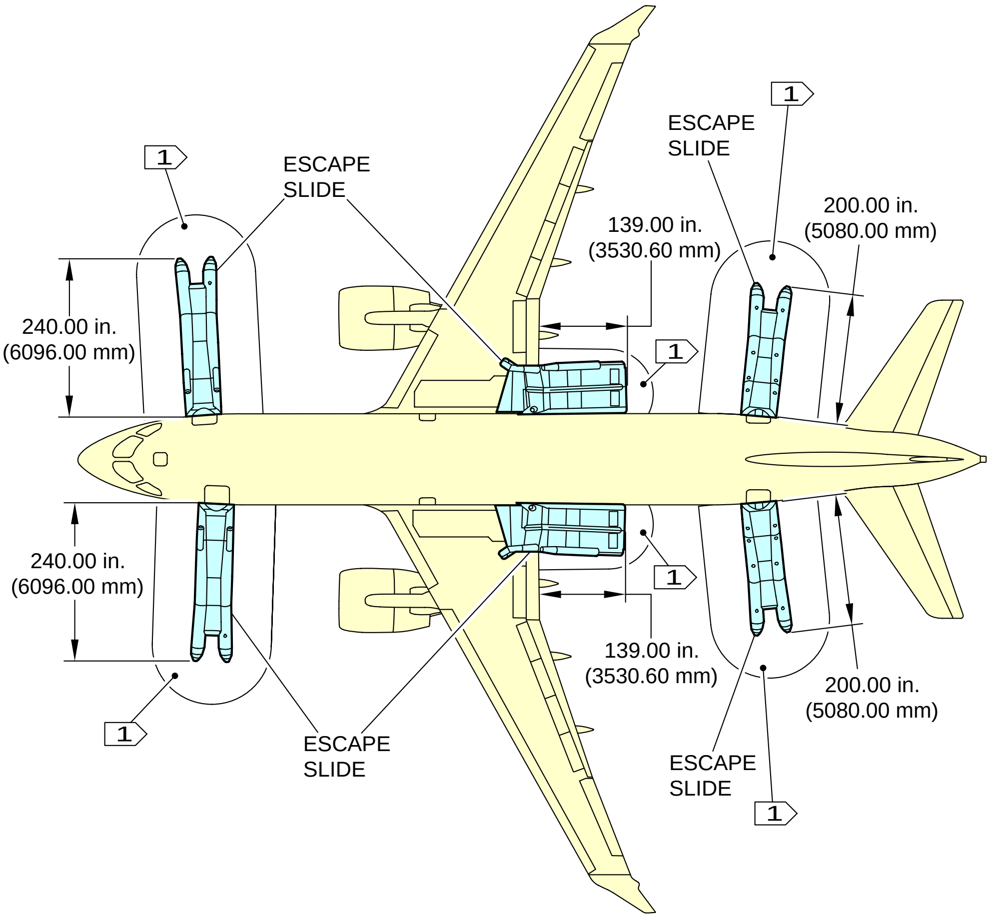

NOTE

1 Emergency evacuation ground area.

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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 .

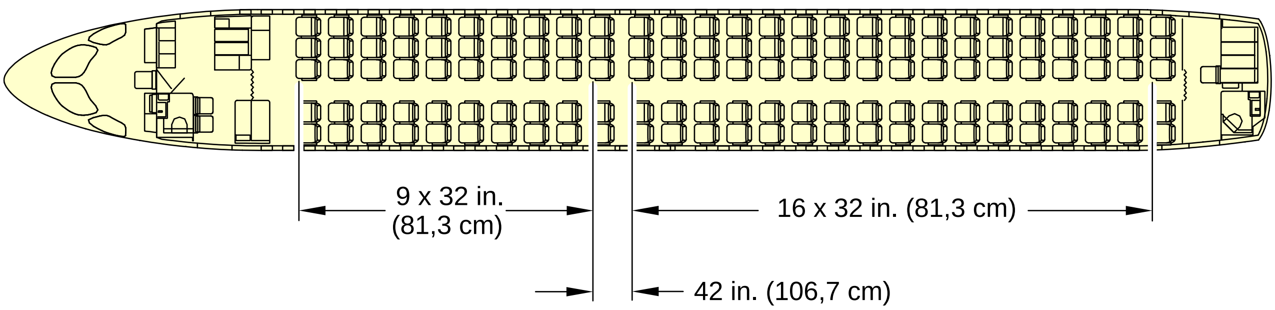

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Figure 4 Layout Of Passenger Accommodation (LOPA)

5 Passenger cross-section

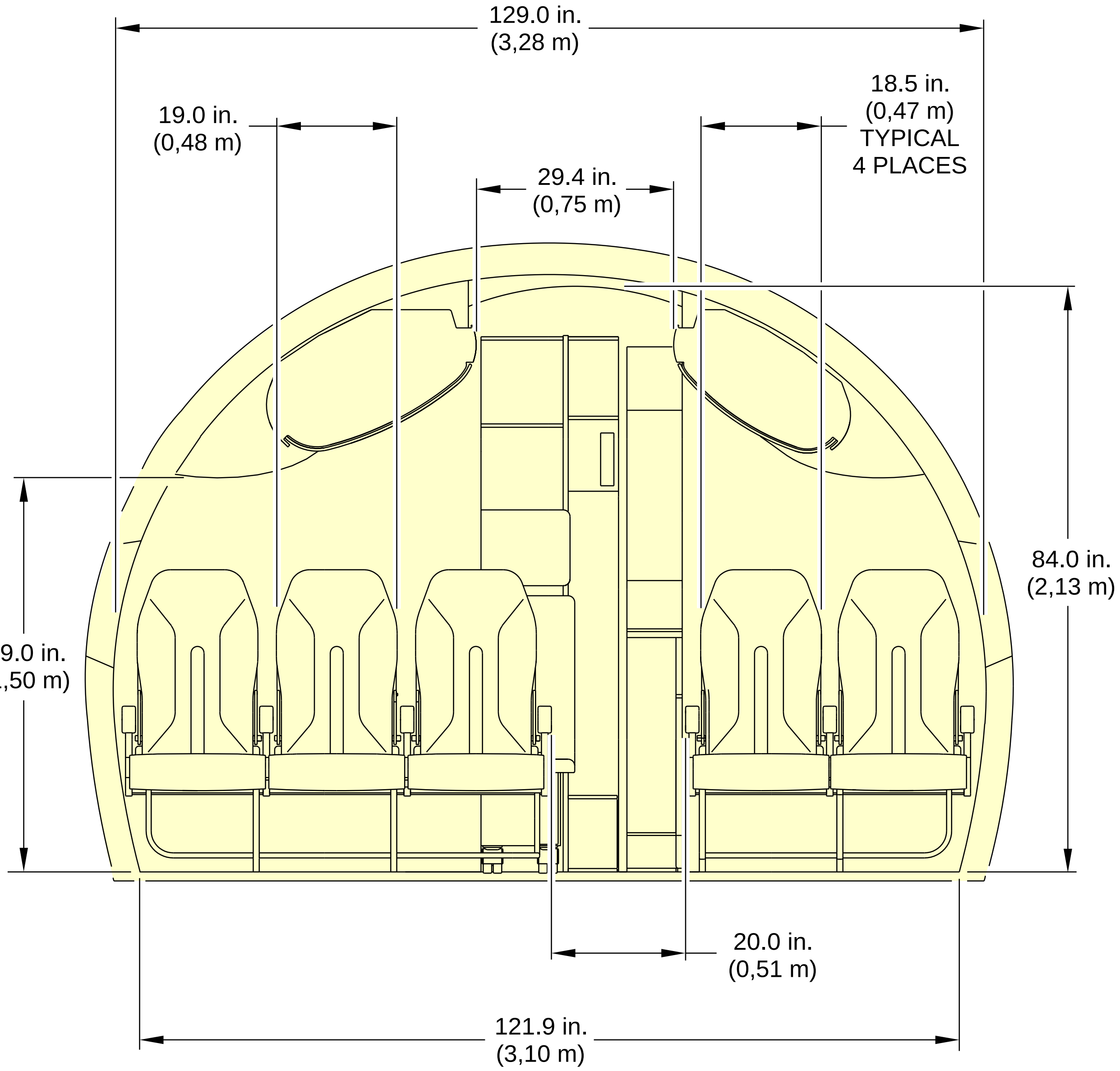

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Figure 5 Passenger cross-section (economy class)

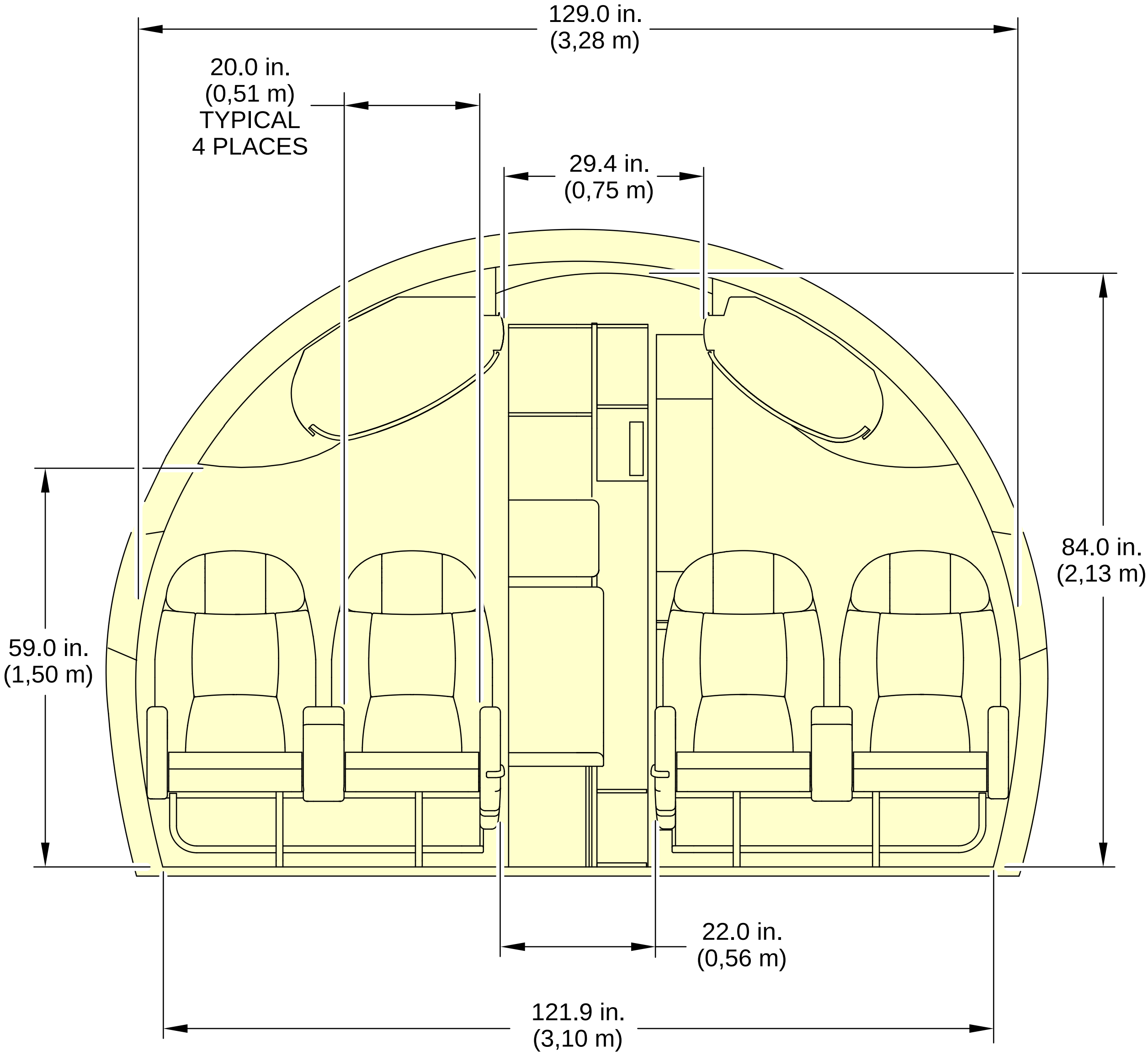

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Figure 6 Passenger cross-section (optional business class)

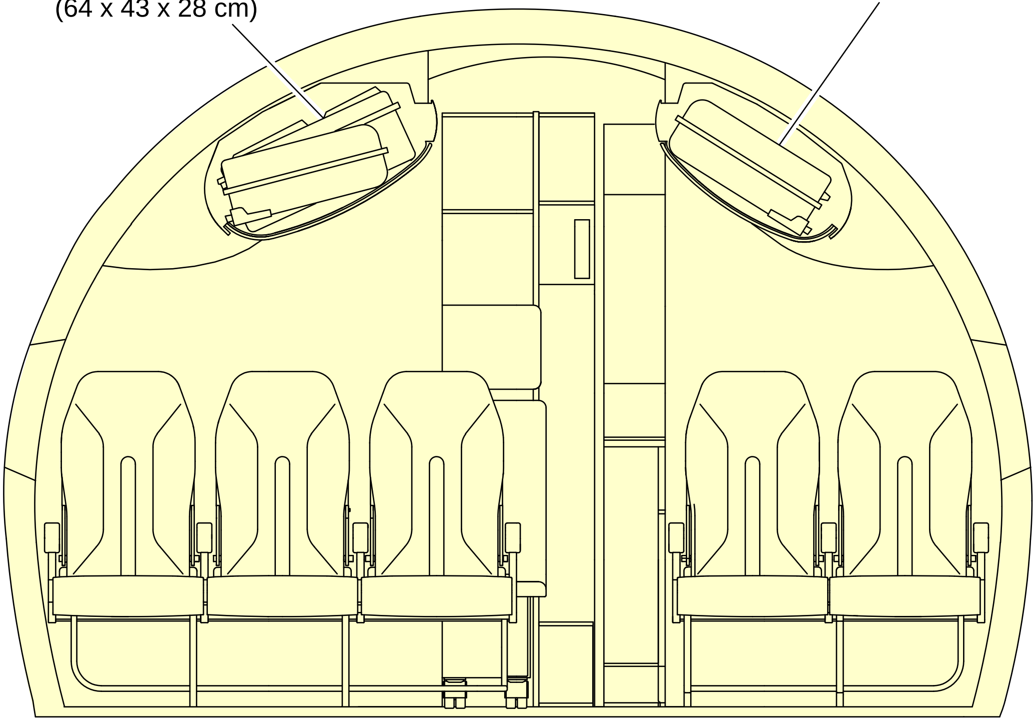

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Figure 7 Overhead stowage bins

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 9 lists the estimated wet volume of the cargo compartments.

Table 9 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

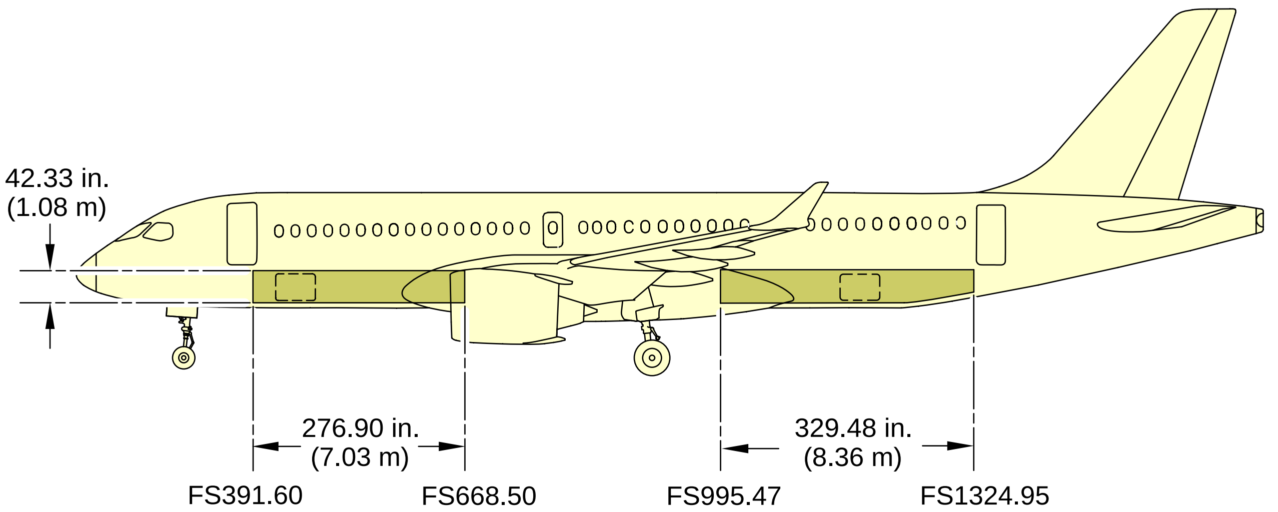

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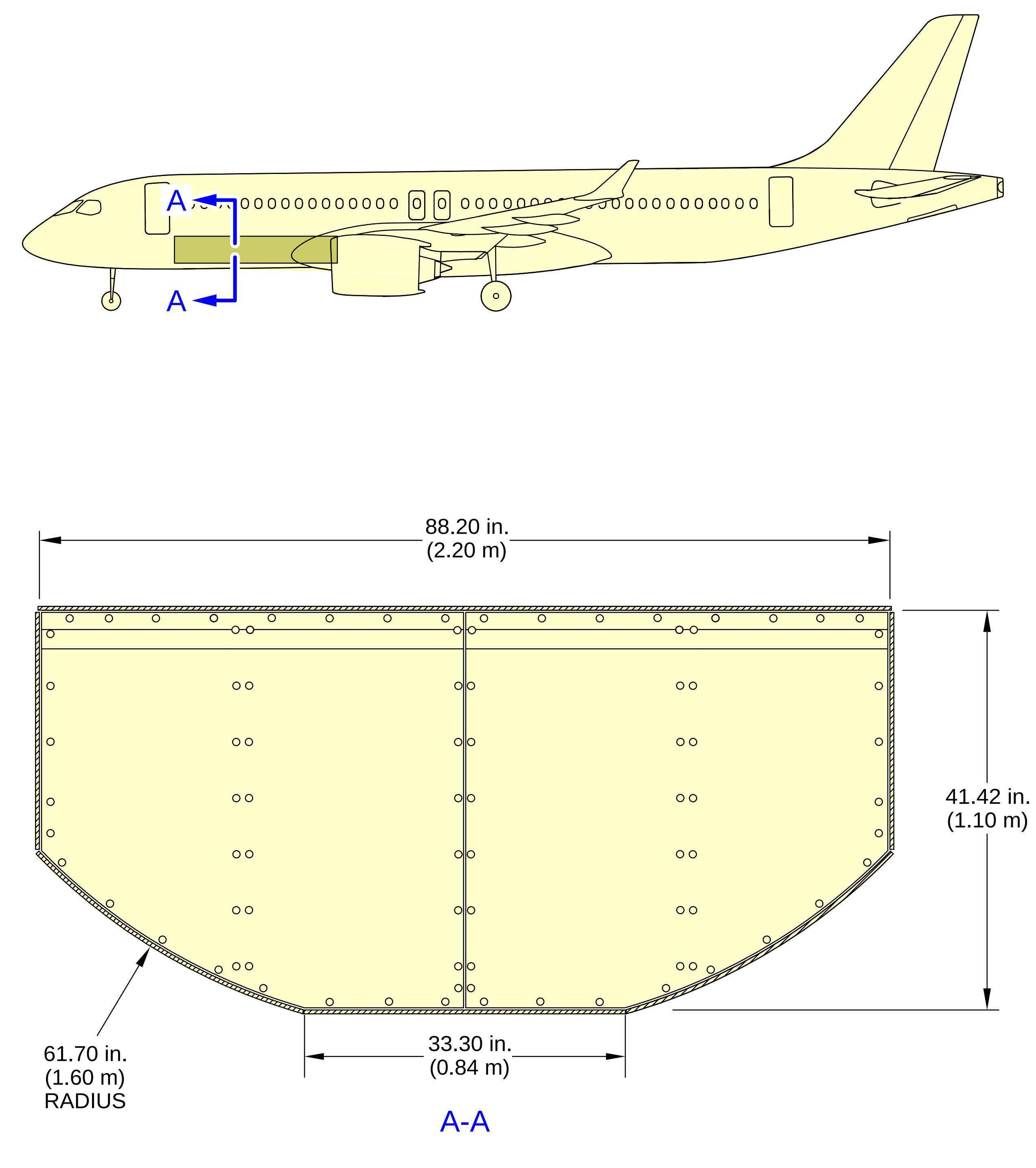
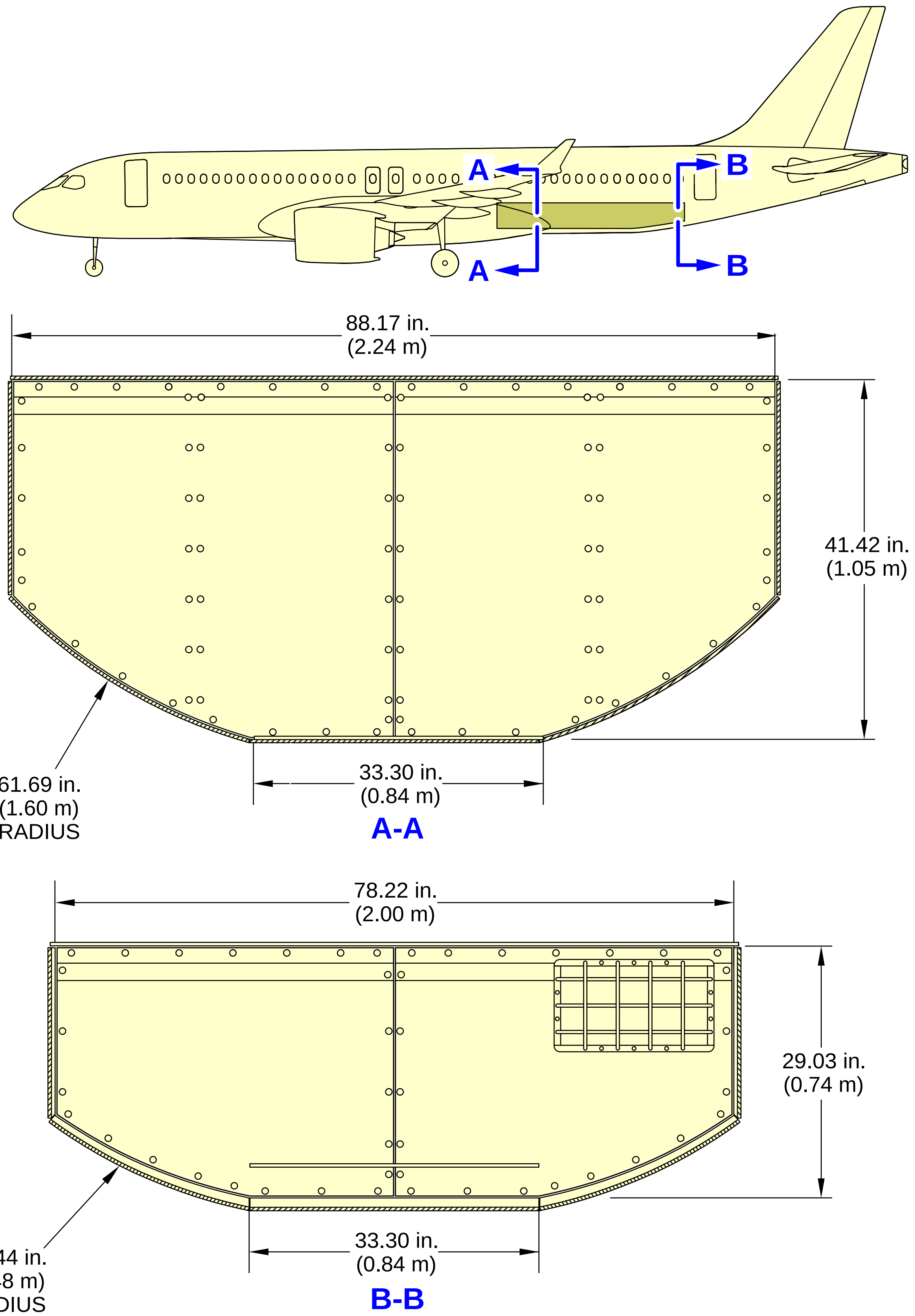
Figure 8 Aircraft cargo side view - (Sheet 1 of 3)



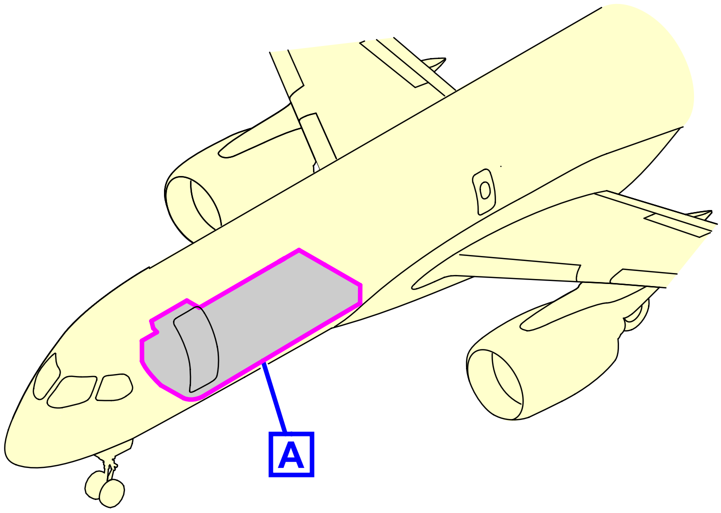
ICN-BD500-A-J084305-A-3AB48-24366-A-001-01

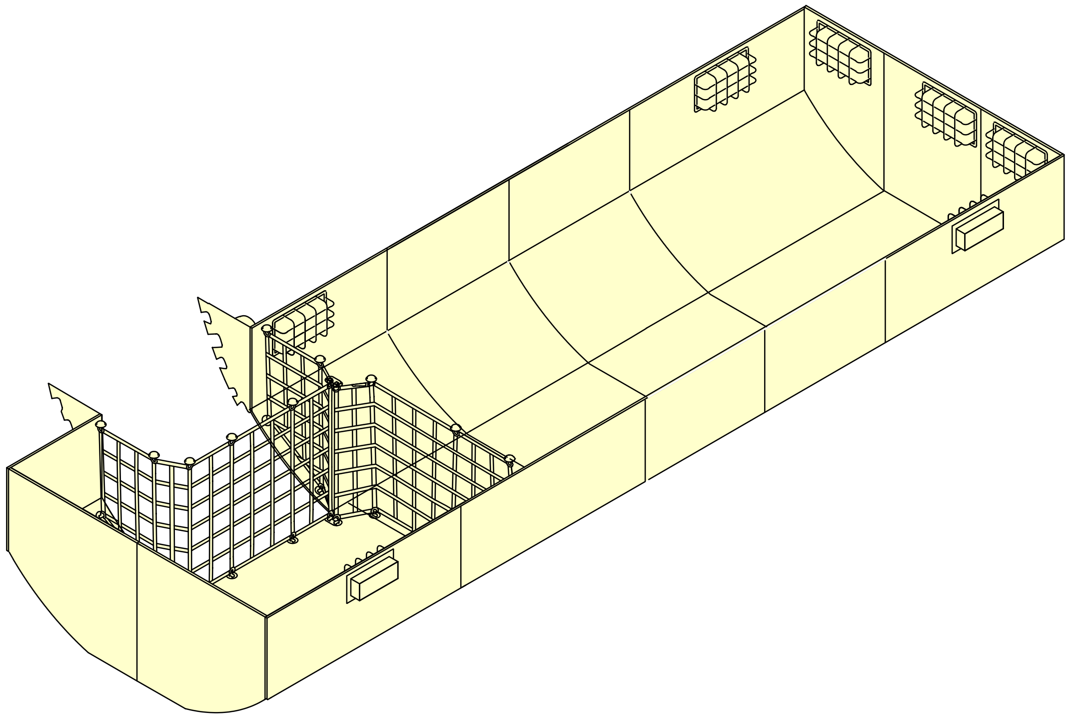
Figure 8 Aircraft cargo side view - (Sheet 2 of 3)



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

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

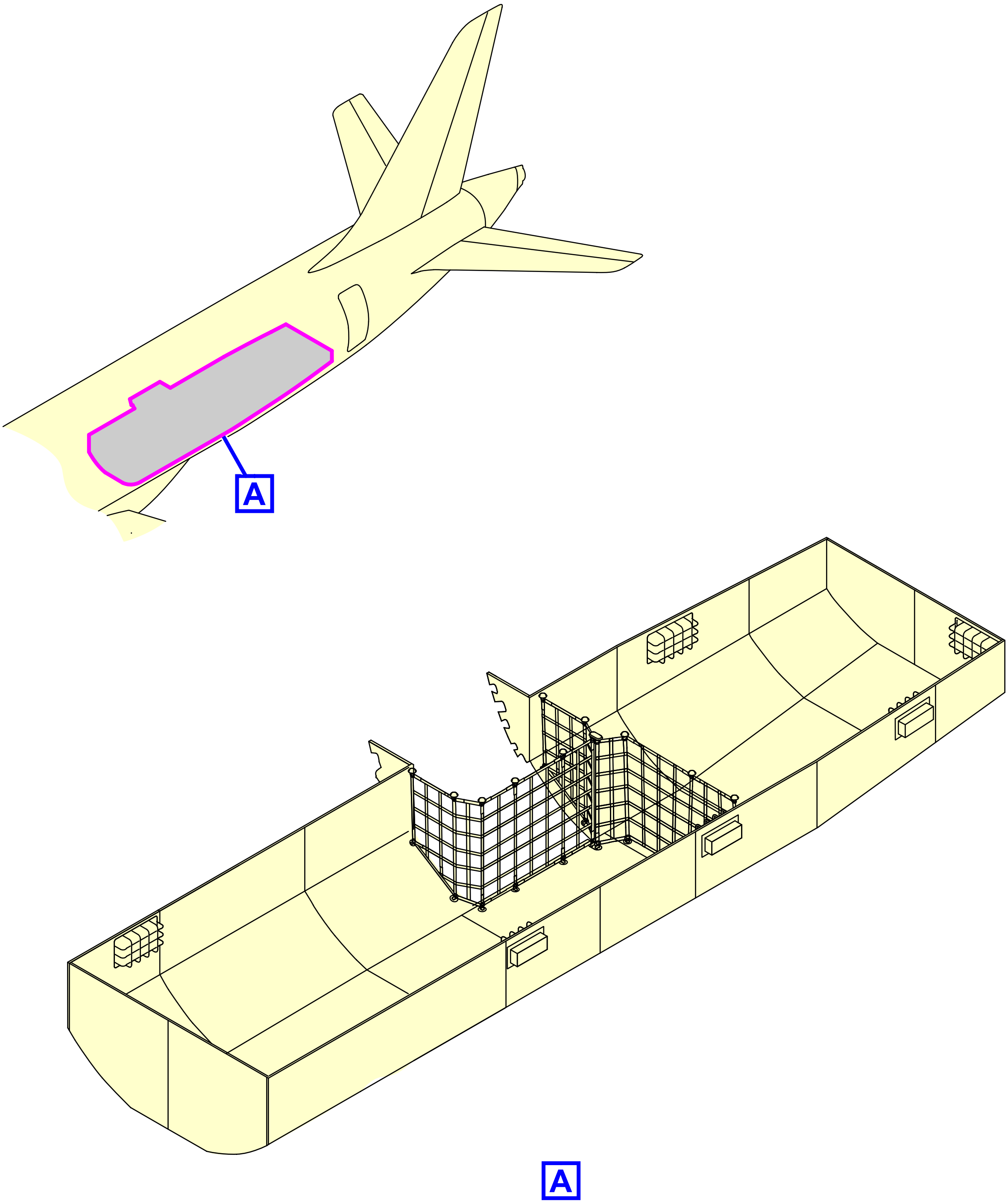




A

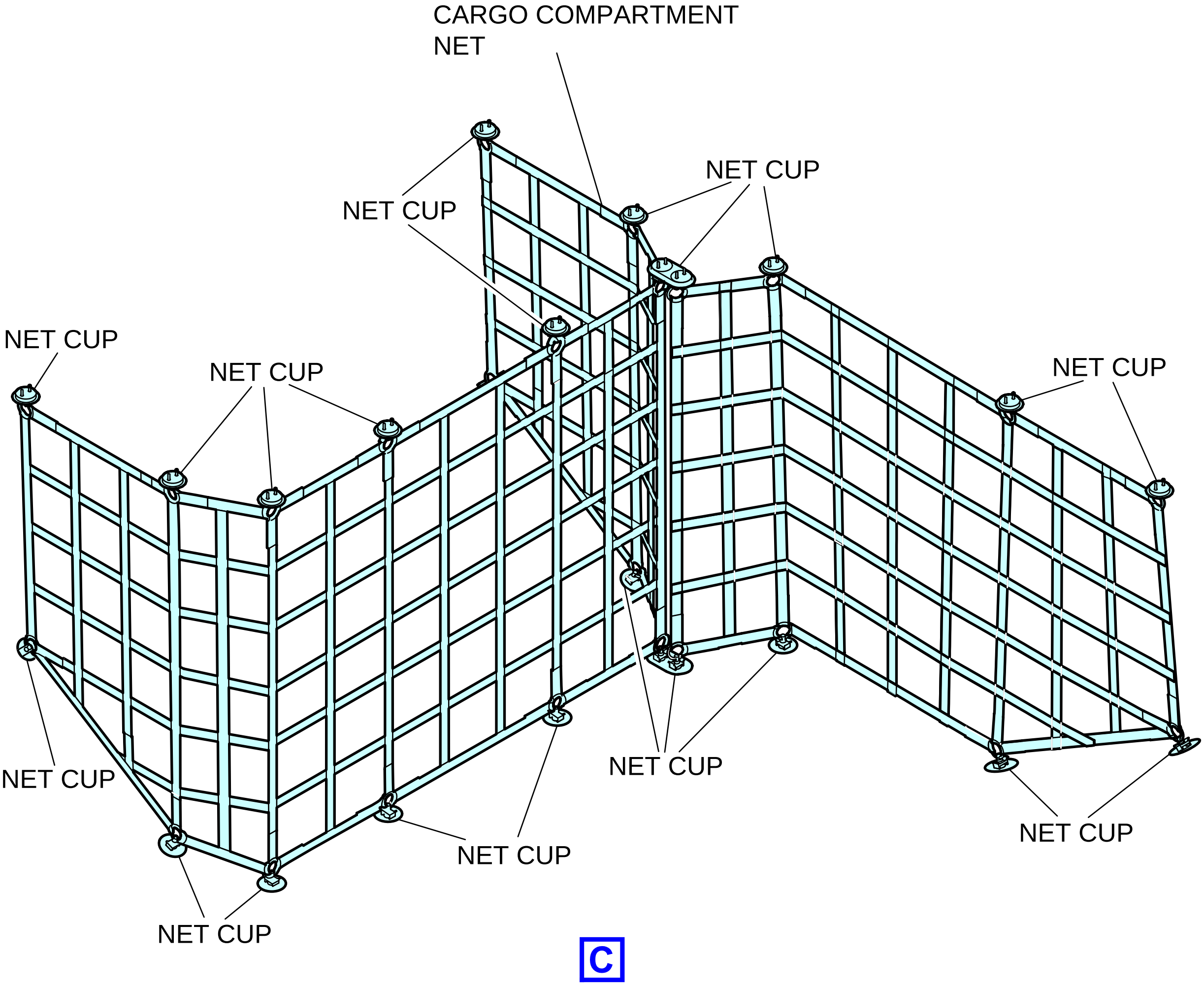
ICN-BD500-A-J084305-A-3AB48-24368-A-001-01

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 10 .

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 10 . 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 10 . 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 10 .

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 10 .

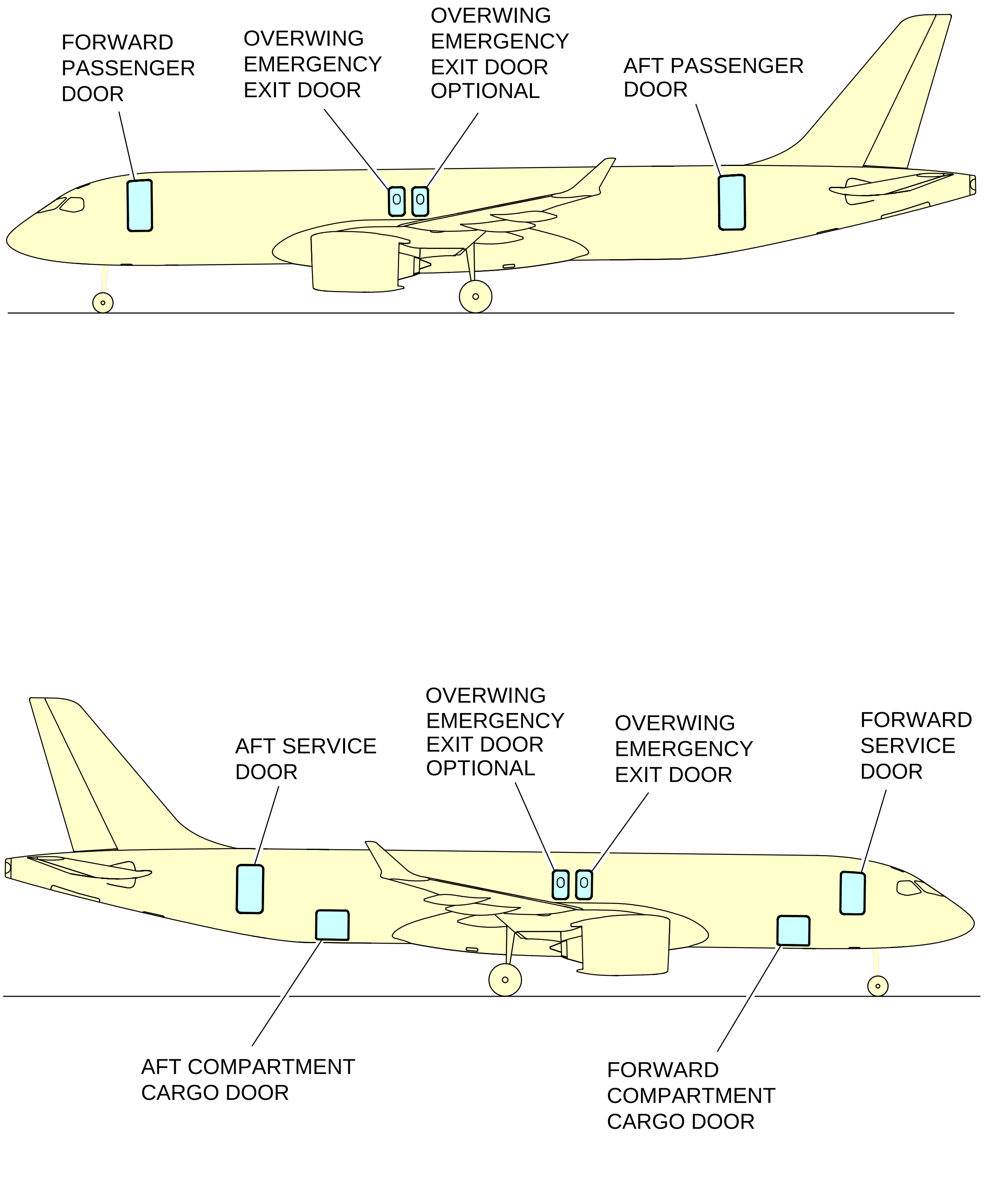
7.8 Aft equipment bay door

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 10 .

7.9 Doors identification

This section shows a general overview of the doors



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

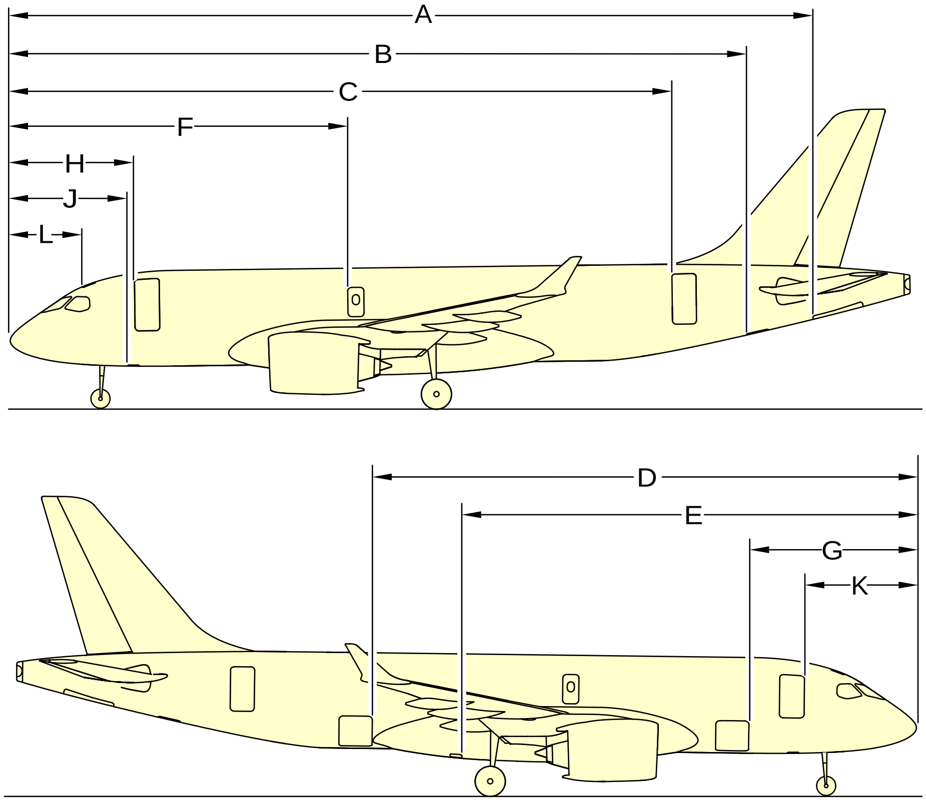
Figure 10 General door location

7.10 Access and exit doors dimensions

Table 10 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)

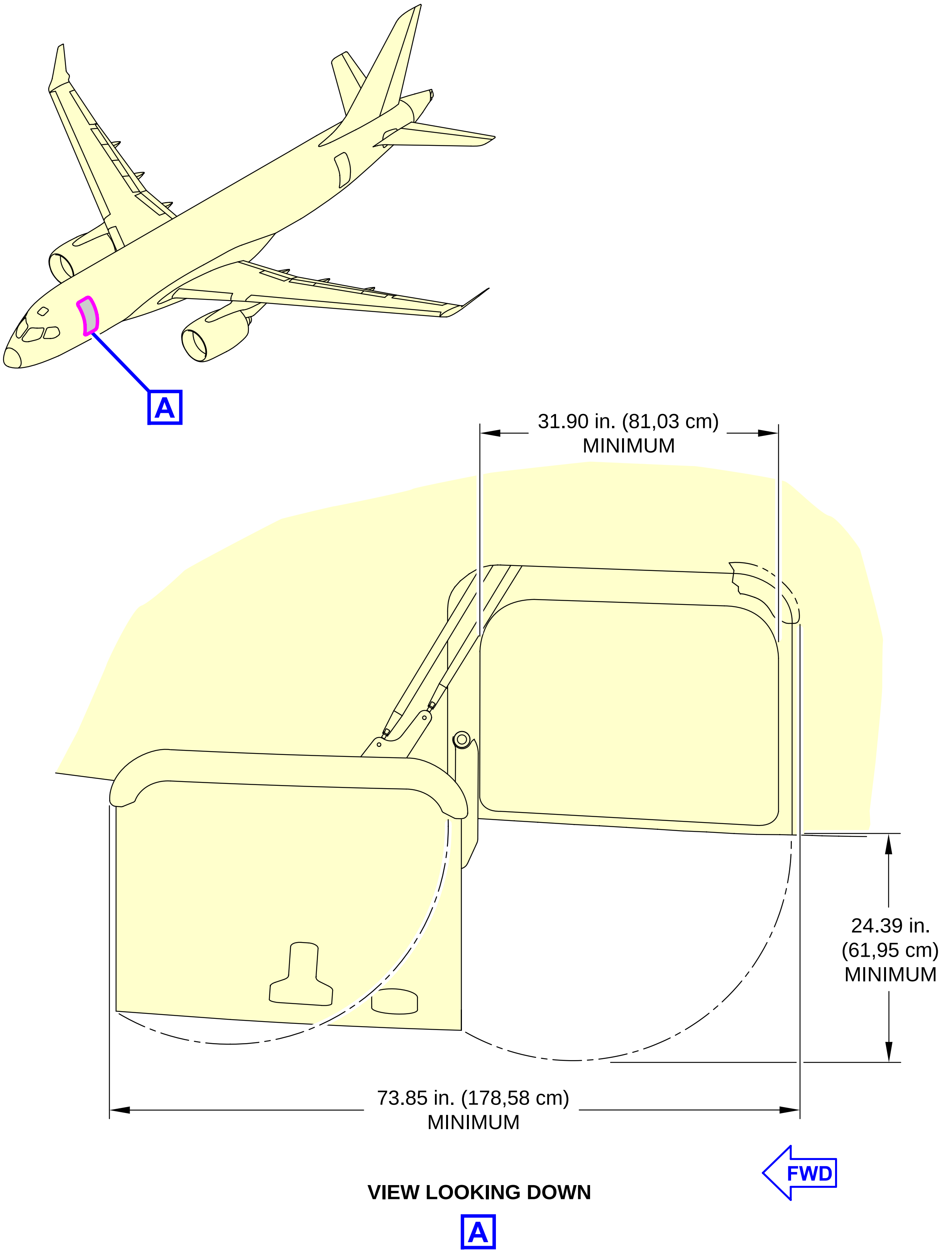
NOTE

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

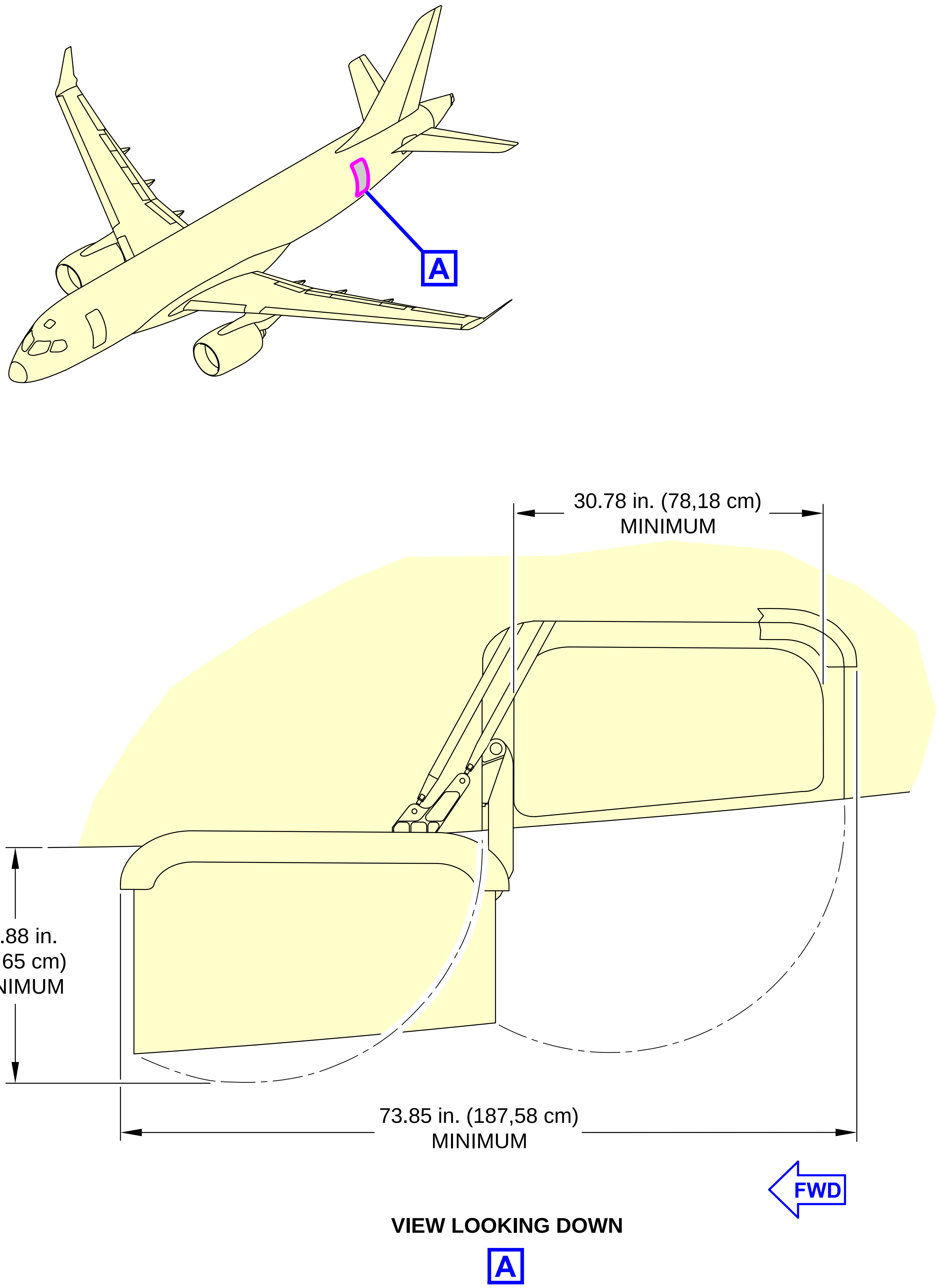
Figure 11 Door distance from nose

7.12 Door opening and clearance



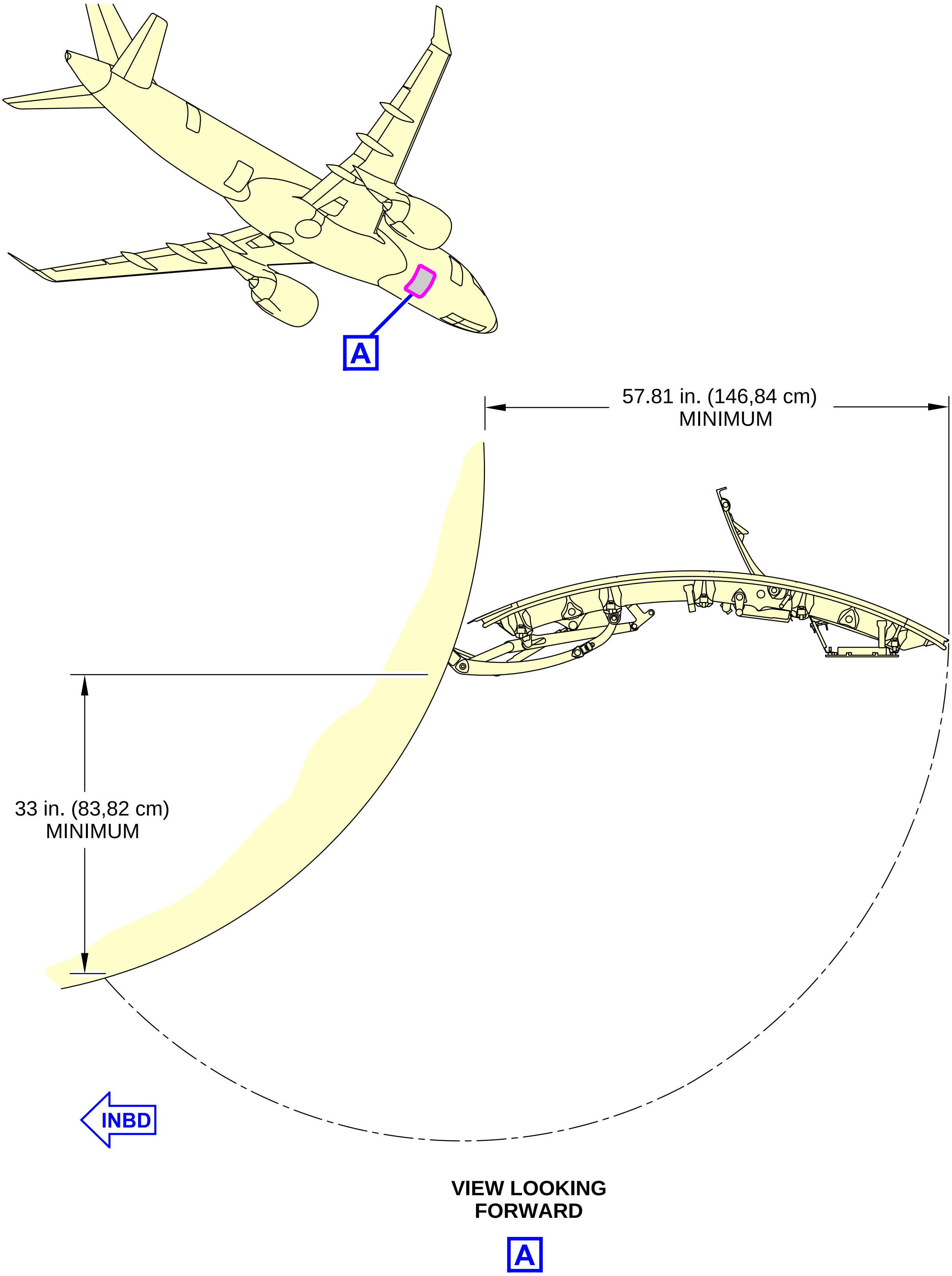
ICN-BD500-A-J061100-A-3AB48-00103-A-003-01

Figure 12 Forward passenger door opening and clearances



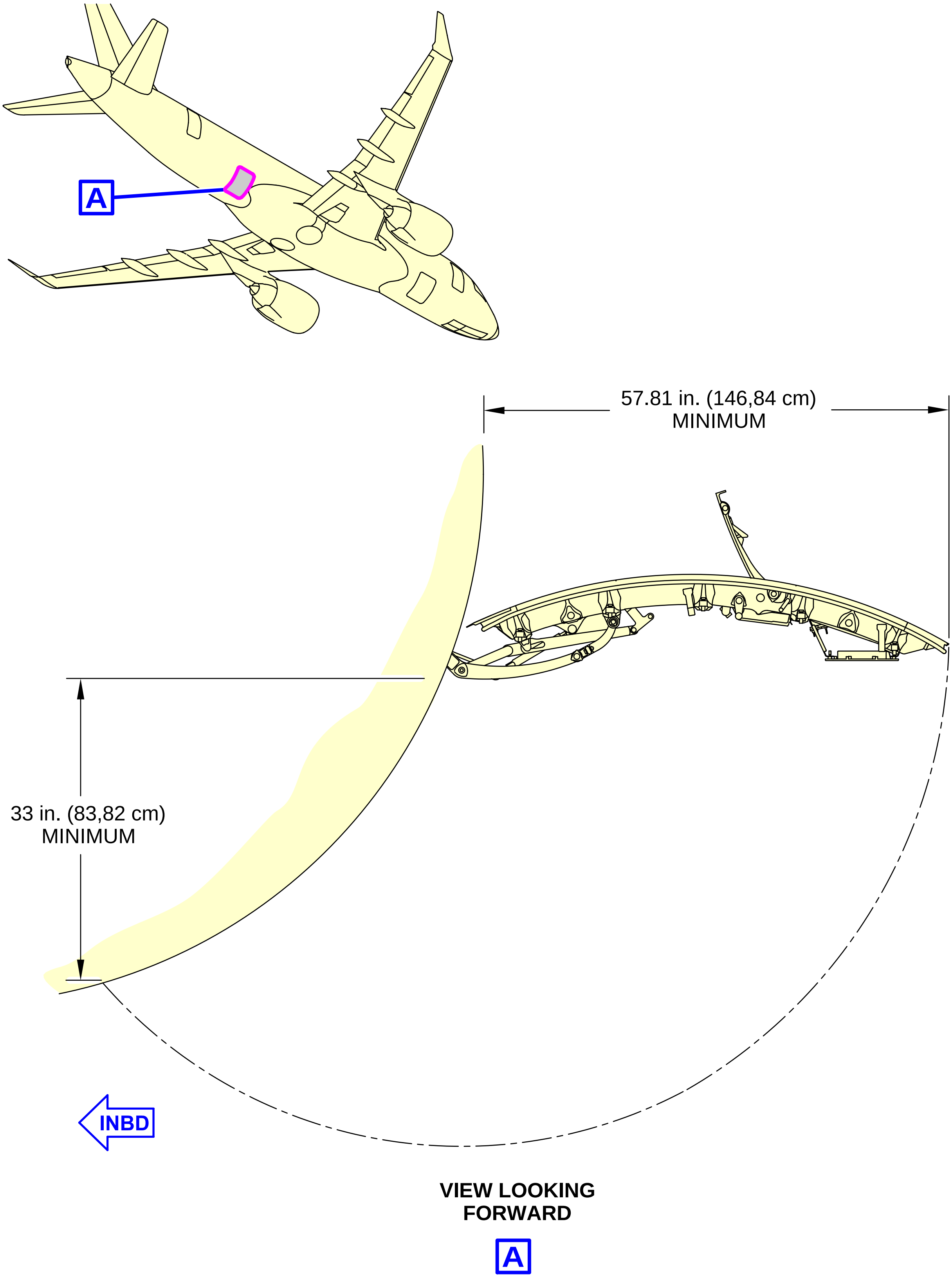
ICN-BD500-A-J061100-A-3AB48-00104-A-003-01

Figure 13 Aft passenger door opening and clearances



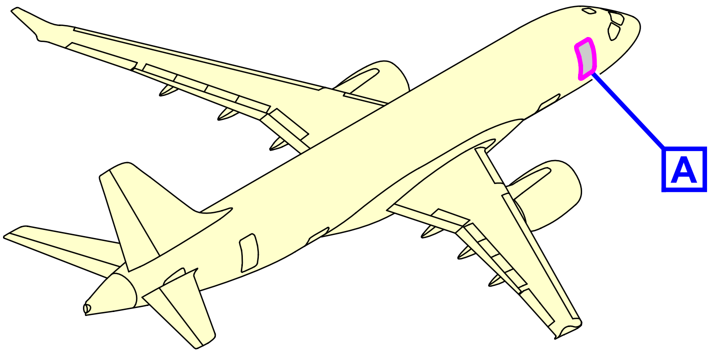
ICN-BD500-A-J061100-A-3AB48-00102-A-002-01

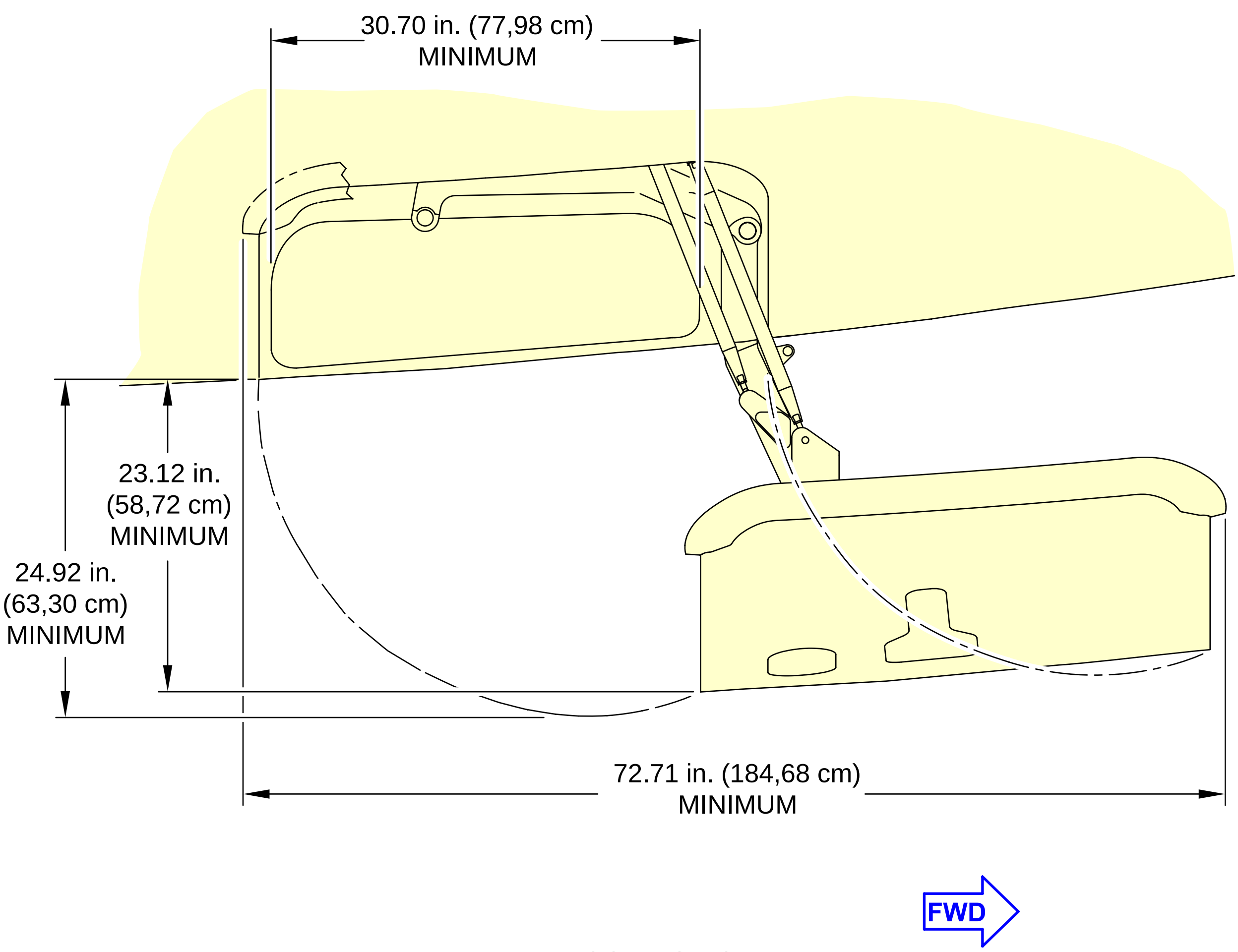
Figure 14 Forward cargo compartment door opening and clearances



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

Figure 15 Aft cargo compartment door opening and clearances



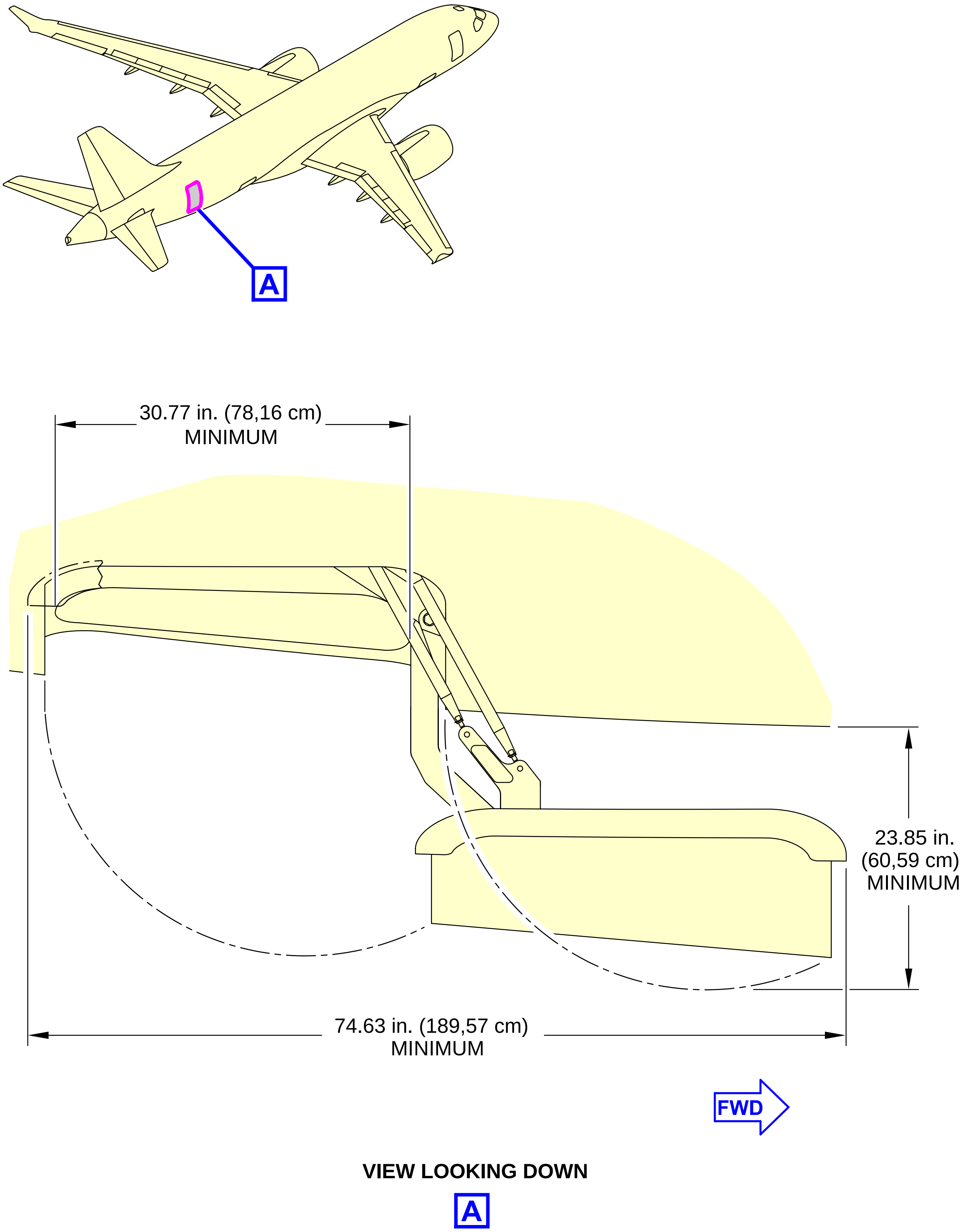


VIEW LOOKING DOWN

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

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A220

Aircraft dimensions - Technical data

Applicability: 50001-54999, 55001-59999

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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	1377.000 (3497.58)
B	146.500 (372.11)
C	Minimum 452.700 (1149.86)
	Maximum 463.800 (1178.05)
D	482.850 (1226.44)
E	Baseline 1377.320 (3498.39)
	Fuel loaded 1381.320 (3508.55)
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)

Locator (refer to Fig. 1)	Value in. (cm)
M	429.400 (1090.68)
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 (490.22)
W	135.200 (33.41)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	515.700 (1309.88)
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)

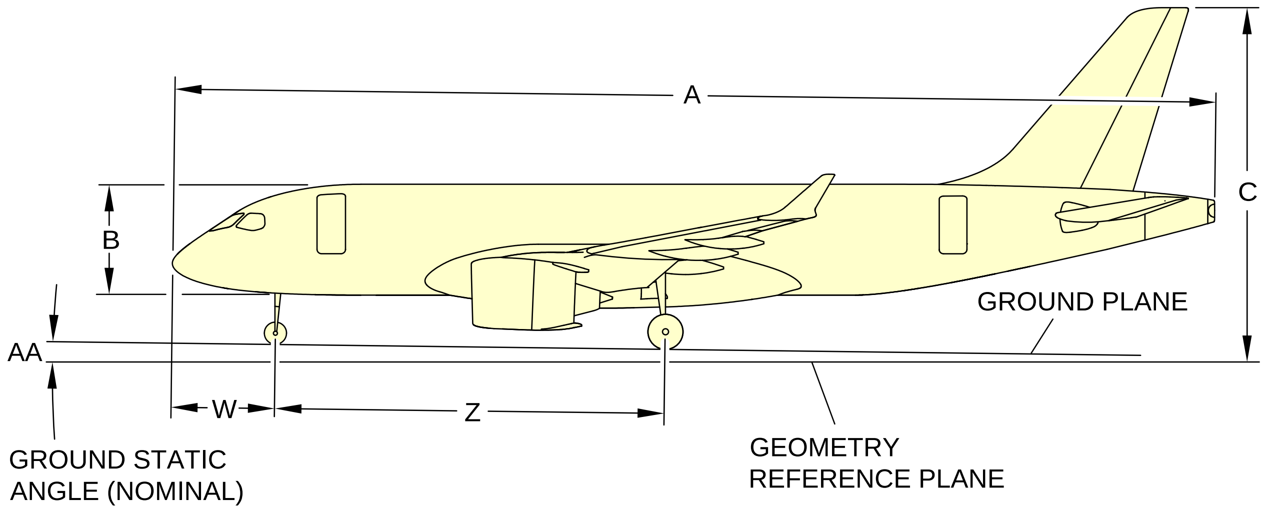
Locator (refer to Fig. 1)	Value in. (cm)
A	1523.200 (3868.93)
B	146.500 (372.11)
C	minimum 455.800 (1157.73)
	Maximum 461.900 (1173.23)
D	482.800 (1226.31)
E	Baseline 1377.320 (3498.39)
	Fuel loaded 1381.320 (3508.55)
F	961.400 (2441.96)
G	857.900 (2179.07)
H	1489.200 (3782.57)
J	783.200 (1989.33)
K	479.000 (1216.66)
L	172.400

Locator (refer to Fig. 1)	Value in. (cm)
	(437.90)
M	513.300 (1303.78)
P	262.900 (667.77)
Q	96.500 (245.11)
R	162.200 (411.99)
S	198.500 (504.19)
T	268.000 (680.72)
U	97.700 (248.16)
V	194.600 (494.28)
W	133.920 (340.16)
X	27.200 (69.09)
Y	265.000 (673.10)
Z	599.700 (1523.24)
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)

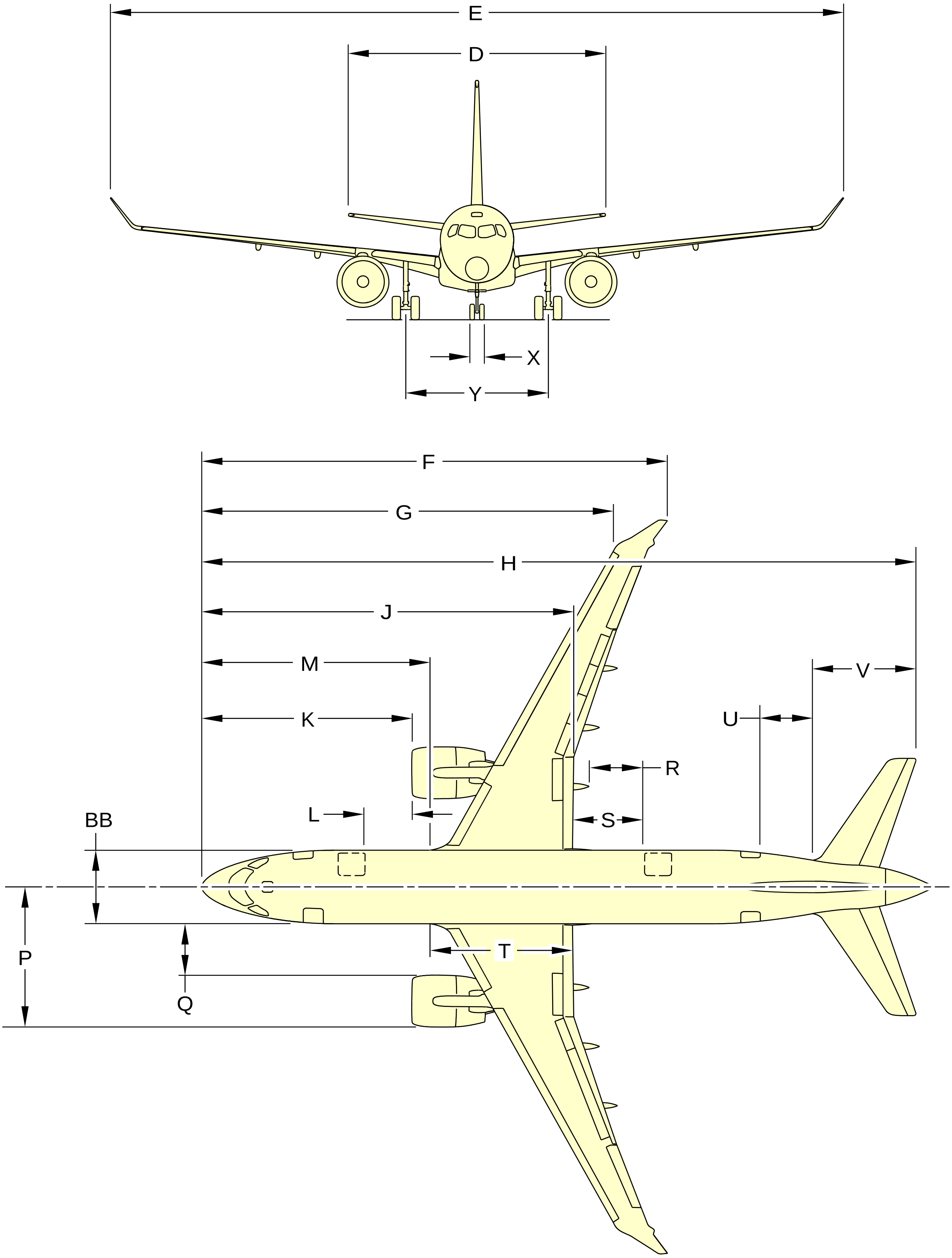


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Figure 1 General aircraft dimensions - (Sheet 2 of 2)

A220

3 Landing gear footprint dimensions

This data module contains data on the landing gear footprint.

Applicability: 50001-54999

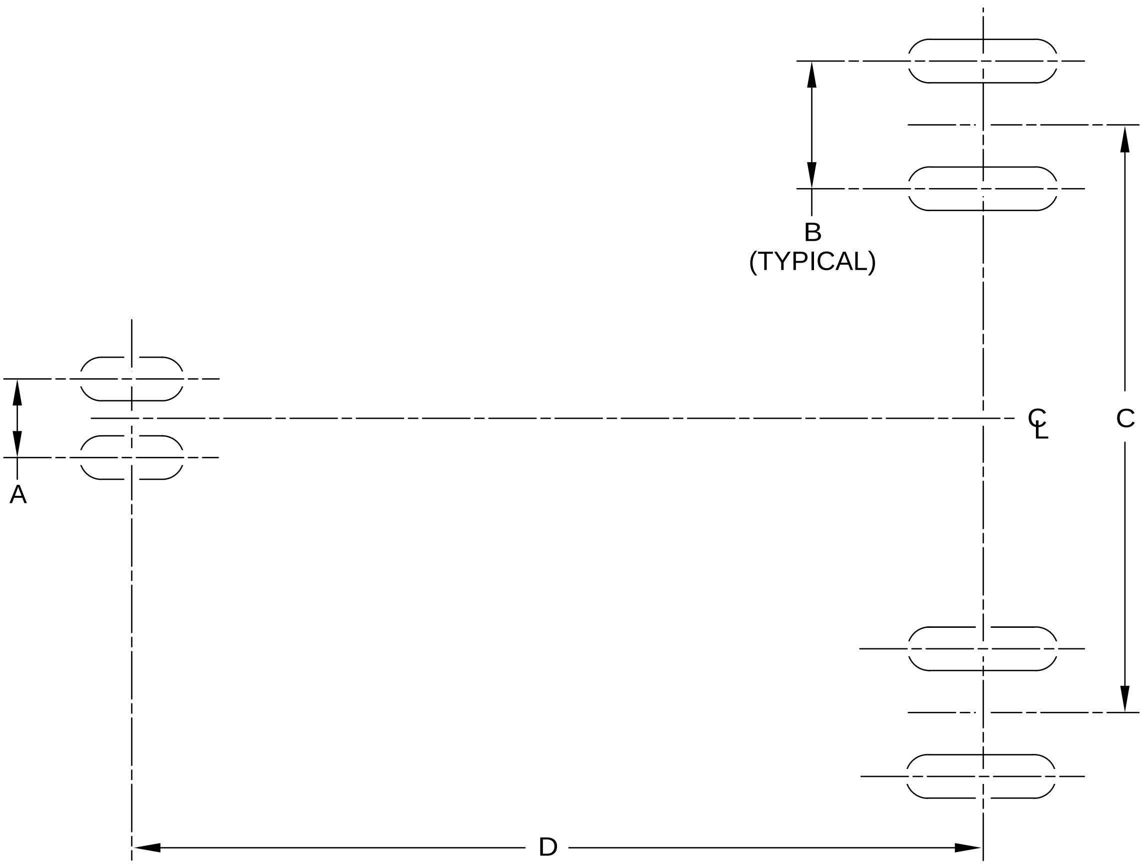
Table 4 Landing gear footprint dimensions (A220-100)

Locator	Value in. (cm)
A	18.571 (47.17)
B	35.000 (88.90)
C	265.000 (673.10)
D	515.700 (1309.88)

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	599.700 (1523.24)



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 = 354.000 (899.16) BL ± 20.000 (50.80) WL = 196.000 (497.80)
D	29.20°
E	17.10°

Applicability: 50001-54999

Table 8 Pressure refueling connection position (A220-100)

Locator (refer to Fig. 3)	Value in. (cm)
B	615.900

Locator (refer to Fig. 3)	Value in. (cm)
	(1564.39)
C	600.210 (1524.53)

Applicability: 55001-59999

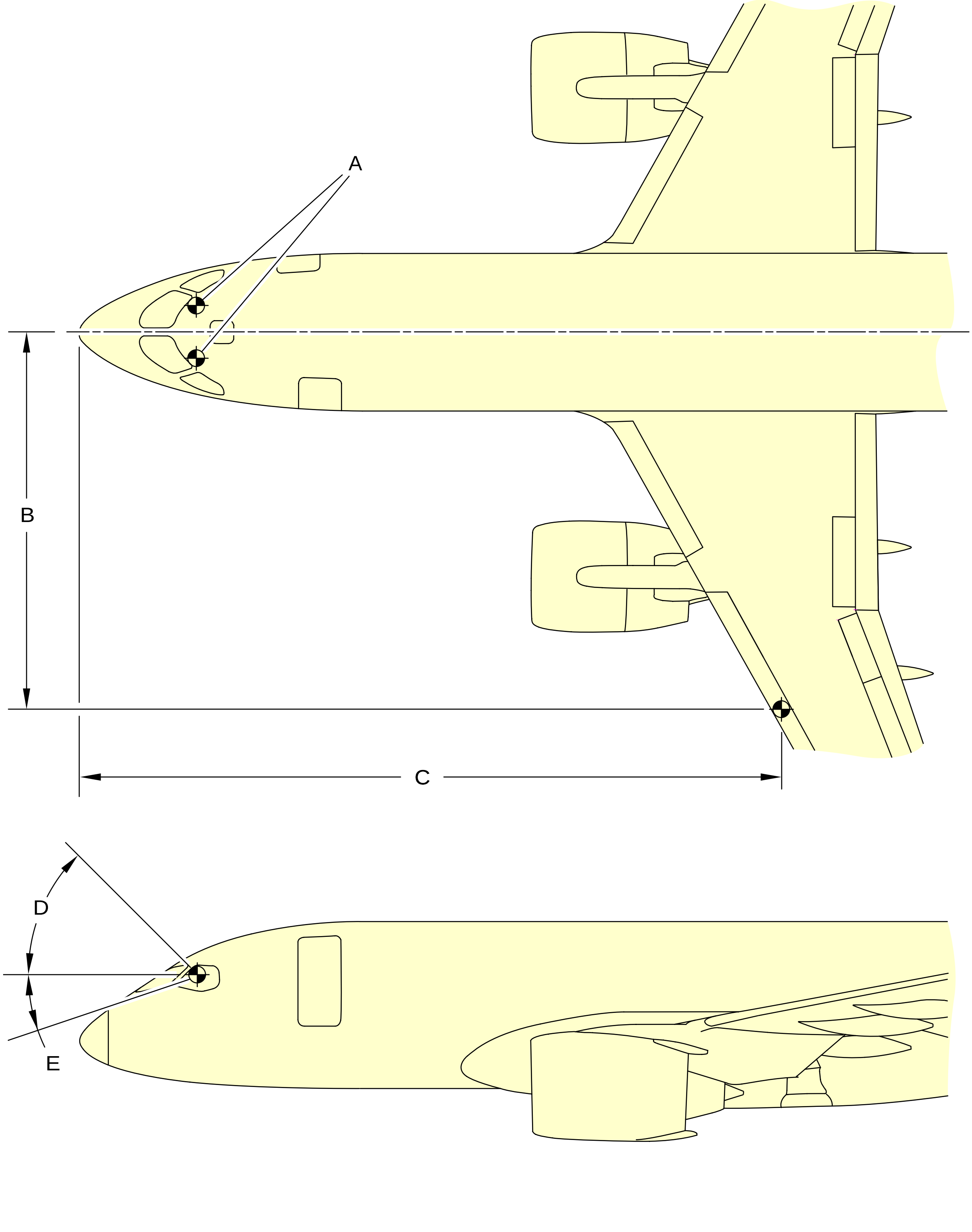
Table 9 Pilots eye position (A220-300)

Locator (refer to Fig. 3)	Value in. (cm)
A	FS = 270.000 (685.80) BL ± 20.000 (50.80) WL = 196.000 (497.80)
D	29.20°
E	17.10°

Applicability: 55001-59999

Table 10 Pressure refueling connection position (A220-300)

Locator (refer to Fig. 3)	Value in. (cm)
B	615.900 (1564.39)
C	684.210 (1737.89)



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

Figure 3 Pressure refueling and pilots eye position

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Nacelle and pylon stations - Technical data

Applicability: 50001-54999, 55001-59999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 General

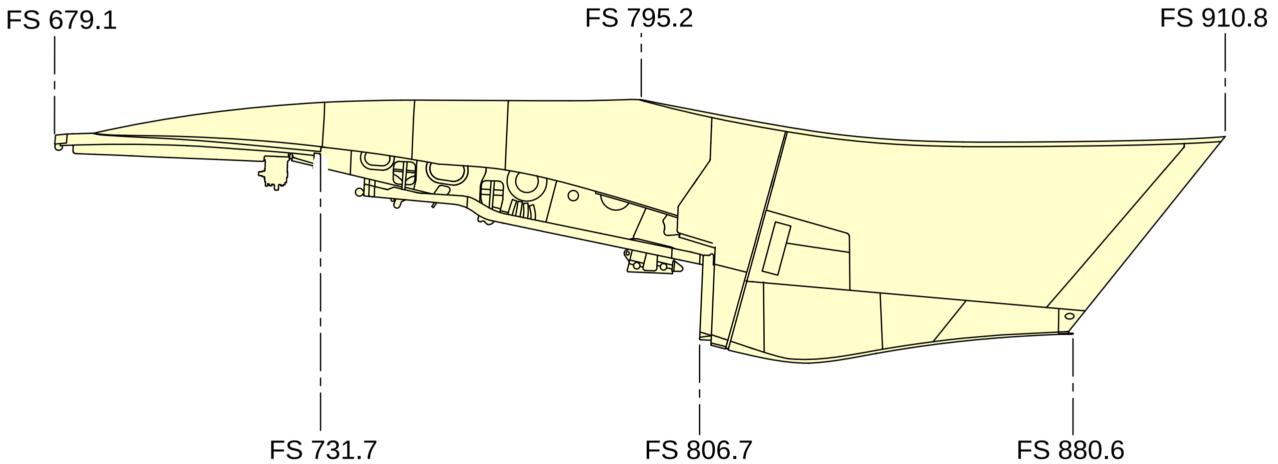
- This section shows the stations along the pylon and the nacelle.

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.

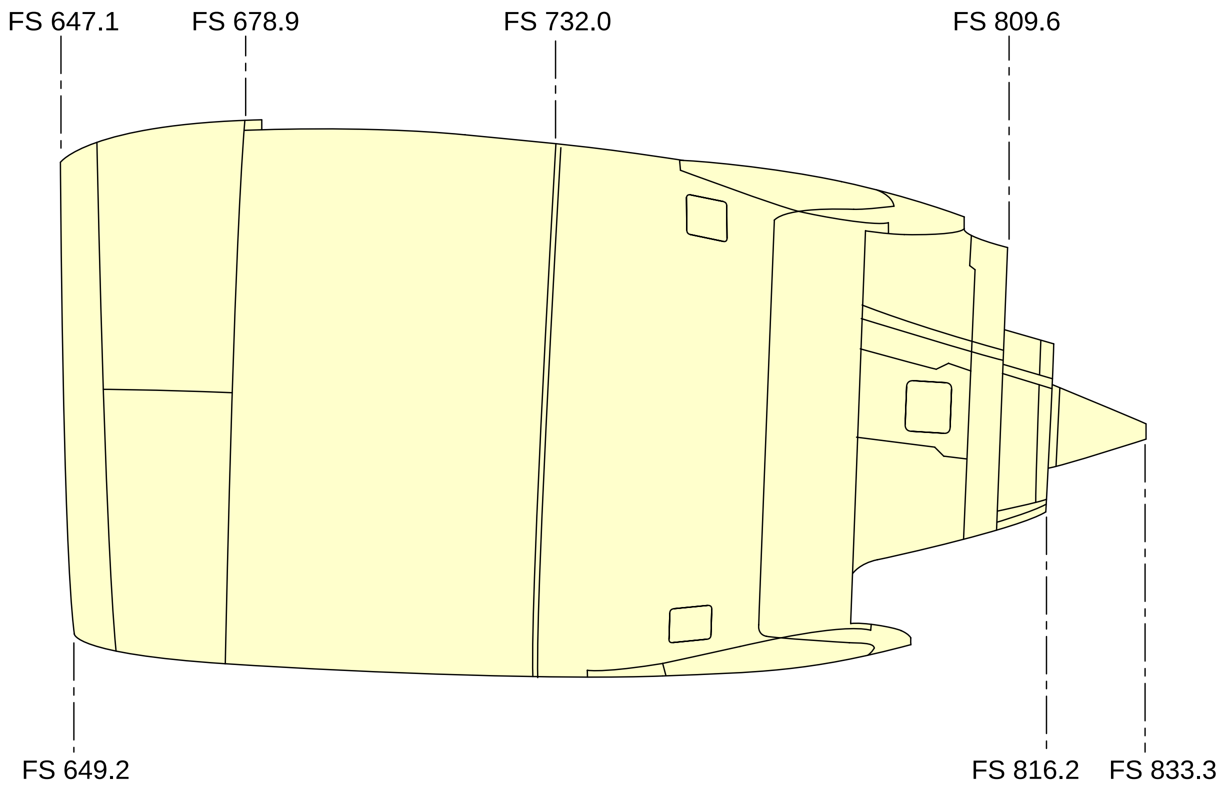
3 Nacelle stations

- 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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Slinging and hoisting - Function, data for plans and description

Applicability: 50001-54999, 55001-59999

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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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A220

Aircraft grounding - General maintenance procedure

Applicability: 50001-54999, 55001-59999

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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.

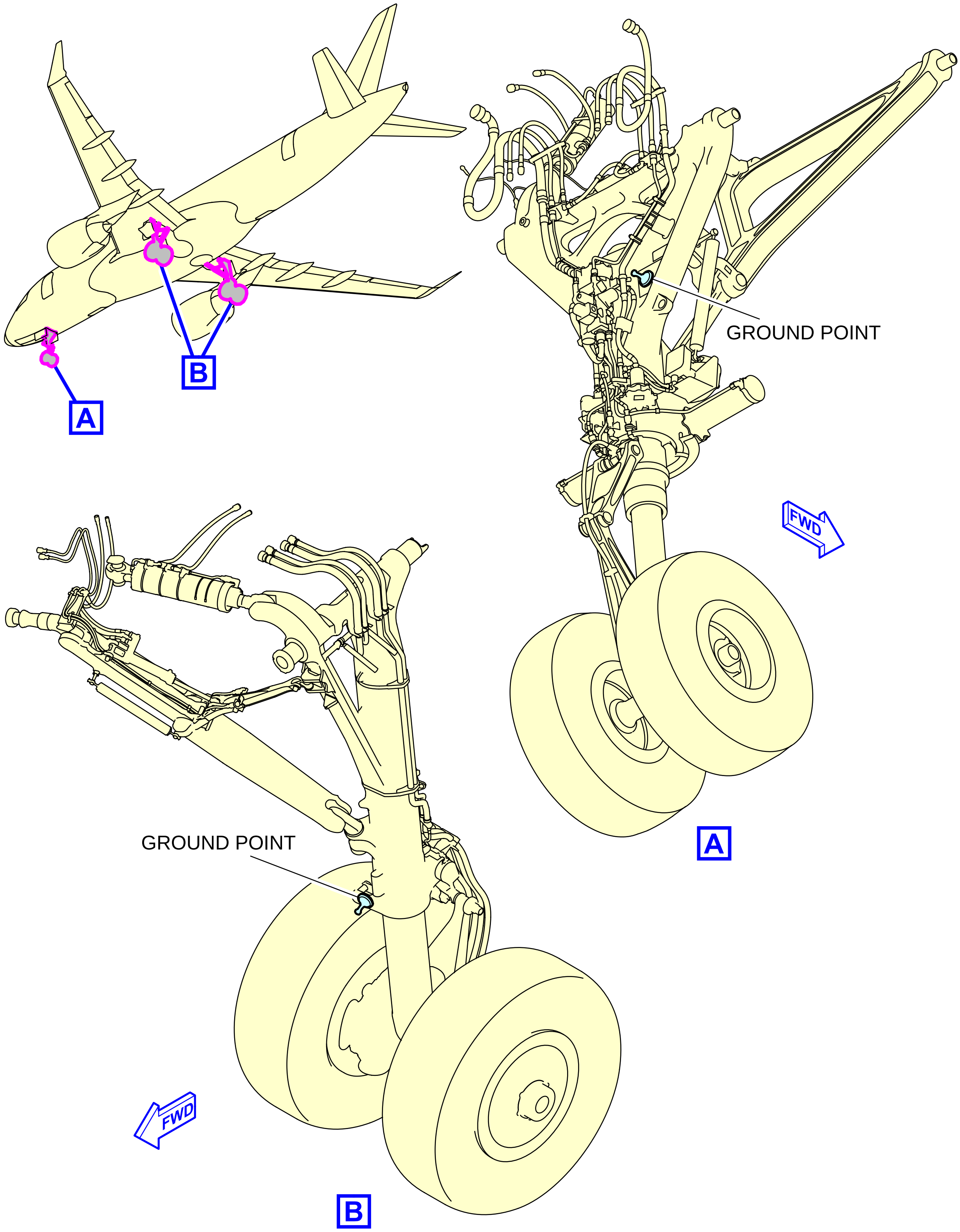
- **Ground the aircraft before you connect the external electrical power. If you do not do this, you can cause injuries to persons and/or damage the equipment.**

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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A220

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

Applicability: 50001-54999, 55001-59999

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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.

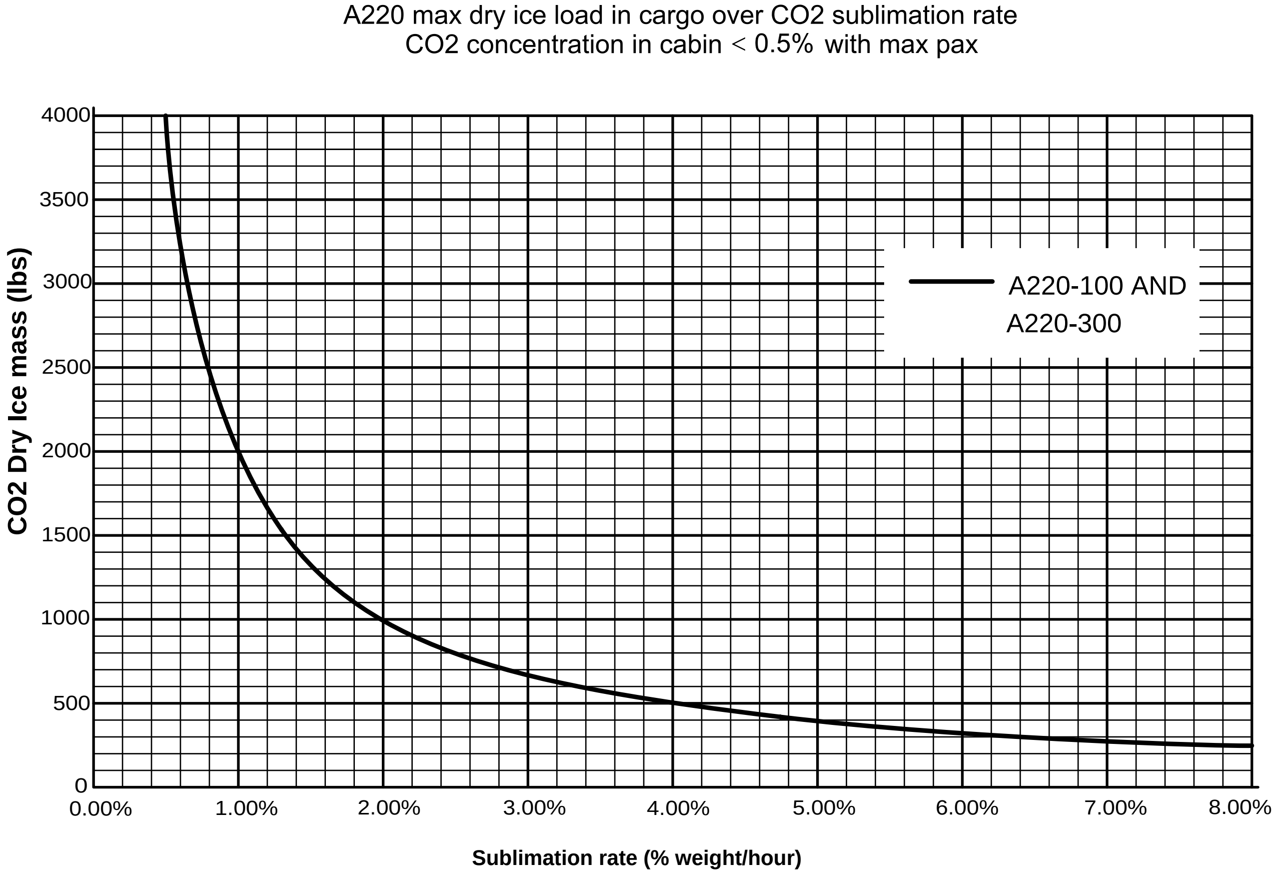
700 lbs (317 kg) of dry ice can be carried in the forward cargo in addition to the live animal shown in Table 4 and Table 5 .

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 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 (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 .

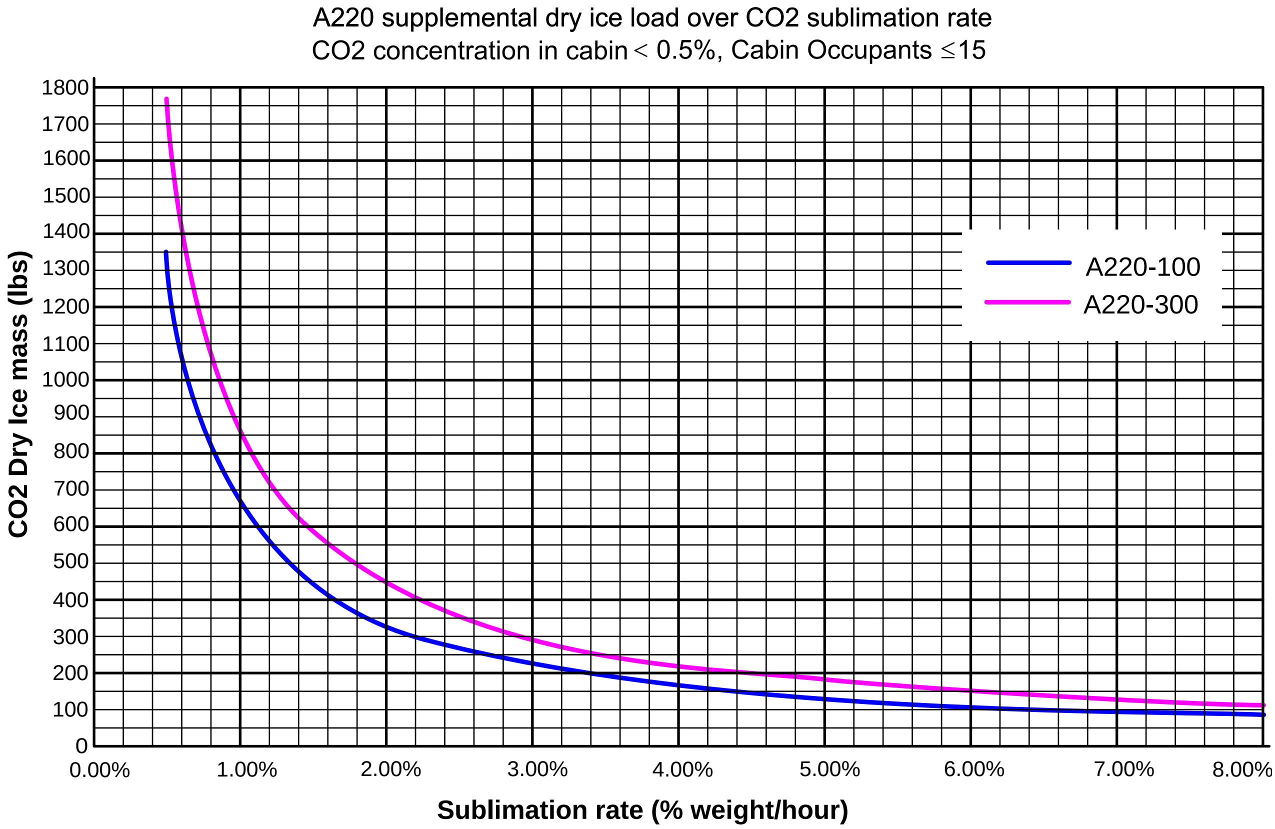
The FWD CARGO VENT switch must not be selected OFF when dry ice is carried in the forward cargo compartment. Refer to Fig.3Sheet. 4 .

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)	Dry Ice Mass 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

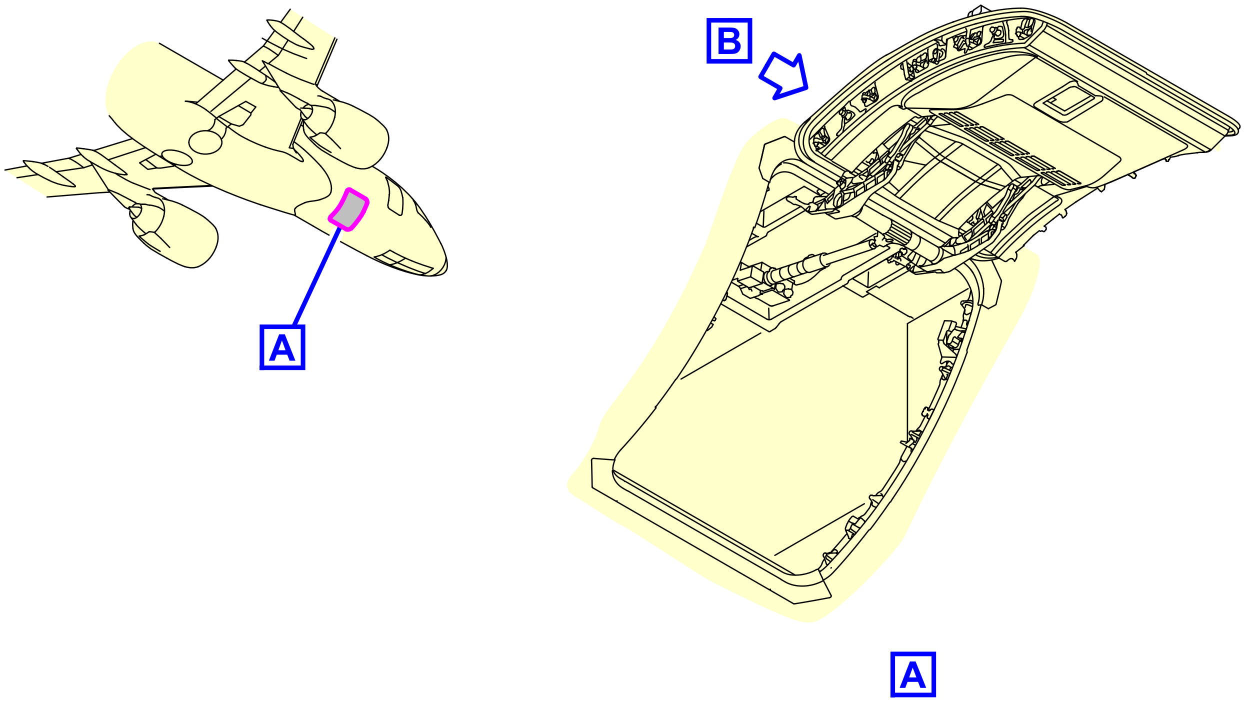
ICN-BD500-A-J142000-A-3AB48-67633-A-001-01

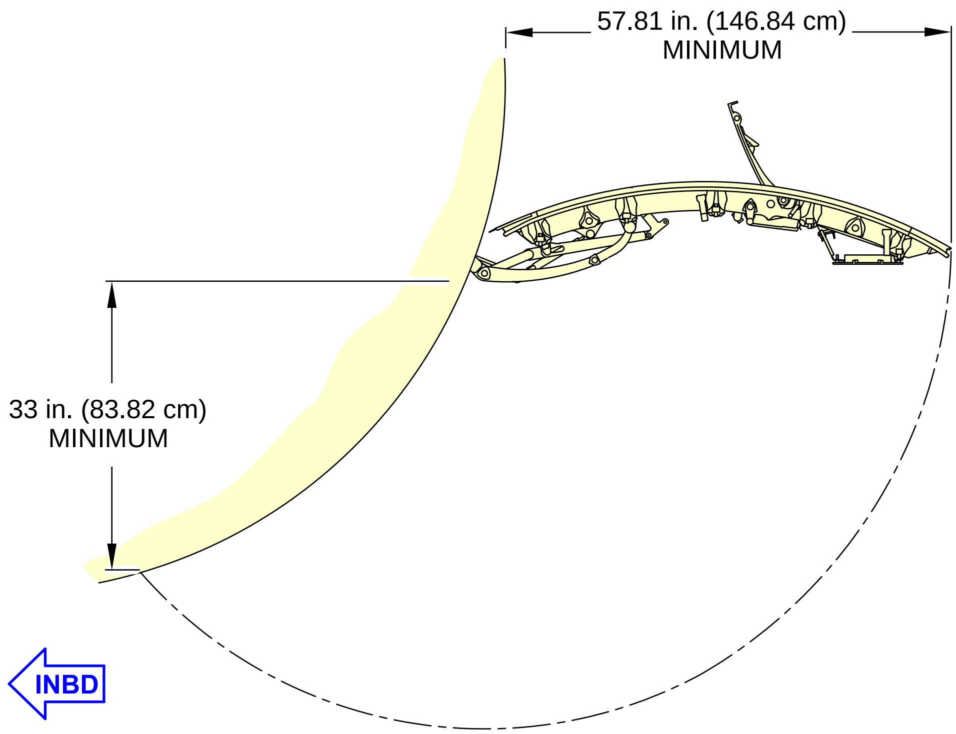
Figure 2 Supplemental dry ice load with reduced occupants (less than 15 occupants)

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.



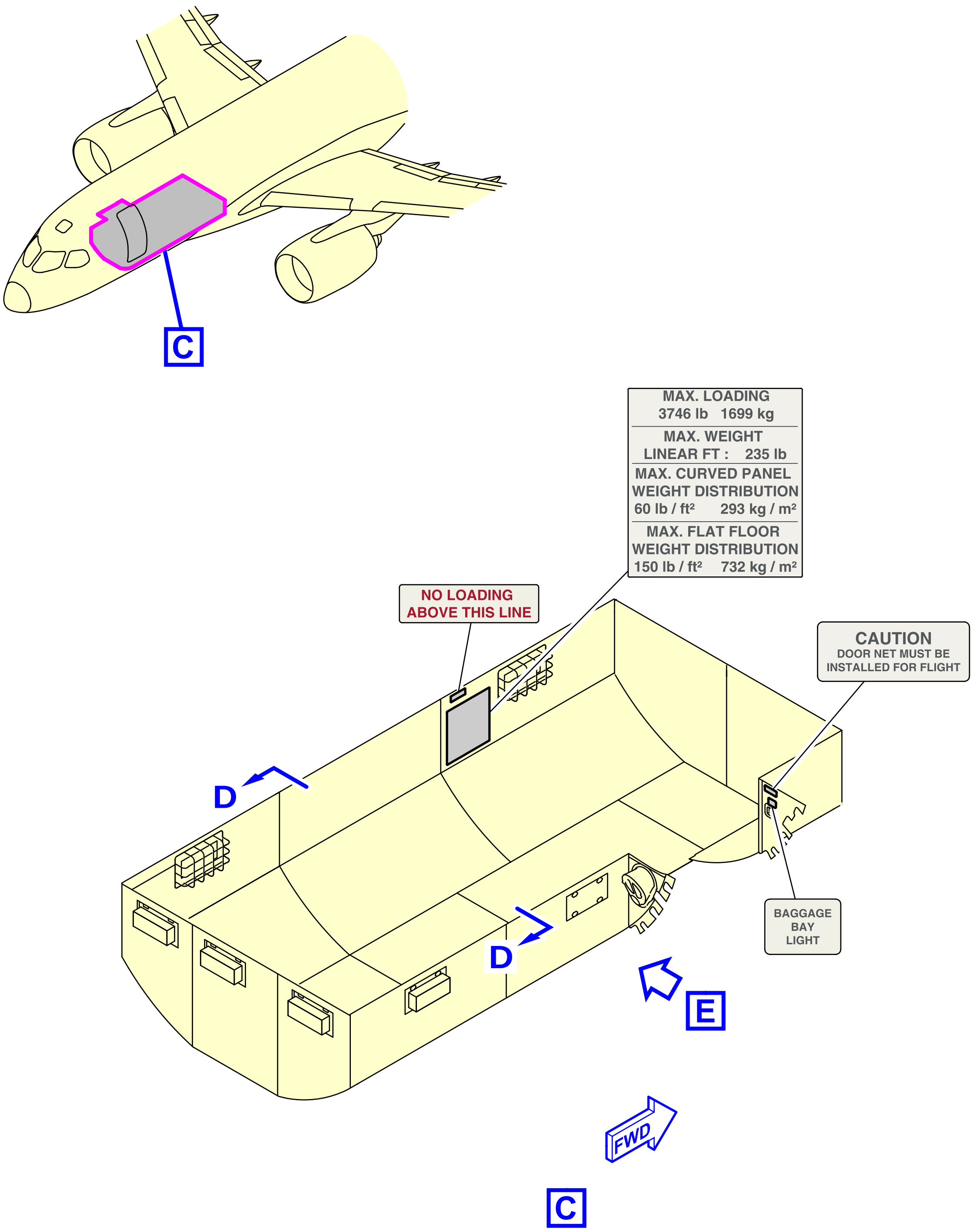


VIEW LOOKING FORWARD

B

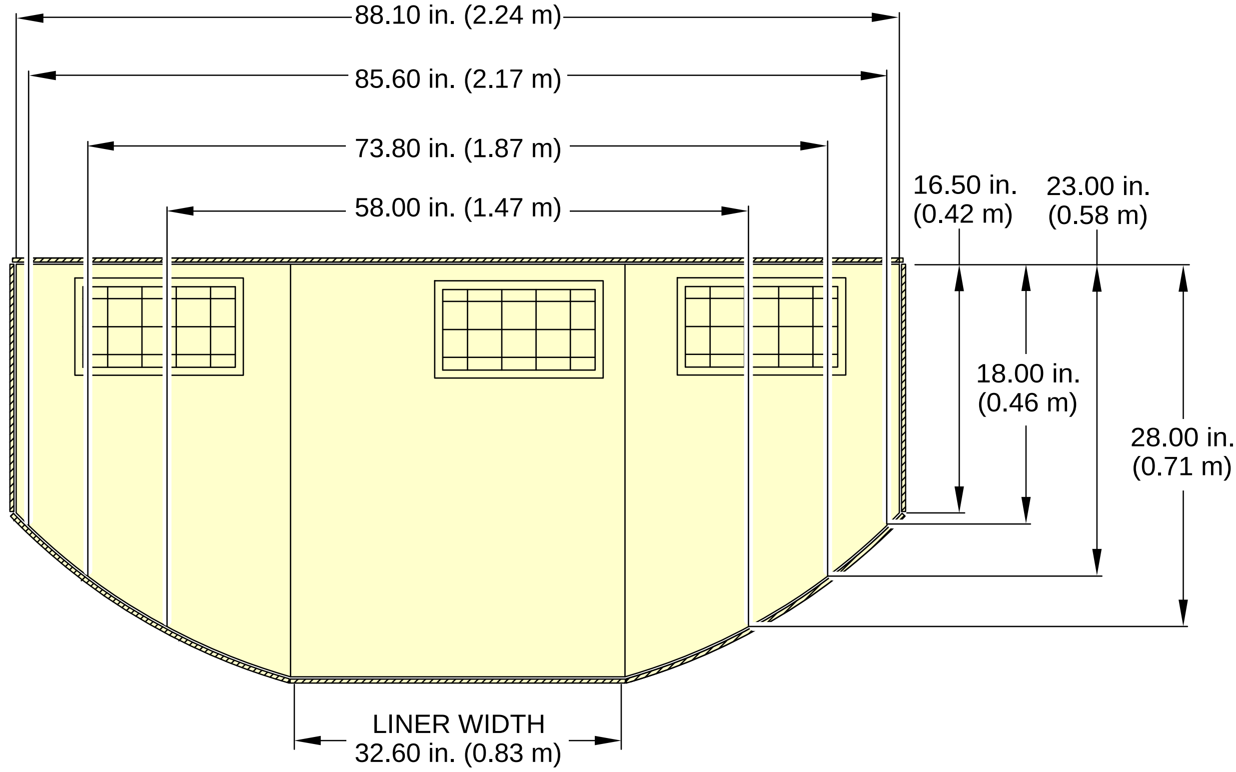
ICN-BD500-A-J142000-A-3AB48-31017-A-001-01

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

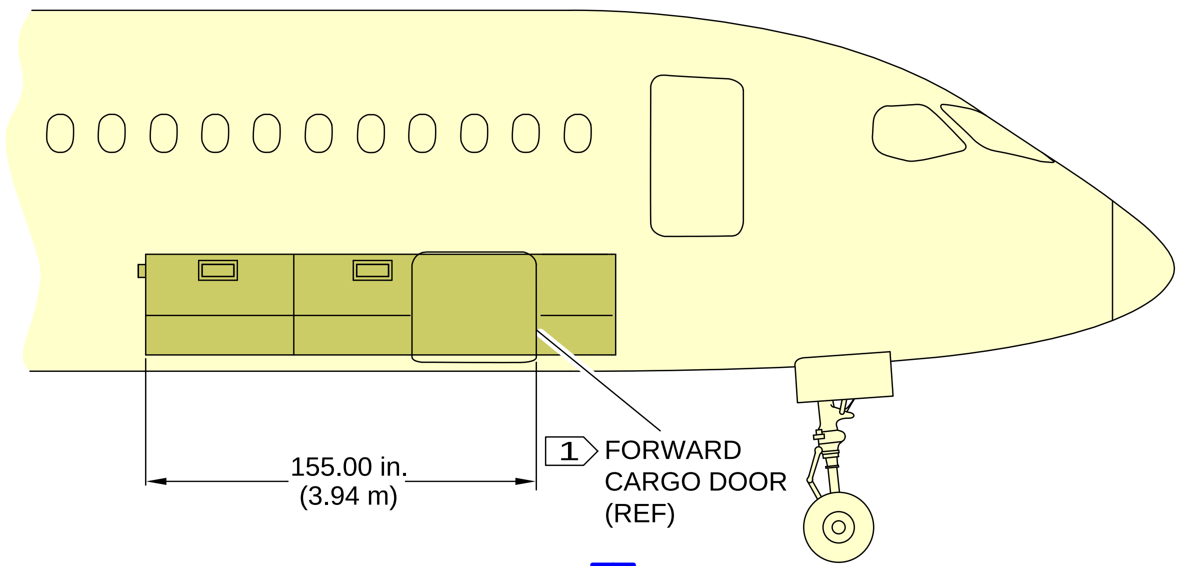


ICN-BD500-A-J142000-A-3AB48-31127-A-002-01

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



D-D



E

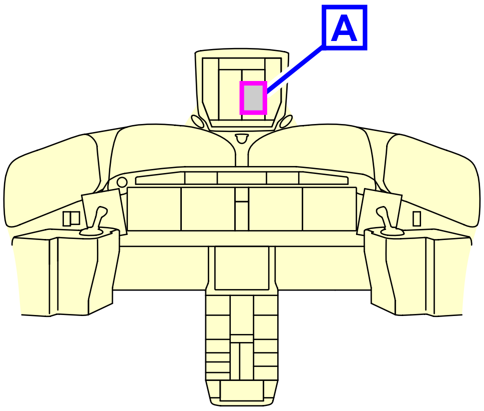
NOTES

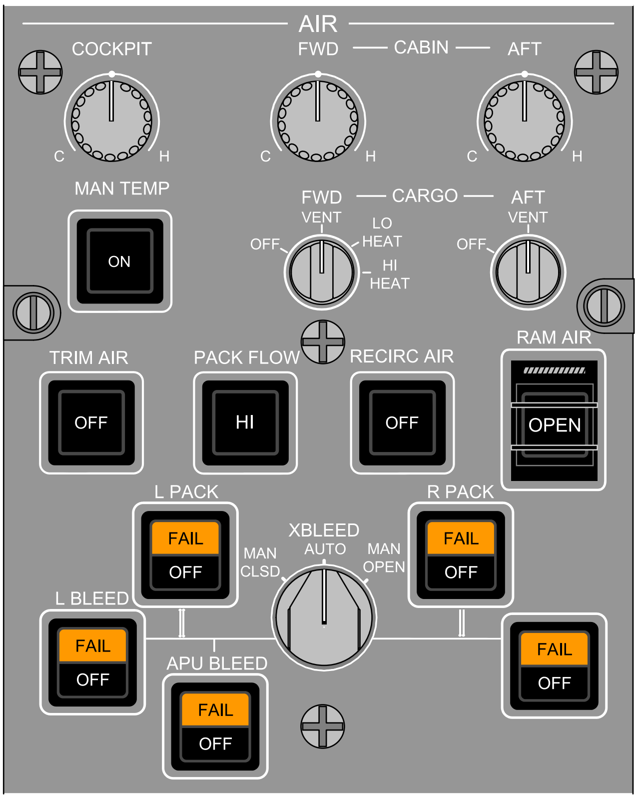
1 Max Clear opening 46.4 in. x 32.6 in. (1.18 m x 0.83 m).

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

A

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

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

A220

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

Applicability: 50001-54999, 55001-59999

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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.

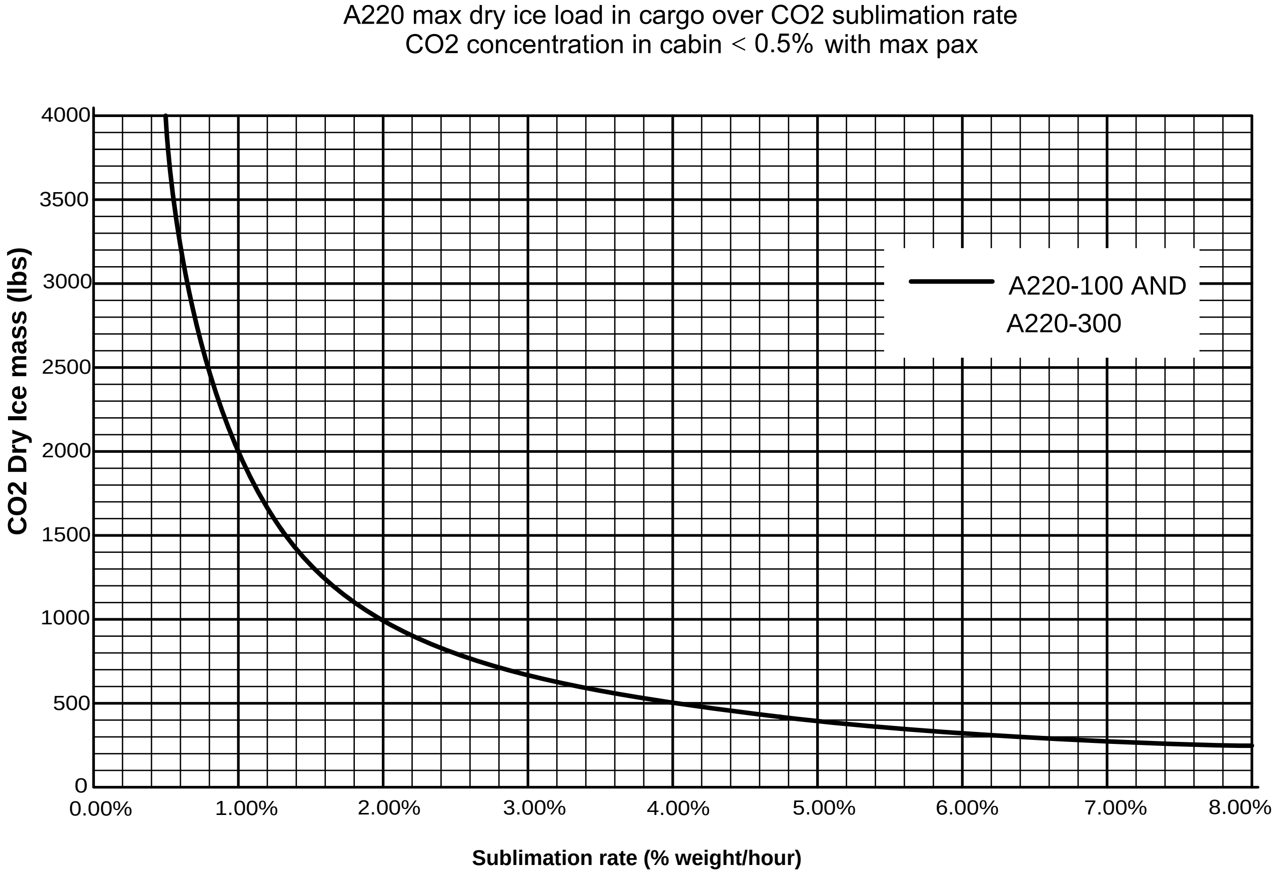
1000 lbs (453 kg) of dry ice can be carried in the aft cargo compartment.

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 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

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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 .

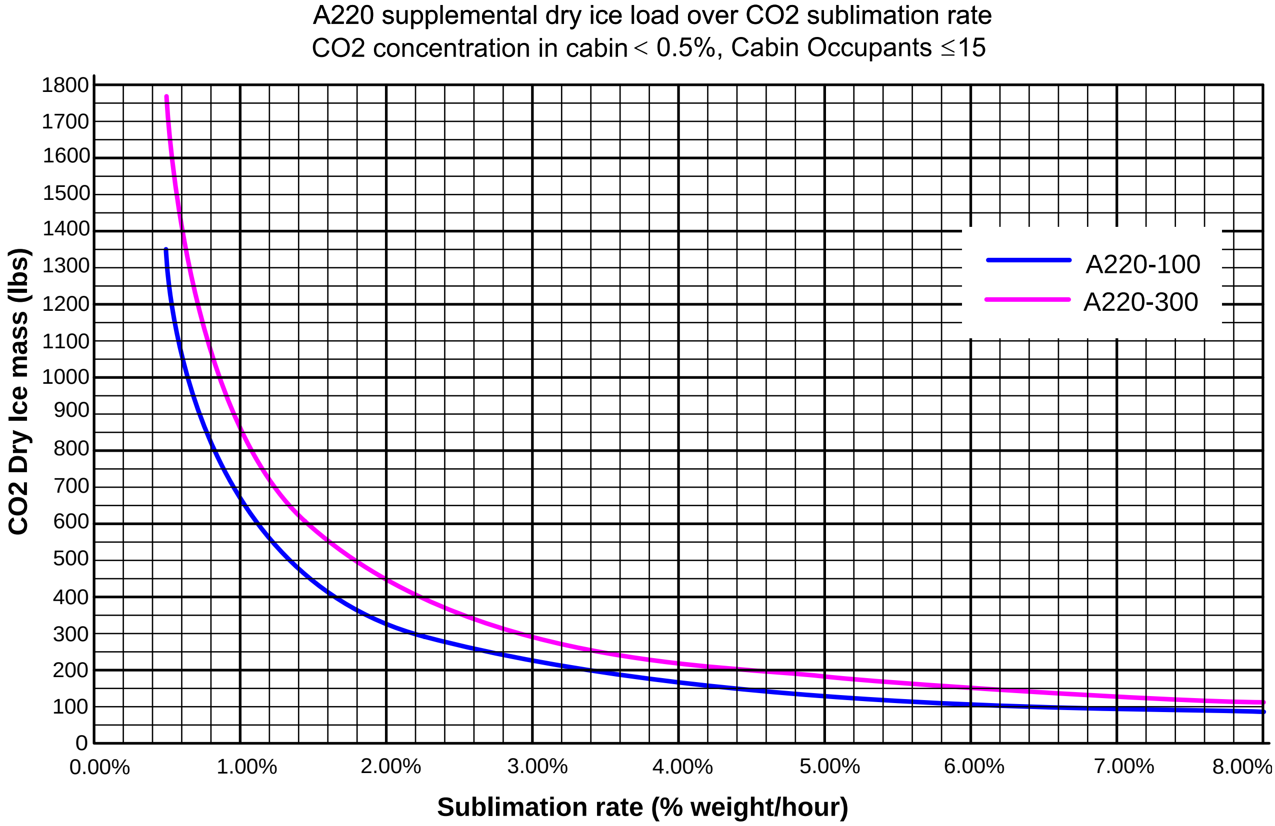
The FWD CARGO VENT switch must not be selected OFF when dry ice is carried in the forward cargo compartment. Refer to Fig.3Sheet. 4 .

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

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.

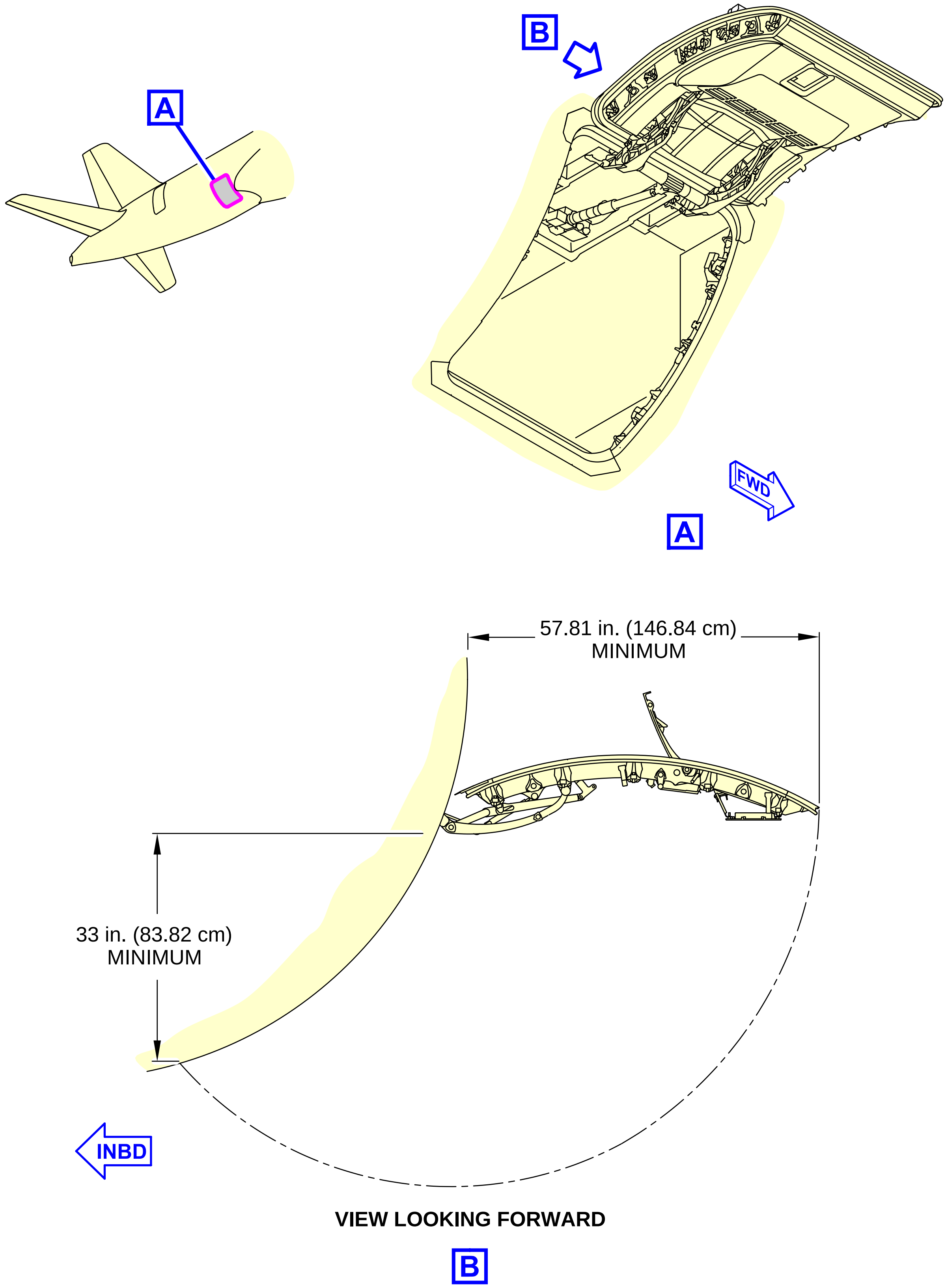


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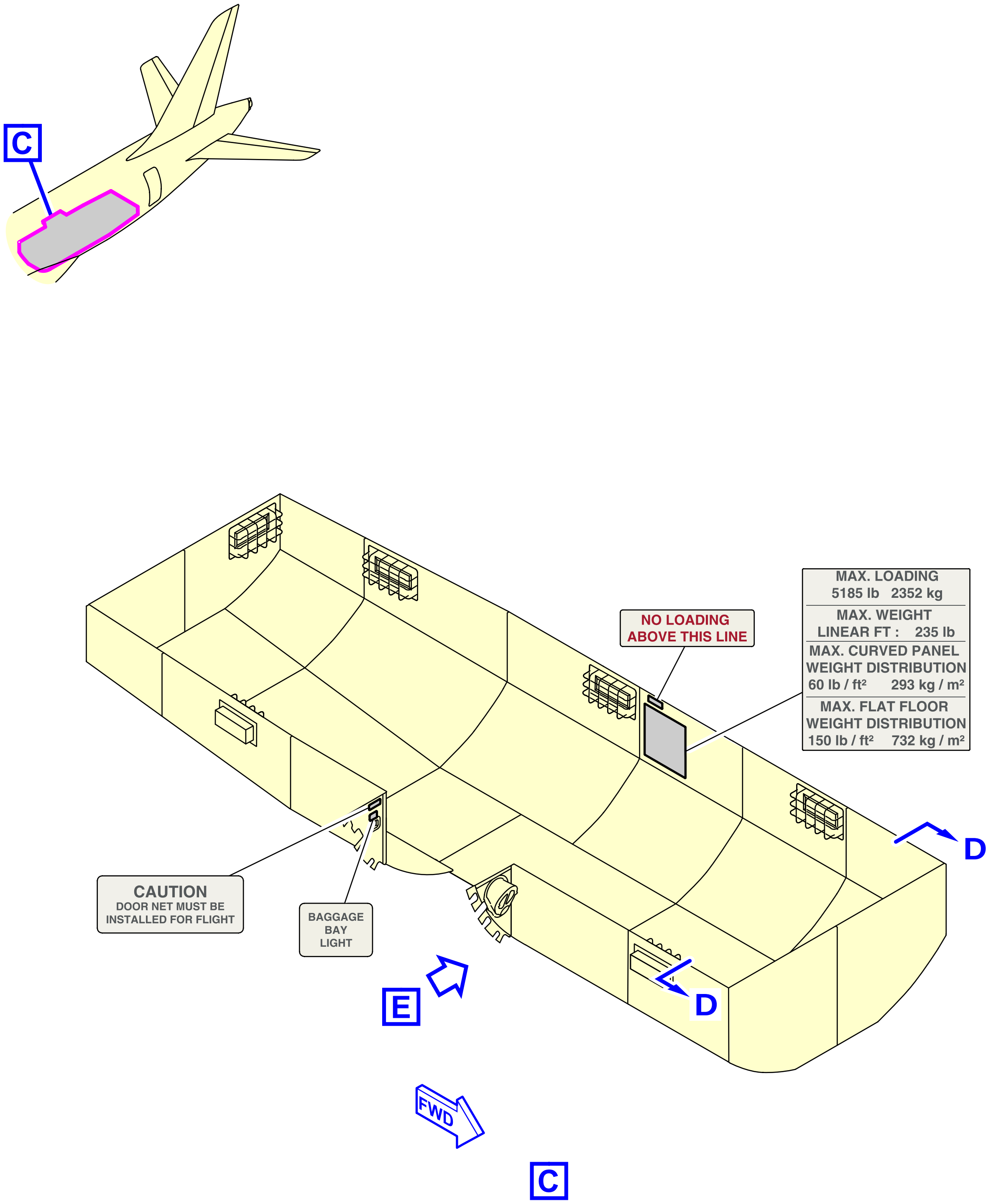
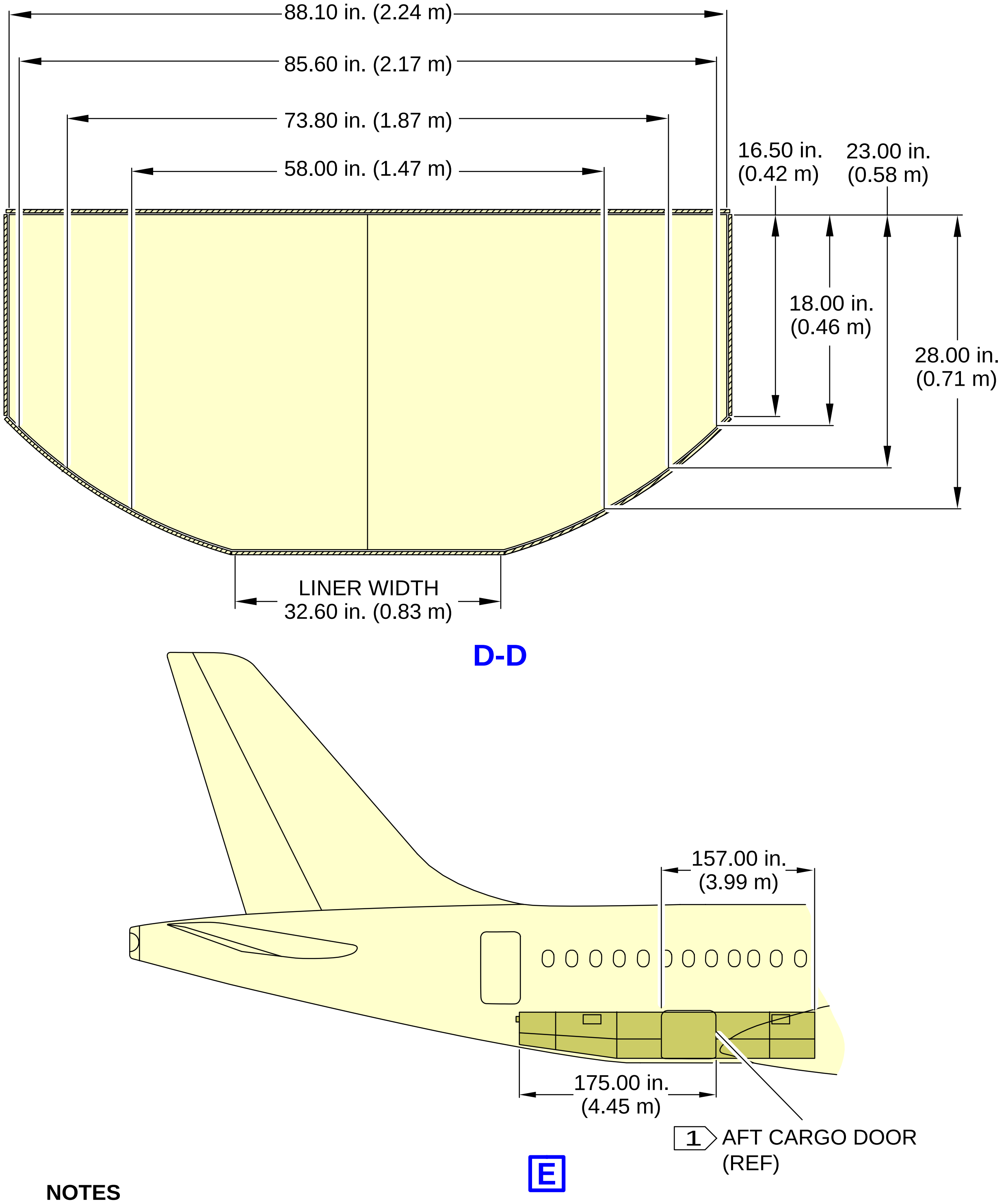
Figure 3 Aft cargo compartment – clearances - (Sheet 1 of 4)



ICN-BD500-A-J142000-A-3AB48-31129-A-002-01

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

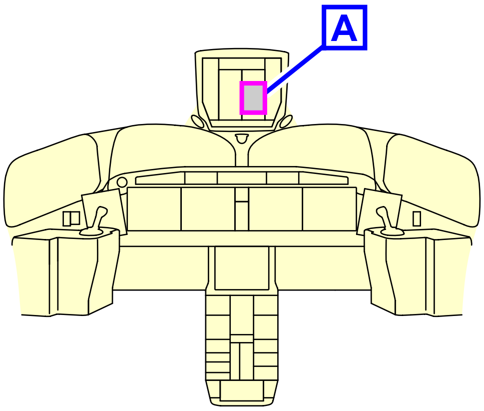


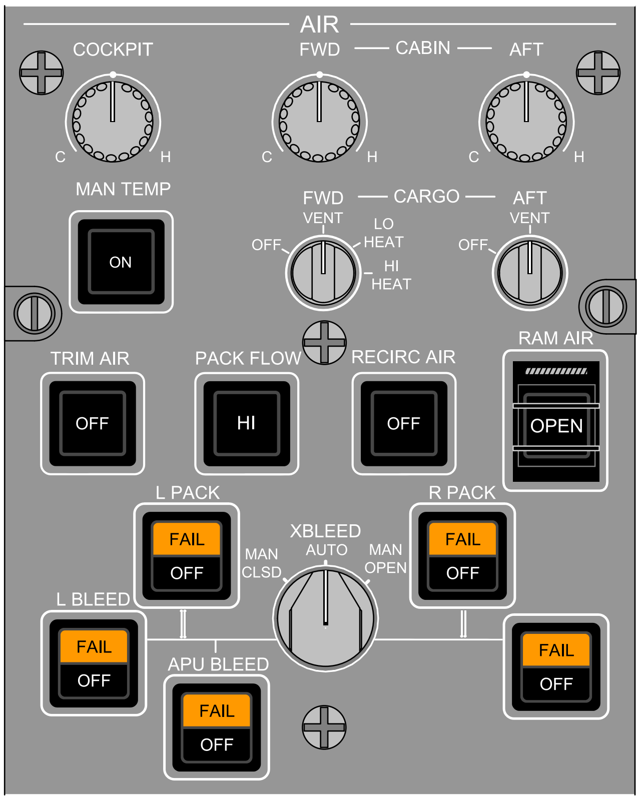
NOTES

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

A

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

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

A220

Aircraft touch and no-touch zones - Technical data

Applicability: 50001-54999, 55001-59999

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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.

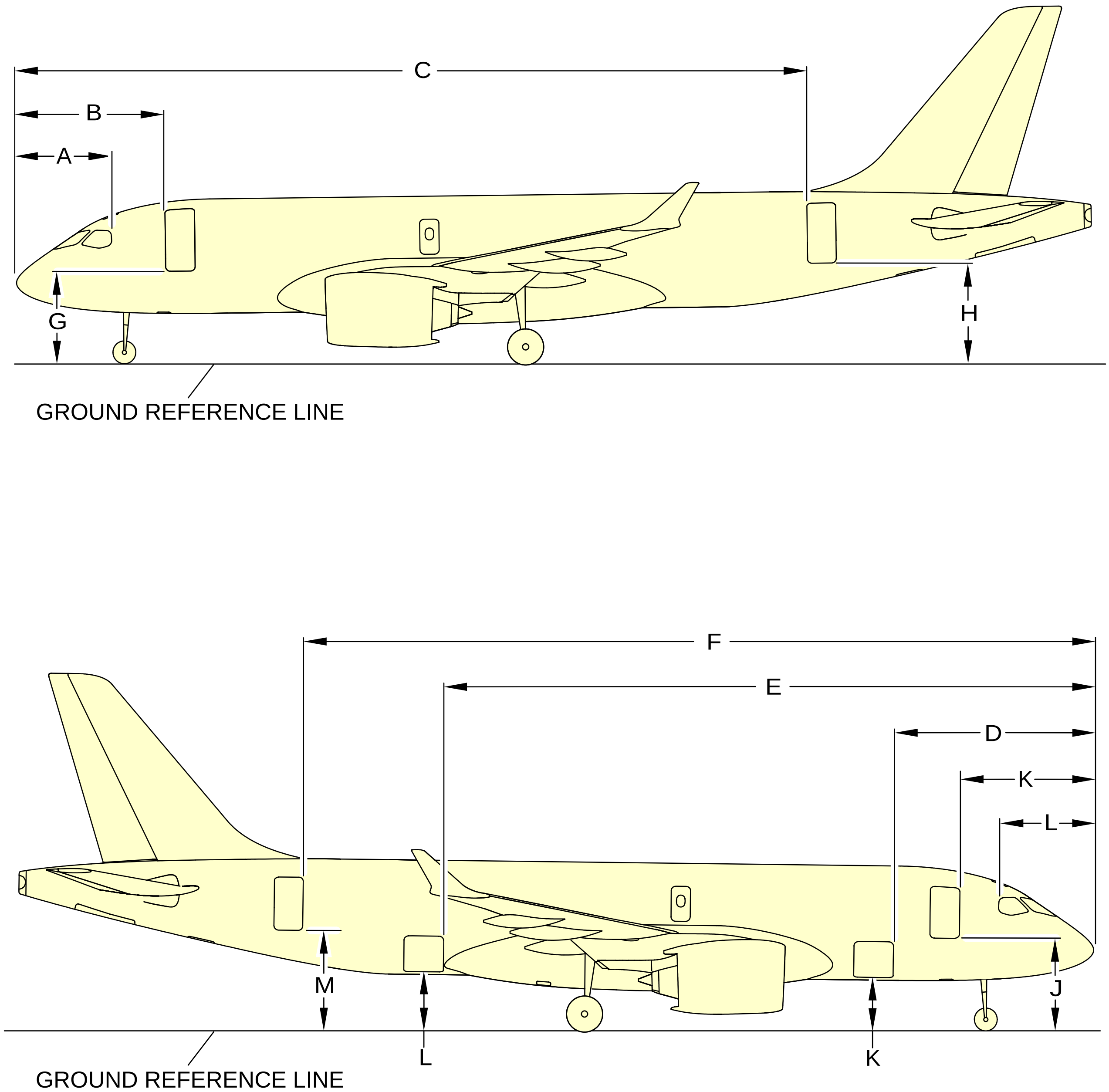

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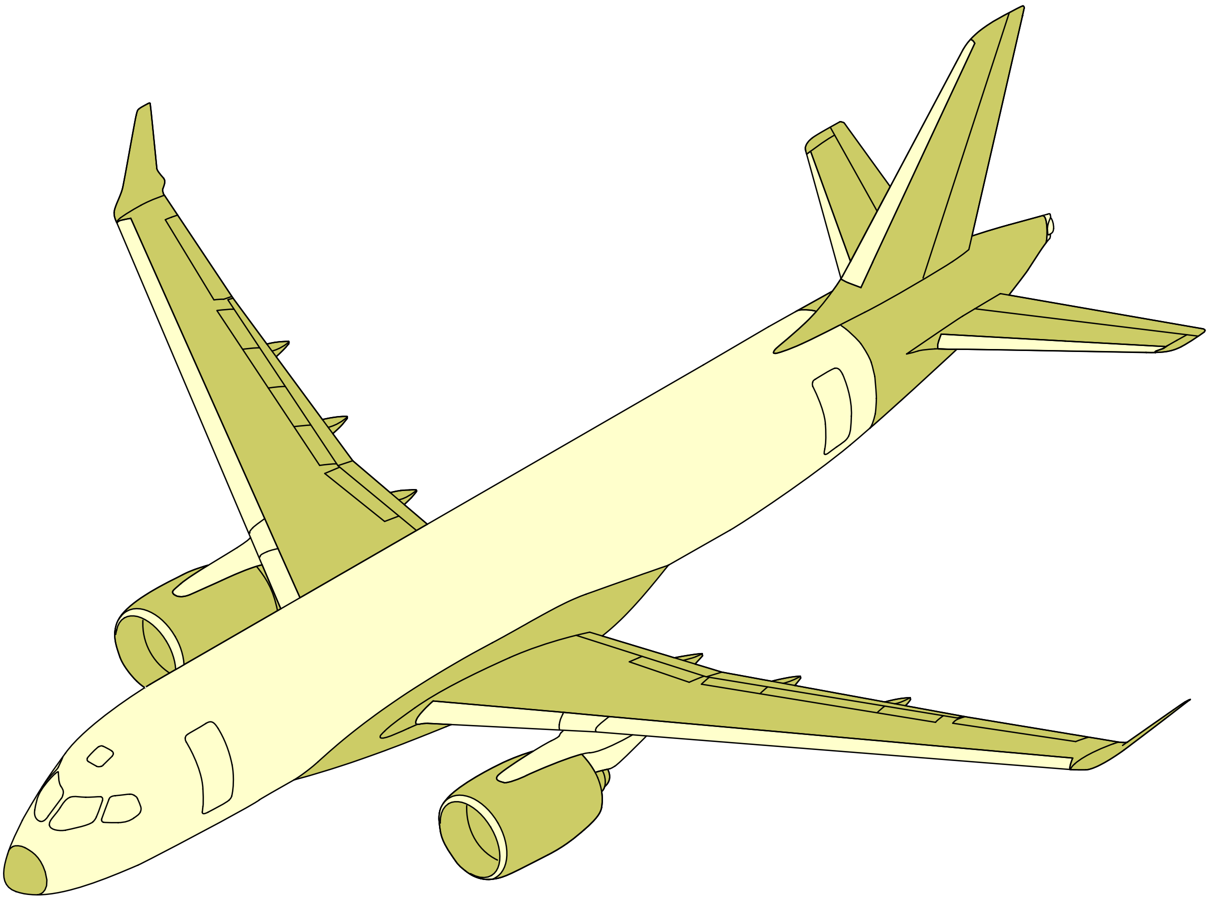
Figure 1 Door ground clearances and distances from the aircraft nose



LEGEND

Composite.

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Figure 2 Composite materials

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Chapter 3: Aircraft performance

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A220

Aircraft performance - Technical data

Applicability: 50001-54999

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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.

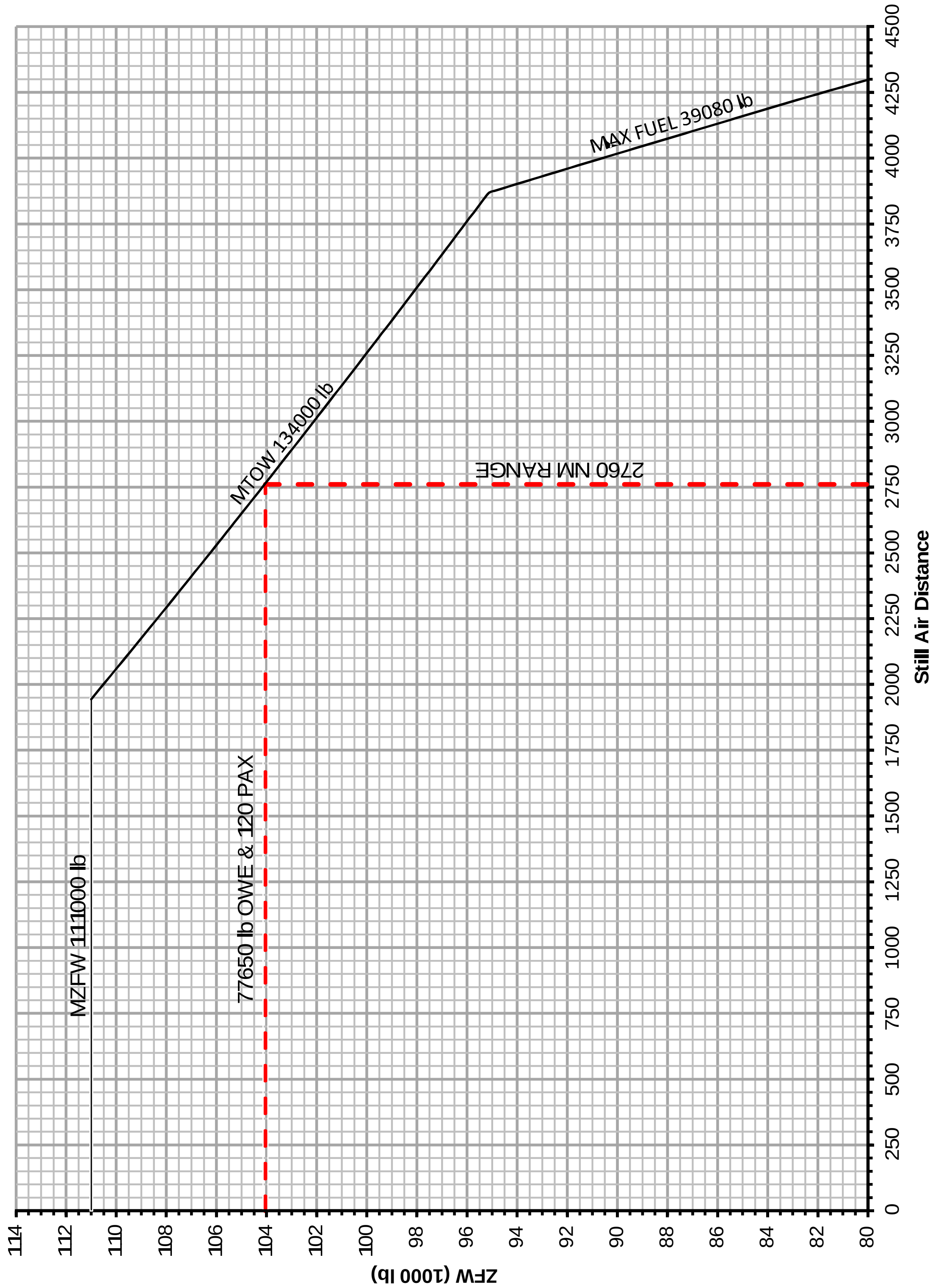
Table 2 Standard day temperature chart

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.

A220



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.

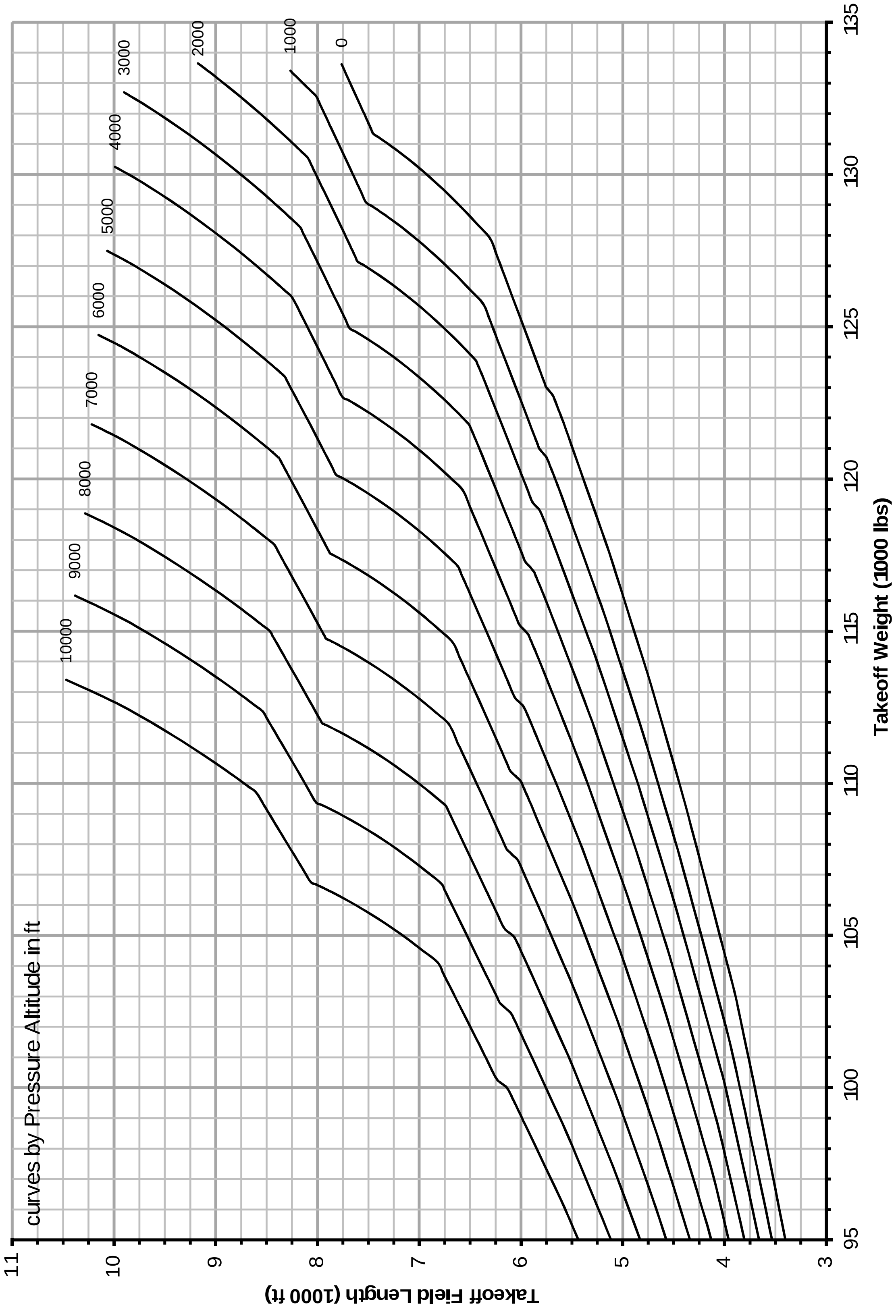


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Figure 2 Takeoff field length - ISA - PW1519G

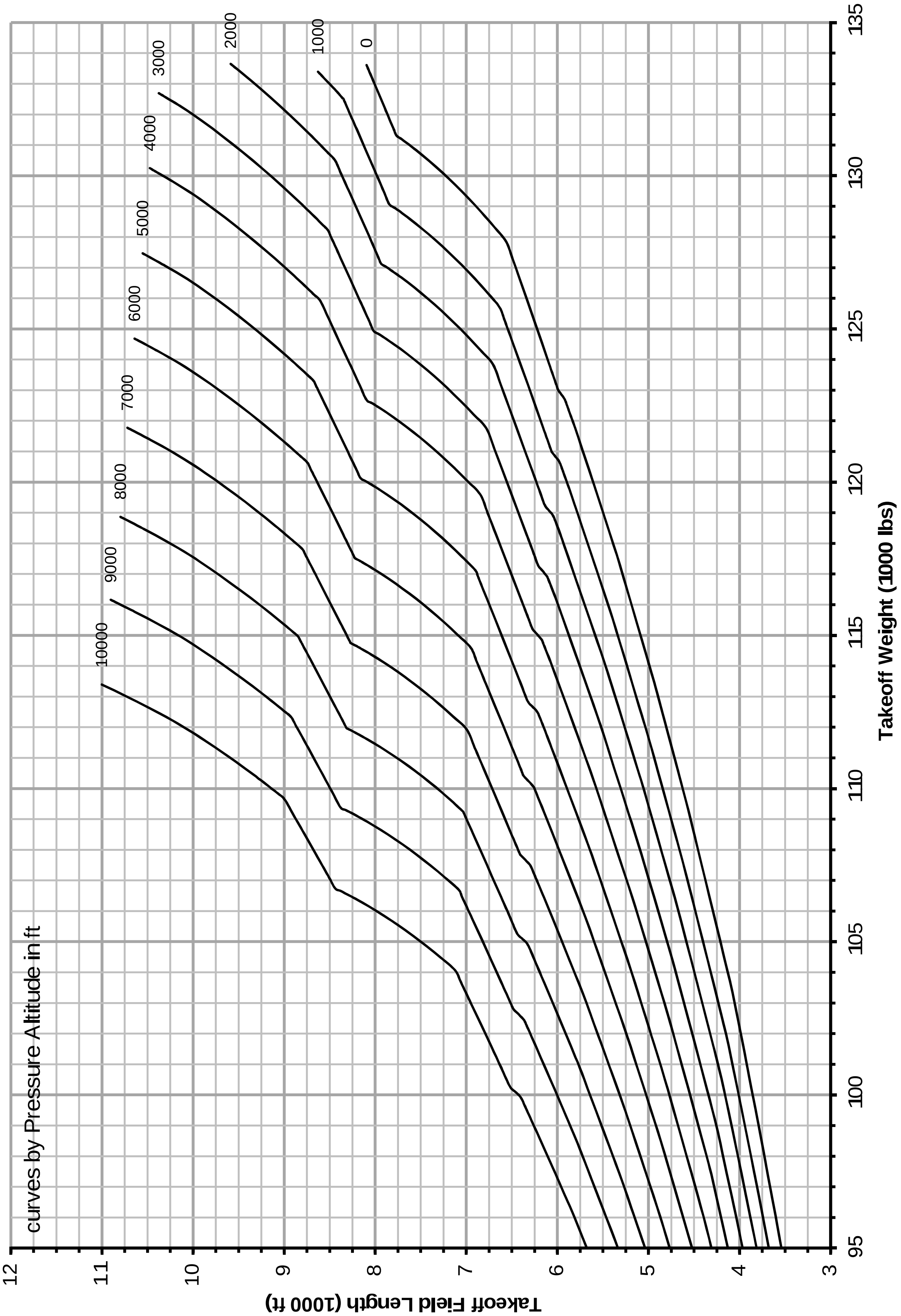

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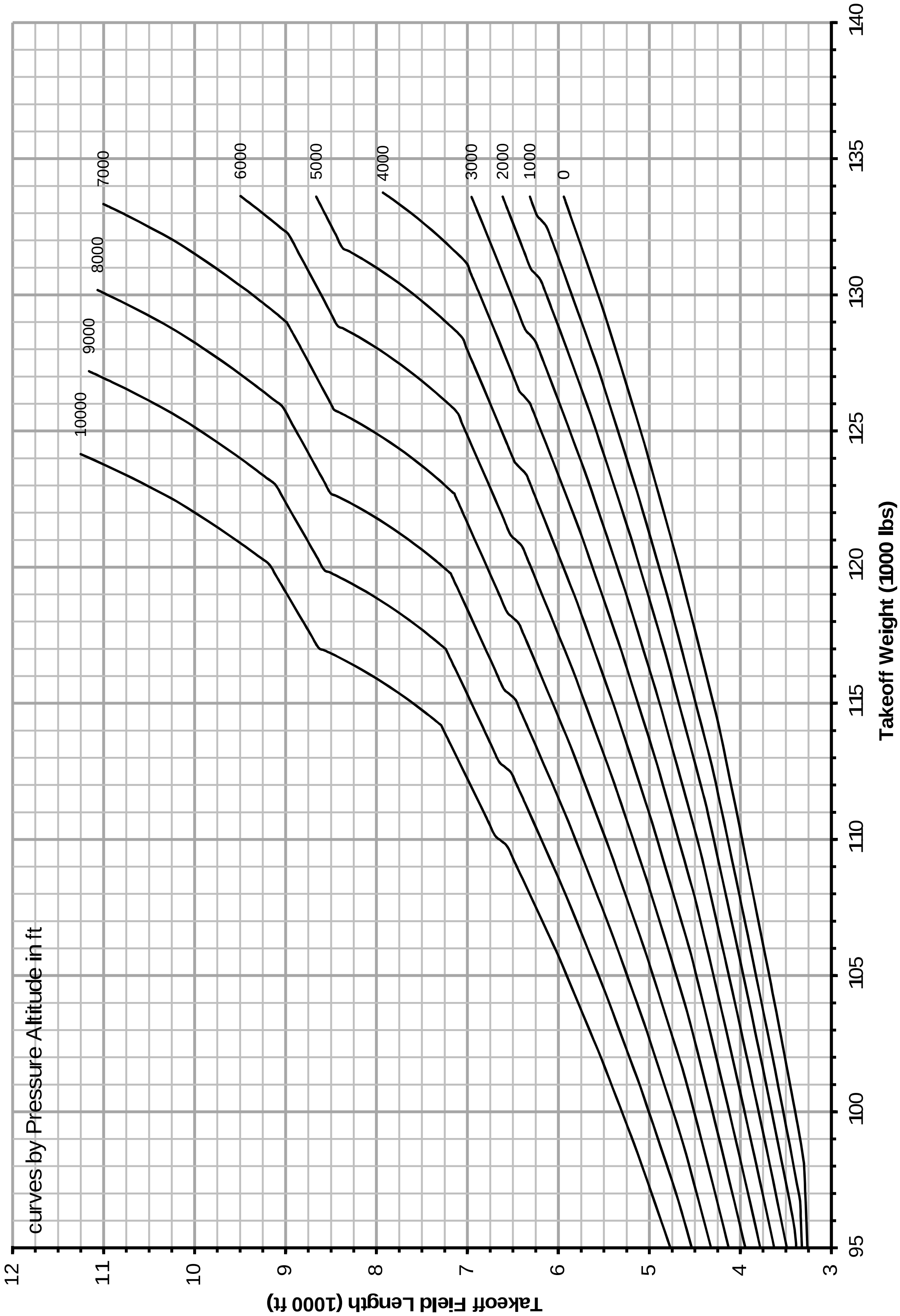
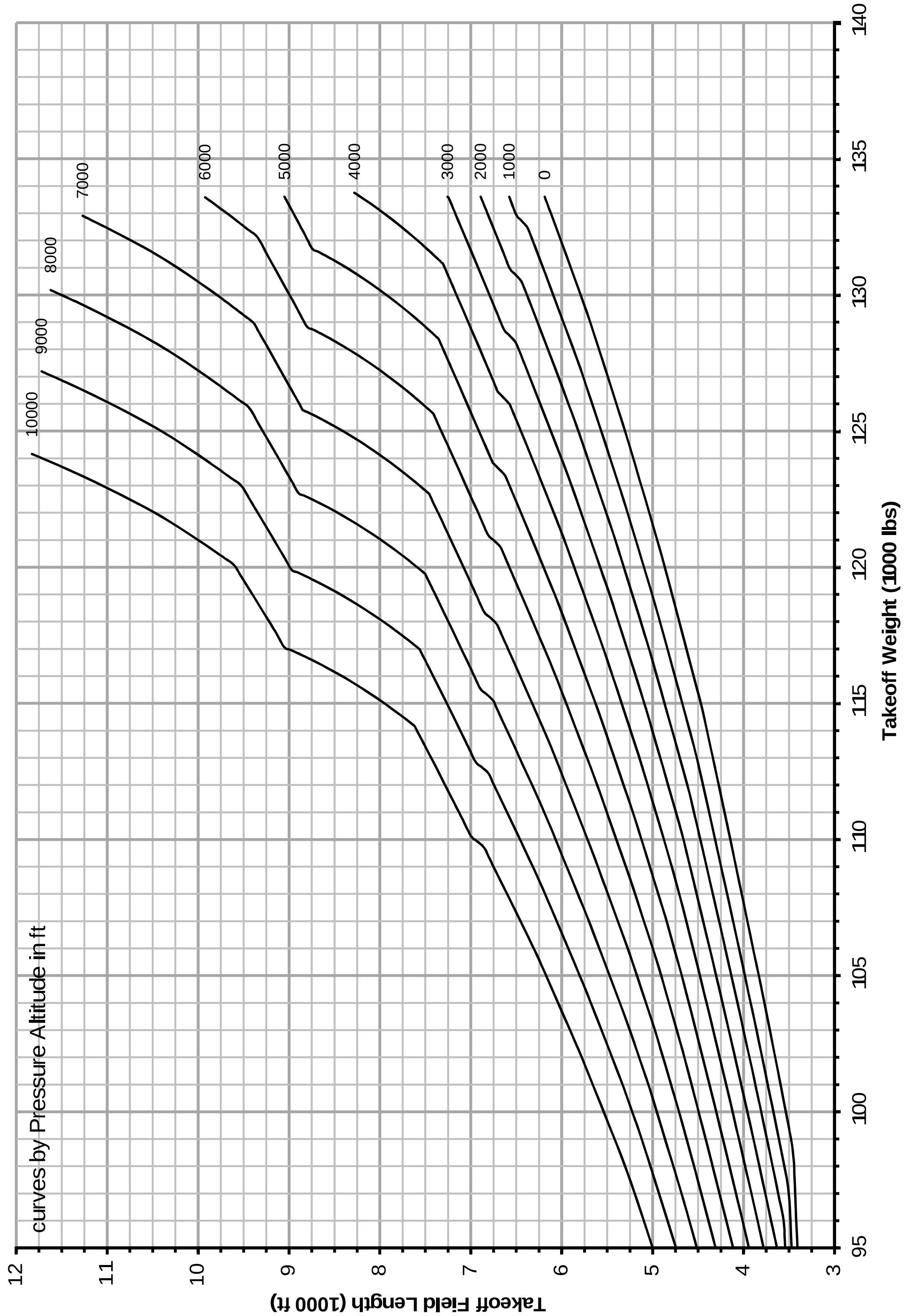
Figure 3 Takeoff field length ISA +15°C - PW1519G



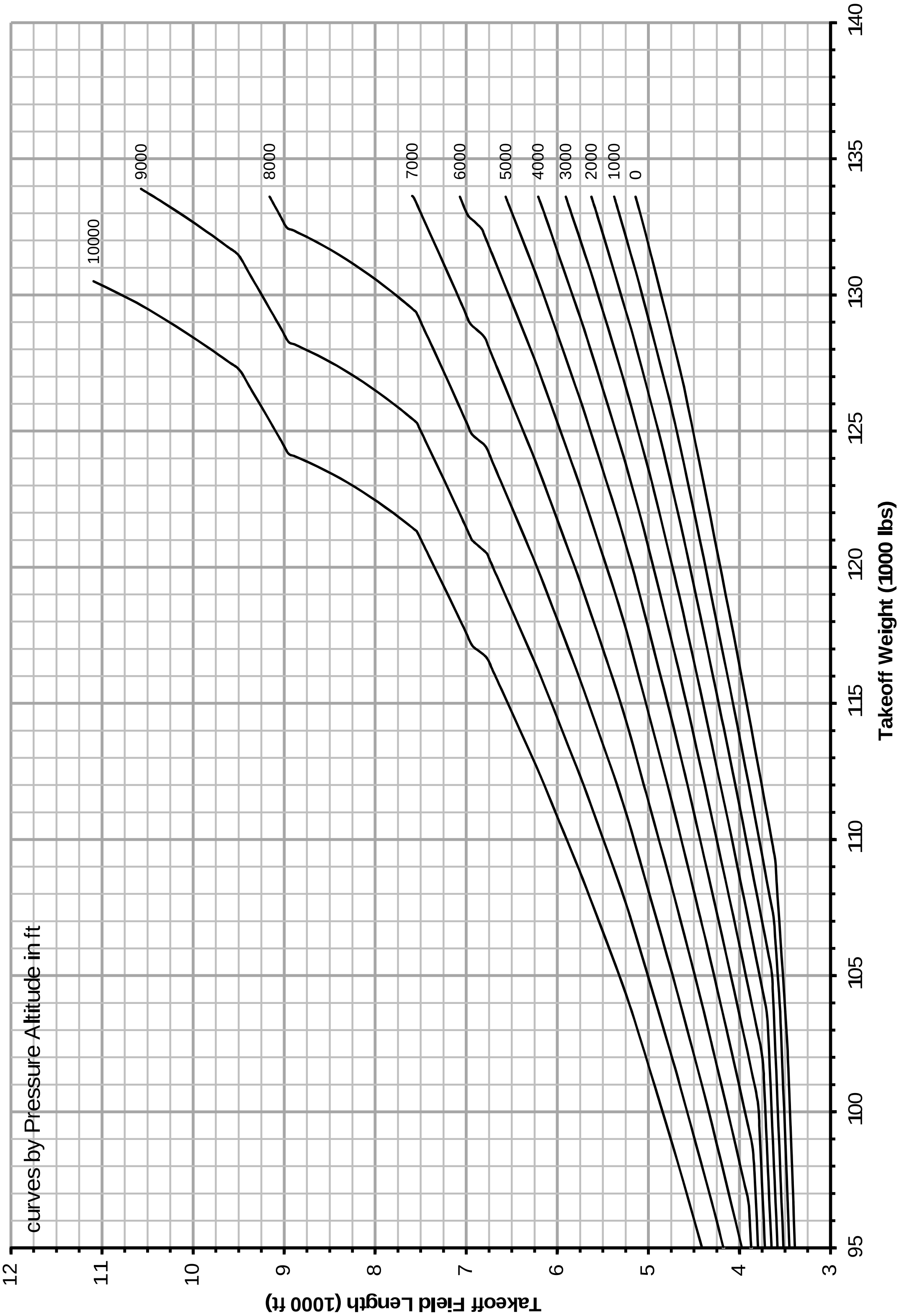
ICN-BD500-A-J000000-A-3AB48-29045-A-001-01

Figure 4 Takeoff field length ISA - PW1521G



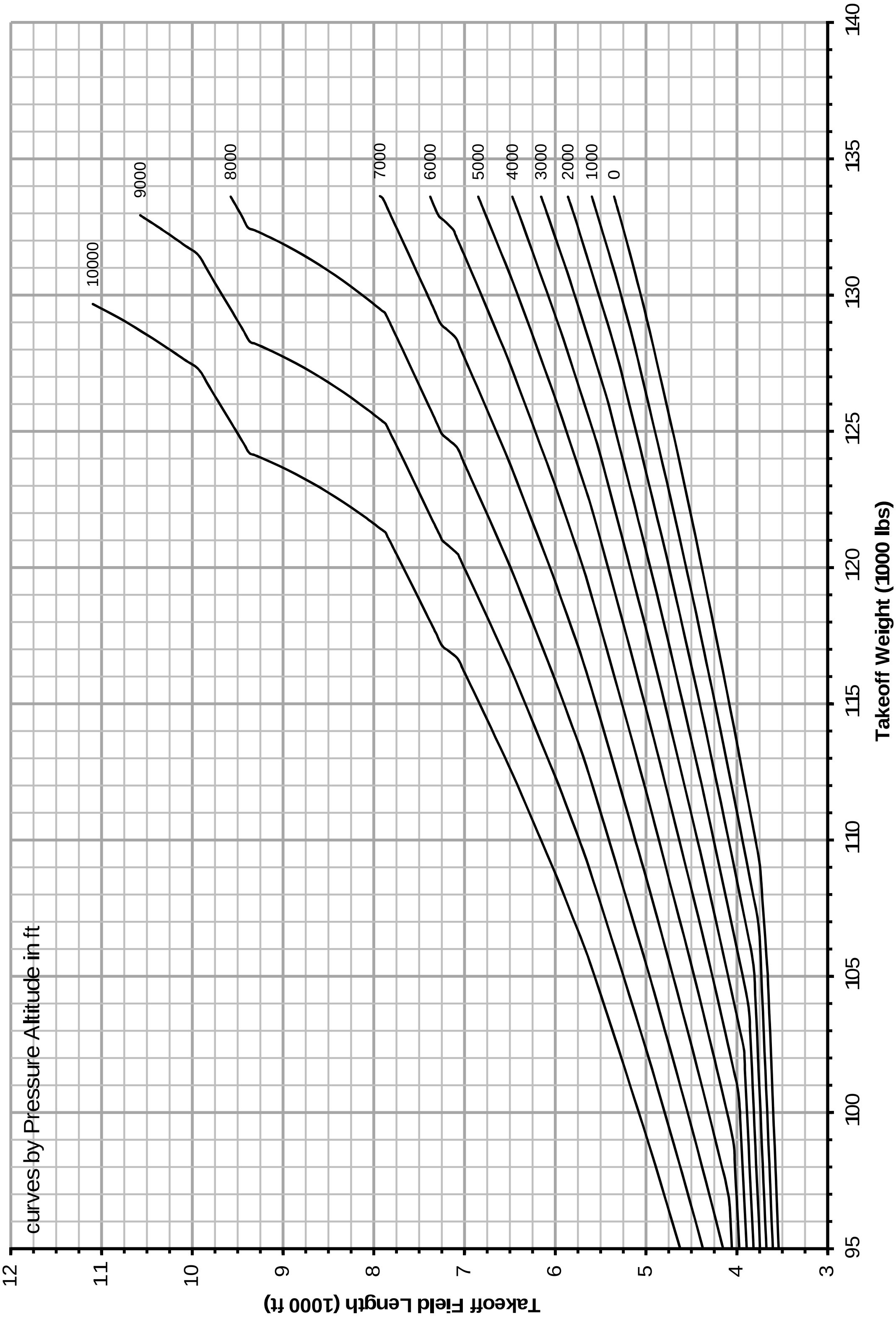
ICN-BD500-A-J000000-A-3AB48-29046-A-001-01

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



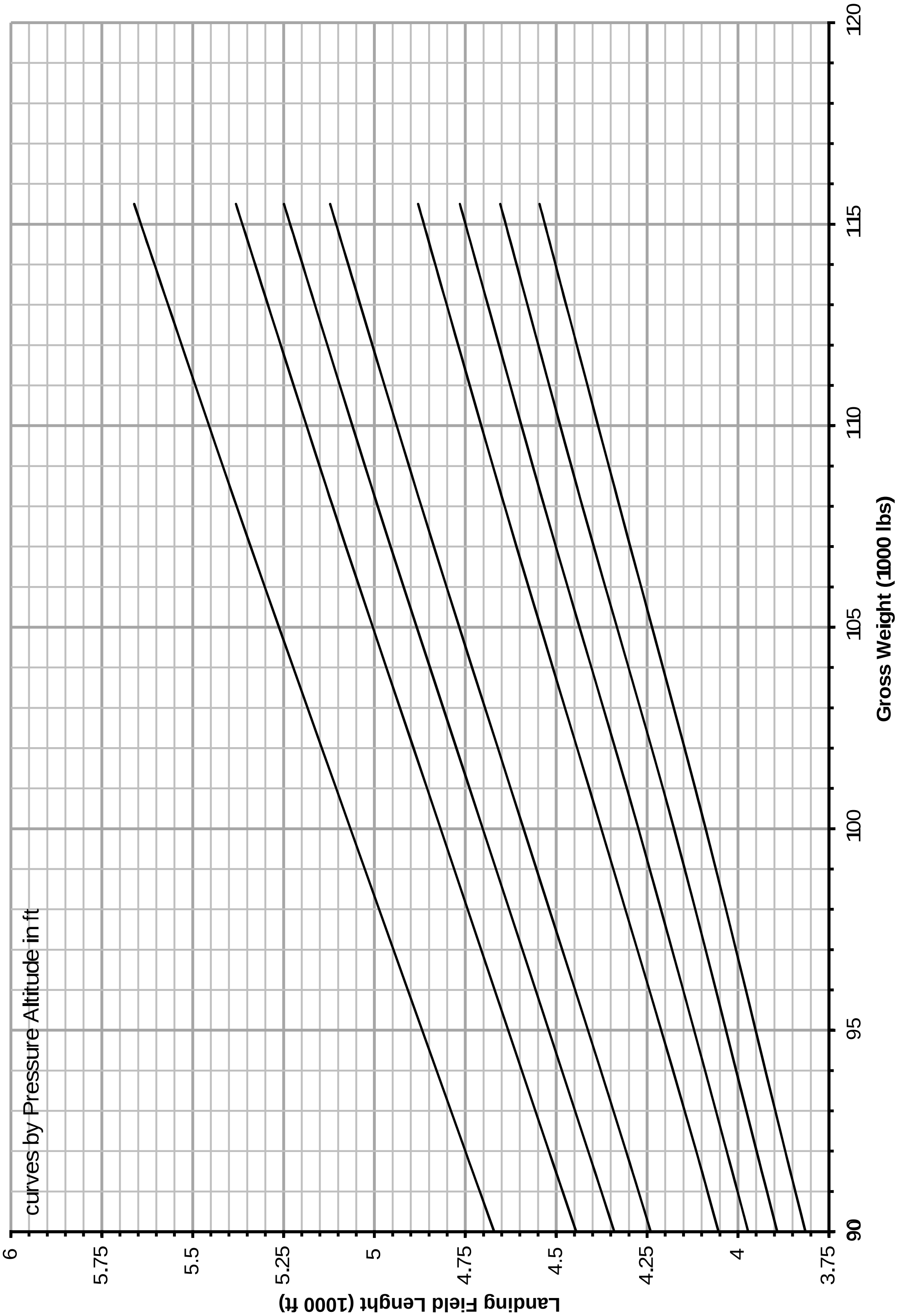
ICN-BD500-A-J000000-A-3AB48-29048-A-001-01

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 .

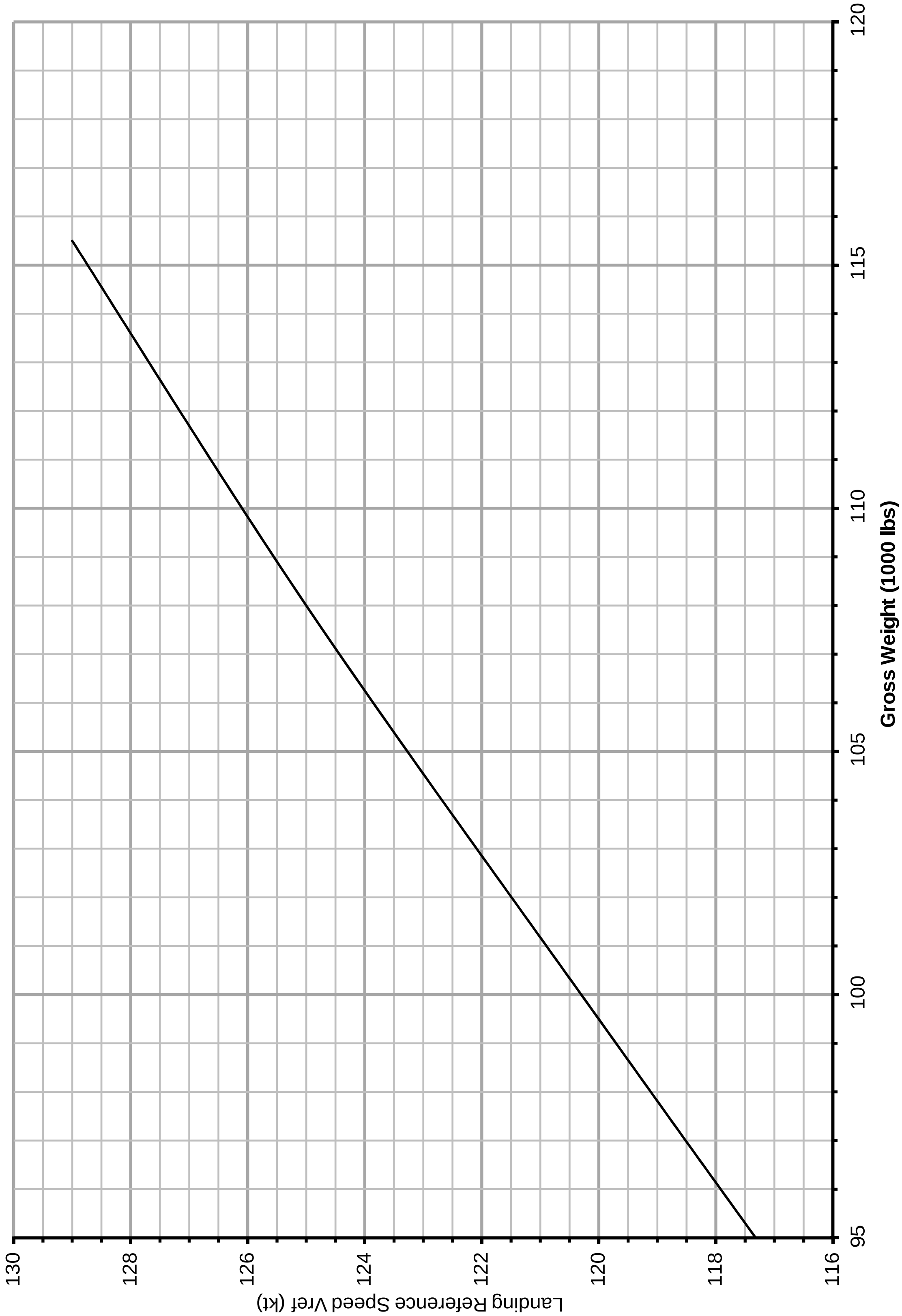


ICN-BD500-A-J000000-A-3AB48-01757-A-002-01

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

End of data module

A220

Aircraft performance - Technical data

Applicability: 55001-59999

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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

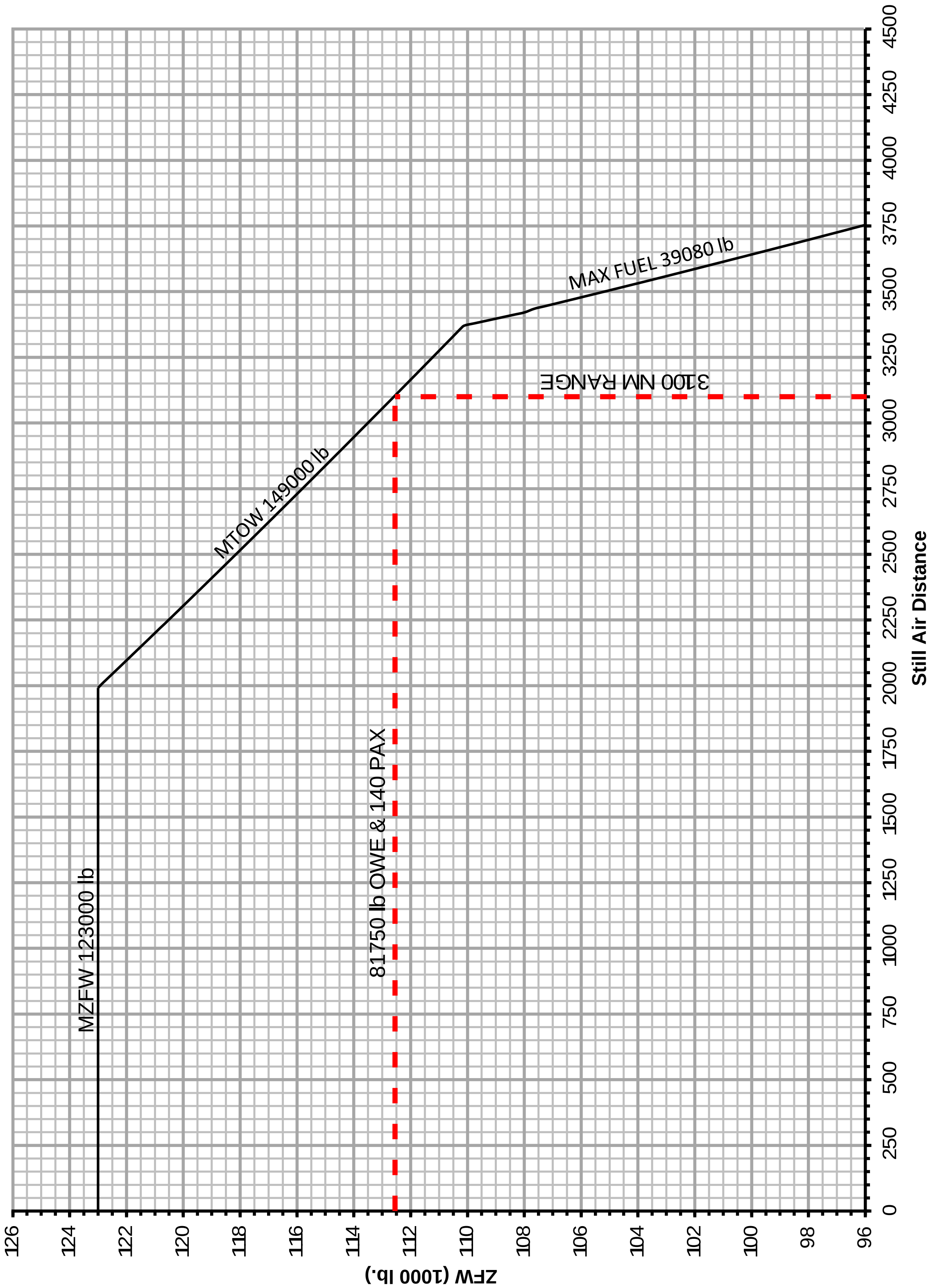
The table below provides standard day temperature for pressure altitudes.

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-3AB48-25637-A-002-01

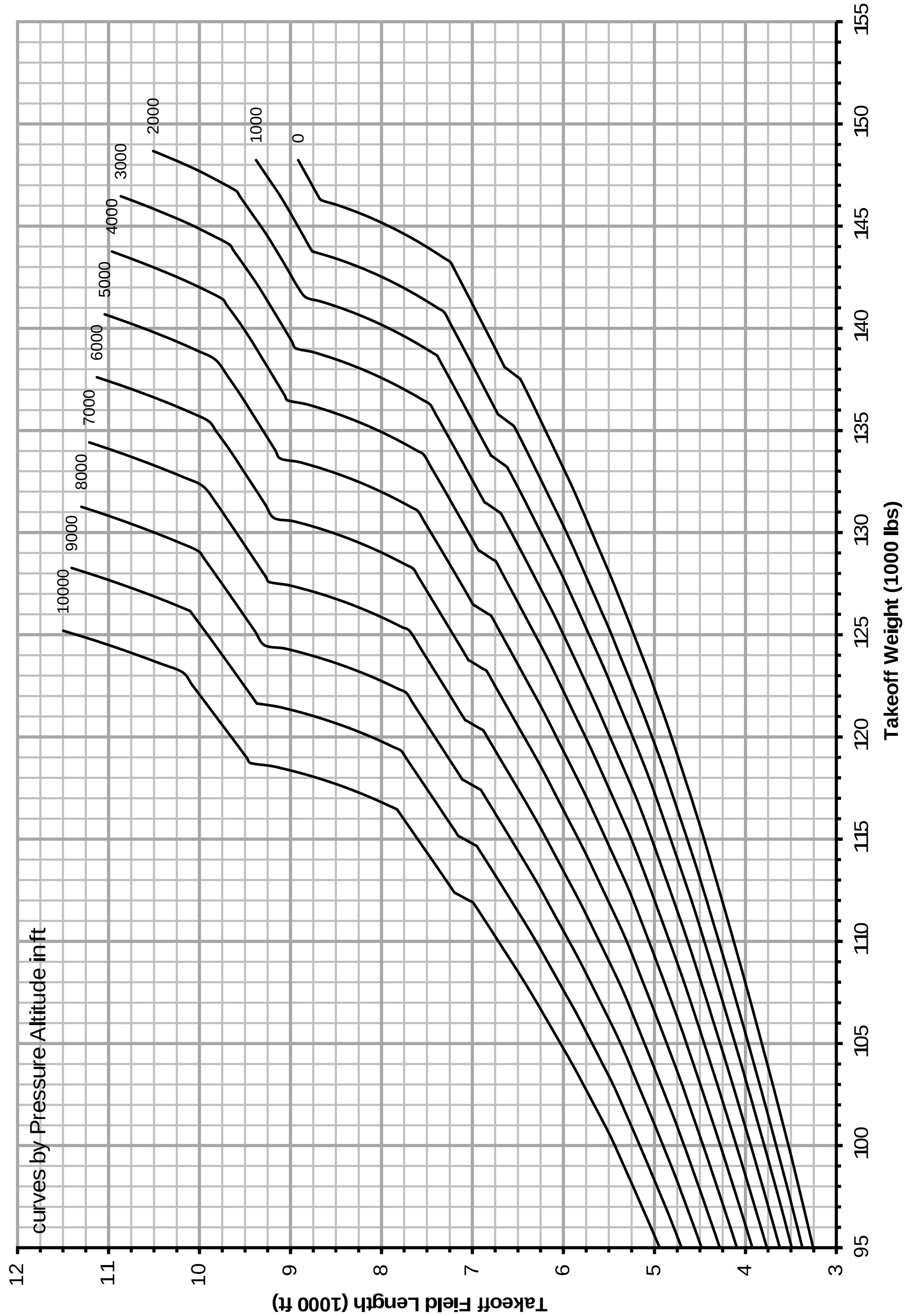
Figure 1 Zero Fuel Weight (ZFW) vs Range ISA

3 Takeoff field length requirements

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

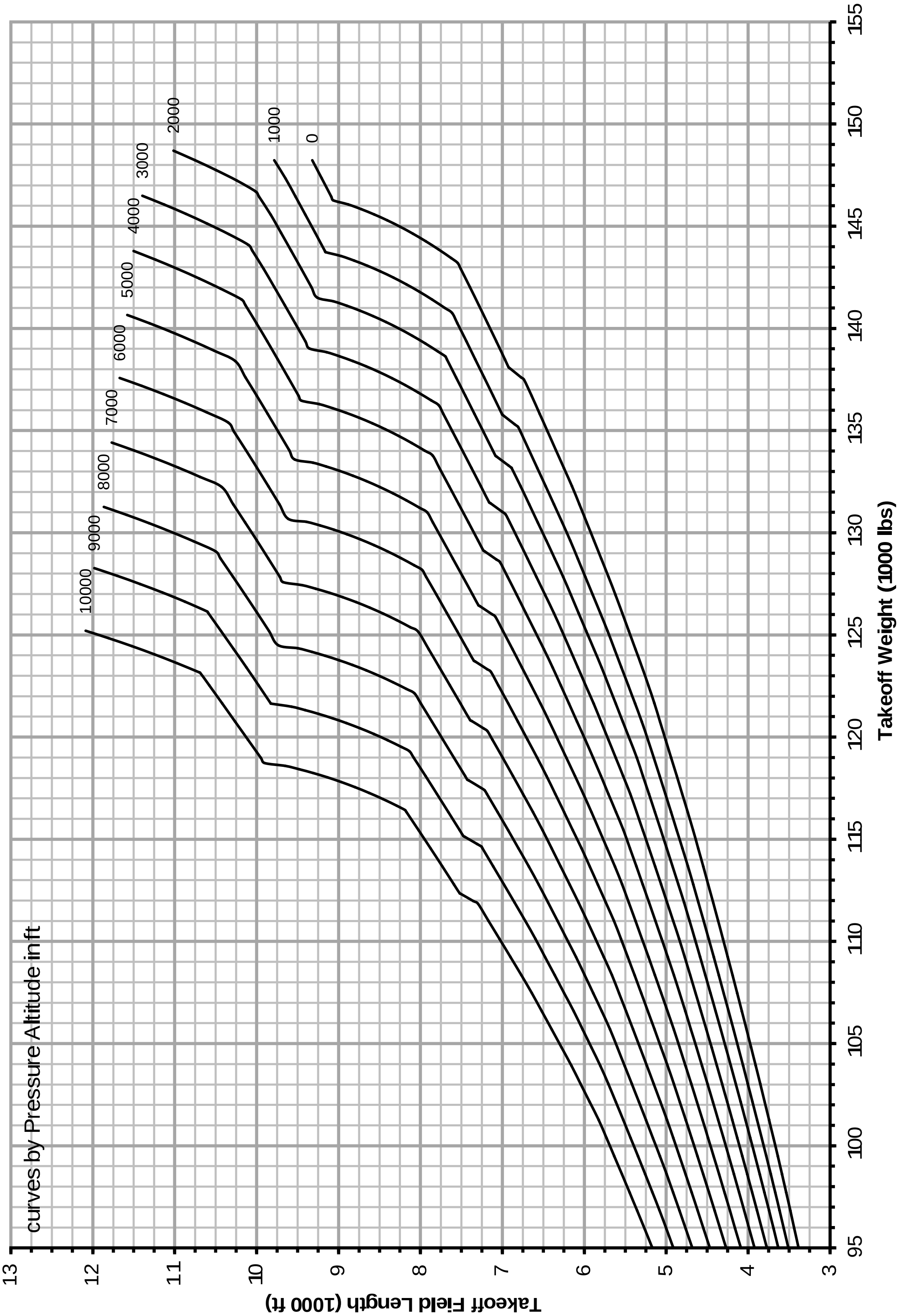
For aircraft performance and field length requirements refer to:

- 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.



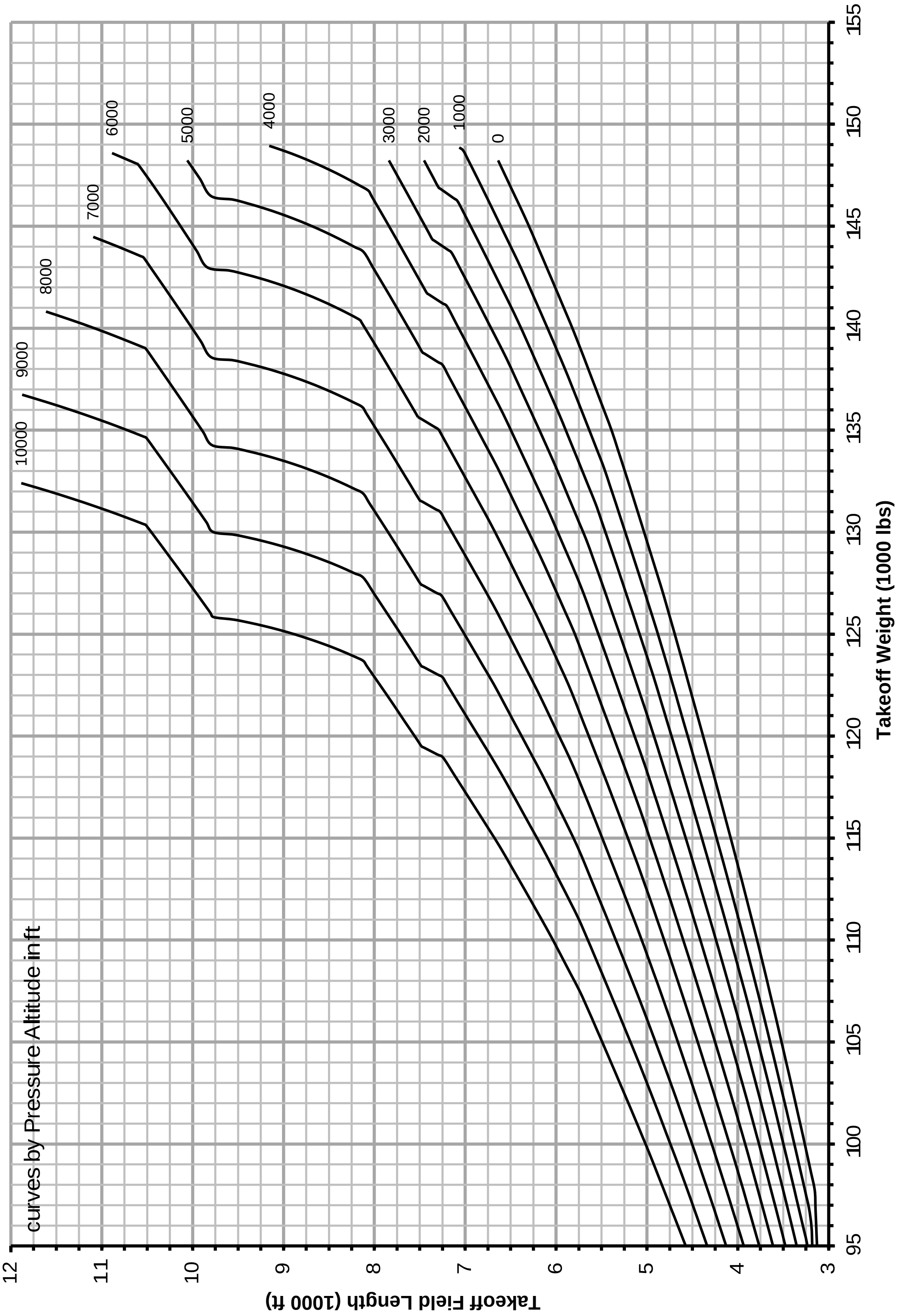
ICN-BD500-A-J000000-A-3AB48-01752-A-002-01

Figure 2 Takeoff field length ISA - PW1521G



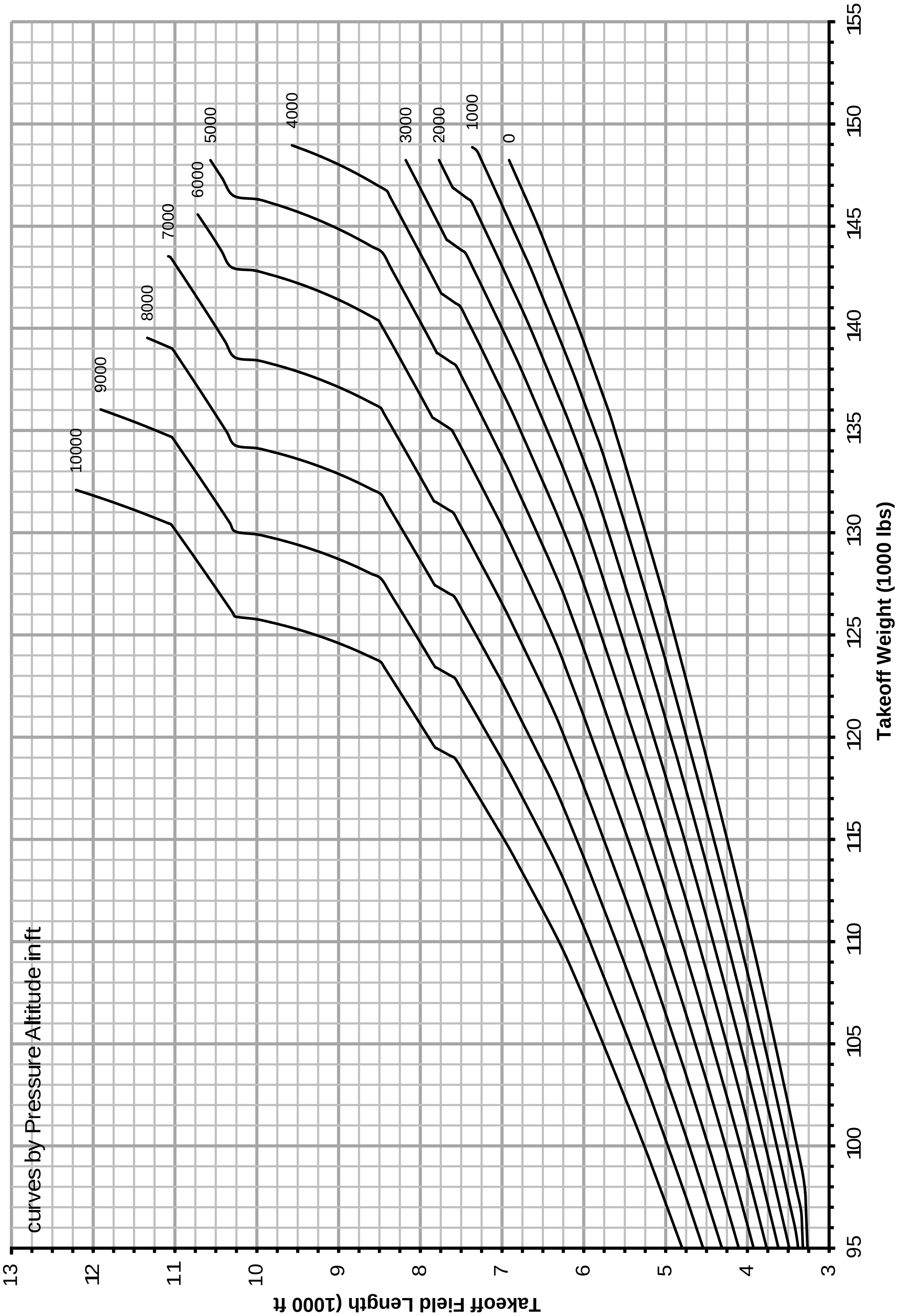
ICN-BD500-A-J000000-A-3AB48-01751-A-002-01

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



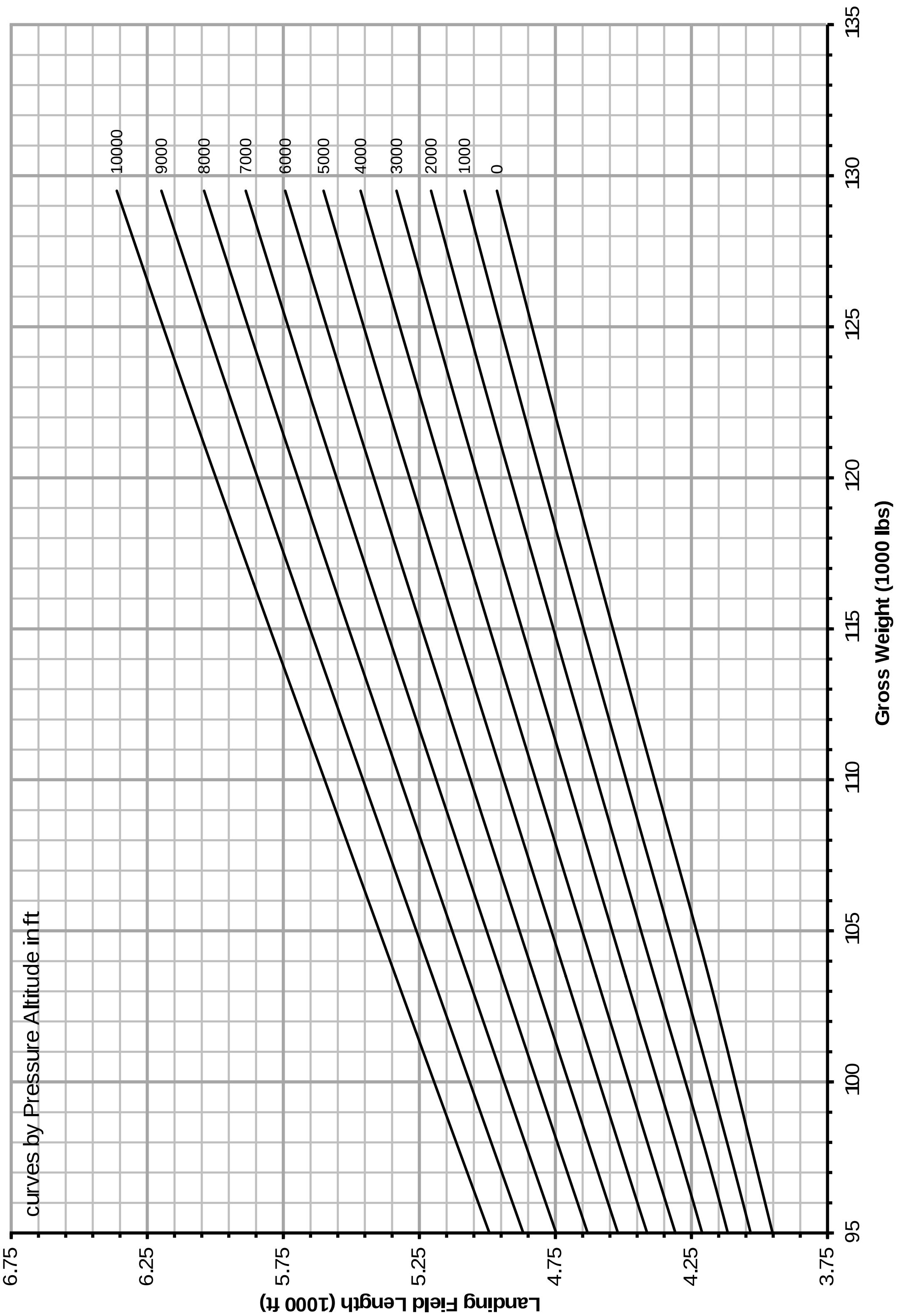
ICN-BD500-A-J000000-A-3AB48-01750-A-002-01

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 .

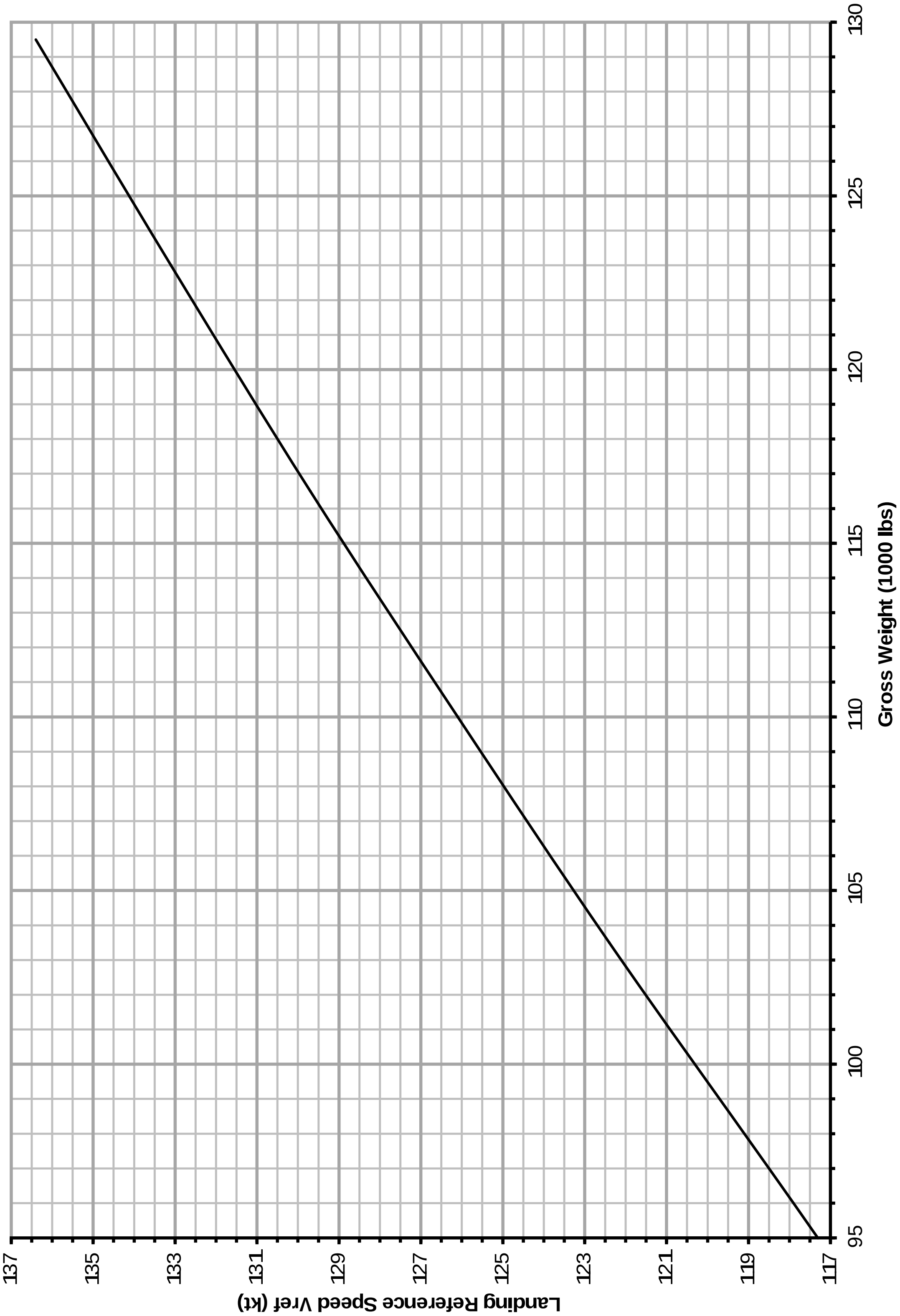


ICN-BD500-A-J000000-A-3AB48-01756-A-002-01

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

Chapter 4: Ground maneuvering

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Operating conditions - Technical data

Applicability: 50001-54999

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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.

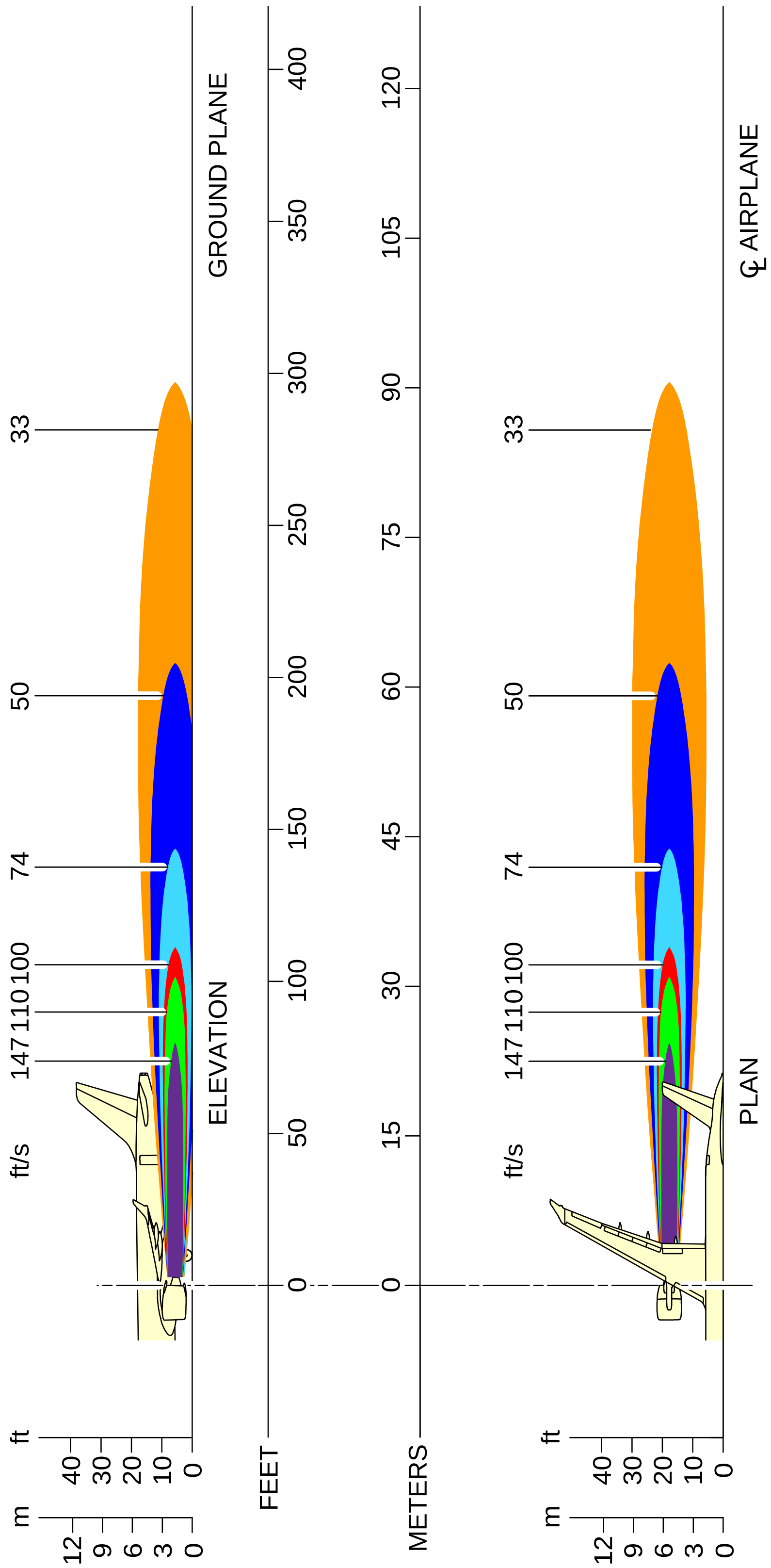
2 Engine dangerous areas

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

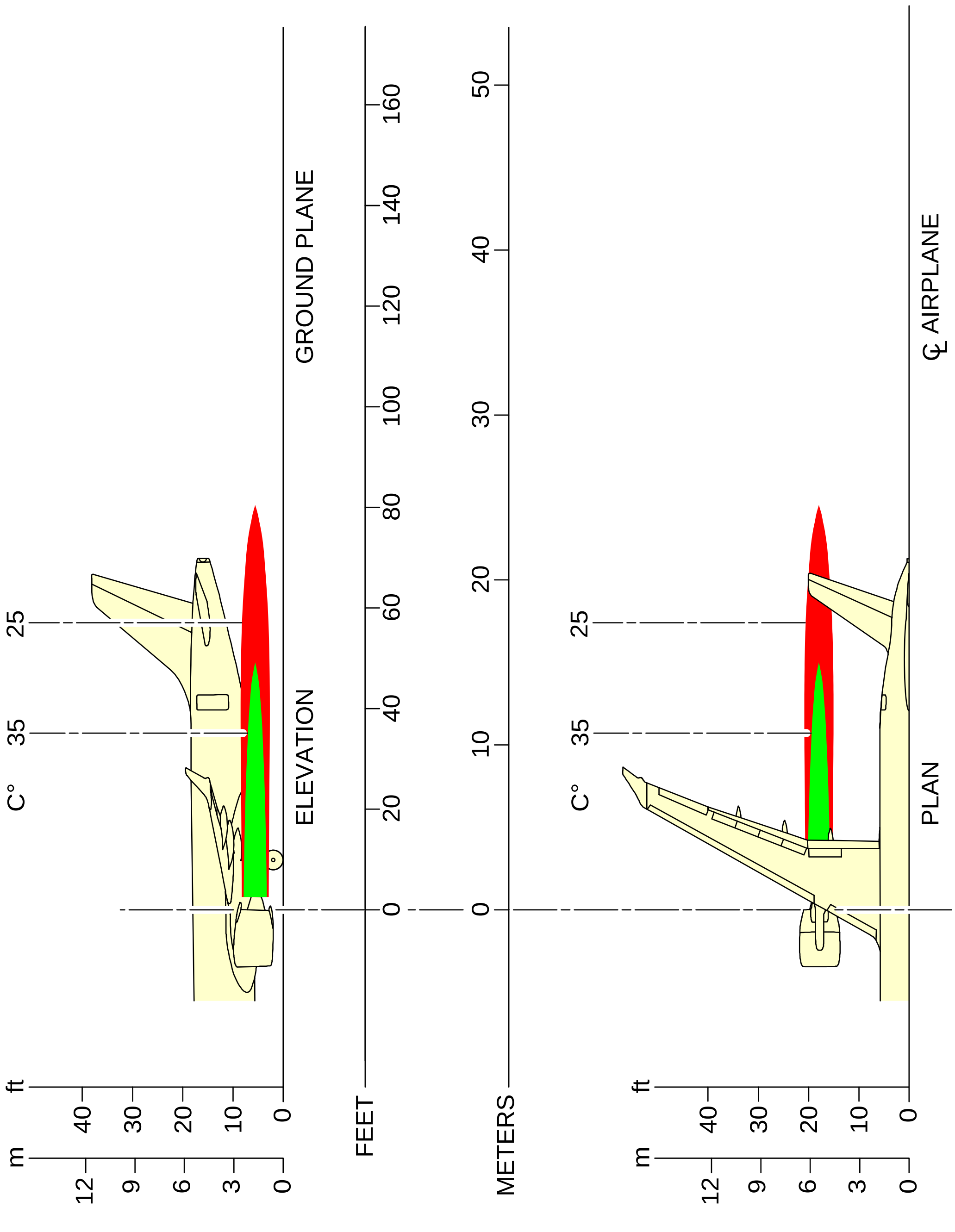
This section shows the estimated engine exhaust plume velocity and temperature profiles during idle, breakaway, and maximum takeoff conditions.

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 .



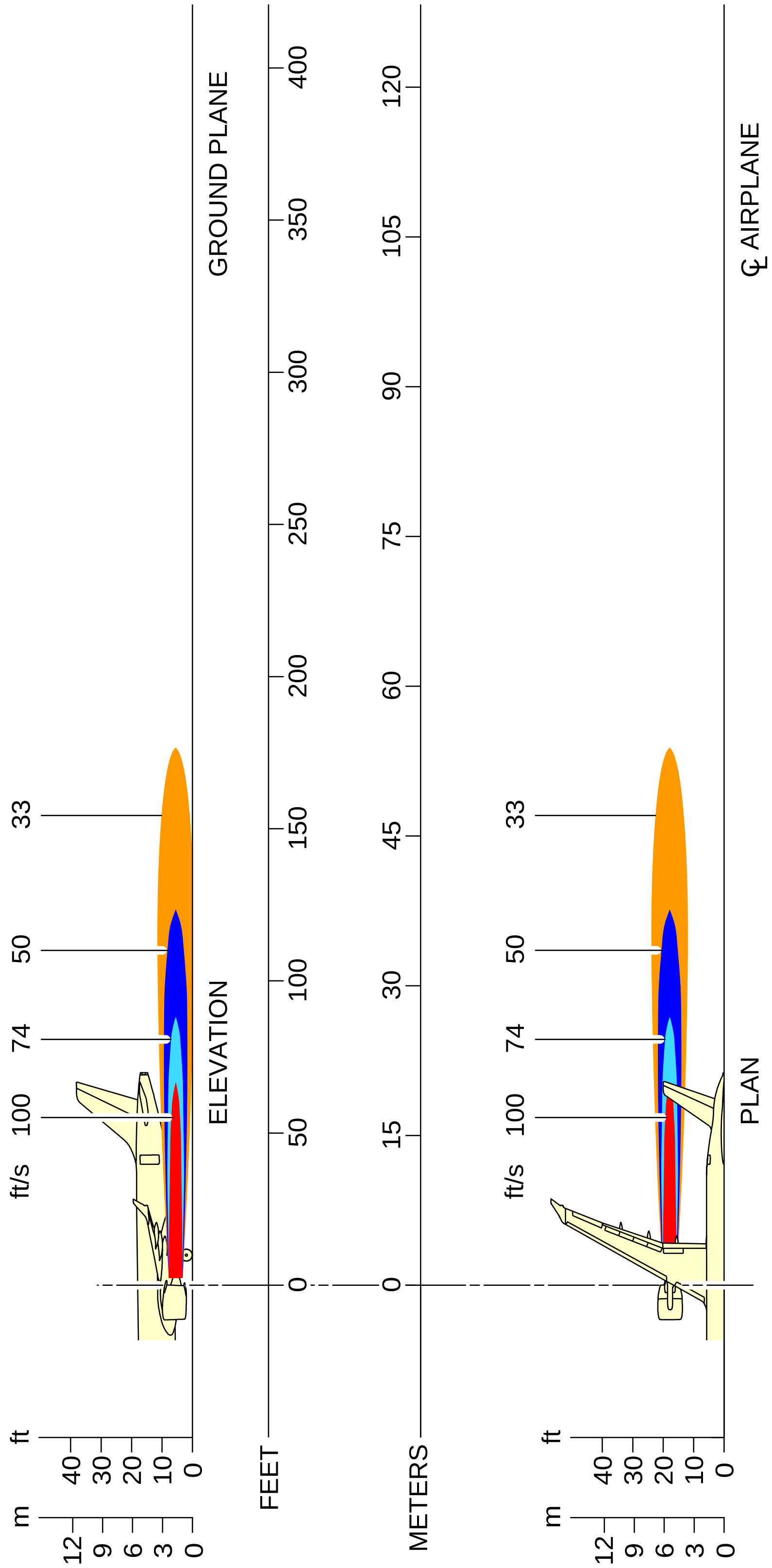
ICN-BD500-A-J000000-A-3AB48-27915-A-001-01

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



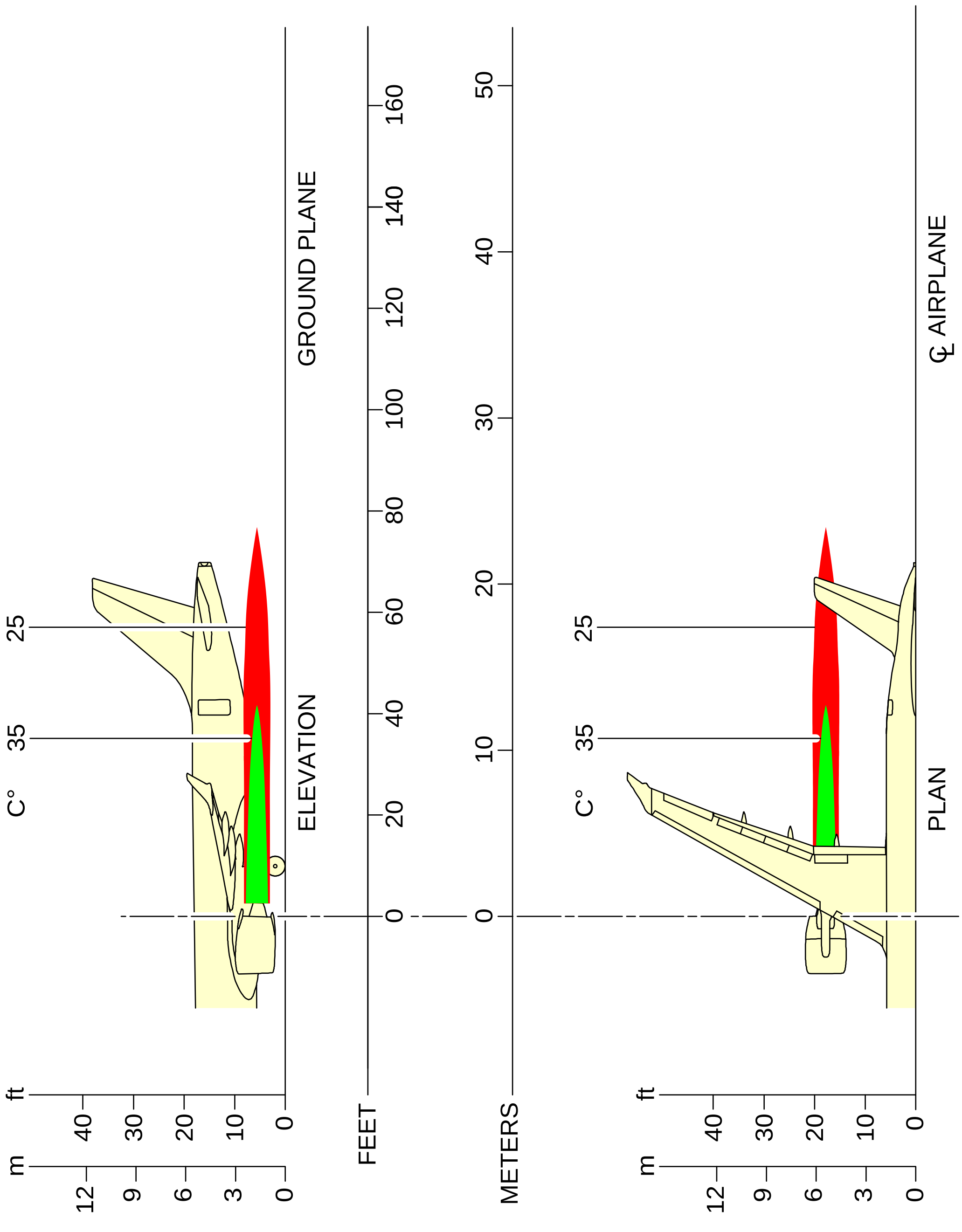
ICN-BD500-A-J000000-A-3AB48-27917-A-001-01

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



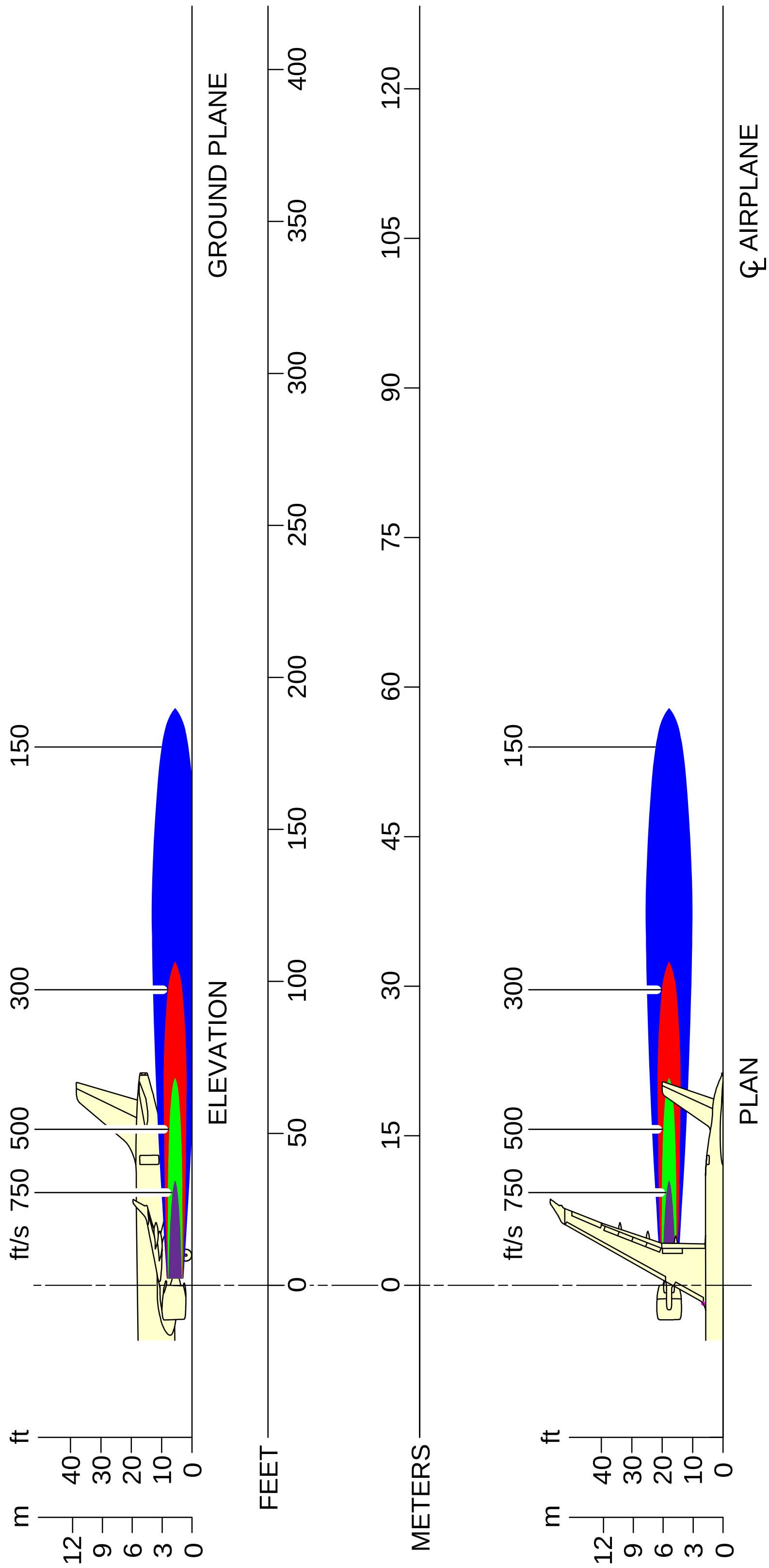
ICN-BD500-A-J000000-A-3AB48-27919-A-001-01

Figure 3 Exhaust plume velocity profile / Ground idle



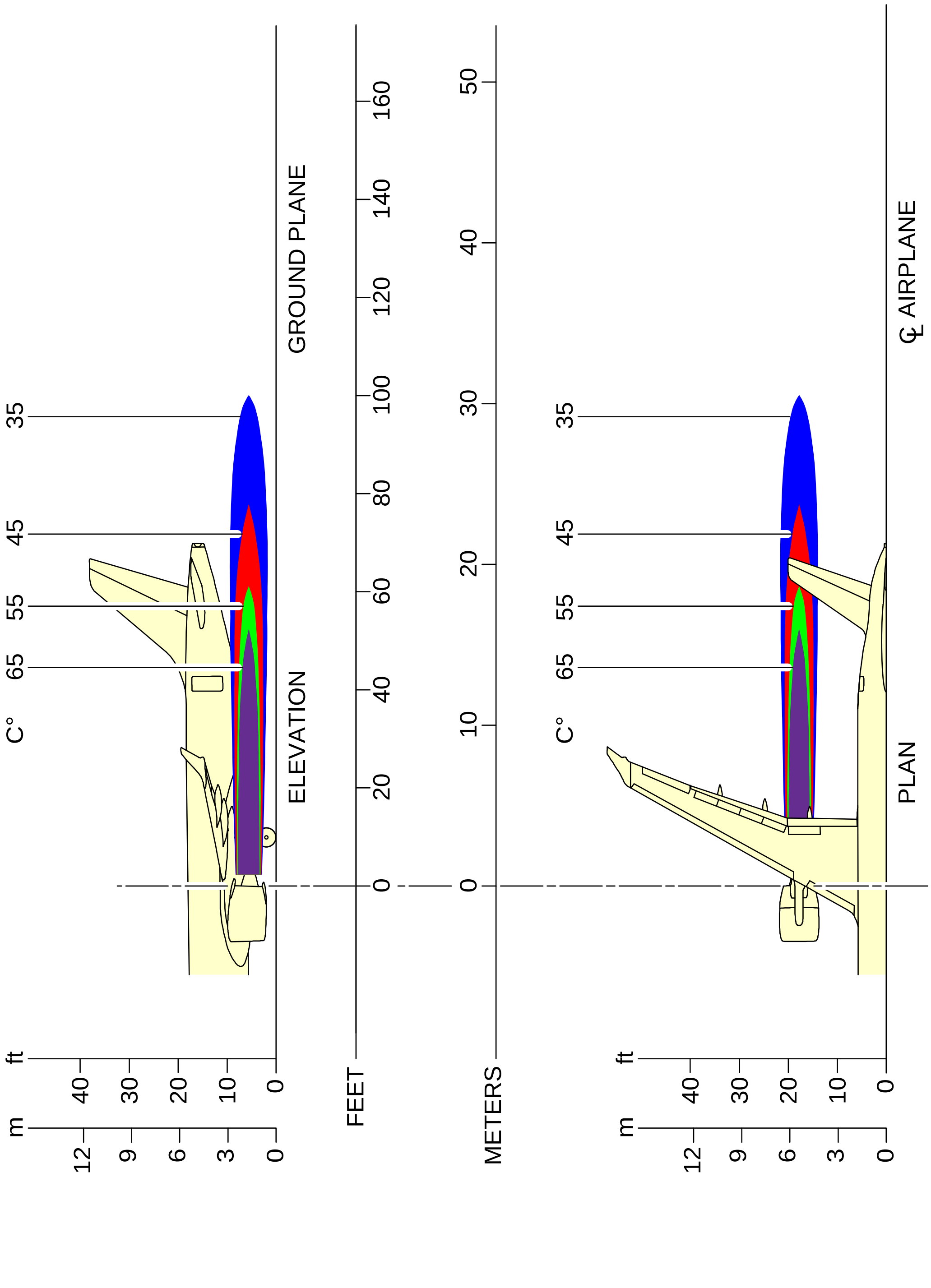
ICN-BD500-A-J000000-A-3AB48-27920-A-001-01

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

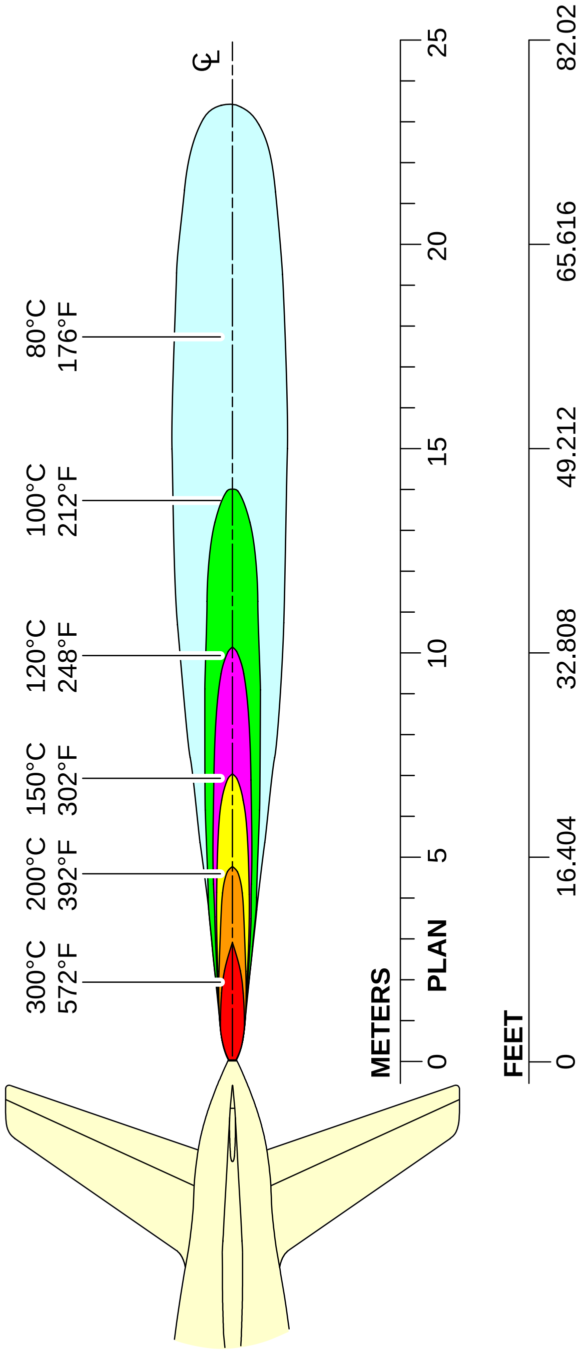


ICN-BD500-A-J000000-A-3AB48-27922-A-001-01

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

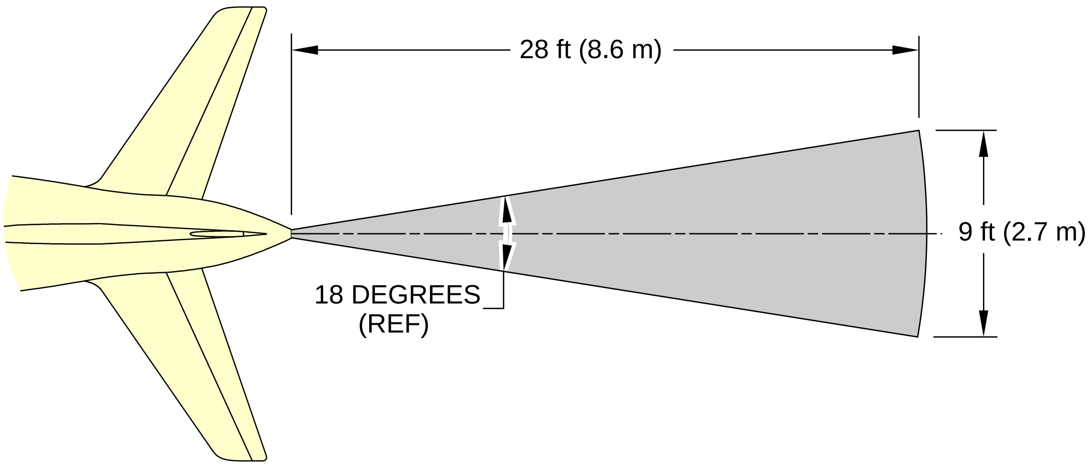
4 Auxiliary Power Unit (APU)

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

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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**		**Measurement Points**			**Margins (EPNdB)**	**Margin Requirement (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: 50069, 50071, 50078, 50085-50086

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>	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
			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

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Operating conditions - Technical data

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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.

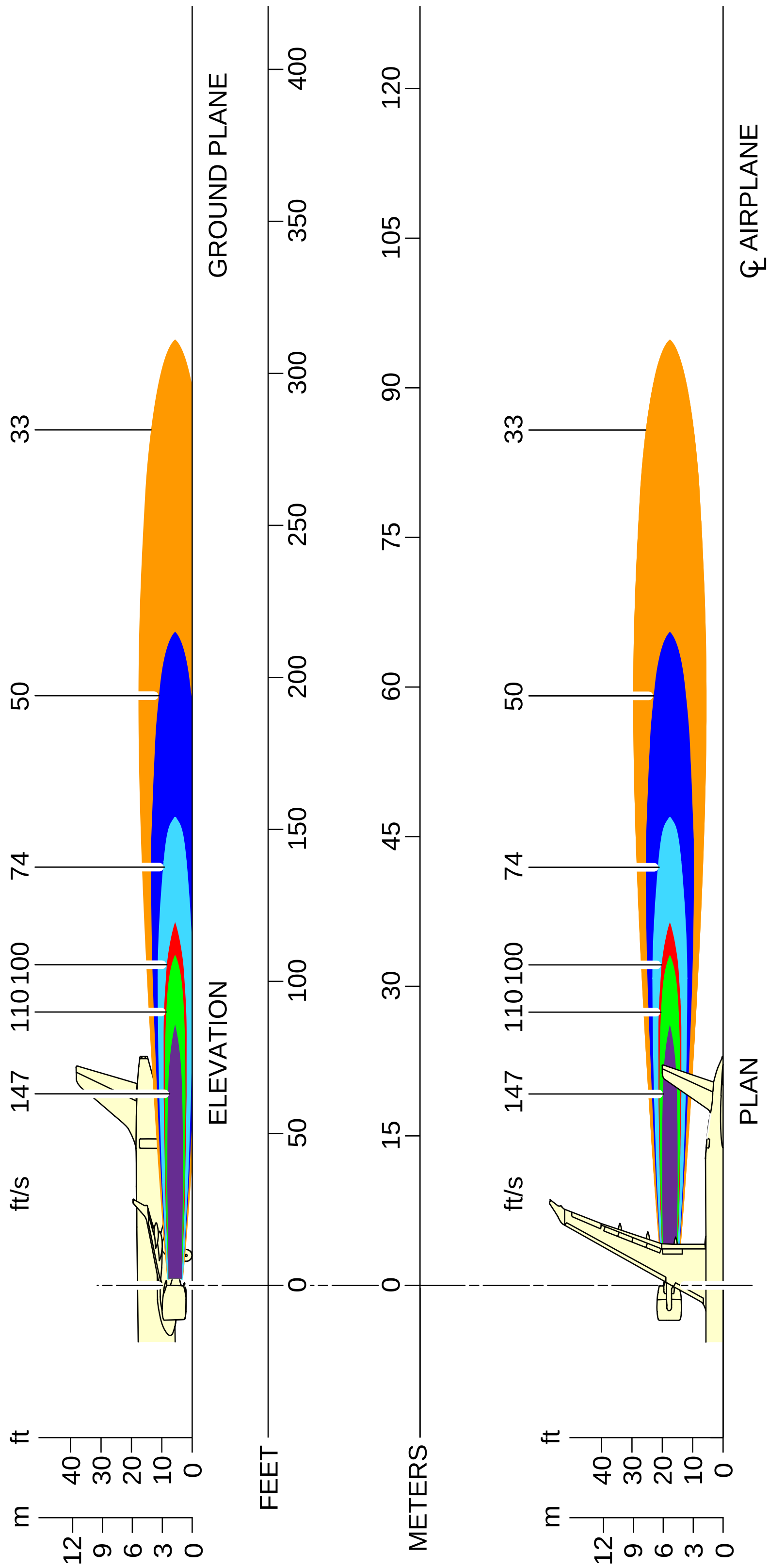
2 Engine dangerous areas

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

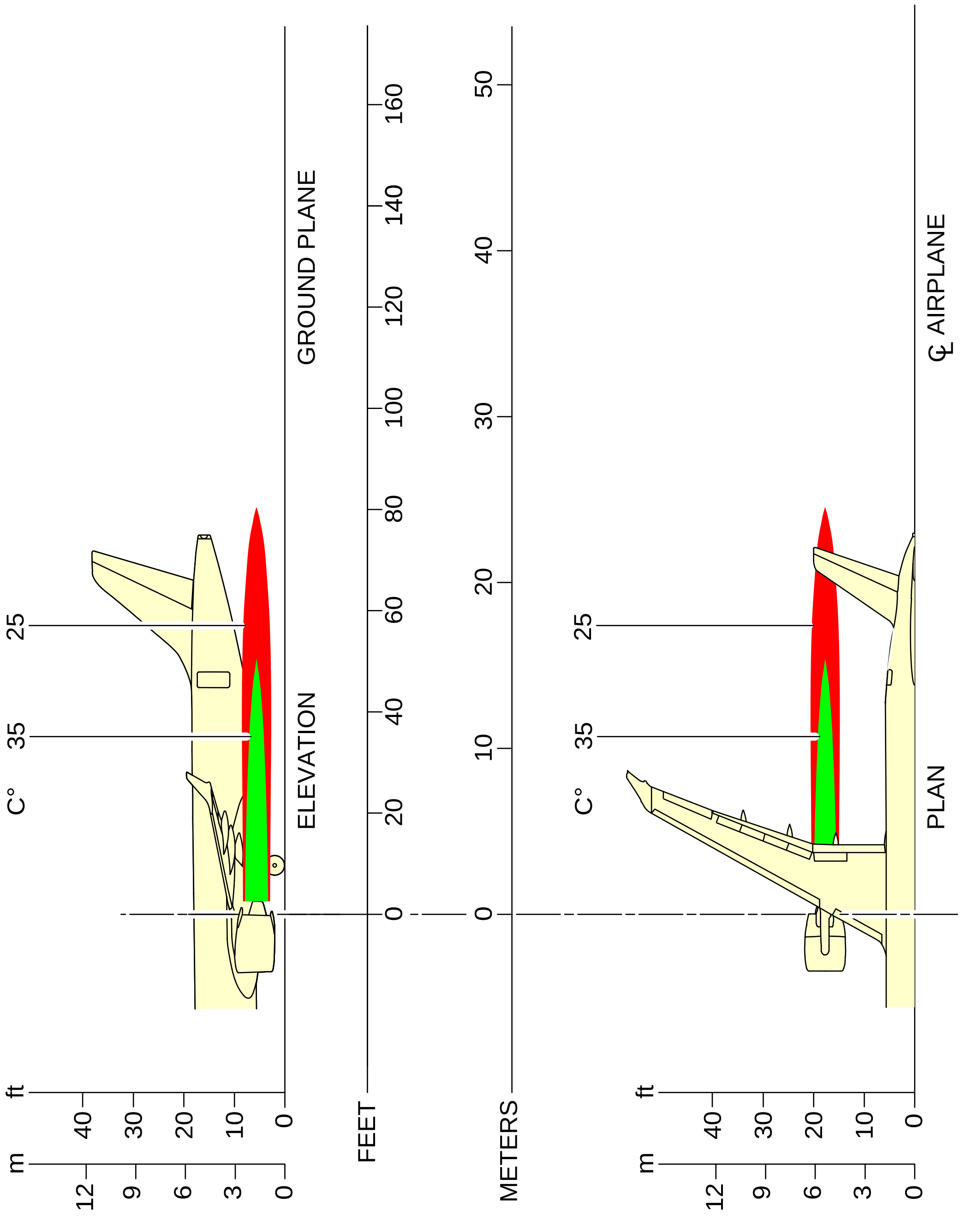
This section shows the estimated engine exhaust plume velocity and temperature profiles during idle, breakaway, and maximum takeoff conditions.

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 .



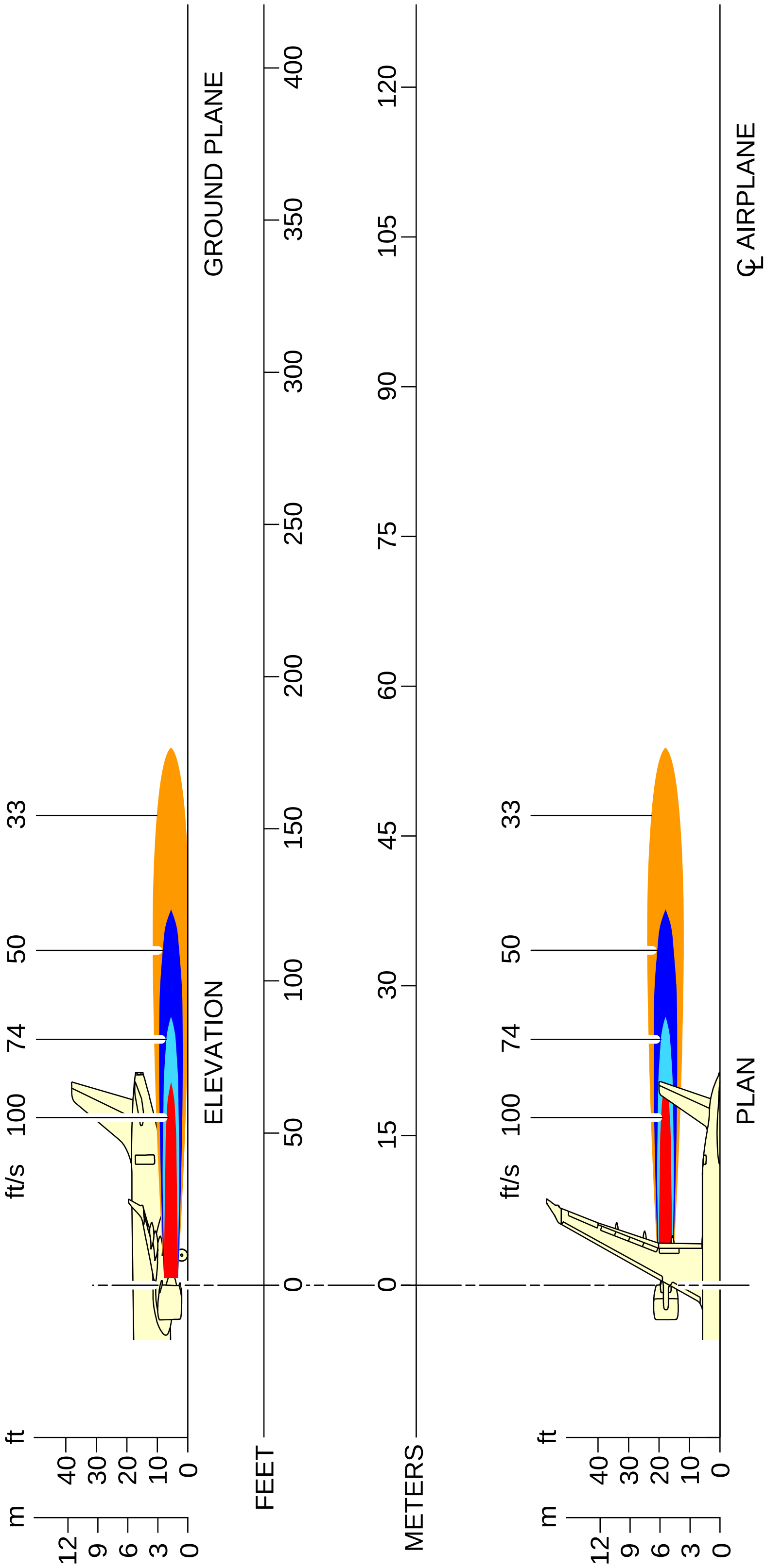
ICN-BD500-A-J000000-A-3AB48-27916-A-001-01

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



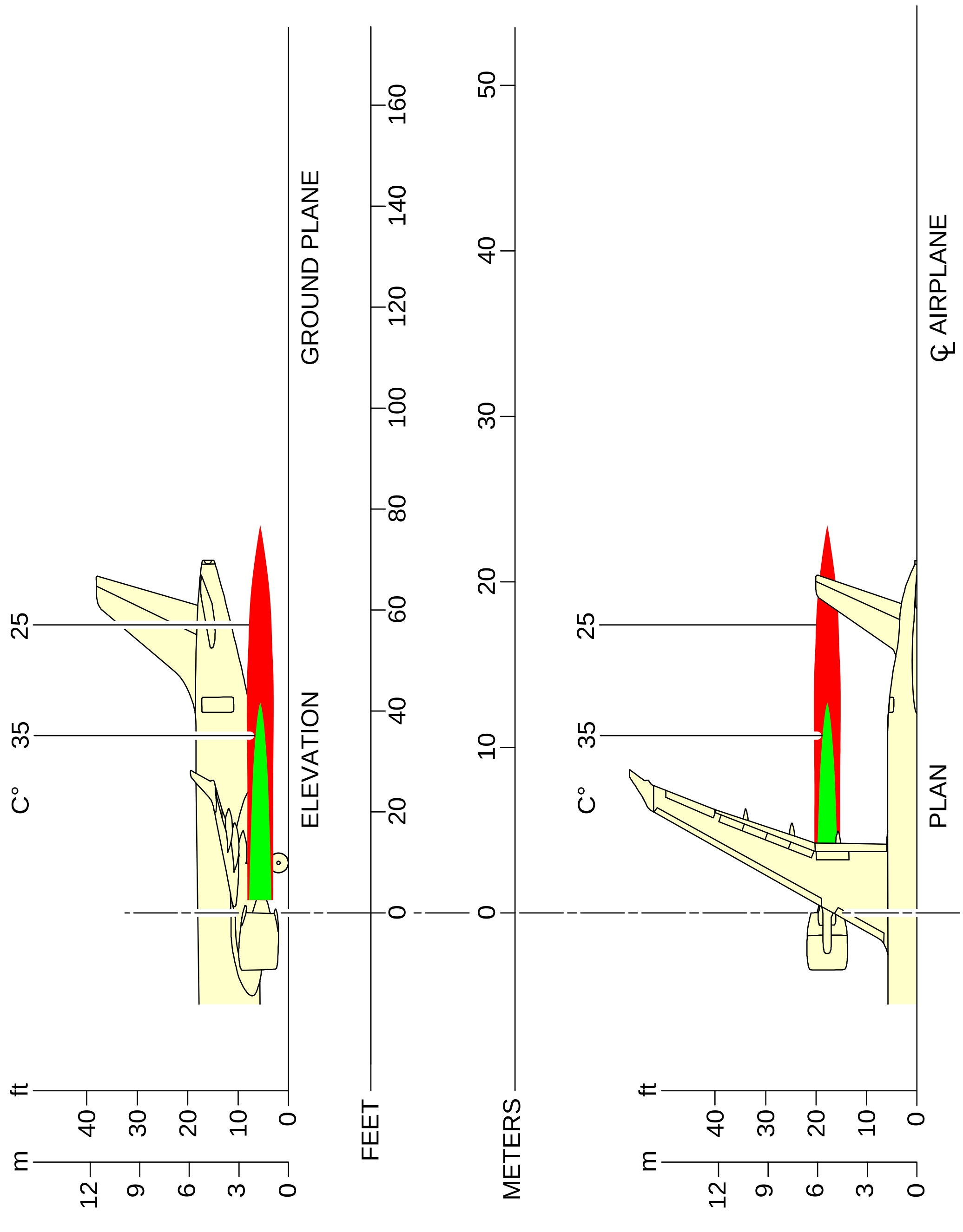
ICN-BD500-A-J000000-A-3AB48-27918-A-001-01

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



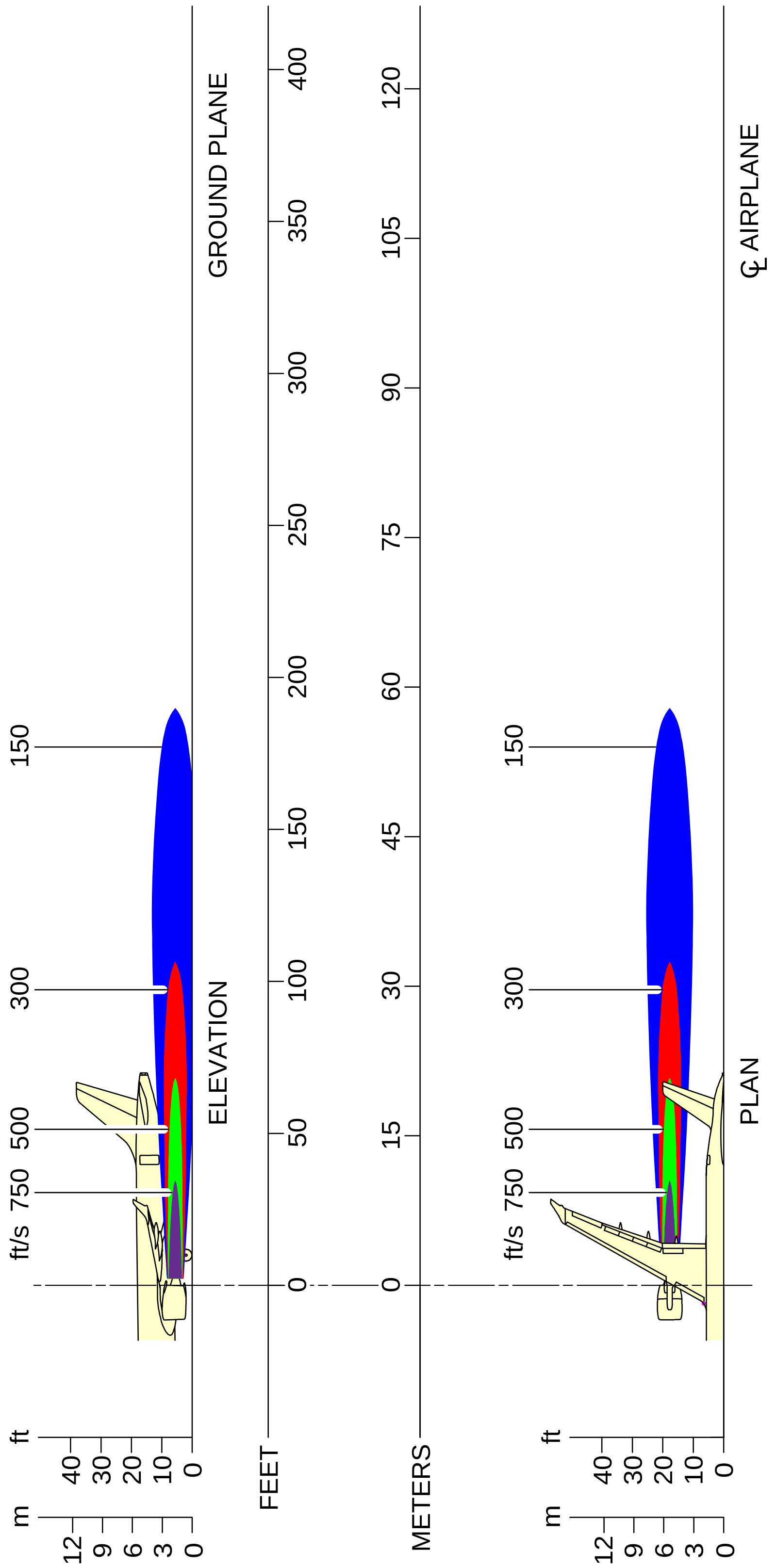
ICN-BD500-A-J000000-A-3AB48-27919-A-001-01

Figure 3 Exhaust plume velocity profile / Ground idle



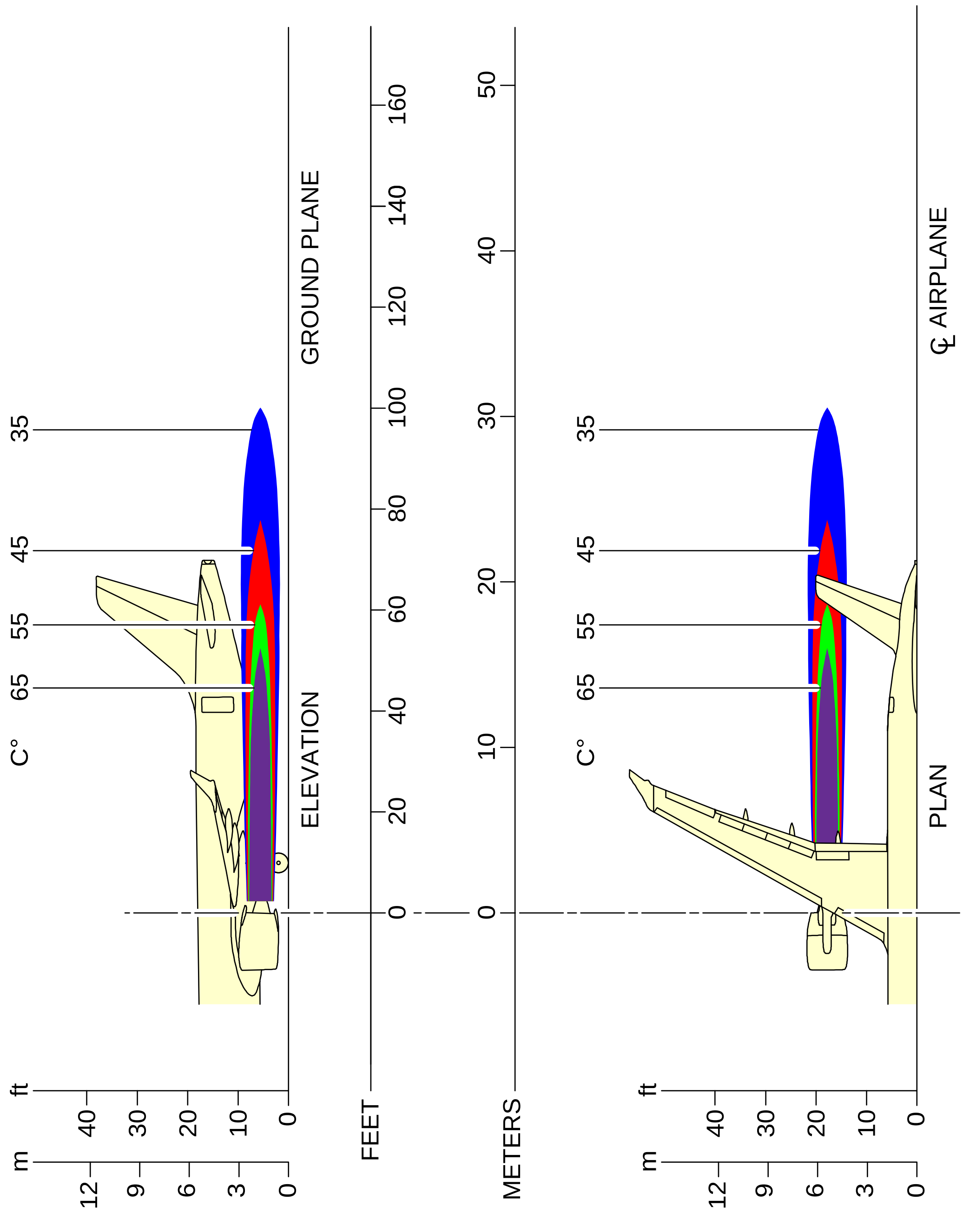
ICN-BD500-A-J000000-A-3AB48-27920-A-001-01

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

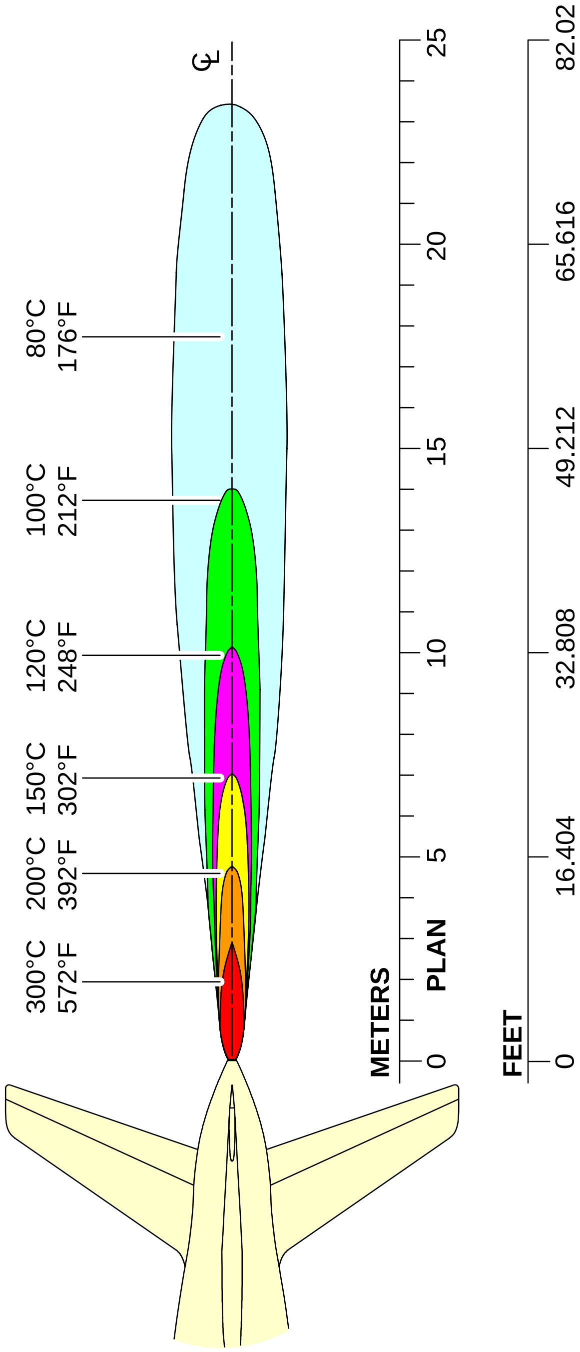


ICN-BD500-A-J000000-A-3AB48-27922-A-001-01

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

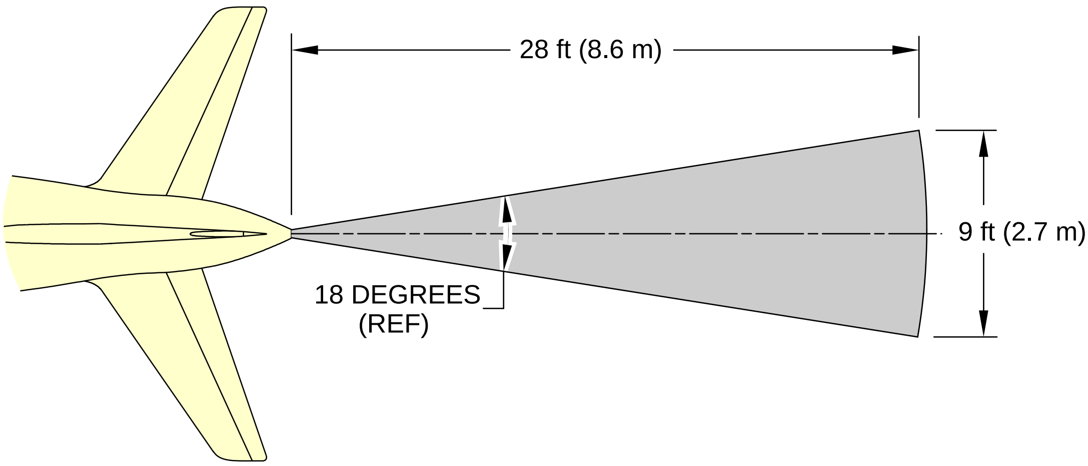
4 Auxiliary Power Unit (APU)

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		Measurement Points			Margins (EPNdB)	Margin Requirement (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

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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 air-craft 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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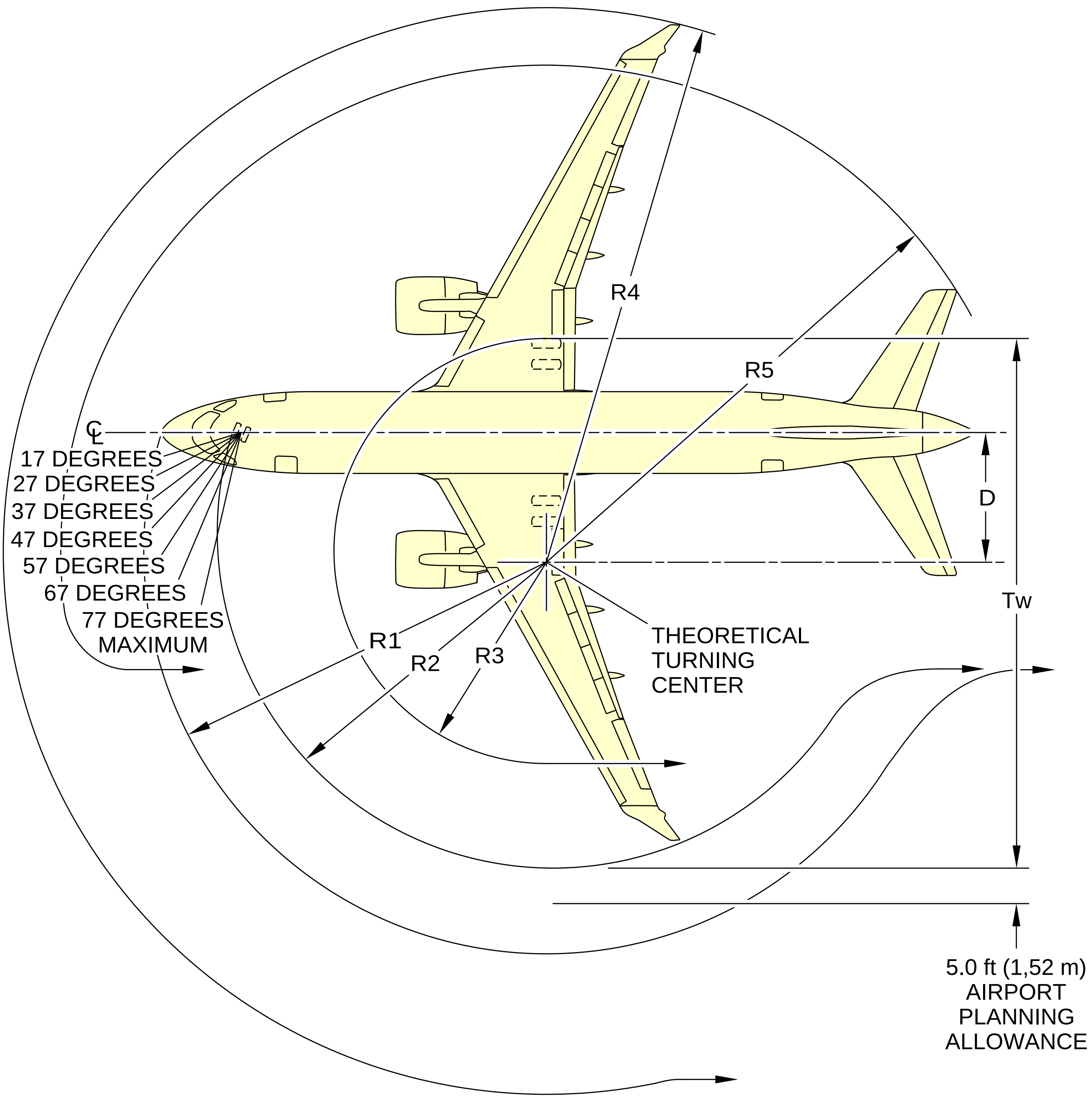


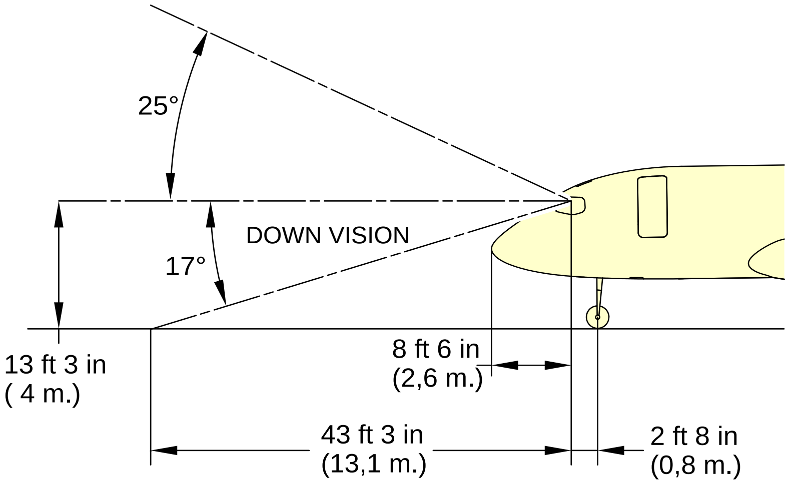
ICN-BD500-A-J092001-A-3AB48-00068-A-001-01

Figure 1 Turn radii

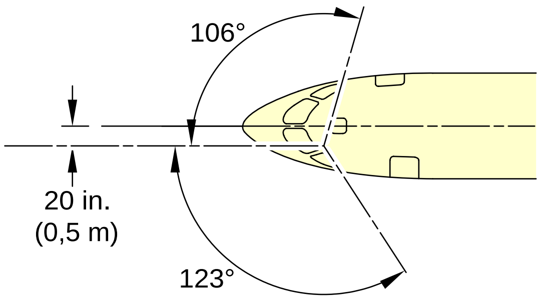
2 Visibility from cockpit in static position

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

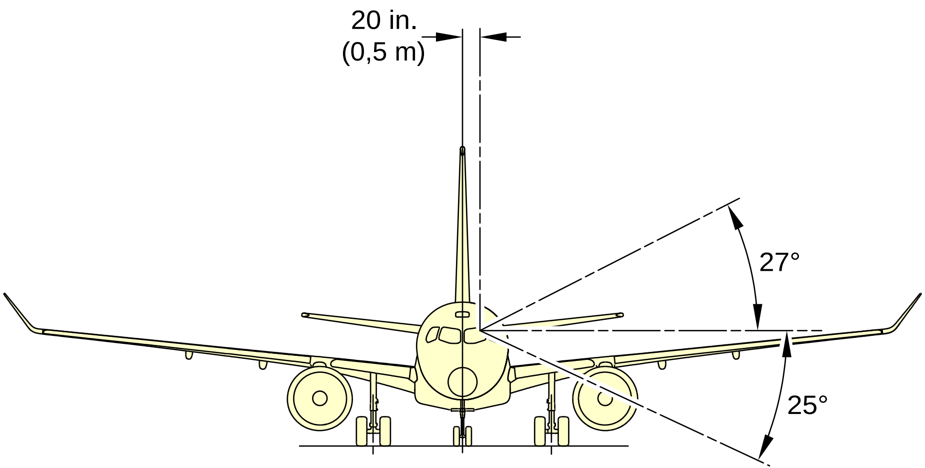
To see the diagram, refer to Fig. 2 .



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

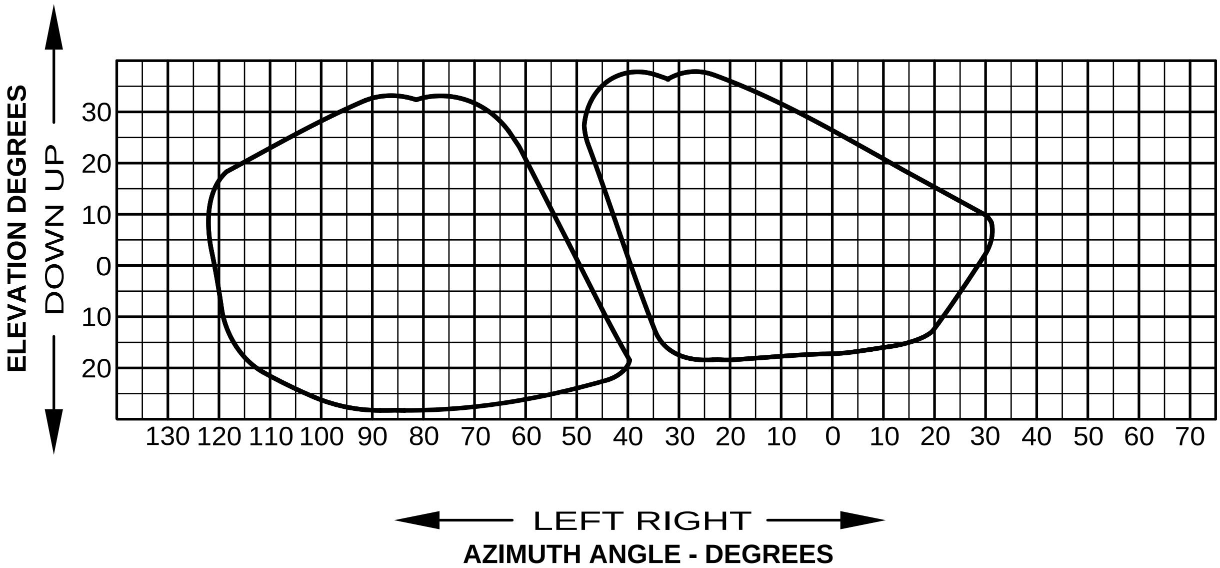
1. Not to be used for landing approach visibility.
2. Not scale.

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

Figure 2 Visibility from cockpit in static position

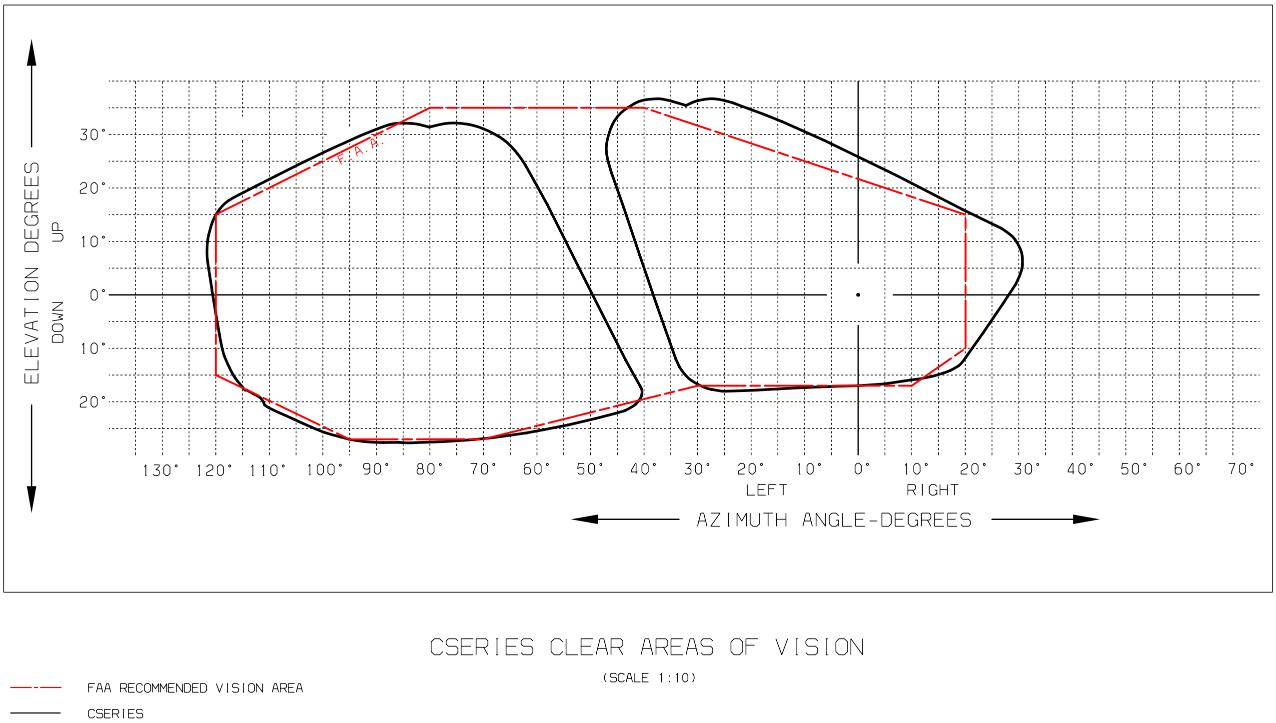
2.1 Clear areas of vision

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

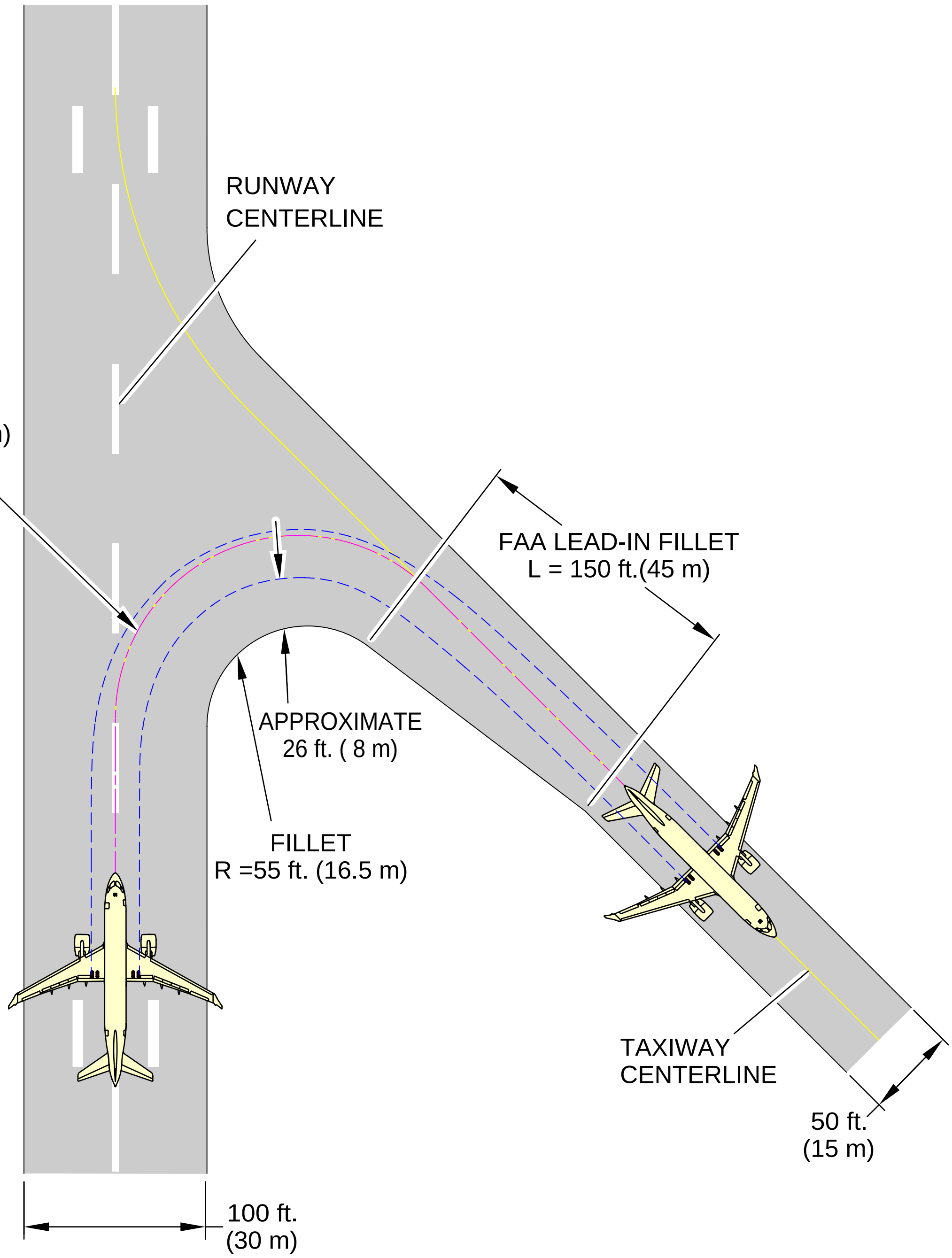
Figure 4 A220 Clear areas of vision

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

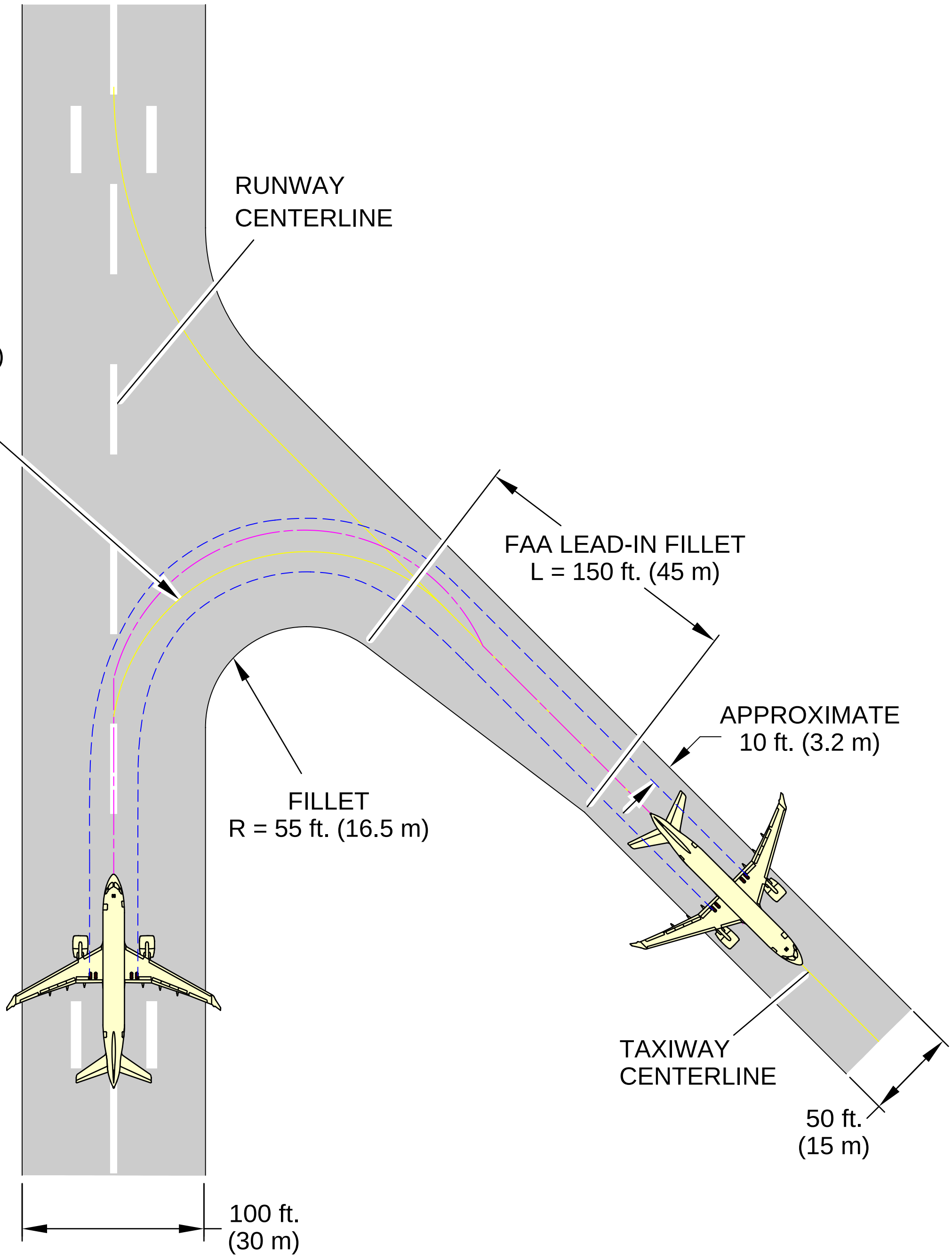
Coordinate with airline operator for the specific planned operating procedure.

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

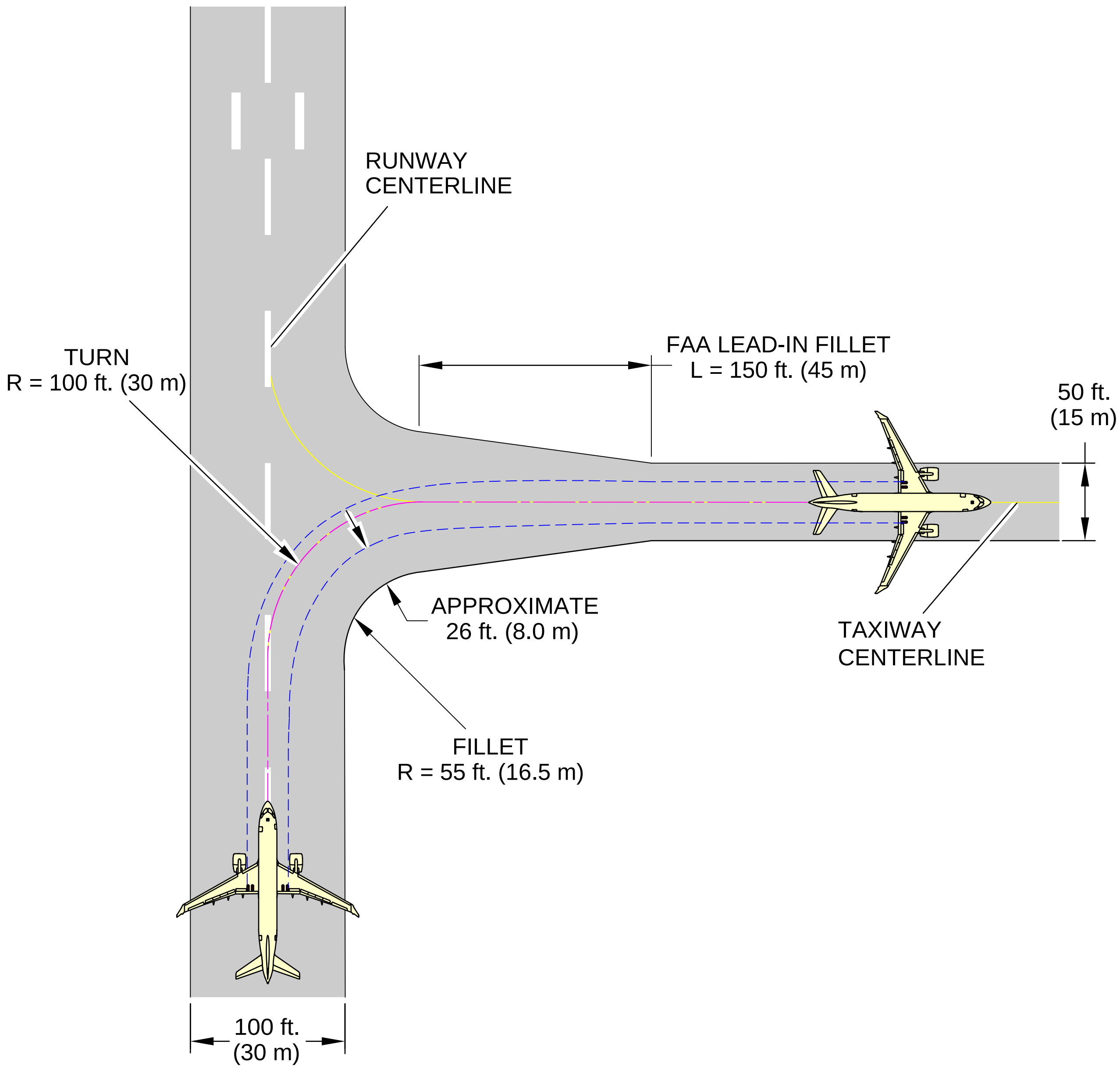
Coordinate with airline operator for the specific planned operating procedure.

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

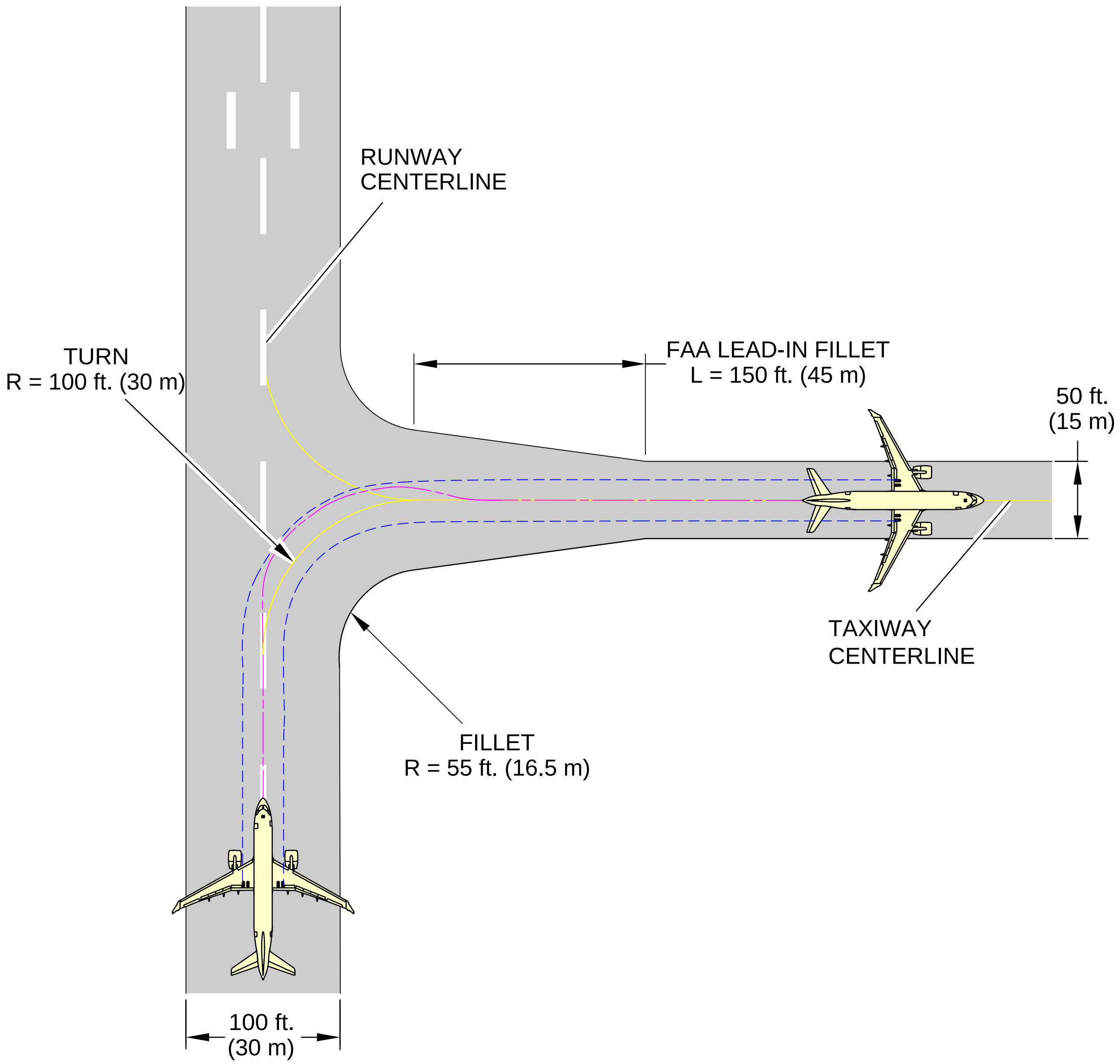
Coordinate with airline operator for the specific planned operating procedure.

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

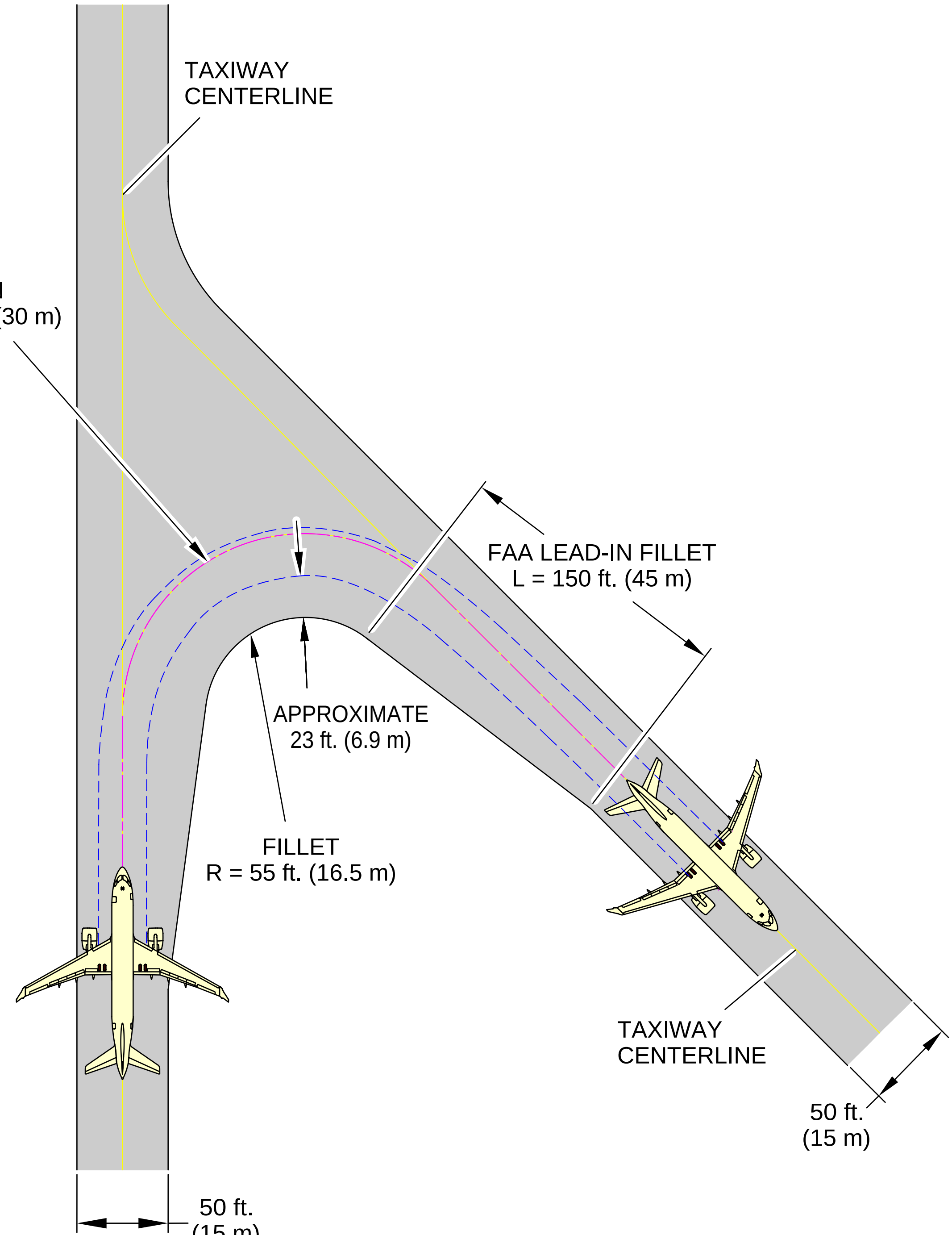
Coordinate with airline operator for the specific planned operating procedure.

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

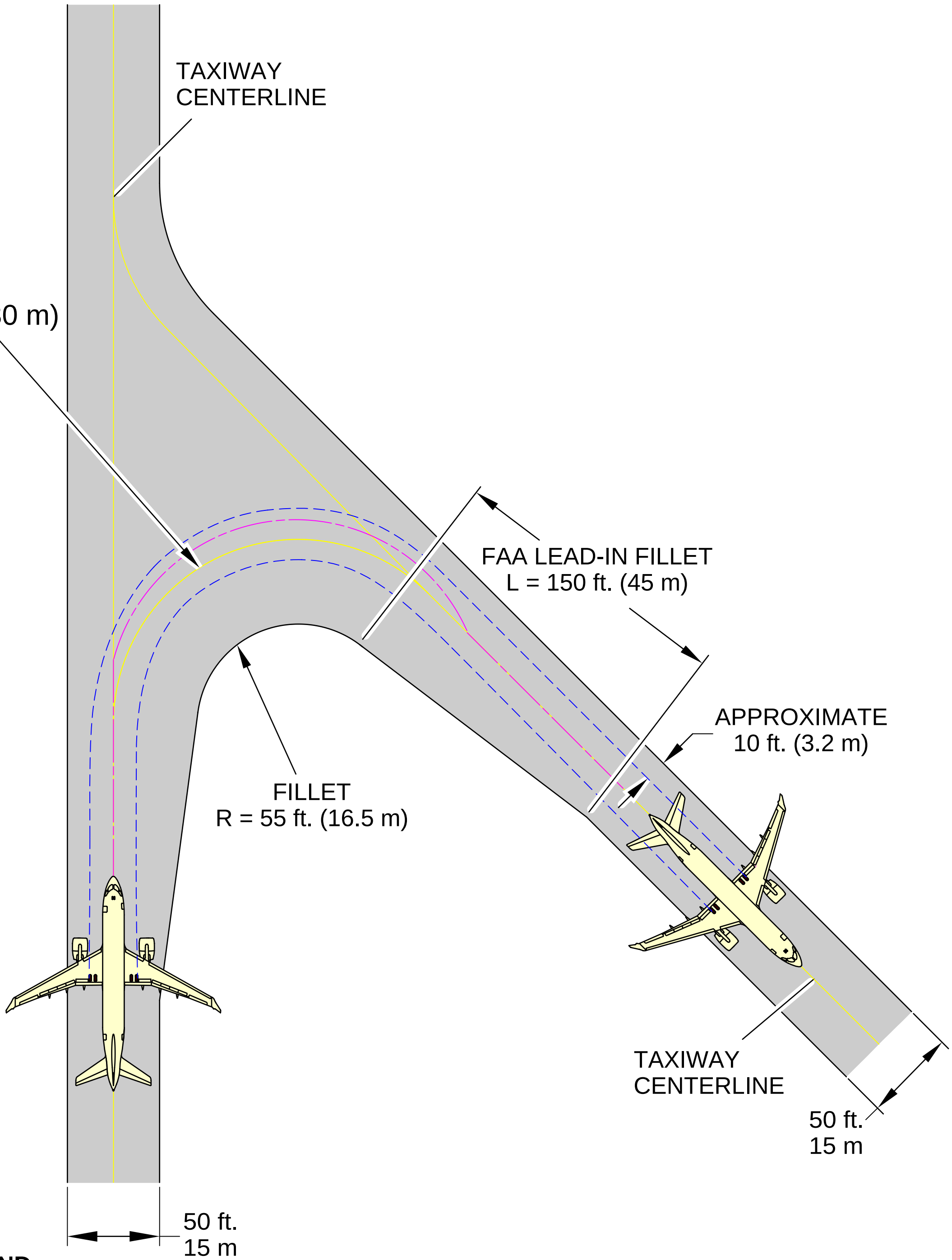
Coordinate with airline operator for the specific planned operating procedure.

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

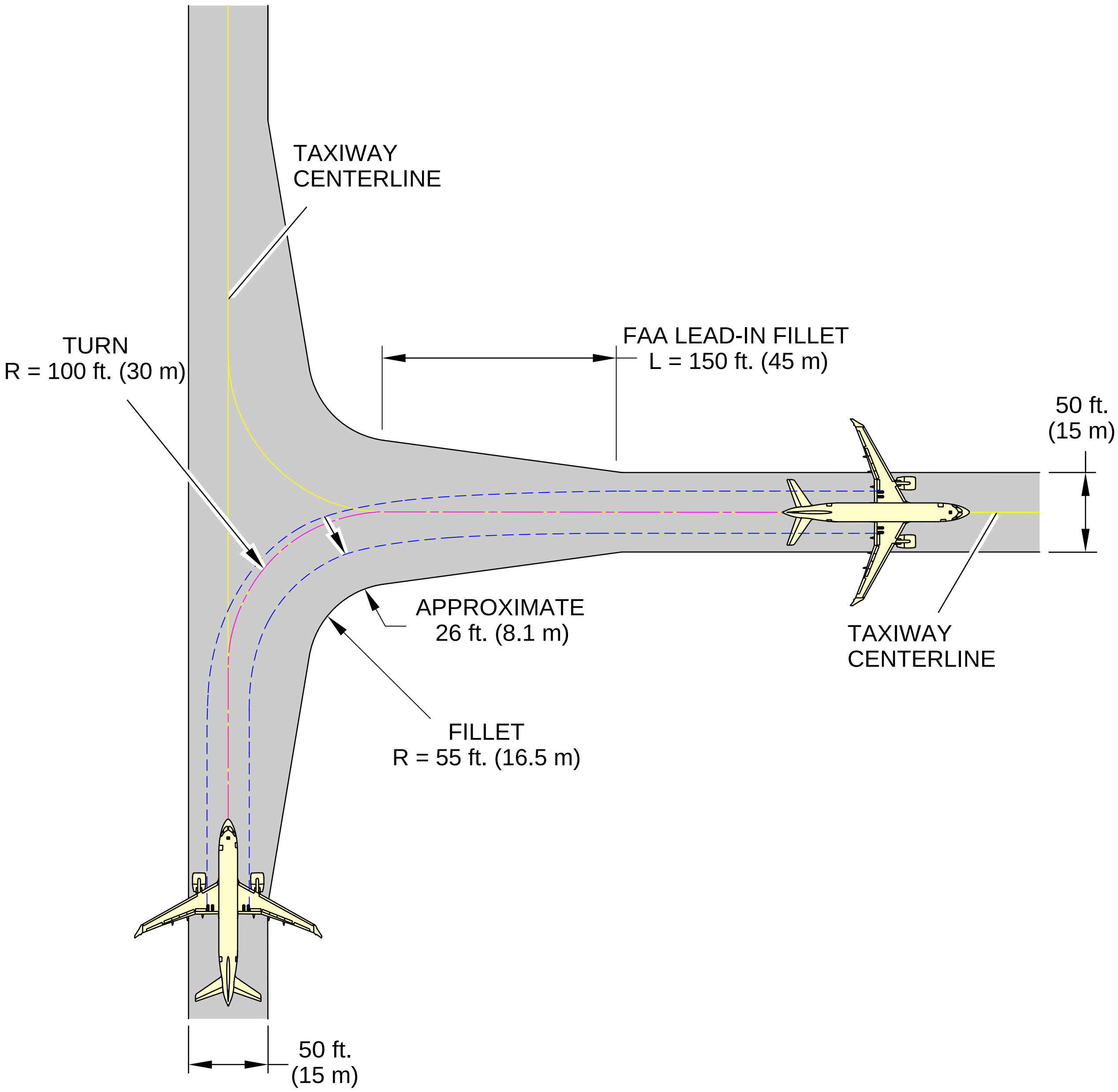
Coordinate with airline operator for the specific planned operating procedure.

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

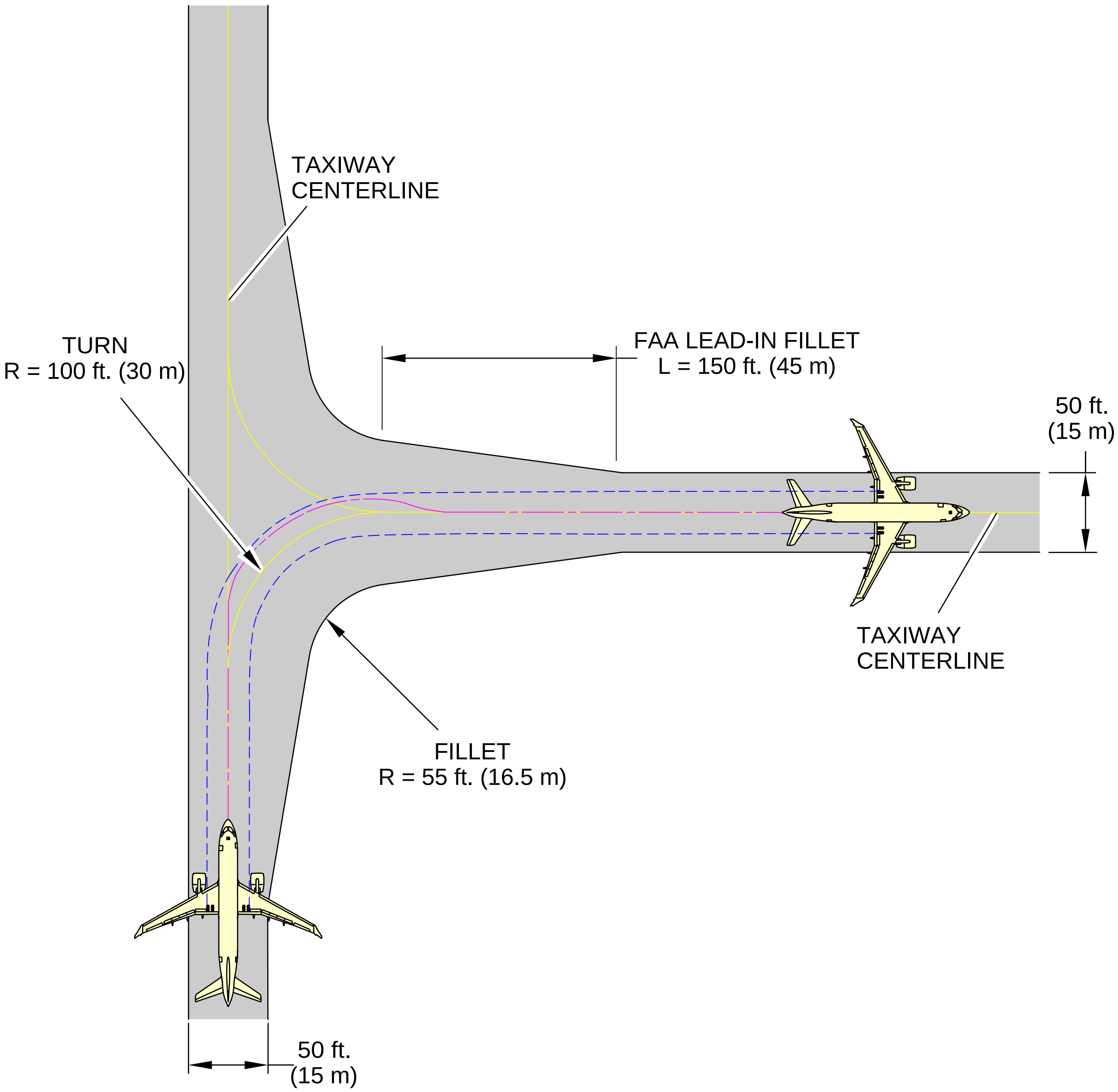
Coordinate with airline operator for the specific planned operating procedure.

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

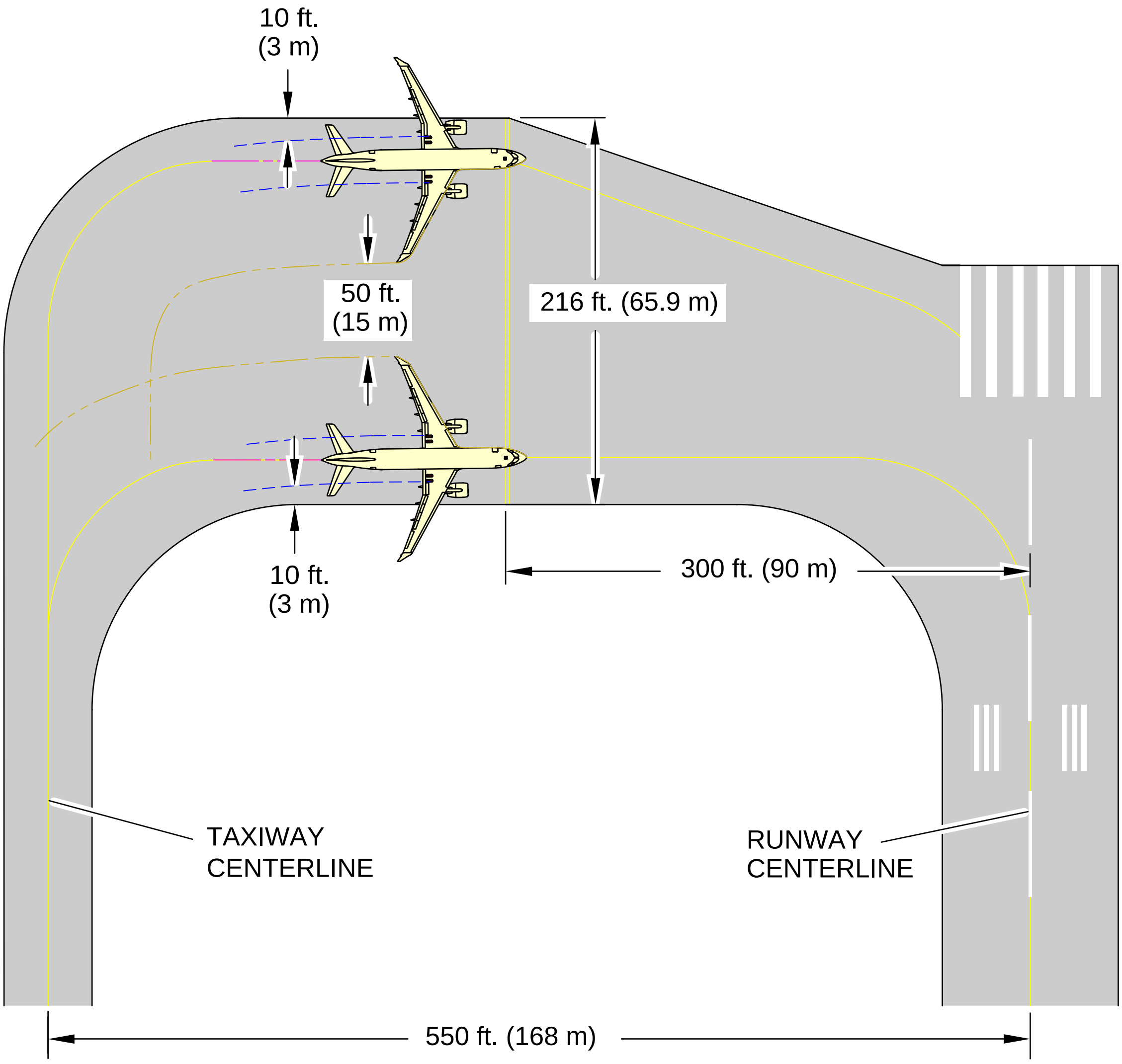
Coordinate with airline operator for the specific planned operating procedure.

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

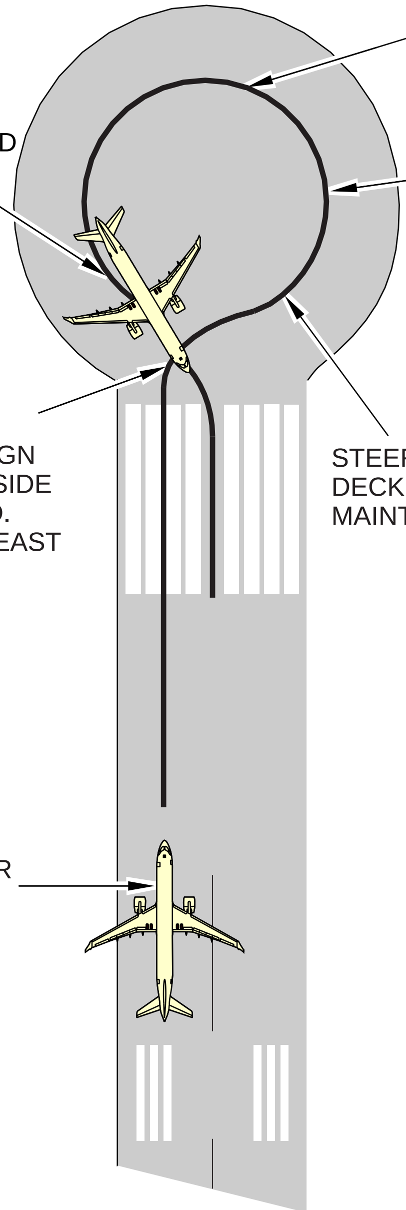
Coordinate with airline operator for the specific planned operating procedure.

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 .

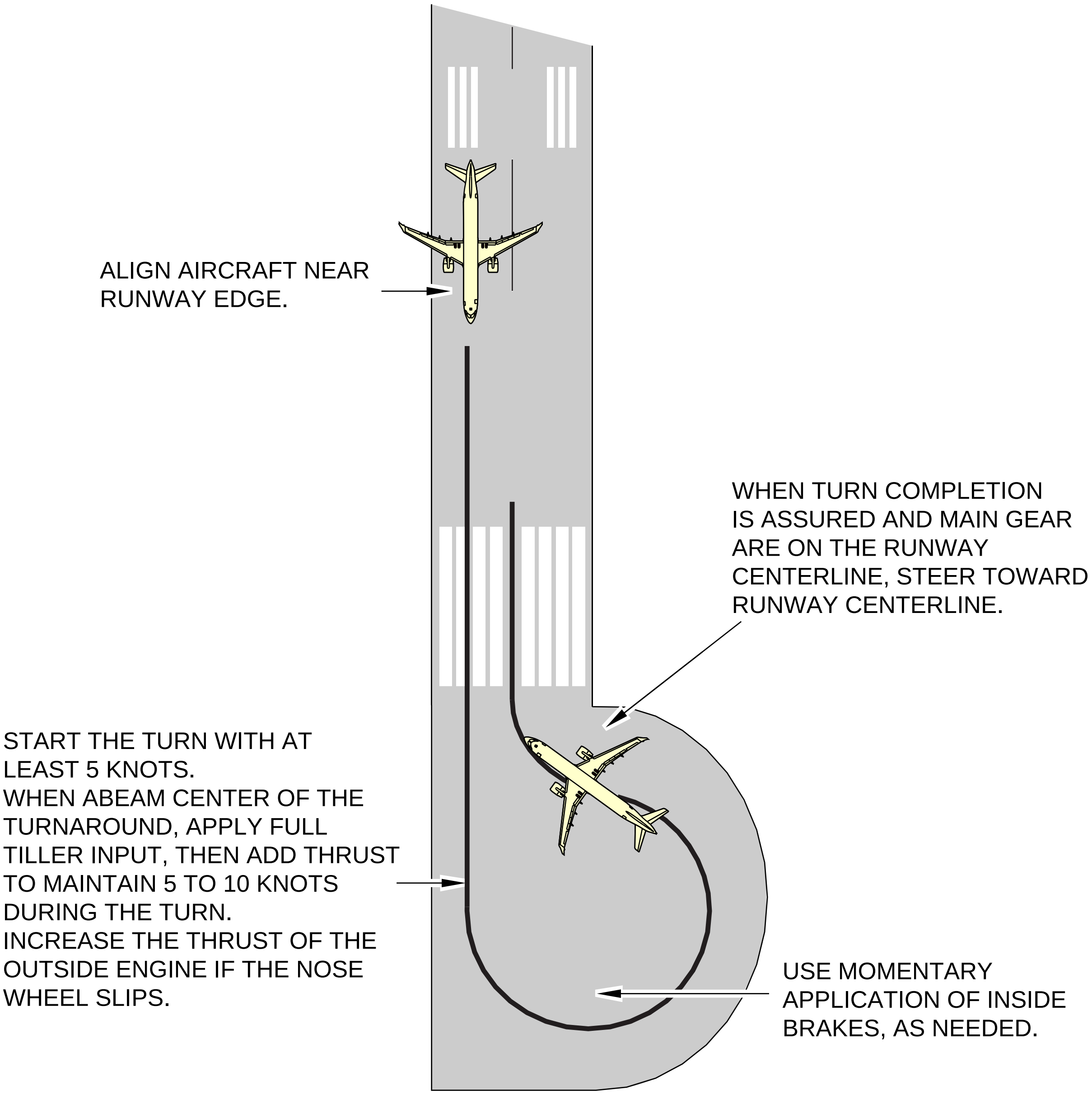


NOTE

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

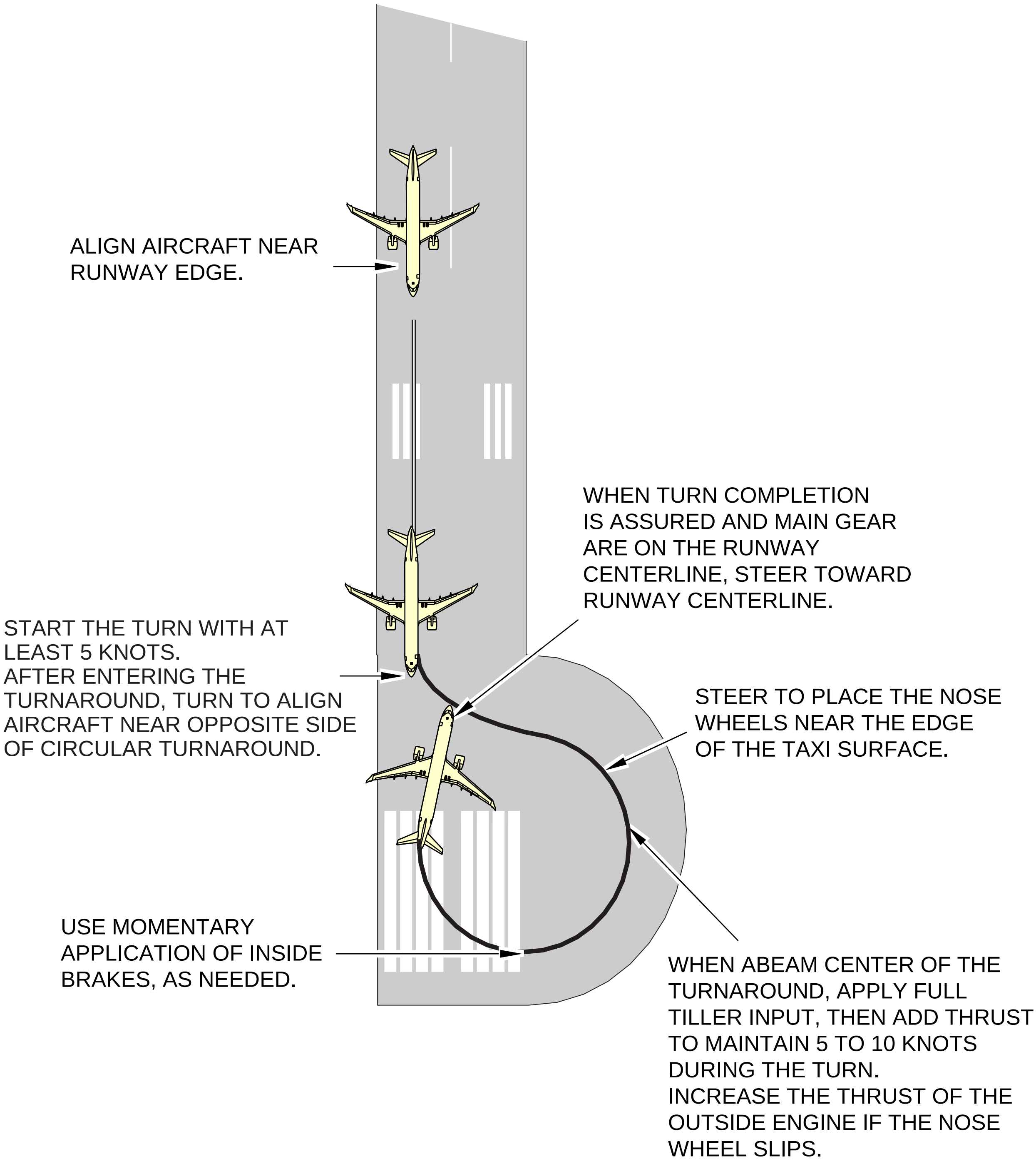
Follow turnaround steering guidance cues if available.

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

A220

Ground maneuvering - Technical data

Applicability: 55001-59999

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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 air-craft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoreti-cal 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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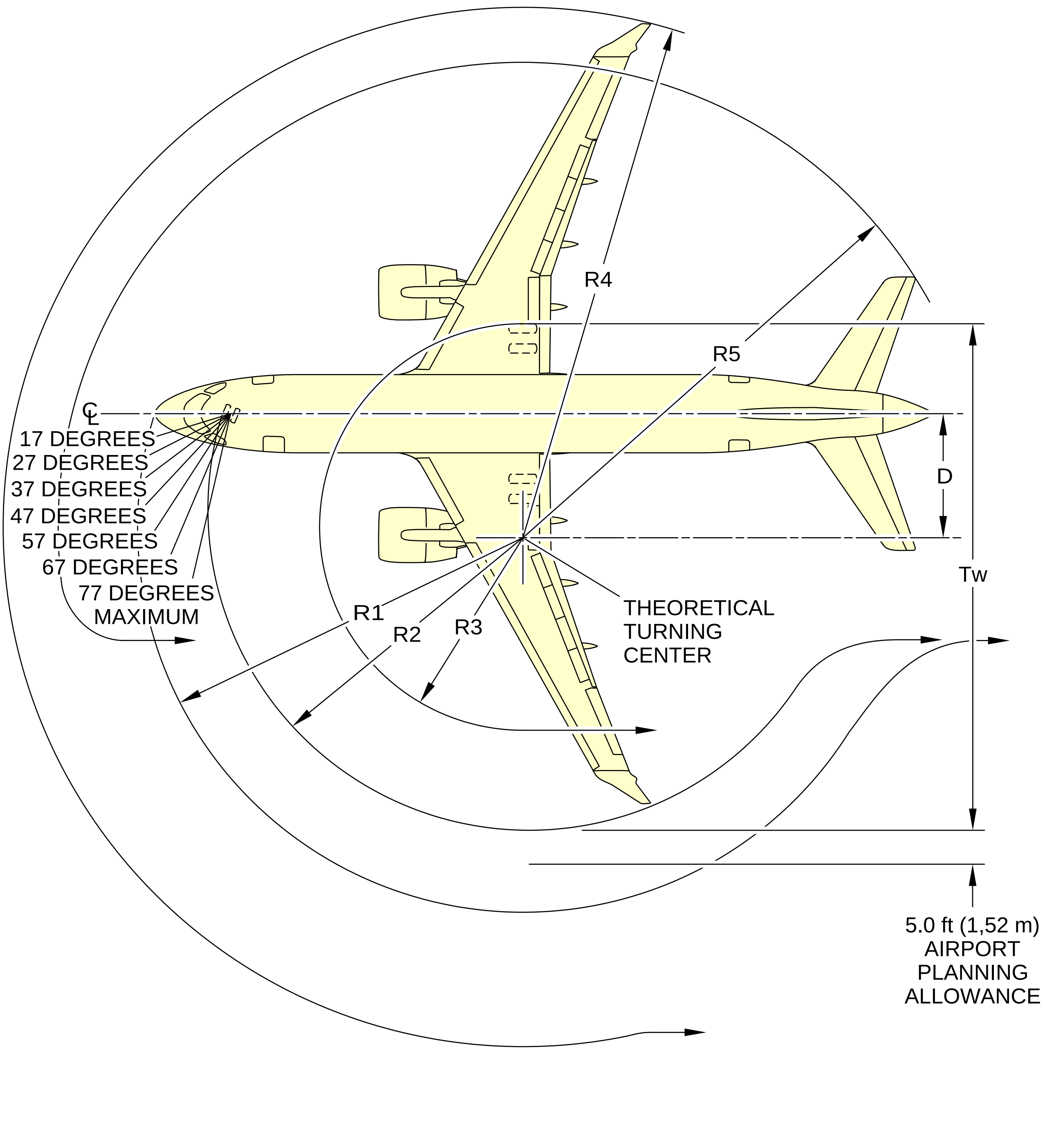


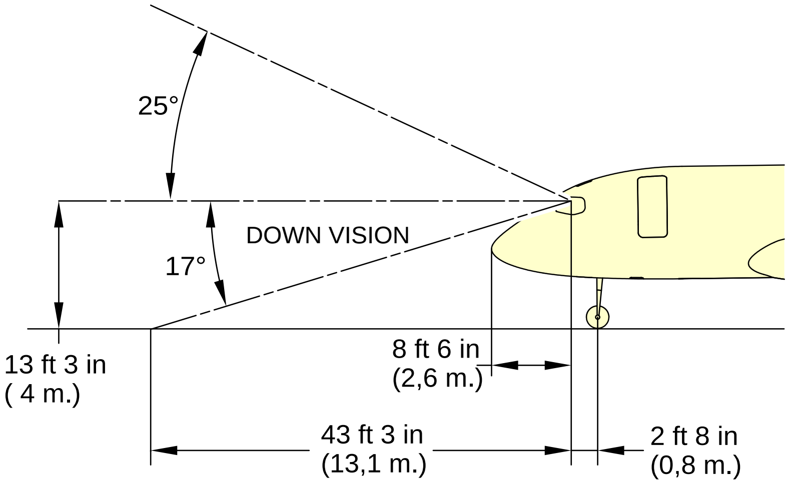
ICN-BD500-A-J092001-A-3AB48-00068-A-001-01

Figure 1 Turn radii

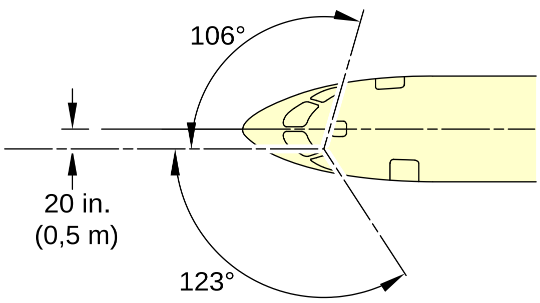
2 Visibility from cockpit in static position

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

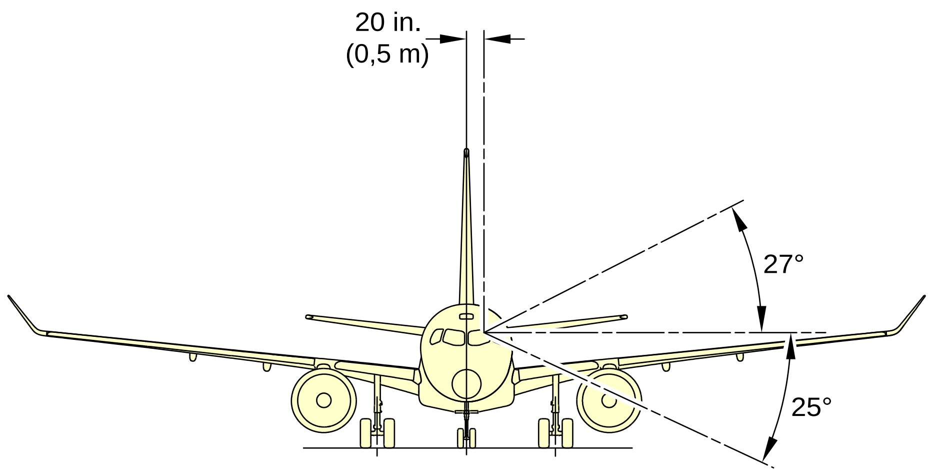
To see the diagram, refer to Fig. 3 .



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

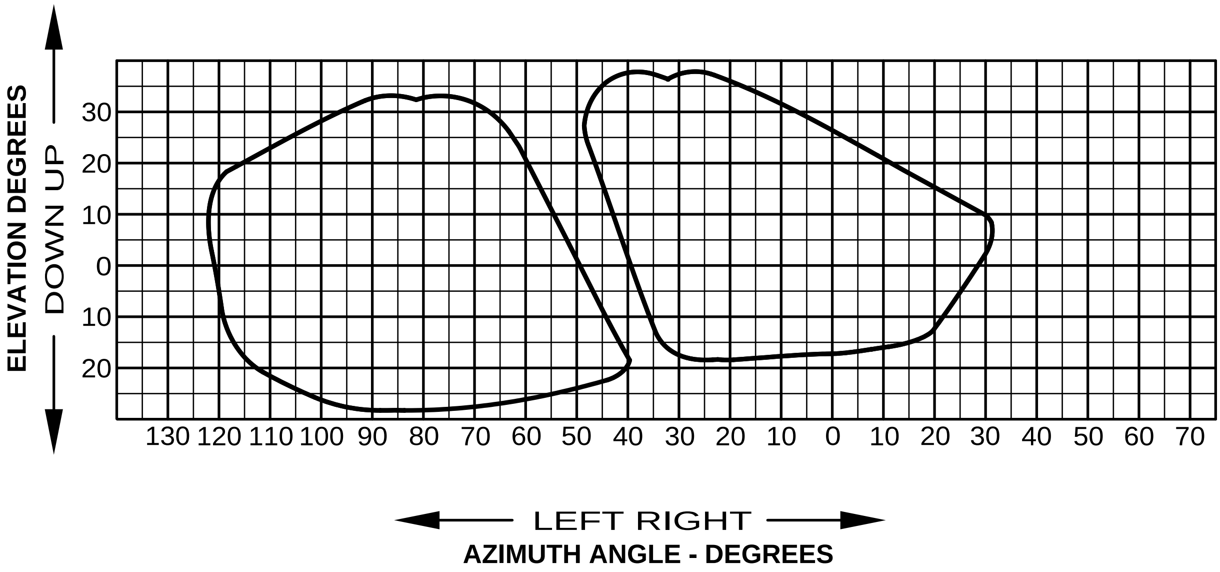
1. Not to be used for landing approach visibility.
2. Not scale.

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

Figure 2 Visibility from cockpit in static position

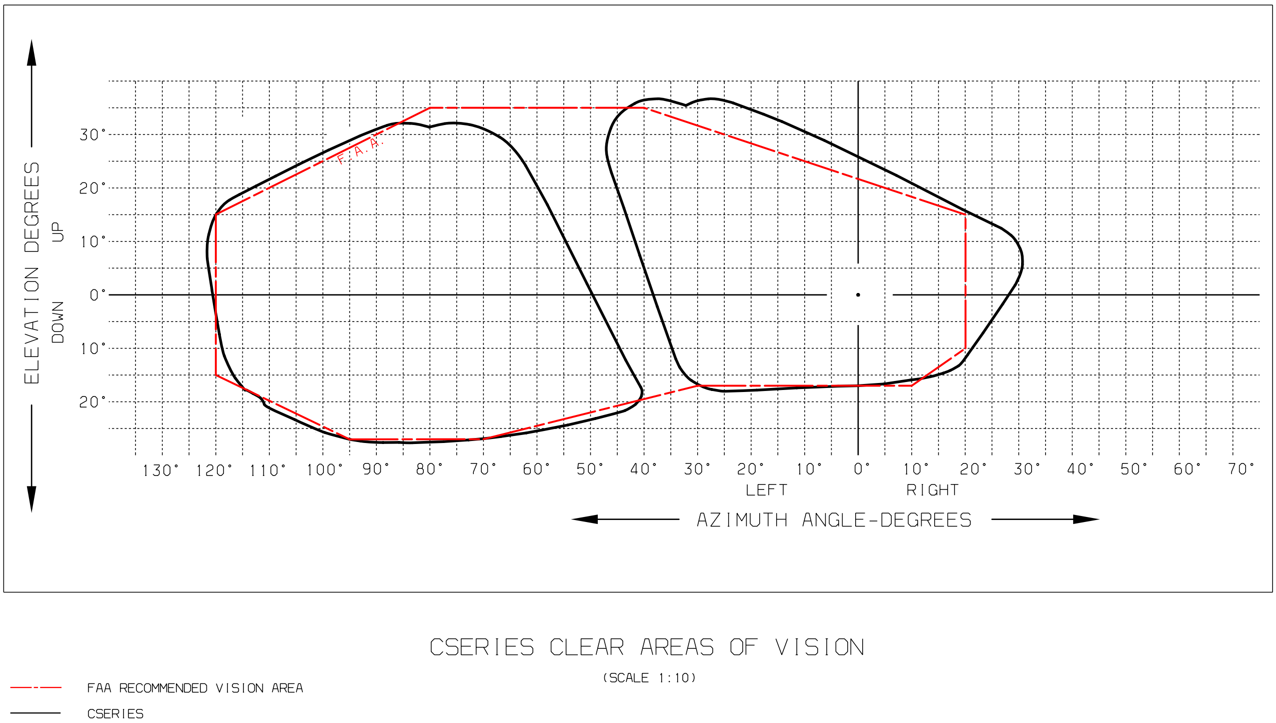
2.1 Clear areas of vision

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

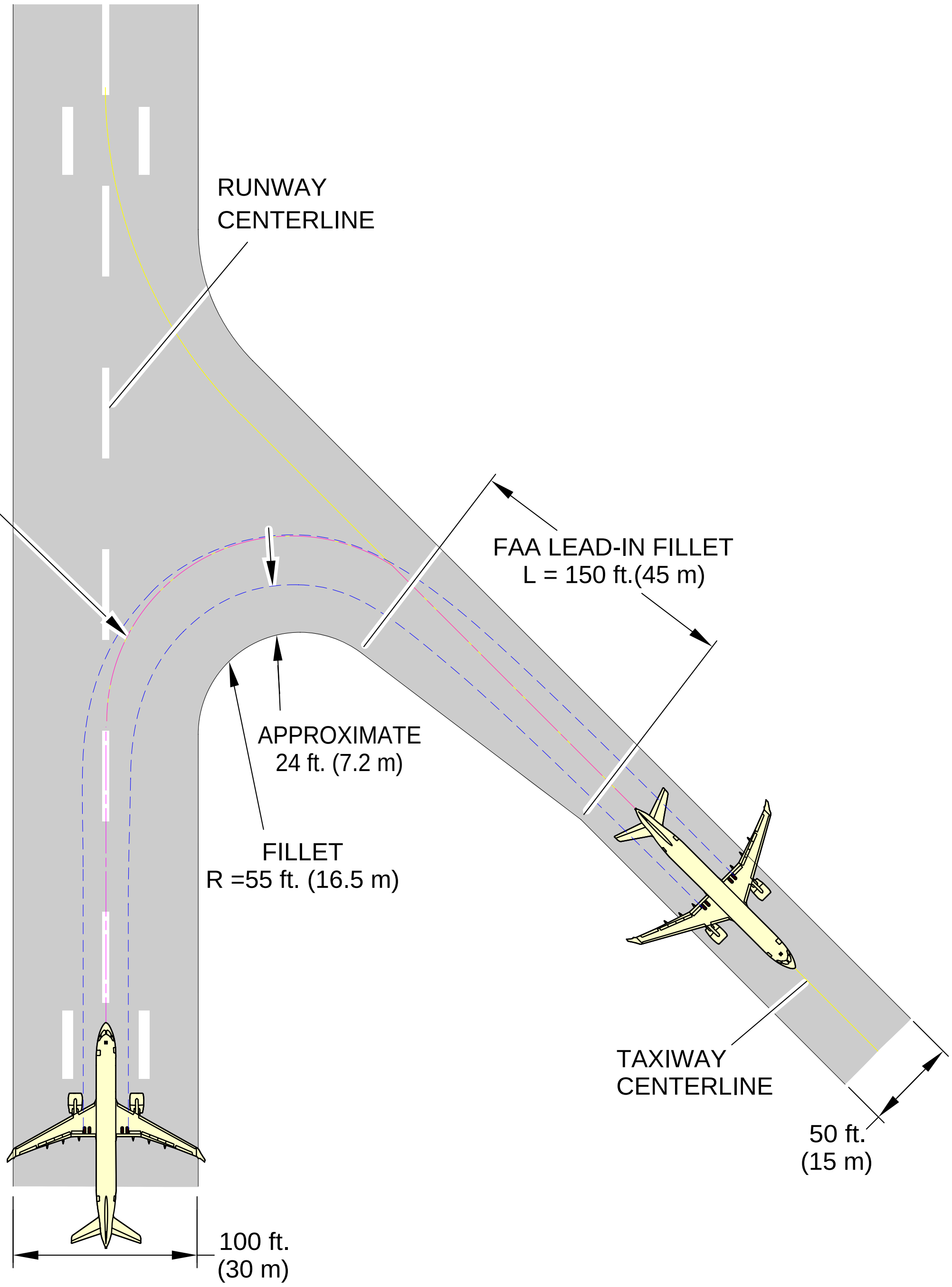
Figure 4 A220 Clear areas of vision

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

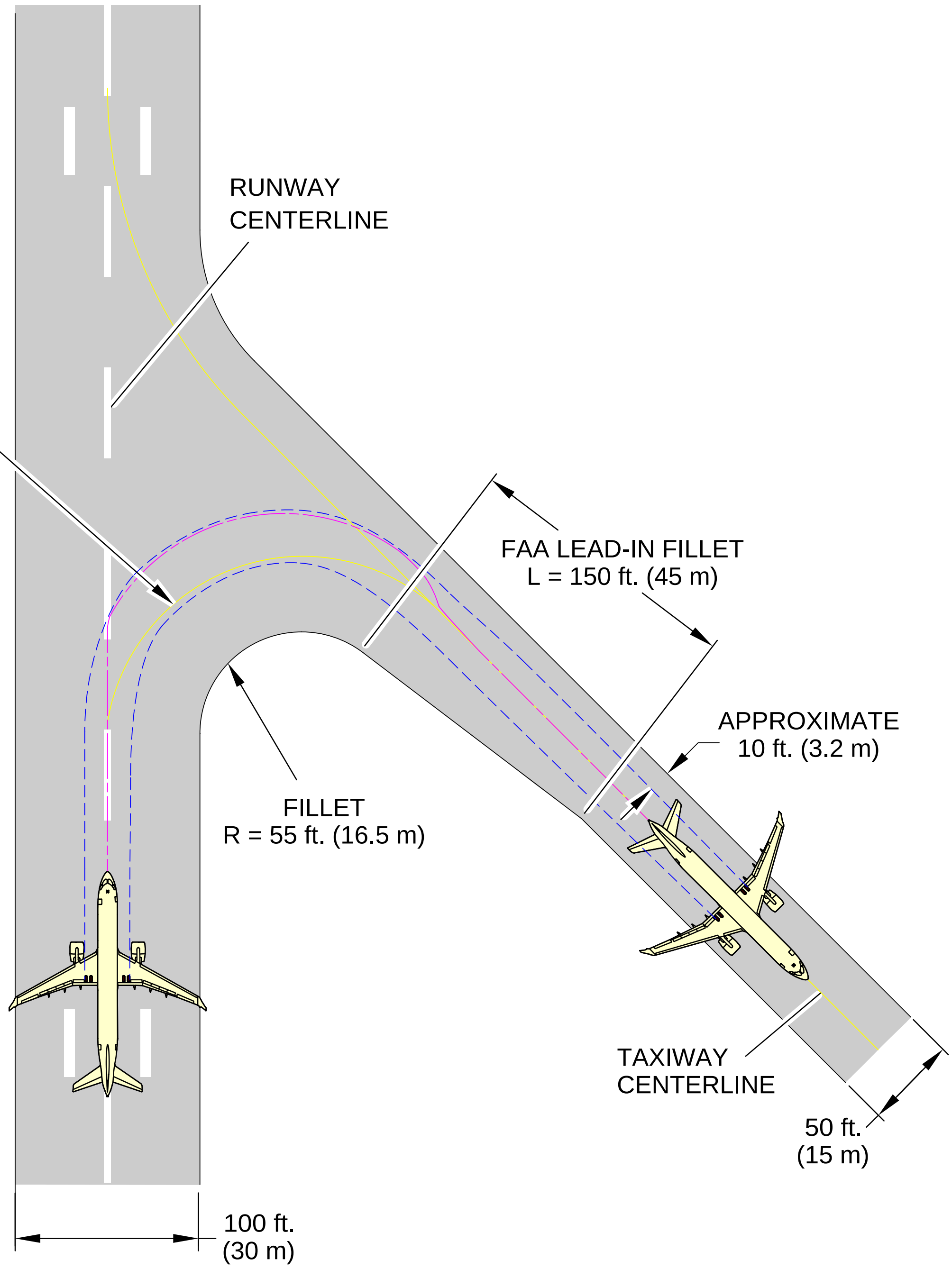
Coordinate with airline operator for the specific planned operating procedure.

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

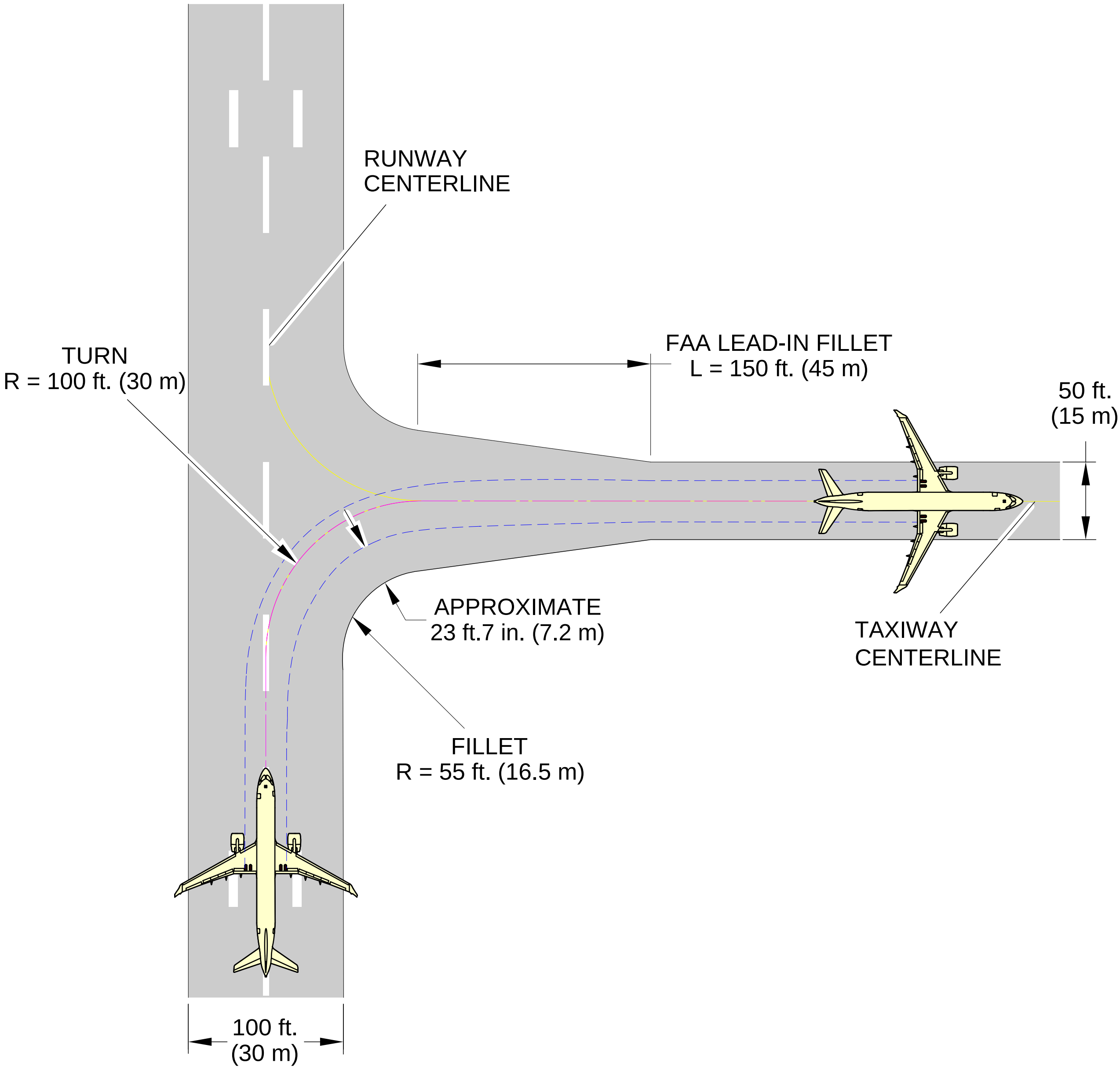
Coordinate with airline operator for the specific planned operating procedure.

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

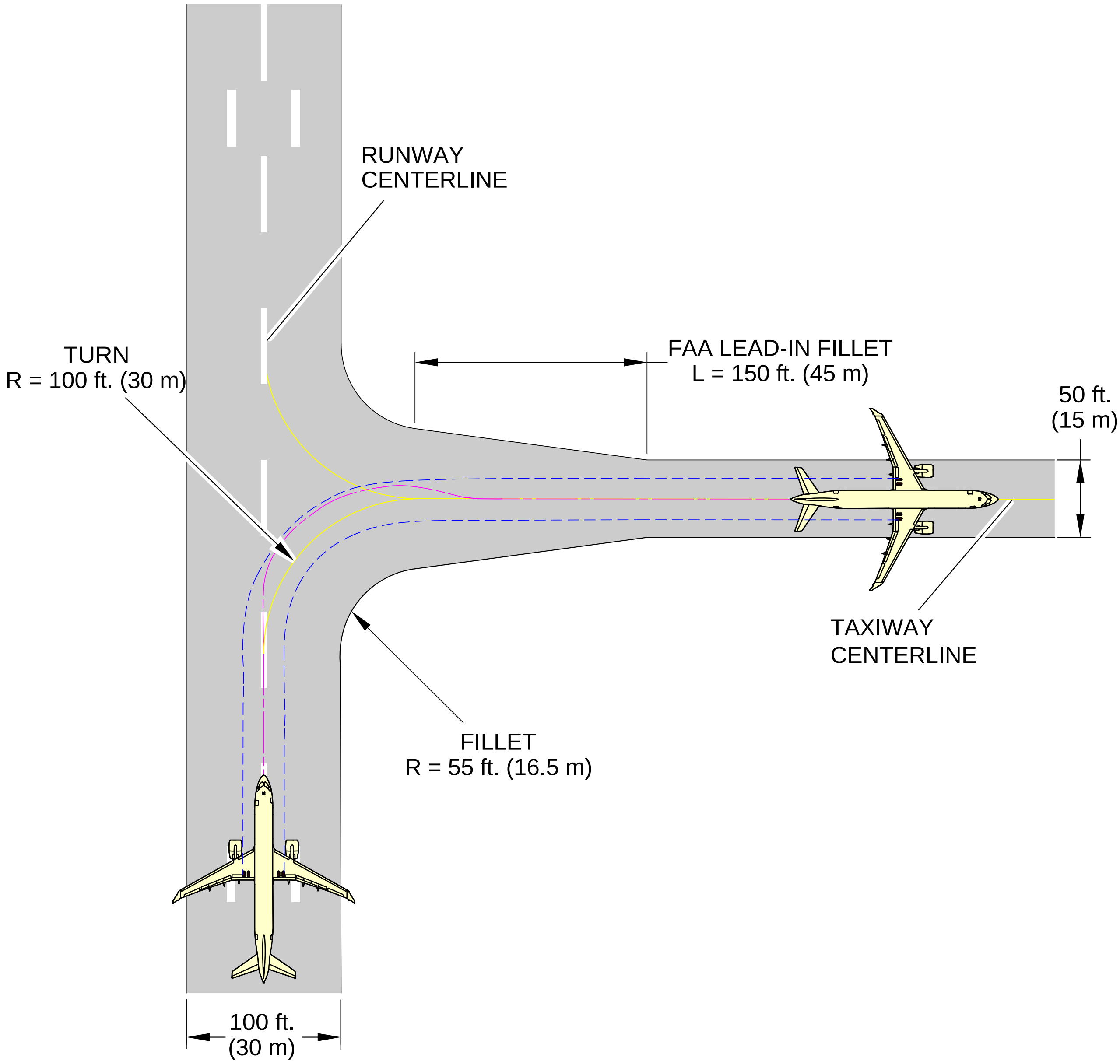
Coordinate with airline operator for the specific planned operating procedure.

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

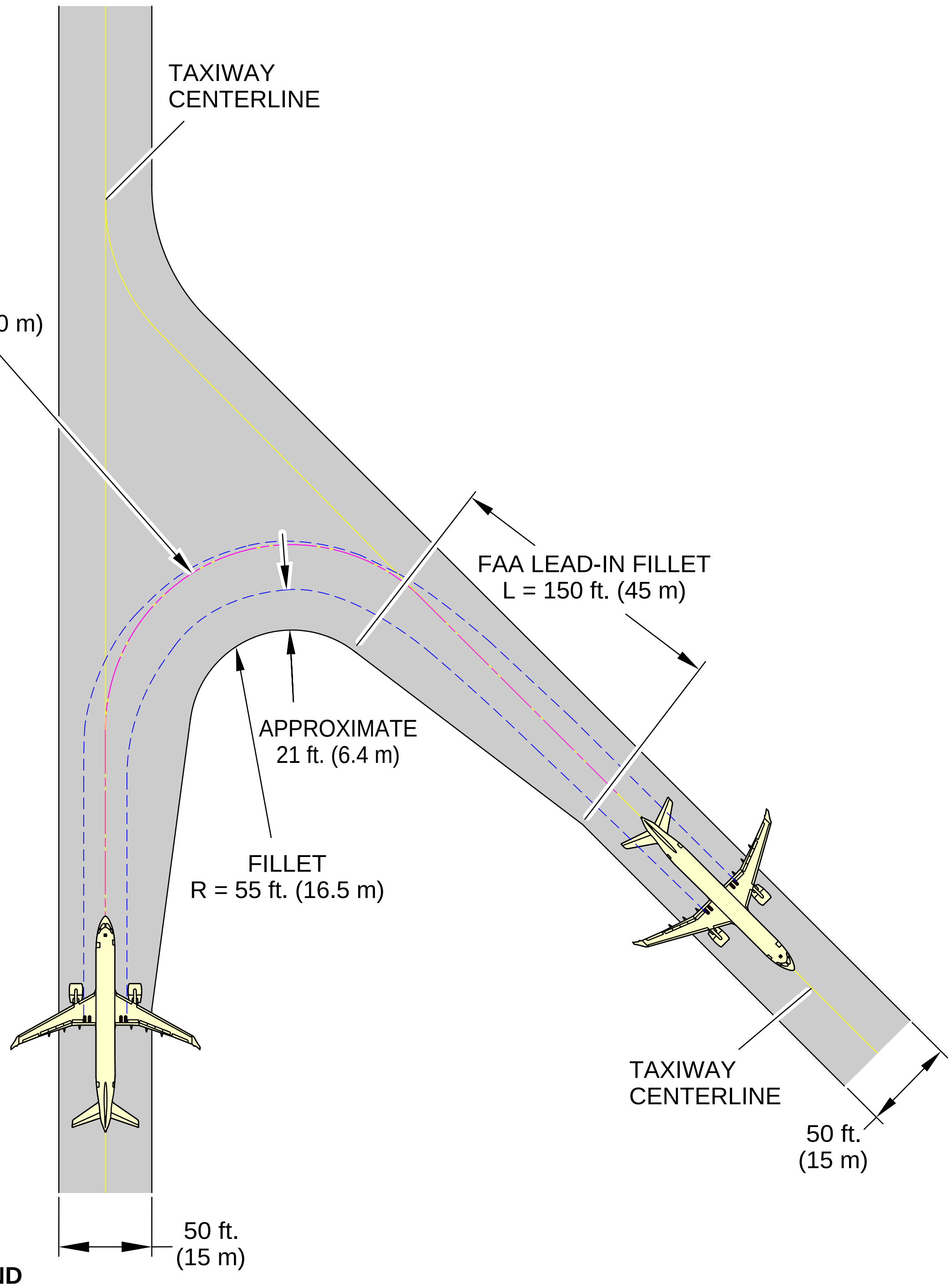
Coordinate with airline operator for the specific planned operating procedure.

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

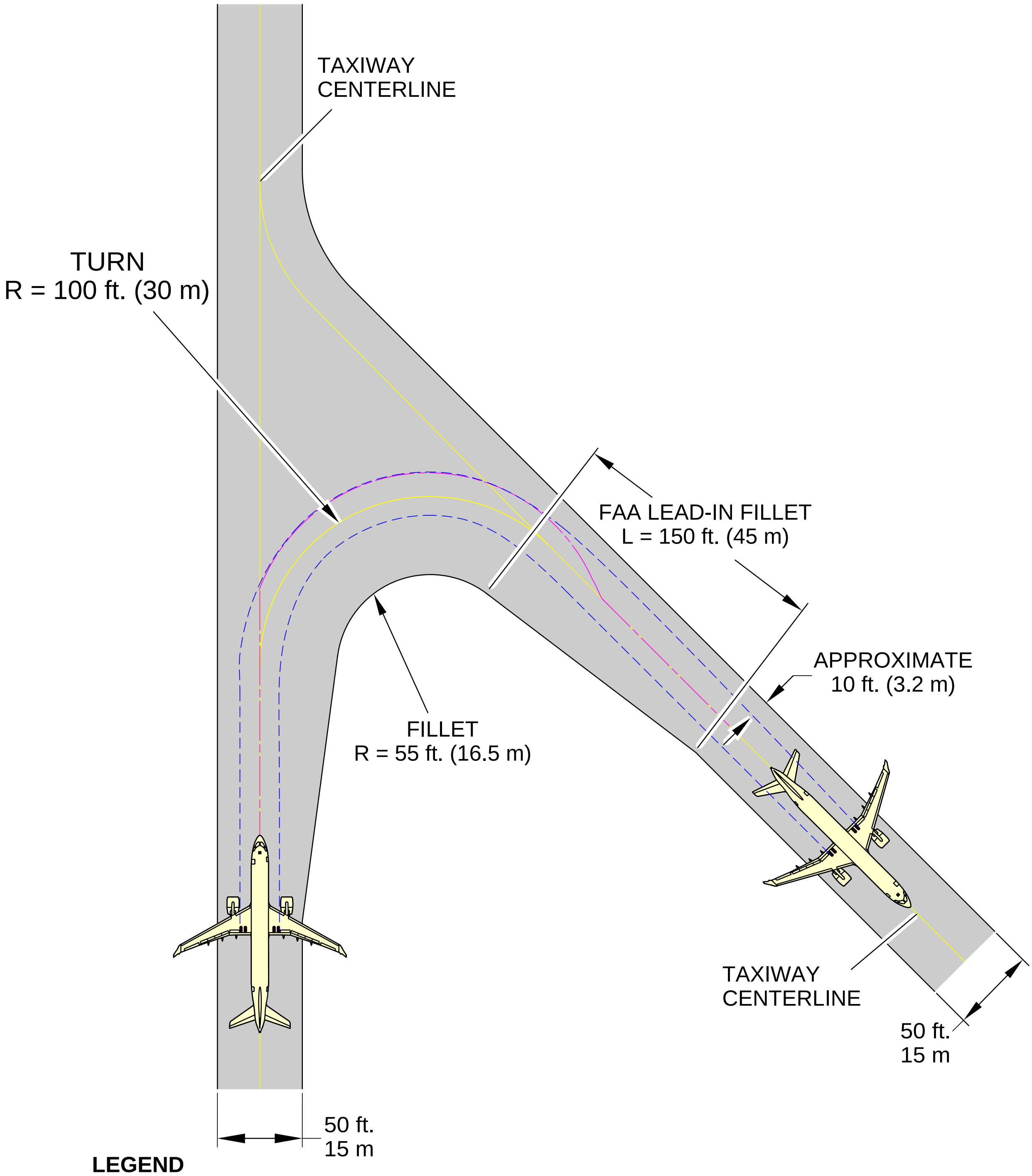
Coordinate with airline operator for the specific planned operating procedure.

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

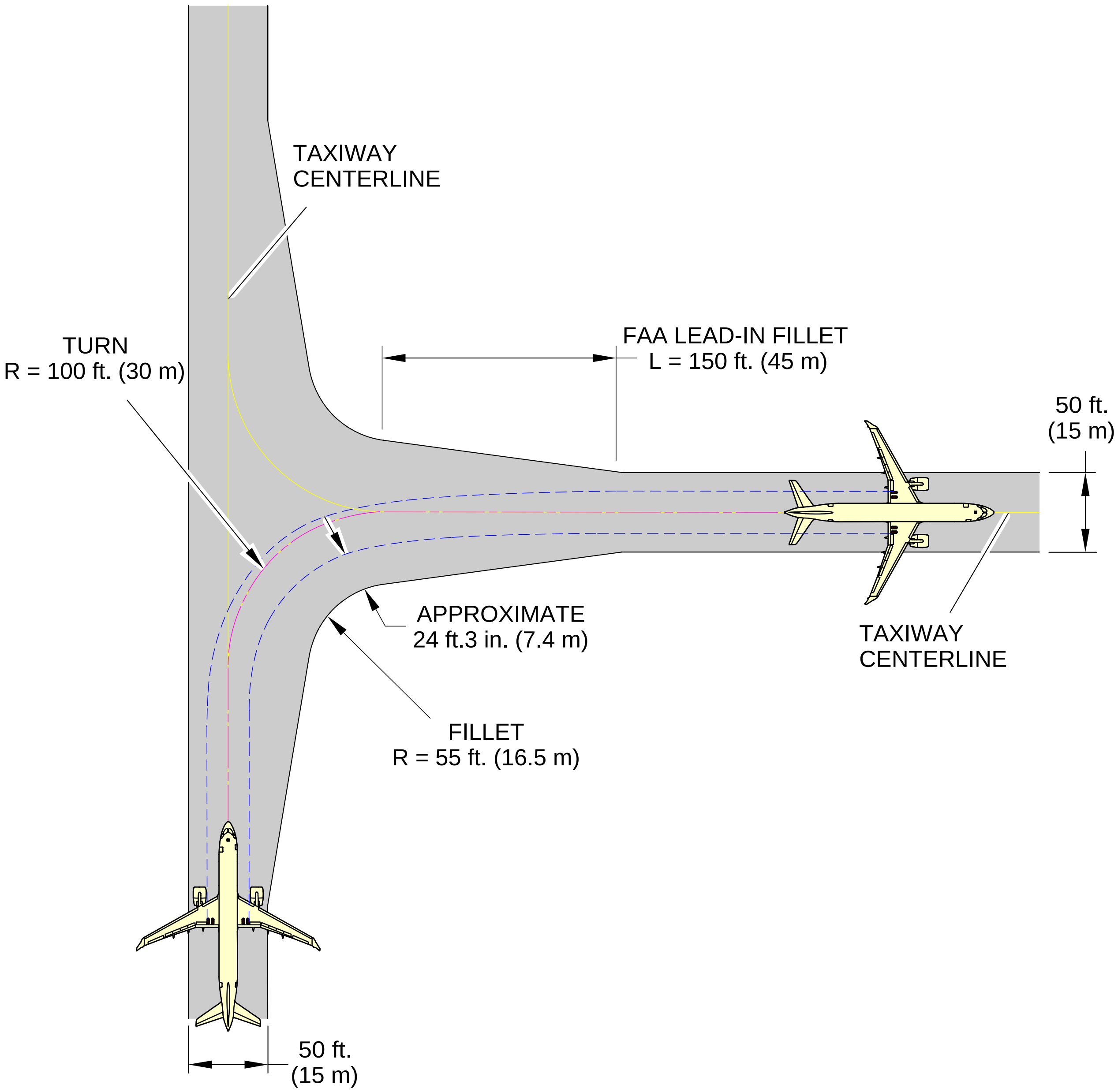
Coordinate with airline operator for the specific planned operating procedure.

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

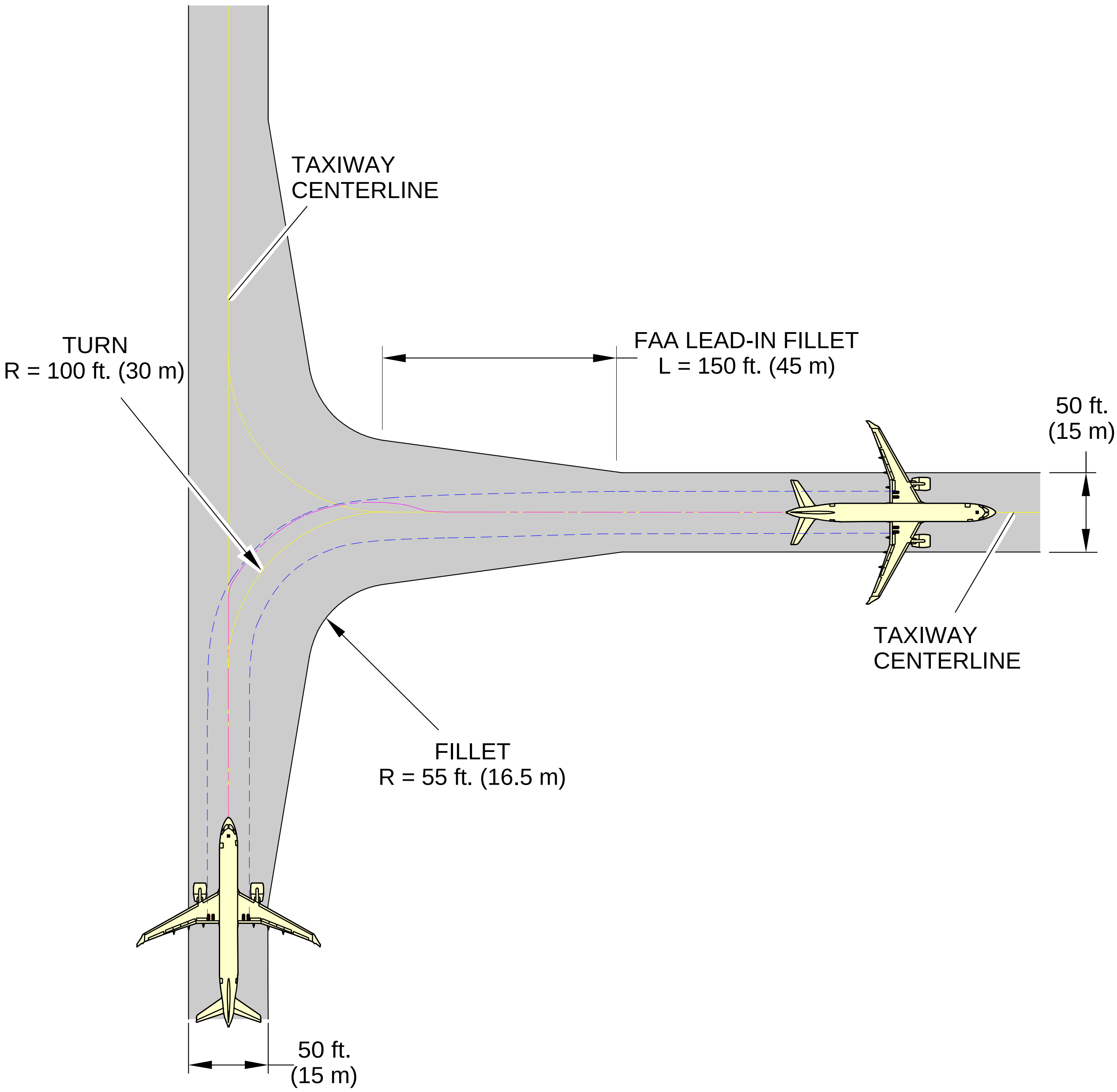
Coordinate with airline operator for the specific planned operating procedure.

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

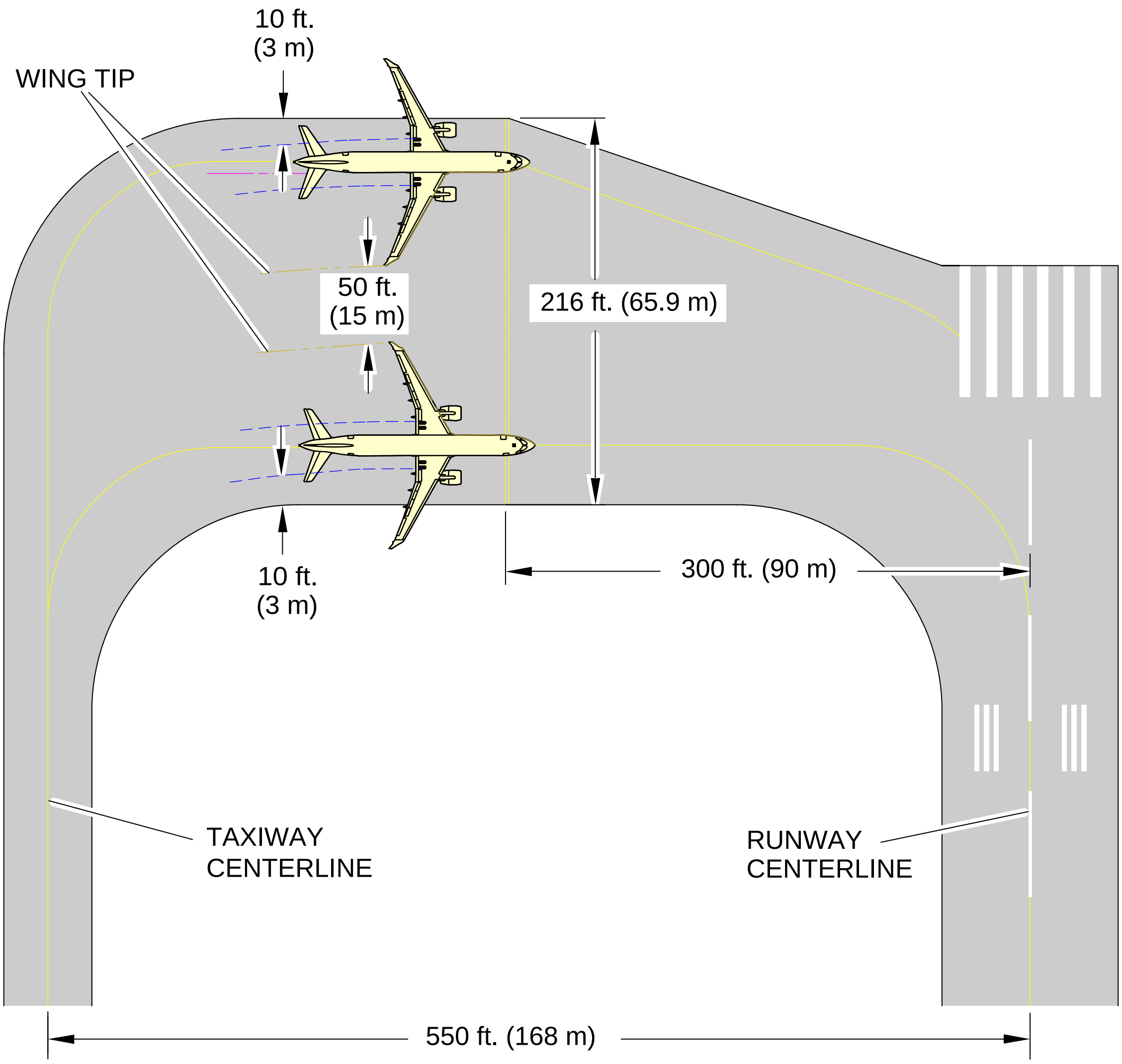
Coordinate with airline operator for the specific planned operating procedure.

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

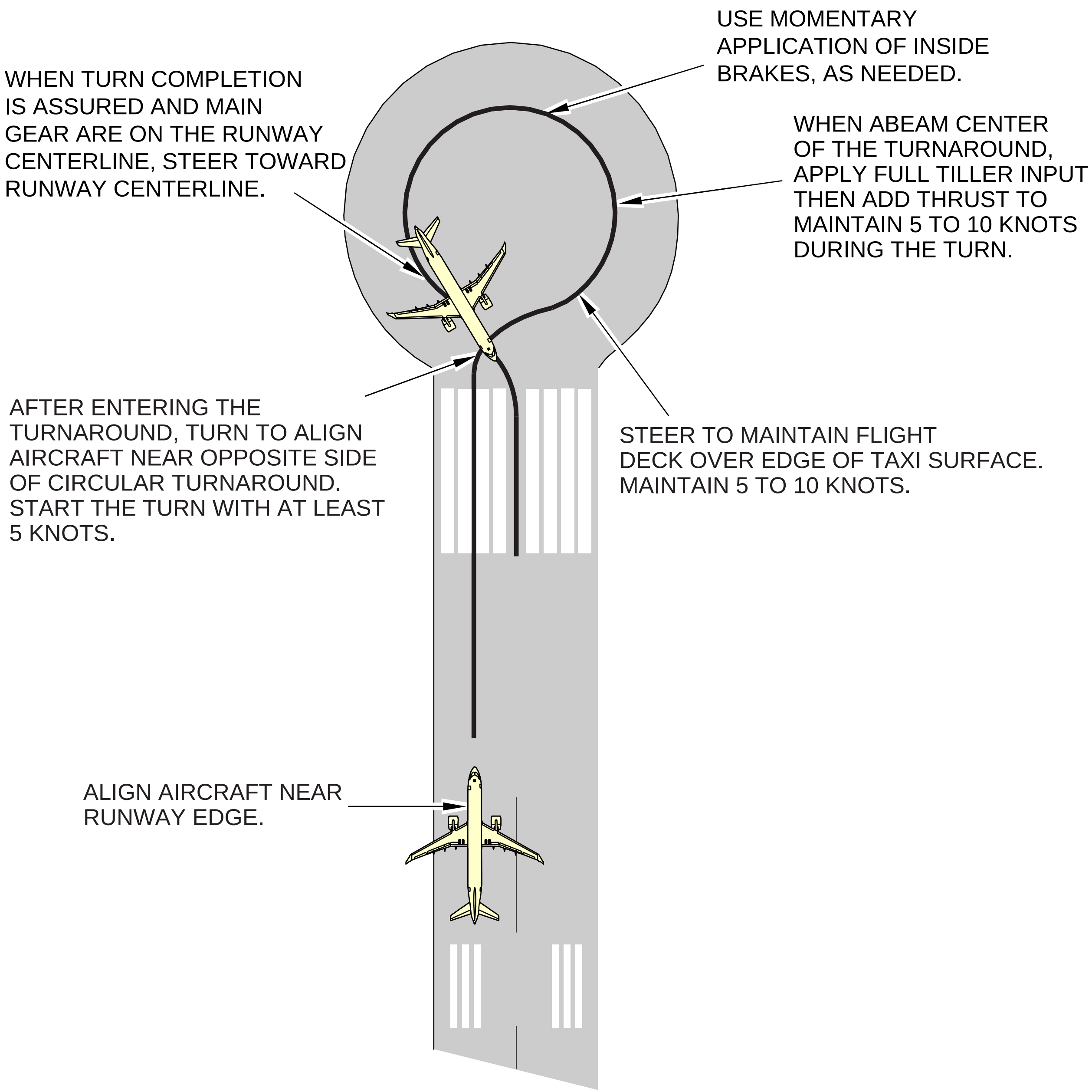
Coordinate with airline operator for the specific planned operating procedure.

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 .

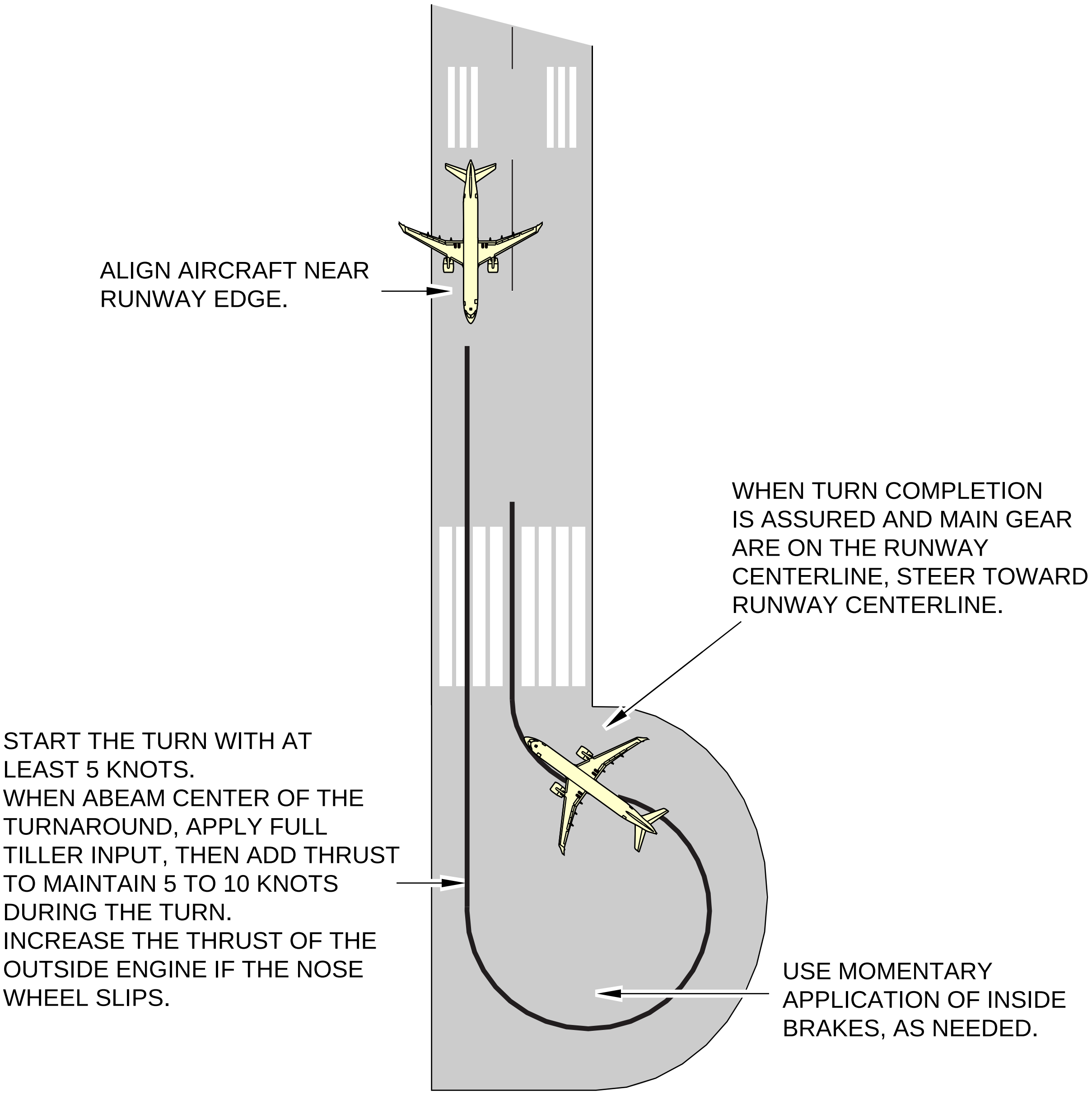


NOTE

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

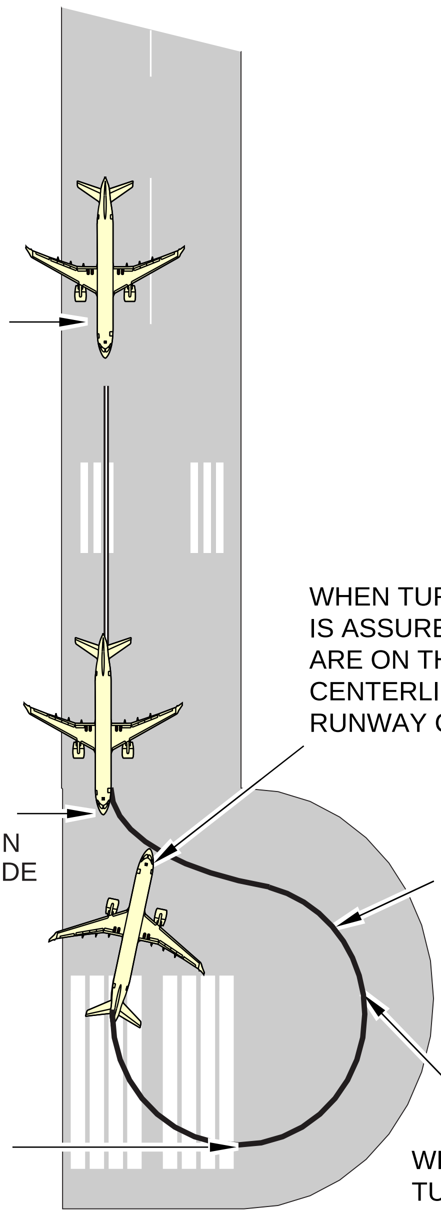
Follow turnaround steering guidance cues if available.

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

A220

Ground maneuvering, turning radii - Technical data

Applicability: 50001-54999, 55001-59999

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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

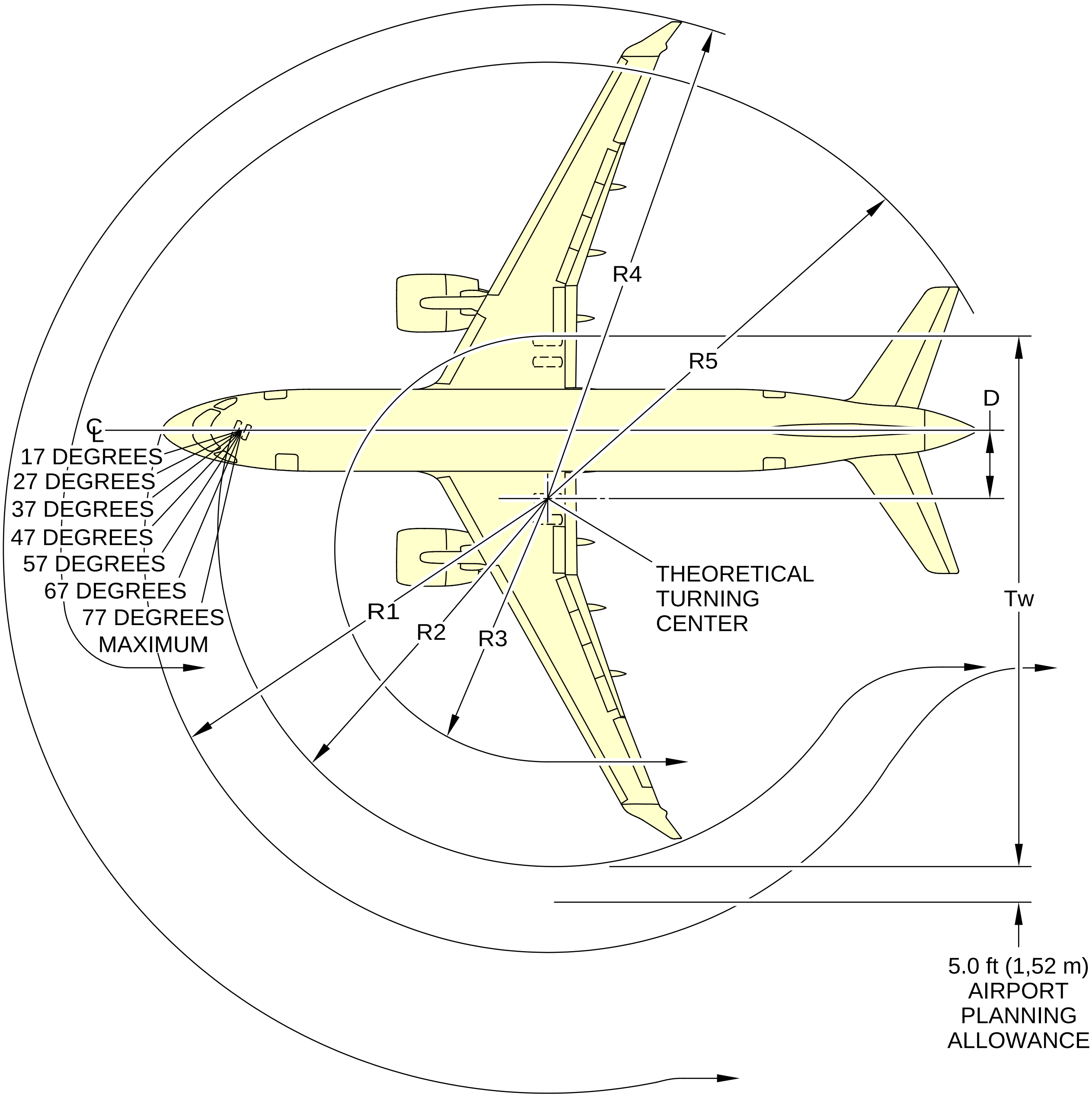
Turning angle (in degrees) with 3 degree tire slip	Turning center to aircraft center line (D)	Nose tip (R1)	Nose gear outside face (R2)	Main gear outside face (R3)	Wing tip (R4)	Empennage tip (R5)	Minimum theoretical pavement width for 180 degrees turn (Tw= R2+ R3)
17	1686.8 in. (4284.47 cm)	1807.5 in. (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

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References

Table 1 References

Data Module/Technical Publication	Title
None	

Description

1 Introduction

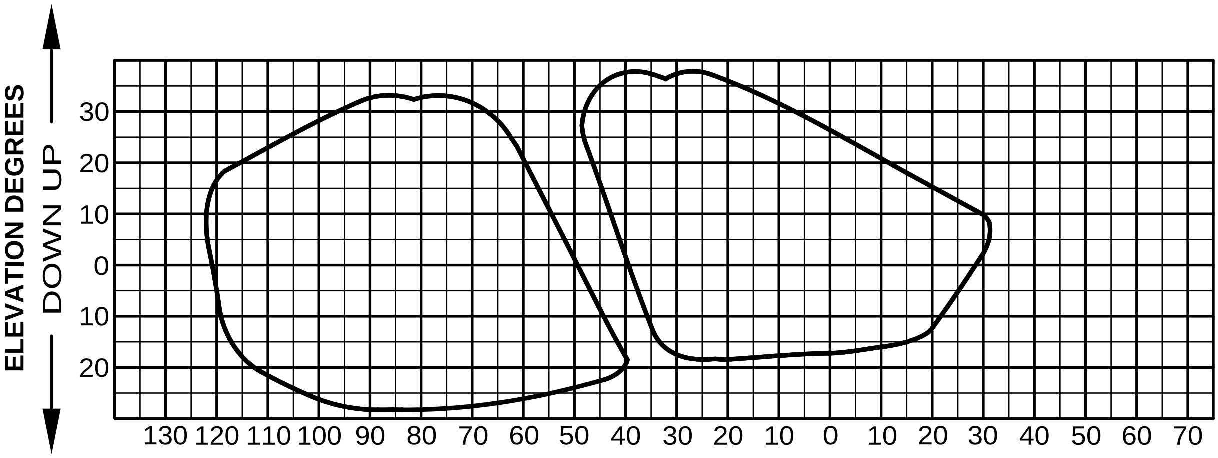
This data module contains data about the visibility from the flight compartment.

2 Clear areas of vision

To see the diagram, refer to Fig. 1

3 Visibility from cockpit in static position

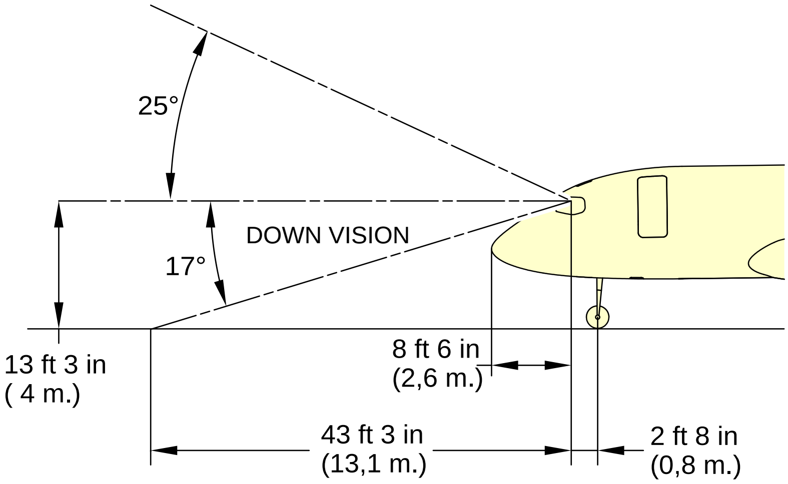
This section contains data about the visibility from cockpit in static position. Refer toFig. 2



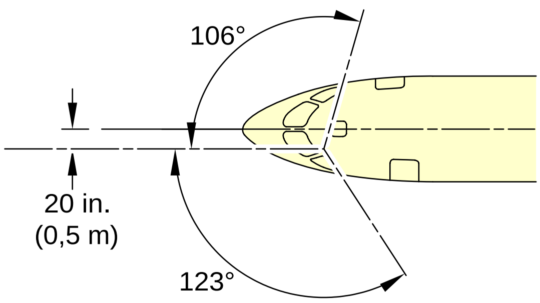
LEFT RIGHT
AZIMUTH ANGLE - DEGREES

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

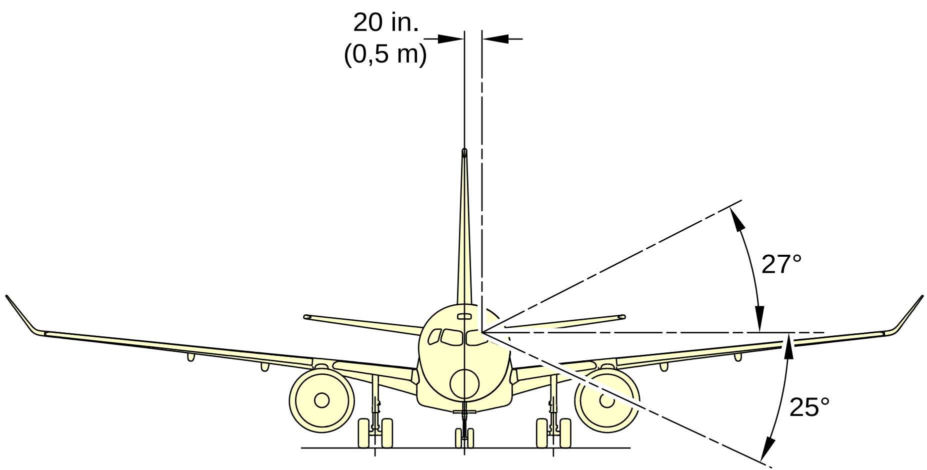
Figure 1 Clear areas of vision



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

Wheel chocks - Handling procedure

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
BD500-A-J12-30-32-02AAA-913A-A	Apply park brake - General maintenance procedure
BD500-A-J10-20-00-02AAA-030A-A	Parking and mooring gust limits - Technical data

Common information

This data module gives general information about the placement of the wheel chocks (59603, Pt. No. 99-9028-6000) for different aircraft conditions.

Note

The operator can use these guidelines and his experience and knowledge of the local regulations to make decision.

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
Make sure that the aircraft is safe for maintenance.	
Make sure that the parking brake is on.	BD500-A-J12-30-32-02AAA-913A-A
Make sure that the beacon lights are off.	
Make sure that all the engines are stopped.	

Support equipment

Table 3 Support equipment

Name	Identification/Reference	Quantity	Remark
Wheel chocks	99-9028-6000	AR	Or equivalent

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

WARNING

Obey these safety precautions during movement of the aircraft (Towing, Push-back, Taxiing). Make sure that:

- **The path of the aircraft is clear of persons, equipment and other obstacles.**
- **No persons go near the tow tractor, tow bar, landing gears, engine nacelles or below the aircraft fuselage.**
- **Only qualified persons are in the tractor and no persons sit or stand on the tow bar.**
- **No persons go near the aircraft before it is fully stopped.**

There is a risk of injury or death if you do not obey these instructions.

Procedure

1 Put the wheel chocks (59603, Pt. No. 99-9028-6000) as follows:

Refer to Fig. 1 .

1.1 If the aircraft is in flight-ready condition and the wind speed is below 25 Knots, do as follows:

1.1.1 Put the wheel chocks (59603, Pt. No. 99-9028-6000) in front of and rear of the inboard tires of the right and left Main Landing Gear (MLG).

1.1.2 Make sure that the wheel chocks do not touch the tires (59603, Pt. No. 99-9028-6000) .

Note

Weight changes can have an effect on the wheelbase, which can cause the tires to catch the chocks.

If you put wheel chock(s) at the Nose Landing Gear (NLG) because of the local regulations, make sure that they do not touch the tires.

1.1.3 If the aircraft is parked on a slope, do as follows:

1.1.3.1 Additionally, put the wheel chocks (59603, Pt. No. 99-9028-6000) on the down-slope side of the inboard tires of each of the MLG .

1.1.4 Make sure that the down-slope chocks touch the tires and the up-slope chocks do not touch the tires.

Note

On slippery surfaces, use more wheel chocks

On slippery surfaces, apply the parking brake.

1.2 If the aircraft is in flight-ready condition and the wind speed is 25 Knots or above, or the aircraft is parked, or the aircraft is in storage condition, do as follows:

When high winds are expected for the time that the aircraft is parked on an open area, do as follows:

1.2.1 Check parking/mooring wind and gust limits. Refer to BD500-A-J10-20-00-02AAA-030A-A.

1.2.2 Put the wheel chocks (59603, Pt. No. 99-9028-6000) in the front and rear side of the NLG and the MLG tires.

1.2.3 Make sure that the wheel chocks do not touch the tires (59603, Pt. No. 99-9028-6000) .

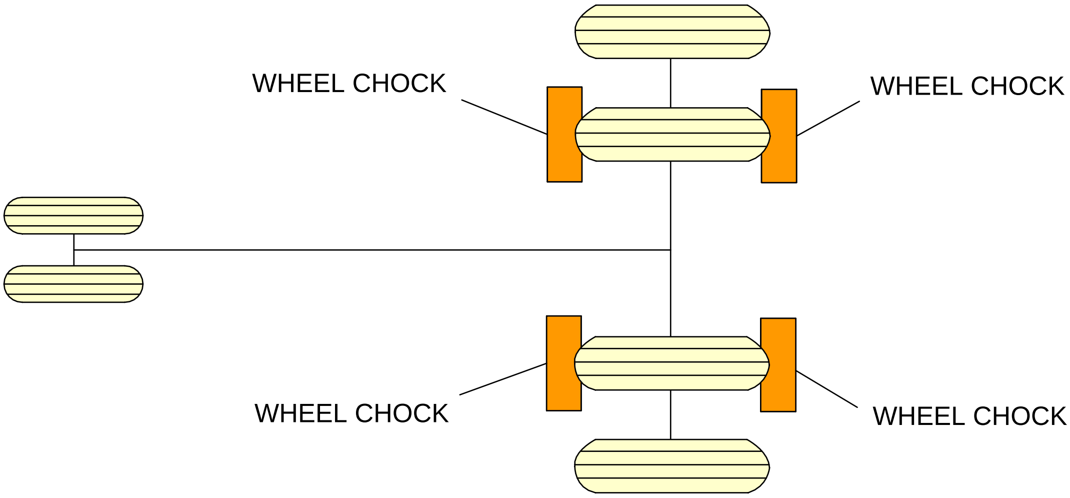
Note

Weight changes can have an effect on the wheelbase, which can cause the tires to catch the chocks.

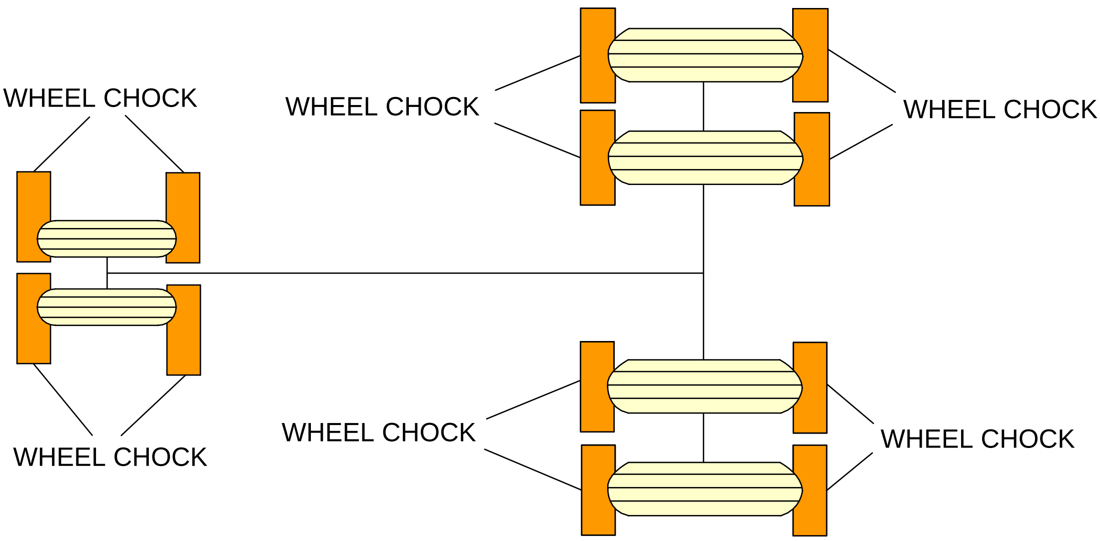
1.2.4 If the aircraft is parked on a slope, put the wheel chocks (59603, Pt. No. 99-9028-6000) against the down-slope tires.

Note

On slippery surfaces or strong wind conditions, apply the parking brake. Refer to BD500-A-J12-30-32-02AAA-913A-A.



AIRCRAFT IN FLIGHT READY CONDITION, WIND SPEED LESS THAN 25 KNOTS



AIRCRAFT IN FLIGHT READY CONDITION, WIND SPEED MORE THAN 25 KNOTS OR AIRCRAFT IN PARKED OR IN THE STORAGE CONDITION

ICN-BD500-A-J101601-C-3AB48-92845-A-002-01

Figure 1 Wheel chocks on aircraft – Location

Requirements after job completion

Required conditions

Table 6 Required conditions

Action/Condition	Data Module/Technical publication
None	

Chapter 5: Terminal servicing

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Terminal servicing - Technical data

Applicability: 50001-54999

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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:

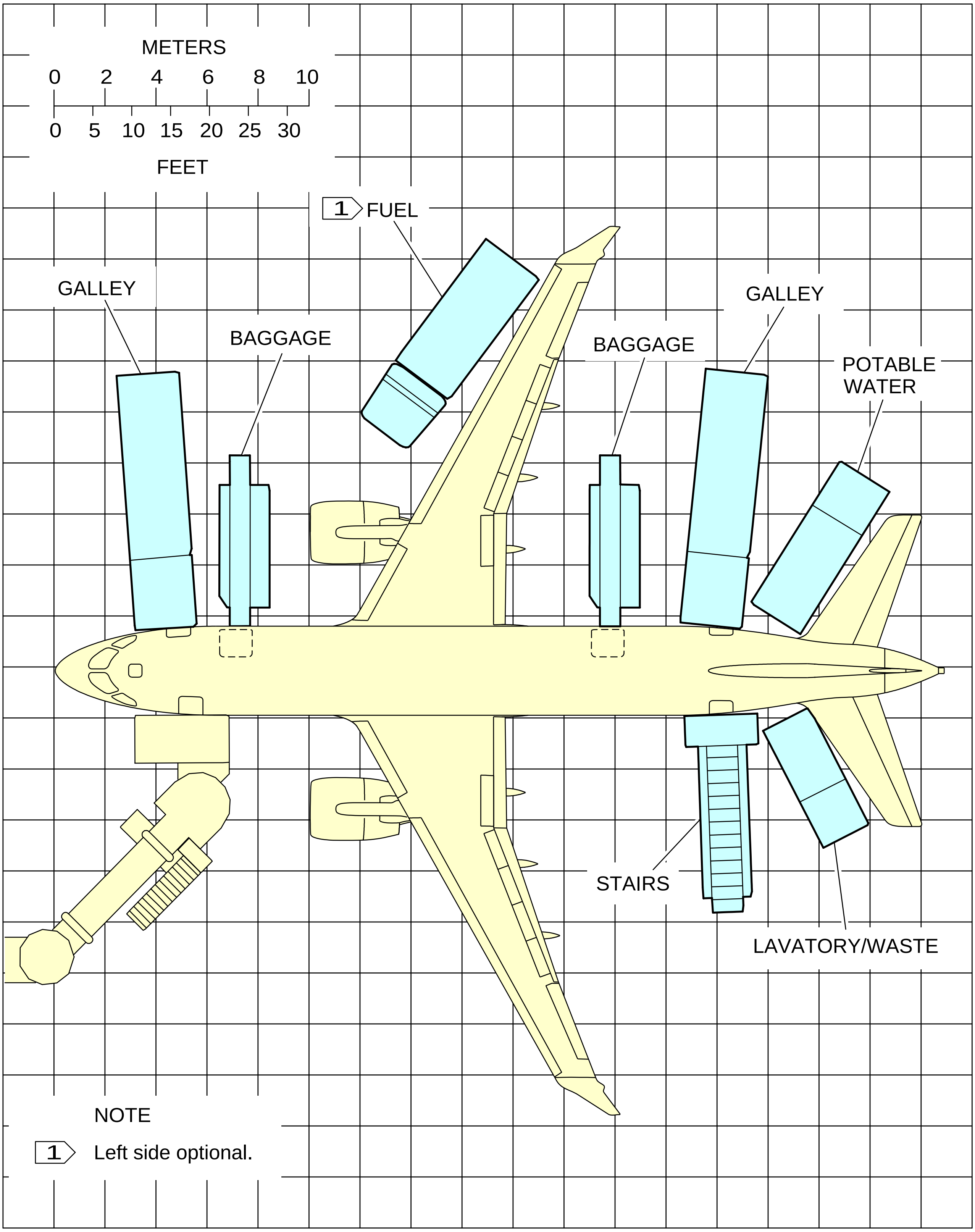
- Aircraft servicing arrangement
- Terminal operations
- Ground servicing connections
- Ground electrical power requirements
- Ground pneumatic power requirements – Engine starting
- Preconditioned airflow requirements – Air conditioning
- Ground towing requirements.

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).

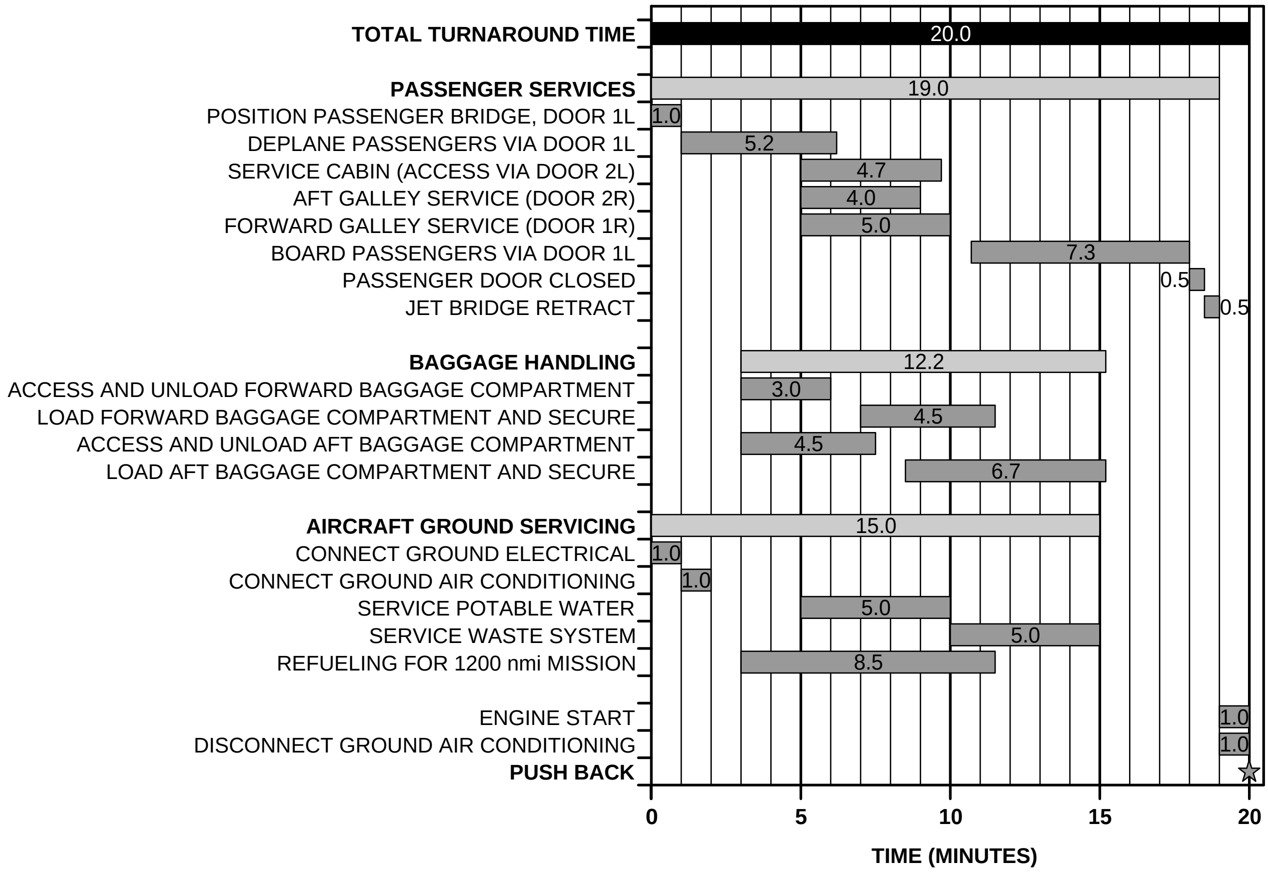
    2 When refueling two (2) wing tanks, the refuel rate is 140 gpm (530 L/min).

    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

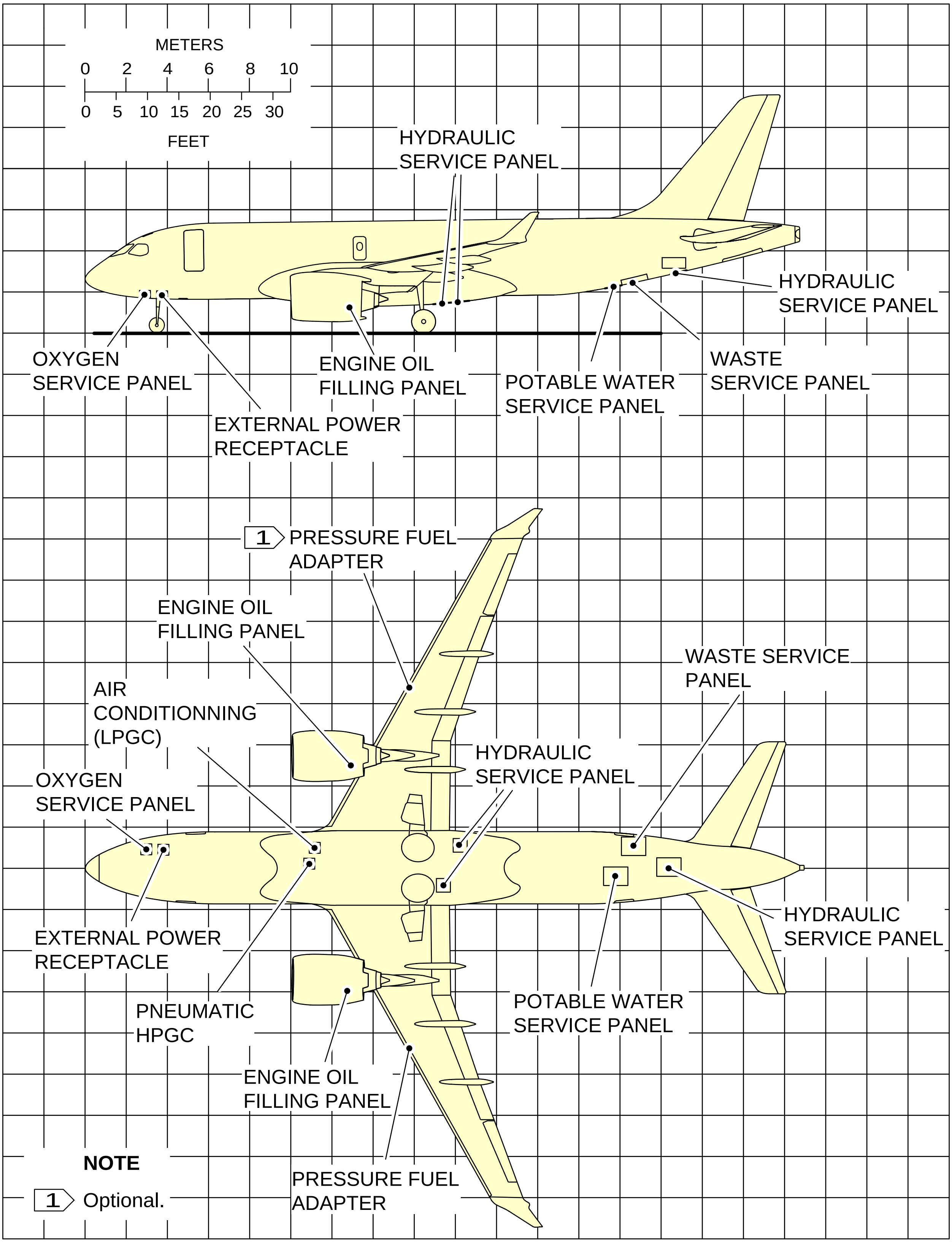
Figure 2 Turnaround time analysis

A220

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)

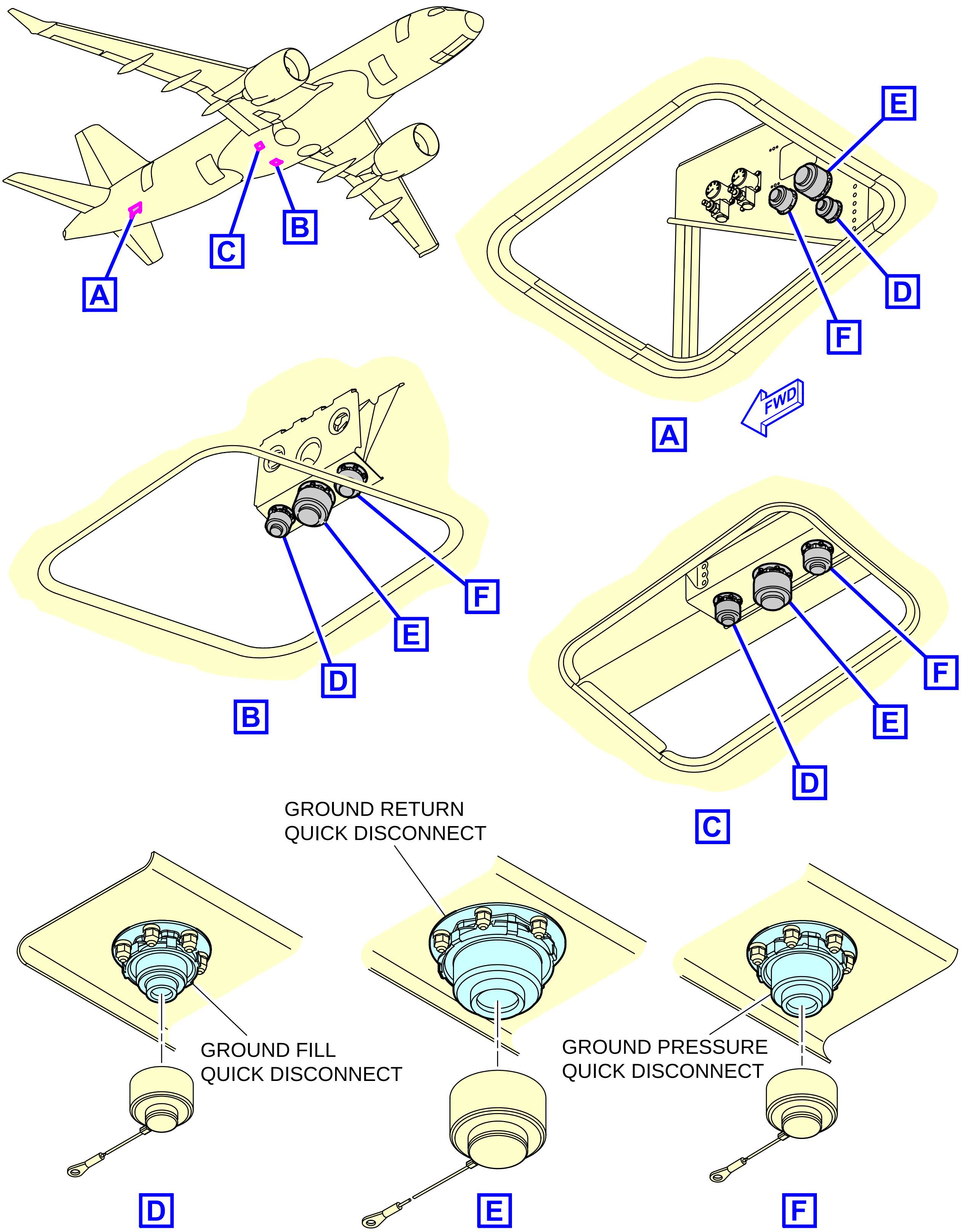


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Figure 4 Ground servicing system

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)

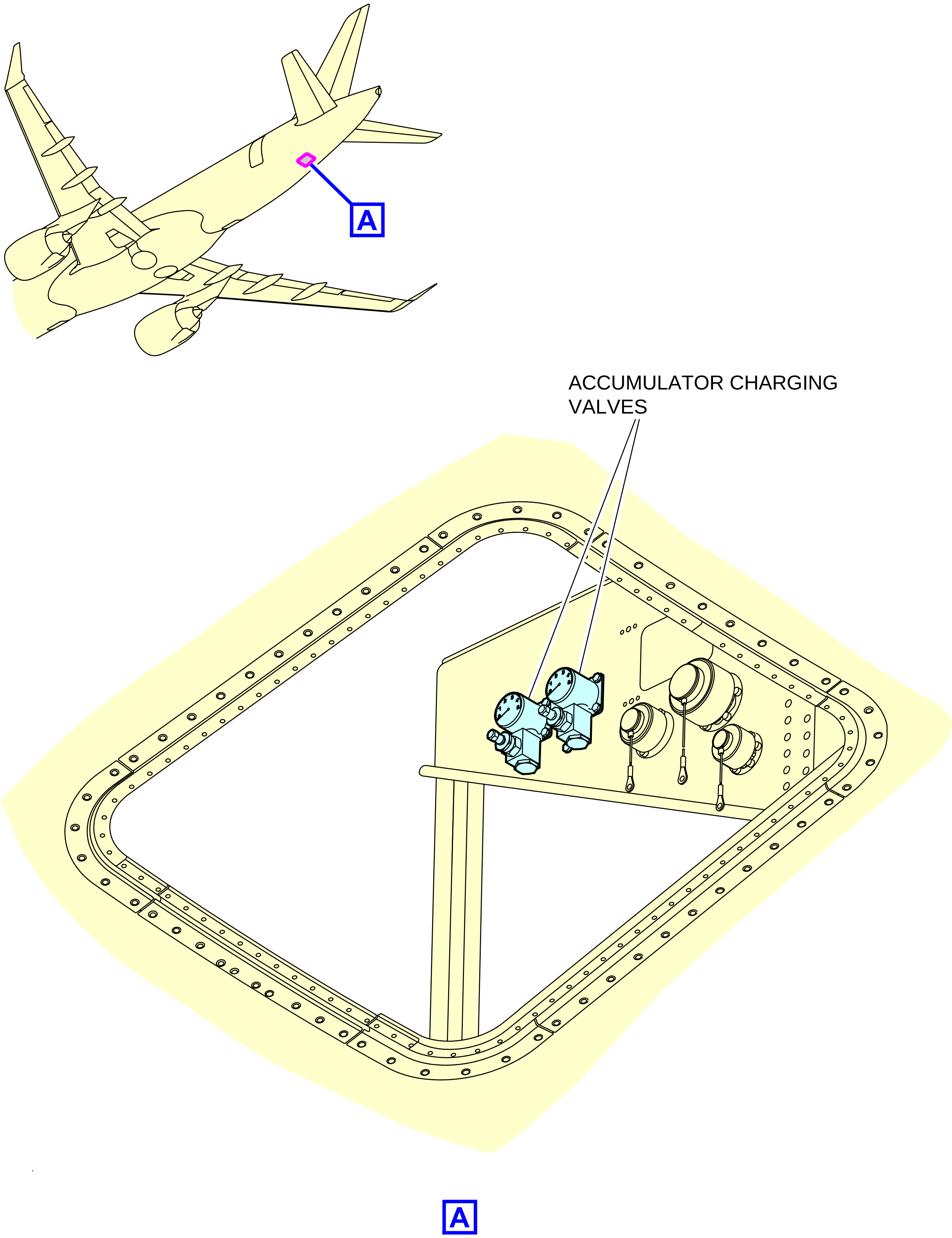
Note

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 RH side ft (m)	Position from aircraft Centerline LH side ft (m)	Mean height from ground 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)

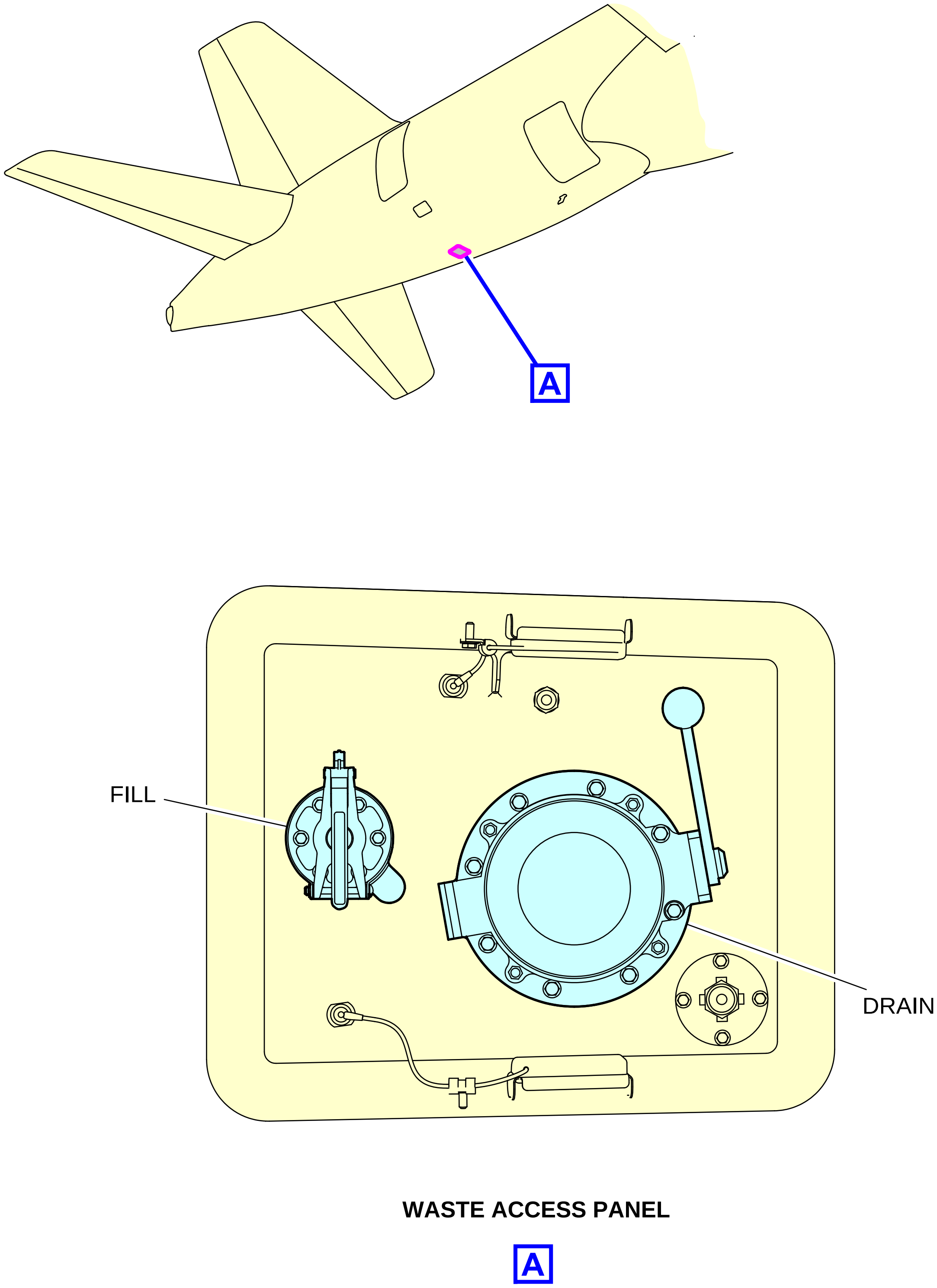


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Figure 6 Waste system access panel

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)

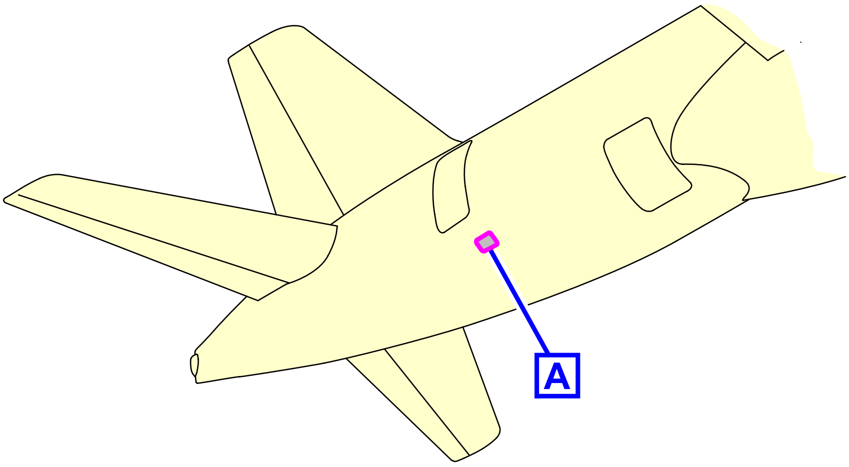
Note

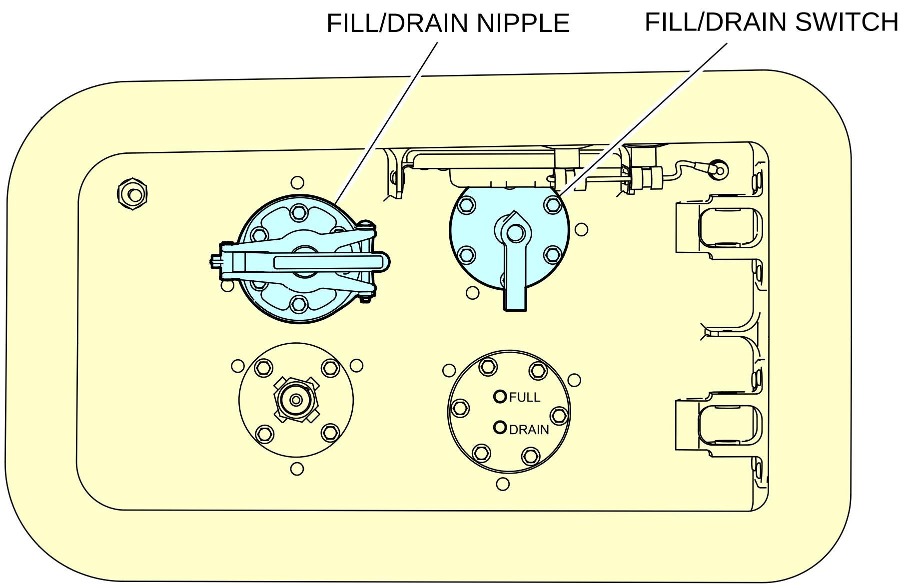
All distances are approximate.

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

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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

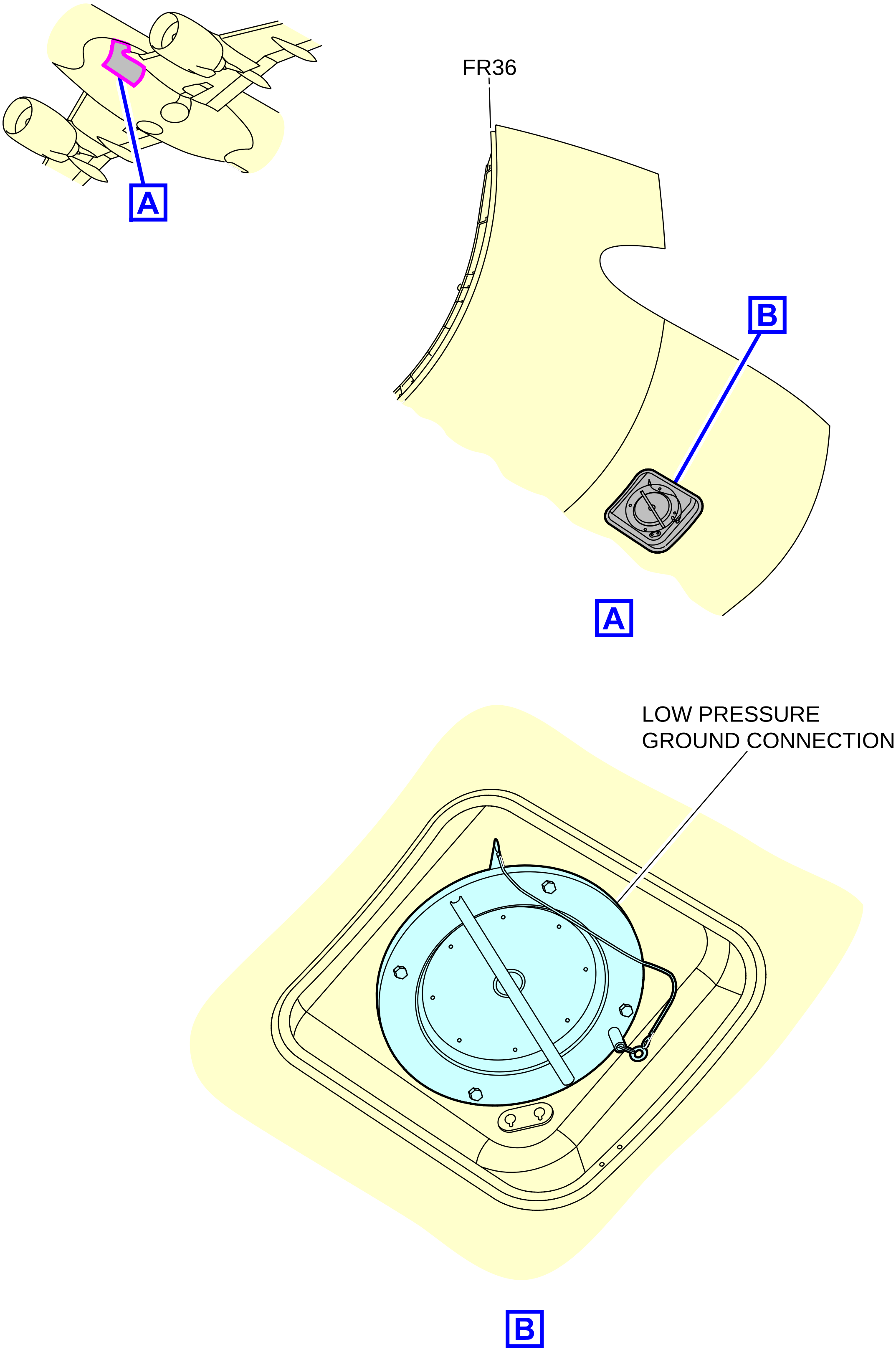

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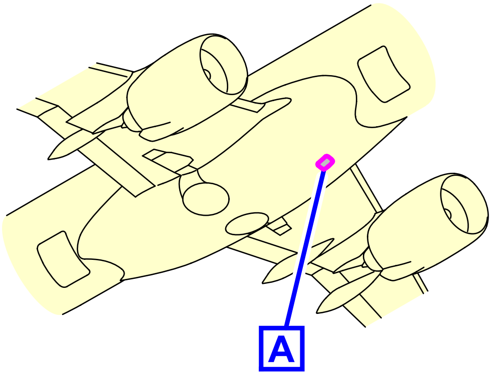
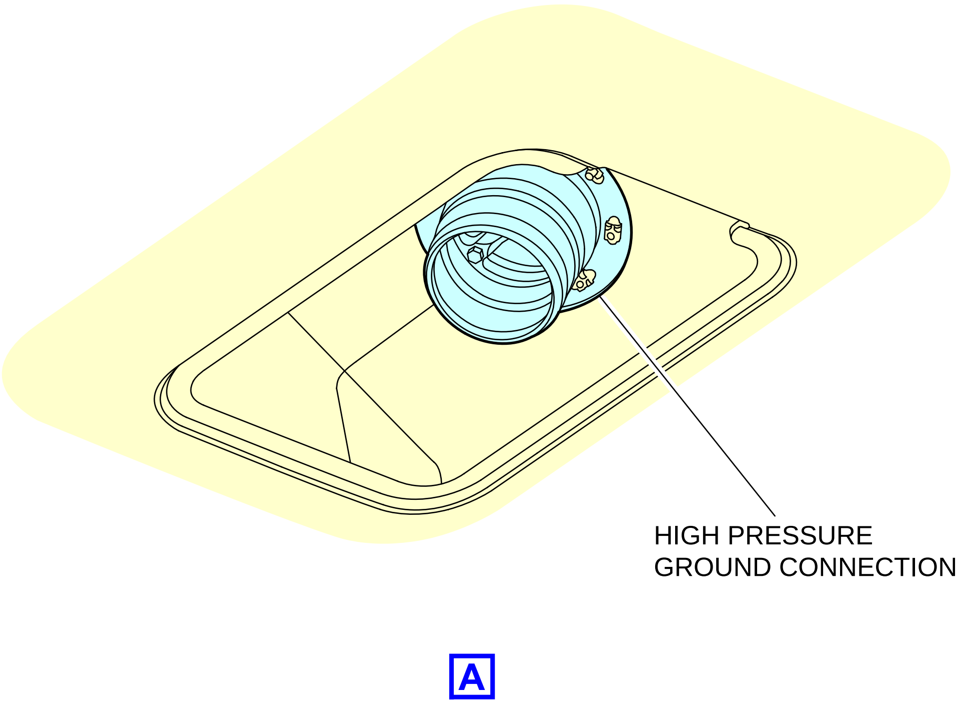
Figure 8 Low pressure ground system





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.

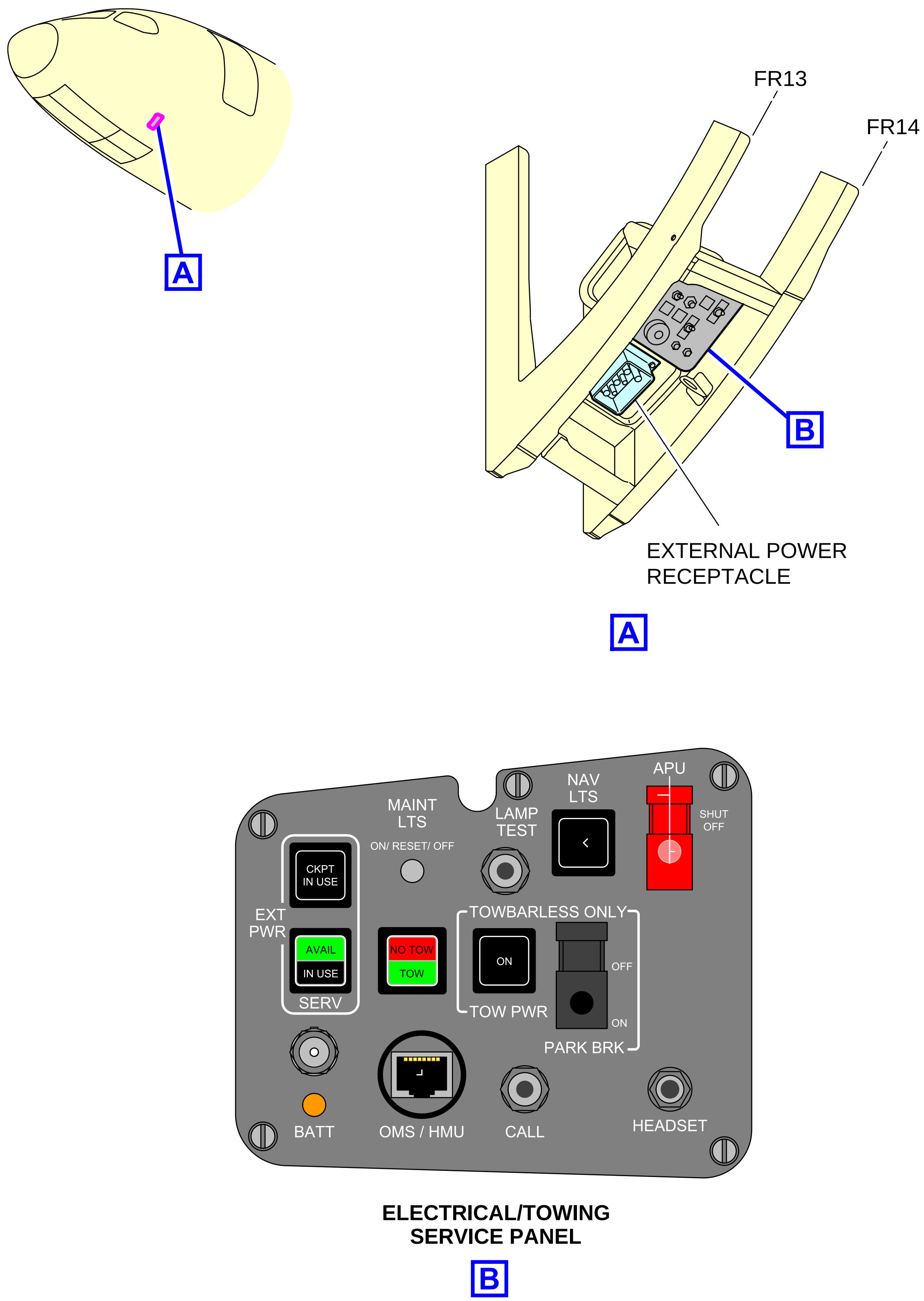
All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

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 .



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)

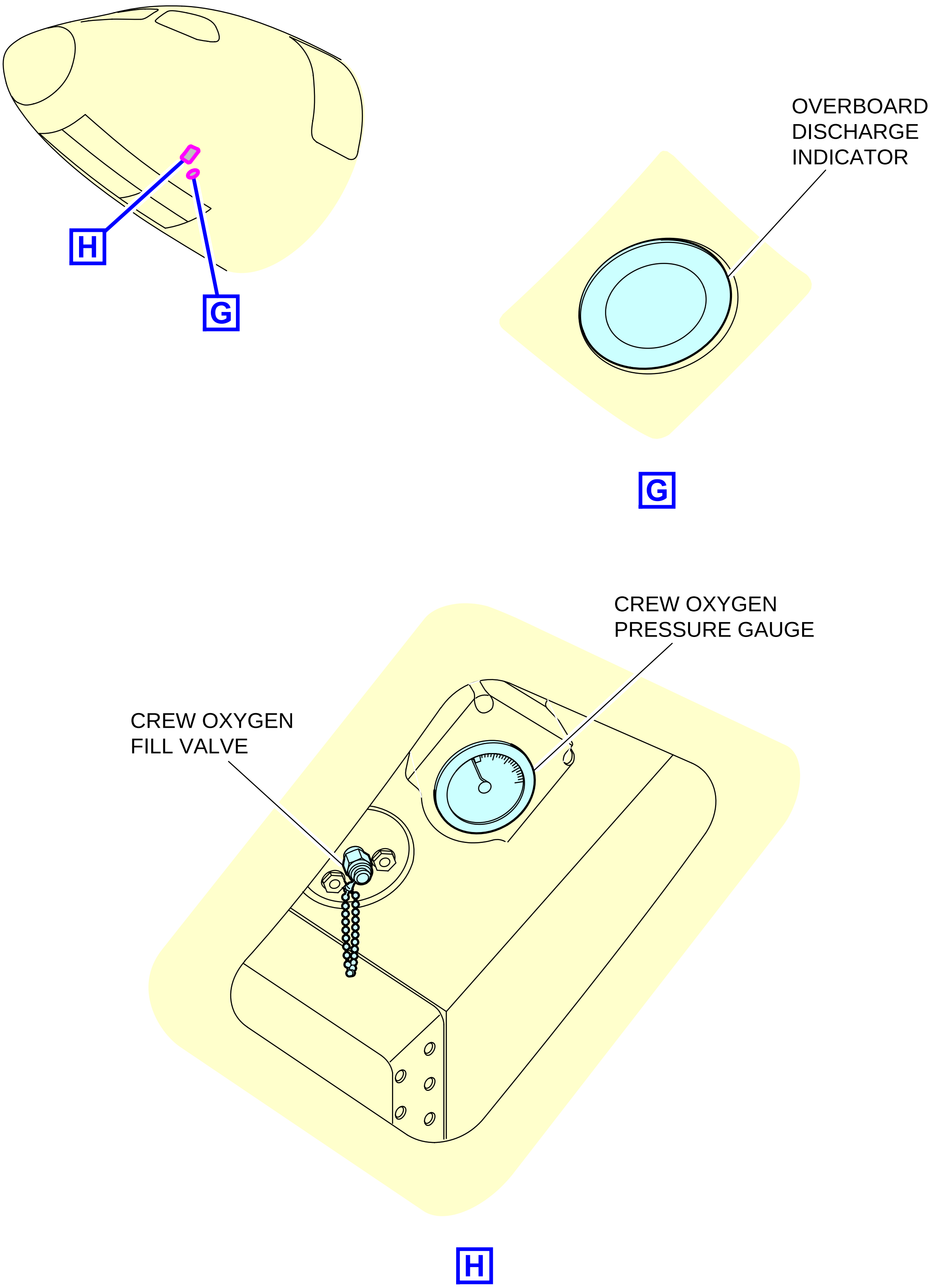
Note

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 ft^3 (2180 L)



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

Figure 11 Crew oxygen system

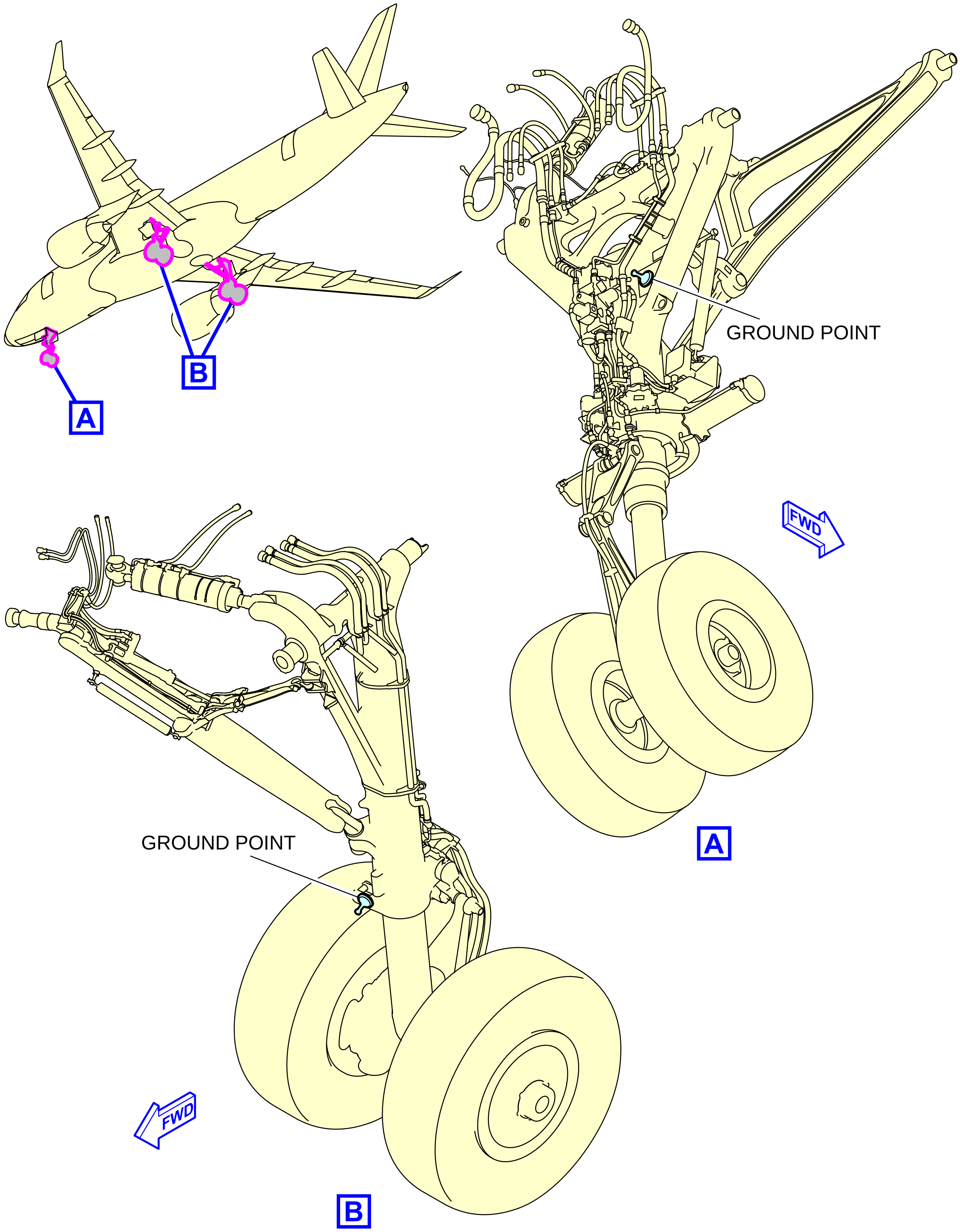
Table 9 Grounding points

Access	Aft of nose ft (m)	Position from aircraft Centerline	Mean height from ground ft (m)	LH side ft (m)
		RH 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	53.23 (16.23)	10.75 (3.27)	-	2.85 (0.87)
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 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

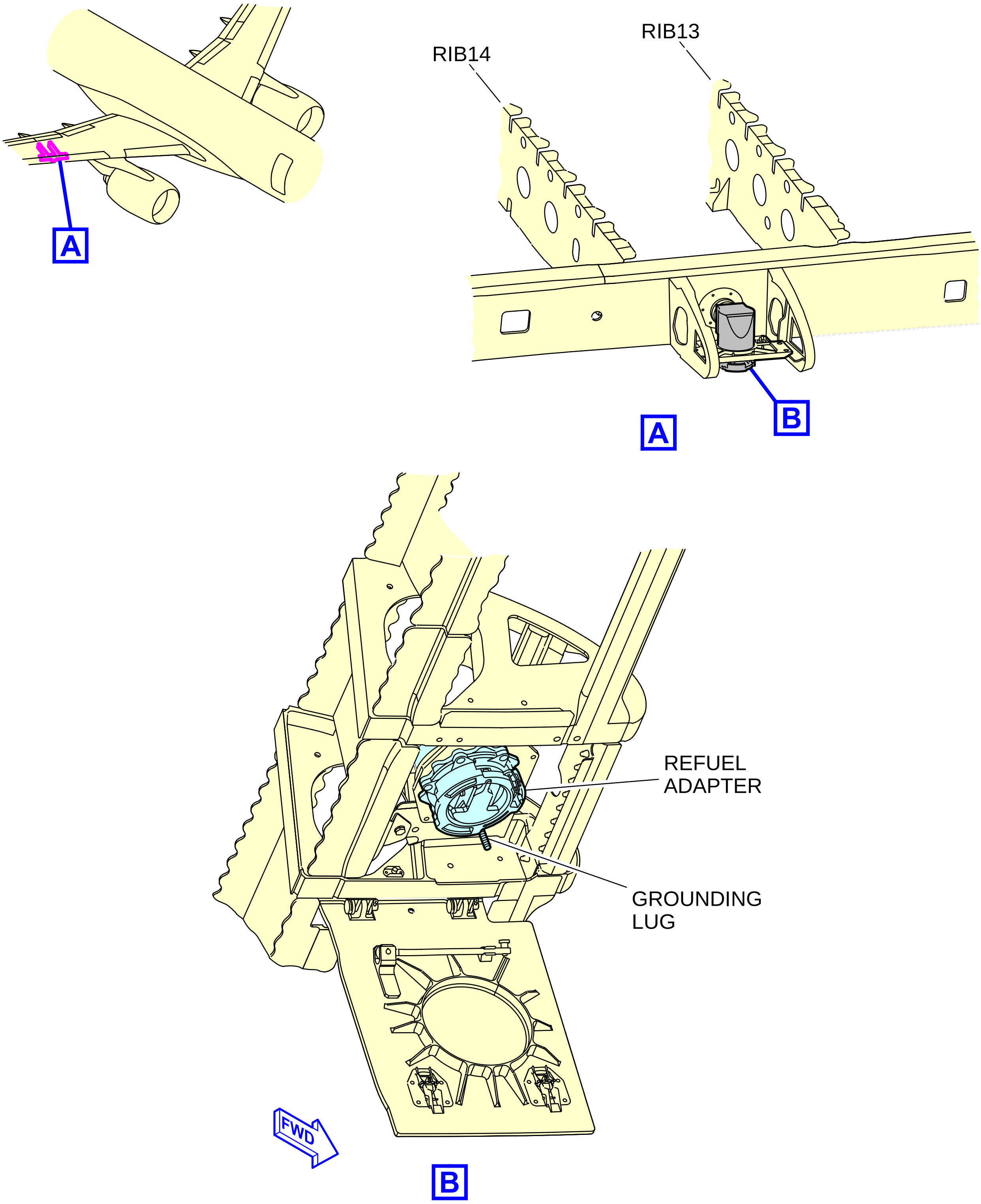
Table 10 Fuel system Refuel/Defuel adapter

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.

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Figure 13 Refuel adapter and grounding point

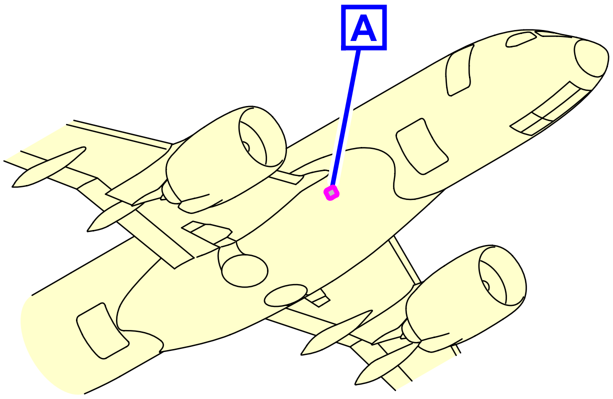
Table 11 Fuel system control panel

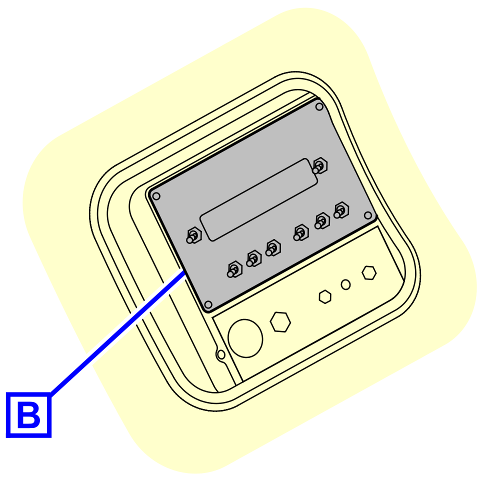
Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 192AB	35.76 (10.9)	4.98 (1.52)	-	6.12 (1.86)

Note

All distances are approximate.

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





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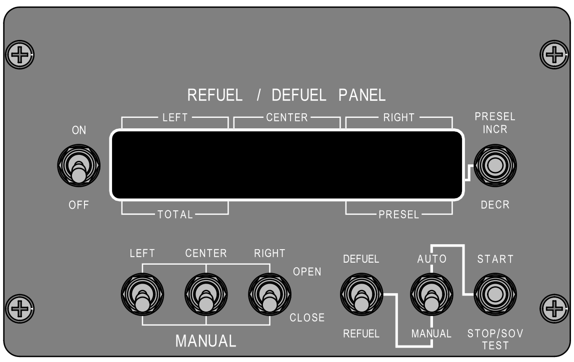

REFUEL/DEFUEL CONTROL PANEL

B

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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)

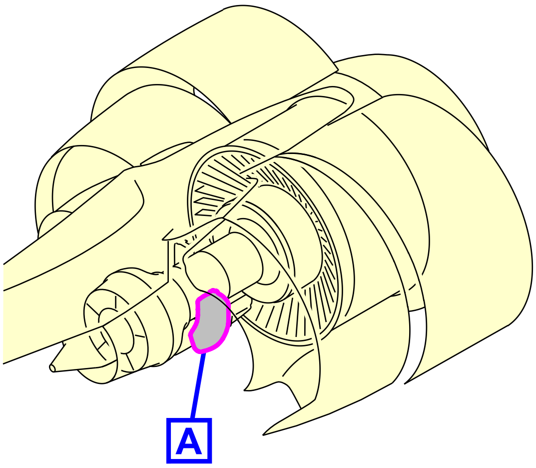
Note

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)



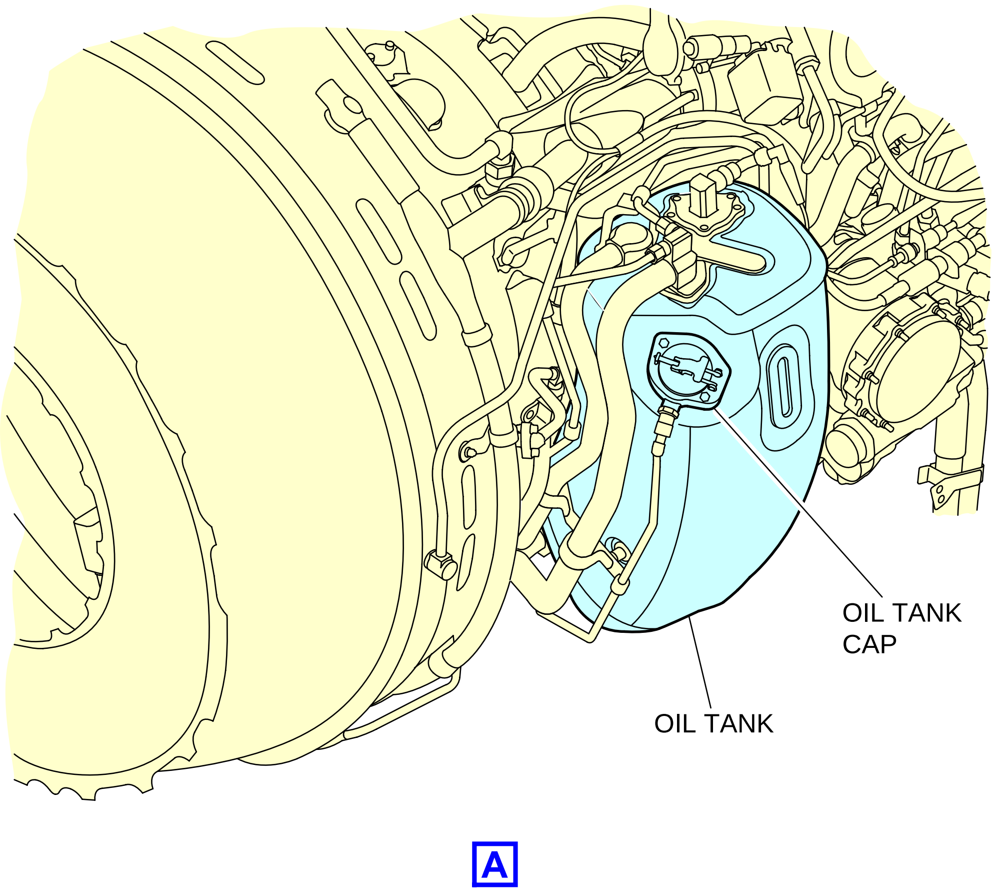


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Figure 15 Oil storage system

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)

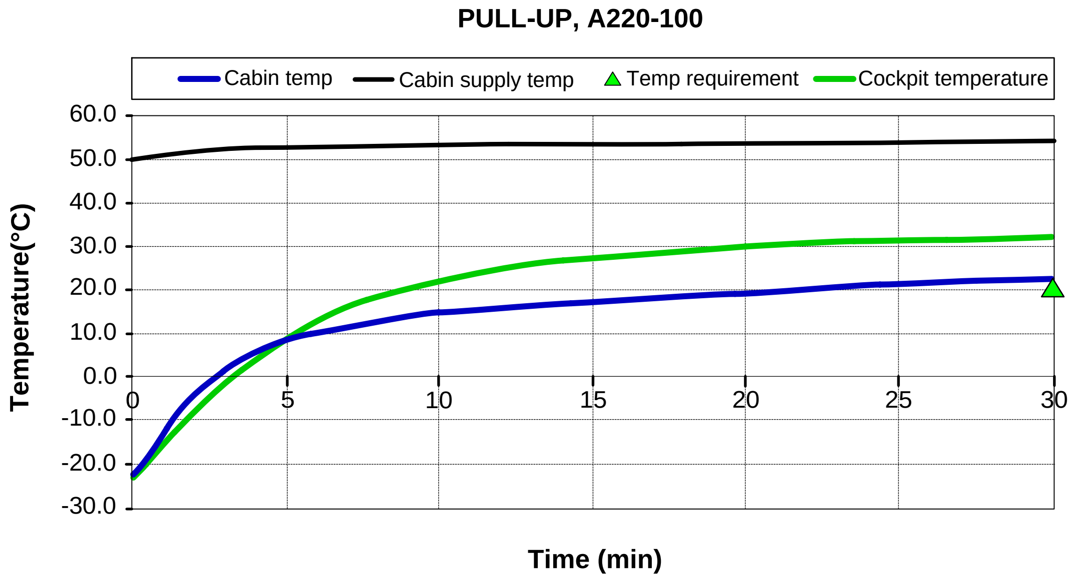

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Figure 16 Ground pneumatic requirements - Heating

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)

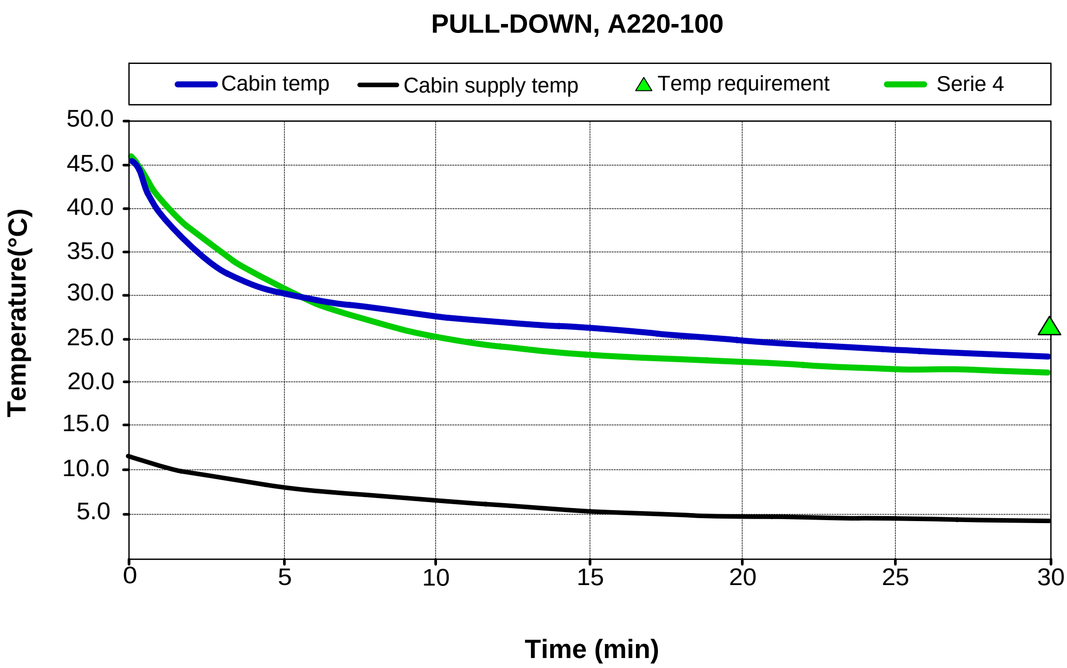

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Figure 17 Ground pneumatic requirements - Cooling

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.

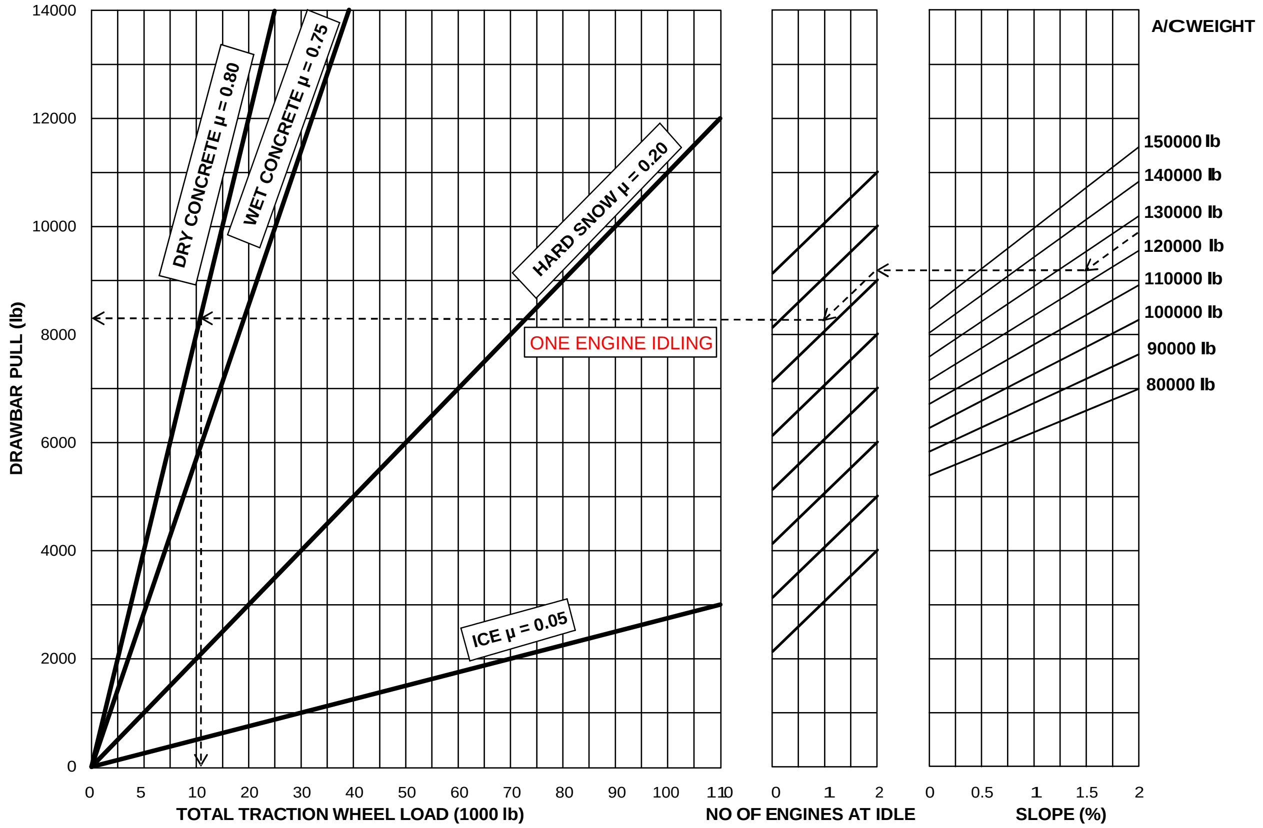
For towing and pushing operations, controls are provided to accommodate the following conditions:

- 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 80((35.6 kN) and the total tractor weight of approximately 10 500 lbs (4762 Kg).

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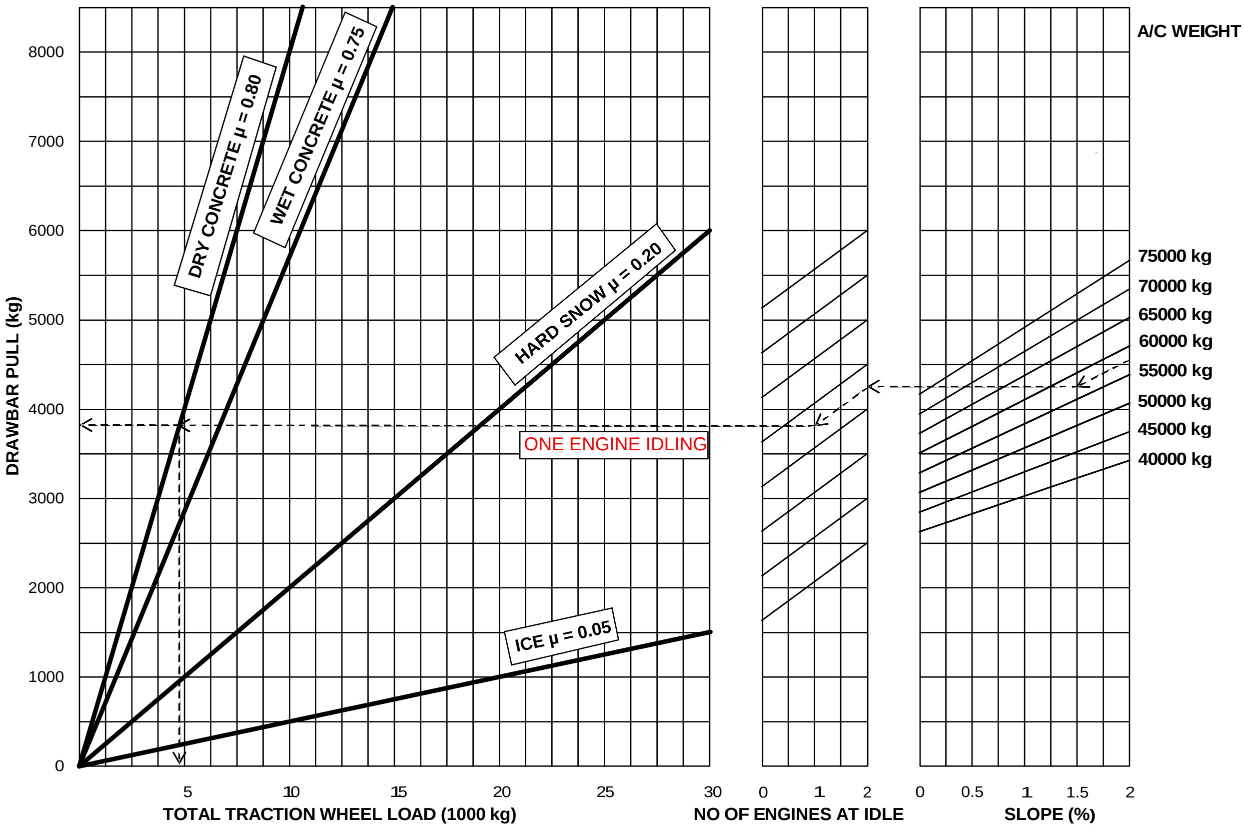
Figure 18 Ground towing requirements (imperial unit)



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 80((35.6 kN) and the total tractor weight of approximately 10 500 lbs (4762 Kg).

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Figure 19 Ground towing requirements (metric unit)

A220

Terminal servicing - Technical data

Applicability: 55001-59999

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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.

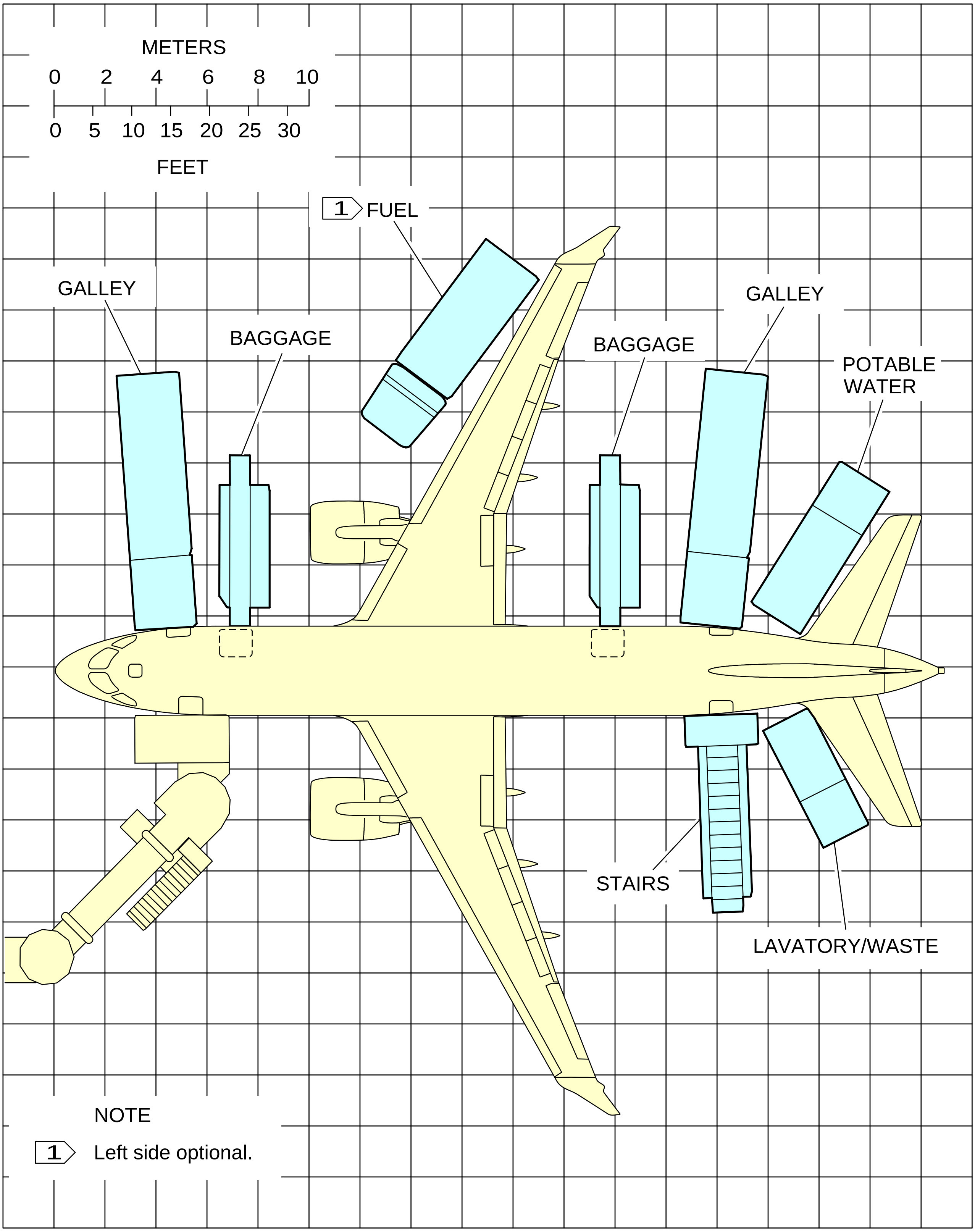

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Figure 1 Aircraft servicing arrangement

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.

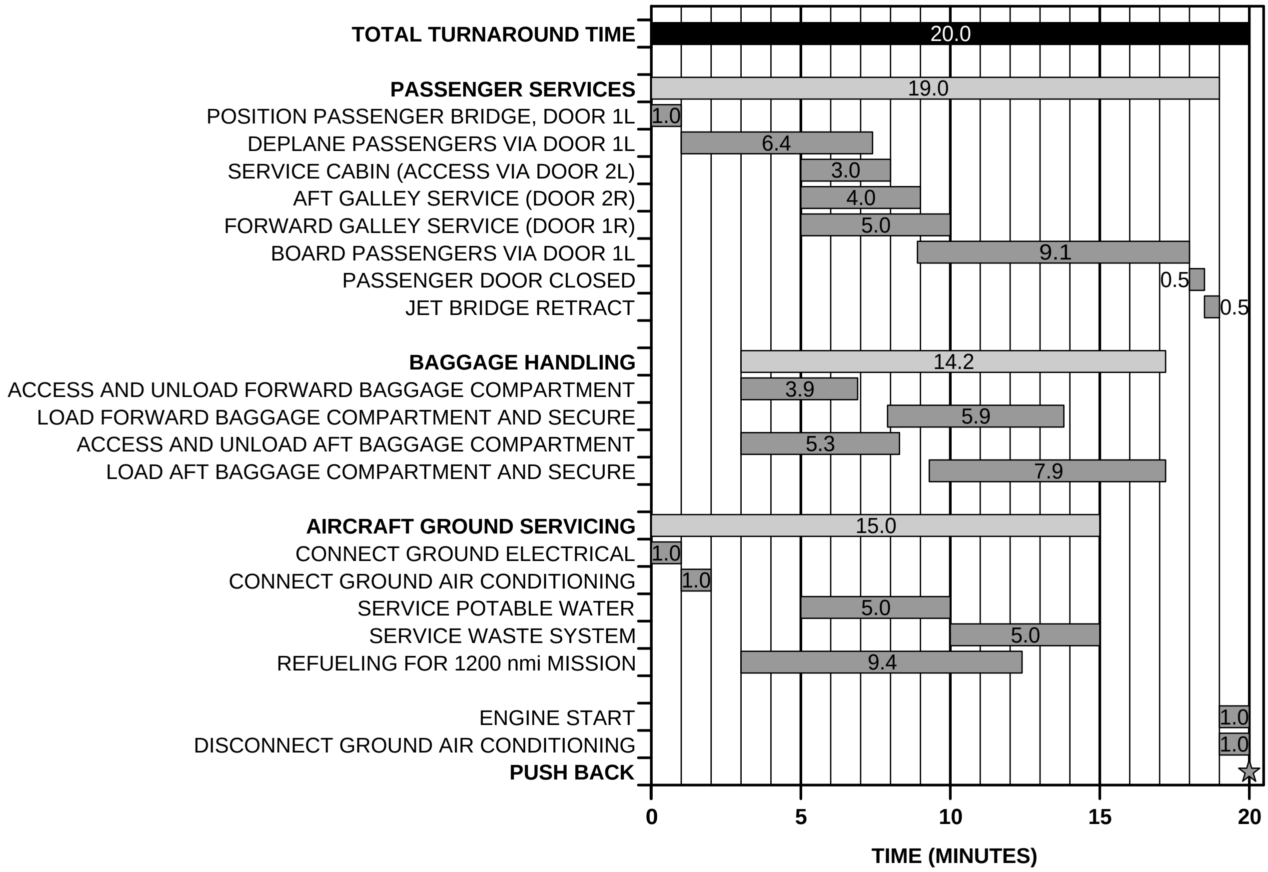

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Figure 2 Turnaround time analysis

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.

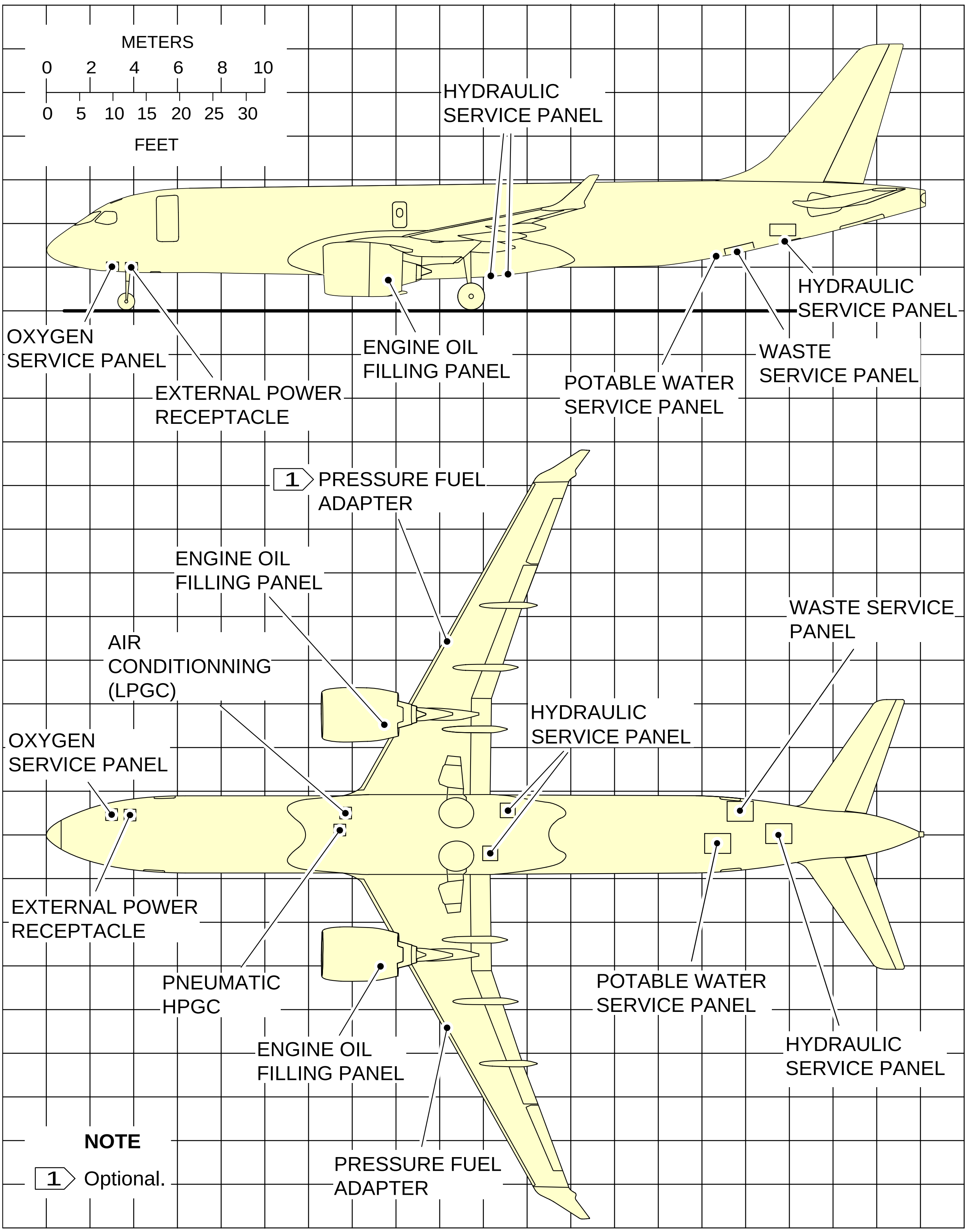

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Figure 3 Ground servicing connections

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)

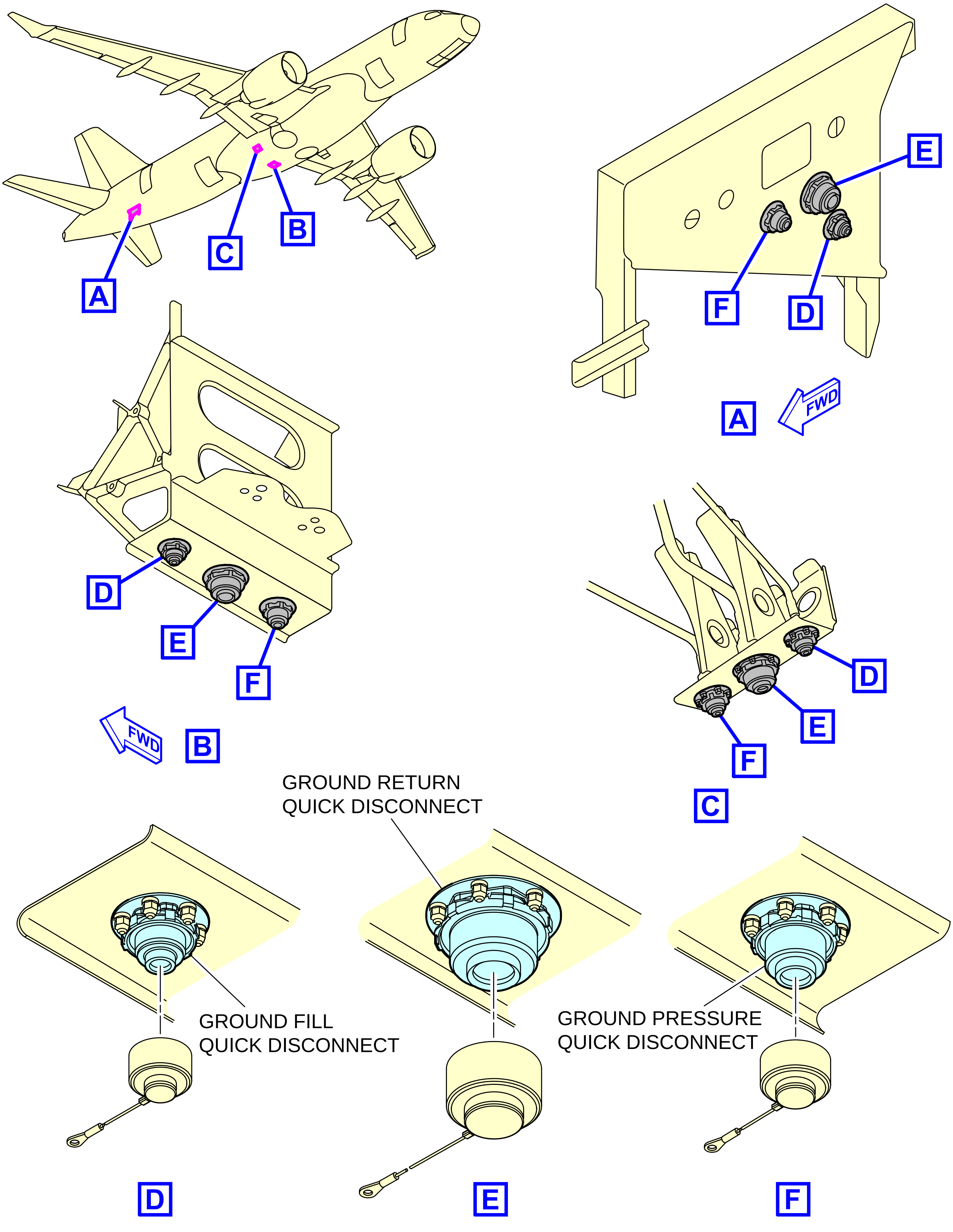

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Figure 4 Ground servicing system

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)

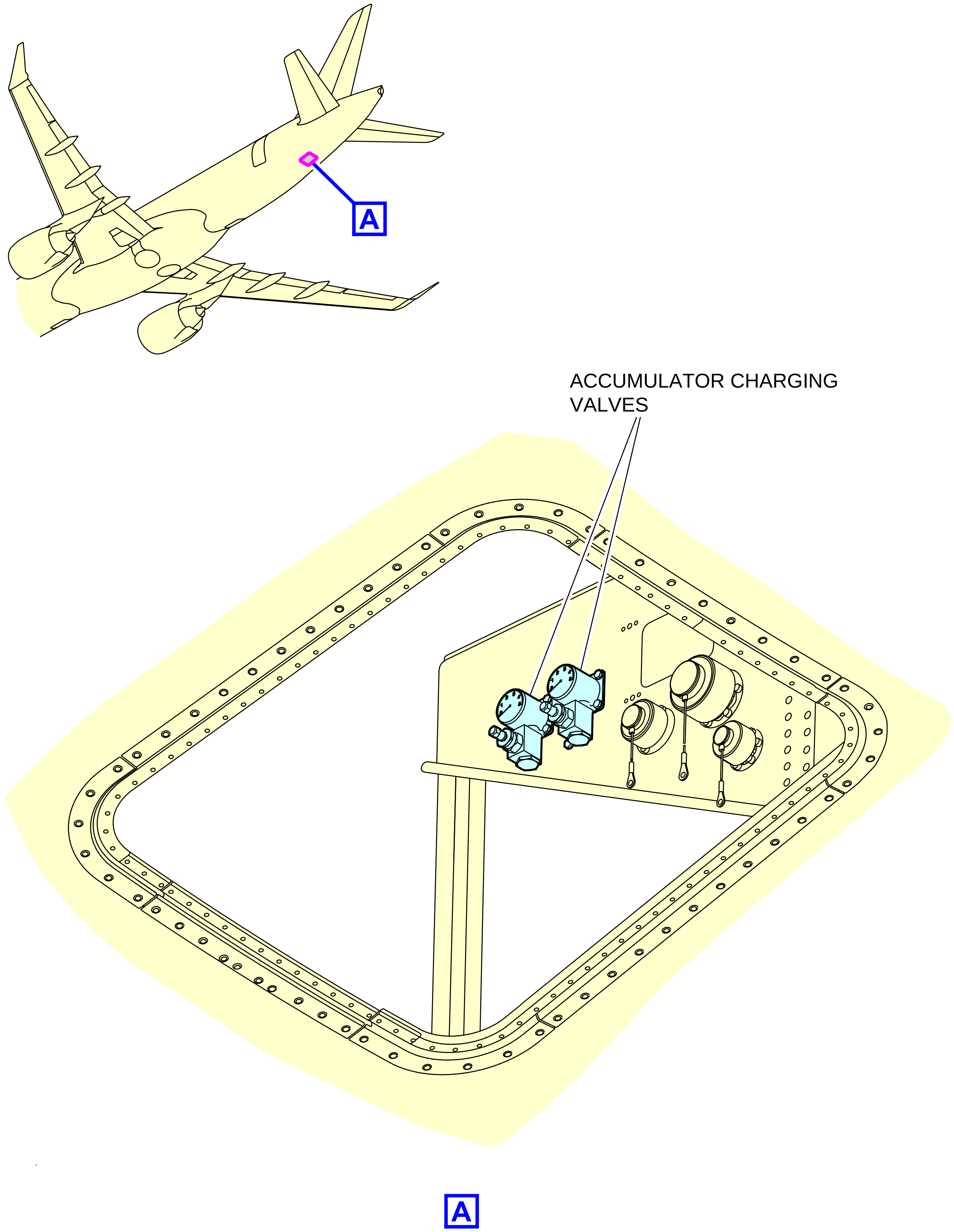

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Figure 5 Accumulator charging valves

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)

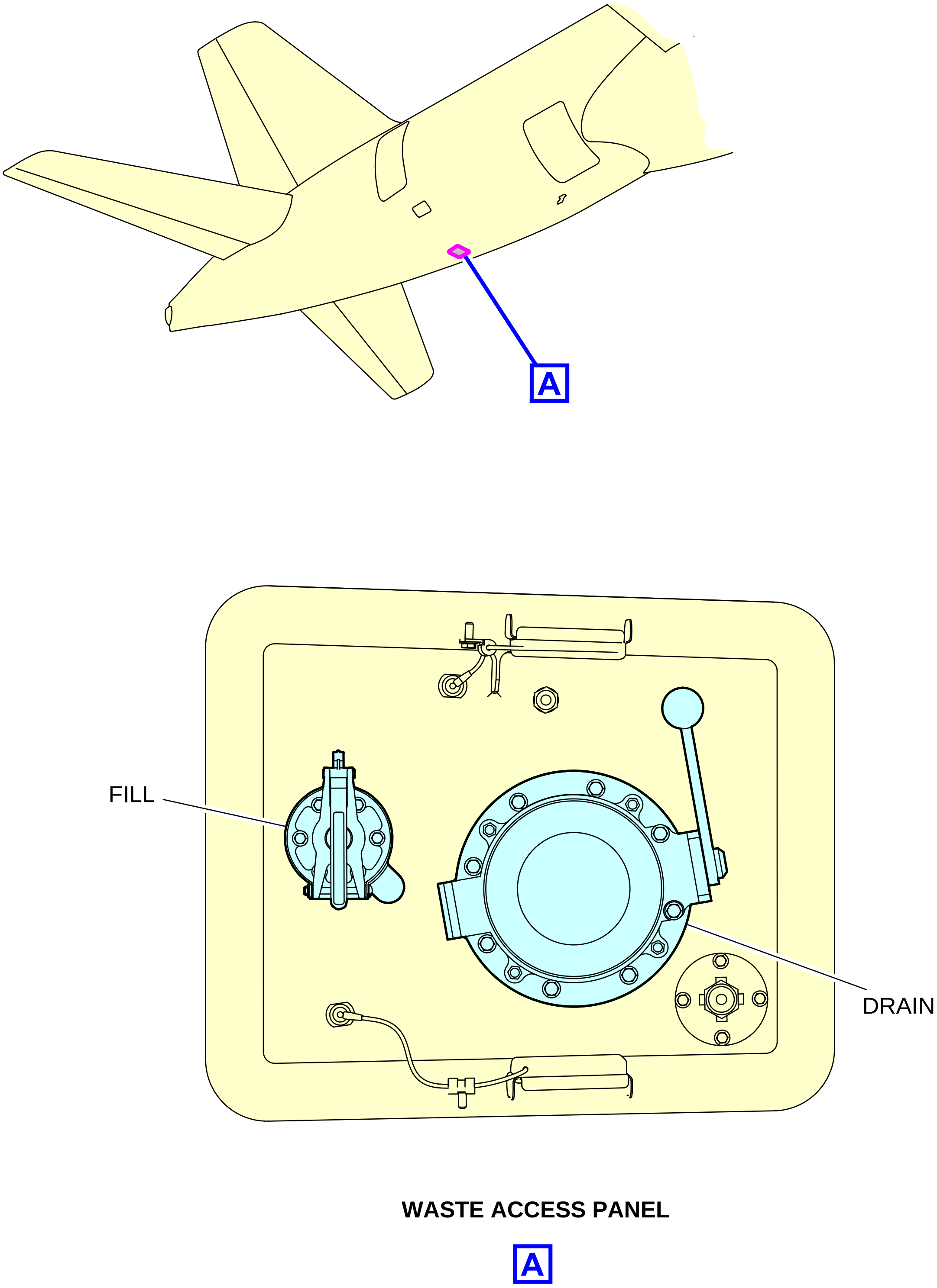

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Figure 6 Waste system access panel

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)

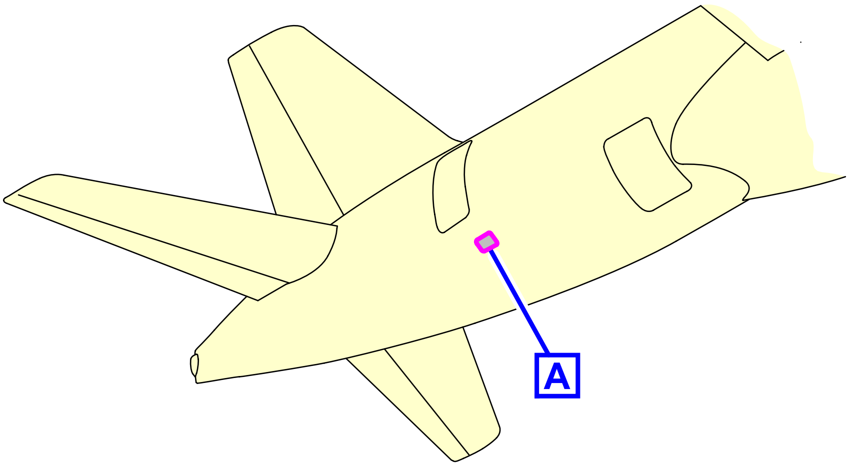
Note

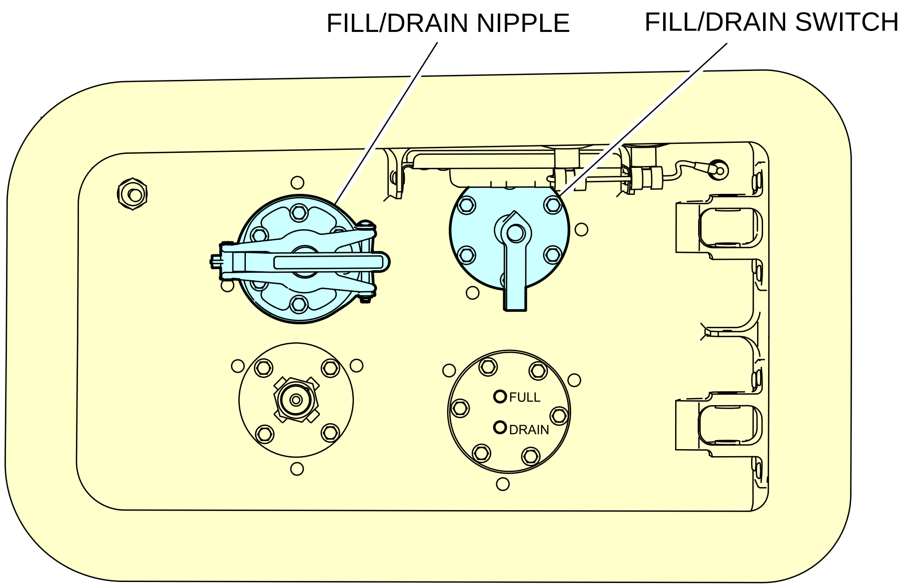
All distances are approximate.

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

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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

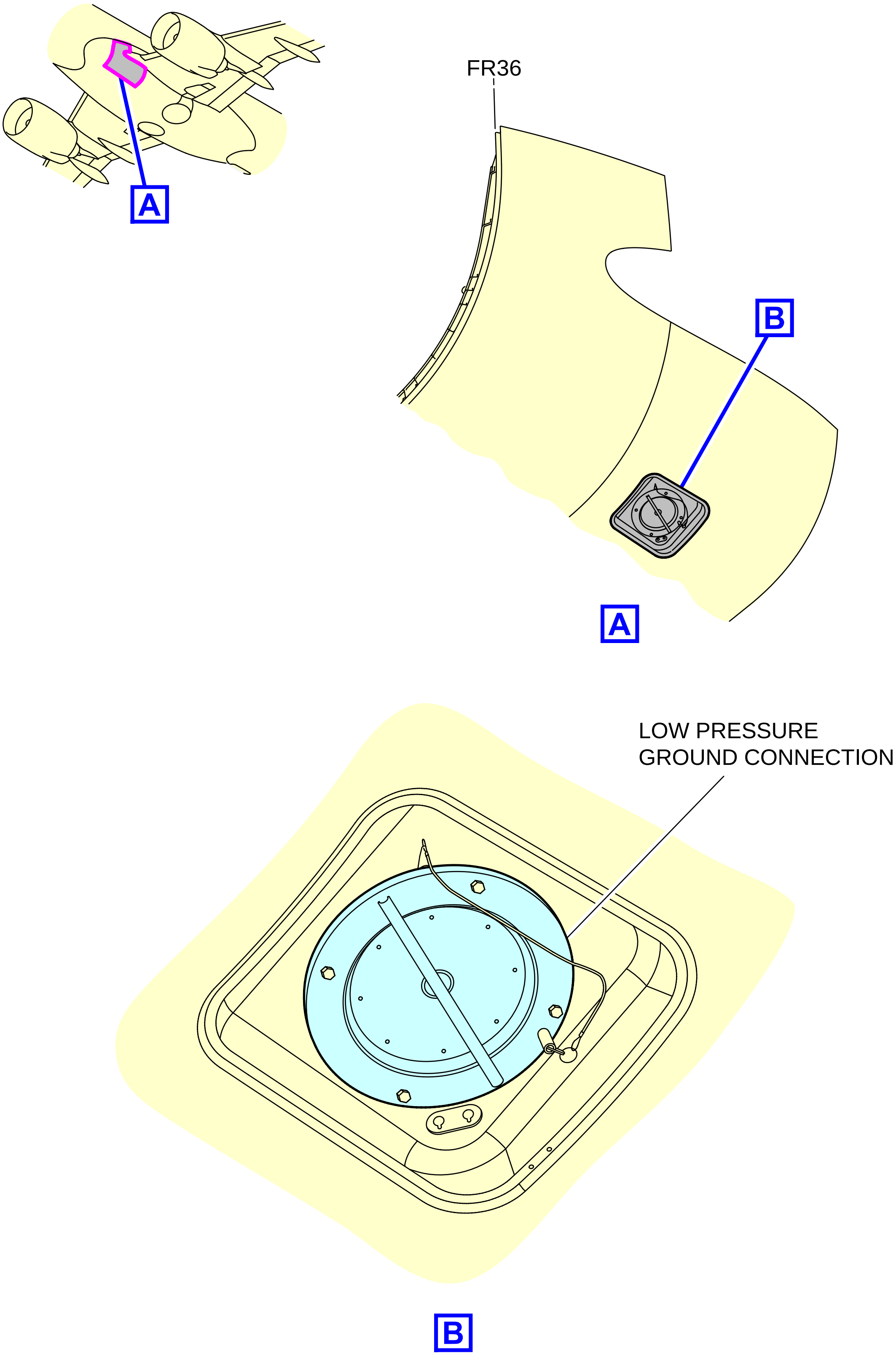

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Figure 8 Low pressure ground system

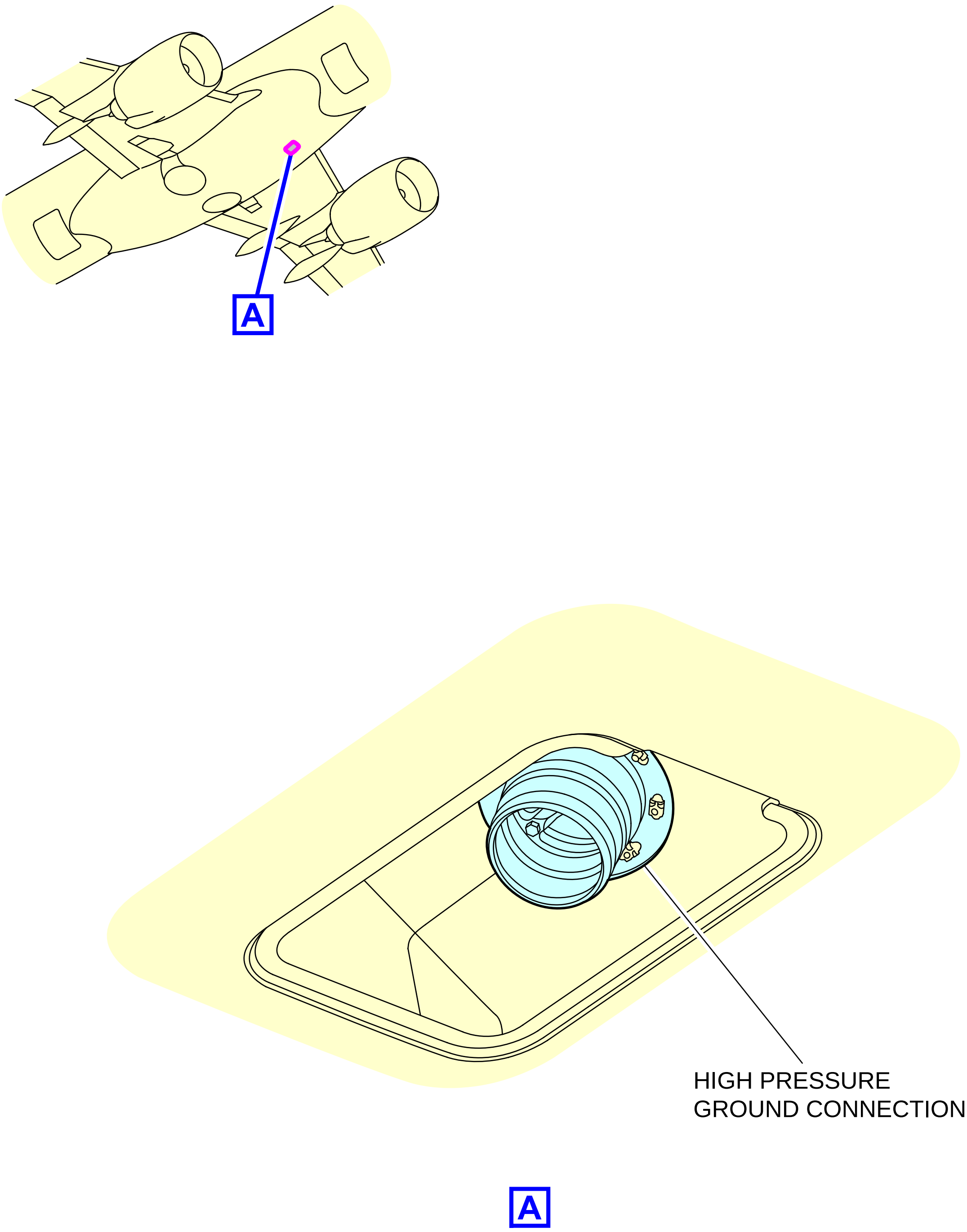

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Figure 9 High pressure ground system

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.

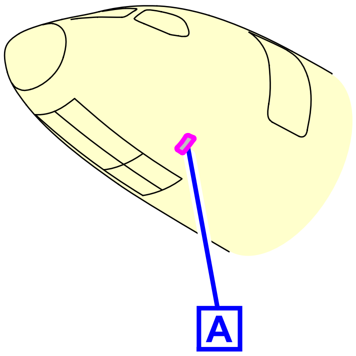
All height from ground distances are approximate and will vary with aircraft configuration and loading conditions.

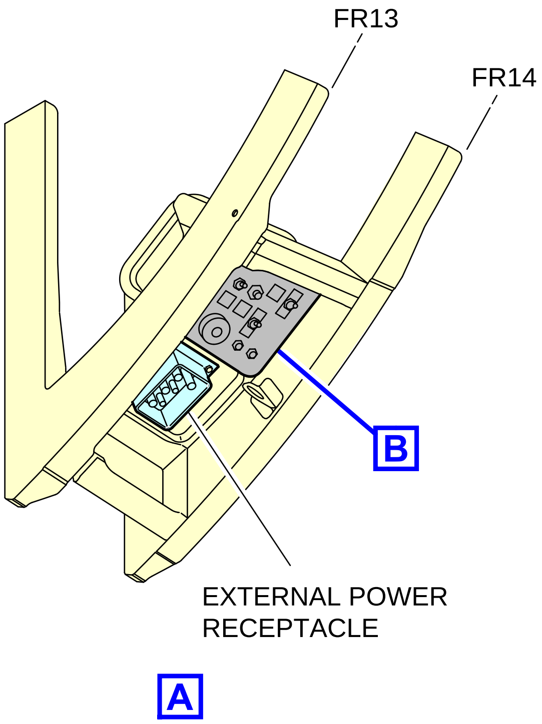
Technical specifications

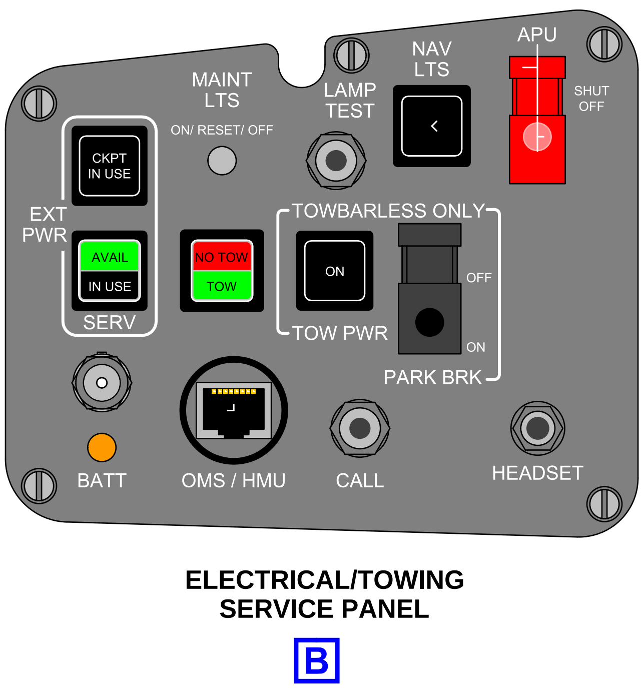
- Power supply: 115 V Alternating Current (AC) External Power Receptacle

Note

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







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)

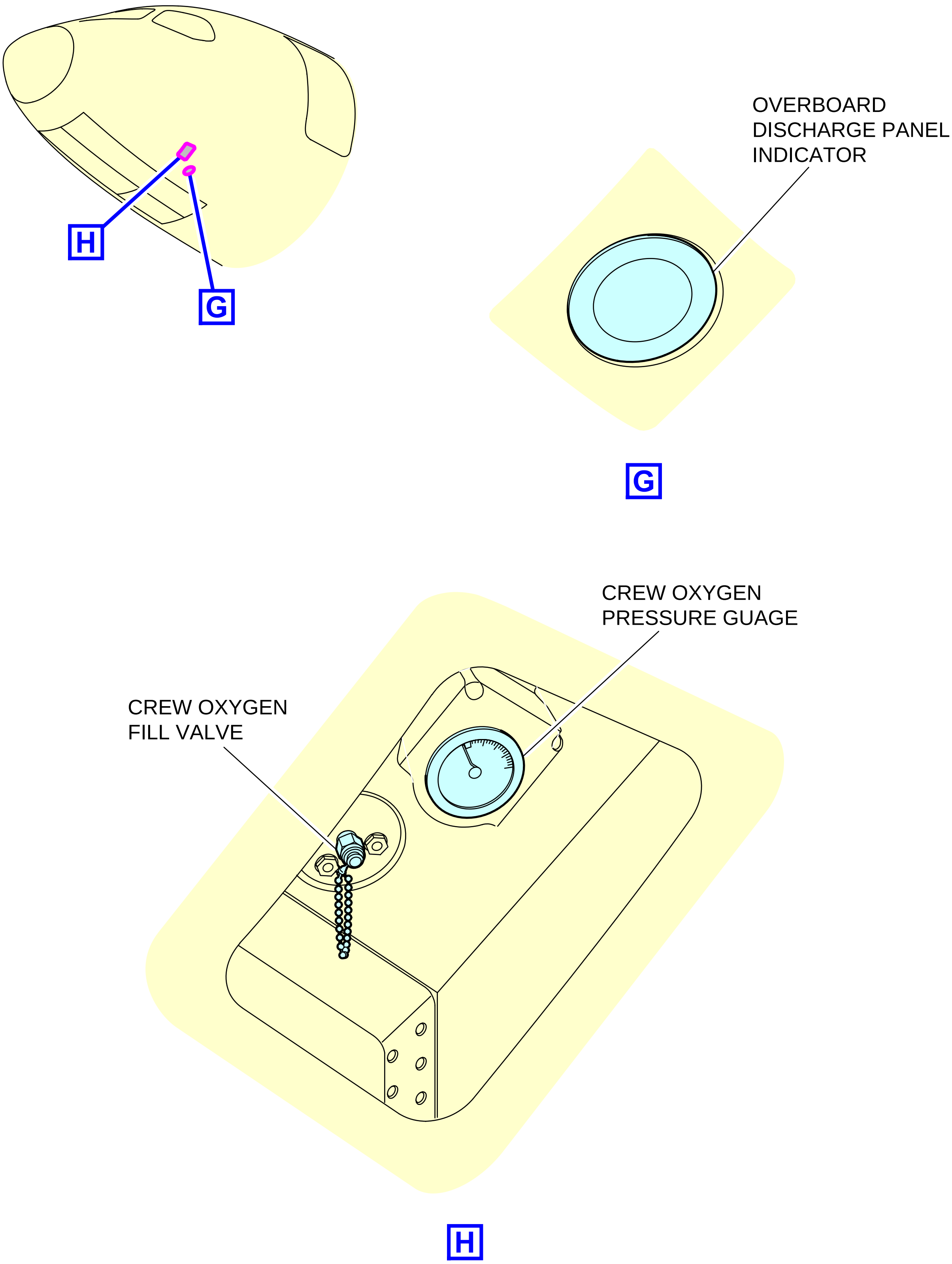
Note

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 ft^3 (2180 L)



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

Figure 11 Crew oxygen system

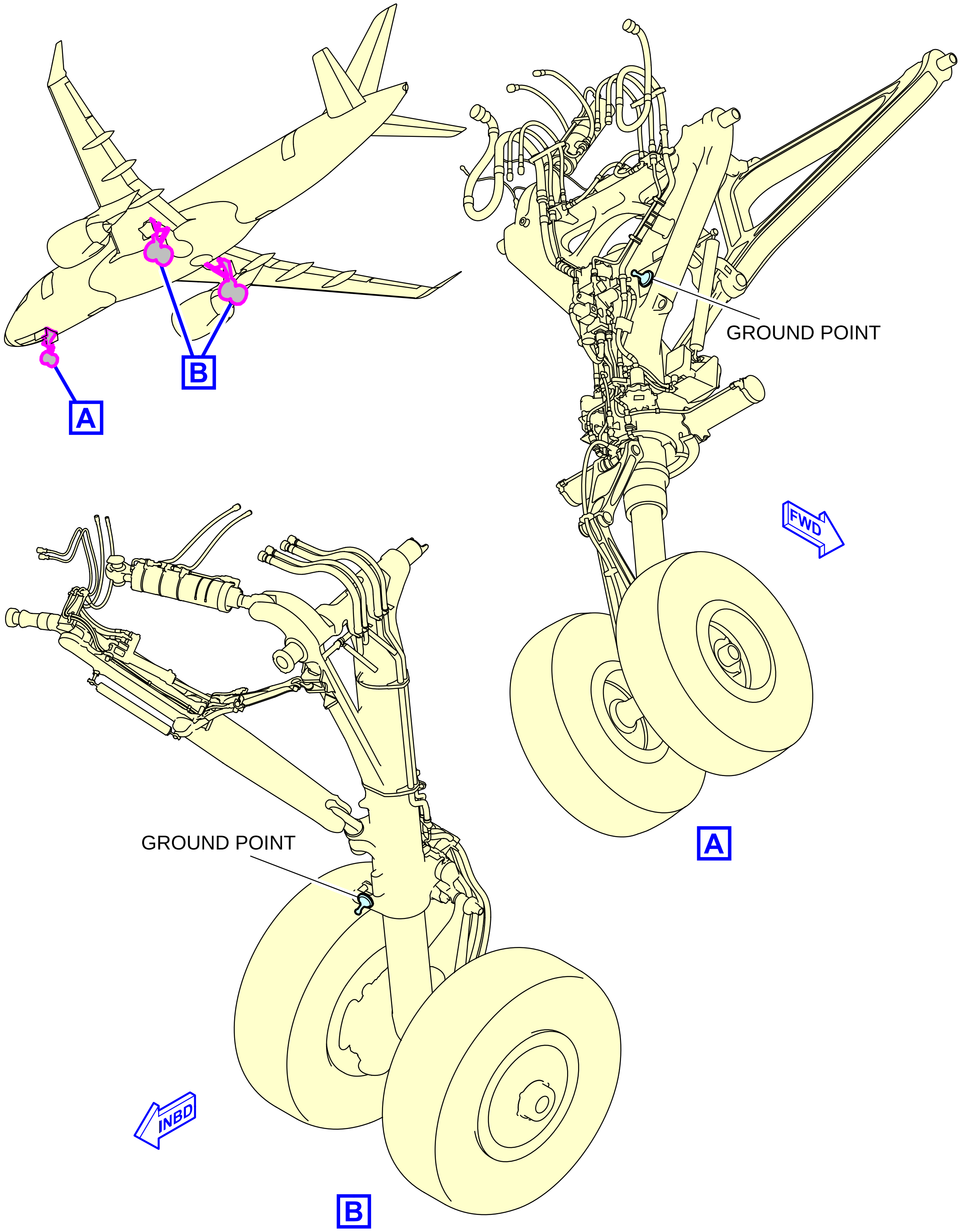
Table 9 Grounding points

Access	Aft of nose ft (m)	Position from aircraft Centerline	Mean height from ground ft (m)	
		RH side 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

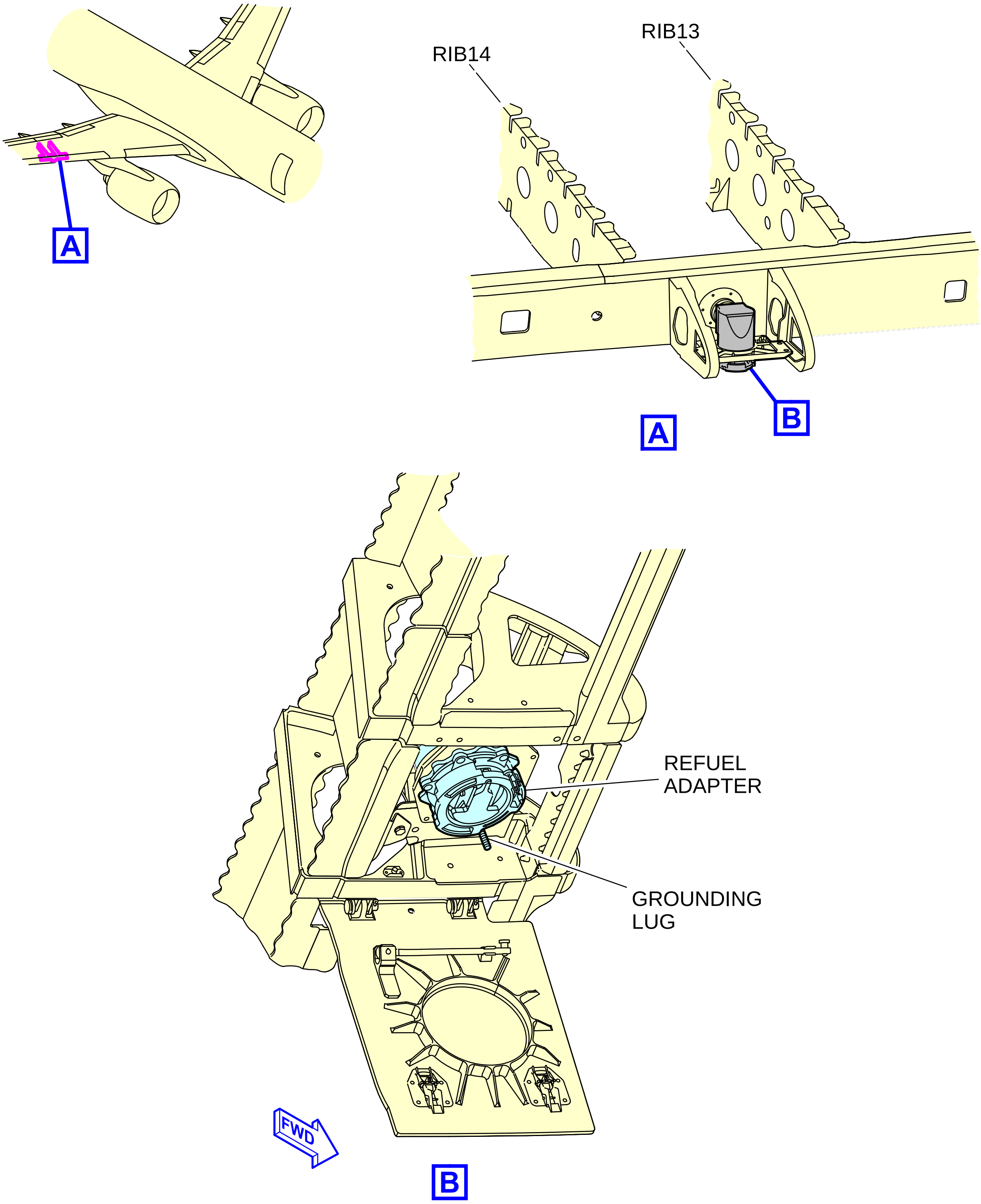
Table 10 Fuel system Refuel/Defuel adapter

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

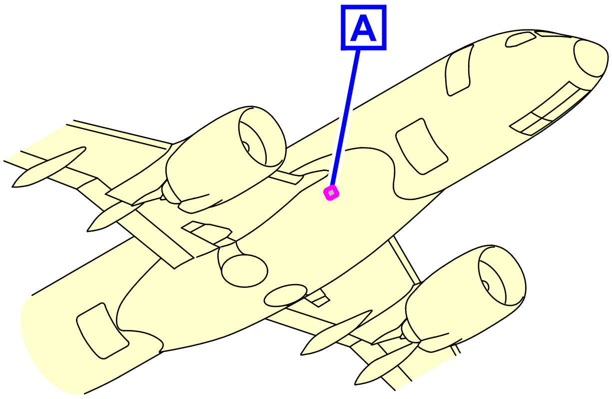
Table 11 Fuel system control panel

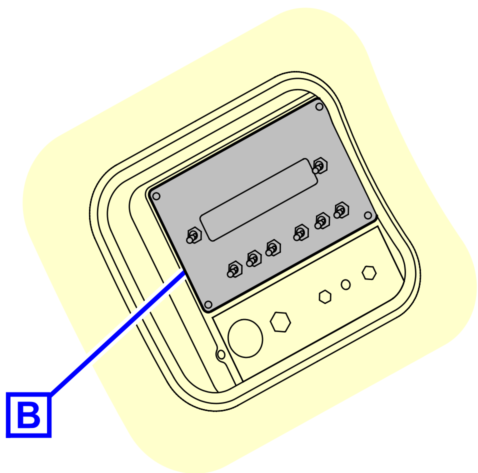
Access	Aft of nose ft (m)	Position from aircraft Centerline		Mean height from ground ft (m)
		RH side ft (m)	LH side ft (m)	
Access door 192AB	42.76 (13.03)	4.98 (1.52)	-	6.12 (1.86)

Note

All distances are approximate.

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





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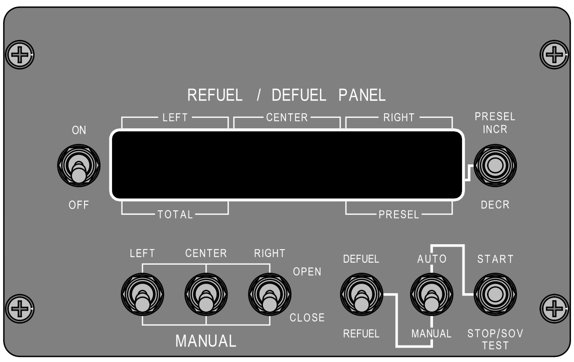


REFUEL/DEFUEL CONTROL PANEL

B

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)

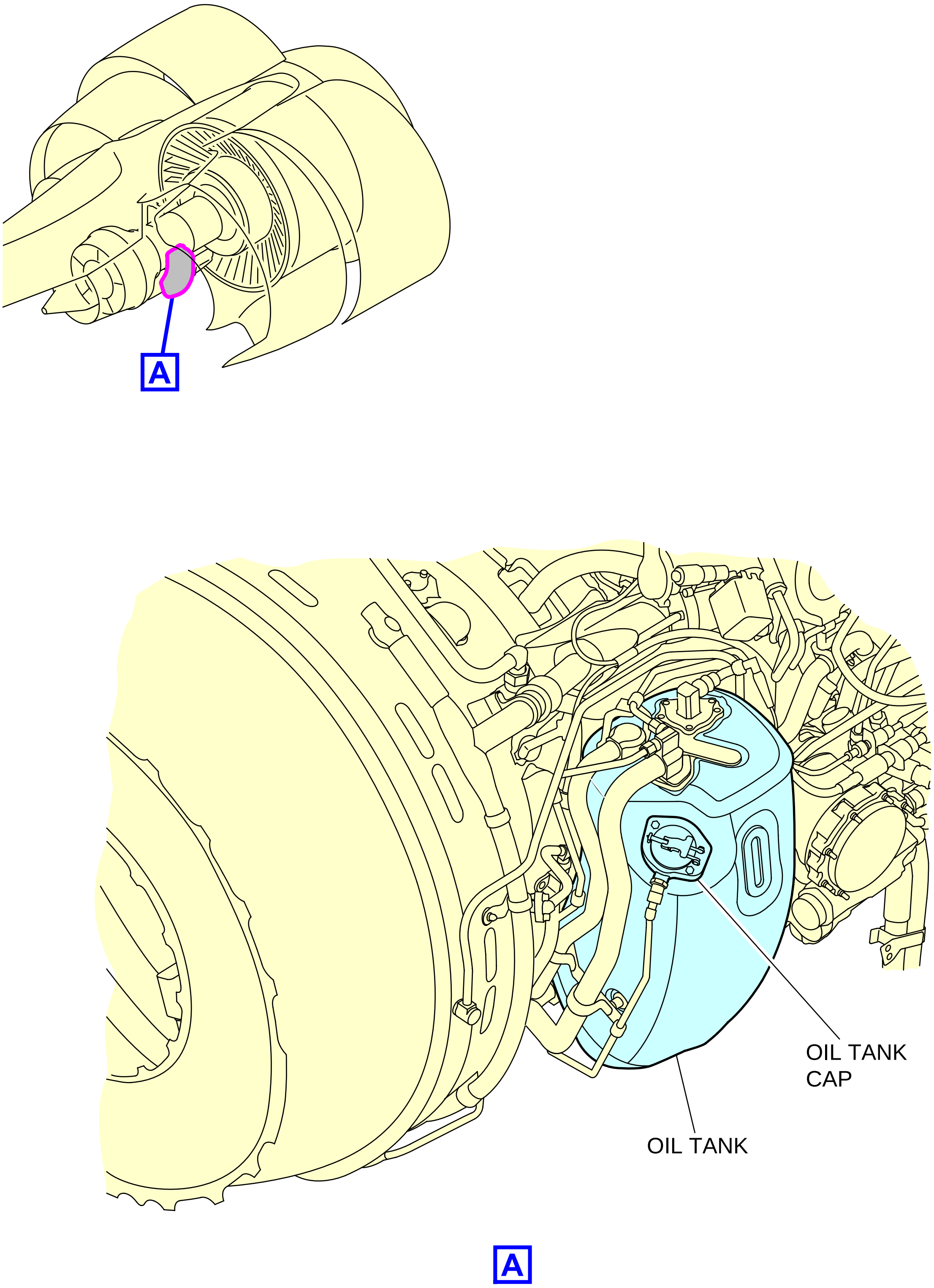
Note

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

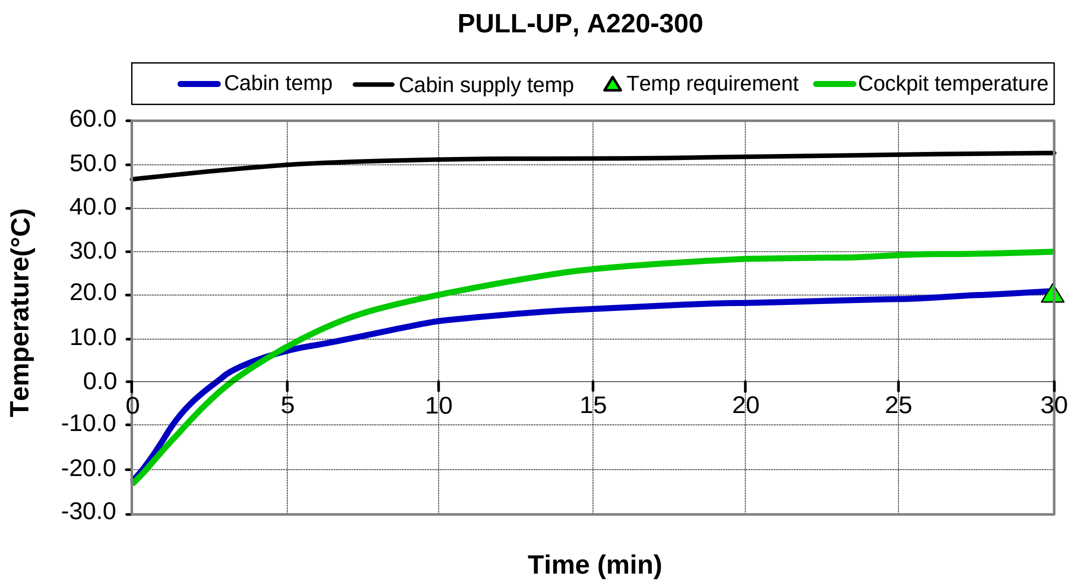
1.6.1 Heating

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)

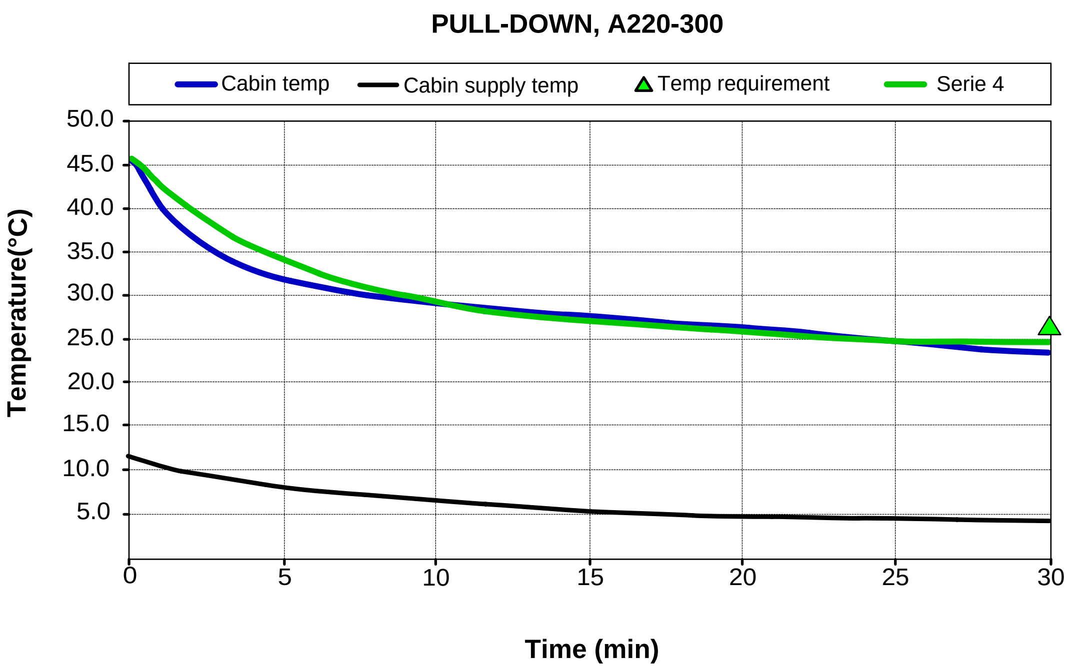
1.6.2 Cooling

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.

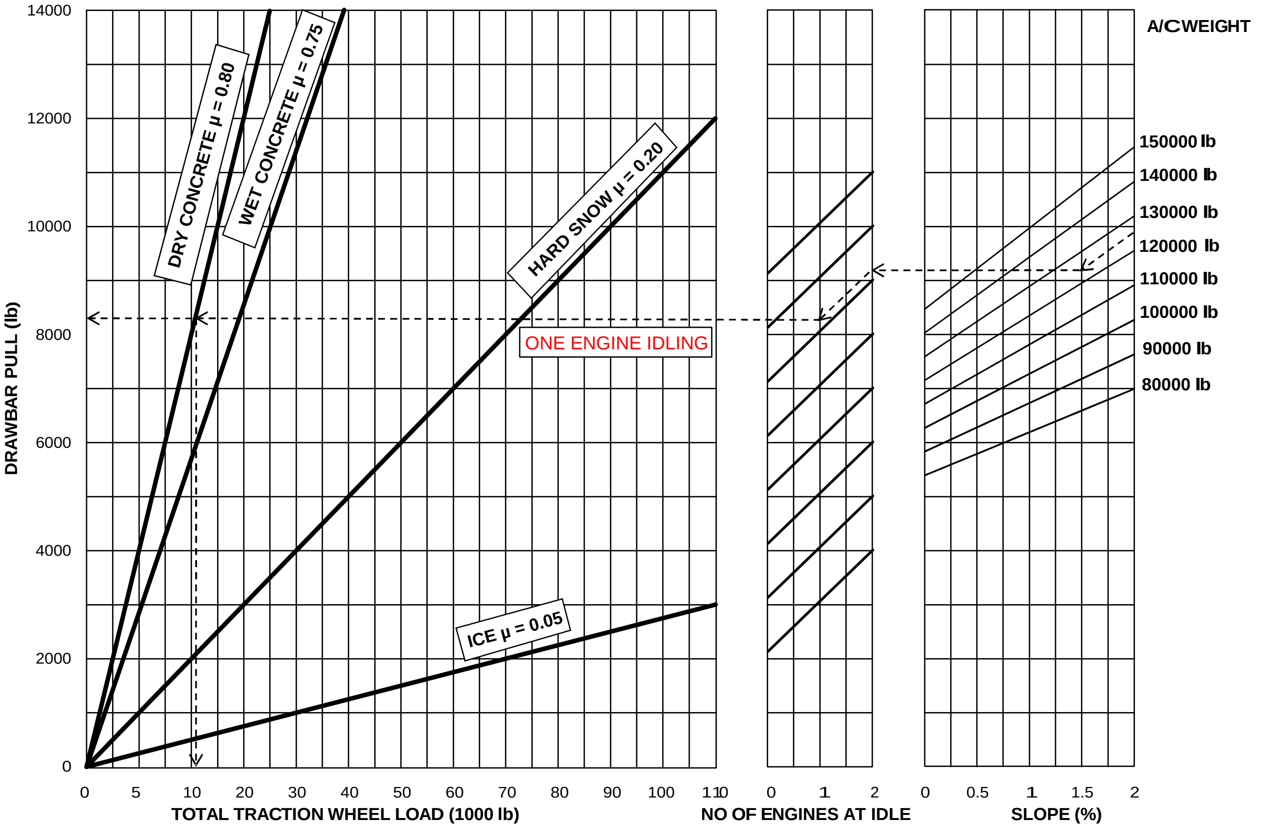
For towing and pushing operations, controls are provided to accommodate the following conditions:

- 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.

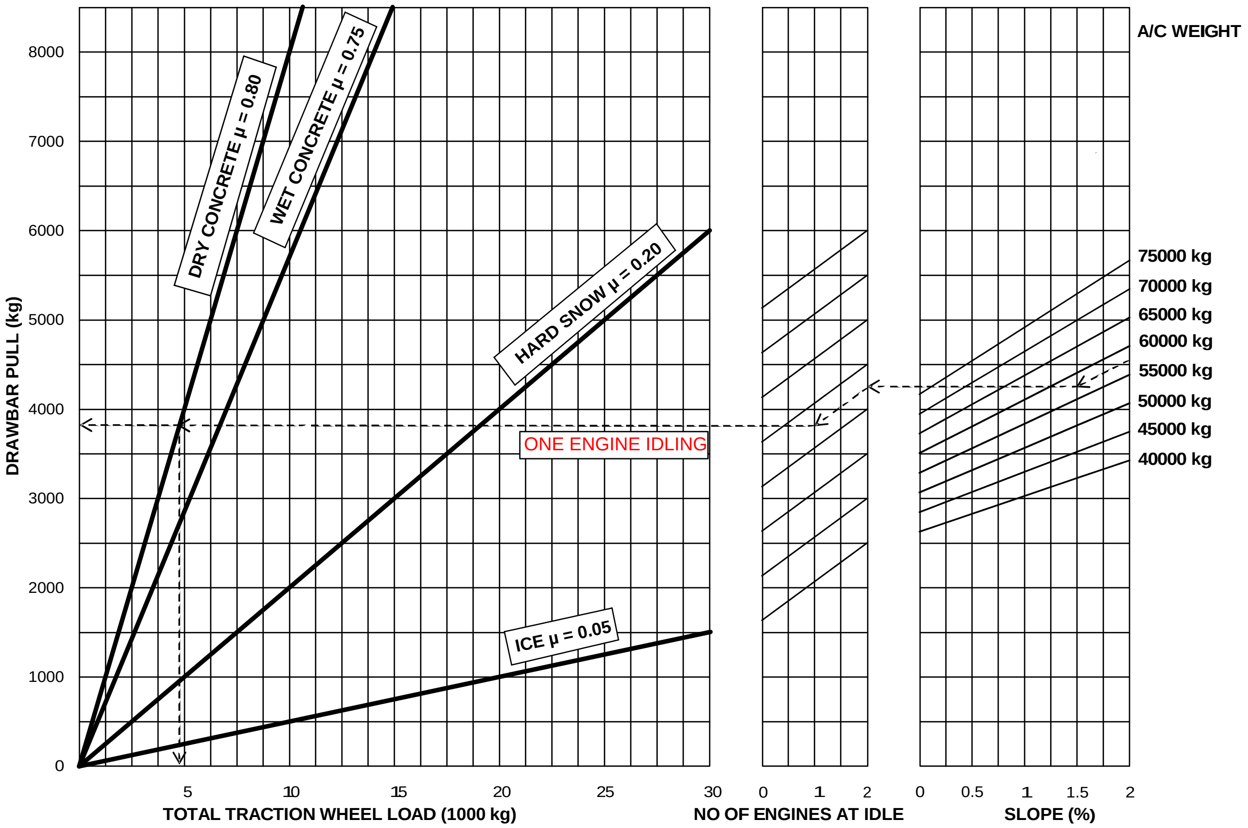


NOTES

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 80((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 80((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)

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Refueling - rate and time - Technical data

Applicability: 55001-59999

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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

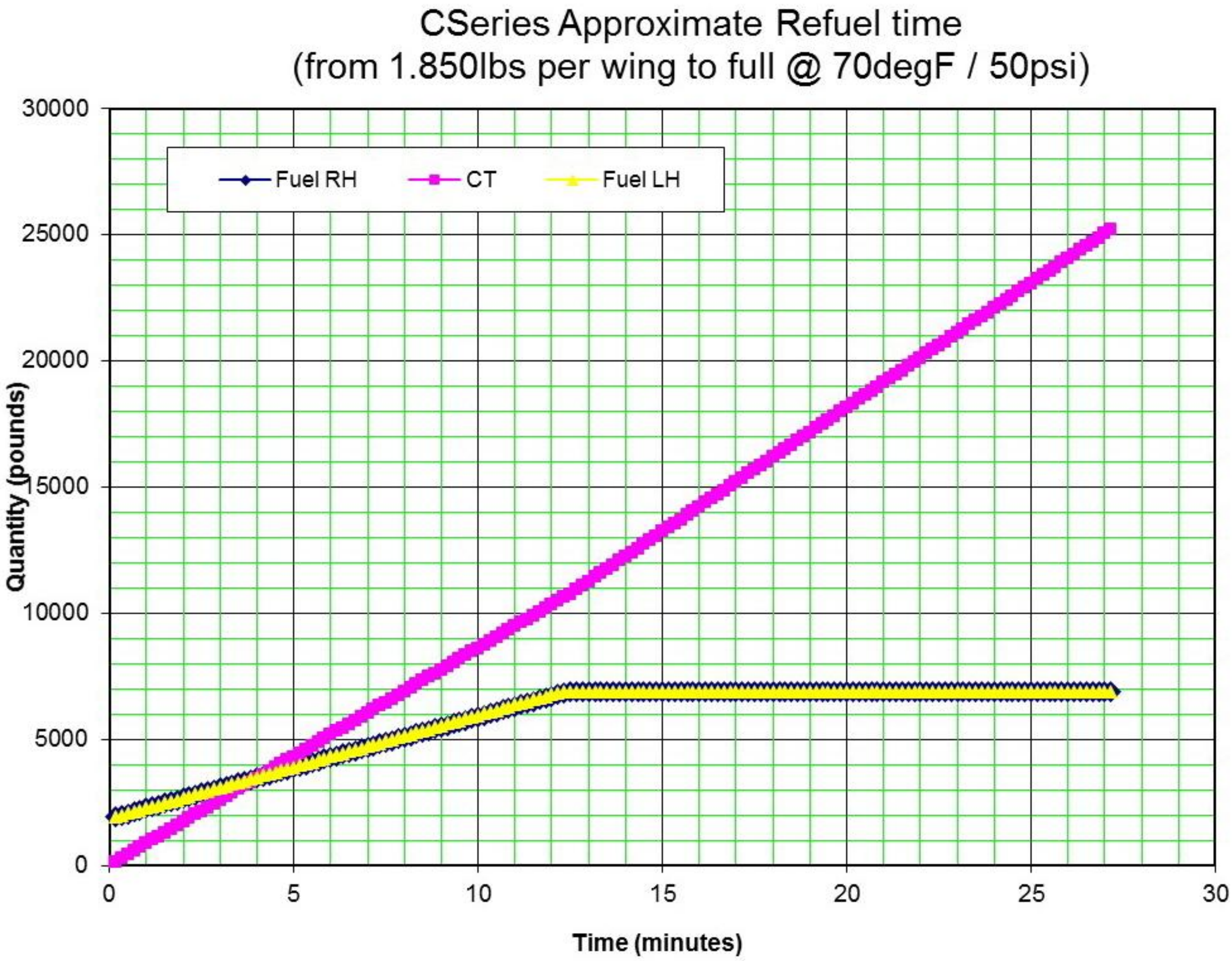
Data presented in these graphs are based on the test data collected with the mentioned conditions listed above. Varying conditions such as the hose length, the diameter, the pressure drop, the gauge location and the fuel density, not measuring the nozzle pressure during the flowing conditions and atmospheric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

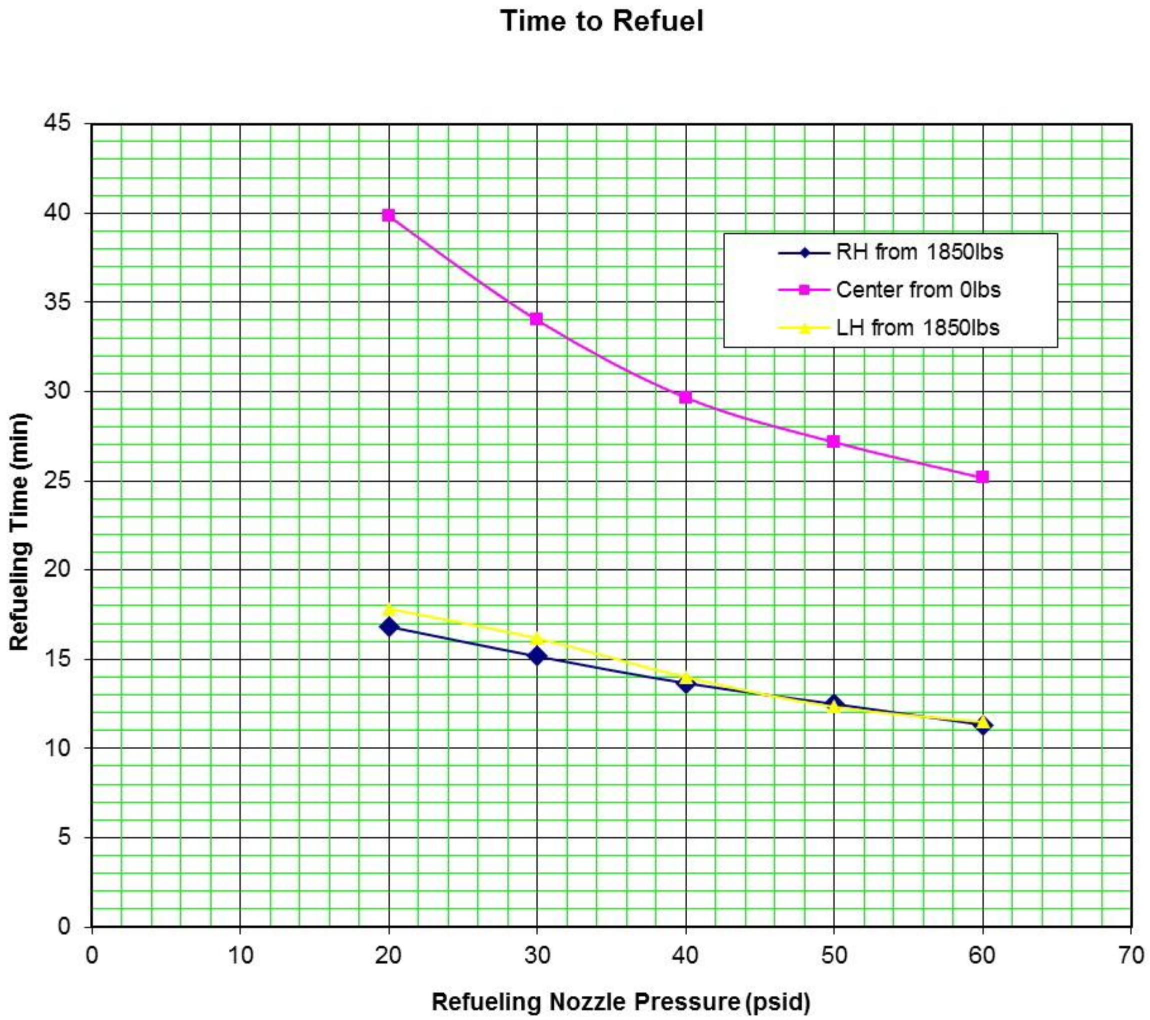


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Figure 2 1,850 lbs per wing to full - Refueling time versus refueling nozzle pressure

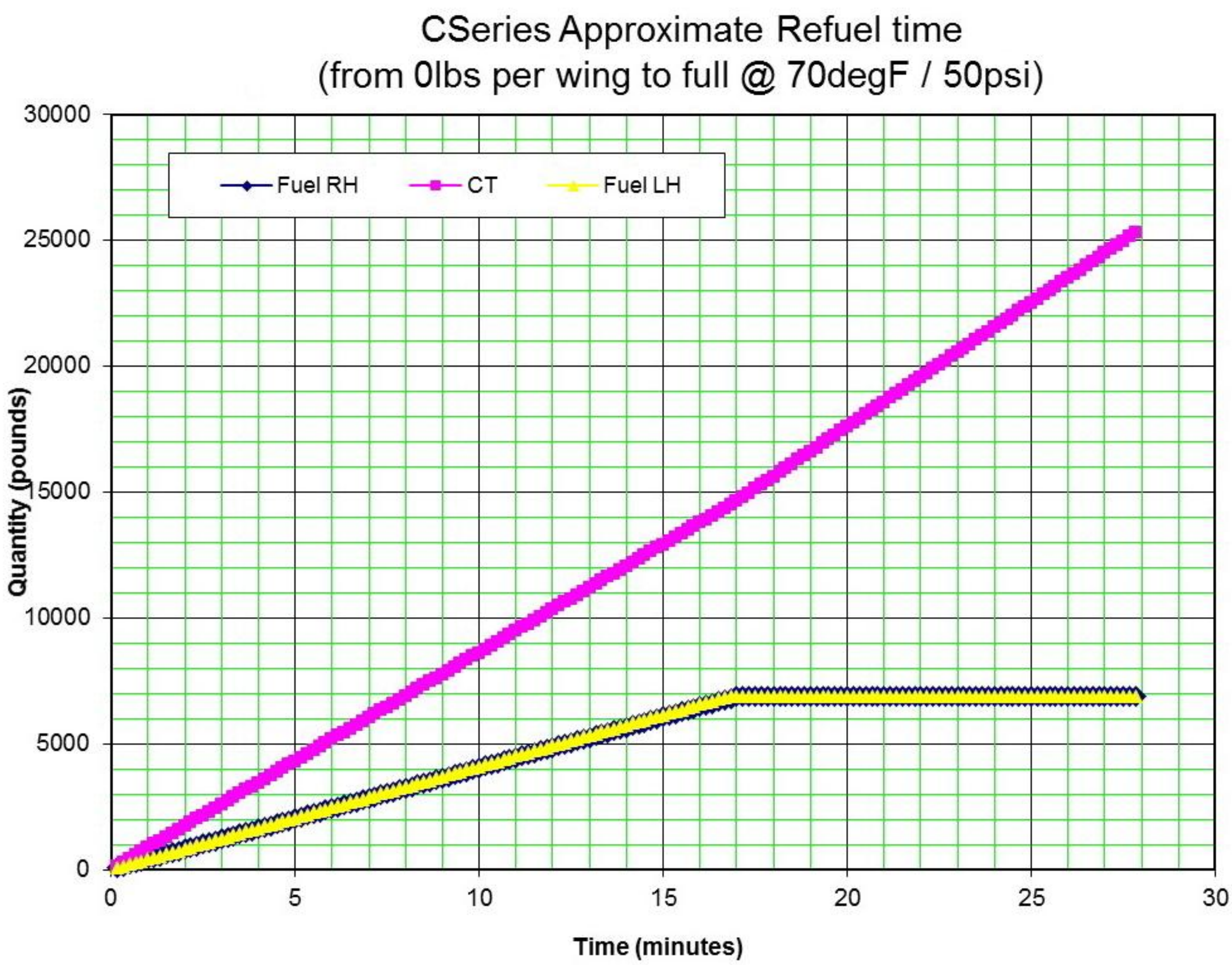

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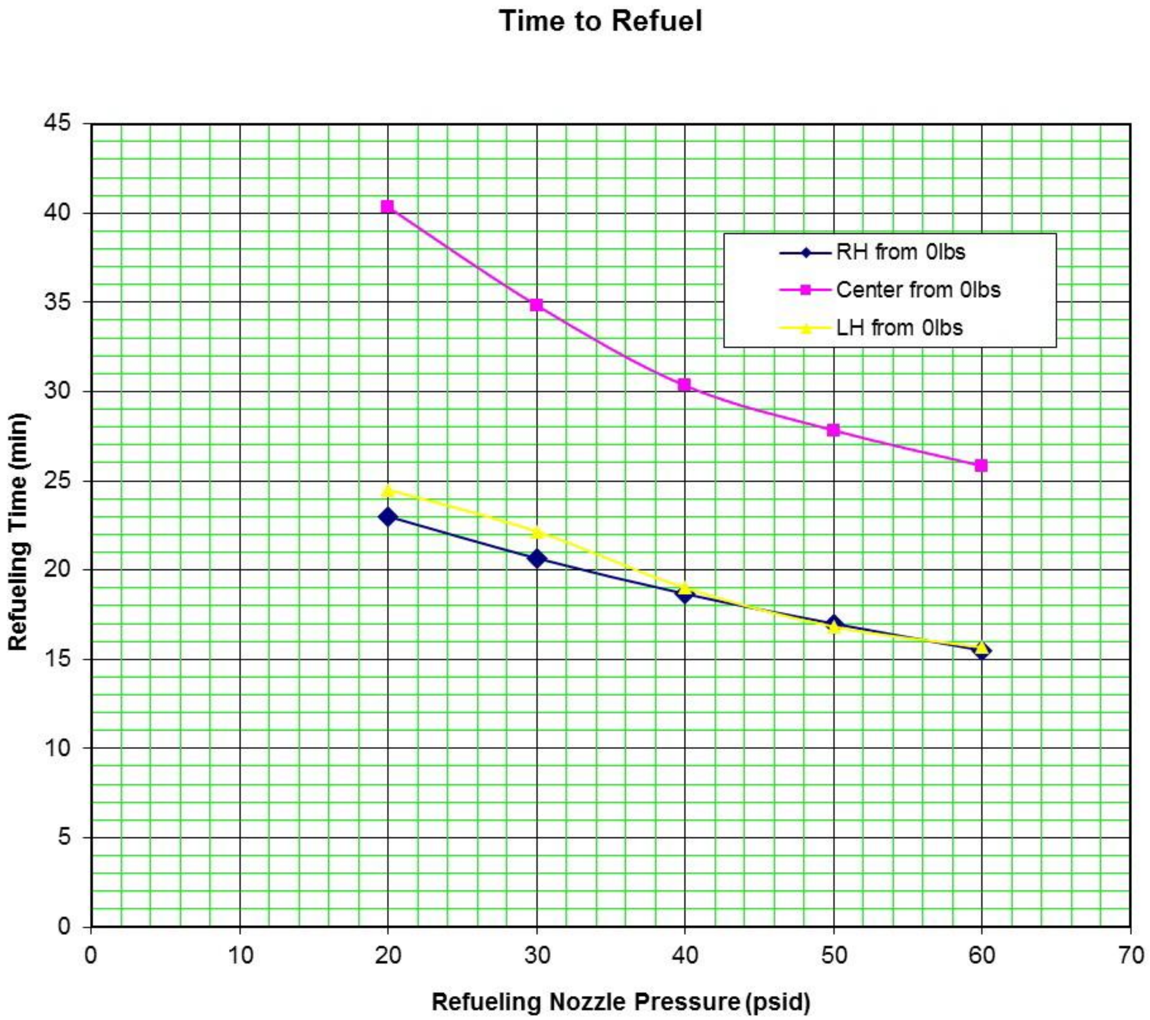
Figure 3 0 lbs per wing to full - Refueling time versus quantity



ICN-BD500-A-J121028-A-3AB48-40773-A-001-01

Figure 4 0 lbs - Refueling time versus refueling nozzle pressure

A220

Deicing/Anti-icing - Remove ice

Applicability: 50001-54999, 55001-59999

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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]

<table>
<tr><th colspan="9">These holdover times apply to newer aircraft with critical surfaces constructed predominantly or entirely of composite materials.</th></tr>
<tr><th rowspan="3">Outside air temperature [2] °C (°F)</th><th colspan="8">Approximate holdover times under various weather conditions (minutes)</th></tr>
<tr><th rowspan="2">Freezing fog or ice crystals</th><th colspan="3">Snow, snow grains or snow pellets [3]</th><th rowspan="2">Freezing drizzle [4]</th><th rowspan="2">Light freezing rain</th><th rowspan="2">Rain on cold soaked wing [5]</th><th rowspan="2">Other [6]</th></tr>
<tr><th>Very light [7]</th><th>Light [7]</th><th>Moderate</th></tr>
<tr><td>-3 (27) and above</td><td>9 - 16</td><td>12</td><td>6 - 12</td><td>3 - 6</td><td>8 - 13</td><td>4 - 6</td><td>1 - 5</td><td rowspan="4">CAUTION:
No holdover time guidelines exist</td></tr>
<tr><td>below -3 (27) to -6 (21)</td><td>6 - 8</td><td>11</td><td>5 - 11</td><td>2 - 5</td><td>5 - 9</td><td>4 - 6</td><td rowspan="3"></td></tr>
<tr><td>below -6 (21) to -10 (14)</td><td>4 - 8</td><td>9</td><td>5 - 9</td><td>2 - 5</td><td>4 - 7</td><td>2 - 5</td></tr>
<tr><td>below -10 (14)</td><td>4 - 7</td><td>7</td><td>4 - 7</td><td>2 - 4</td><td></td><td></td></tr>
</table>

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

<table>
<tr><th colspan="4">Guidelines for the application of SAE Type I fluid mixtures at minimum concentrations for the prevailing outside air temperature (OAT)</th></tr>
<tr><th rowspan="2">OAT [1]
°C (°F)</th><th rowspan="2">One-step procedure deicing/anti-icing</th><th colspan="2">Two-step procedure</th></tr>
<tr><th>First step: Deicing</th><th>Second step: Anti-icing [2]</th></tr>
<tr><td>-3 (27) and above</td><td rowspan="2">Heated mix of fluid and water with a freezing point of at least 10°C (18°F) below OAT</td><td>Heated water or heated mix of fluid and water</td><td rowspan="2">Heated mix of fluid and water with a freezing point of at least 10°C (18°F) below OAT</td></tr>
<tr><td>below -3 (27)</td><td>Freezing point of heated fluid mixture shall not be more than 3°C (5°F) above OAT</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td colspan="4">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.)</td></tr>
</table>

Table 11 SAE TYPE II, TYPE III and TYPE IV - Deicing / anti-icing fluid application procedures

<table>
<tr><th colspan="4">Guidelines for the application of SAE Type II, III and IV fluid mixtures at minimum concentrations for the prevailing outside air temperature (OAT)</th></tr>
<tr><th rowspan="2">OAT [1]
°C (°F)</th><th rowspan="2">One-step procedure deicing/anti-icing</th><th colspan="2">Two-step procedure</th></tr>
<tr><th>First step: Deicing</th><th>Second step: Anti-icing [2]</th></tr>
<tr><td>-3 (27) and above</td><td>50/50
Heated[3] Type II/III/IV</td><td>Heated water or heated mix of Type I, II, III or IV with water</td><td>50/50
Type II/III/IV</td></tr>
<tr><td>-14 (7) and above</td><td>75/25
Heated[3] Type II/III/IV</td><td>Heated suitable mix of Type I, Type II/III/IV and water with FP not more than 3°C (5°F) above actual OAT.</td><td>75/25
Type II/III/IV</td></tr>
<tr><td>-25 (13) and above</td><td>100/0
Heated[3] Type II/III/IV</td><td>Heated suitable mix of Type I, Type II/III/IV and water with FP not more than 3°C (5°F) above actual OAT.</td><td>100/0
Type II/III/IV</td></tr>
<tr><td>below -25 (13)</td><td colspan="3">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.</td></tr>
</table>

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	**CAUTION:** No holdover time guidelines exist	
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]		
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 only[1]

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.

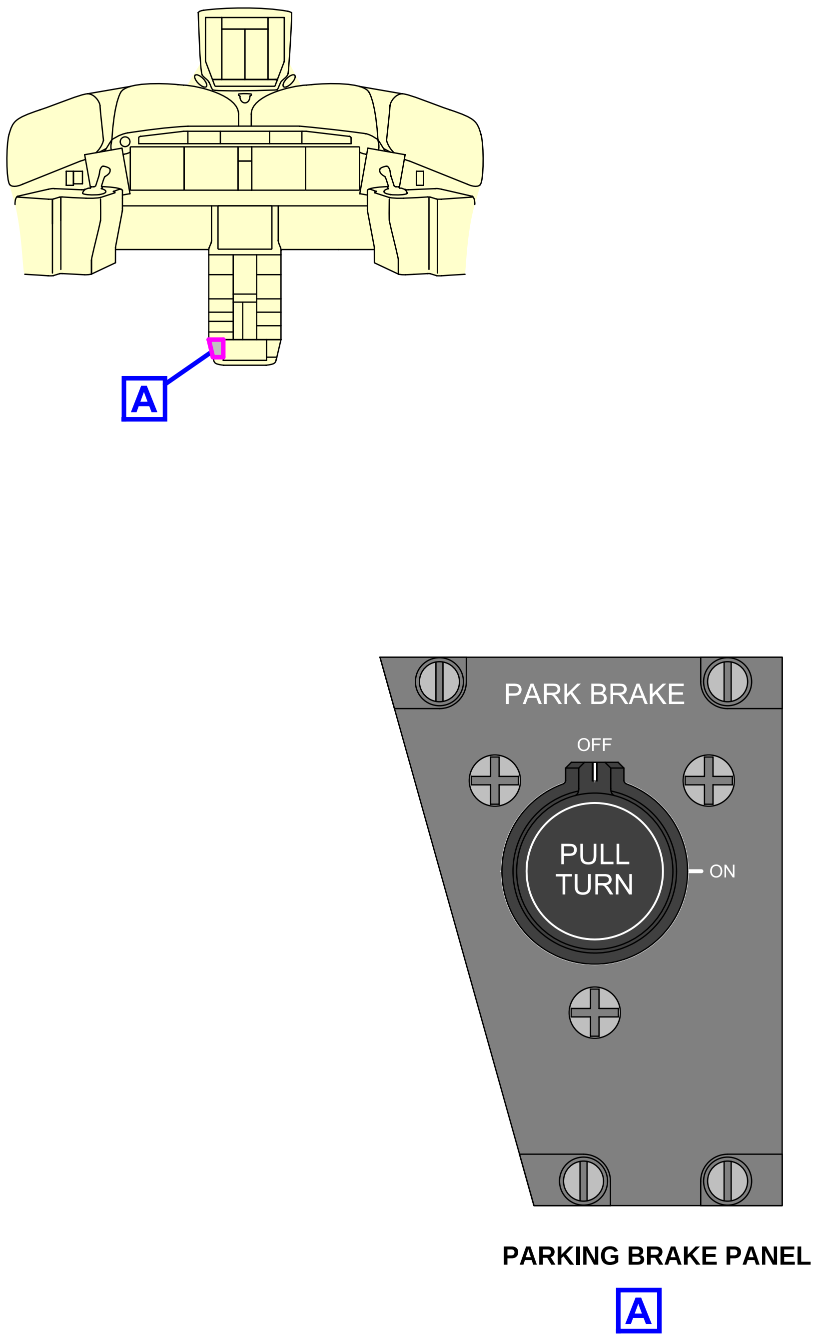

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Figure 1 Park break panel

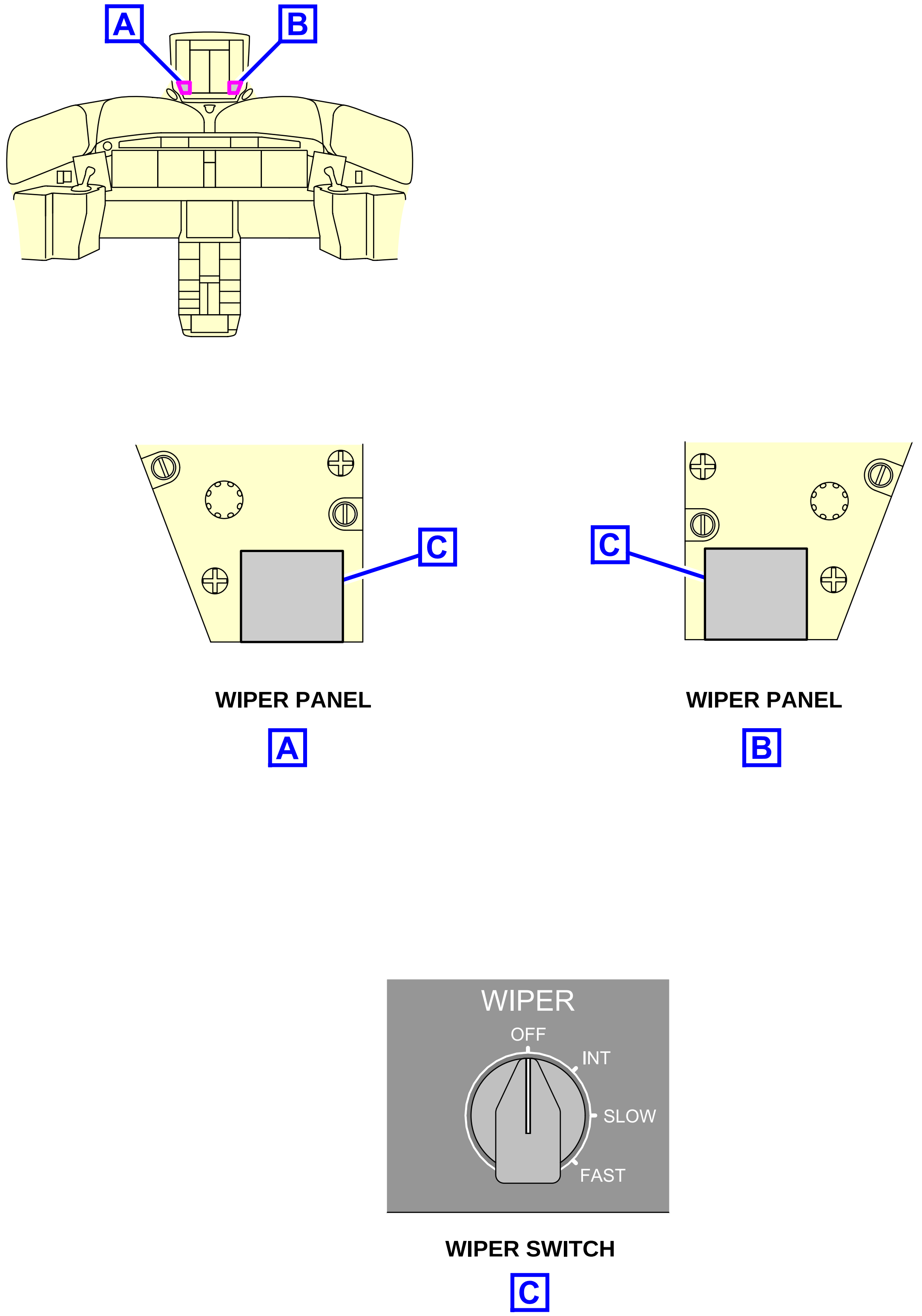

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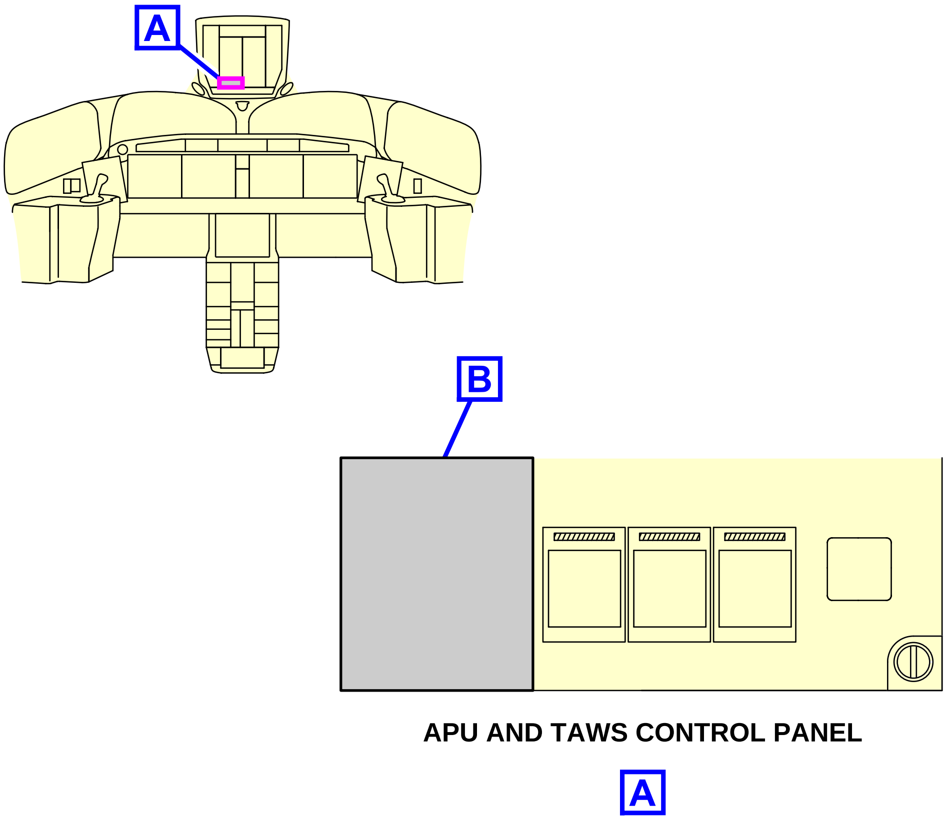
Figure 2 Wiper control switch



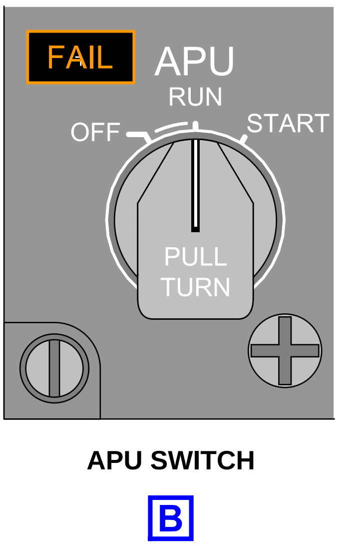


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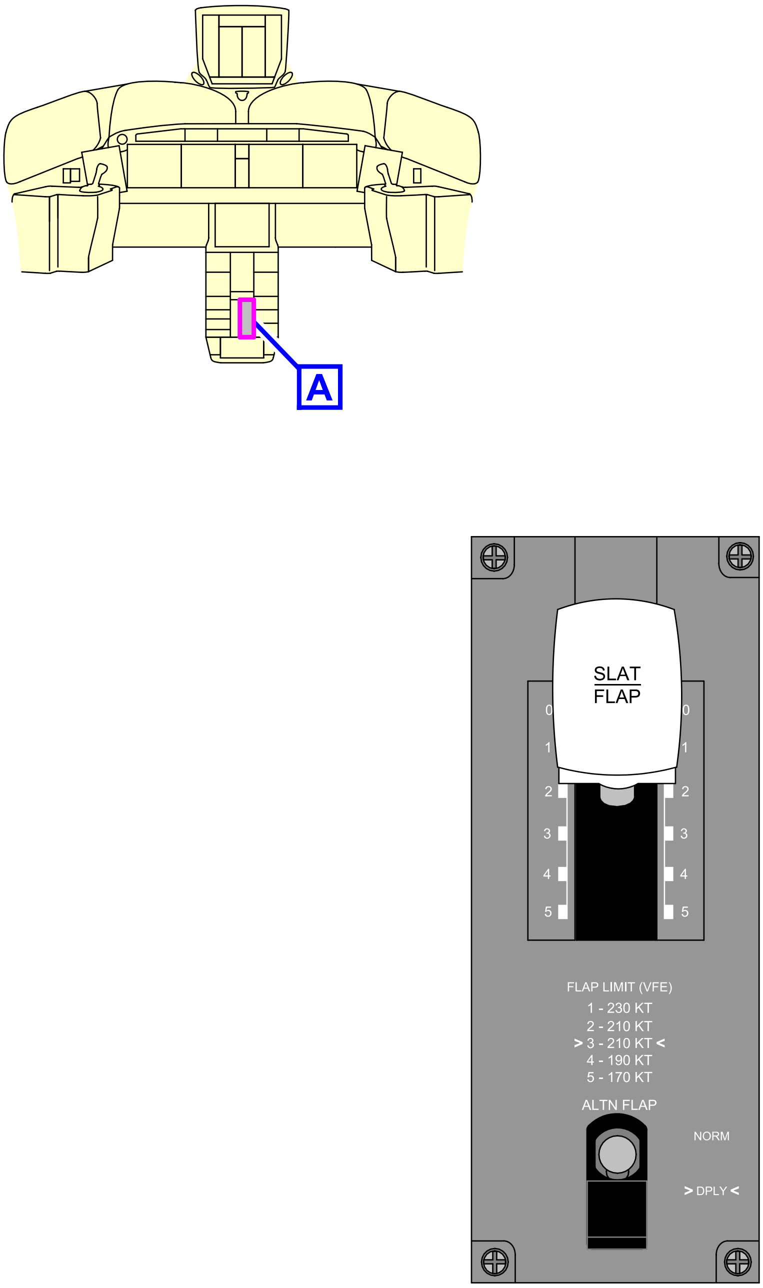
Figure 3 APU control panel



SLAT/FLAP CONTROL PANEL

A

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Figure 4 Slats/flaps panel

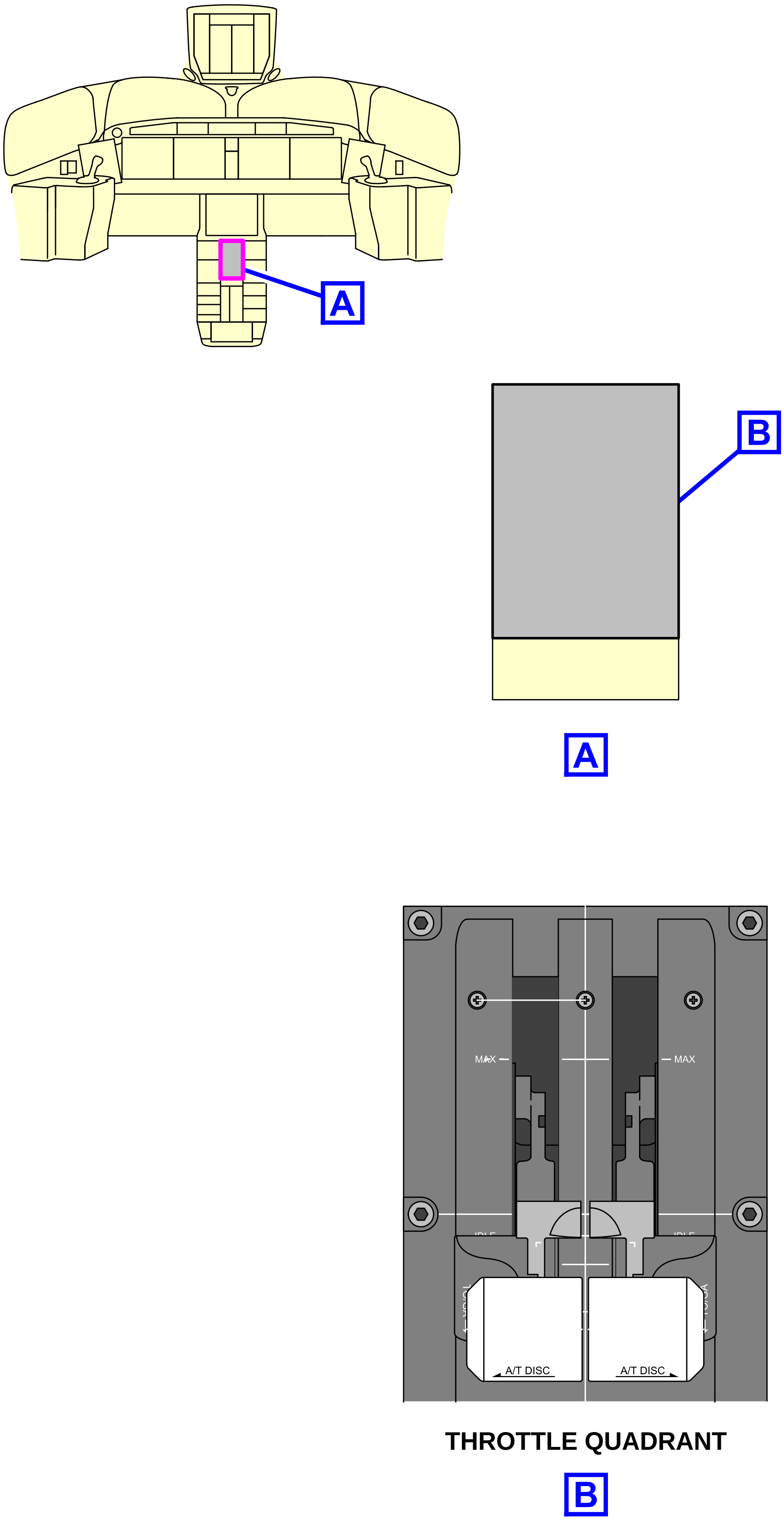

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Figure 5 Throttle control system

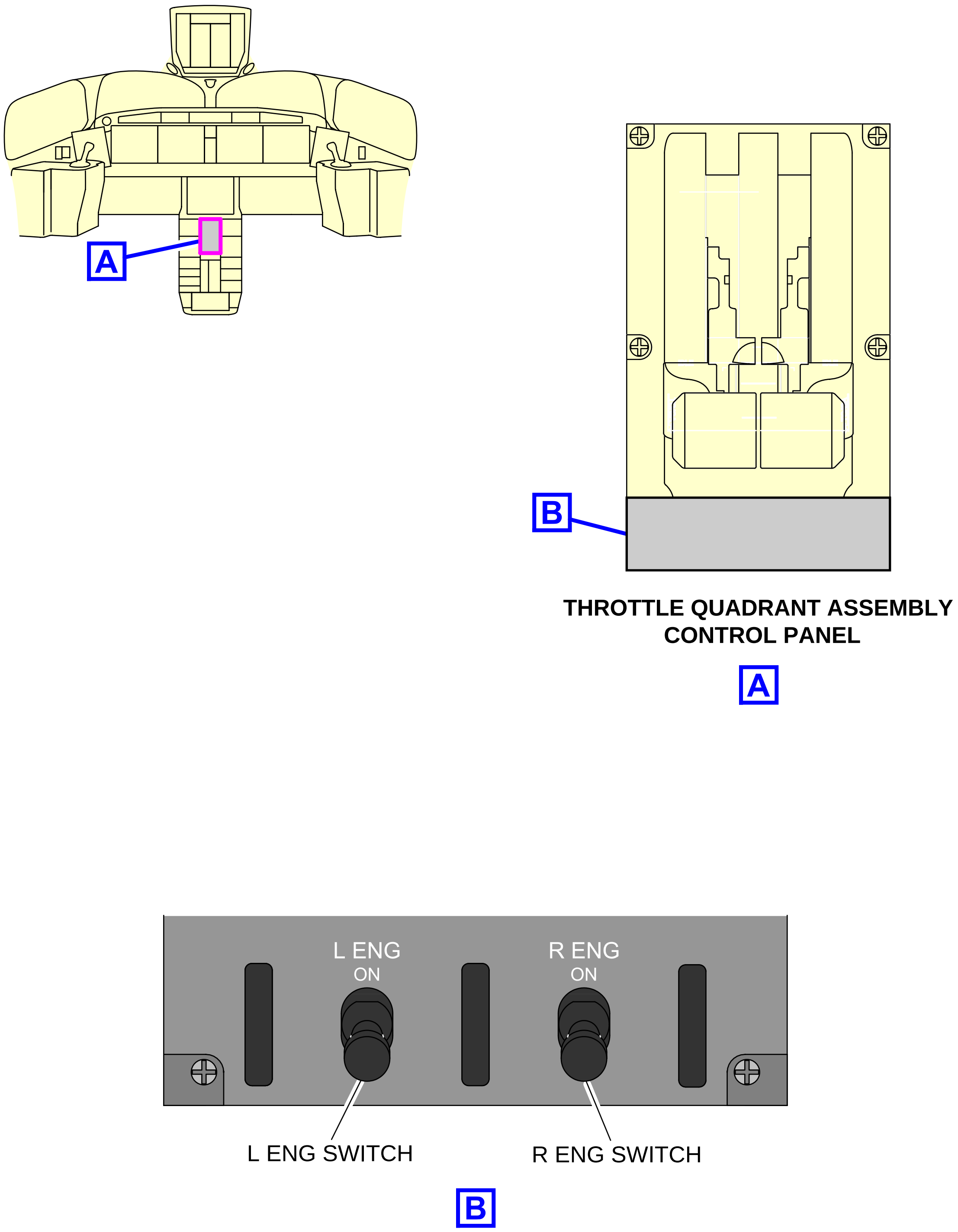

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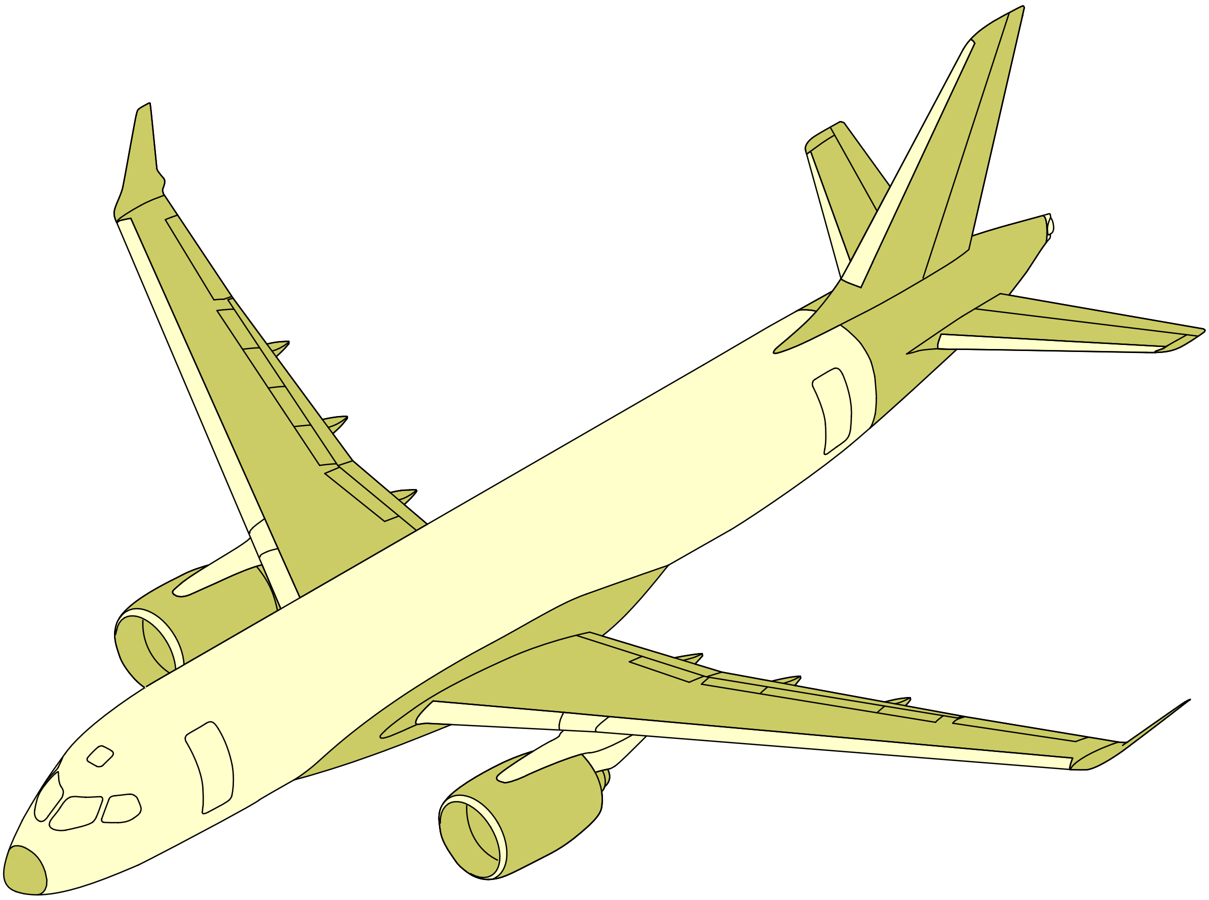
Figure 6 Ignition system



LEGEND

Composite.

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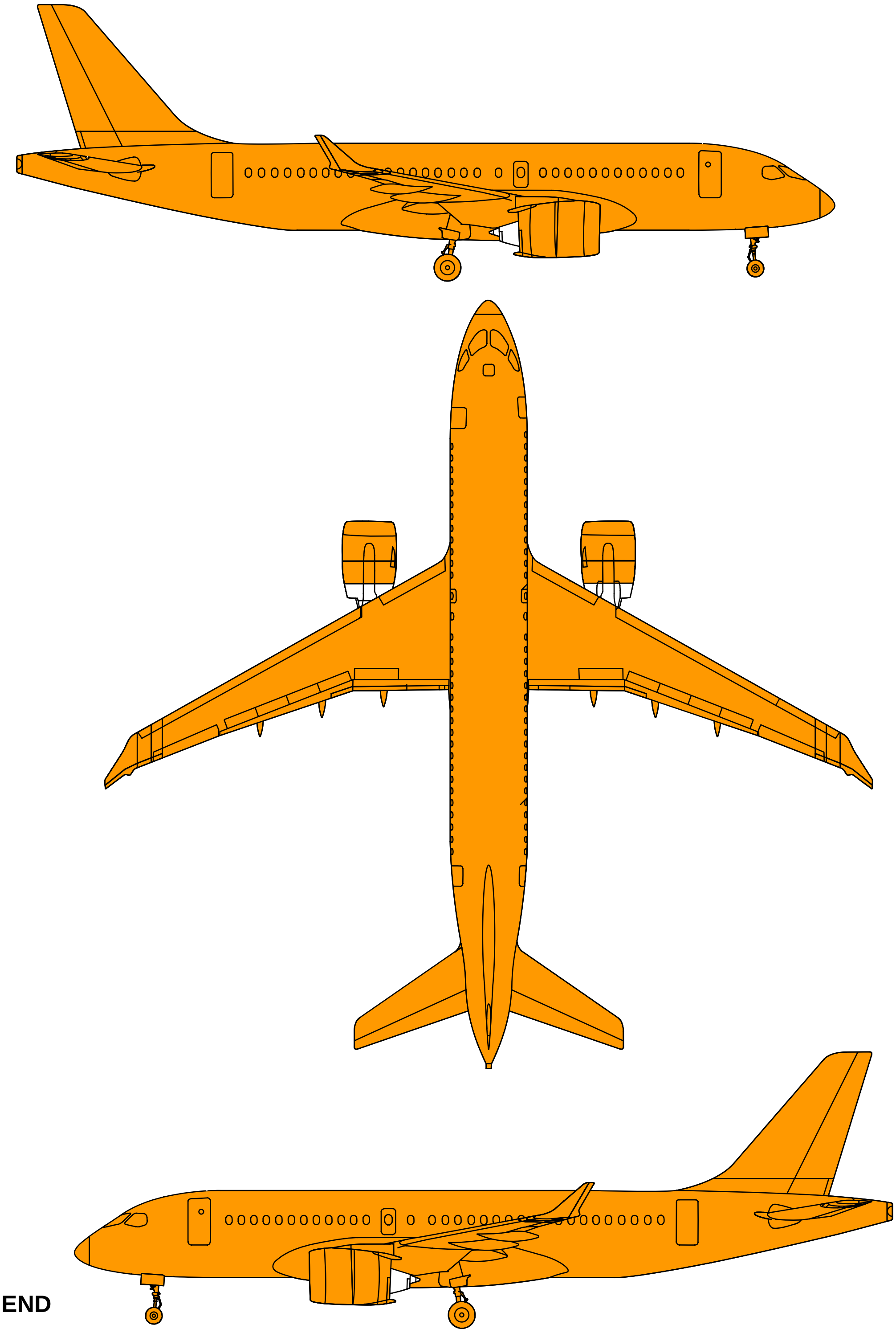
Figure 7 Composite materials



LEGEND

Deicing Fluid Application Areas.

Deicing Fluid Non-Application Areas.

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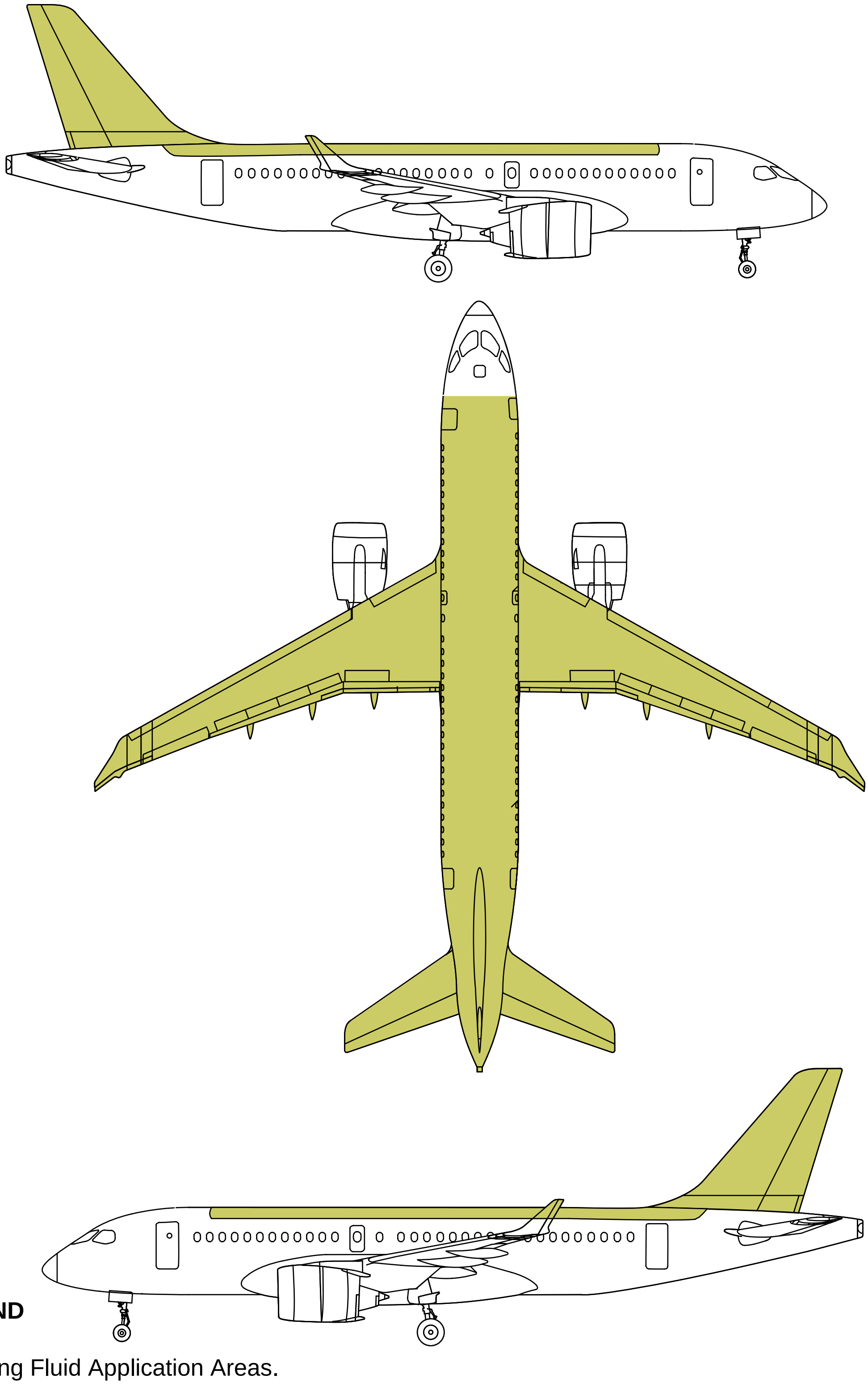
Figure 8 Deicing/Anti- icing fluids application and non-application areas - (Sheet 1 of 2)



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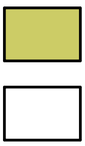

Anti-icing Fluid Application Areas.

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)

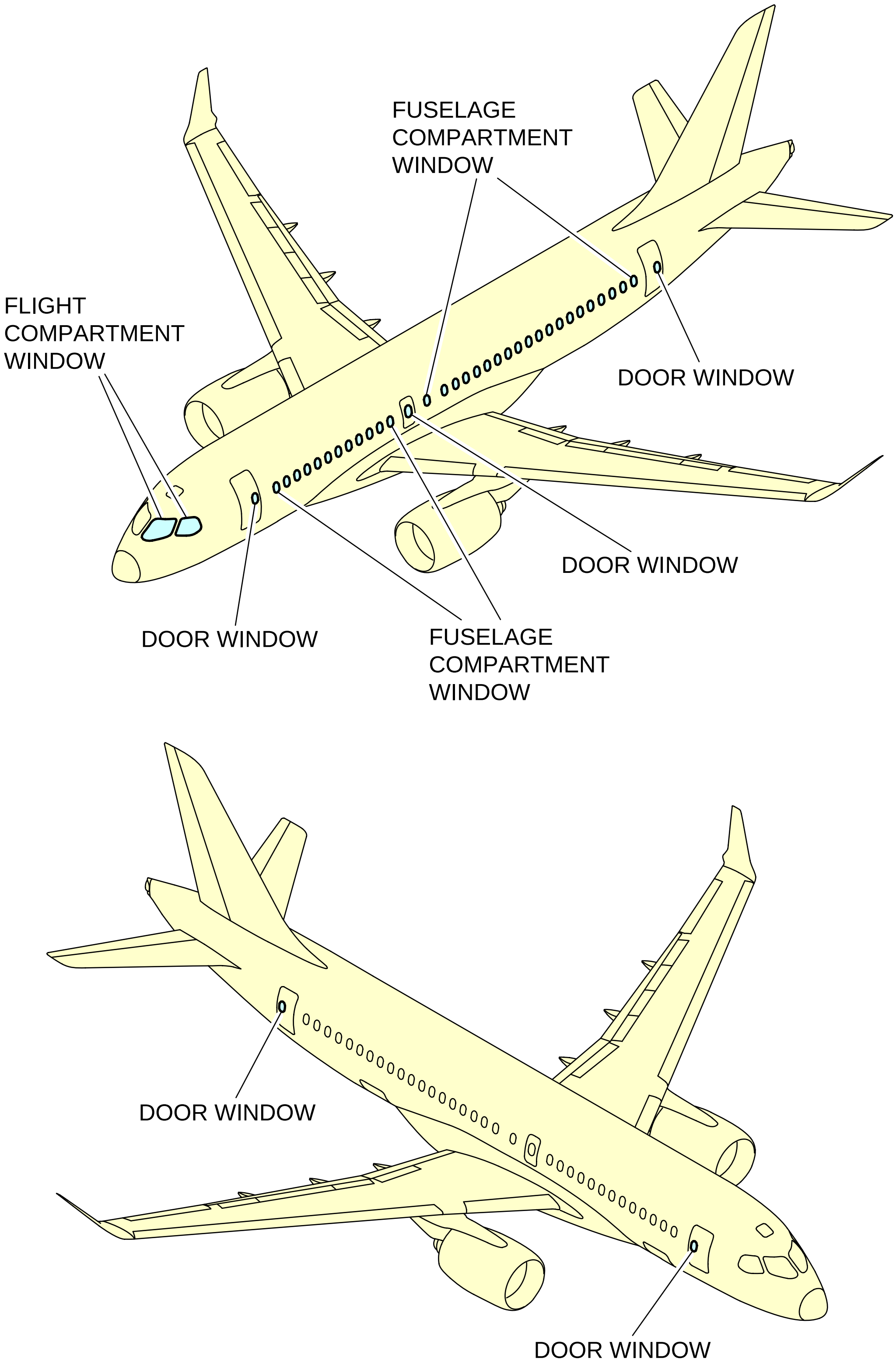

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Figure 9 Deicing fluids non-application areas

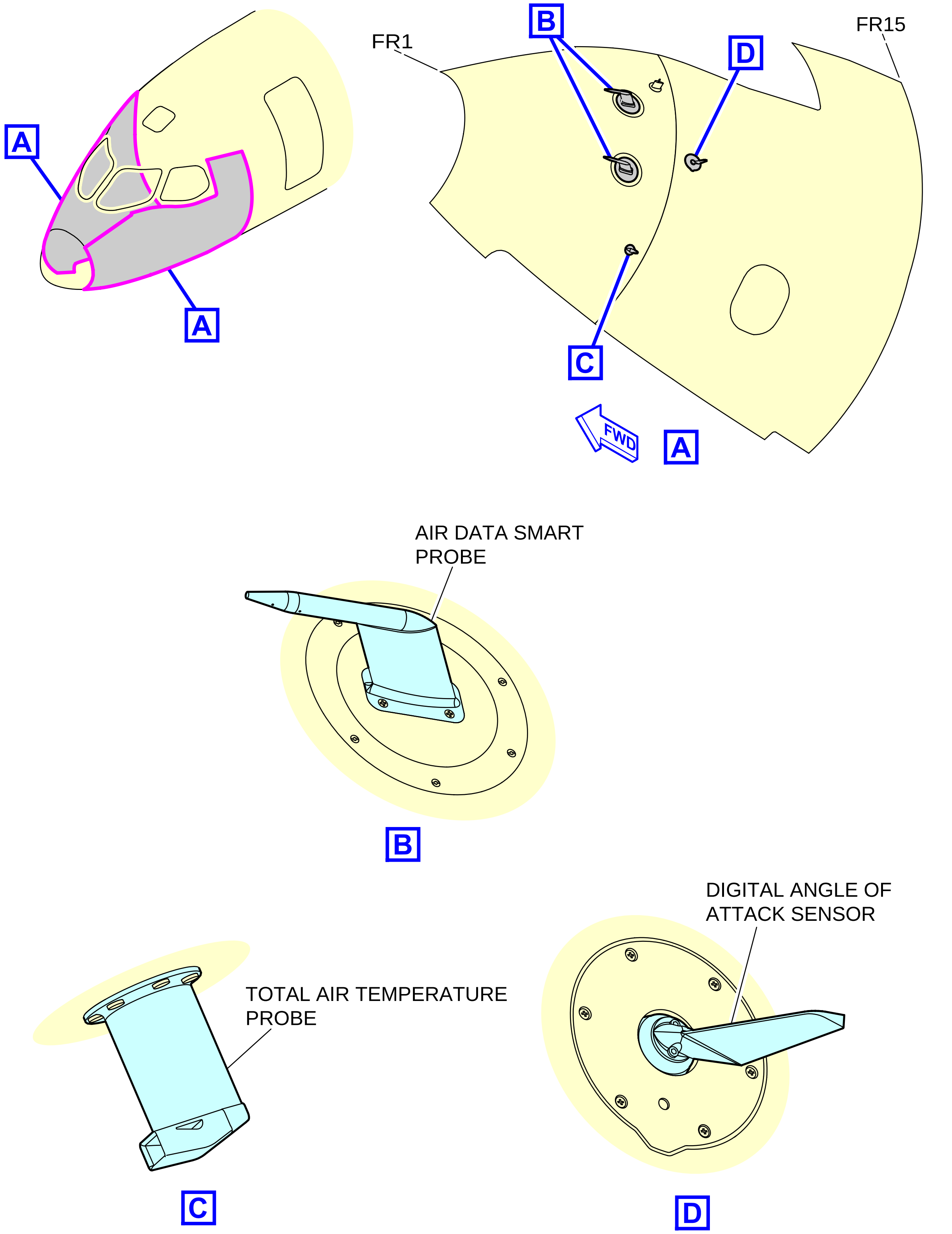

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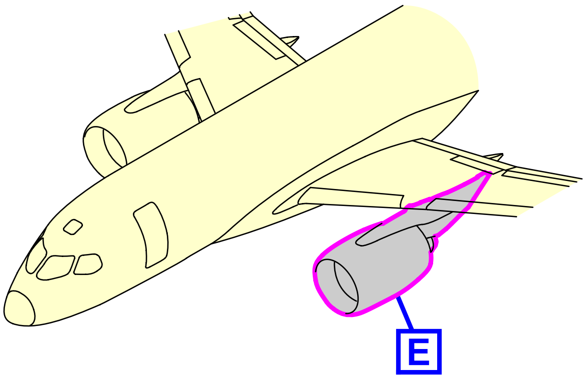
Figure 10 Deicing fluids non-application areas - (Sheet 1 of 7)



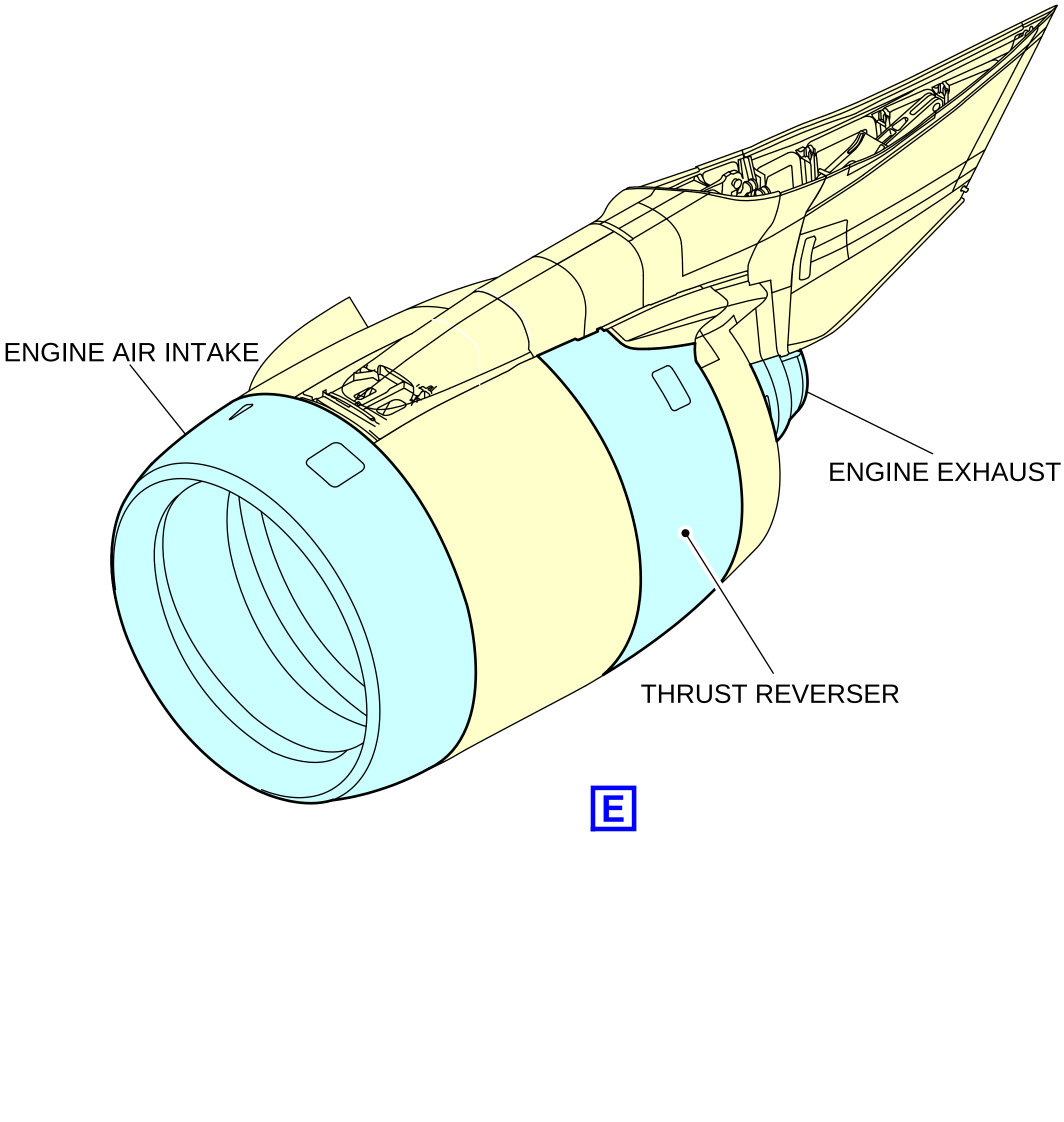


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Figure 10 Deicing fluids non-application areas - (Sheet 2 of 7)

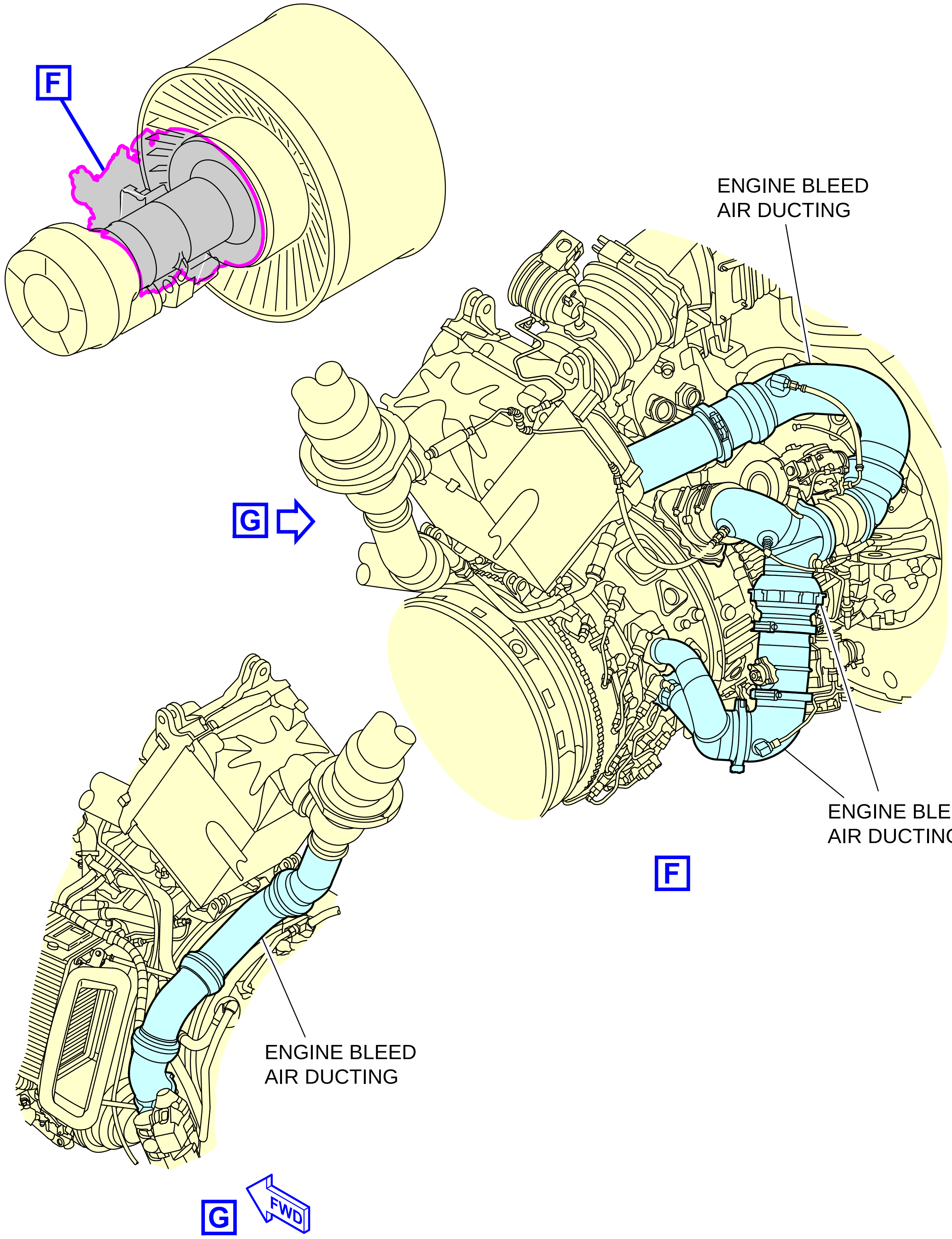

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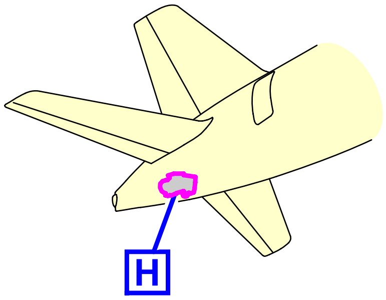
Figure 10 Deicing fluids non-application areas - (Sheet 3 of 7)



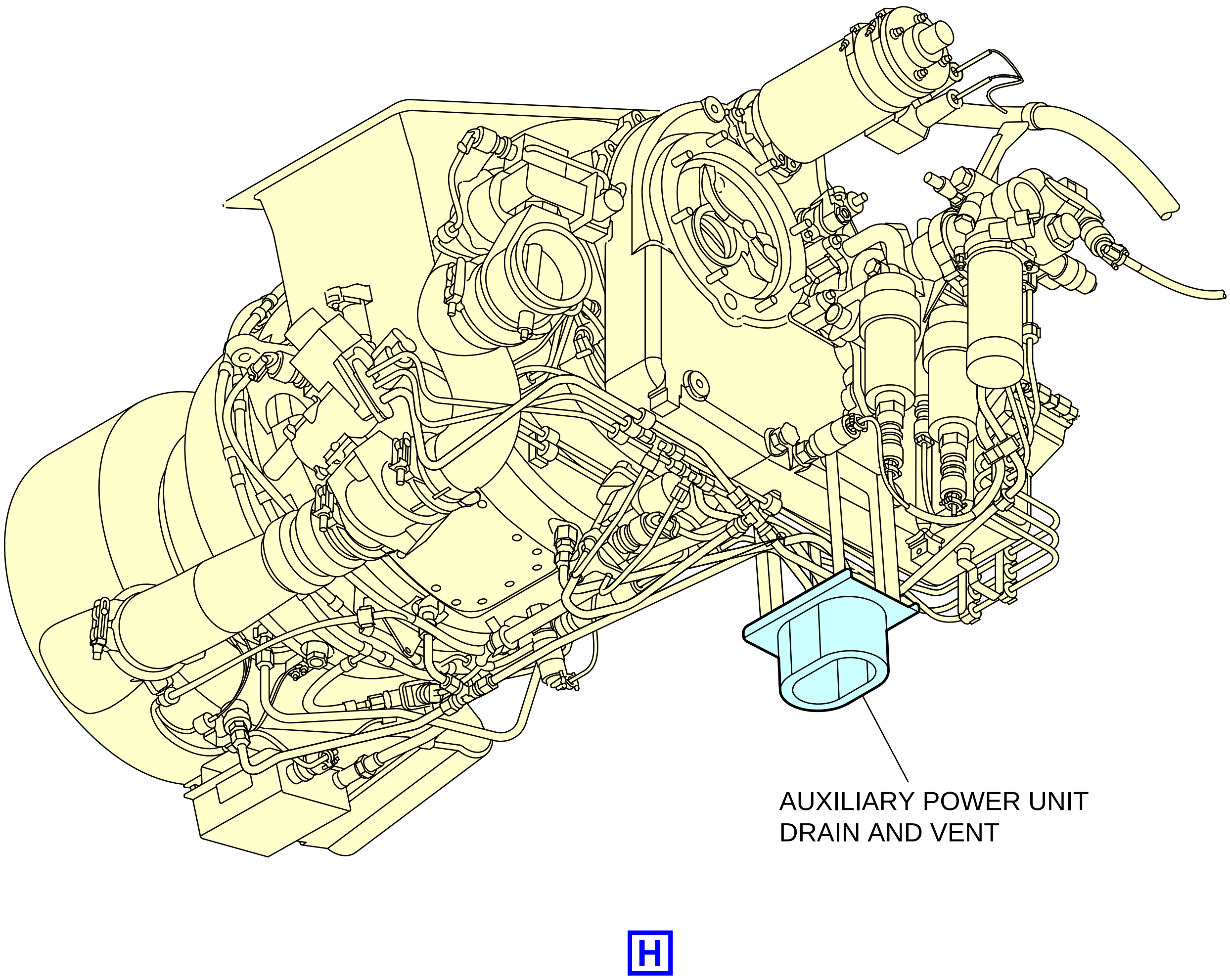


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Figure 10 Deicing fluids non-application areas - (Sheet 4 of 7)

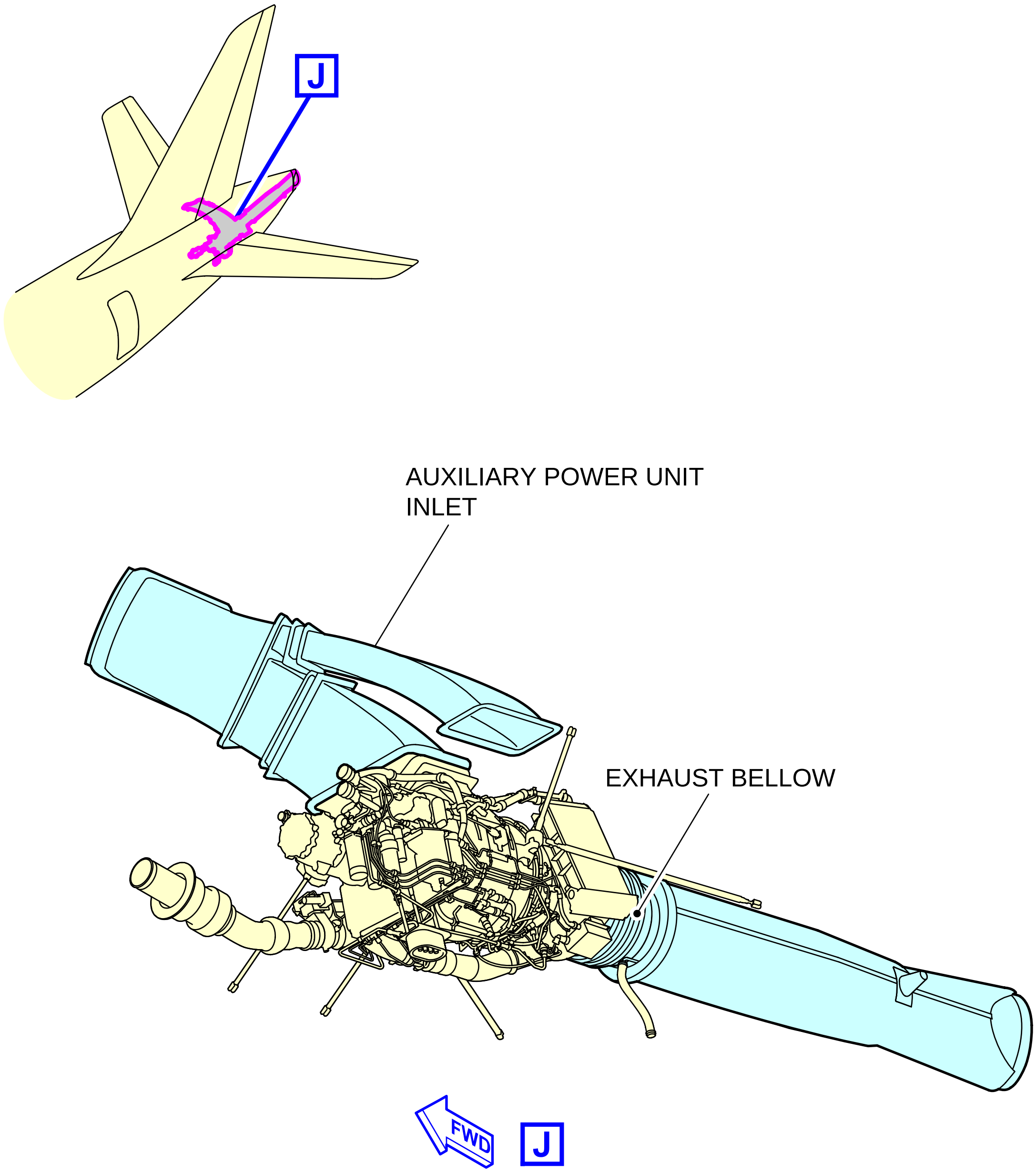

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Figure 10 Deicing fluids non-application areas - (Sheet 5 of 7)

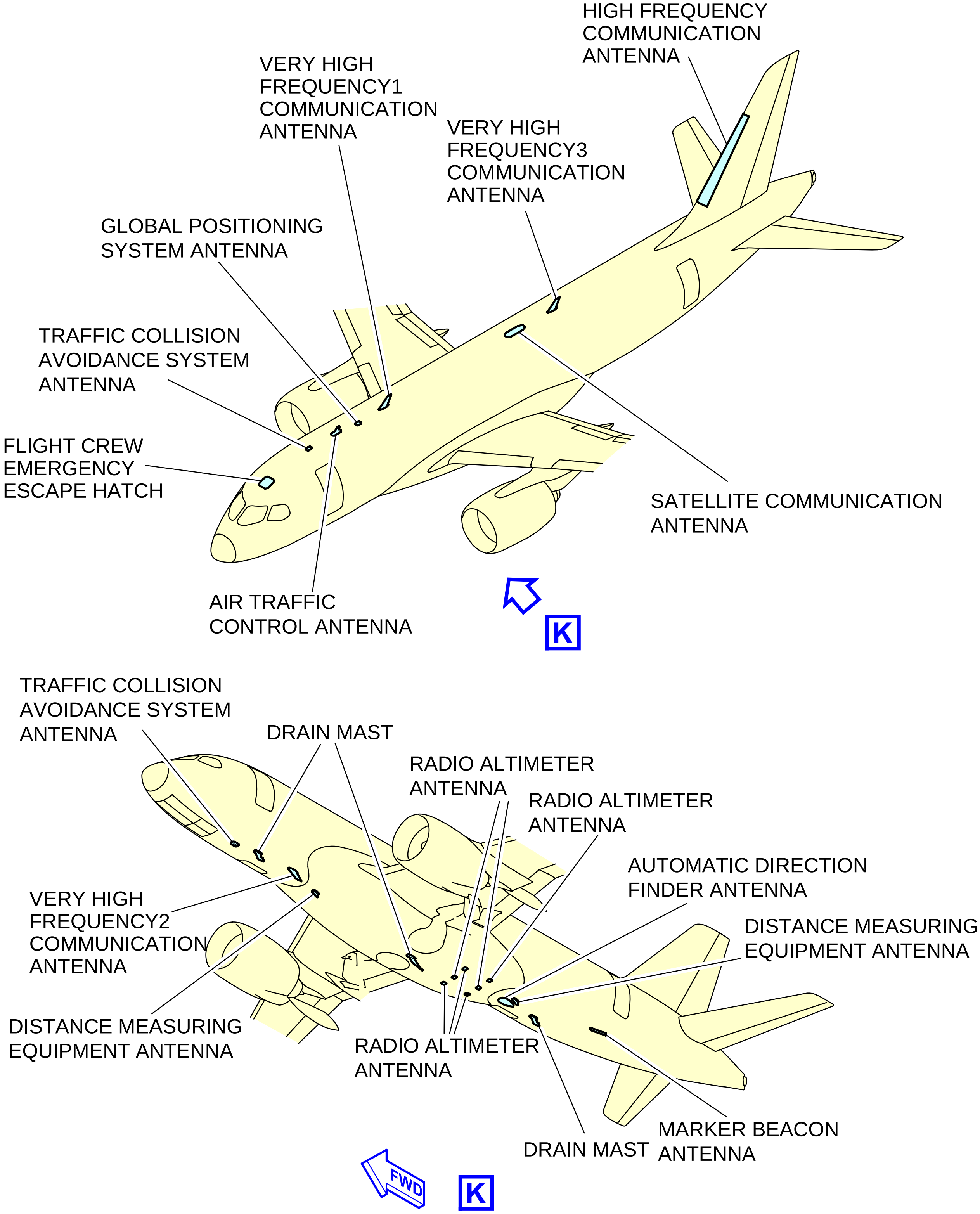

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Figure 10 Deicing fluids non-application areas - (Sheet 6 of 7)

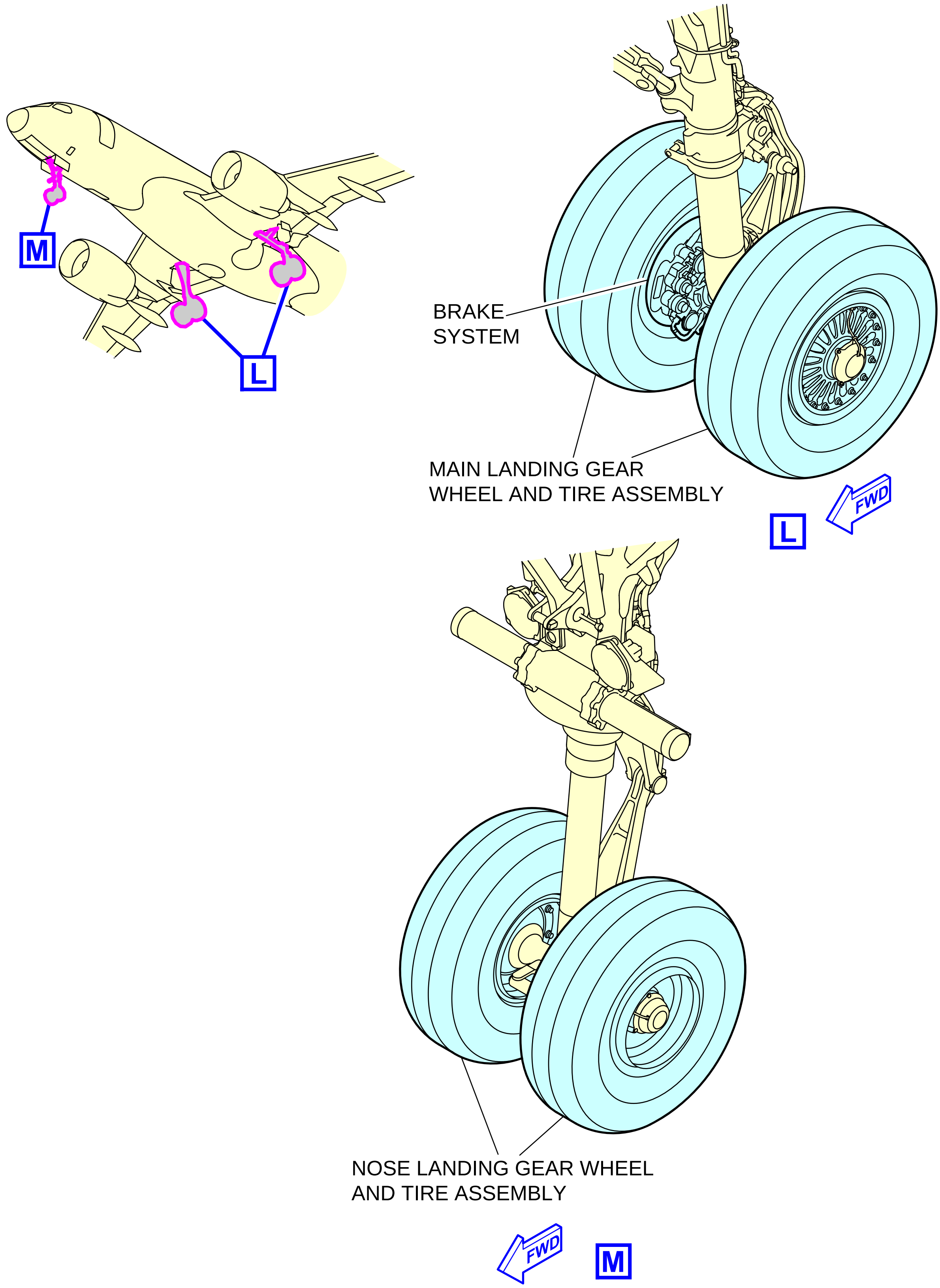

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Figure 10 Deicing fluids non-application areas - (Sheet 7 of 7)

Requirements after job completion

Required conditions

Table 17 Required conditions

Action/Condition	Data Module/Technical publication
None	

Chapter 6: Operating conditions

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A220

Crew safety precautions - dangerous areas - Technical data

Applicability: 50001-54999

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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

<u>WARNING</u>

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.

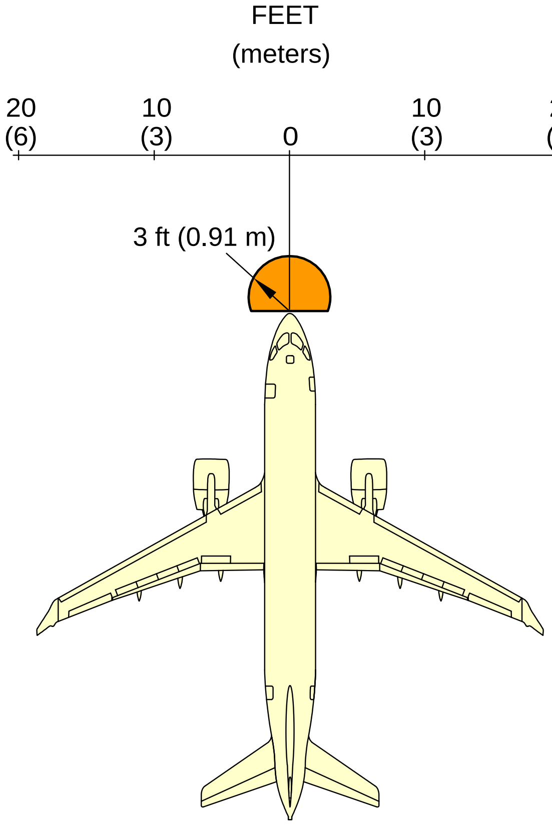

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Figure 1 Weather radar area

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Chapter 7: Pavement data

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Pavement data - Technical data

Applicability: 50001-54999

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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:

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	130042	58986	36.6	38.7	40.8	42.5
140500	63729	129272	58636	36.4	38.5	40.5	42.2
140000	63502	128876	58457	36.2	38.3	40.3	42.0
139000	63049	128085	58098	36.0	38.19	40.0	41.7
138000	62595	127294	57739	35.7	37.8	39.8	41.4
137000	62142	126503	57380	35.5	37.5	39.5	41.1
136000	61688	125711	57021	35.2	37.2	39.2	40.8
135000	61234	124920	56662	34.9	37.0	38.9	40.6
134000	60781	124129	56303	34.7	36.7	38.6	40.3

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	123338	55945	34.4	36.4	38.3	40.0
132000	59874	122546	55585	34.2	36.1	38.0	39.7
131000	59420	121755	55227	33.9	35.9	37.8	39.4
130000	58967	120964	54868	33.6	35.6	37.5	39.1
129000	58513	120173	54509	33.4	35.3	37.2	38.8
128000	58059	119381	54150	33.1	35.1	36.9	38.5
127000	57606	118590	53791	32.9	34.8	36.6	38.2
126000	57152	117799	53432	32.6	34.5	36.3	37.9
125000	56699	117008	53073	32.3	34.2	36.1	37.6
124000	56245	116216	52714	32.1	34.0	35.8	37.3
123000	55791	115425	52355	31.8	33.7	35.5	37.0
122000	55338	114634	51997	31.6	33.4	35.2	36.7
121000	54884	113843	51638	31.3	33.1	34.9	36.4
120500	54657	113447	51458	31.2	33.0	34.8	36.3
120000	54431	113048	51277	31.0	32.9	34.6	36.1
119500	54204	112649	51096	30.9	32.7	34.5	36.0
119000	53977	112177	50882	30.7	32.6	34.3	35.8
118000	53523	111234	50454	30.4	32.2	34.0	35.5
117000	53070	110290	50026	30.1	31.9	33.7	35.1
116000	52616	109347	49598	29.8	31.6	33.3	34.8
115000	52163	108404	49171	29.5	31.3	33.0	34.4
114000	51709	107461	48743	29.2	31.0	32.7	34.1
113000	51255	106517	48315	28.9	30.7	32.3	33.8
112000	50802	105574	47887	28.6	30.3	32.0	33.4
111000	50348	104631	47459	28.3	30.0	31.7	33.1
110000	49895	103688	47032	28.0	29.7	31.3	32.7

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
109000	49441	102744	46603	27.7	29.4	31.0	32.4
108000	48987	101801	46176	27.4	29.1	30.7	32.1
107000	48534	100858	45748	27.1	28.8	30.4	31.7
106000	48080	99915	45320	26.8	28.5	30.0	31.4
105000	47627	98971	44892	26.6	28.1	29.7	31.0
104000	47173	98028	44464	26.3	27.8	29.4	30.7
103000	46720	97085	44037	26.0	27.5	29.0	30.4
102000	46266	96142	43609	25.7	27.2	28.7	30.0
101000	45812	95198	43181	25.4	26.9	28.4	29.7
100000	45359	94255	42753	25.1	26.6	28.1	29.3
99000	44905	93247	42296	24.8	26.2	27.7	29.0
98000	44452	92239	41838	24.5	25.9	27.4	28.6
97000	43998	91231	41381	24.1	25.6	27.0	28.3
96000	43544	90223	40924	23.8	25.3	26.7	27.9
95000	43091	89215	40467	23.5	24.9	26.4	27.6
94000	42637	88207	40010	23.2	24.6	26.0	27.2
93000	42184	87199	39552	22.9	24.3	25.7	26.9
92000	41730	86191	39095	22.6	24.0	25.3	26.5
91000	41276	85183	38638	22.3	23.7	25.0	26.2
90000	40823	84175	38181	22.0	23.3	24.7	25.8
89000	40369	83167	37723	21.7	23.0	24.3	25.5
88000	39916	82159	37266	21.4	22.7	24.0	25.1
87000	39462	81151	36809	21.1	22.4	23.6	24.8
86000	39008	80143	36352	20.8	22.0	23.3	24.4
85000	38555	79135	35895	20.5	21.7	23.0	24.1
84000	38101	78127	35437	20.2	21.4	22.6	23.7

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
83000	37648	77119	34980	19.9	21.1	22.3	23.4
82000	37194	76111	34523	19.6	20.8	21.9	23.0
81000	36740	75103	34066	19.3	20.4	21.6	22.6
80000	36287	74095	33608	19.0	20.1	21.3	22.3
79000	35833	73087	33151	18.7	19.8	20.9	21.9
78000	35380	72079	32694	18.4	19.5	20.6	21.6
77000	34926	71071	32237	18.1	19.1	20.3	21.2

Applicability: 50010-50017, 50020-50065, 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

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	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
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

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	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
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, 50085-50086

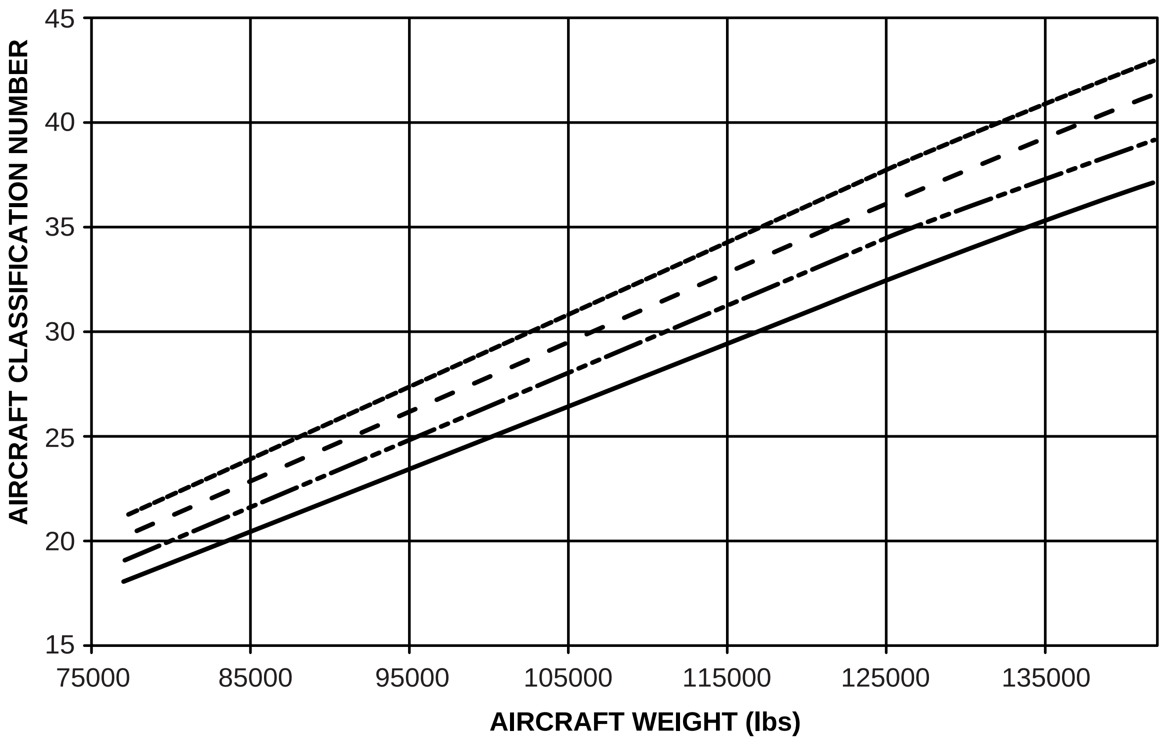
Table 6 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

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

RIGID PAVEMENT - A220-100



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-004-01

Figure 1 ACN results - Rigid pavement

Applicability:

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	130042	58986	32.4	33.5	37.0	42.3
140500	63729	129272	58636	32.2	33.3	36.7	42.0
140000	63502	128876	58457	32.1	33.2	36.6	41.8
139000	63049	128085	58098	31.8	33.0	36.3	41.5
138000	62595	127294	57739	31.6	32.7	36.0	41.2
137000	62142	126503	57380	31.4	32.5	35.7	40.9
136000	61688	125711	57021	31.2	32.3	35.4	40.6
135000	61234	124920	56662	30.9	32.0	35.2	40.3
134000	60781	124129	56303	30.71	31.8	34.9	40.0
133000	60327	123338	55945	30.5	31.6	34.6	39.7
132000	59874	122546	55585	30.2	31.3	34.3	39.4
131000	59420	121755	55227	30.0	31.1	34.1	39.1
130000	58967	120964	54868	29.8	30.9	33.8	38.8
129000	58513	120173	54509	29.5	30.6	33.5	38.5
128000	58059	119381	54150	29.3	30.4	33.2	38.2
127000	57606	118590	53791	29.1	30.2	32.9	37.9
126000	57152	117799	53432	28.9	29.9	32.7	37.6
125000	56699	117008	53073	28.6	29.7	32.4	37.3
124000	56245	116216	52714	28.4	29.5	32.1	37.0
123000	55791	115425	52355	28.2	29.2	31.8	36.7
122000	55338	114634	51997	27.9	29.0	31.6	36.4
121000	54884	113843	51638	27.7	28.8	31.3	36.1
120500	54657	113447	51458	27.6	28.6	31.1	36.0
120000	54431	113048	51277	27.5	28.5	31.0	35.9

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
119500	54204	112649	51096	27.4	28.4	30.9	35.7
119000	53977	112177	50882	27.2	28.2	30.7	35.5
118000	53523	111234	50454	27.0	27.9	30.4	35.2
117000	53070	110290	50026	26.7	27.7	30.1	34.8
116000	52616	109347	49598	26.4	27.4	29.7	34.5
115000	52163	108404	49171	26.2	27.1	29.4	34.1
114000	51709	107461	48743	25.9	26.8	29.1	33.7
113000	51255	106517	48315	25.7	26.5	28.8	33.4
112000	50802	105574	47887	25.4	26.2	28.5	33.0
111000	50348	104631	47459	25.1	25.9	28.2	32.7
110000	49895	103688	47032	24.9	25.7	27.9	32.3
109000	49441	102744	46603	24.6	25.4	27.6	32.0
108000	48987	101801	46176	24.4	25.1	27.3	31.6
107000	48534	100858	45748	24.1	24.8	26.9	31.3
106000	48080	99915	45320	23.9	24.5	26.6	30.9
105000	47627	98971	44892	23.6	24.2	26.3	30.6
104000	47173	98028	44464	23.3	23.9	26.0	30.2
103000	46720	97085	44037	23.1	23.7	25.7	29.9
102000	46266	96142	43609	22.8	23.4	25.4	29.5
101000	45812	95198	43181	22.6	23.1	25.1	29.2
100000	45359	94255	42753	22.3	22.8	24.8	28.8
99000	44905	93247	42296	22.1	22.5	24.5	28.4
98000	44452	92239	41838	21.8	22.3	24.2	28.1
97000	43998	91231	41381	21.5	22.0	23.8	27.7
96000	43544	90223	40924	21.3	21.7	23.5	27.3
95000	43091	89215	40467	21.0	21.4	23.2	26.9

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
94000	42637	88207	40010	20.8	21.2	22.9	26.6
93000	42184	87199	39552	20.5	20.9	22.6	26.2
92000	41730	86191	39095	20.2	20.6	22.3	25.8
91000	41276	85183	38638	20.0	20.3	22.0	25.4
90000	40823	84715	38181	19.7	20.1	21.7	25.1
89000	40369	83167	37723	19.5	19.8	21.4	24.7
88000	39916	82159	37266	19.2	19.5	21.1	24.3
87000	39462	81151	36809	19.0	19.2	20.8	23.9
86000	39008	80143	36352	18.7	19.0	20.5	23.6
85000	38555	79135	35895	18.4	18.7	20.2	23.2
84000	38101	78127	35437	18.2	18.4	19.9	22.8
83000	37648	77119	34980	17.9	18.1	19.6	22.4
82000	37194	76111	34523	17.7	17.9	19.2	22.1
81000	36740	75103	34066	17.4	17.6	18.9	21.7
80000	36287	74095	33608	17.2	17.3	18.6	21.3
79000	35833	73087	33151	16.9	17.0	18.3	20.9
78000	35380	72079	32694	16.6	16.8	18.0	20.6
77000	34926	71071	32237	16.4	16.5	17.7	20.2

Applicability: 50010-50017, 50020-50065, 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

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
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
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

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	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
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

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	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

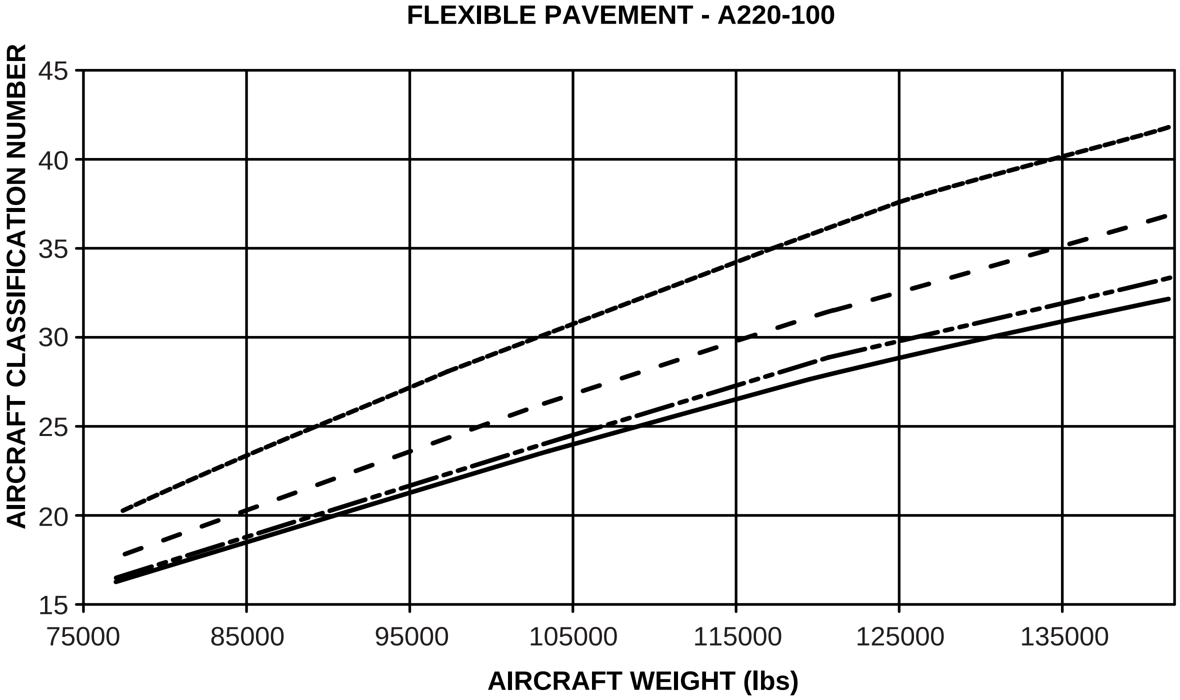
Applicability: 50069, 50071, 50078, 50085-50086

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

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
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
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

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
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
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-004-01

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:

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	126993	57603	35.6	37.7	39.6	41.3
140500	63729	125971	57139	35.3	37.3	39.3	40.9
140000	63502	125477	56915	35.1	37.2	39.1	40.7
139000	63049	124489	56467	34.8	36.8	38.7	40.4
138000	62595	123501	56019	34.5	36.5	38.4	40.0
137000	62142	122513	55570	34.1	36.1	38	39.7
136000	61688	121525	55122	33.8	35.8	37.7	39.3
135000	61234	120537	54674	33.5	35.5	37.3	38.9
134000	60781	119549	54226	33.2	35.1	37.0	38.6
133000	60327	118561	53778	32.9	34.8	36.6	38.2
132000	59874	117573	53330	32.5	34.4	36.3	37.8
131000	59420	116585	52882	32.2	34.1	35.9	37.5
130000	58967	115597	52433	31.9	33.8	35.6	37.1
129000	58513	114609	51985	31.6	33.4	35.2	36.7
128000	58059	113621	51537	31.2	33.1	34.9	36.4
127000	57606	112633	51089	30.9	32.7	34.5	36.0
126000	57152	111645	50641	30.6	32.4	34.2	35.6
125000	56699	110657	50193	30.3	32.1	33.8	35.3
124000	56245	109669	49745	30.0	31.7	33.4	34.9
123000	55791	108681	49296	29.6	31.4	33.1	34.6

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	107693	48848	29.3	31.0	32.7	34.2
121000	54884	106705	48400	29.0	30.7	32.4	33.8
120500	54657	106211	48176	28.8	30.5	32.2	33.6
120000	54431	105721	47954	28.7	30.4	32.0	33.5
119000	53977	104741	47509	28.4	30.0	31.7	33.1
118000	53523	103762	47065	28.1	29.7	31.3	32.8
117000	53070	102782	46621	27.7	29.4	31.0	32.4
116000	53070	101802	46176	27.4	29.1	30.7	32.1
115000	52616	100845	45742	27.1	28.7	30.3	31.7
114000	52163	99888	45308	26.8	28.4	30.0	31.4
113425	51448	99338	45058	26.7	28.2	29.8	31.2
113000	51255	98967	44890	26.5	28.1	29.7	31.0
112000	50802	98094	44494	26.3	27.8	29.4	30.7
111000	50348	97220	44098	26.0	27.6	29.1	30.5
110000	49895	96347	43702	25.7	27.3	28.8	30.1
109000	49441	95474	43306	25.5	27.0	28.5	29.8
108000	48987	94601	42910	25.2	26.7	28.2	29.5
107000	48534	93727	42513	25.0	26.4	27.9	29.2
106000	48080	92854	42117	24.7	26.2	27.6	28.9
105000	47627	91981	41721	24.4	25.9	27.3	28.6
104000	47173	91108	41325	24.2	25.6	27.0	28.3
103000	46720	90234	40929	23.9	25.3	26.7	28.0
102000	46266	89361	40533	23.6	25.0	26.4	27.7
101000	45812	88488	40137	23.4	24.8	26.1	27.4
100000	45359	87615	39741	23.1	24.5	25.9	27.1
99000	44905	86741	39345	22.8	24.2	25.6	26.8

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
98000	44452	85868	38949	22.6	23.9	25.3	26.5
97000	43998	84995	38553	22.3	23.6	25.0	26.1
96000	43544	84122	38157	22.1	23.4	24.7	25.8
95000	43091	83248	37760	21.8	23.1	24.4	25.5
94000	42637	82375	37364	21.5	22.8	24.1	25.2
93000	42184	81502	36968	21.3	22.5	23.8	24.9
92000	41730	80629	36572	21.0	22.2	23.5	24.6
91000	41276	79755	36176	20.7	22.0	23.2	24.3
90000	40823	78882	35780	20.5	21.7	22.9	24.0
89000	40369	78009	35384	20.2	21.4	22.6	23.7
88000	39916	77136	34988	19.9	21.1	22.3	23.4
87000	39462	76262	34591	19.7	20.8	22.0	23.1
86000	39008	75389	34195	19.4	20.6	21.7	22.8
85000	38555	74516	33799	19.2	20.3	21.4	22.5
84000	38101	73643	33403	18.9	20.0	21.1	22.2
83000	37648	72769	33007	18.6	19.7	20.9	21.9
82000	37194	71896	32611	18.4	19.4	20.6	21.6
81000	36740	71023	32215	18.1	19.2	20.3	21.3
80000	36287	70150	31819	17.8	18.9	20.0	21.0
79000	35833	69276	31423	17.6	18.6	19.7	20.7
78000	35380	68403	31027	17.3	18.3	19.4	20.3
77000	34926	67530	30631	17.0	18.1	19.1	20.0

Applicability: 50010-50017, 50020-50065, 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, 50085-50086

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

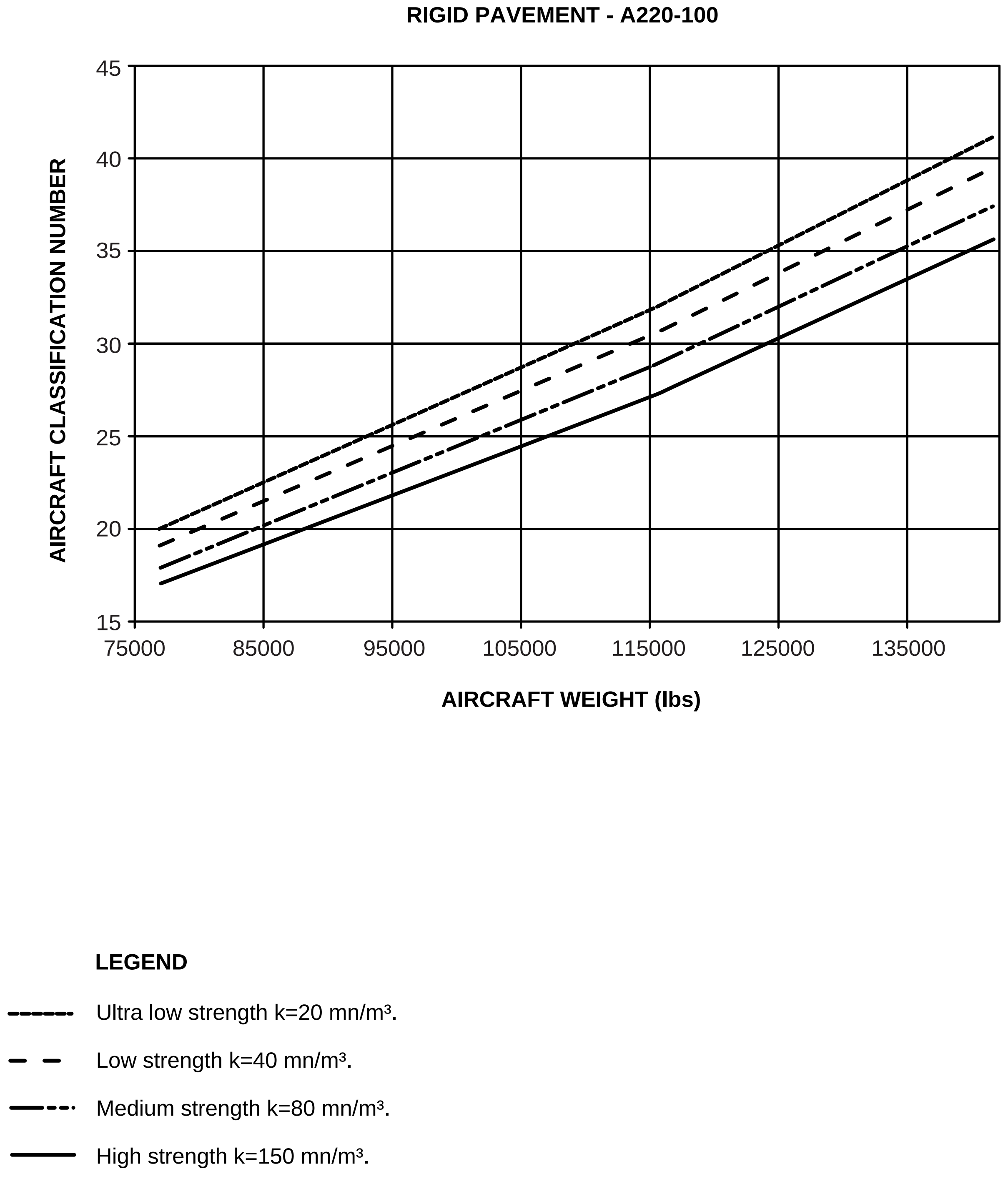


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Figure 3 ACN results - Rigid pavement

Applicability:

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	126993	57603	31.5	32.7	35.9	41.1
140500	63729	125971	57139	31.2	32.4	35.5	40.7
140000	63502	125477	56915	31.1	32.2	35.3	40.5
139000	63049	124489	56467	30.8	31.9	35.0	40.2
138000	62595	123501	56019	30.5	31.6	34.6	39.8
137000	62142	122513	55570	30.2	31.3	34.3	39.4
136000	61688	121525	55122	30.0	31.0	34.0	39.0
135000	61234	120537	54674	29.7	30.7	33.6	38.7
134000	60781	119549	54226	29.4	30.4	33.3	38.3
133000	60327	118561	53778	29.1	30.1	32.9	37.9
132000	59874	117573	53330	28.8	29.8	32.6	37.6
131000	59420	116585	52882	28.5	29.5	32.3	37.2
130000	58967	115597	52433	28.3	29.2	31.9	36.8
129000	58513	114609	51985	28.0	28.9	31.6	36.4
128000	58059	113621	51537	27.7	28.6	31.2	36.1
127000	57606	112633	51089	27.4	28.3	30.9	35.7
126000	57152	111645	50641	27.1	28.0	30.5	35.3
125000	56699	110657	50193	26.8	27.7	30.2	34.9
124000	56245	109669	49745	26.6	27.4	29.9	34.6
123000	55791	108681	49296	26.3	27.1	29.5	34.2
122000	55338	107693	48848	26.0	26.8	29.2	33.8
121000	54884	106705	48400	25.7	26.5	28.8	33.5
120500	54657	106211	48176	25.7	26.4	28.7	33.3
120000	54431	105721	47954	25.4	26.2	28.5	33.1

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	104741	47509	25.2	25.9	28.2	32.7
118000	53533	103762	47065	24.9	25.6	27.9	32.4
117000	53070	102782	46621	24.6	25.3	27.6	32.0
116000	52389	101802	46176	24.4	25.0	27.2	31.6
115000	52163	100845	45742	24.1	24.7	26.9	31.3
114000	51709	99888	45308	23.8	24.5	26.6	30.9
113425	51448	99338	45058	23.7	24.3	26.4	30.7
113000	51255	98967	44890	23.6	24.2	26.3	30.6
112000	50802	98094	44494	23.4	24.0	26.0	30.2
111000	50348	97220	44098	23.1	23.7	25.8	29.9
110000	49895	96347	43702	22.9	23.5	25.5	29.6
109000	49441	95474	43306	22.7	23.2	25.2	29.3
108000	48987	94601	42910	22.5	23.0	25.0	29.0
107000	48534	93727	42513	22.2	22.8	24.7	28.6
106000	48080	92854	42117	22.0	22.5	24.4	28.3
105000	47627	91981	41721	21.8	22.3	24.2	28.0
104000	47173	91108	41325	21.6	22.0	23.9	27.7
103000	46720	90234	40929	21.3	21.8	23.6	27.3
102000	46266	89361	40533	21.1	21.6	23.4	27.0
101000	45812	88488	40137	20.9	21.3	23.1	26.7
100000	45359	87615	39741	20.7	21.1	22.8	26.4
99000	44905	86741	39345	20.4	20.8	22.6	26.0
98000	44452	85868	38949	20.2	20.6	22.3	25.7
97000	43998	84995	38553	20.0	20.4	22.0	25.4
96000	43544	84122	38157	19.8	20.1	21.8	25.1
95000	43091	83248	37760	19.5	19.9	21.5	24.8

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
94000	42637	82375	37364	19.3	19.7	21.2	24.4
93000	42184	81502	36968	19.1	19.4	21.0	24.1
92000	41730	80629	36572	18.9	19.2	20.7	23.8
91000	41276	79755	36176	18.6	18.9	20.4	23.5
90000	40823	78882	35780	18.4	18.7	20.2	23.1
89000	40369	78009	35384	18.2	18.5	19.9	22.8
88000	39916	77136	34988	18.0	18.2	19.6	22.5
87000	39462	76262	34591	17.7	18.0	19.4	22.2
86000	39008	75389	34195	17.5	17.7	19.1	21.8
85000	38555	74516	33799	17.3	17.5	18.8	21.5
84000	38101	736432	33403	17.1	17.3	18.6	21.2
83000	37648	72769	33007	16.8	17.0	18.3	20.9
82000	37194	71896	32611	16.6	16.8	18.0	20.5
81000	36740	71023	32215	16.4	16.6	17.8	20.2
80000	36287	70150	31819	16.2	16.3	17.5	19.9
79000	35833	69276	31423	15.9	16.1	17.2	19.6
78000	35380	68403	31027	15.7	15.8	17.0	19.3
77000	34926	67530	30631	15.5	15.6	16.7	18.9

Applicability: 50010-50017, 50020-50065, 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

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
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
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

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	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
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

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	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: 50069, 50071, 50078, 50085-50086

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

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
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
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

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
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
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

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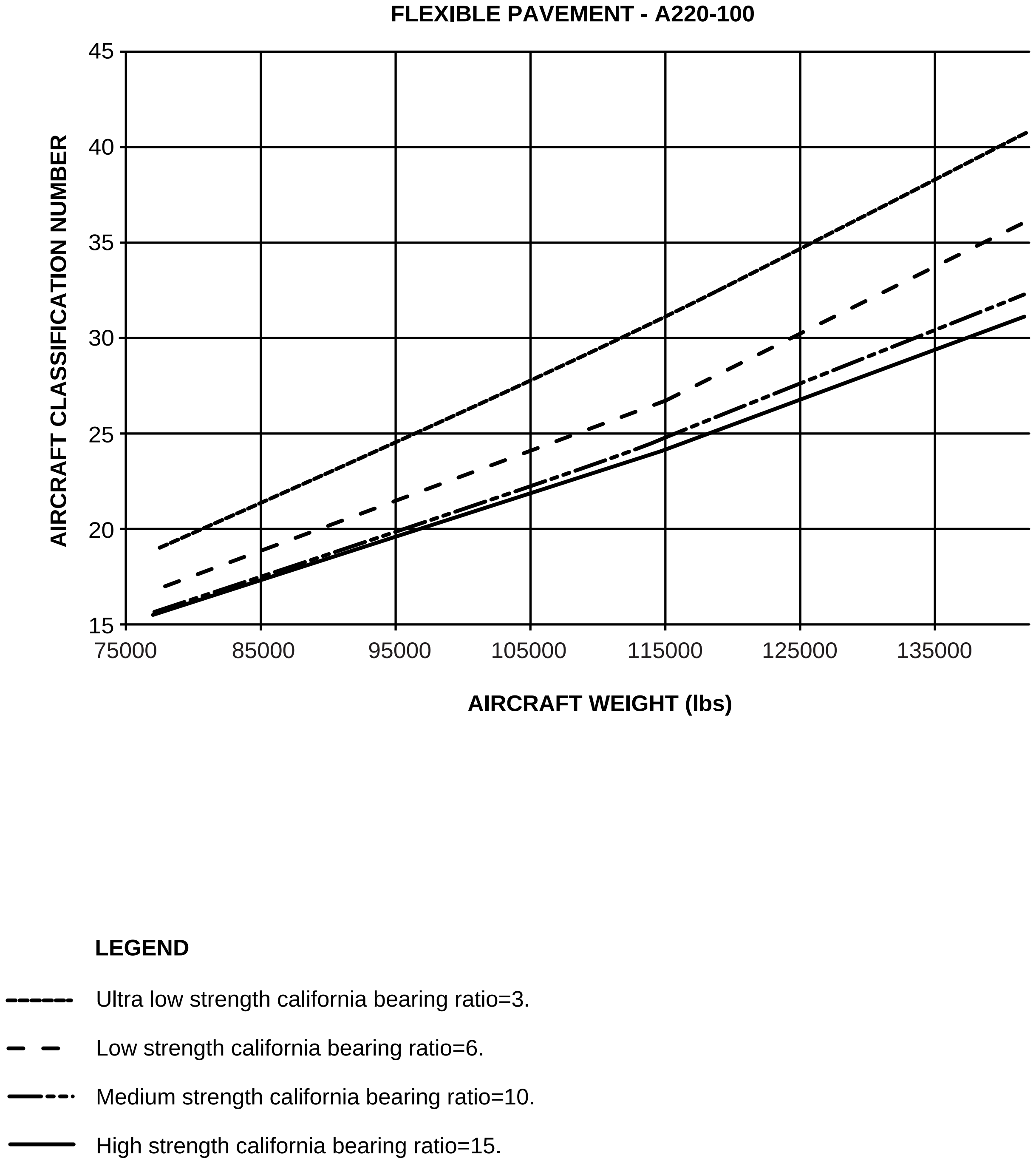

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Figure 4 ACN results - Flexible pavement

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:

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	24678	43
78000	35380	200	23041	39	24108	41	25114	44
79000	35833	200	23447	39	24525	41	25550	44
80000	36287	200	23854	40	24943	42	25986	45
81000	36740	200	24260	41	25360	43	26422	46
82000	37194	200	24667	41	25777	43	26858	47
83000	37648	200	25073	42	26195	44	27294	47
84000	38101	200	25480	43	26612	45	27730	48
85000	38555	200	25886	44	27029	46	28166	49
86000	39008	200	26293	44	27447	46	28602	50
87000	39462	200	26699	45	27864	47	29038	50
88000	39916	200	27106	46	28281	48	29474	51
89000	40369	200	27512	46	28699	48	29910	52
90000	40823	200	27919	47	29116	49	30346	53
91000	41276	200	28325	48	29533	50	30782	53
92000	41730	200	28732	48	29951	50	31218	54
93000	42184	200	29138	49	30368	51	31654	55
94000	42637	200	29545	50	30785	52	32090	56
95000	43091	200	29951	51	31202	53	32526	56
96000	43544	200	30358	51	31620	53	32962	57
97000	43998	200	30764	52	32037	54	33398	58

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	31171	53	32454	55	33834	59
99000	44905	200	31577	53	32872	55	34270	59
100000	45359	200	31984	54	33289	56	34706	60
101000	45812	200	32306	55	33642	57	35057	60
102000	46266	200	32628	55	33994	57	35408	61
103000	46719	200	32950	56	34347	58	35759	61
104000	47173	200	33272	56	34700	58	36110	62
105000	47627	200	33594	57	35052	59	364616	62
106000	48080	200	33917	57	35405	59	36812	63
107000	48534	200	34239	58	35757	60	37163	63
108000	48987	200	34561	59	36110	61	37514	64
109000	49441	200	34883	59	36463	61	37865	64
110000	49895	200	35205	60	36815	62	38216	64
111000	50348	200	35527	60	37168	62	38567	65
112000	50802	200	35850	61	37521	63	38917	65
113000	51255	200	36172	61	38873	63	39268	66
114000	51709	200	36494	62	38226	64	39619	66
115000	52163	200	36816	62	38578	64	39970	67
116000	52616	200	37138	63	38931	65	40321	67
117000	53070	200	37520	63	39256	65	40743	67
118000	53523	200	37903	64	39581	66	41165	68
119000	53977	200	38285	64	39906	66	41587	68
119500	54204	200	38476	64	40068	66	41798	68
120000	54431	200	38608	65	40206	67	41941	69
120500	54657	200	38740	65	40343	67	42084	69
121000	54884	200	38868	65	40469	67	42216	69
122000	55338	200	39125	66	40722	68	42481	70

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
123000	55791	200	39382	66	40975	68	42745	70
124000	56245	200	39639	66	41228	68	43010	70
125000	56699	200	39895	67	41480	69	43274	71
126000	57152	200	40152	67	41733	69	43539	71
127000	57606	200	40409	67	41986	69	43803	71
128000	58059	200	40666	68	42239	70	44068	72
129000	58513	200	40923	68	42492	70	44332	72
130000	58966	200	41179	68	42745	70	44596	72
131000	59420	200	41436	69	42997	71	44861	73
132000	59874	200	41693	69	43250	71	45125	73
133000	60327	200	41950	69	43503	71	45390	73
134000	60781	200	42207	70	43756	72	45654	74
135000	61234	200	42463	70	44009	72	45919	74
136000	61688	200	42720	70	44262	72	46183	74
137000	62142	200	42977	71	44514	73	46448	75
138000	62595	200	43234	71	44767	73	46712	75
139000	63049	200	43491	71	45020	73	46977	75
140000	63502	200	43747	72	45273	74	47241	76
140500	63729	200	43876	72	45399	74	47373	76
141500	64183	200	44432	72	45985	74	47651	76

Applicability: 50010-50017, 50020-50065, 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

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
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
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

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
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
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

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
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

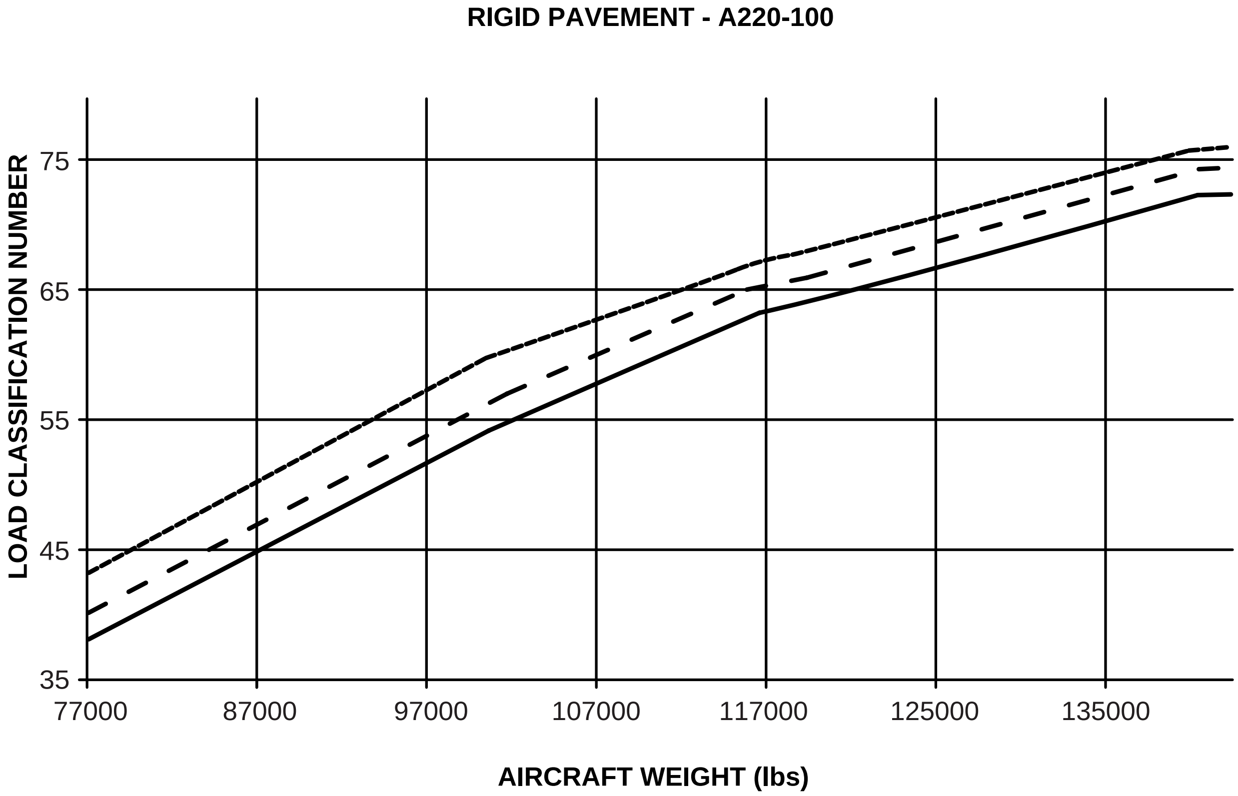
Applicability: 50069, 50071, 50078, 50085-50086

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

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
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
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

Aircraft Weight (lbs)	Aircraft Weight (Kg)	Tire Pressure (psi)	L = 30 inches		L = 40 inches		L = 50 inches	
			ESWL	LCN	ESWL	LCN	ESWL	LCN
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
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-004-01

Figure 5 LCN results - Rigid pavement

Applicability:

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	33	21213	36	25068	43
78000	35380	200	22994	32	19178	34	21584	37	25498	44
79000	35833	200	23061	32	19512	34	21956	37	25928	44
80000	36287	200	23128	33	19847	35	22327	38	26357	45
81000	36740	200	23195	33	20181	35	22698	39	26787	46
82000	37194	200	23262	34	20516	36	23069	39	27217	47
83000	37648	200	23329	34	20851	36	23440	40	27646	47
84000	38101	200	23396	35	21185	37	23812	41	28076	48
85000	38555	200	23463	35	21520	38	24183	42	28505	49
86000	39008	200	23530	36	21854	38	24554	42	28935	50
87000	39462	200	23597	36	22189	39	24925	43	29365	50
88000	39916	200	23664	37	22523	39	25296	44	29794	51
89000	40369	200	23731	37	22858	40	25668	44	30224	52
90000	40823	200	23798	38	23192	40	26039	45	30654	53
91000	41276	200	23865	38	23527	41	26410	46	31083	53
92000	41730	200	23932	39	23861	41	26781	46	31513	54
93000	42184	200	23999	39	24196	42	27152	47	31943	55
94000	42637	200	24066	40	24531	43	27524	48	32372	56
95000	43091	200	24133	40	24865	43	27895	49	32802	56
96000	43544	200	24200	41	25200	44	28266	49	33231	57
97000	43998	200	24267	41	25534	44	28637	50	33661	58
98000	44452	200	24334	42	25869	45	29008	51	34091	59
99000	44905	200	24401	42	26203	45	29379	51	34520	59
100000	45359	200	24468	43	26538	46	29751	52	34950	60

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
101000	45812	200	24702	43	26814	46	30056	52	35301	60
102000	46266	200	24937	44	27090	47	30361	53	35652	61
103000	46719	200	25172	44	27367	47	30666	53	36003	61
104000	47173	200	25407	45	27643	48	30971	54	36354	62
105000	47627	200	25642	45	27919	48	31276	54	36705	62
106000	48080	200	25877	45	28195	49	31582	55	37056	63
107000	48534	200	26111	46	28471	49	31887	55	37407	63
108000	48987	200	26346	46	28748	50	32192	56	37758	64
109000	49441	200	26581	46	29024	50	32497	56	38109	64
110000	49895	200	26816	47	29300	50	32802	56	38460	64
111000	50348	200	27051	47	29576	51	33107	57	38811	65
112000	50802	200	27286	48	29853	51	33412	57	39162	65
113000	51255	200	27520	48	30129	52	33717	58	39513	66
114000	51709	200	27755	48	30405	52	34023	58	39864	66
115000	52163	200	27990	49	30681	53	34328	59	40215	67
116000	52616	200	28225	49	30957	53	34633	59	40566	67
117000	53070	200	28461	49	31237	53	34941	60	40920	68
118000	53523	200	28696	50	31517	54	35250	60	41274	68
119000	53977	200	28907	50	31797	54	35558	61	41628	69
119500	54204	200	29050	50	317937	54	35713	61	41805	69
120000	54431	200	29149	51	32055	55	35843	62	41954	70
120500	54657	200	29249	51	32173	55	35974	62	42104	70
121000	54884	200	29334	51	32276	55	36087	62	42234	70
122000	55338	200	29506	52	32483	56	36314	62	42494	70
123000	55791	200	29678	52	32689	56	36541	63	42753	71
124000	56245	200	29850	52	32895	56	36768	63	43013	71

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
125000	56699	200	30022	53	33101	57	36995	63	43273	71
126000	57152	200	30194	53	33307	57	37222	64	43532	71
127000	57606	200	30366	53	33513	57	37448	64	43792	72
128000	58059	200	30538	54	33719	58	37675	64	44052	72
129000	58513	200	30710	54	33925	58	37902	65	44312	72
130000	58966	200	30882	54	34131	58	38129	65	44571	72
131000	59420	200	31054	55	34337	59	38356	65	44831	73
132000	59874	200	31226	55	34544	59	38583	65	45091	73
133000	60327	200	31398	55	34750	59	38810	66	45350	73
134000	60781	200	31570	56	34956	60	39037	66	45610	73
135000	61234	200	31742	56	35162	60	39264	66	45870	74
136000	61688	200	31914	56	35368	60	39490	67	46130	74
137000	62142	200	32086	57	35574	61	39717	67	46389	74
138000	62595	200	32258	57	35780	61	39944	67	46649	74
139000	63049	200	32430	57	35986	61	40171	68	46909	75
140000	63502	200	32602	58	36192	62	40398	68	47168	75
140500	63729	200	32688	58	36295	62	40512	68	47298	75
141500	64183	200	32880	59	36527	63	40766	68	47589	76

Applicability: 50010-50017, 50020-50065, 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

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
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
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

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
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
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

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
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

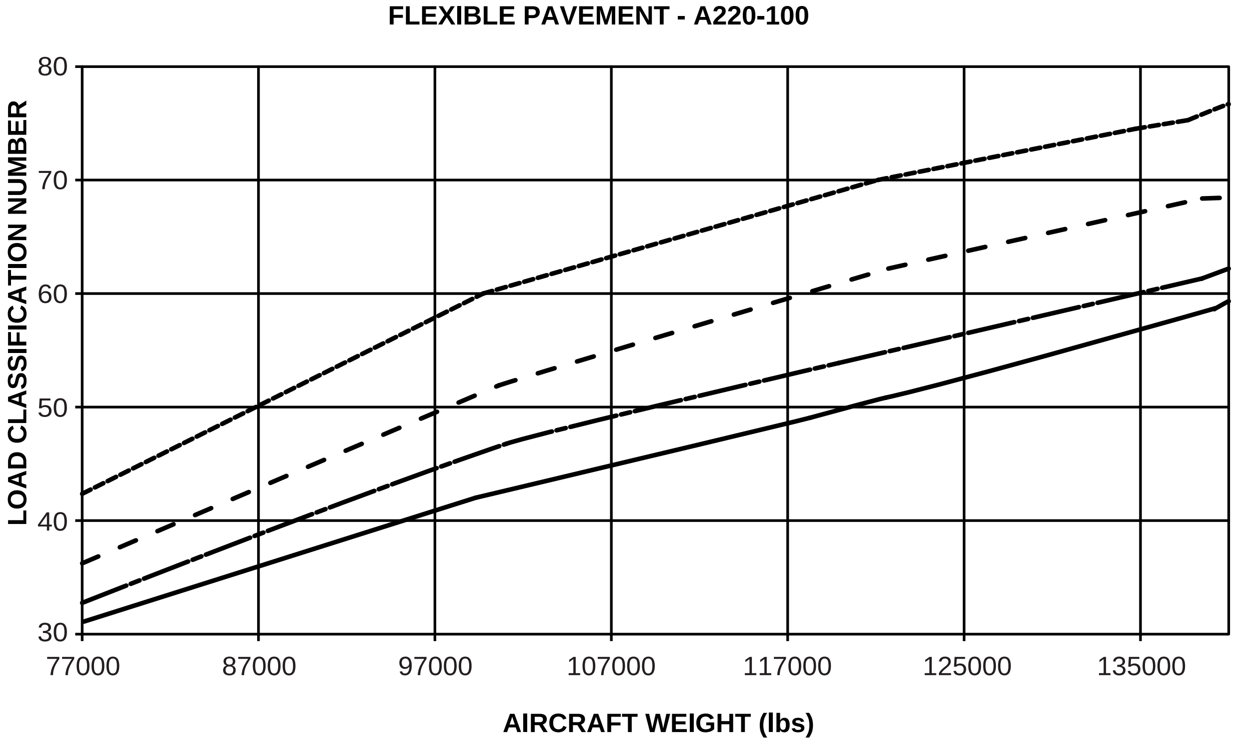
Applicability: 50069, 50071, 50078, 50085-50086

Table 21 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
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

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
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
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

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
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
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).

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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.

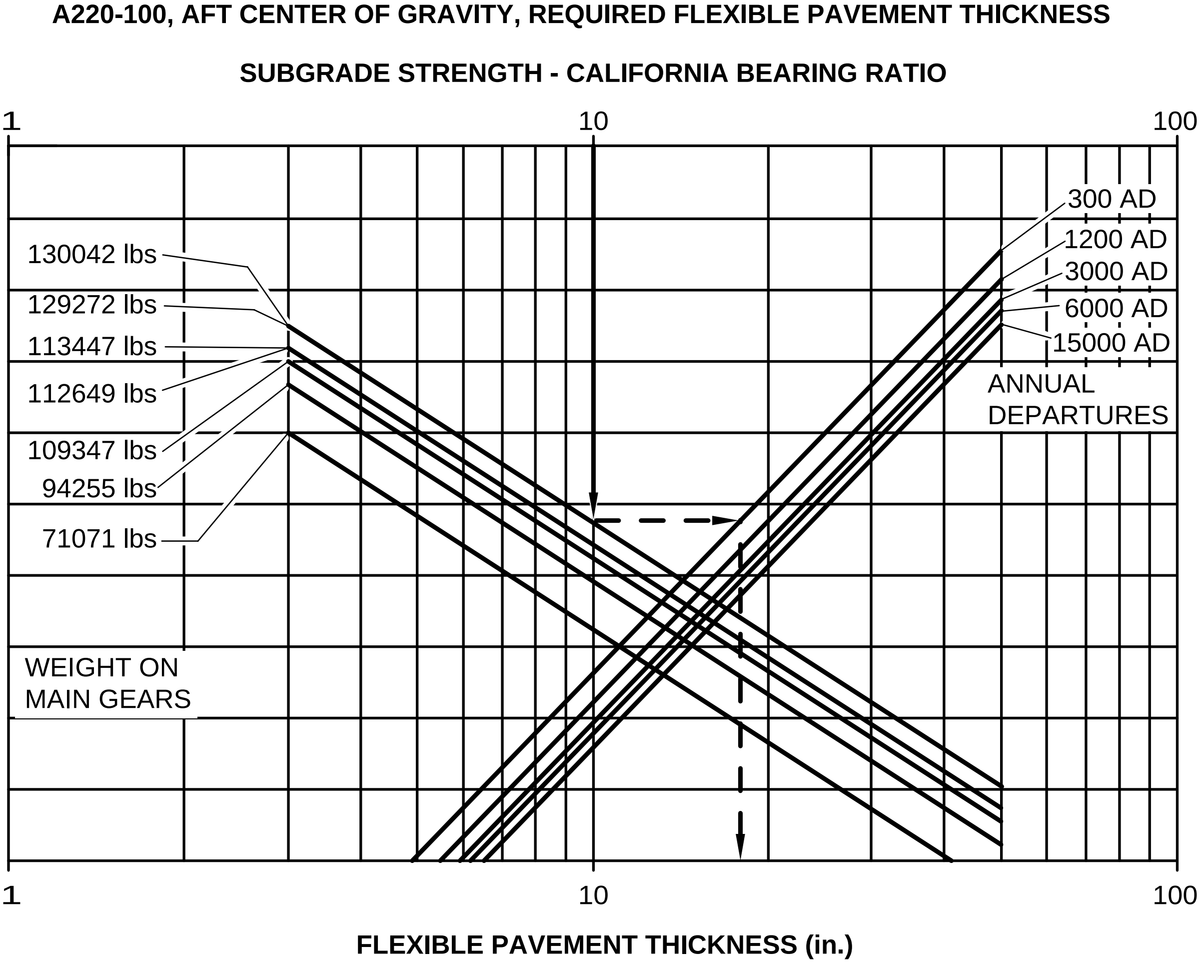

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Figure 7 Flexible pavement required thickness

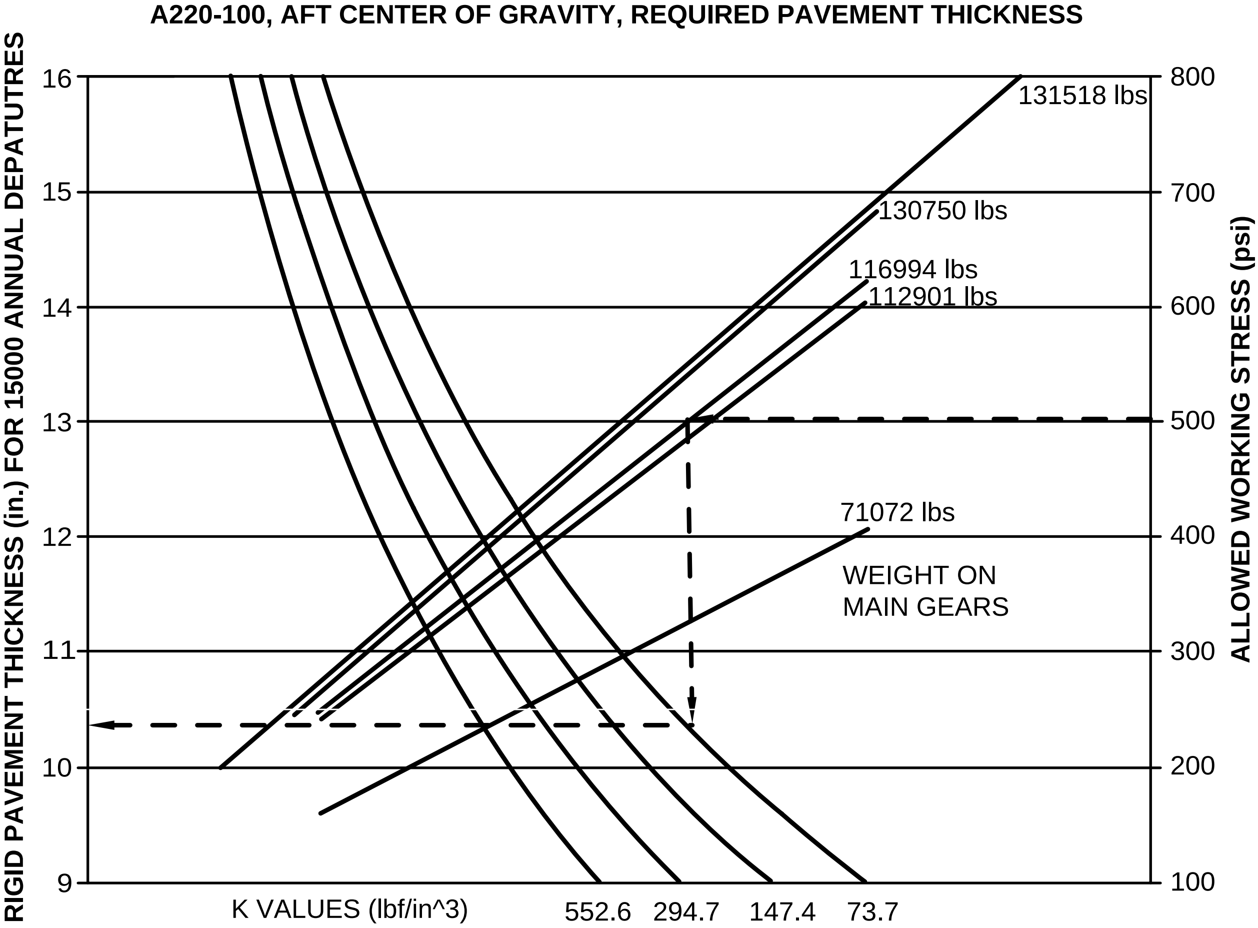

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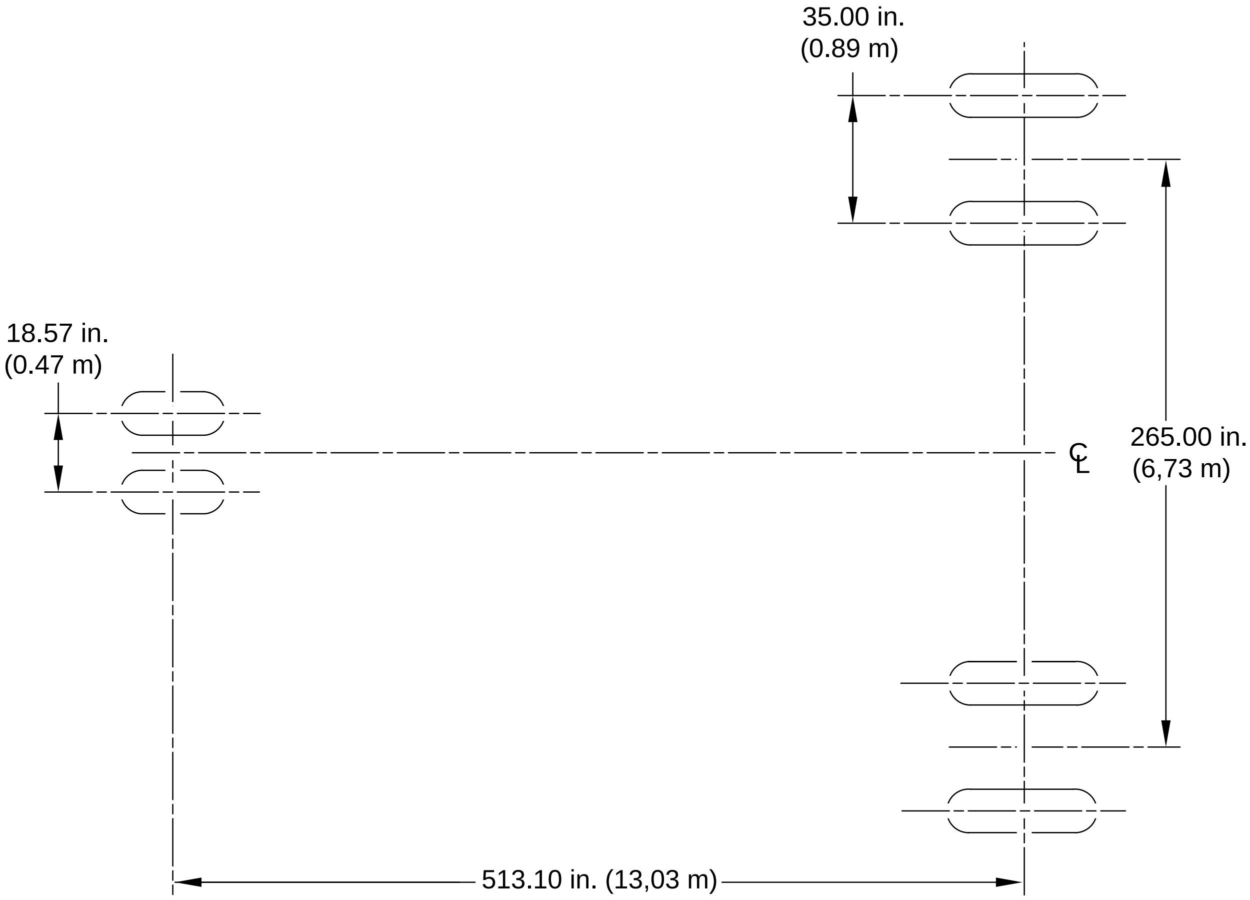
Figure 8 Rigid pavement required thickness

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.

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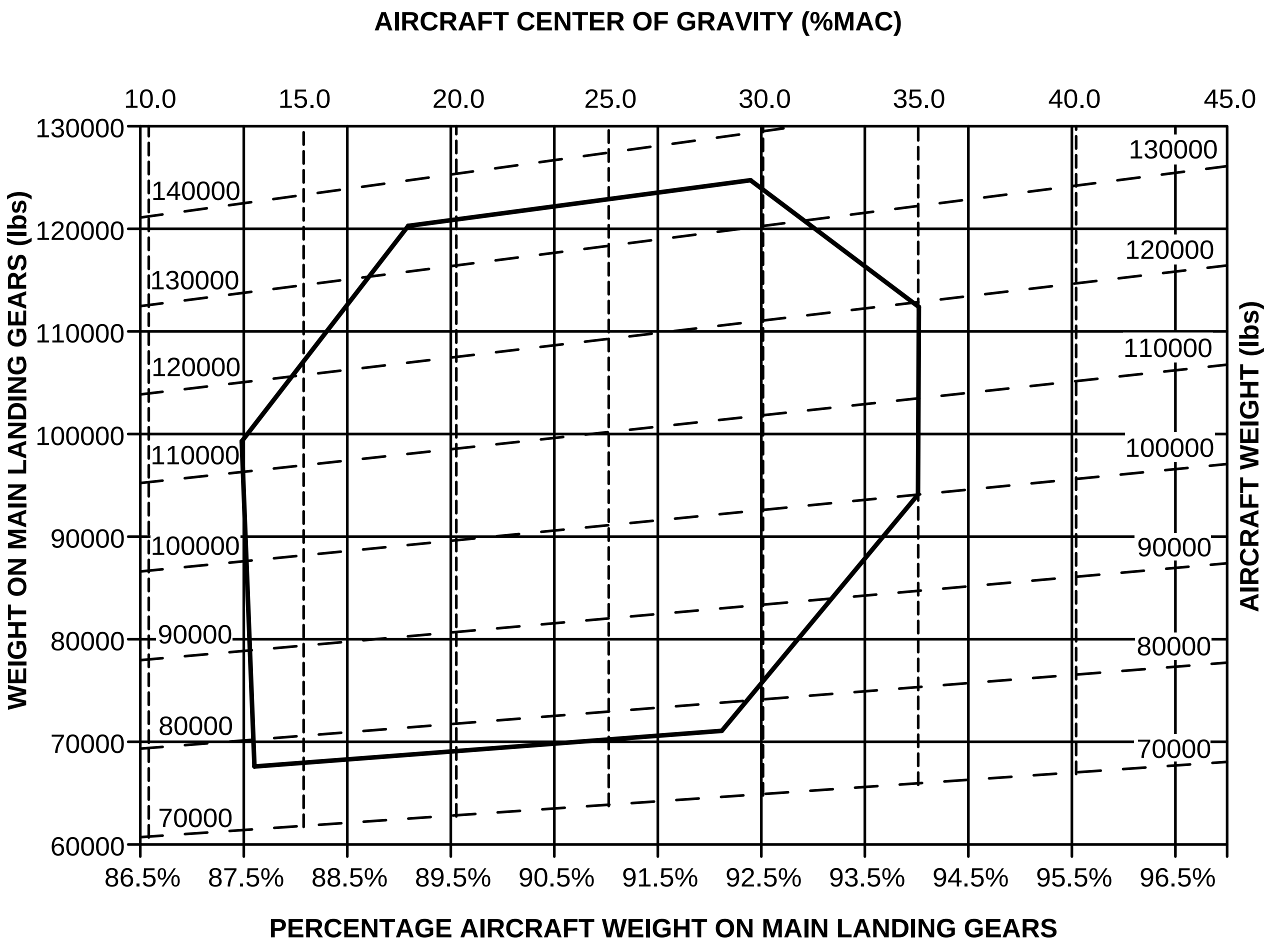
Figure 9 Landing gear footprint

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.

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Figure 10 Maximum Pavement Load

A220

Pavement data - Technical data

Applicability: 55001-59999

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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.

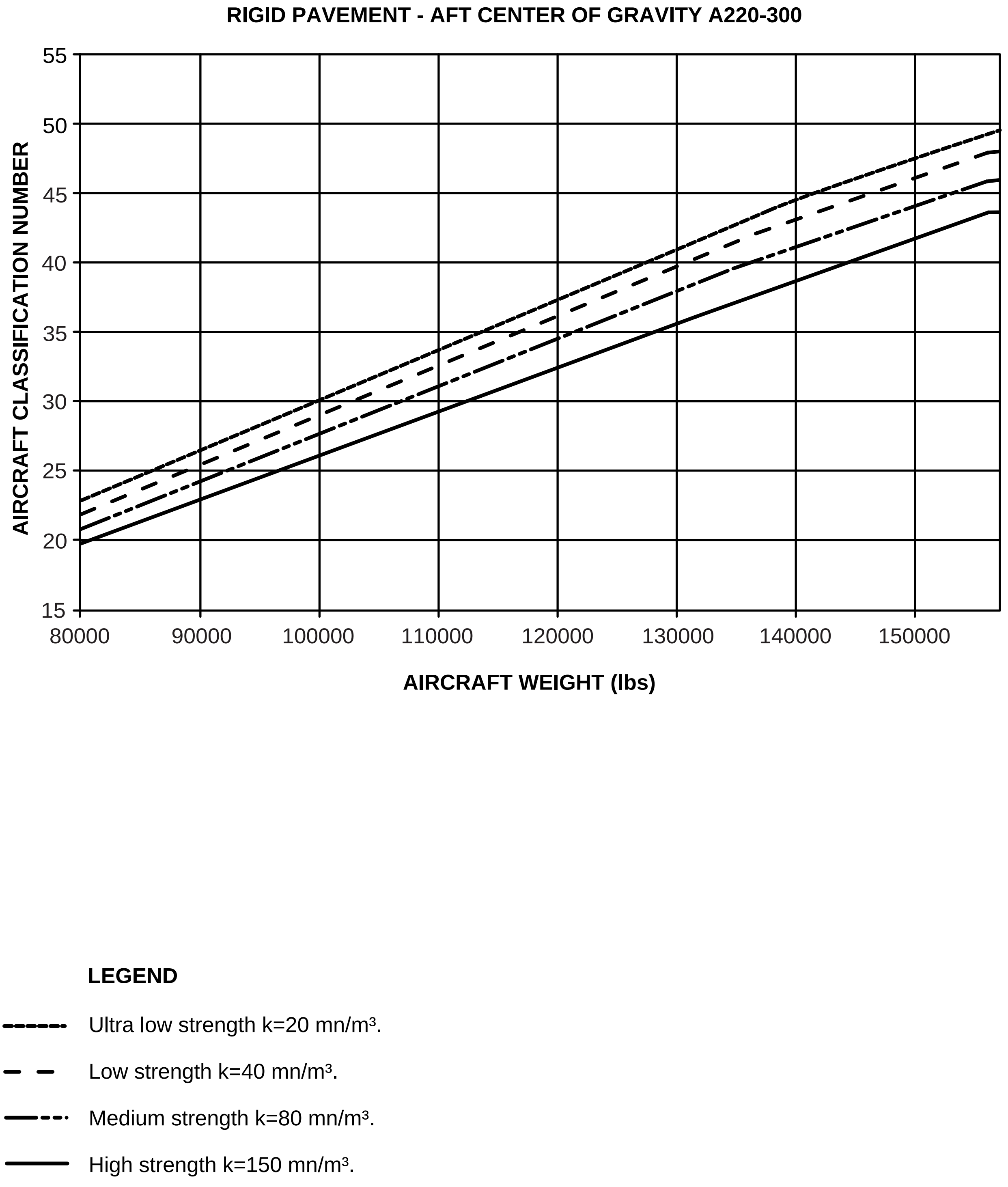
Table 4 Aircraft Classification Number (ACN) RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

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	145380	65943	43.2	45.4	47.5	49.2
156000	70760	145323	65917	43.2	45.4	47.5	49.2
155000	70306	144509	65548	42.9	45.1	47.1	48.9
154000	69853	143695	65178	42.6	44.8	46.8	48.6
153000	69399	142881	64809	42.3	44.5	46.5	48.2
152000	68945	142067	64440	42.1	44.2	46.2	47.9
151000	68492	141254	64071	41.8	43.9	45.9	47.6
150000	68038	140438	63533	41.5	43.6	45.6	47.3
149000	67585	139624	63332	41.2	43.3	45.3	47.0
148000	67131	138810	62963	40.9	43.0	45.0	46.7
147000	66678	137996	62593	40.6	42.7	44.7	46.4
146000	66224	137182	62224	40.4	42.4	44.4	46.1
145000	65770	136368	61855	40.1	42.1	44.1	45.7
144000	65317	135554	61486	39.8	41.8	43.8	45.4
143000	64863	134740	61117	39.5	41.5	43.5	45.1
142000	64410	133926	60747	39.2	41.2	43.2	44.8
141000	63956	133112	60378	38.9	40.9	42.9	44.5

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
140000	63502	132298	60009	38.7	40.6	42.6	44.2
139000	63049	131483	59639	38.4	40.4	42.2	43.9
138000	62595	130669	59270	38.1	40.1	41.9	43.5
137000	62142	129855	58901	37.8	39.8	41.6	43.2
136000	61688	129041	58532	37.5	39.5	41.3	42.9
135000	61234	128227	58162	37.2	39.2	41.0	42.6
134500	61008	127820	57978	37.1	39.0	40.9	42.5
134000	60781	127413	57793	37.0	38.9	40.7	42.3
133000	60327	126462	57362	36.6	38.5	40.4	41.9
132000	59874	125510	56930	36.3	38.2	40.0	41.6
131000	59420	124559	56499	36.0	37.9	39.7	41.2
130000	58966	123608	56067	35.7	37.5	39.3	40.8
129000	58513	122656	55635	35.3	37.2	39.0	40.5
128000	58059	121705	55204	35.0	36.8	38.6	40.1
127000	57606	120754	54773	34.7	36.5	38.3	39.8
126000	57152	119802	54341	34.4	36.2	37.9	39.4
125000	56699	118851	53909	34.1	35.9	37.6	39.1
124000	56245	117900	53478	33.7	35.5	37.2	38.7
123000	55791	116948	53046	33.4	35.2	36.9	38.4
122000	55338	115997	52615	33.1	34.9	36.6	38.0
121000	54884	115046	52183	32.8	34.5	36.2	37.6
120000	54431	114094	51752	32.5	34.2	35.9	37.3
119000	53977	113143	51320	32.2	33.9	35.5	36.9
118000	53523	112191	50888	31.9	33.5	35.2	36.6
117000	53070	111240	50457	31.5	33.2	34.8	36.2
116000	52616	110289	50026	31.2	32.9	34.5	35.9

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
115000	52163	109337	49594	30.9	32.6	34.1	35.5
114000	51709	108386	49163	30.6	32.2	33.8	35.2
113000	51255	107435	48731	30.3	31.9	33.5	34.8
112000	50802	106483	48299	30.0	31.6	33.1	34.5
111000	50348	105532	47868	29.7	31.2	32.8	34.1
110000	49895	104581	47437	29.3	30.9	32.4	33.8
109000	49441	103629	47005	29.0	30.6	32.1	33.4
108000	48987	102678	46573	28.7	30.2	31.7	33.1
107000	48534	101727	46142	28.4	29.9	31.4	32.7
106000	48080	100775	45710	28.1	29.6	31.1	32.3
105000	47627	99824	45279	27.8	29.3	30.7	32.0
104000	47173	98872	44847	27.4	28.9	30.4	31.6
103000	46719	97921	44416	27.1	28.6	30.0	31.3
102000	46266	96970	43984	26.8	28.3	29.7	30.9
101000	45812	96018	43553	26.5	27.9	29.3	30.6
100000	45359	95067	43121	26.2	27.6	29.0	30.2
99000	44905	94045	42658	25.9	27.3	28.6	29.9
98000	44452	93023	42194	25.5	26.9	28.3	29.5
97000	43998	92001	41730	25.2	26.6	27.9	29.1
96000	43544	90980	41267	24.9	26.3	27.6	28.8
95000	43091	89958	40804	24.6	25.9	27.2	28.4
94000	42637	88936	40340	24.3	25.6	26.9	28.0
93000	42184	87914	39877	23.9	25.2	26.5	27.7
92000	41730	86892	39413	23.6	24.9	26.2	27.3
91000	41276	85870	38949	23.3	24.6	25.8	26.9
90000	40823	84849	38486	23.0	24.2	25.5	26.6

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
89000	40369	83827	38023	22.7	23.9	25.1	26.2
88000	39916	82805	37559	22.3	23.6	24.8	25.9
87000	39462	81783	37096	22.0	23.2	24.4	25.5
86000	39008	80761	36632	21.7	22.9	24.1	25.1
85000	38555	79739	36169	21.4	22.5	23.7	24.8
84000	38101	78717	35705	21.1	22.2	23.4	24.4
83000	37648	77696	35242	20.7	21.9	23.0	24.0
82000	37194	76674	34778	20.4	21.5	22.6	23.7
81000	36740	75652	34315	20.1	21.2	22.3	23.3
80000	36287	74630	33851	19.8	20.9	21.9	22.9



ICN-BD500-A-J000000-C-3AB48-57655-A-004-01

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	145380	65943	37.4	39.1	42.8	48.1
156000	70760	145323	65917	37.3	39.0	42.8	48.1
155000	70306	144509	65548	37.1	38.8	42.5	47.8
154000	69853	143695	65178	36.8	38.5	42.2	47.5
153000	69399	142881	64801	36.6	38.3	41.9	47.2
152000	68945	142067	64440	36.4	38.0	41.6	46.9
151000	68492	141253	64071	36.1	37.7	41.3	46.6
150000	68038	140438	63701	35.9	37.5	41.0	46.3
149000	67585	139624	63332	35.6	37.2	40.7	46.0
148000	67131	138810	62963	35.4	37.0	40.4	45.7
147000	66678	137996	62593	35.2	36.7	40.1	45.4
146000	66224	137182	62224	34.9	36.4	39.8	45.0
145000	65770	136368	61855	34.7	36.2	39.5	44.7
144000	65317	135554	61486	34.4	35.9	39.2	44.4
143000	64863	134740	61117	34.2	35.7	38.9	44.1
142000	64410	133926	60747	34.0	35.4	38.6	43.8
141000	63956	133112	60378	33.7	35.1	38.3	43.5
140000	63502	132298	60009	33.5	34.9	38.0	43.2
139000	63049	131483	59639	33.2	34.6	37.7	42.9
138000	62595	130669	59270	33.0	34.4	37.4	42.6
137000	62142	129855	58901	32.8	34.1	37.1	42.3
136000	61688	129041	58532	32.5	33.8	36.8	42.0
135000	61234	128277	58185	32.3	33.6	36.5	41.7
134500	61008	127820	57978	32.2	33.5	36.3	41.5
134000	60781	127413	57793	32.0	33.3	36.2	41.4
133000	60327	126462	57362	31.8	33.0	35.8	41.0

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
132000	59874	125510	56930	31.5	32.7	35.5	40.6
131000	59420	124559	56499	31.2	32.5	35.2	40.3
130000	58966	123608	56067	31.0	32.2	34.8	39.9
129000	58513	122656	55635	30.7	31.9	34.5	39.6
128000	58059	121705	55204	30.4	31.6	34.2	39.2
127000	57606	120754	54773	30.2	31.3	33.8	38.8
126000	57152	119802	54341	29.9	31.0	33.5	38.5
125000	56699	118851	53909	29.6	30.7	33.2	38.1
124000	56245	117900	53478	29.3	30.4	32.9	37.8
123000	55791	116948	53046	29.1	30.1	32.6	37.4
122000	55338	115997	52615	28.8	29.9	32.2	37.1
121000	54884	115046	52183	28.5	29.6	31.9	36.7
120000	54431	114094	51752	28.3	29.3	31.6	36.3
119000	53977	1131434	51320	28.0	29.0	31.3	36.0
118000	53523	112191	50888	27.7	28.7	31.0	35.6
117000	53070	111240	50457	27.5	28.4	30.6	35.3
116000	52616	110289	50026	27.2	28.1	30.3	34.9
115000	52163	109337	49594	26.9	27.9	30.0	34.6
114000	51709	108386	49163	26.7	27.6	29.7	34.2
113000	51255	107435	48731	26.4	27.3	29.4	33.8
112000	50802	106483	48299	26.1	27.0	29.0	33.5
111000	50348	105532	47868	25.9	26.7	28.7	33.1
110000	49895	104581	47437	25.6	26.4	28.4	32.8
109000	49441	103629	47005	25.3	26.1	28.1	32.4
108000	48987	102678	46573	25.1	25.9	27.8	32.1
107000	48534	101727	46142	24.8	25.6	27.5	31.7

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	100775	45710	24.5	25.3	27.1	31.3
105000	47627	99824	45279	24.3	25.0	26.8	31.0
104000	47173	98872	44847	24.0	24.7	26.5	30.6
103000	46719	97921	44416	23.7	24.4	26.2	30.3
102000	46266	96970	43984	23.5	24.1	25.9	29.9
101000	45812	96018	43553	23.2	23.9	25.5	29.5
100000	45359	95067	43121	22.9	23.6	25.2	29.2
99000	44905	94045	42658	22.7	23.3	24.9	28.8
98000	44452	93023	42194	22.4	23.0	24.6	28.4
97000	43998	92001	41730	22.1	22.7	24.3	28.0
96000	43544	90980	41267	21.8	22.4	24.0	27.7
95000	43091	89958	40804	21.6	22.1	23.6	27.3
94000	42637	88936	40340	21.3	21.8	23.3	27
93000	42184	87914	39877	21.0	21.5	23.0	26.5
92000	41730	86892	39413	20.8	21.2	22.7	26.1
91000	41276	85870	38949	20.5	21.0	22.4	25.7
90000	40823	84849	38486	20.2	20.7	22.1	25.4
89000	40369	83827	38023	20.0	20.4	21.7	25.0
88000	39916	82805	37559	19.7	20.1	21.4	24.6
87000	39462	81783	37096	19.4	19.8	21.1	24.2
86000	39008	807\61	36632	19.1	19.5	20.8	23.8
85000	38555	79739	36169	18.9	19.2	20.5	23.5
84000	38101	78717	35705	18.6	18.9	20.2	23.1
83000	37648	77696	35242	18.3	18.6	19.8	22.7
82000	37194	76674	34778	18.1	18.3	19.5	22.3
81000	36740	75652	34315	17.8	18.1	19.2	21.9

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	74630	33851	17.5	17.8	18.9	21.5

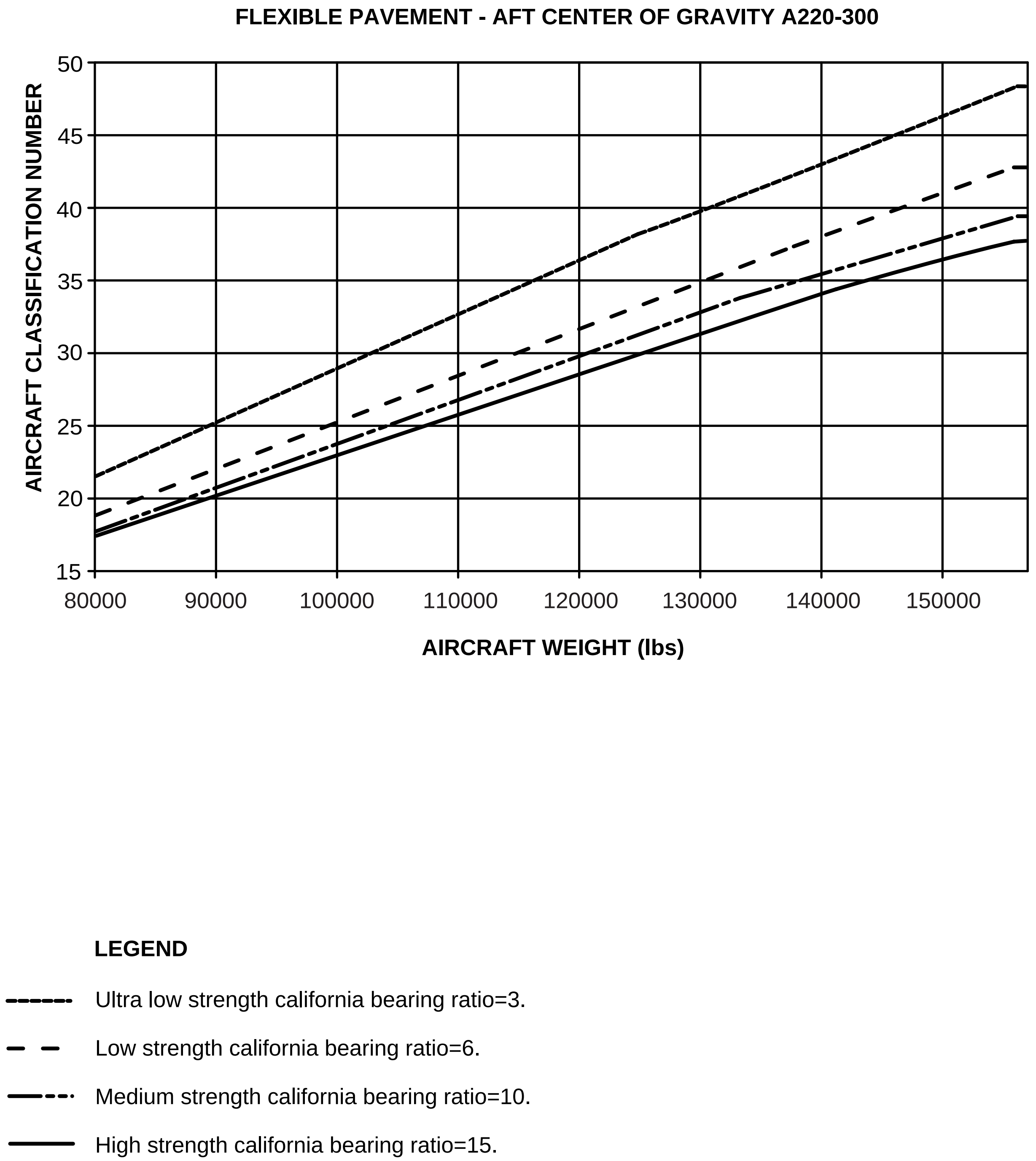


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Figure 2 ACN results - Flexible pavement

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

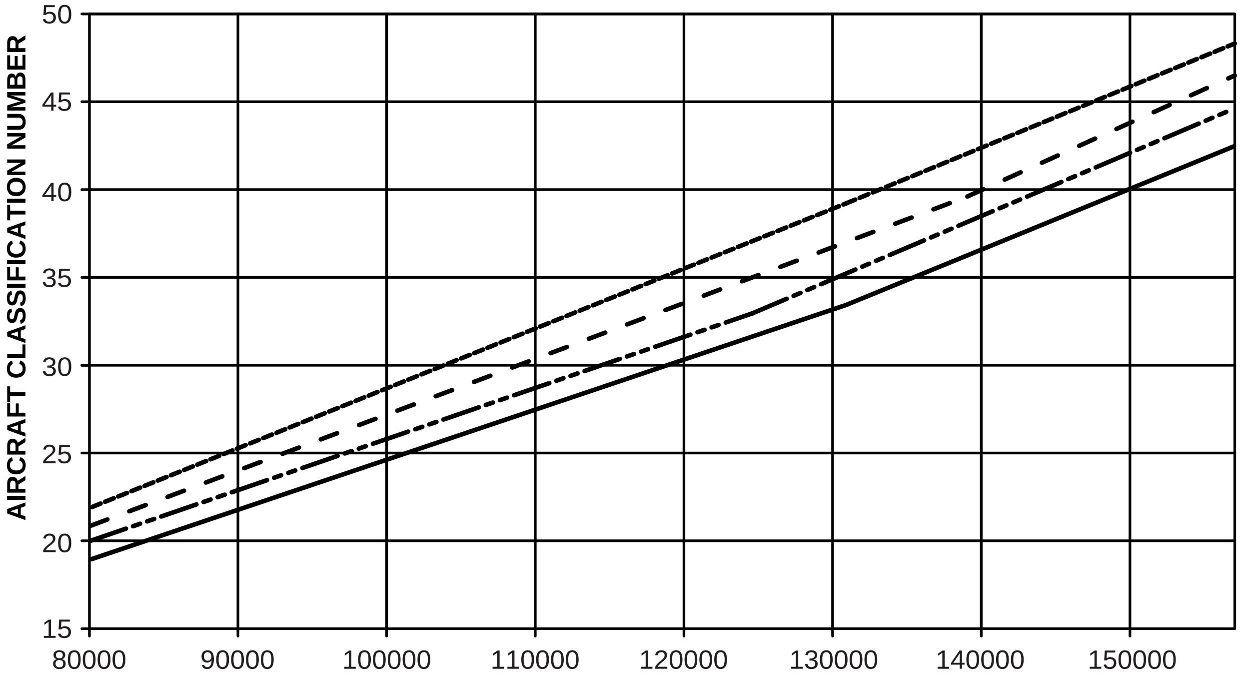
A/C Gross Weight (lb)	A/C Gross Weight (Kg)	MLG Load (lb)	MLG Load (kg)	ACN High Strength K=150 MN/m3	ACN Medium Strength K=80 MN/m3	ACN Low Strength K=40 MN/m3	ACN Ultra-Low Strength K=20 MN/m3
157000	71213	143077	64898	42.4	44.6	46.6	48.3
156300	70896	142359	64572	42.2	44.3	46.3	48.0
156000	70760	142063	64438	42.0	44.2	46.2	47.9
155000	70306	141075	63990	41.7	43.8	45.8	47.5
154000	69853	140087	63542	41.4	43.5	45.5	47.2
153000	69399	139099	63094	41.0	43.1	45.1	46.8
152000	68945	138111	62646	40.7	42.8	44.7	46.4
151000	68492	137124	62198	40.3	42.4	44.4	46.0
150000	68038	136136	61750	40.0	42.0	44.0	45.6
149000	67585	135148	61302	39.7	41.7	43.6	45.3
148000	67131	134160	60853	39.3	41.3	43.3	44.9
147000	66678	133172	60405	39.0	41.0	42.9	44.5
146000	66224	132185	59958	38.6	40.6	42.5	44.1
145000	65770	131197	59509	38.3	40.3	42.2	43.8
144000	65317	130209	59061	37.9	39.9	41.8	43.4
143000	64863	129221	58613	37.6	39.5	41.4	43.0
142000	64410	128233	58165	37.3	39.2	41.0	42.6
141000	63956	127246	57717	36.9	38.8	40.7	42.2
140000	63502	126258	57269	36.6	38.5	40.3	41.9
139000	63049	125270	56821	36.2	38.1	39.9	41.5
138000	62595	124282	56373	35.9	37.8	39.6	41.1

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	123294	55925	35.6	37.4	39.2	40.7
136000	61688	122307	55477	35.26	37.1	38.8	40.4
135000	61234	121319	55029	34.9	36.7	38.5	40.0
134500	61008	120825	54805	34.7	36.5	38.3	39.8
134000	60781	120339	54584	34.5	36.3	38.1	39.6
133000	60327	119366	54143	34.2	36.0	37.7	39.2
132000	59874	118394	53702	33.9	35.7	37.4	38.9
131000	59420	117421	53261	33.6	35.3	37.0	38.5
130000	58966	116449	52820	33.2	35.0	36.7	38.1
129000	58513	115476	52379	32.9	34.6	36.3	37.8
128000	58059	114504	51938	32.6	34.3	36.0	37.4
127000	57606	113529	51495	32.2	34.0	35.6	37.0
126000	57152	112554	51053	31.9	33.6	35.3	36.7
125972	57139	112527	51041	31.9	33.6	35.3	36.7
125000	56699	111661	50648	31.6	33.3	34.9	36.4
124000	56245	110770	50244	31.4	33.0	34.6	36.0
123000	55791	109880	49840	31.1	32.7	34.3	35.7
122000	55338	108989	49436	30.8	32.4	34.0	35.4
121000	54884	108098	49032	30.5	32.1	33.7	35.1
120000	54431	107207	48628	30.2	31.8	33.4	34.7
119000	53977	106316	48224	29.9	31.5	33.1	34.4
118000	53523	105426	47820	29.6	31.2	32.8	34.1
117000	53070	104535	47416	29.4	30.9	32.5	33.8
116000	52616	103644	47012	29.1	30.6	32.1	33.5
115000	52163	102753	46607	28.8	30.3	31.8	33.1
114000	51709	101863	46204	28.5	30.0	31.5	32.8

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
113000	51255	100972	45800	28.2	29.7	31.2	32.5
112000	50802	100081	45395	27.9	29.4	30.9	32.2
111000	50348	99190	44991	27.7	29.1	30.6	31.8
110000	49895	98299	44587	27.4	28.8	30.3	31.5
109000	49441	97409	44183	27.1	28.5	30.0	31.2
108000	48987	96518	43779	26.8	28.2	29.6	30.9
107000	48534	95627	43375	26.5	27.9	29.3	30.6
106000	48080	94736	42971	26.2	27.6	29.0	30.2
105000	47627	93846	42567	26.0	27.3	28.7	29.9
104000	47173	92955	42163	25.7	27.0	28.4	29.6
103000	46719	92064	41759	25.4	26.7	28.1	29.3
102000	46266	91173	41355	25.1	26.4	27.8	28.9
101000	45812	90282	40952	24.8	26.1	27.5	28.6
100000	45359	89392	40547	24.5	25.8	27.2	28.3
99000	44905	88501	40143	24.2	25.5	26.8	28.0
98000	44452	87610	39739	24.0	25.2	26.5	27.7
97000	43998	86719	39335	23.7	24.9	26.2	27.3
96000	43544	85829	38931	23.4	24.6	25.9	27.0
95000	43091	84938	38527	23.1	24.3	25.6	26.7
94000	42637	84047	38123	22.8	24.1	25.3	26.4
93000	42184	83156	37718	22.5	23.8	25.0	26.0
92000	41730	82265	37314	22.3	23.5	24.7	25.7
91000	41276	81375	36911	22.0	23.2	24.3	25.4
90000	40823	80484	36506	21.7	22.9	24.0	25.1
89000	40369	79593	36102	21.4	22.6	23.7	24.8
88000	39916	78702	35698	21.1	22.3	23.4	24.4

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
87000	39462	77811	35294	20.8	22.0	23.1	24.1
86000	39008	76921	34890	20.6	21.7	22.8	23.8
85000	38555	76030	34486	20.3	21.4	22.5	23.5
84000	38101	75139	34082	20.0	21.1	22.2	23.1
83000	37648	74248	33678	19.7	20.8	21.9	22.8
82000	37194	73358	33274	19.4	20.5	21.5	22.5
81000	36740	72467	32870	19.1	20.2	21.2	22.2
80000	36287	71576	32466	18.9	19.9	20.9	21.9

RIGID PAVEMENT - FWD CENTER OF GRAVITY A220-300



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

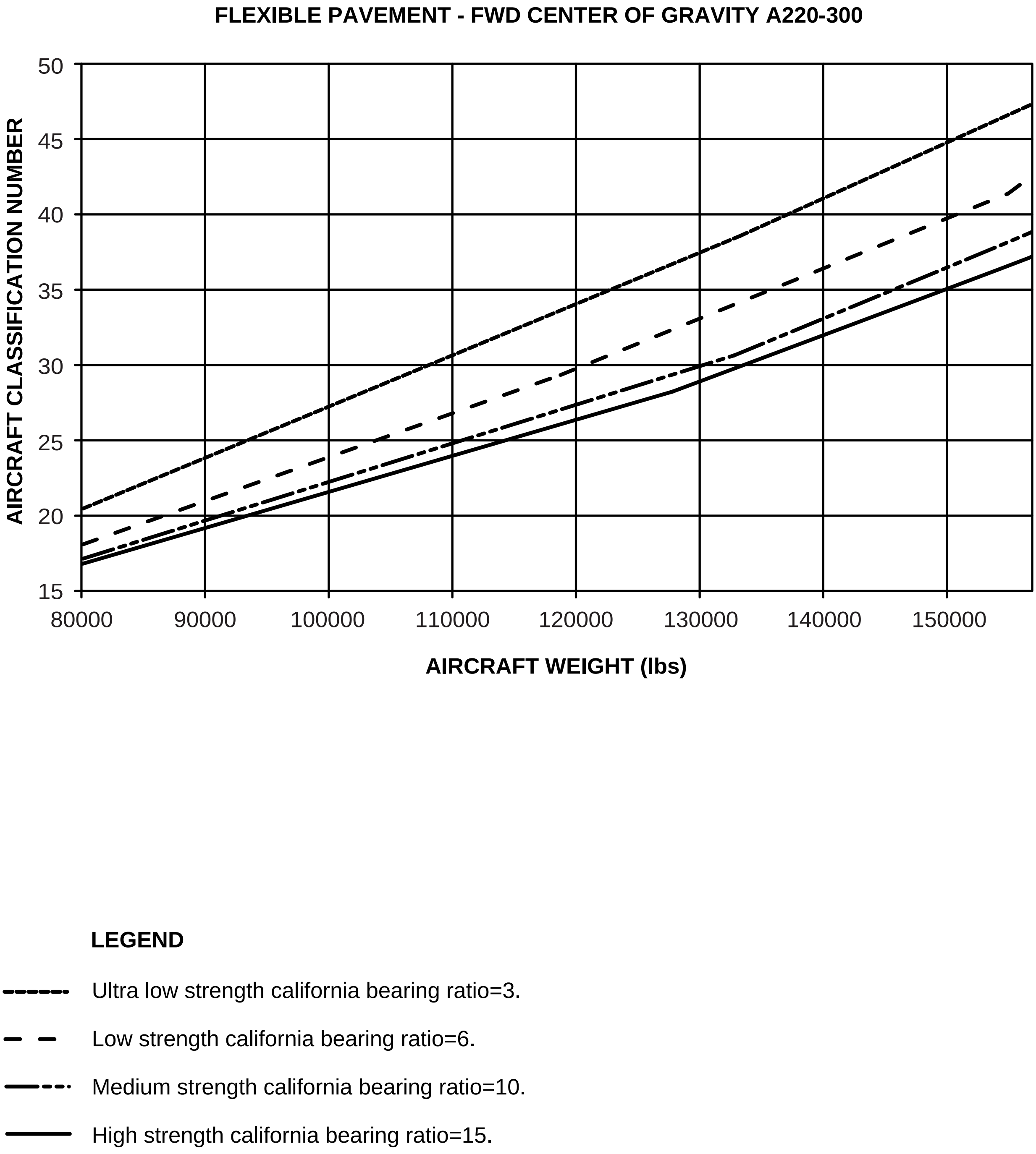
Table 7 Aircraft Classification Number (ACN) RESULTS FOR MOST FWD C.G. FLEXIBLE PAVEMENT

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	143077	64898	36.6	38.3	41.9	47.3
156300	70896	142359	64572	36.4	38.1	41.6	47.0
156000	70760	142063	64438	36.3	38.0	41.5	46.9
155000	70306	141075	63990	36.0	37.7	41.2	46.5
154000	69853	140087	63542	35.8	37.3	40.8	46.1
153000	69399	139099	63094	35.5	37.0	40.5	45.8
152000	68945	138111	62646	35.2	36.7	40.1	45.4
151000	68492	137124	62198	34.9	36.4	39.7	45.0
150000	68038	136136	61750	34.6	36.1	39.4	44.7
149000	67585	135148	61302	34.3	35.8	39.0	44.3
148000	67131	134160	60853	34.0	35.5	38.7	43.9
147000	66678	133172	60405	33.8	35.2	38.3	43.5
146000	66224	132185	59958	33.5	34.9	37.9	43.2
145000	65770	131197	59509	33.2	34.6	37.6	42.8
144000	65317	130209	59061	32.9	34.3	37.2	42.4
143000	64863	129221	58613	32.6	33.9	36.9	42.0
142000	64410	128233	58165	32.3	33.6	36.5	41.7
141000	63956	127246	57717	32.0	33.3	36.2	41.3
140000	63502	126258	57269	31.8	33.0	35.8	40.9
139000	63049	125270	56821	31.5	32.7	35.4	40.5
138000	62595	124282	56373	31.2	32.4	35.1	40.2
137000	62142	123294	55925	30.9	32.1	34.7	39.8
136000	61688	122307	55477	30.6	31.8	34.4	39.4
135000	61234	121319	55029	30.3	31.5	34.0	39.1
134500	61008	120825	54805	30.2	31.3	33.8	38.9
134000	60781	120339	54584	30.0	31.2	33.7	38.7

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	119366	54143	29.7	30.9	33.3	38.3
132000	59874	118394	53702	29.5	30.6	33.0	38.0
131000	59420	117421	53261	29.2	30.3	32.7	37.6
130000	58966	116449	52820	28.9	30.0	32.3	37.2
129000	58513	115476	52379	28.6	29.7	32.0	36.8
128000	58059	114504	51938	28.3	29.4	31.7	36.5
127000	57606	113529	51495	28.0	29.1	31.3	36.1
126000	57152	112554	51053	27.7	28.8	31.0	35.7
125972	57139	112527	51041	27.7	28.8	31.0	35.7
125000	56699	111661	50648	27.5	28.5	30.7	35.4
124000	56245	110770	50244	27.2	28.3	30.4	35.1
123000	55791	109880	49840	27.0	28.0	30.1	34.7
122000	55338	108989	49436	26.8	27.7	29.9	34.4
121000	54884	108098	49032	26.5	27.5	29.6	34.1
120000	54431	107207	48628	26.3	27.2	29.3	33.7
119000	53977	106316	48224	26.1	27.0	29.0	33.4
118000	53523	105426	47820	25.8	26.7	28.7	33.1
117000	53070	104535	47416	25.6	26.5	28.5	32.7
116000	52616	103644	47012	25.3	26.2	28.2	32.4
115000	52163	102753	46607	25.1	25.9	27.9	32.1
114000	51709	101863	46204	24.9	25.7	27.6	31.7
113000	51255	100972	45800	24.6	25.4	27.3	31.4
112000	50802	100081	45395	24.4	25.2	27.0	31.1
111000	50348	99190	44991	24.1	24.9	26.8	30.7
110000	49895	98299	44587	23.9	24.7	26.5	30.4
109000	49441	97409	44183	23.7	24.4	26.2	30.1

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
108000	48987	96518	43779	23.4	24.1	25.9	29.7
107000	48534	95627	43375	23.2	23.9	25.6	29.4
106000	48080	94736	42971	22.9	23.6	25.3	29.1
105000	47627	93846	42567	22.7	23.4	25.1	28.7
104000	47173	92955	42163	22.5	23.1	24.8	28.4
103000	46719	92064	41759	22.2	22.9	24.5	28.1
102000	46266	91173	41355	22.0	22.6	24.2	27.7
101000	45812	90282	40951	21.7	22.3	23.9	27.4
100000	45359	89392	40547	21.5	22.1	23.6	27.1
99000	44905	88501	40143	21.3	21.8	23.4	26.7
98000	44452	87610	39739	21.0	21.6	23.1	26.4
97000	43998	86719	39335	20.8	21.3	22.8	26.1
96000	43544	85829	38931	20.5	21.1	22.5	25.7
95000	43091	84938	38527	20.3	20.8	22.2	25.4
94000	42637	84047	38123	20.1	20.5	21.9	25.1
93000	42184	83156	37718	19.8	20.3	21.7	24.7
92000	41730	82265	37314	19.6	20.0	21.4	24.4
91000	41276	81375	36911	19.4	19.8	21.1	24.1
90000	40823	80484	36506	19.1	19.5	20.8	23.8
89000	40369	79593	36102	18.9	19.2	20.5	23.4
88000	39916	78702	35698	18.6	19.0	20.3	23.1
87000	39462	77811	35294	18.4	18.7	20.0	22.8
86000	39008	76921	34890	18.2	18.5	19.7	22.4
85000	38555	76030	34486	17.9	18.2	19.4	22.1
84000	38101	75139	34082	17.7	18.0	19.1	21.8
83000	37648	74248	33678	17.4	17.7	18.8	21.4

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
82000	37194	73358	33274	17.2	17.4	18.6	21.1
81000	36740	72467	32870	17.0	17.2	18.3	20.8
80000	36287	71576	32466	16.7	16.9	18.0	20.4



ICN-BD500-A-J000000-C-3AB48-57658-A-004-01

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.

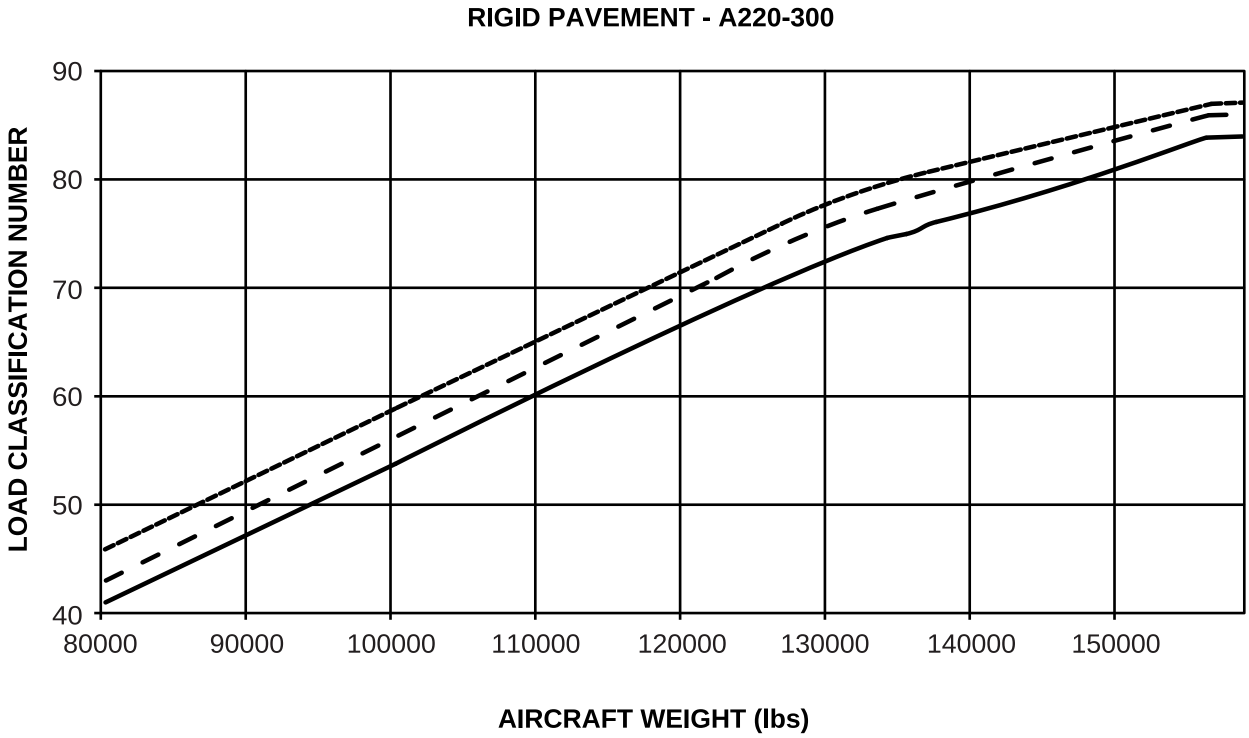
Table 8 LCN RESULTS FOR MOST AFT C.G. RIGID PAVEMENT

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	23617	42	24712	44	25735	45
81000	36740	223	24038	43	25143	45	26161	46
82000	37194	223	24460	44	25575	46	26588	47
83000	37648	223	24881	44	26006	46	27014	48
84000	38101	223	25302	45	26438	47	27441	48
85000	38555	223	25723	46	26869	48	27868	49
86000	39008	223	26145	47	27301	49	28294	50
87000	39462	223	26566	48	27732	50	28721	51
88000	39916	223	26987	48	28163	50	29147	52
89000	40369	223	27408	49	28595	51	29574	53
90000	40823	223	27829	50	29026	52	30001	54
91000	41276	223	28251	51	29458	53	30427	54
92000	41730	223	28672	52	29889	54	30854	55
93000	42184	223	29093	52	30321	54	31280	56
94000	42637	223	29514	53	30752	55	31707	57
95000	43091	223	29935	54	31183	56	32134	58
96000	43544	223	30357	55	31615	57	32560	59
97000	43998	223	30778	56	32046	58	32987	59
98000	44452	223	31199	56	32478	58	33413	60
99000	44905	223	31620	57	32909	59	33840	61
100000	45359	223	32042	58	33341	60	34267	62
101000	45812	223	32388	59	33692	61	34652	63

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	32735	59	34044	61	35037	63
103000	46719	223	33082	60	34396	62	35423	64
104000	47173	223	33429	60	34748	62	35808	64
105000	47627	223	33776	61	35100	63	36193	65
106000	48080	223	34122	61	35452	63	36579	65
107000	48534	223	34469	62	35803	64	36964	66
108000	48987	223	34816	62	36155	64	37349	66
109000	49441	223	35163	63	36507	65	377351	67
110000	49895	223	35510	63	36859	65	38120	67
111000	50348	223	35856	64	37211	66	38505	68
112000	50802	223	36203	64	37563	66	38891	68
113000	51255	223	36550	65	37914	67	39276	69
114000	51709	223	36897	65	38266	67	39661	70
115000	52163	223	37244	66	38618	68	40047	70
116000	52616	223	37590	66	38970	68	40432	71
117000	53070	223	37937	67	39322	69	40818	71
118000	53523	223	38284	67	39674	69	41203	71
119000	53977	223	38631	68	40025	70	41588	72
120000	54431	223	38978	68	40377	70	41973	73
121000	54884	223	39324	69	40729	71	42359	73
122000	55338	223	39671	69	41081	71	42744	74
123000	55791	223	40018	70	41433	72	43130	74
124000	56245	223	40365	70	41785	72	43515	75
125000	56699	223	40712	710	42136	73	43900	75
126000	57152	223	41058	71	42488	73	44866	76
127000	57606	223	41405	72	42840	74	44671	76
128000	58059	223	41752	72	43192	74	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	42021	73	43468	75	45398	77
130000	58966	223	42290	73	43745	75	45740	78
131000	59420	223	42559	74	44021	76	46082	78
132000	59874	223	42827	74	44297	76	46424	78
133000	60327	223	43096	75	44574	77	46767	79
134000	60781	223	43365	75	44850	77	47109	79
134500	61008	223	43499	75	44989	77	47255	80
136000	61688	223	43903	75	45433	77	47697	80
137000	62142	223	44171	76	45728	78	47992	81
138000	62595	223	44440	76	46024	78	48287	81
139000	63049	223	44709	76	46320	78	48582	81
140000	63502	223	44978	77	46615	79	48877	82
141000	63956	223	45247	77	46911	79	49172	82
142000	64410	223	45516	77	47207	79	49467	82
143000	64863	223	45784	78	47503	80	49762	82
144000	65317	223	46053	78	47798	80	50057	83
145000	65770	223	46322	78	48094	80	50351	83
146000	66224	223	46591	79	48390	81	50646	83
147000	66678	223	46860	79	48685	81	50941	83
148000	67131	223	47129	79	48981	81	51236	84
149000	67585	223	47397	80	49277	82	51531	84
150000	68038	223	47666	80	49573	82	51826	84
151000	68492	223	47935	80	49868	82	52121	85
152000	68945	223	48204	81	50164	83	52416	85
153000	69399	223	48473	81	50460	83	52711	85
154000	69853	223	48742	81	50755	83	53006	85
155000	70306	223	49010	82	51051	84	53301	86

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	49279	82	51347	84	53596	86
157000	71213	223	49286	82	51354	84	53603	86



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-3AB48-57659-A-003-01

Figure 5 LCN results - Rigid pavement

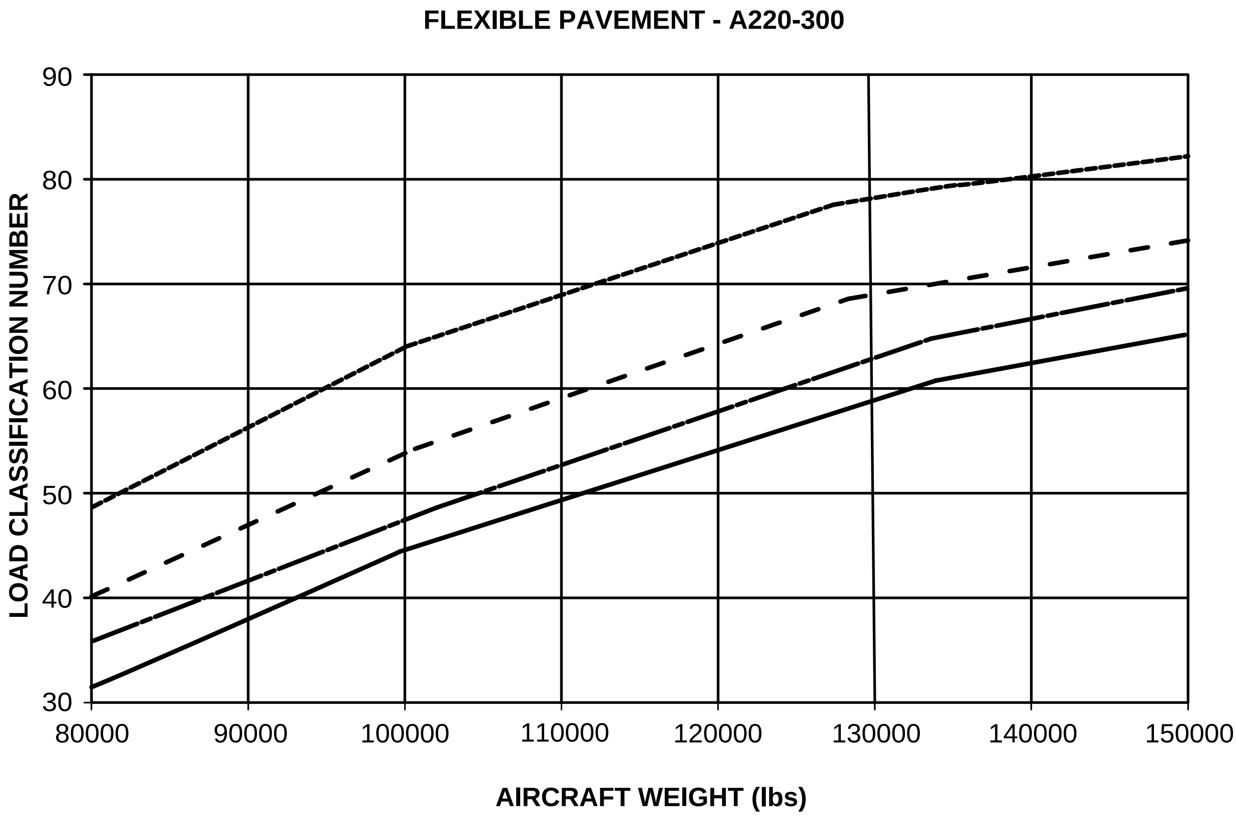
Table 9 RESULTS FOR MOST AFT C.G. FLEXIBLE PAVEMENT

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	32	19711	36	22206	40	26268	48
81000	36740	223	18958	33	20053	37	22586	41	26709	49
82000	37194	223	19259	33	20396	37	22967	41	27151	50
83000	37648	223	19560	34	20738	38	23348	42	27592	50
84000	38101	223	19860	35	21081	38	23728	43	28034	51
85000	38555	223	20161	35	21423	39	24109	44	28475	52
86000	39008	223	20462	36	21766	40	24490	44	28917	53
87000	39462	223	20763	37	22108	40	24870	45	29358	54
88000	39916	223	21063	37	22451	41	25251	46	29800	54
89000	40369	223	21364	38	22794	41	25632	46	830242	55
90000	40823	223	21665	39	23136	42	26012	47	30683	56
91000	41276	223	21966	39	23479	43	26393	48	31125	57
92000	41730	223	22266	40	23821	43	26773	48	31566	58
93000	42184	223	22567	40	24164	44	27154	49	32008	58
94000	42637	223	22868	41	24506	44	27535	50	32449	59
95000	43091	223	23168	42	24849	45	27915	51	32891	60
96000	43544	223	23469	42	25191	46	28296	51	33332	61
97000	43998	223	23770	43	25534	46	28677	52	33774	62
98000	44452	223	24071	44	25877	47	29057	53	34215	62
99000	44905	223	24371	44	26219	47	29438	53	34657	63
100000	45359	223	24672	45	26562	48	29819	54	35098	64
101000	45812	223	24909	45	26839	49	30126	55	35452	64
102000	46266	223	25146	46	27117	49	30432	55	35805	65
103000	46719	223	25384	46	27394	50	30739	56	36159	65
104000	47173	223	25621	47	27672	50	31046	56	36512	676

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	25858	47	27949	51	31353	57	36866	66
106000	48080	223	26095	48	28227	51	31660	57	37219	67
107000	48534	223	26333	48	28504	52	31967	58	37573	67
108000	48987	223	26570	49	28782	52	32274	58	37926	68
109000	49441	223	26807	49	29059	53	32580	59	38280	68
110000	49895	223	27044	50	29337	53	32887	59	38633	69
111000	50348	223	27281	50	29614	54	33194	60	38987	69
112000	50802	223	27519	51	29892	54	33501	60	39340	70
113000	51255	223	27756	51	30169	55	33808	61	39693	70
114000	51709	223	27993	52	30447	55	34115	61	40047	71
115000	52163	223	28230	52	30724	56	34422	62	40400	71
116000	52616	223	28467	52	31002	56	34728	62	40754	71
117000	53070	223	28705	53	31279	57	35035	63	41107	72
118000	53523	223	28942	53	31557	57	35342	63	41461	72
119000	53977	223	29179	54	31834	58	35649	64	41814	73
120000	54431	223	29416	54	32112	58	35956	64	42168	73
121000	54884	223	29654	55	32389	59	36263	65	42521	74
122000	55338	223	29891	55	32667	59	36570	65	42875	74
123000	55791	223	30128	56	32944	609	36876	66	43228	75
124000	56245	223	30365	56	33222	60	37183	66	43582	75
125000	56699	223	30602	57	33499	61	37490	67	43935	76
126000	57152	223	30840	57	33777	61	37797	67	44289	76
127000	57606	223	31077	58	34054	62	38104	68	44642	76
128000	58059	223	31314	58	34332	62	38411	68	44996	77
129000	58513	223	31552	59	34614	63	38722	68	45353	77
130000	58966	223	31790	59	34897	63	39033	69	45710	77

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	32027	60	35179	64	39345	69	46067	78
132000	59874	223	32265	60	35461	64	39656	69	46425	78
133000	60327	223	32503	61	35744	65	39968	70	46782	78
134000	60781	223	32741	61	36026	65	40279	70	47139	78
134500	61008	223	32842	61	36147	65	40412	70	47292	78
135000	61234	223	32932	61	36255	65	40531	70	47428	78
136000	61688	223	33112	61	36471	65	40769	70	47700	78
137000	62142	223	33292	62	36687	66	41007	71	47972	79
138000	62595	223	33472	62	36903	66	41245	71	48244	79
139000	63049	223	33652	62	37119	66	414828	71	48516	79
140000	63502	223	33832	63	37335	67	41720	72	48788	80
141000	63956	223	34012	63	37551	67	41958	72	49061	80
142000	64410	223	34192	63	37767	67	42195	72	49333	80
143000	64863	223	34372	63	37983	67	42433	72	49605	80
144000	65317	223	34552	64	38199	68	42671	73	4977	81
145000	65770	223	34732	64	38415	68	42909	73	50149	81
146000	66224	223	34913	64	38631	68	43146	73	50421	81
147000	66678	223	35093	64	38847	68	43384	73	50693	81
148000	67131	223	35273	65	39063	69	43622	74	50965	82
149000	67585	223	35453	65	39279	69	43860	74	51237	82
150000	68038	223	35633	65	39495	69	44097	74	51509	82
151000	68492	223	35813	66	39711	70	44335	75	51781	83
152000	68945	223	35993	66	39927	70	44573	75	52053	83
153000	69399	223	36173	66	40143	70	44811	75	52325	83
154000	69853	223	36353	66	40359	70	45048	75	52597	83
155000	70306	223	36533	67	40575	71	45286	76	52869	84

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	36713	67	40791	71	45524	76	53141	84
157000	71213	223	36718	67	40797	71	45530	76	53149	84



LEGEND

Radius of relative stiffness P=10.00 in. (254.00 mm).

Radius of relative stiffness P=15.00 in. (381.00 mm).

Radius of relative stiffness P=20.00 in. (508.00 mm).

Radius of relative stiffness P=30.00 in. (762.00 mm).

ICN-BD500-A-J000000-C-3AB48-57660-A-004-01

Figure 6 LCN results - Flexible pavement

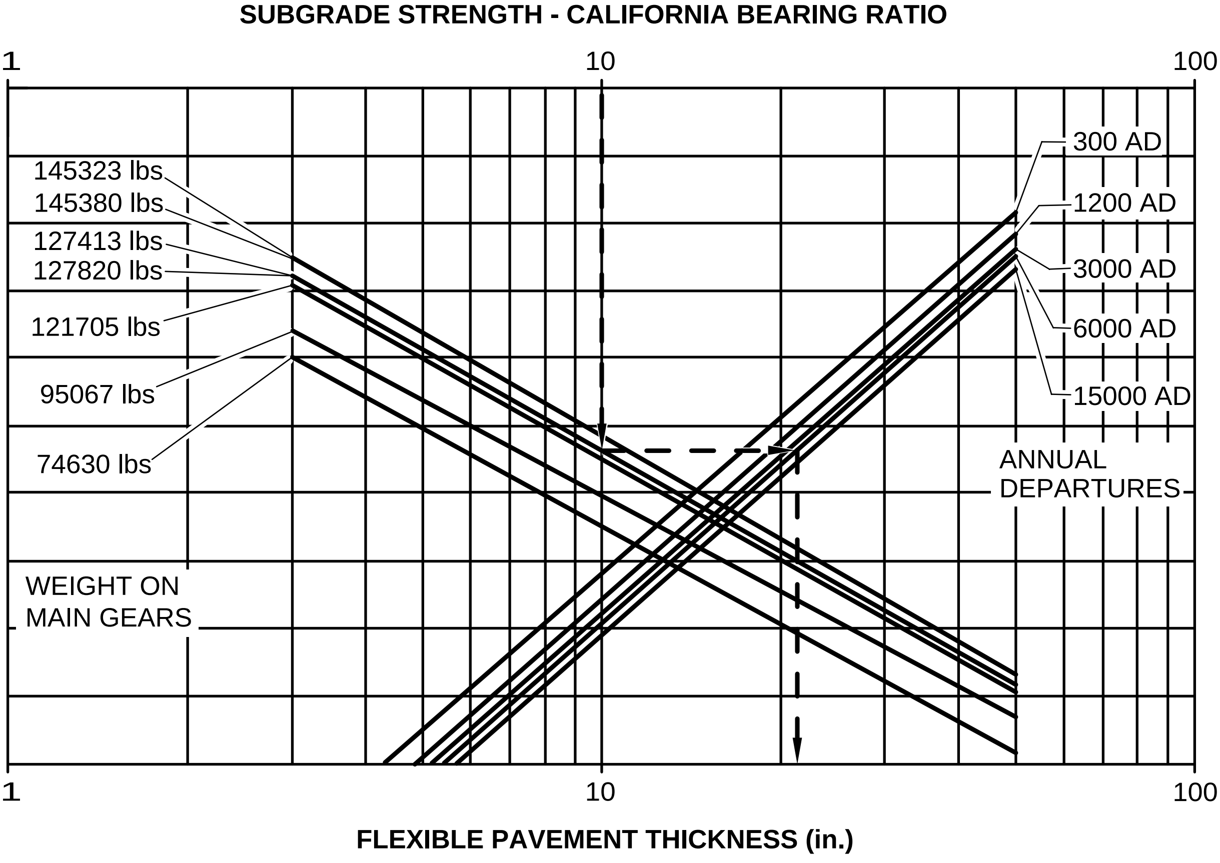
5 Required Pavement Thickness

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

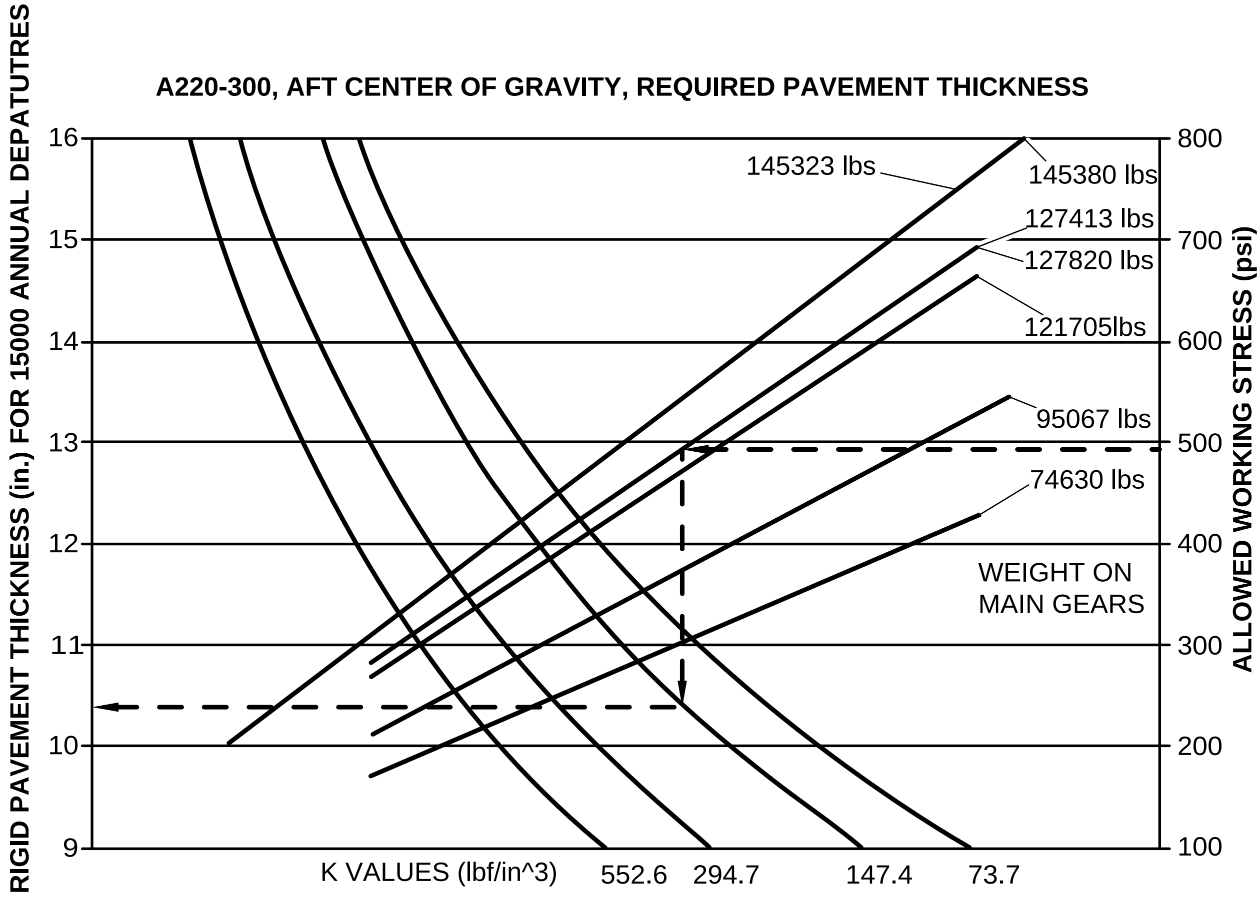
Number of annual departure starts from 300 (close to 1 flight per day). In fact, this gives the reader a better idea about required pavement thickness on those small airports that might not have a very high usage rate.

A220-300, AFT CENTER OF GRAVITY, REQUIRED FLEXIBLE PAVEMENT THICKNESS



ICN-BD500-A-J000000-C-3AB48-57661-A-004-01

Figure 7 Flexible pavement required thickness



ICN-BD500-A-J000000-C-3AB48-57662-A-004-01

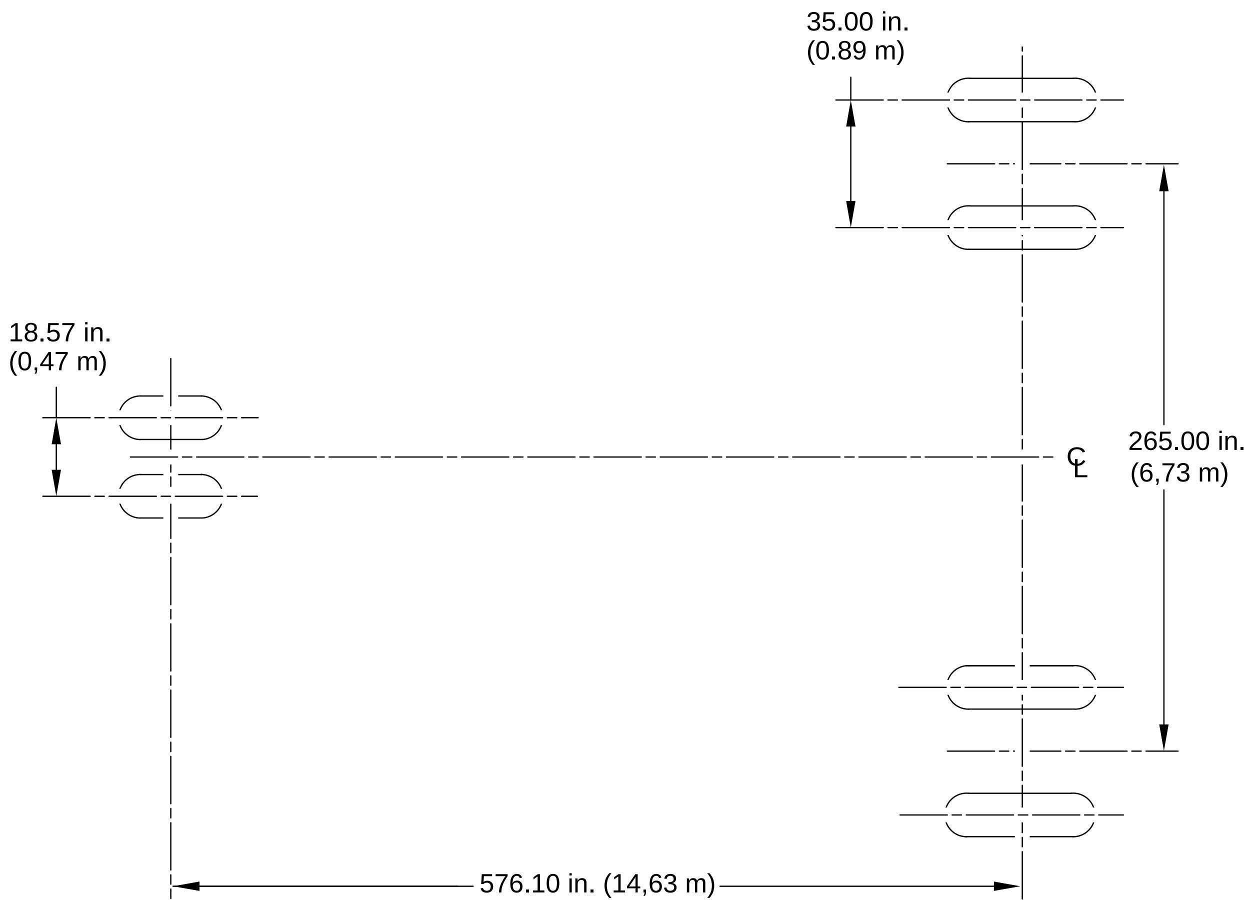
Figure 8 Rigid pavement required thickness

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.

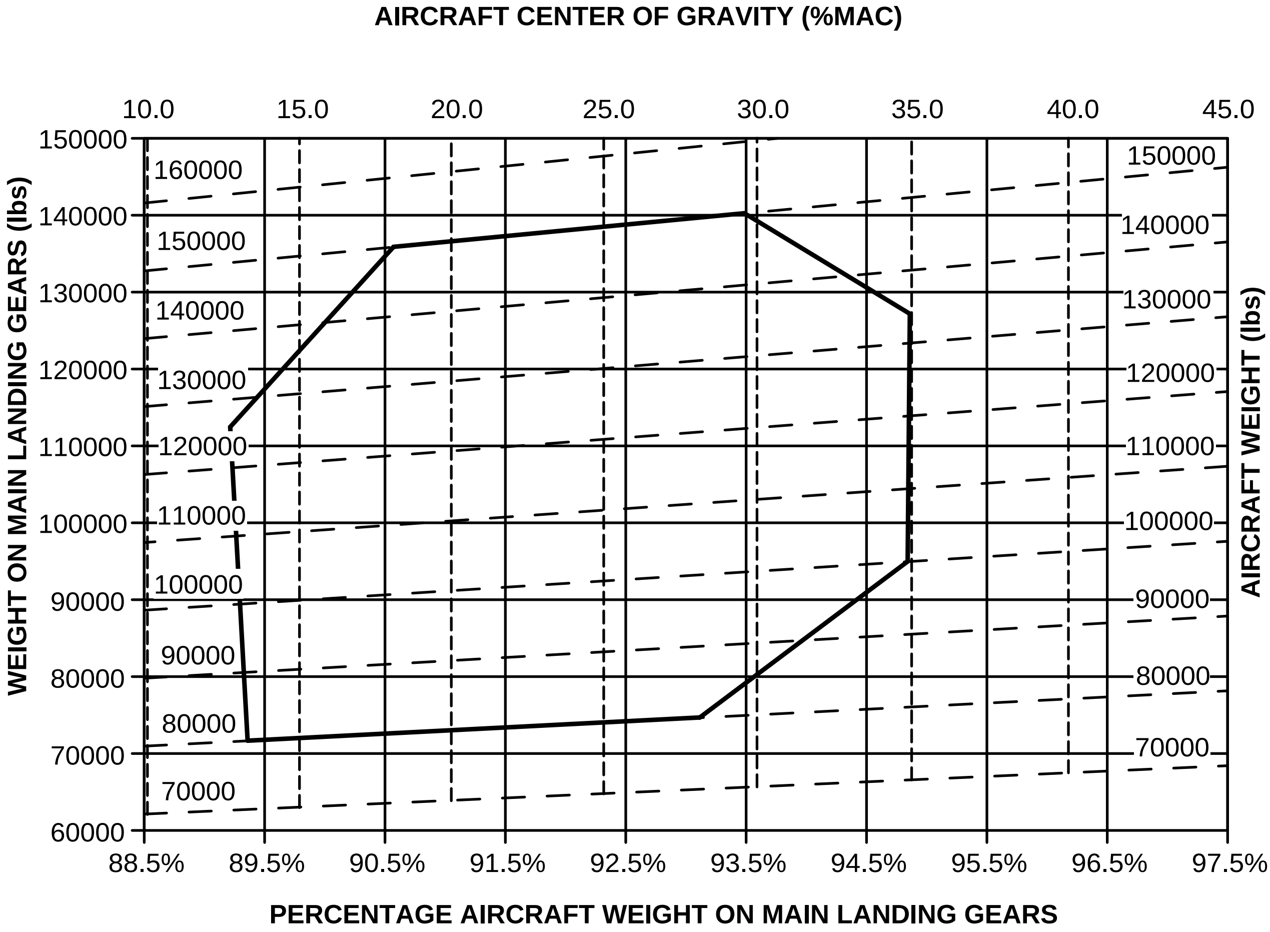
ICN-BD500-A-J000000-A-3AB48-21629-A-001-01

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

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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

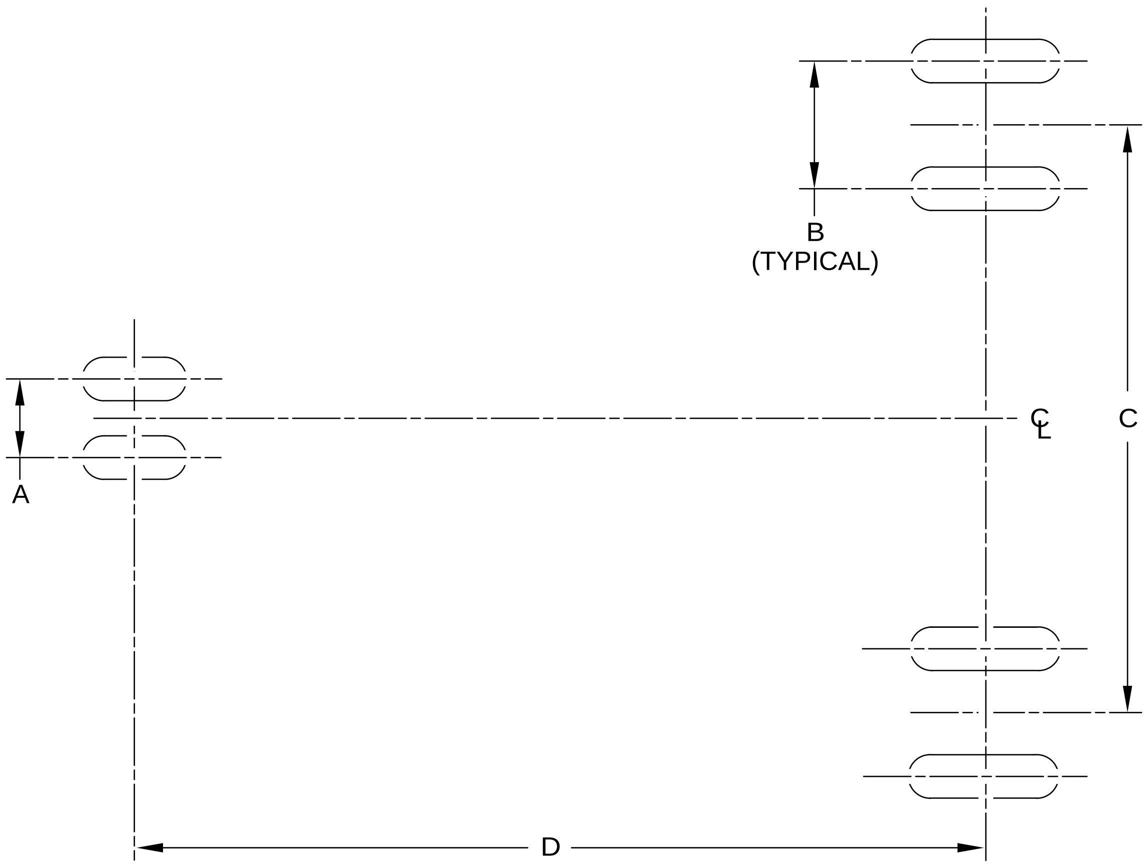
Table 2 Landing gear footprint dimensions

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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Chapter 8: Scaled drawing

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A220

Scaled drawings - Technical data

Applicability: 50001-54999

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References

Table 1 References

Data Module/Technical Publication	Title
None	

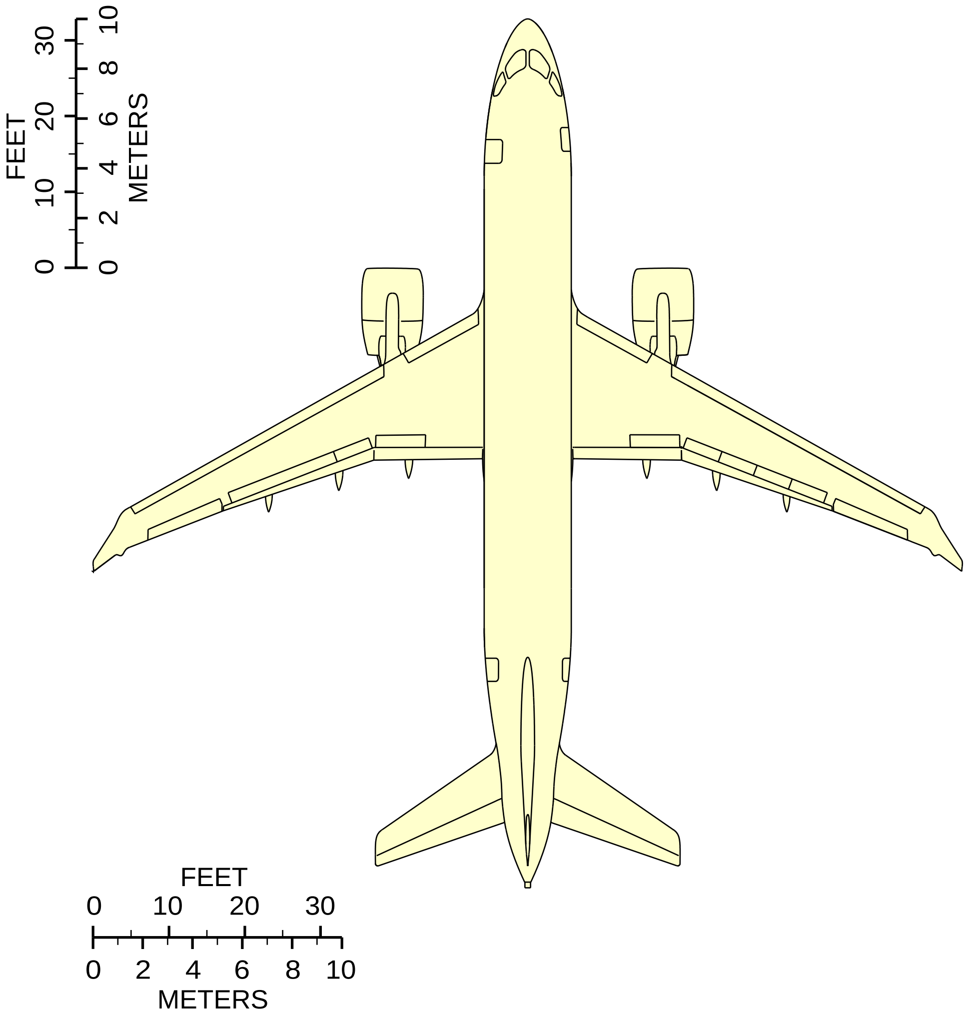
Description

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

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References

Table 1 References

Data Module/Technical Publication	Title
None	

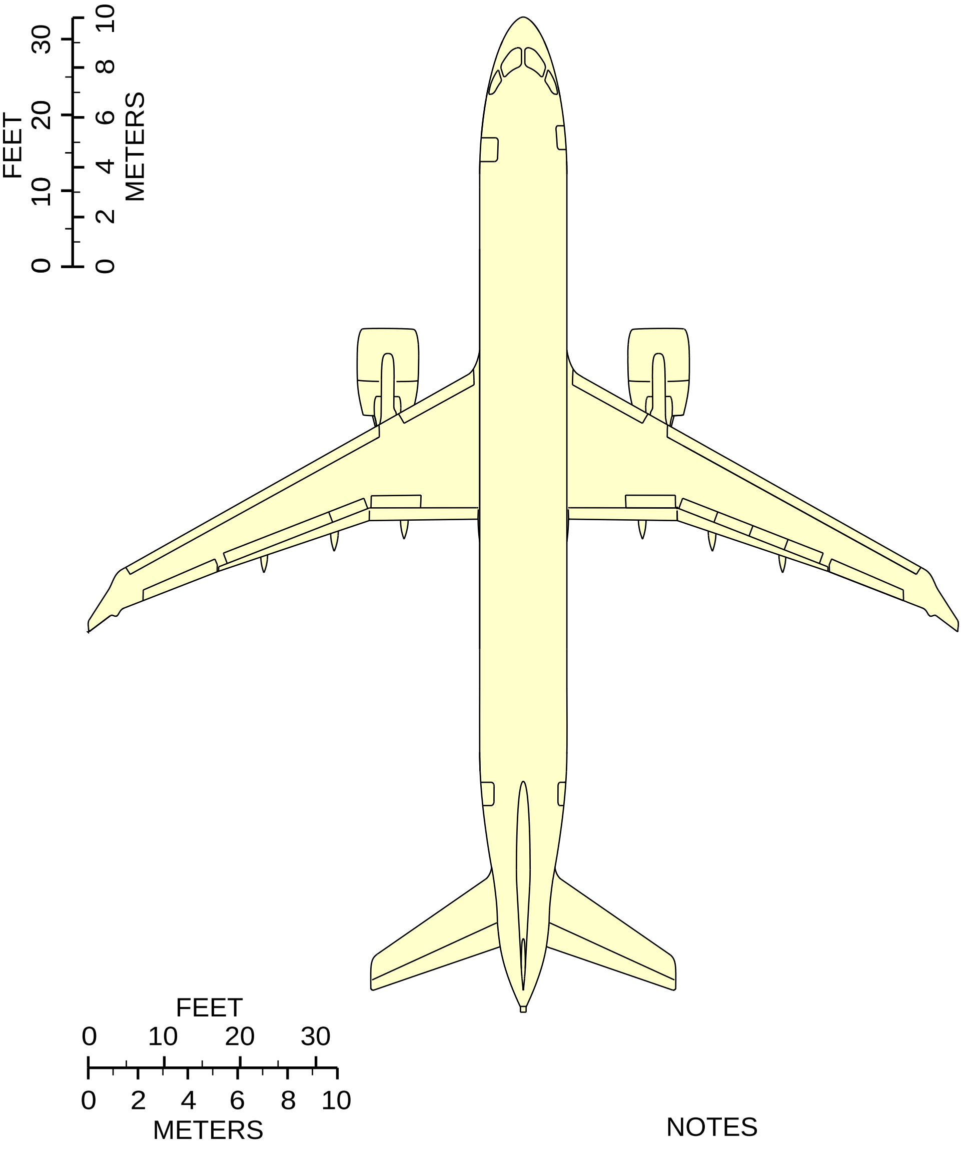
Description

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

A220

Aircraft scaled down dimensions - Technical data

Applicability: 50001-54999, 55001-59999

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Table 1 References

Data Module/Technical Publication	Title
None	

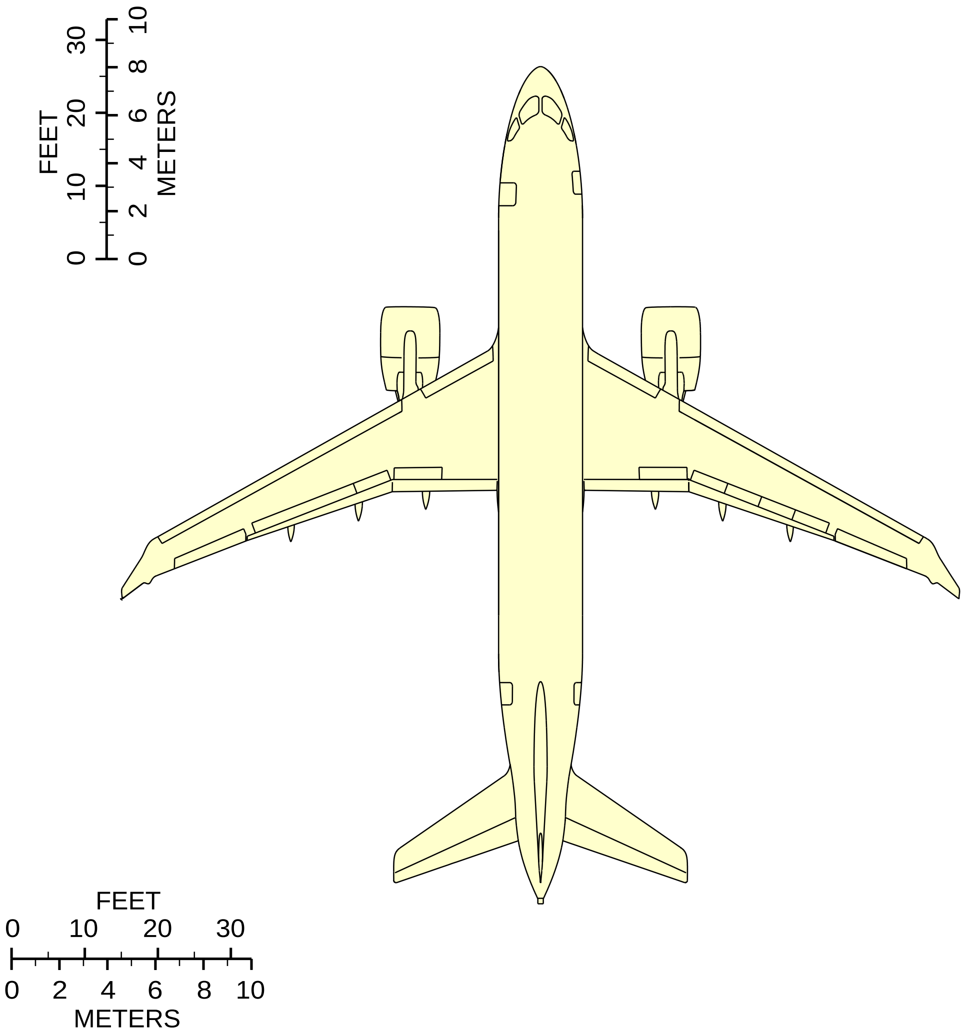
Description

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



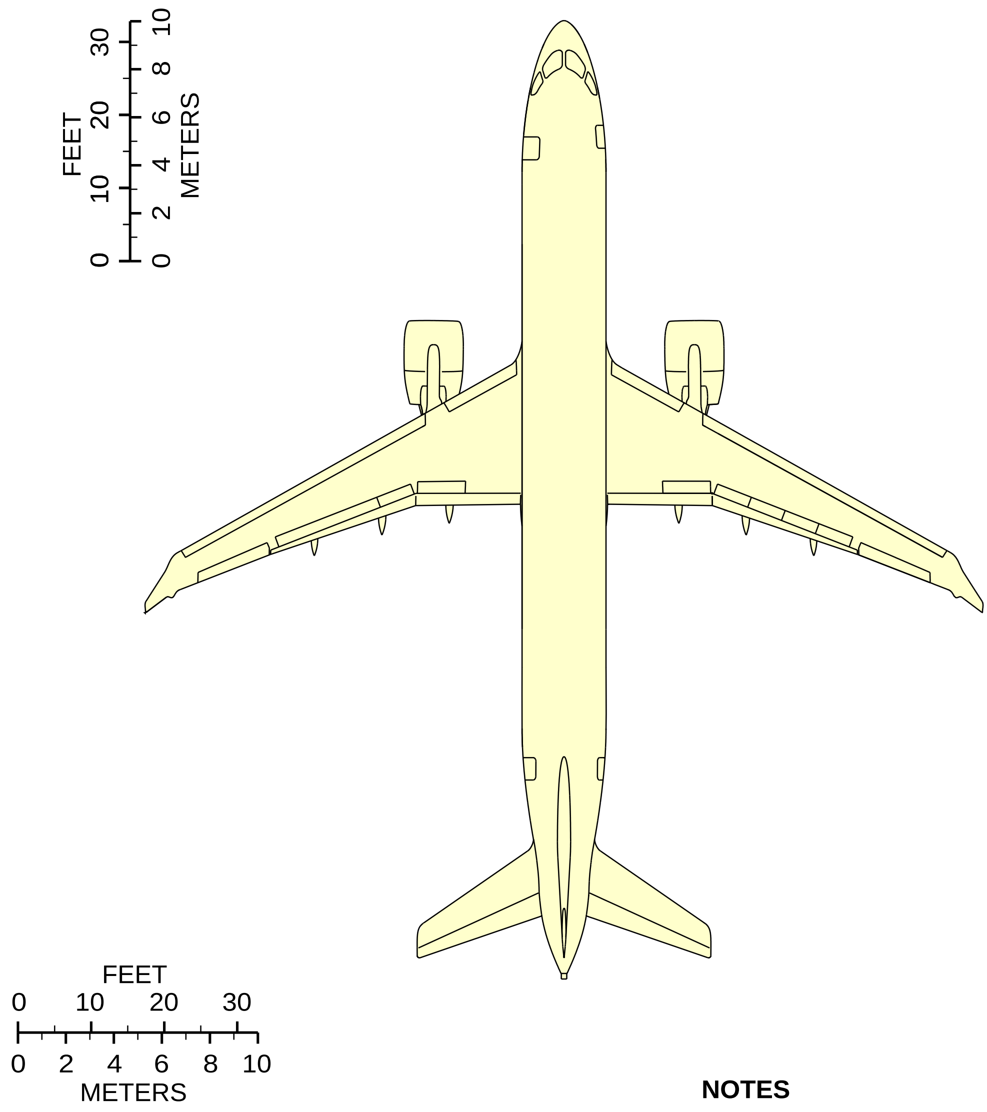
NOTES

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.

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Figure 1 Scaled drawing - (Sheet 2 of 2)

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Chapter 10: Aircraft rescue and fire fighting

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Emergency exits and evacuation - Technical data

Applicability: 50001-54999, 55001-59999

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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.

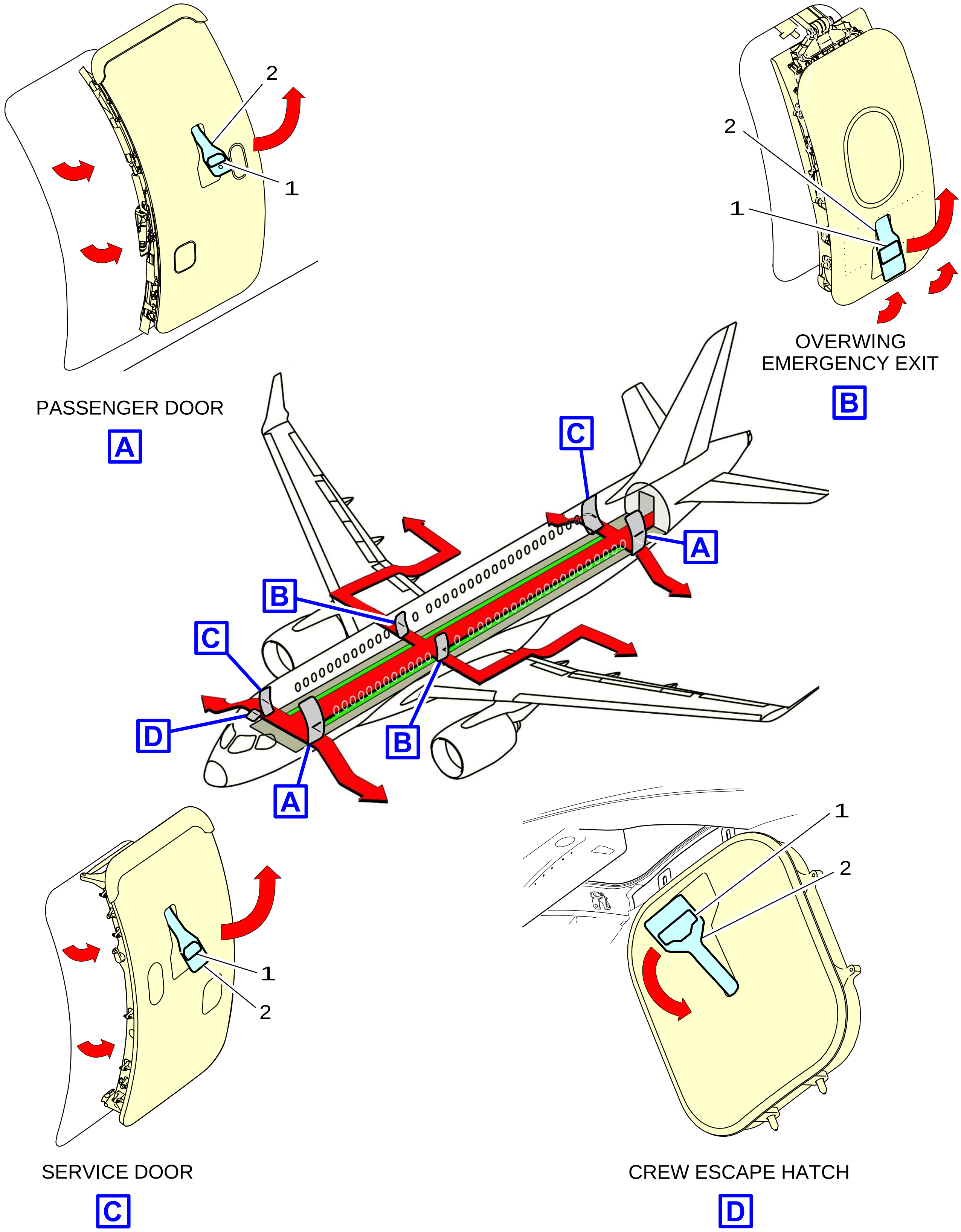

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Figure 1 Emergency exits and evacuation

A220

Fire-fighting - Fire-fighting and rescue

Applicability: 50001-54999, 55001-59999

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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

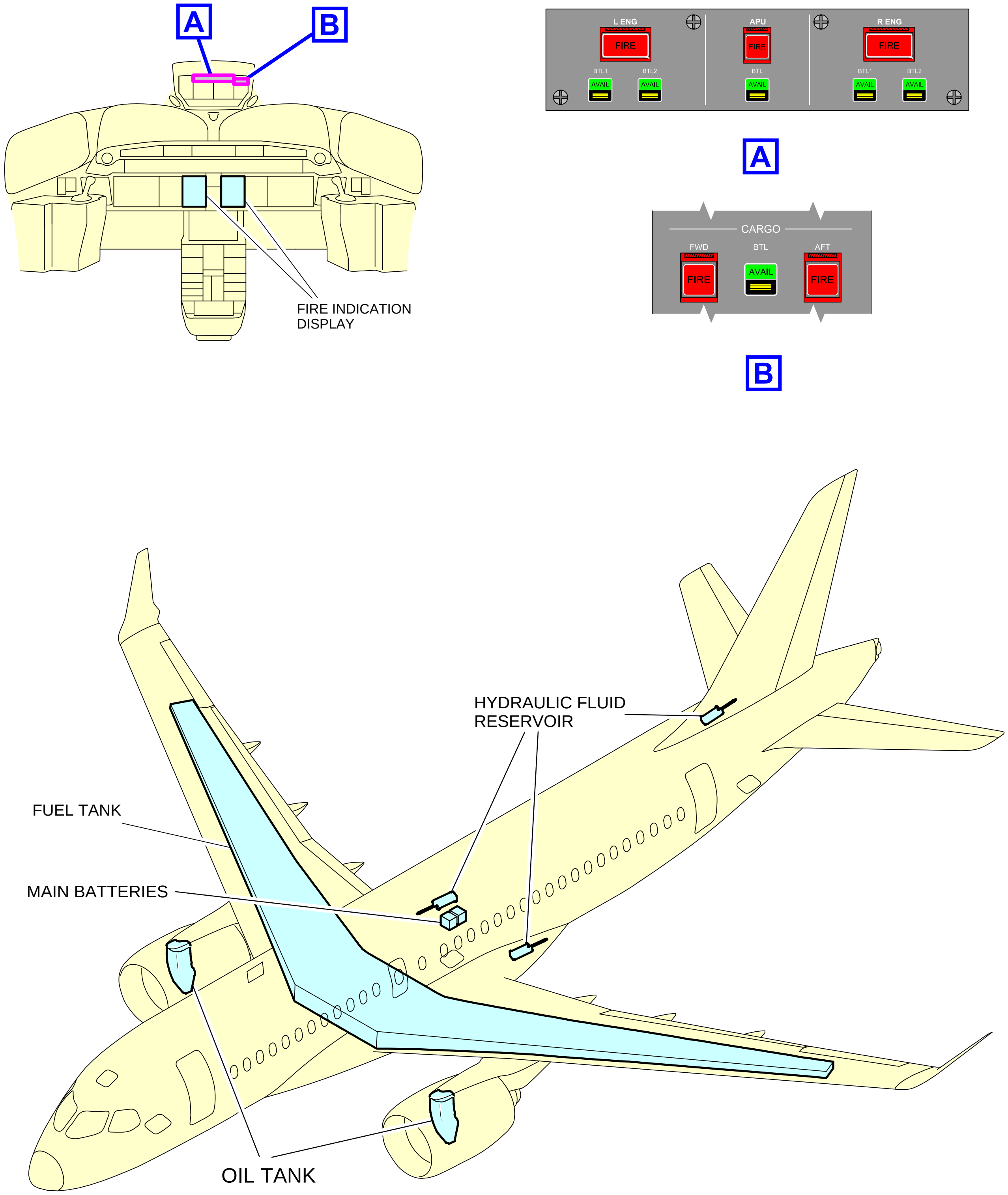

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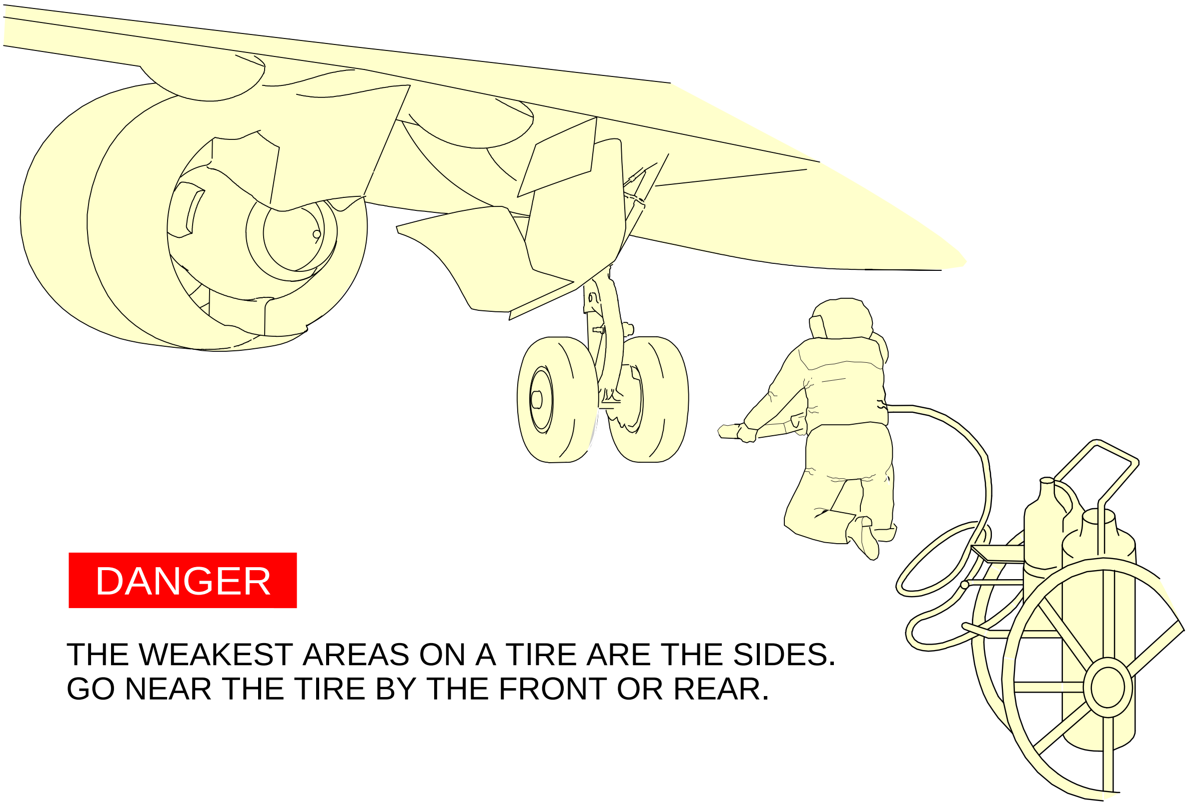
Figure 1 Fire indication and control / Flammable material location



DANGER

THE WEAKEST AREAS ON A TIRE ARE THE SIDES.
GO NEAR THE TIRE BY THE FRONT OR REAR.

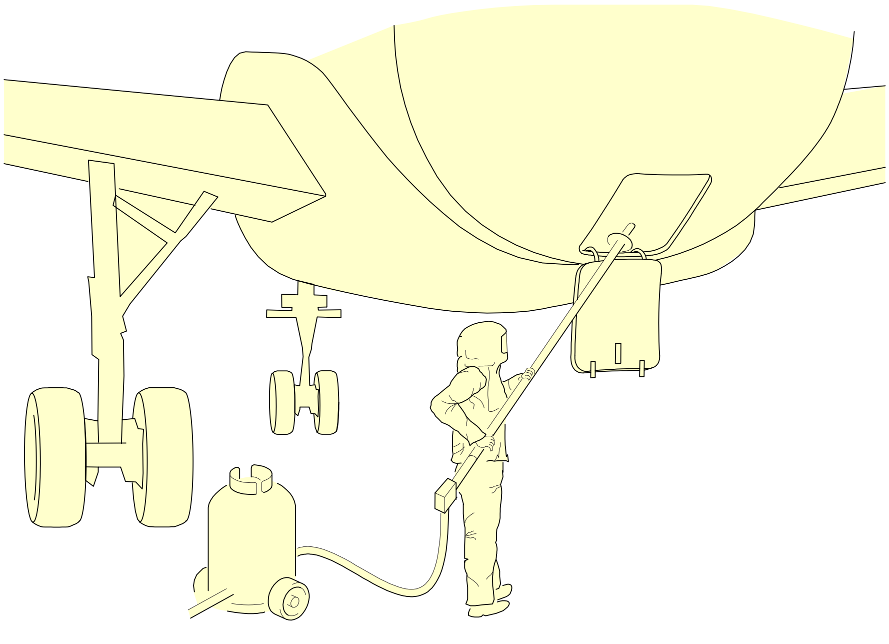


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Figure 2 Fire-fighting

Requirements after job completion

Required conditions

Table 7 Required conditions

Action/Condition	Data Module/Technical publication
None	

End of data module