CRJ SERIES Regional Jet

AIRPORT PLANNING MANUAL

TRANSMITTAL LETTER − REVISION 8

This package contains the CRJ1000 Aircraft Airport Planning Manual, CSP D−020, Revision 8, dated Dec 17/2015.

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AIRPORT PLANNING MANUAL

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CRJ SERIES
Regional Jet

Model CL−600−2E25

Series 1000

AIRPORT PLANNING MANUAL

Volume 1

CSP D−020

MASTER

BOMBARDIER INC.
BOMBARDIER AEROSPACE COMMERCIAL AIRCRAFT
CUSTOMER SUPPORT

123 GARRATT BLVD., TORONTO, ONTARIO
CANADA M3K 1Y5

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1	May 20/2010	May 20/2010	BCSG
2	Dec 20/2010	Dec 20/2010	BCSG
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5	Dec 19/2012	Dec 19/2011	BCSG
6	Dec 18/2013	Dec 18/2013	BCSG
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TABLE OF CONTENTS

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INTRODUCTION

1. General

A. The Airport Planning Manual (APM), prepared by Bombardier Aerospace, contains general data on the airport facilities, ramp, and runway areas necessary to operate the Canadair Regional Jet (CRJ) Model CL−600−2E24 aircraft. This manual agrees with the Air Transportation Association of America Specification No. 100 (ATA 100), Revision 34 dated February 15, 1996 and is written in Simplified English.

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

C. If there is a difference between the data contained in this manual and that given by the local Regulatory Authority, the data from the Regulatory Authority must be obeyed.

2. Manual Organization

A. The APM contains the sections that follow:

- Section 01: Introduction
- Section 02: Aircraft Description
- Section 03: Aircraft Performance
- Section 04: Ground Maneuvering
- Section 05: Terminal Servicing
- Section 06: Operating Conditions
- Section 07: Pavement Data
- Section 08: Derivative Aircraft
- Section 09: Scaled Drawings

3. Dimensions

A. Linear dimensions given in this manual are in inches with the metric equivalents in parentheses ().

4. Correspondence

A. Send all correspondence about this manual to:

Bombardier Inc.
Bombardier Aerospace Commercial Aircraft
Customer Support
Mailbox Stop N42−25
123 Garratt Blvd., Toronto
Ontario, Canada
M3K 1Y5

Attention: Director, Technical Publications

5. Translation of Manual

A. If all or part of this publication is translated, the official version is the English language version by Bombardier Aerospace Regional Aircraft.

6. Standard Term Definitions

A. The definitions that follow are used throughout the APM:

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 (MLOW). Maximum weight for takoff 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 Payload. Maximum design zero weight (MLOW) minus operational weight empty (OWE).

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 APU.

7. Acronyms

A.

The acronyms that follow are used in the APM:

CGFS	Center of Gravity at Fuselage Station
FBO	Fixed Base Operator
ISA	International Standard Atmosphere
MLW	Maximum Landing Weight
MTOW	Maximum Take−Off Weight
MFW	Maximum Flight Weight
MRW	Maximum Ramp Weight
MZFW	Maximum Zero Fuel Weight
OWE	Operating Weight Empty
VM	Weight on Main Gear
VN	Weight on Nose Gear

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AIRCRAFT DESCRIPTION

1. Introduction

This section contains general description data about the aircraft. This section is divided into the subsections that follow:

– Aircraft characteristics

– Aircraft dimensions

– Interior configurations

– Door clearances

– Cargo compartment configurations.

2. Aircraft Characteristics

A. This section contains general data about the CRJ1000 aircraft characteristics.

B. 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 (CSP B−041) and Weight and Balance Report for structural limits and other weight information.

C. Refer to Table 1 for the aircraft characteristics.

D. Refer to Table 2 for the system fluid capacities.

E. Refer to Table 3 for the service fluid capacities.

Table 1 − Aircraft Characteristics

Description	Model CL−600−2E24
Engines	QTY: 2 GE CF34−8C5A1 Turbofan GE CF34−8C5A2 Turbofan (option)
Mode	Passenger
Maximum Seating Capacity	104
Maximum Ramp Weight (MRW)	92300 lb (41867 kg)
Maximum Take−Off Weight (MTOW)	91800 lb (41640 kg)

Description	Model CL−600−2E24
Maximum Landing Weight (MLW)	81500 lb (36968 kg)
Minimum Flight Weight (MFW)	51000 lb (23133 kg)
Maximum Zero Fuel Weight (MZFW)	77500 lb (35153 kg)
Maximum Fuel Tank Capacity	2903 US gal (10989 L) 19450 lb (8822 kg)[1]
Unusable Fuel	33.8 US gal (127.95 L) 228.2 lb (103.5 kg)[1]
Maximum Cargo Volume − Aft Baggage Compartment	508.8 pi³ (14.41 m³)[2]
Maximum Cargo Volume − Forward Under Floor Baggage	185.8 pi³ (5.26 m³)[2]
Maximum Cargo Volume − Under−seat storage	147.0 pi³ (4.16 m³)[2]
Maximum Cargo Volume − Overhead bins	179.3 pi³ (5.08 m³)[2]
[1] Weight is calculated with a fuel density of 6.7 lb/US gal (0.809 kg/L). [2] Cargo volume can be modified according to interior configuration.	

Table 2 − System Fluid Capacities

Description	Volume	Weight
APU and Engine Fluids Calculated with 7.5 lb/US gal (0.898 kg/L)		
Engines Oil Tank @ 60 °F	5.2 US gal (19.68 L)	42.4 lb (19.2 kg)
Oil Replenisment Tank	1.6 US gal (6.06 L)	13.0 lb (5.9 kg)
Lines and Internal Engine Oil	0.9 US gal (3.41 L)	7.5 lb (3.4 kg)
Total	7.7 US gal (29.15 L)	62.9 lb (28.5 kg)
Hydraulic Fluids @ 77°F (25 °C) Low Density 8.43 lb/US gal (1.01 kg/L)		
System 1 Reservoir	0.7 US gal (2.65 L)	6.2 lb (2.8 kg)
System 2 Reservoir	1.0 US gal (3.79 L)	8.0 lb (3.6 kg)

Description	Volume	Weight
System 3 Reservoir	0.8 US gal (3.03 L)	6.6 lb (3.0 kg)
Total	2.5 US gal (9.46 L)	20.8 lb (9.4 kg)
Hydraulic Fluids @ 77°F (25 °C) High Density 8.86 lb/US gal (1.06 kg/L)		
System 1 Reservoir	0.7 US gal (2.65 L)	6.5 lb (2.9 kg)
System 2 Reservoir	1.0 US gal (3.79 L)	8.4 lb (3.8 kg)
System 3 Reservoir	0.8 US gal (3.03 L)	6.9 lb (3.1 kg)
Total	2.5 US gal (9.46 L)	21.8 (9.8 kg)

Table 3 − Service Fluid Capacities

Description	Volume	Weight
Potable Water @ 60 °F (15.5 °C)		
Forward Galley/Lavatory Tank	11.5 US gal (43.5 L)	91.7 lb (41.6 kg)
Aft Lavatory Tank	10.1 US gal (38.2 L)	83.4 lb (37.9 kg)
Chemical Toilet Fluid @ 60 °F (15.5 °C)		
Forward or Aft Toilet Tank	2.3 US gal (8.71 L)	19.2 lb (8.7 kg)

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DIMENSIONS

1. General

A. This section contains general data about the aircraft dimensions and clearances.

B. The structural weight limits, such as maximum ramp weight, landing weight, and zero fuel weight are dependent on configuration. Refer to each aircraft Weight and Balance Manual (CSP C−041) and Weight and Balance Report for structural limits and other weight information.

C. Refer to Table 1 and Figures 1and 2 for the aircraft dimensions and clearances.

D. Refer to Table 3 and Figure 3 for the door dimensions and clearances.

Table 1 − General Aircraft Dimensions and Areas

LOCATION	DESCRIPTION	VALUE
A	Total Aircraft Length	128 ft. 5 in. (39.13 m)
B	Total Aircraft Height	24 ft. 6 in. (7.47 m)
C	Total Wing Span	85 ft. 11 in. (26.17 m)
D	Total Horizontal Stabilizer Span	28 ft. (8.54 m)
E	Fuselage External Diameter	8 ft. 10 in. (2.69 m)
F	Fuselage Length	120 ft. (36.57 m)
G	Static Ground Angle (Nominal)	1.65 degrees
H	Total Wing Area	833.05 ft.^{2} (77.39 m^2)
I	Total Horizontal Stabilizer Area	171.4 ft.^{2} (15.91 m^2)
J	Total Vertical Stabilizer Area	121.9 ft.^{2} (11.32 m^2)

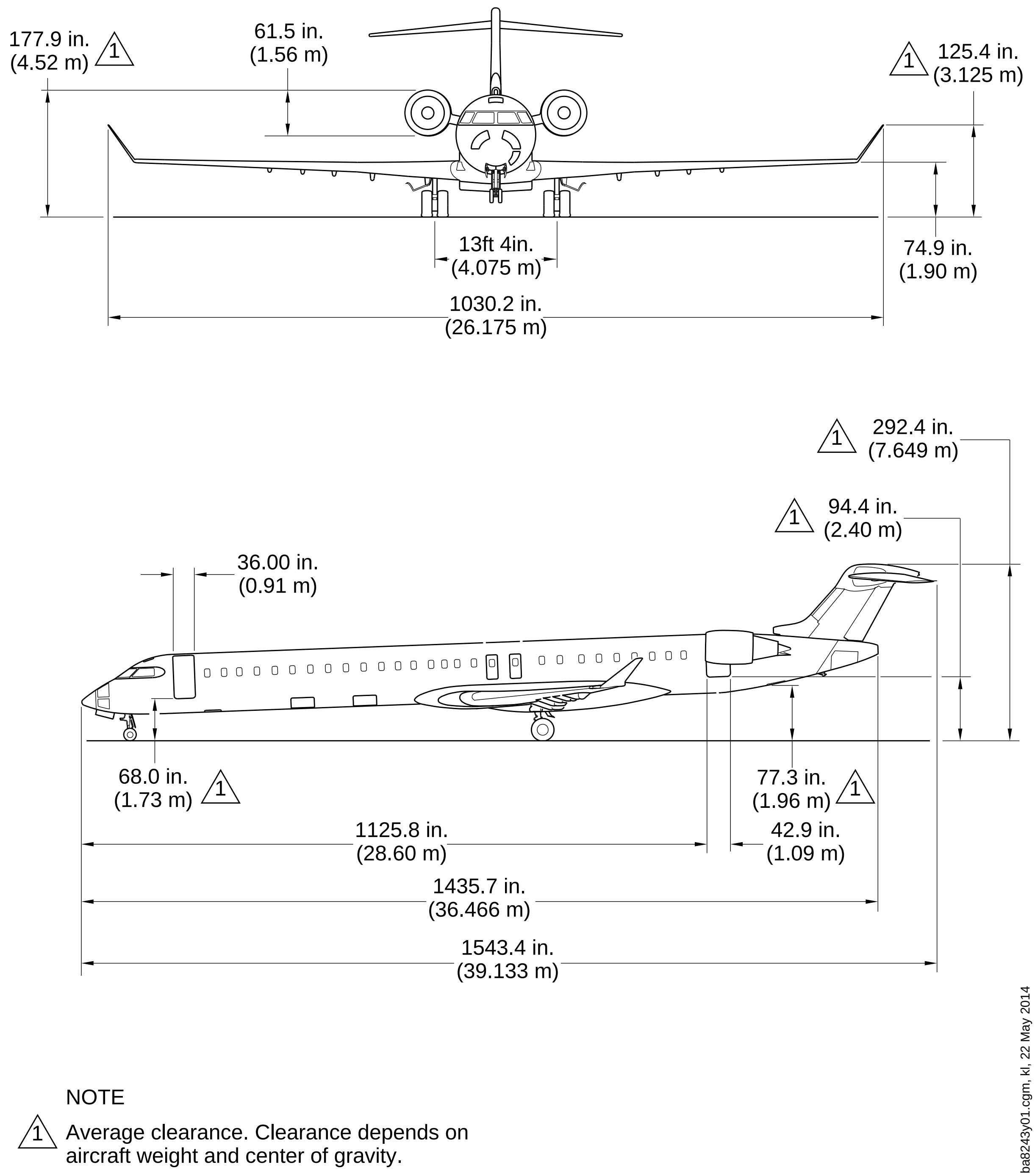
Table 2 − Landing Gear Dimensions

LANDING GEARS	MAIN	NOSE
Tire Dimensions	H36 x 11.5 −19 PR	H20.5 x 6.75 −10 PR
Wheel Size	19.0 in. (0.48 m)	10.0 in. (0.25 m)

LANDING GEARS	MAIN	NOSE
Wheel Base (max)	61 ft. 10 in. (18.8 m)	N/A
Track	13 ft. 4 in. (4.07 m)	N/A

Table 3 − Door Dimensions

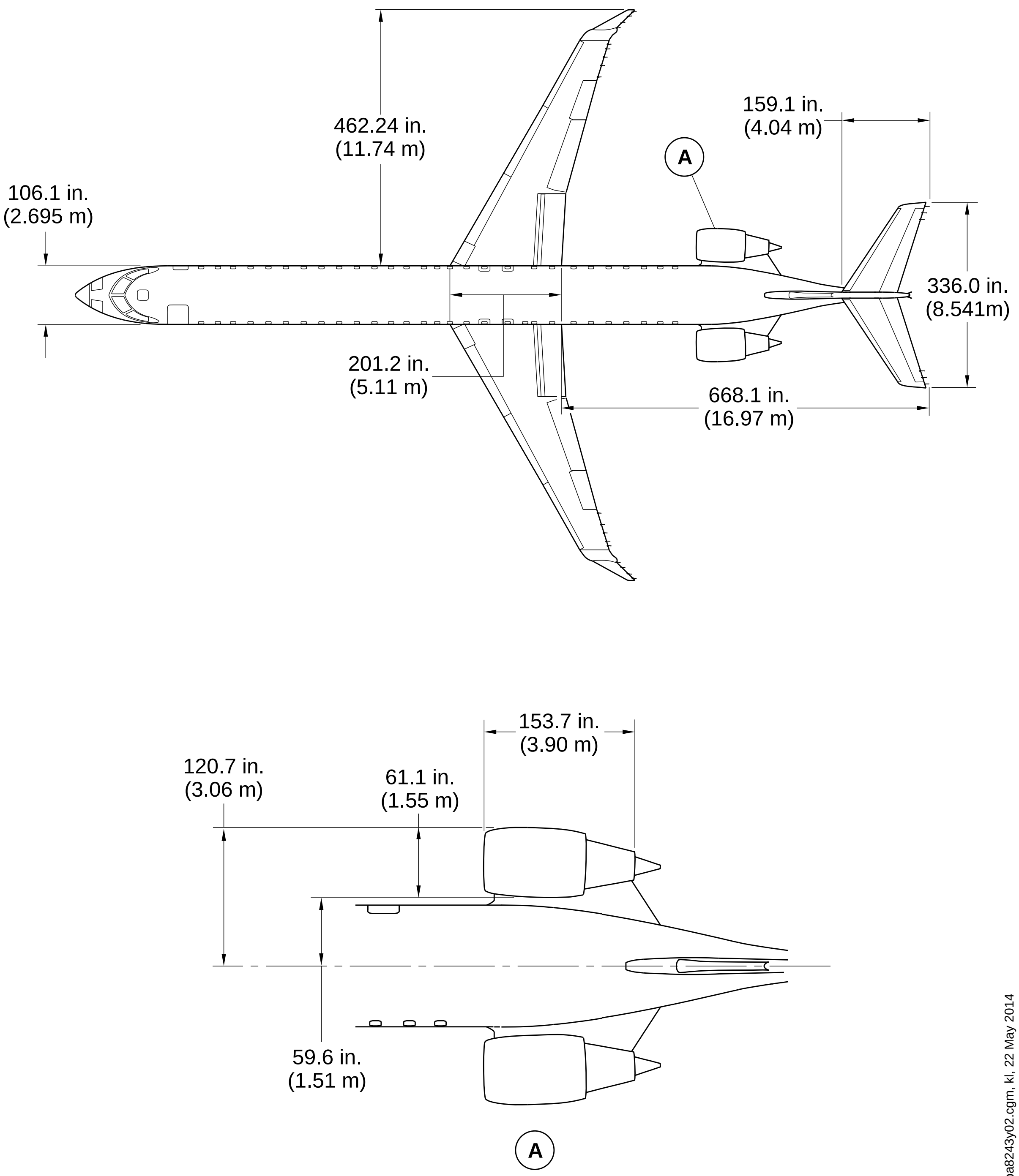
DOOR	HEIGHT	WIDTH
Passenger Door	5 ft. 10 in. (1.78 m)	3 ft. (0.91 m)
Service Door	4 ft. (1.22 m)	2 ft. (0.61 m)
Aft Baggage Door	2 ft. 9 in. (0.84 m)	3 ft. 7 in. (1.09 m)
Under−Floor Baggage Door (Fwd)	1 ft. 8 in. (0.51 m)	3 ft. 6 in. (1.07 m)
Under−Floor Baggage Door (Aft)	1 ft. 8 in. (0.51 m)	3 ft. 6 in. (1.07 m)
Type III Over−Wing Exit Door (Fwd)	3 ft. 7 in. (1.09 m)	1 ft. 8 in. (0.51 m)
Type III Over−Wing Exit Door (Aft)	3 ft. 7 in. (1.09 m)	1 ft. 8 in. (0.51 m)
Crew Escape Hatch	19.6 in. (0.50 m)	18.6 in. (0.47 m)



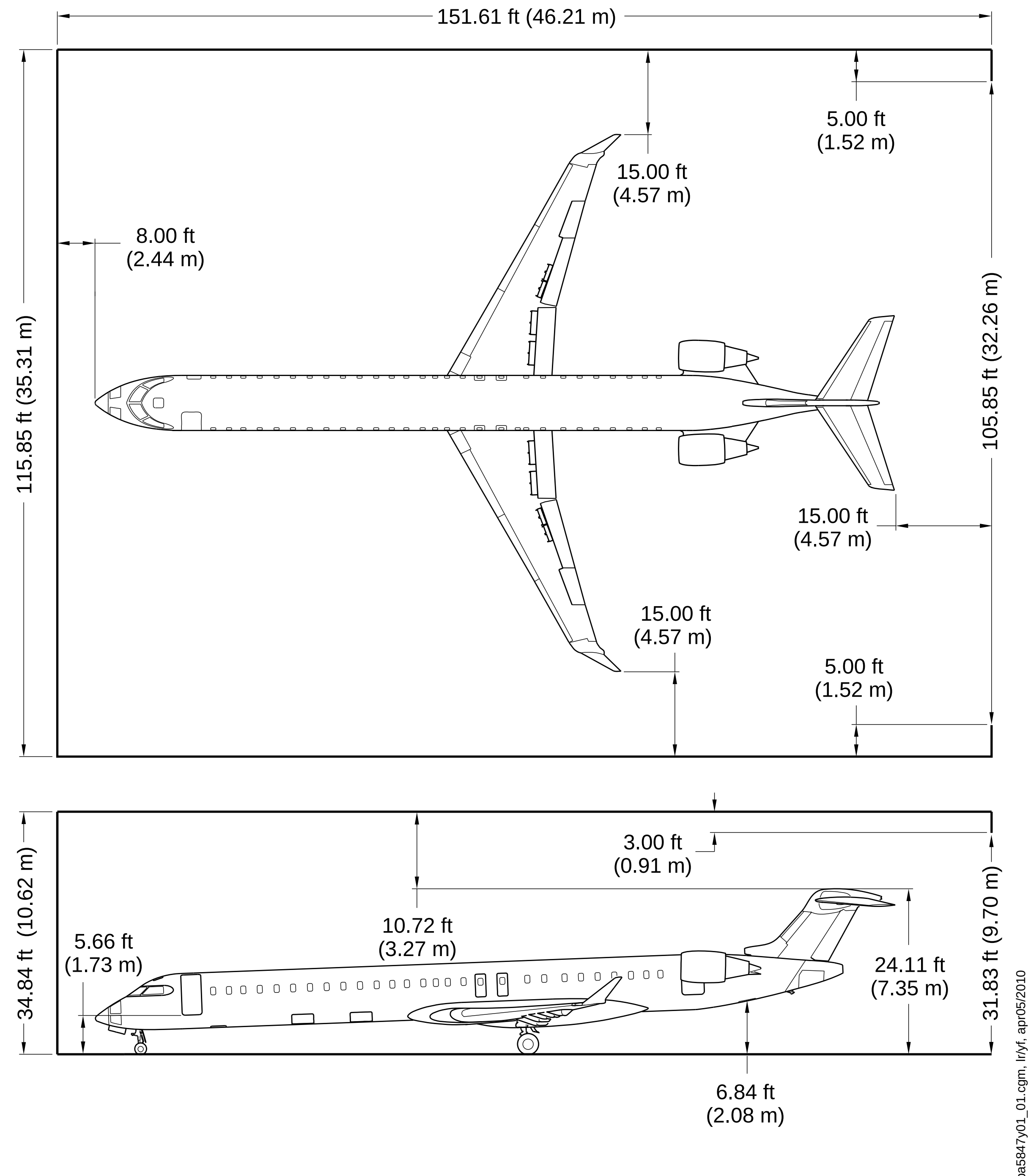
NOTE

1 Average clearance. Clearance depends on aircraft weight and center of gravity.

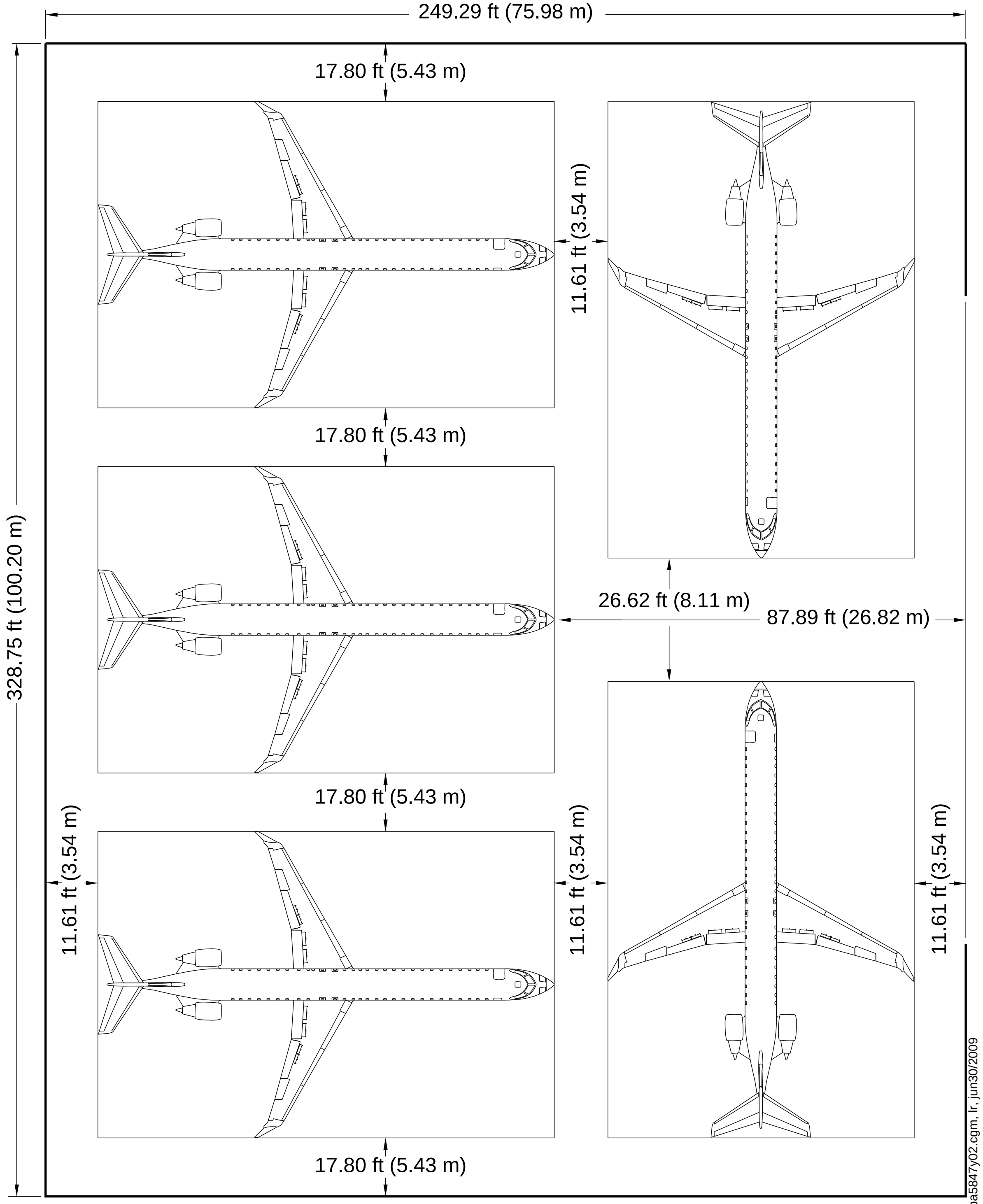
Aircraft Dimensions
Figure 1 (Sheet 1 of 2)



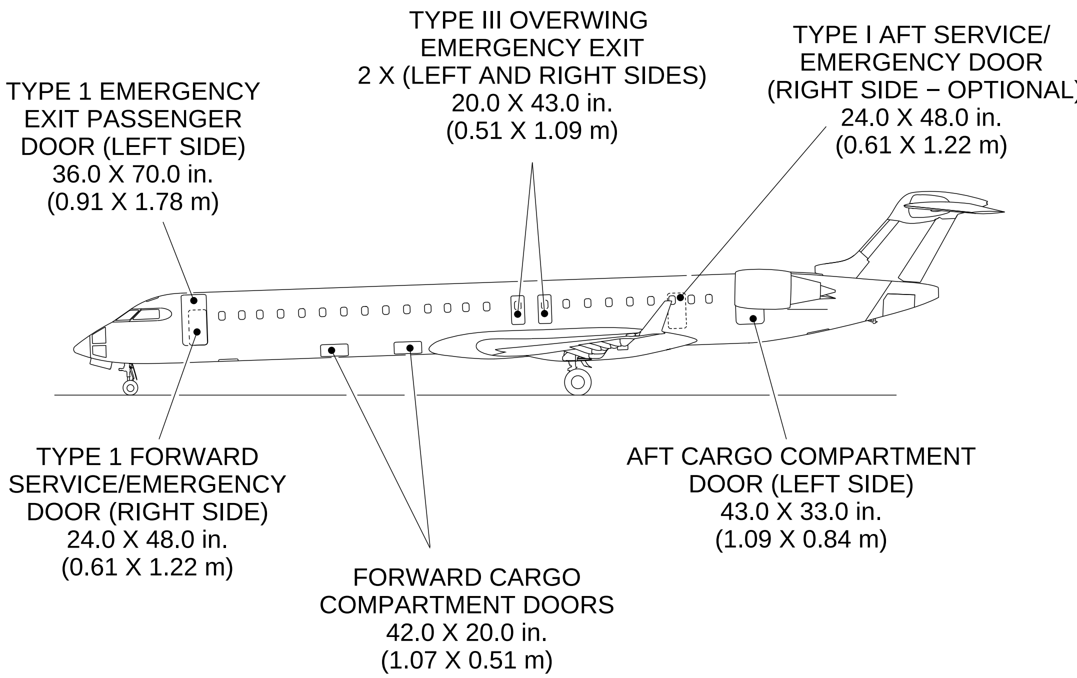
Aircraft Dimensions
Figure 1 (Sheet 2 of 2)

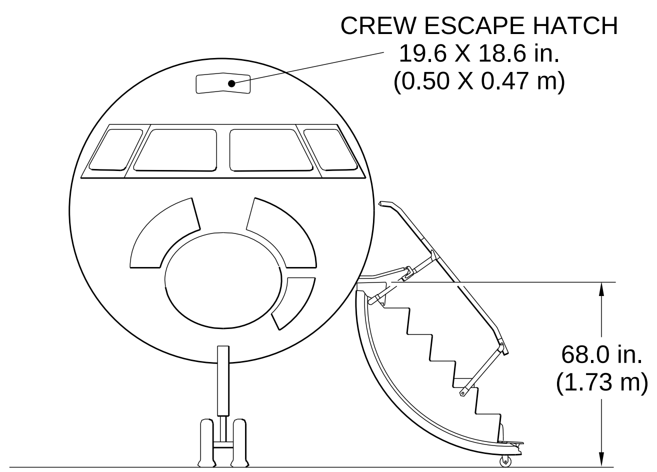


Hangar Space Needs
Figure 2 (Sheet 1 of 2)



Hangar Space Needs
Figure 2 (Sheet 2 of 2)





Door Dimensions and Clearances
Figure 3

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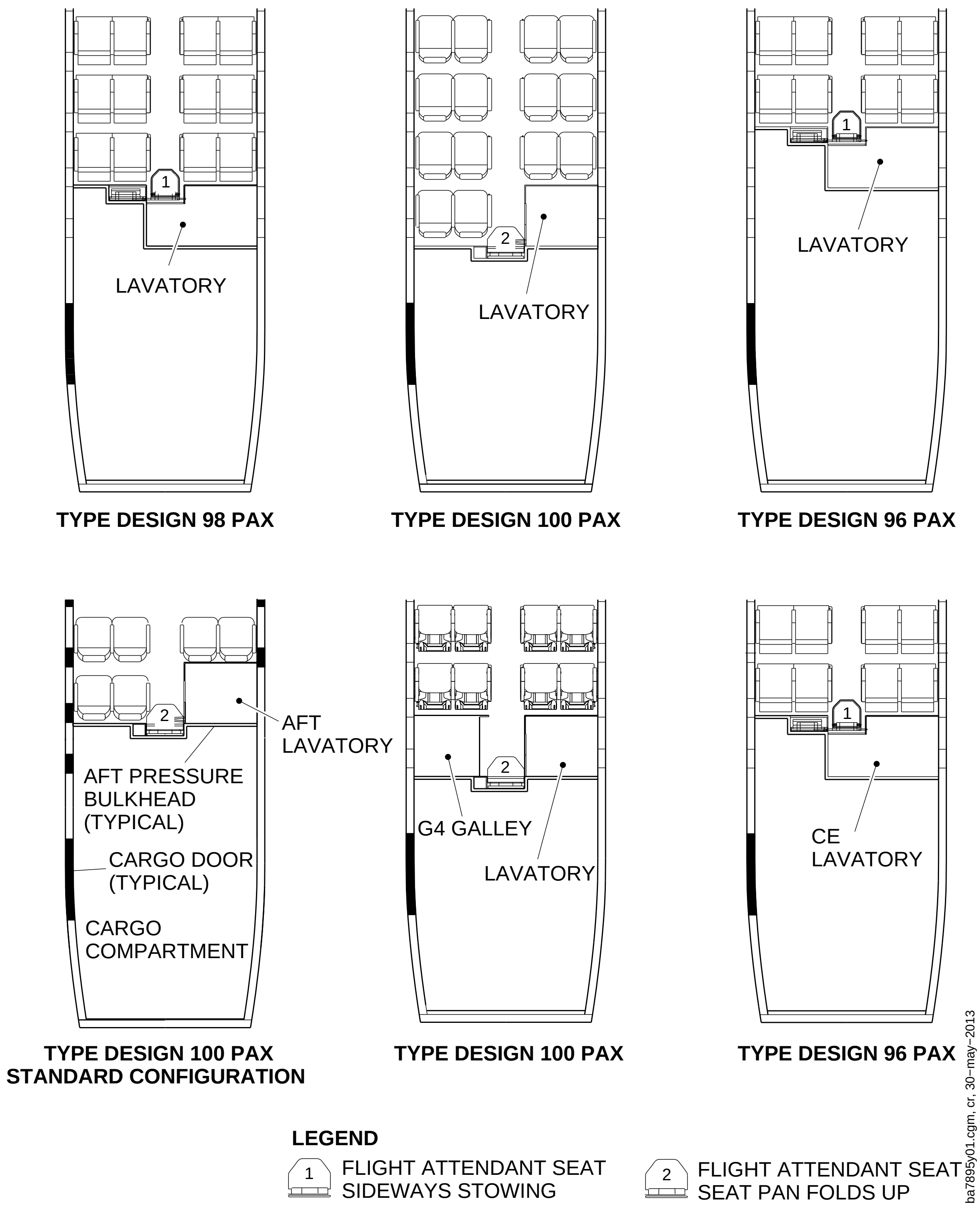
INTERIOR CONFIGURATIONS

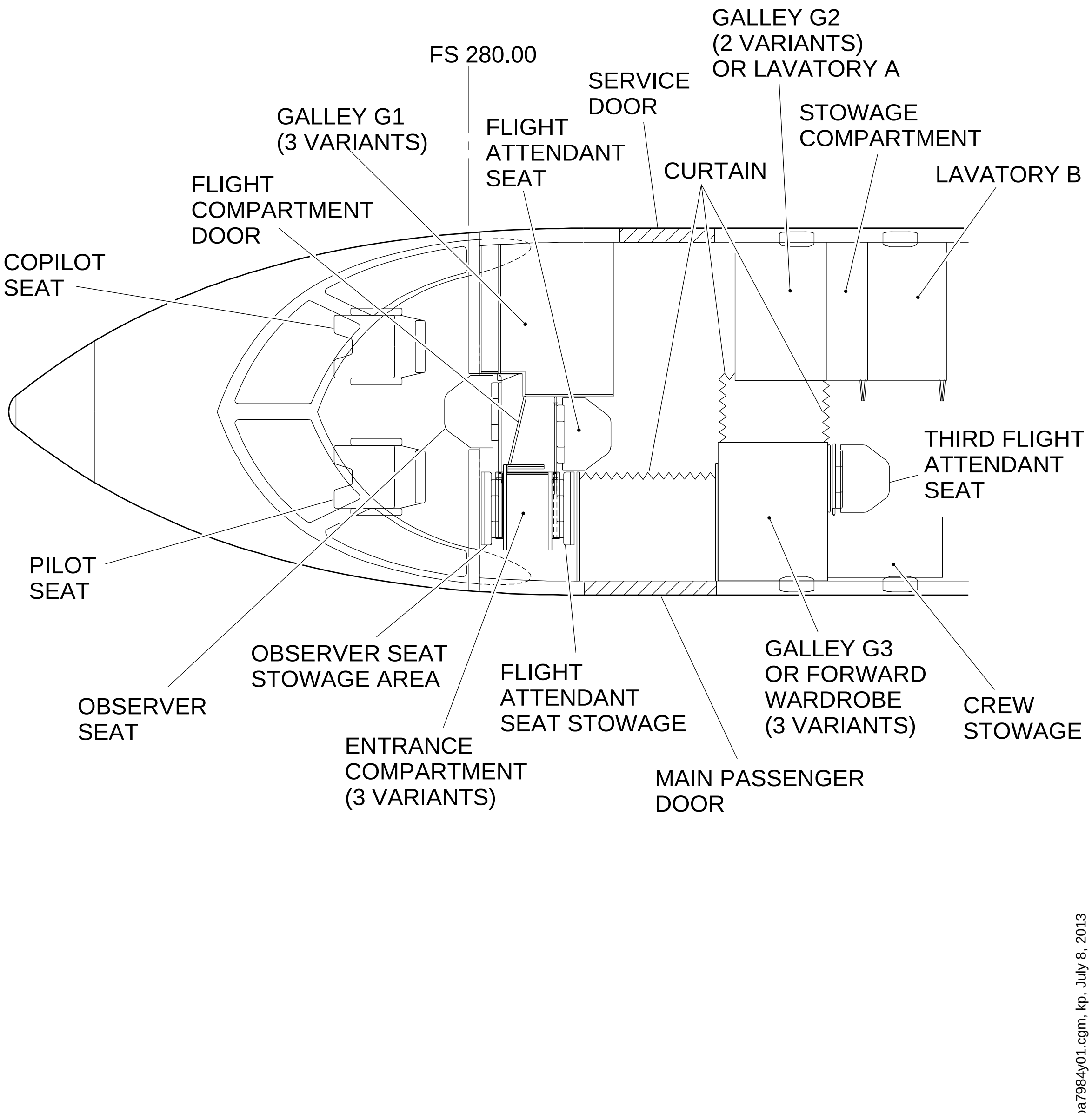
1. General

A. This section contains examples of passenger compartment interior configuration.

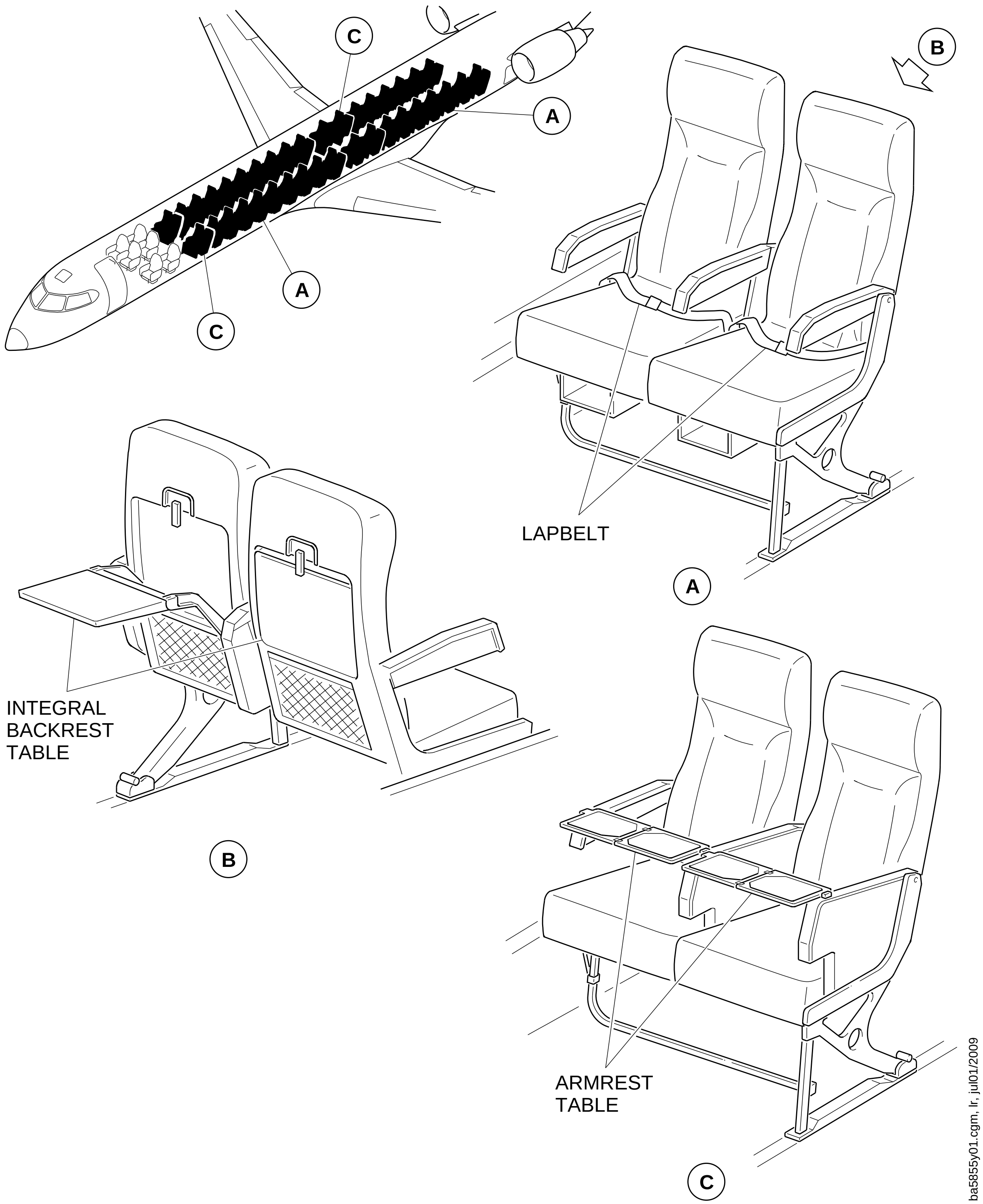
B. The passenger compartment includes the galley area, lavatory, and passenger seating area. The galley and utility areas are isolated from the passenger area by partitions and curtains (refer to Figures 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10).



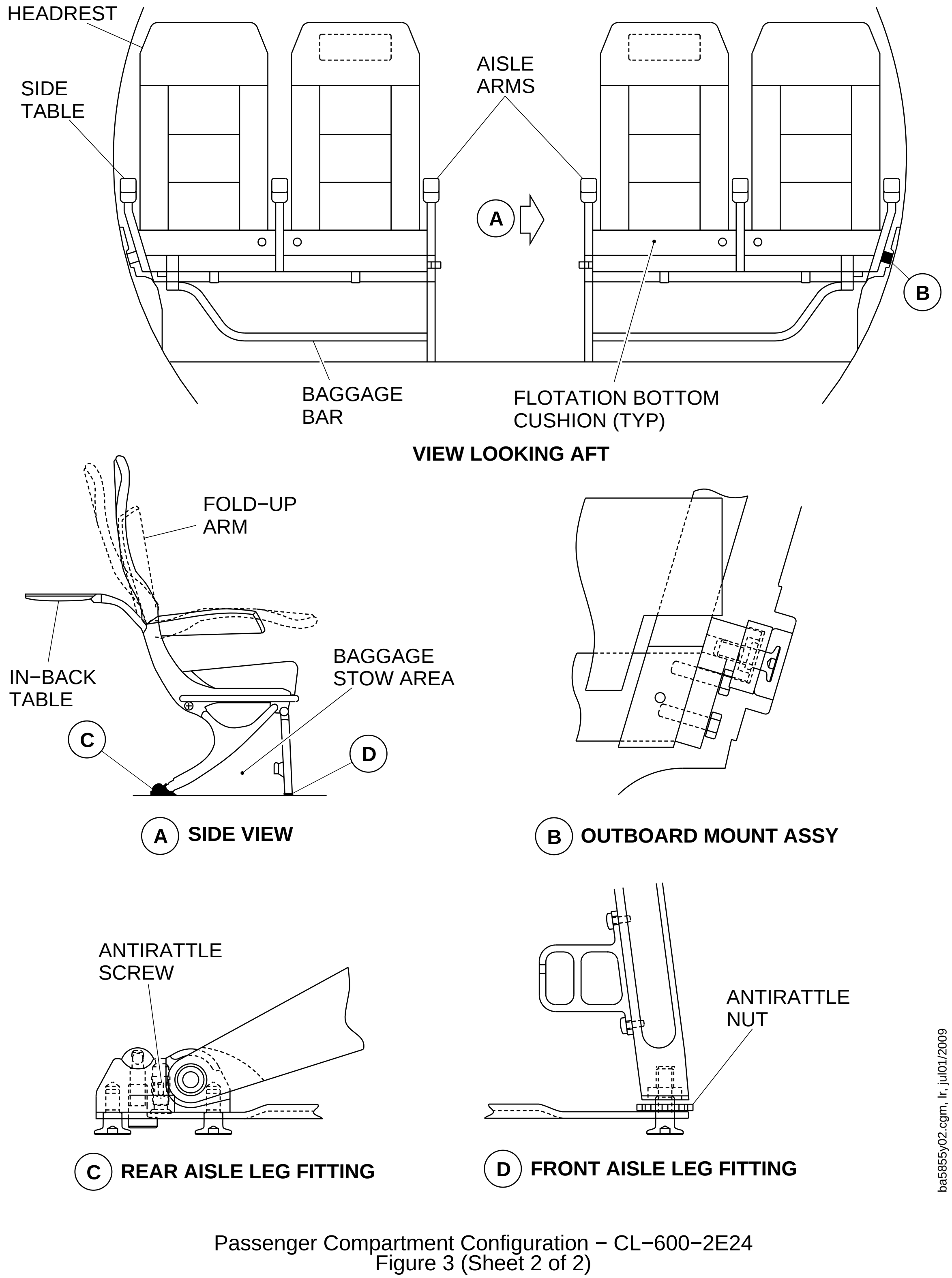
Aft Passenger Cabin Configuration and Lavatory Options
Figure 1



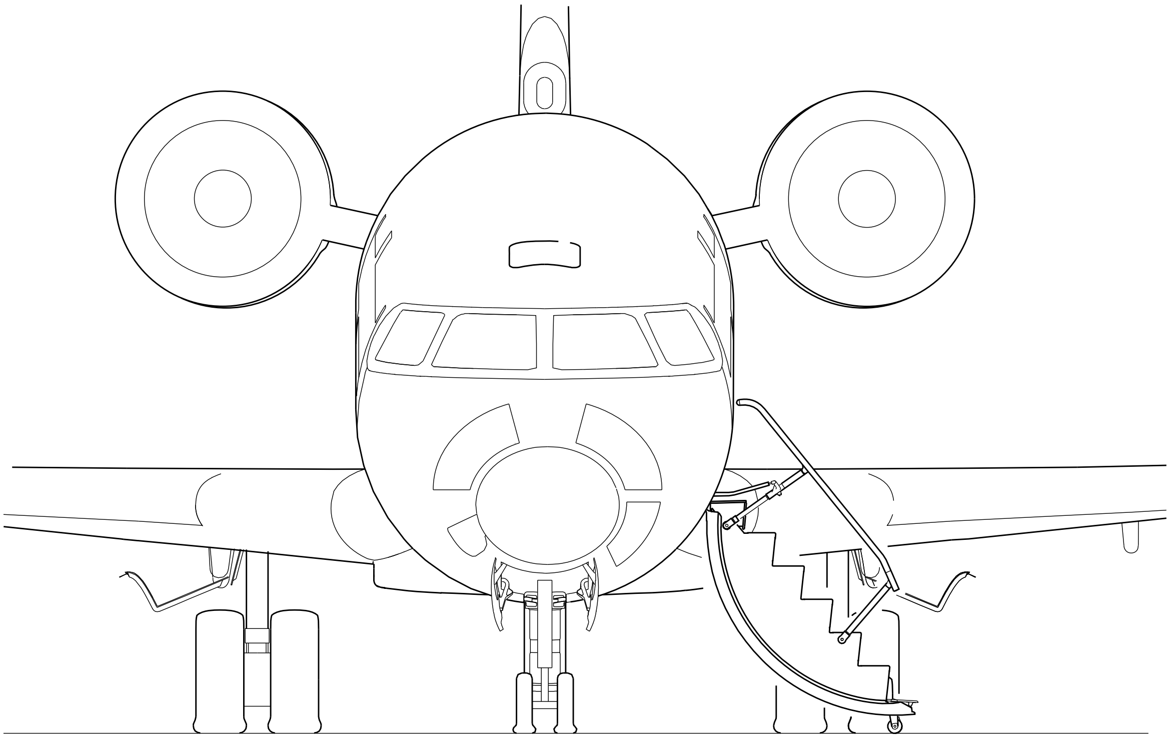
Forward Passenger Cabin Configuration
Figure 2

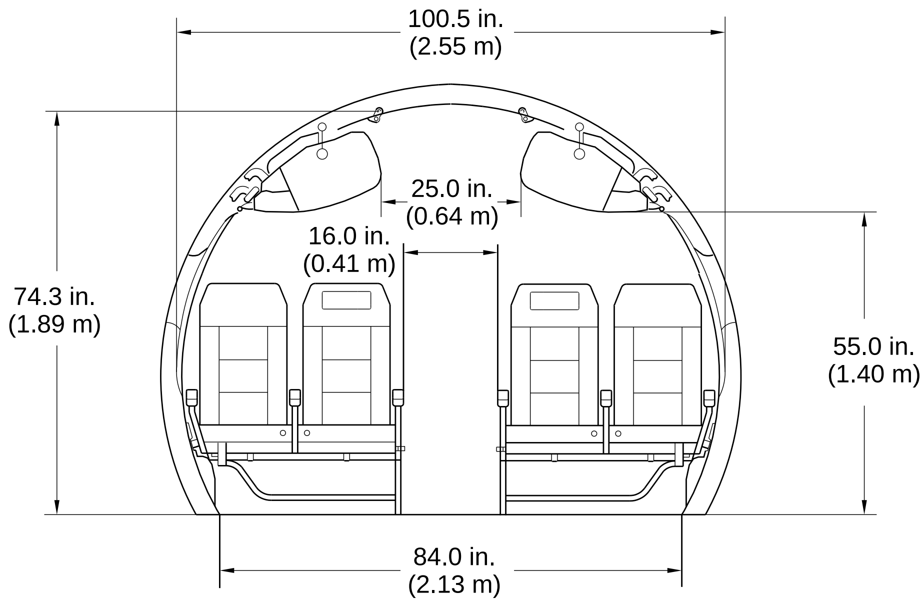


Passenger Compartment Configuration − CL−600−2E24
Figure 3 (Sheet 1 of 2)



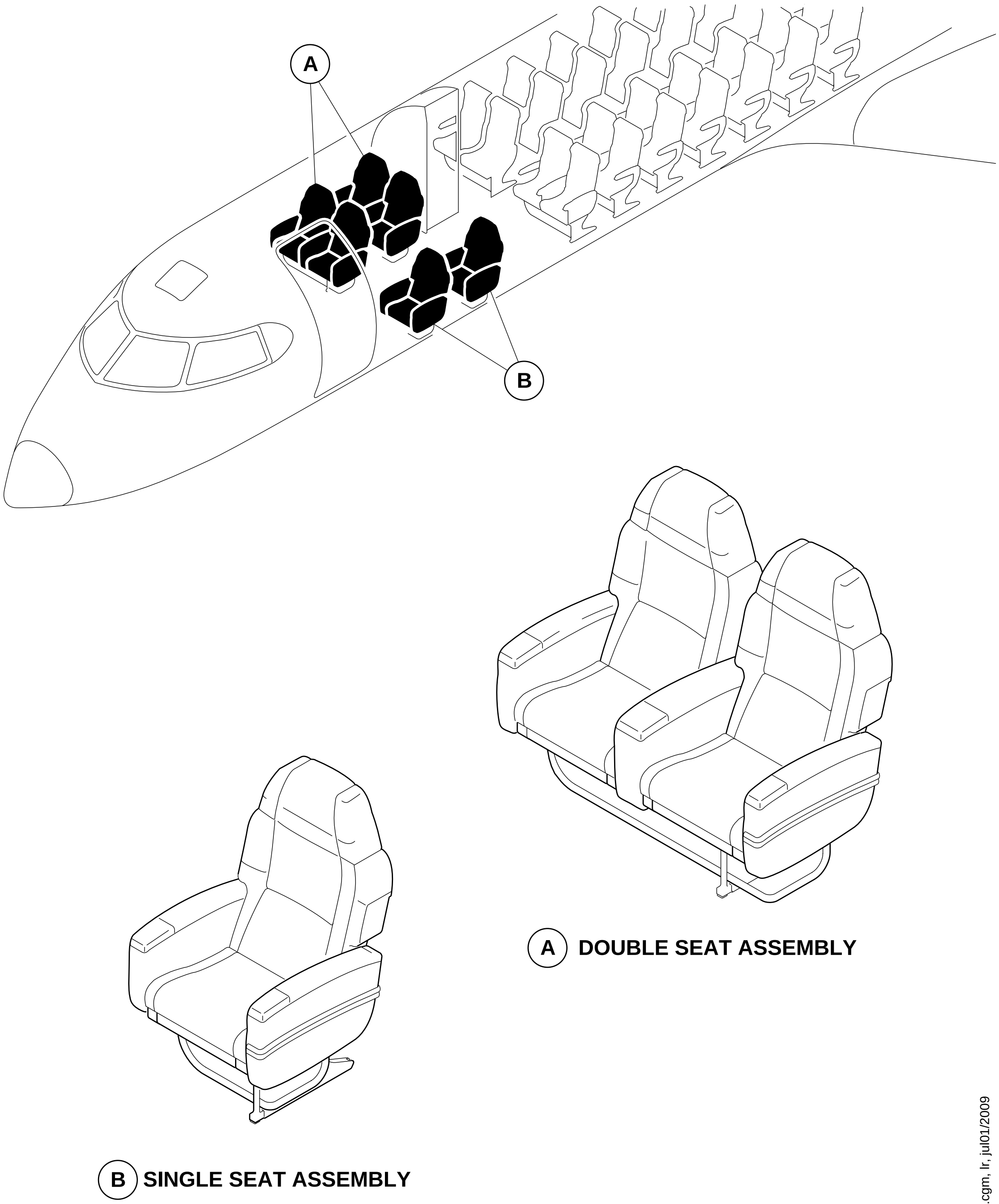
Passenger Compartment Configuration − CL−600−2E24
Figure 3 (Sheet 2 of 2)



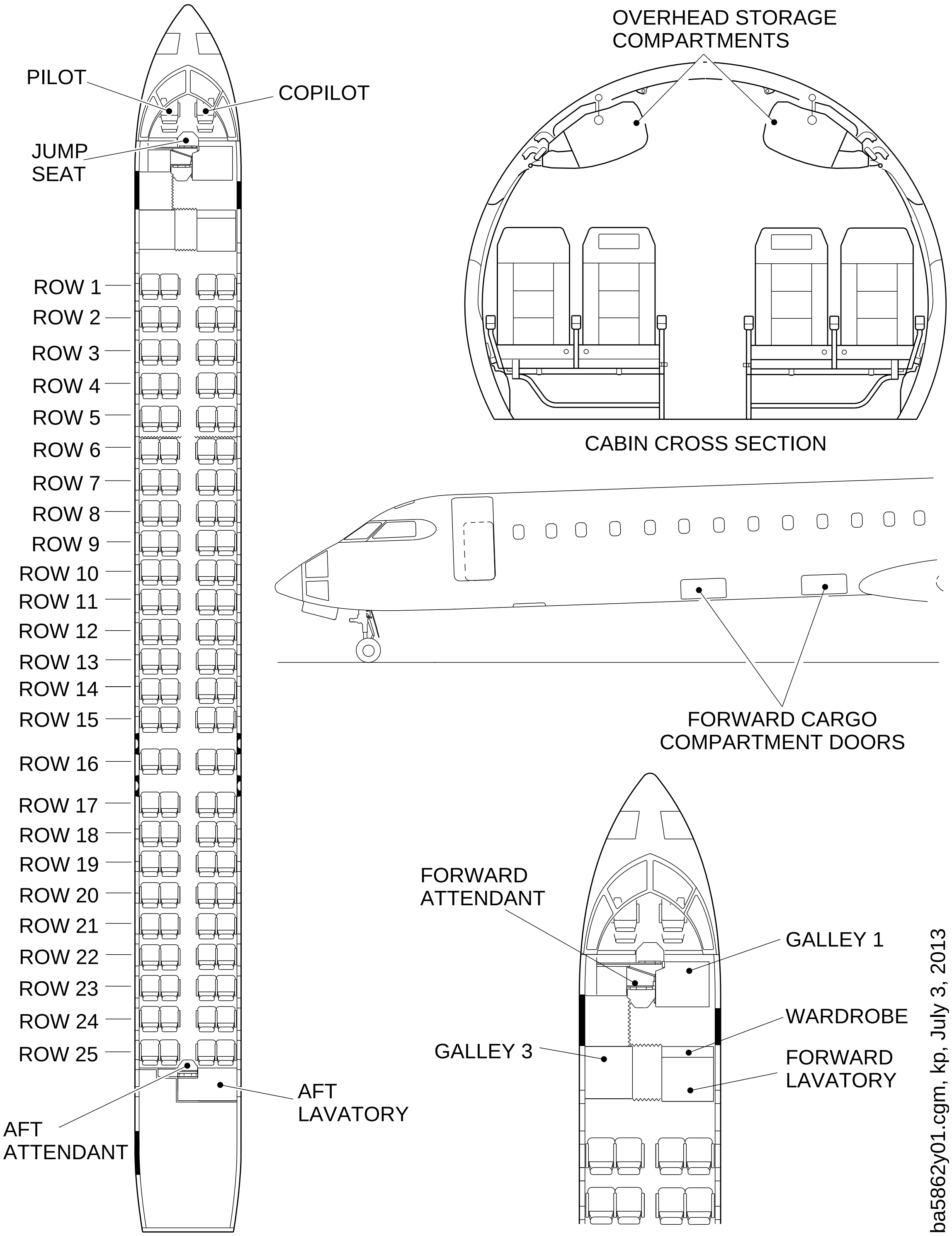


CABIN CROSS SECTION

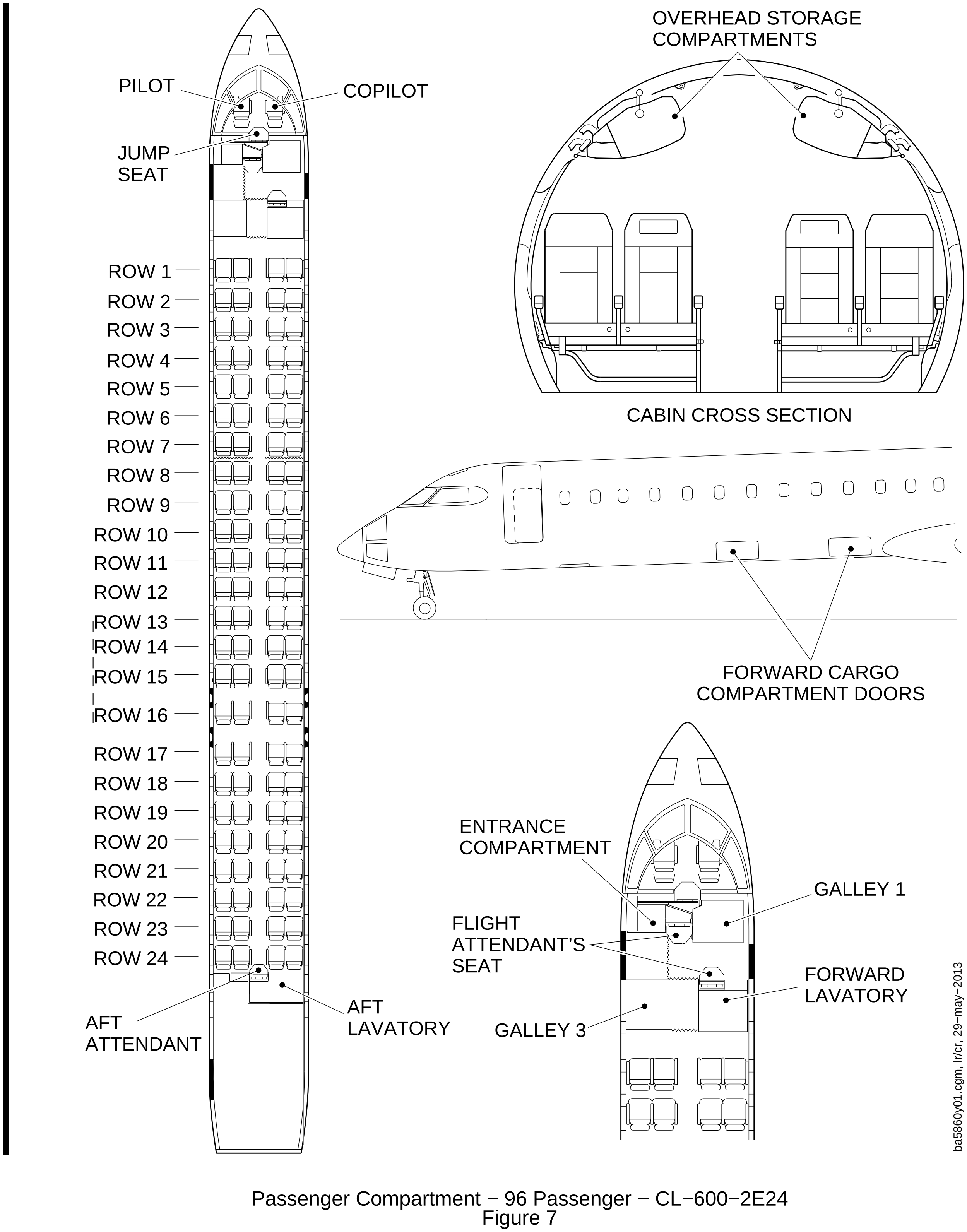
Passenger Compartment Cross Section − CL−600−2E24
Figure 4



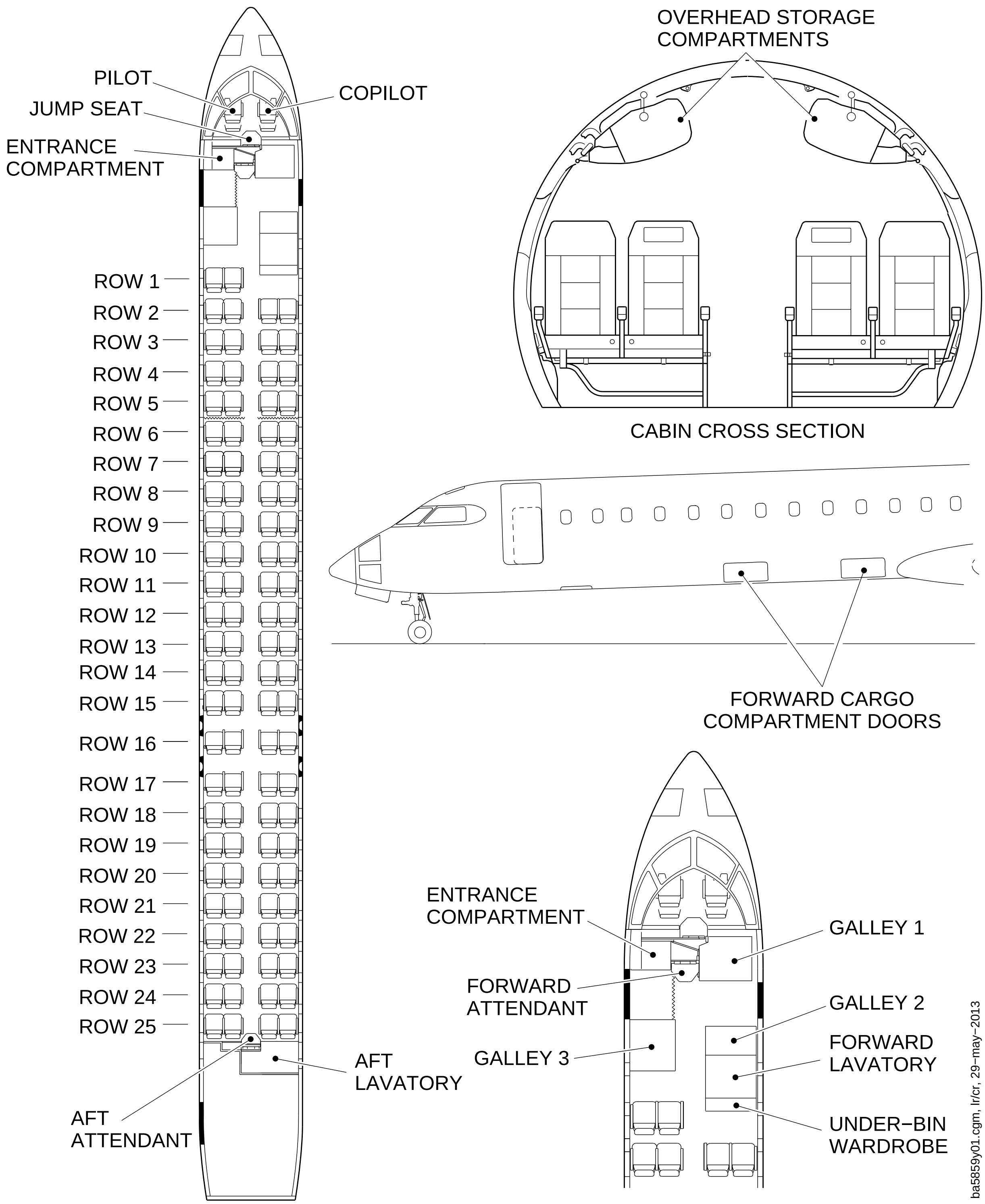
Passenger Seats − Business Class− CL−600−2E24
Figure 5



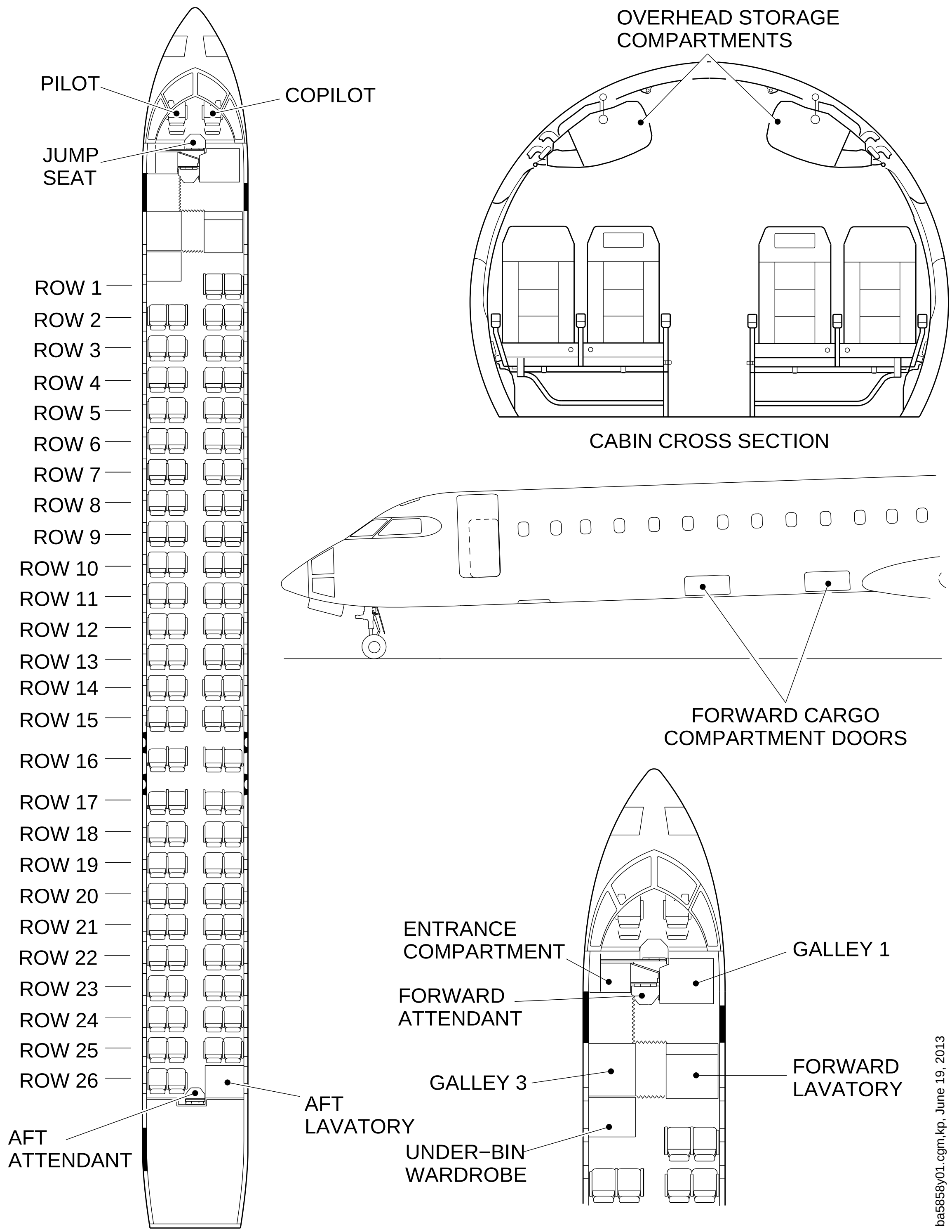
Passenger Compartment − 100 Passenger − CL−600−2E24
Figure 6



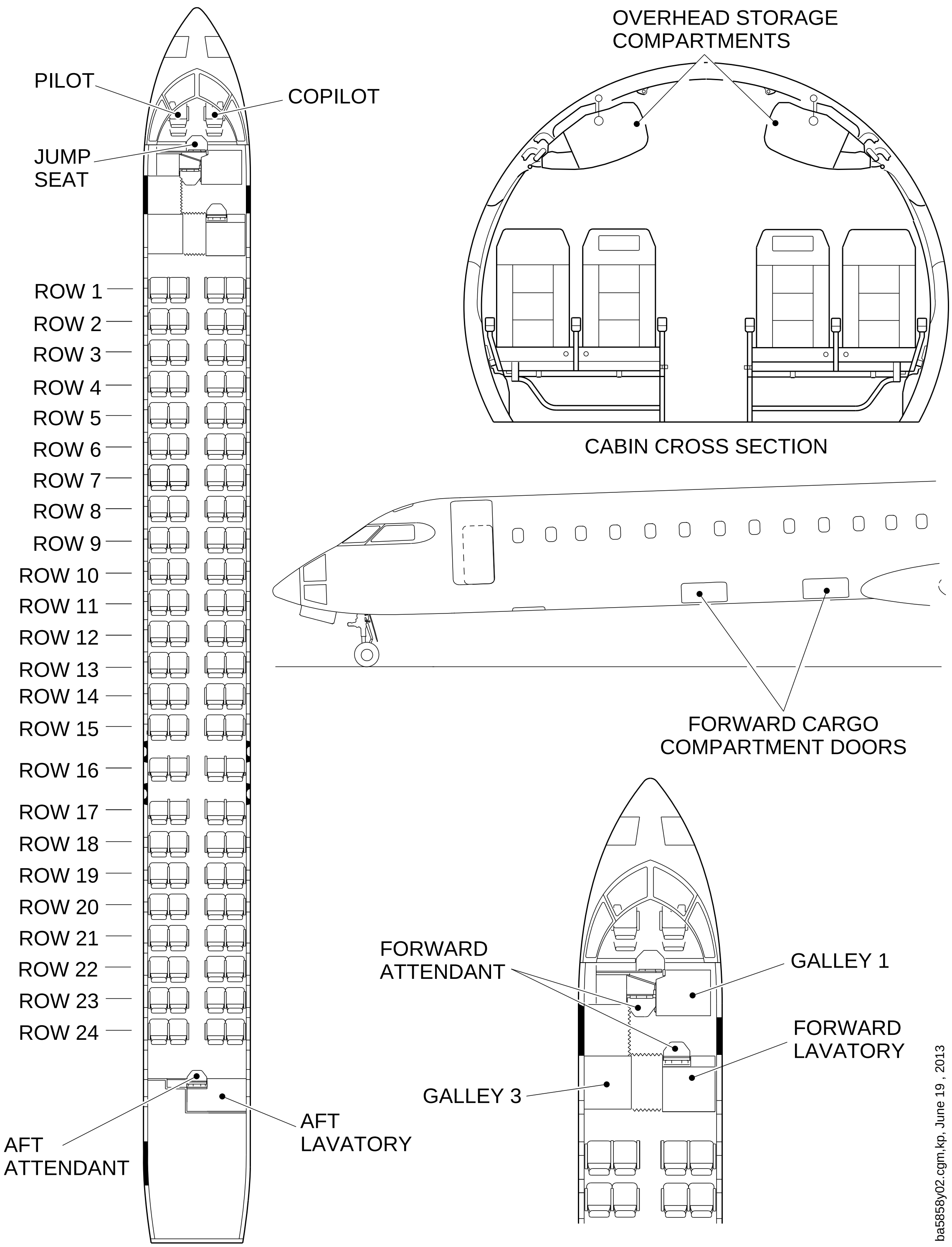
Passenger Compartment − 96 Passenger − CL−600−2E24
Figure 7



Passenger Compartment − 98 Passenger − CL−600−2E24
Figure 8



Passenger Compartment − 100 Passenger − CL−600−2E24
Figure 9



Passenger Compartment − 96 Passengers − CL−600−2E24
Figure 10

DOOR CLEARANCES

1. Introduction

This subsection gives data on the aircraft door sizes and clearance. This subsection is divided into the chapters that follow:

– General

– Door clearances

2. General

A. The door clearance sheets provide details on the door size and location on the aircraft. A general description of the doors is as follows:

(1) The main passenger door opens outward and down, and has stairs attached to the inner side. The door can be operated manually (internally and externally) for opening and can be manually closed from the outside. The passenger door can also be operated with a power assist system, to close it from the inside of the aircraft.

(2) The overwing emergency exits are plug−type doors that can be opened from the inside or from the outside of the fuselage. The emergency exit doors permit the passengers to exit from the aircraft during an emergency.

(3) The crew escape hatch is provided to permit the pilots to escape the aircraft during an emergency, if the flight compartment is blocked.

(4) The forward and aft cargo compartment doors are semi−plug type that open from the outside of the fuselage and are unlocked by use of an external handle. The doors move inward initially, continue to move outboard from the fuselage, and then swing down on a hinge mechanism resting below the fuselage outer skin. The cargo compartment doors are not accessible from the passenger compartment and are not emergency exits.

(5) The service doors include the galley service door, main avionics compartment door, and the aft equipment compartment door.

(a) The galley service door is a semi−plug type door and is a Type 1 emergency exit. The door is for servicing the galley and is manually opened or closed from inside or outside of the aircraft.

NOTE: For certain aircraft configurations, an optional fuselage plug is installed in the right aft fuselage in place of the aft galley service door to permit additional passenger seating.

(b) The main avionics compartment door is opened from the outside of the fuselage and moves up on a set of four roller arms and then moved fore or aft on a set of tracks.

(c) The aft equipment compartment door, is located outside of the pressurized area of the aircraft. This door provides access to the aft equipment compartment components and has a grilled opening to ventilate the compartment.

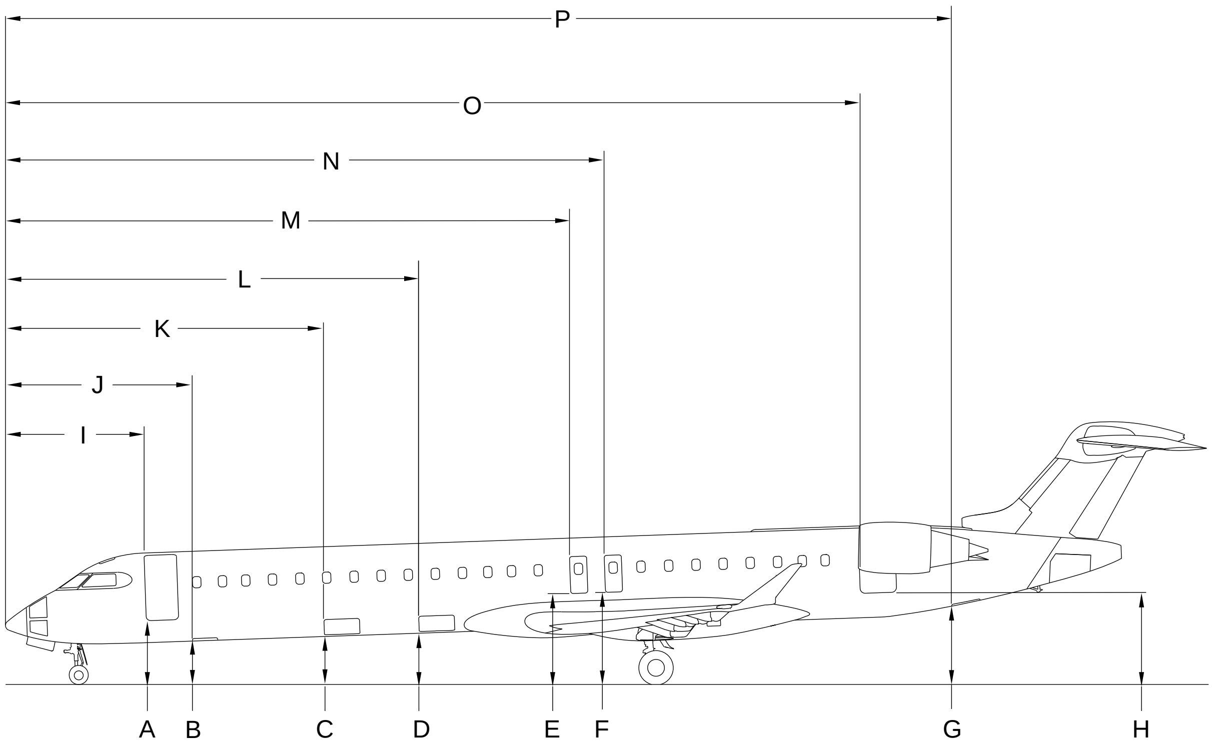
3. Door Clearances

A. This subsection gives data about the clearances between the doors, the access panels, and the ground (refer to Table 1 and Figure 1 for door clearances).

Table 1 − Door Clearances

LOCATION	DESCRIPTION	VALUE
A	Passenger Door Sill to Ground	5 ft. 8 in. (1.73 m)
A	Service Door (RH Side) Sill to Ground	5 ft. 8 in. (1.73 m)
B	Main Avionics Compartment Door to Ground	4 ft. (1.22 m)
C	Forward Cargo Compartment Door Sill to Ground	4 ft. 8 in. (1.43 m)
D	Center Cargo Compartment Door Sill to Ground	4 ft. 10 in. (1.48 m)
E	Forward Overwing Emergency Exit Door Sill to Ground	8 ft. 1 in. (2.48 m)
F	Aft Overwing Emergency Exit Door Sill to Ground	8 ft. 2 in. (2.50 m)
G	Aft Equipment Compartment Door to Ground	6 ft. 5 in. (1.96 m)
H	Aft Cargo Compartment Door Sill to Ground	7 ft. 10 in. (2.40 m)
I	Passenger Door (FWD Side) to Radome	13 ft. 10 in. (4.22 m)
I	Service Door (RH Side) to Radome	14 ft. 7 in. (4.47 m)
J	Main Avionics Compartment Door to Radome	18 ft. 6 in. (5.65 m)
K	Forward Cargo Compartment Door (FWD Side) to Radome	32 ft. 5 in. (9.89 m)

LOCATION	DESCRIPTION	VALUE
L	Center Cargo Compartment Door (FWD Side) to Radome	41 ft. 9 in. (12.73 m)
M	Forward Overwing Emergency Exit (FWD Side) to Radome	60 ft. 8 in. (18.49 m)
N	Aft Overwing Emergency Exit (FWD Side) to Radome	64 ft. 2 in. (19.56 m)
O	Aft Cargo Compartment Door (FWD Side) to Radome	93 ft. 9 in. (28.60 m)
P	Aft Equipment Compartment Door to Radome	102 ft. 9 in. (31.33 m)



Door Clearances
Figure 1

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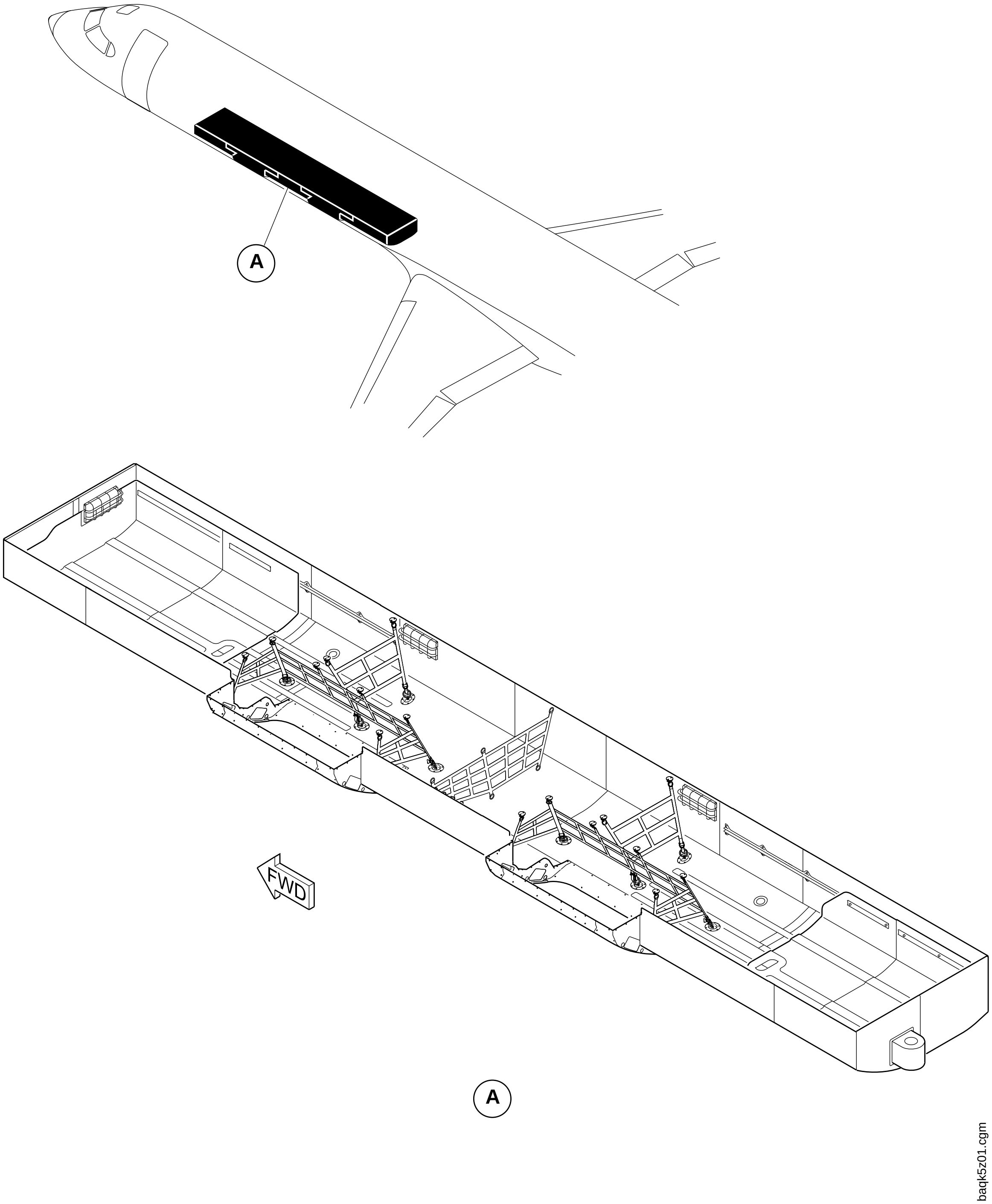
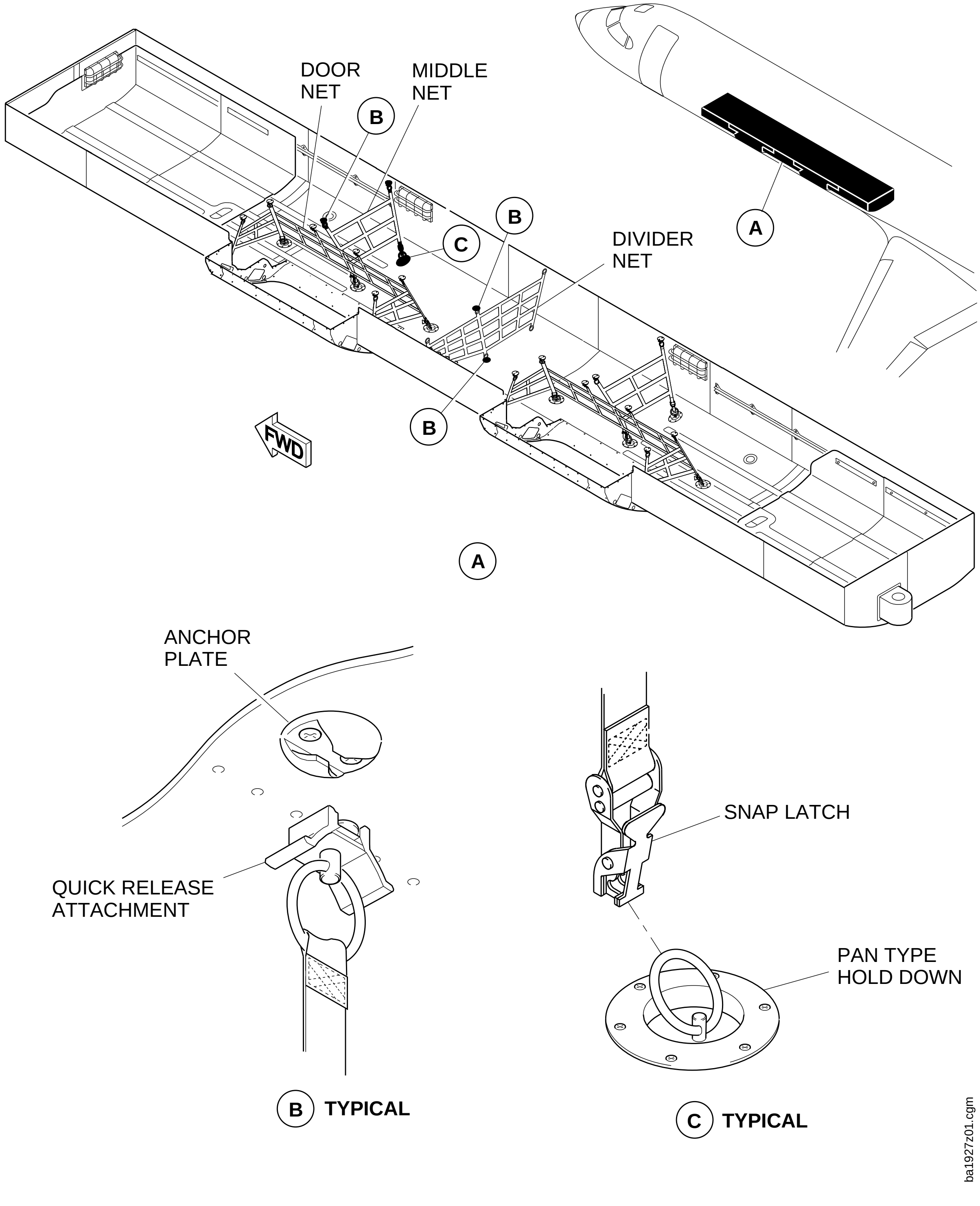
CARGO COMPARTMENT CONFIGURATIONS

1. Forward Cargo Compartment

A. This subsection gives data about the forward cargo compartment (refer to Figures 1, and 2).



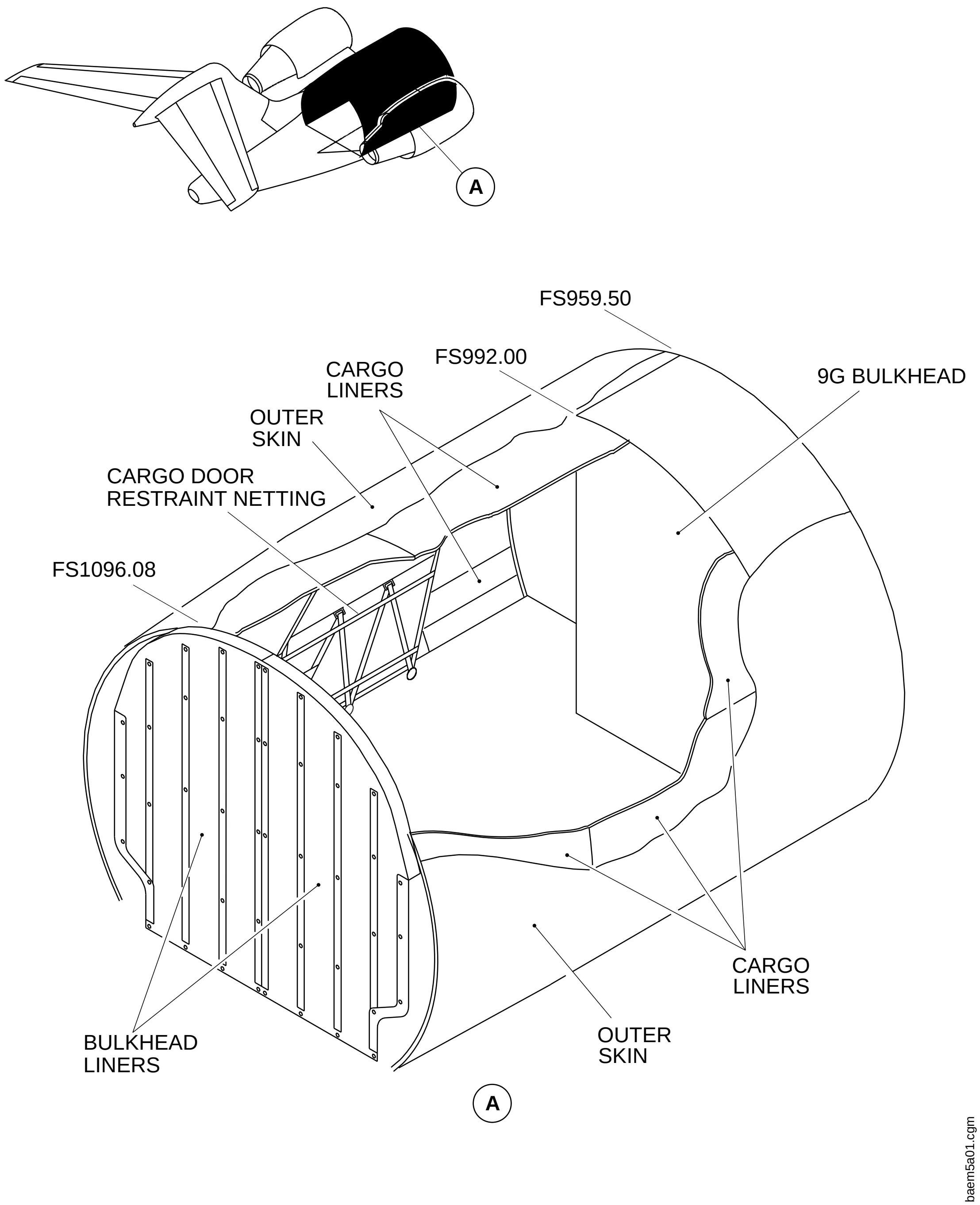
Forward Cargo Compartment
Figure 1



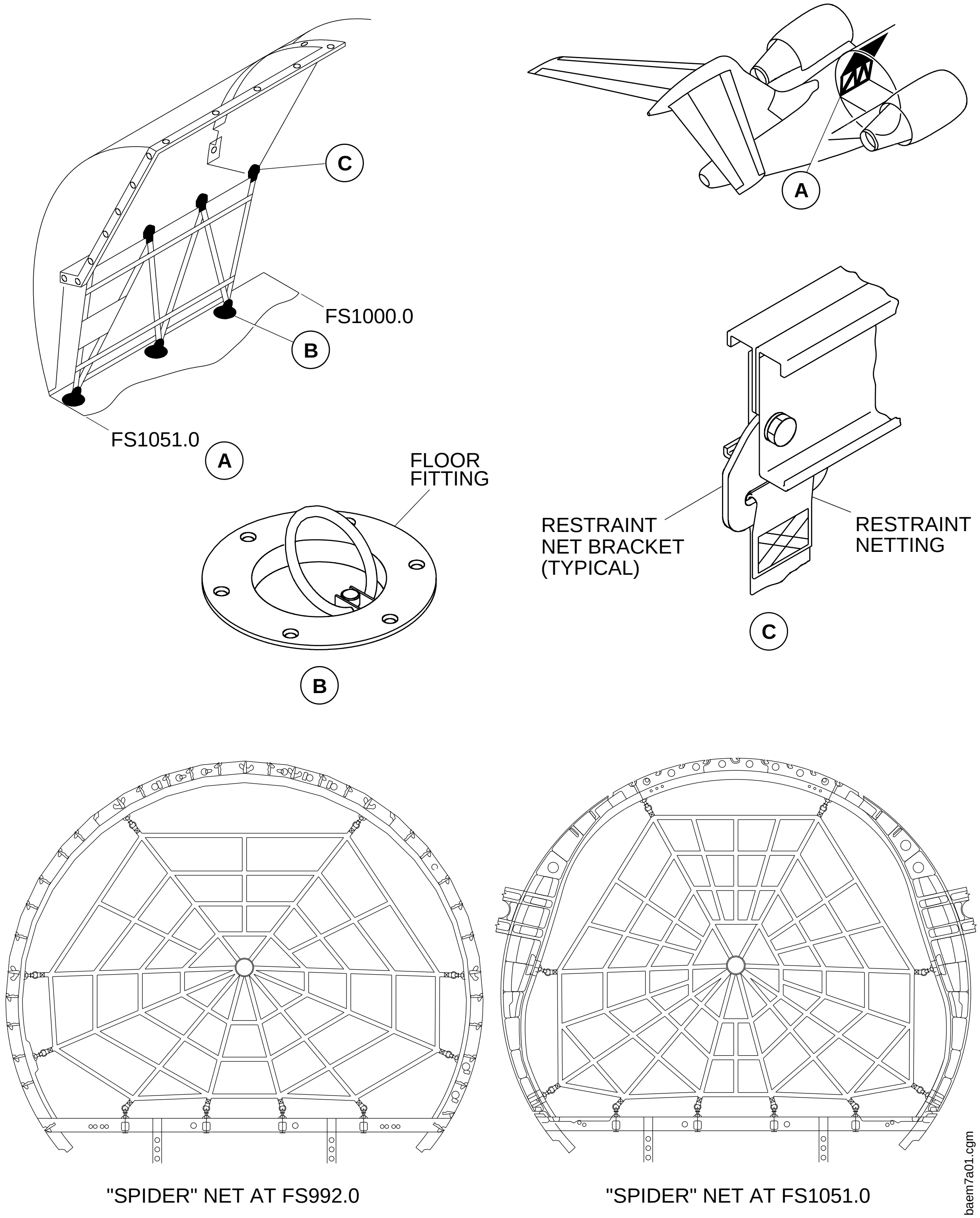
Forward Cargo Compartment
Figure 2

2. Aft Cargo Compartment

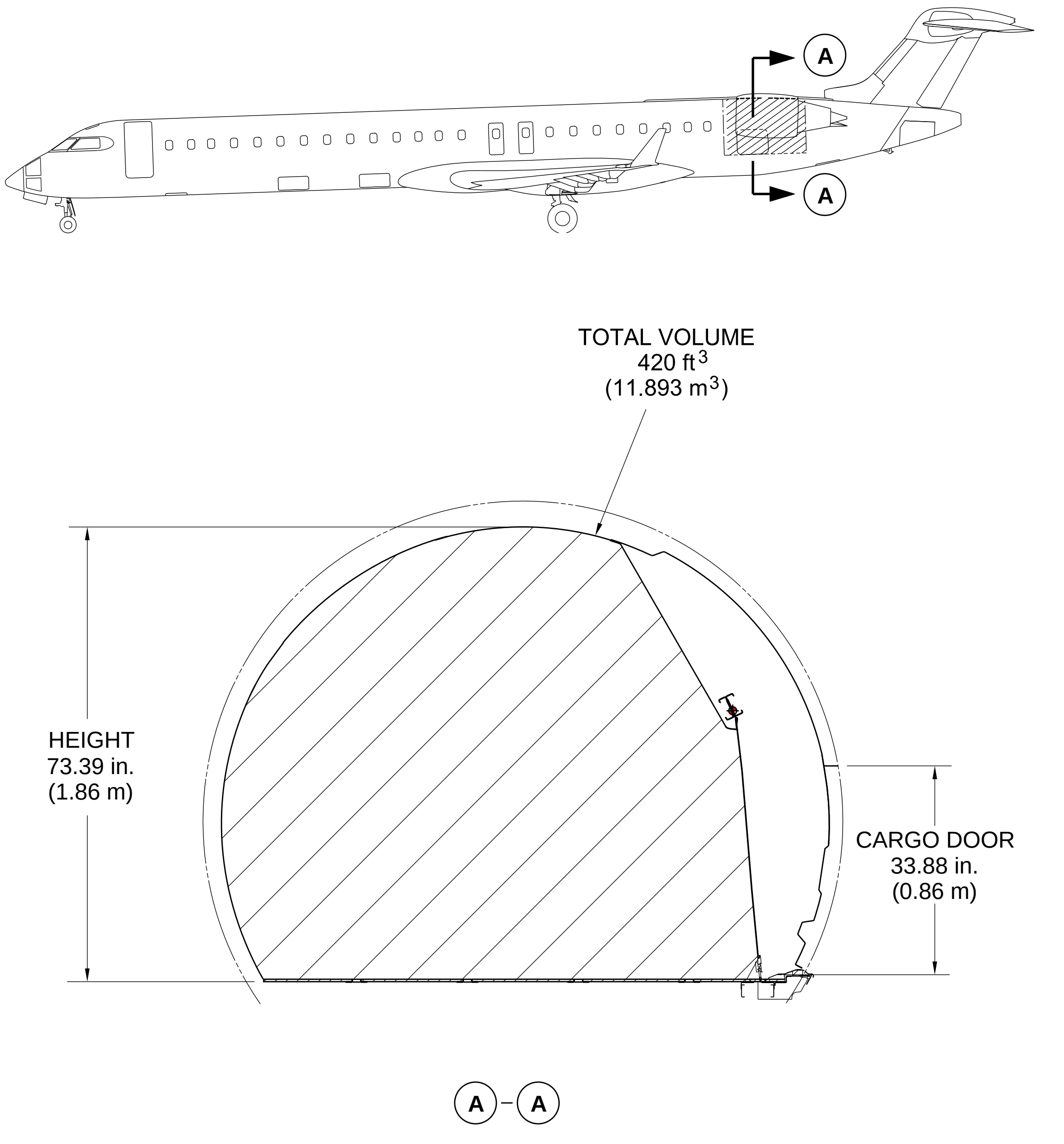
A. This subsection gives data about the aft cargo compartment (refer to Figures 3, 4, 5 and 6)).



Aft Cargo Compartment
Figure 3



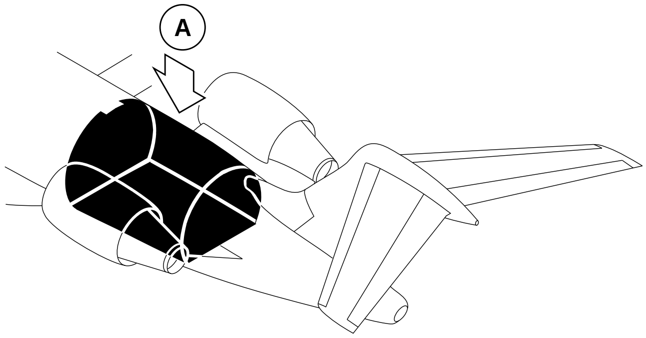
Aft Cargo Compartment
Figure 4

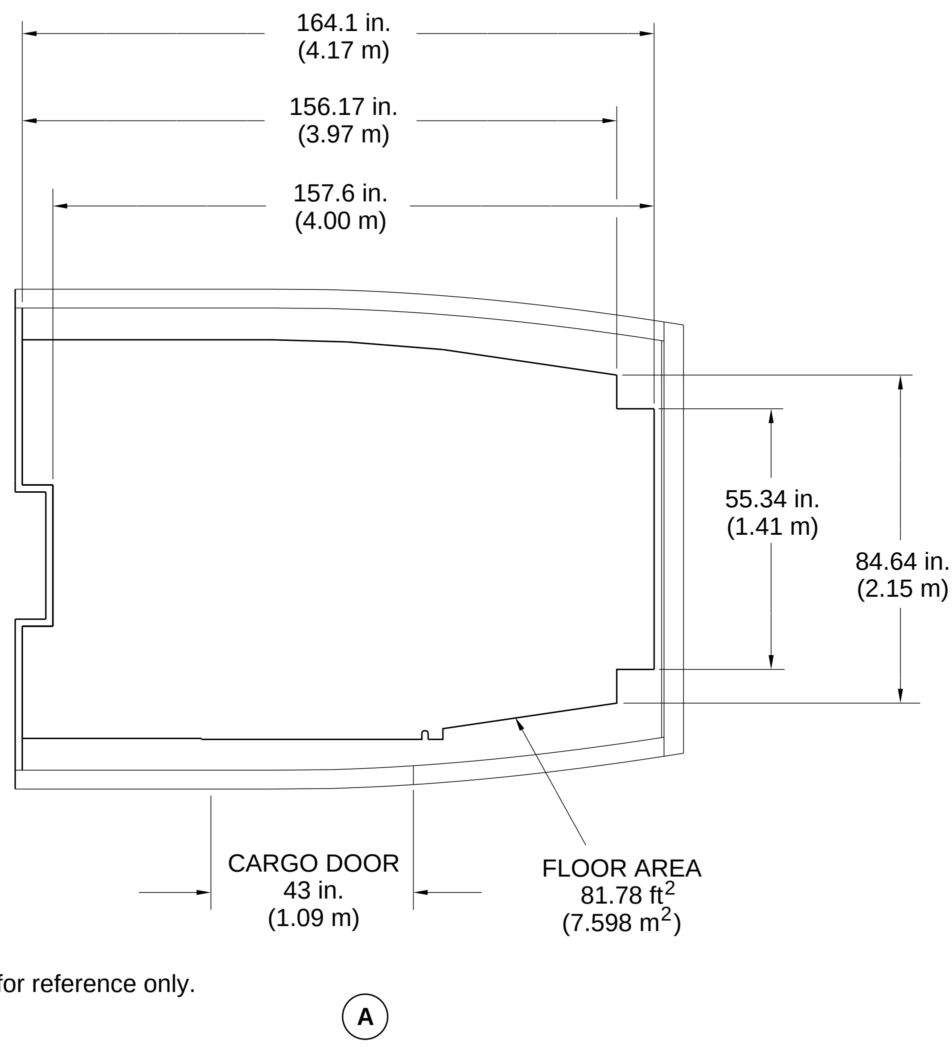


NOTE:

Dimensions are for reference only.

Aft Cargo Shape
Figure 5





NOTE:

Dimensions are for reference only.

Aft Cargo Floor
Figure 6

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AIRCRAFT PERFORMANCE

1. Introduction

This section contains performance data for the aircraft during normal operations:

- Standard day temperature chart
- Payload/range information for specific cruise altitudes and speeds.

This section is divided into the subsections that follow:

- Aircraft Performance − Takeoff field length requirements
- Aircraft Performance − Landing field length requirements.

2. Standard Day Temperature Chart

A. This section contains the performance data as required for airport planning purposes.

B. The standard day temperatures versus altitudes are given in Table 1 − Standard Day Temperature Chart.

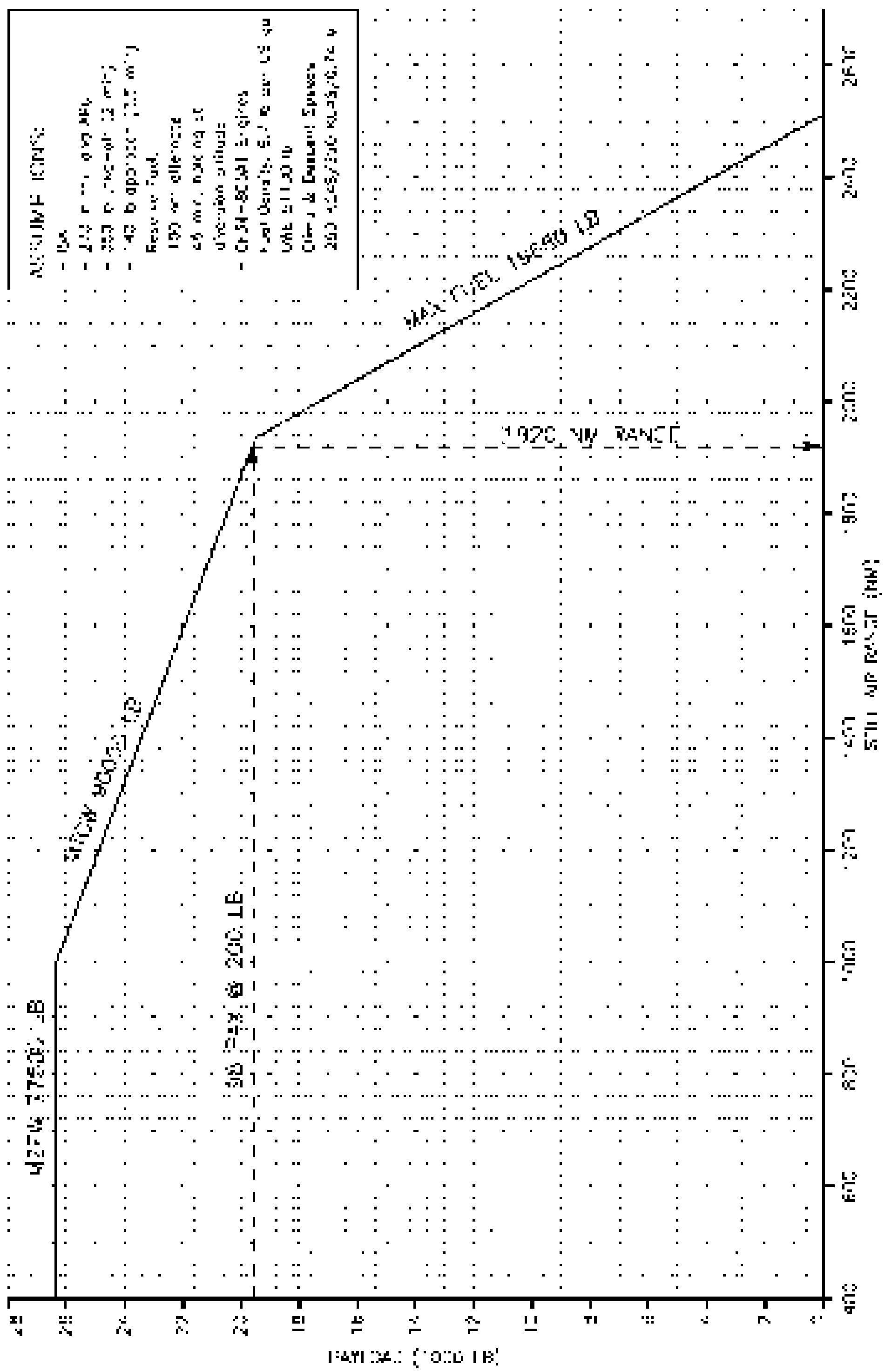
Table 1 − Standard Day Temperature Chart

Elevation		Standard Day Temperature	
Feet (ft)	Meters (m)	°F	°C
0	0	59	15
2000	610	51.9	11.1
4000	1220	44.7	7.1
6000	1830	37.6	3.1
8000	2440	30.5	−0.8
10000	3050	23.3	−4.8

3. Payload/Range

A. For more information about landing field, refer to the Aircraft Flight Manual (CSP D−012).

B. Refer to Figures 1 , 2 and 3 for the payload/range data.



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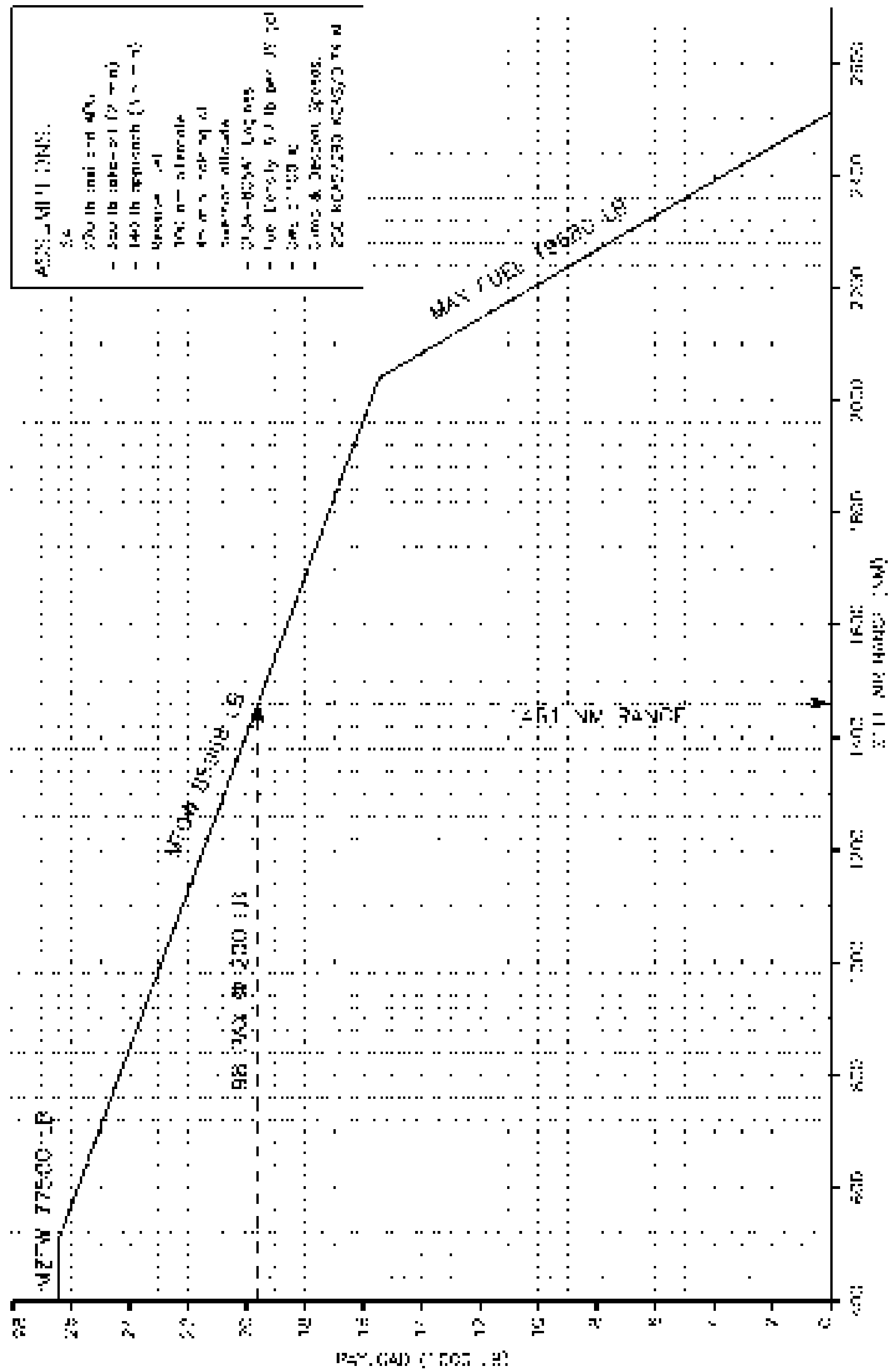
Payload/Range − Basic
Figure 1



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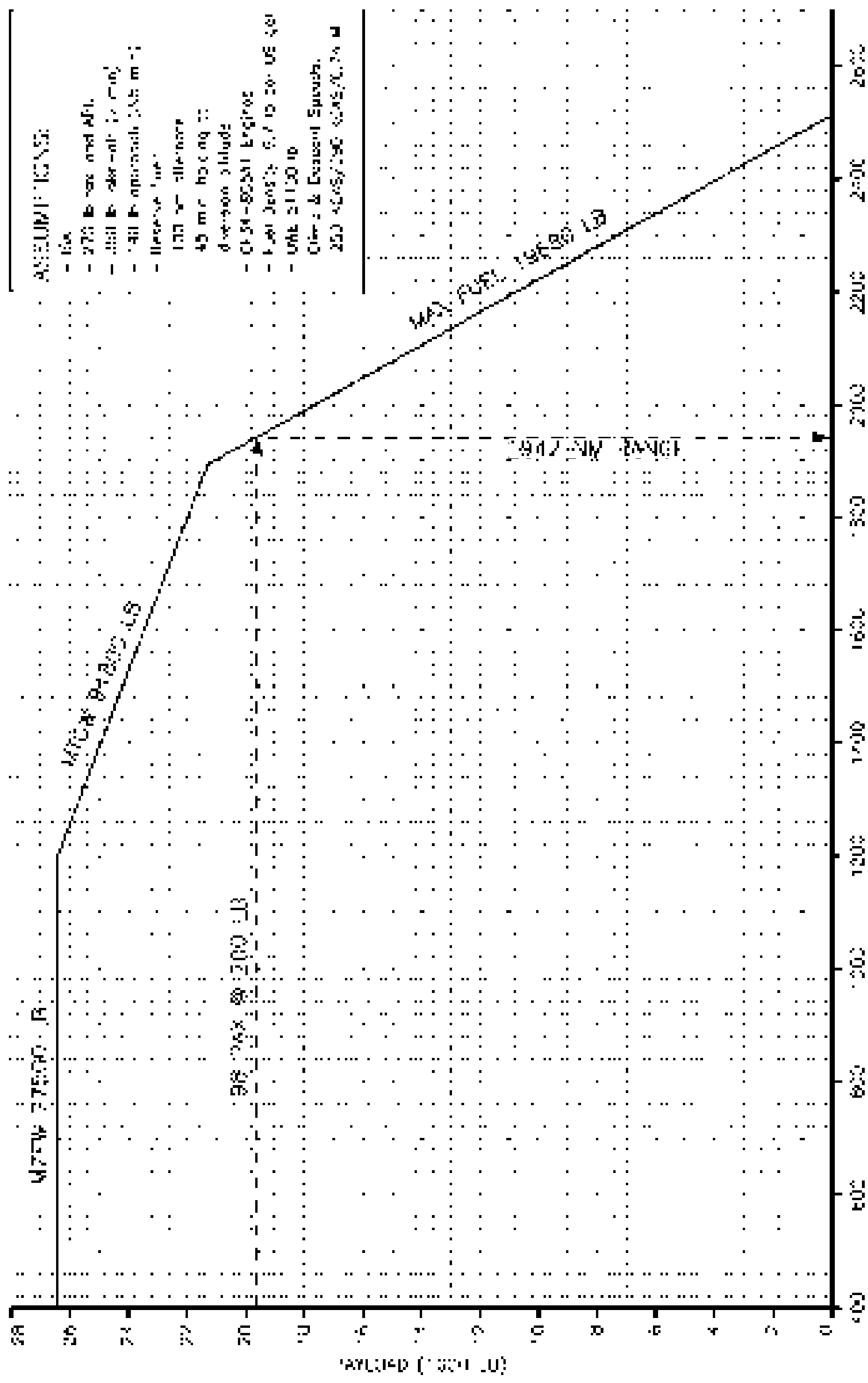
Payload/Range − EL
Figure 2



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Payload/Range − ER
Figure 3

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TAKEOFF FIELD LENGTH REQUIREMENTS

1. Introduction

This subsection gives data on the aircraft performance and field length requirements related to takeoff during normal operations. This subsection is divided into the chapter that follows:

– FAR takeoff runway length requirements.

2. FAR Takeoff Field Length Requirements

A. Technical data is not available at this time. For more information about aircraft performance, refer to the Aircraft Flight Manual (CSP D−012).

B. Refer to Figure 1 for the takeoff field length ISA.

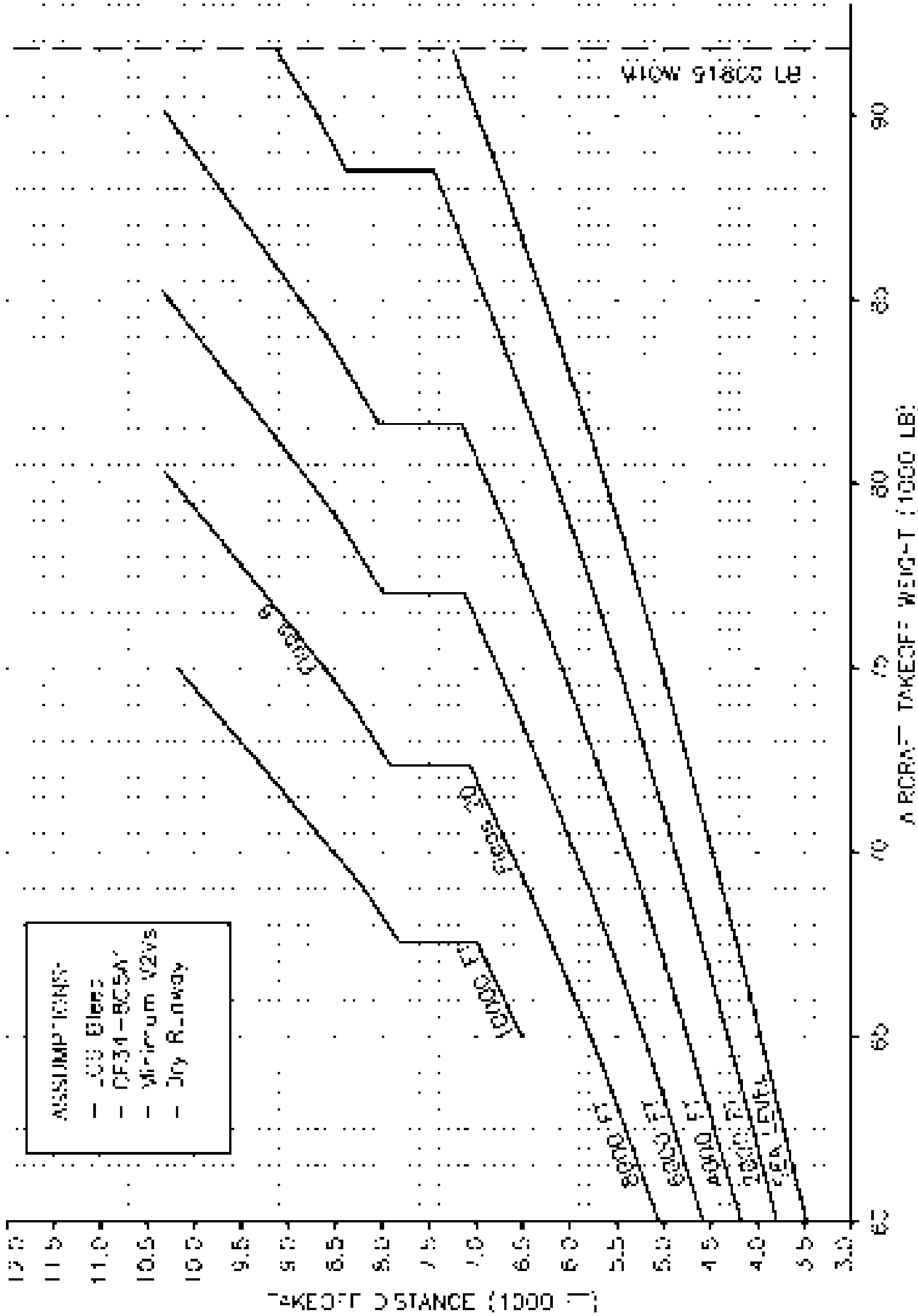
C. Refer to Figure 2 for the takeoff field length ISA + 15°C.

D. Refer to Figure 3 for the takeoff field length ISA + 20°C.

E. Refer to Figure 4 for the takeoff field length ISA + 25°C.

F. Refer to Figure 5 for the takeoff field length ISA + 30°C.

G. Refer to Figure 6 for the takeoff field length ISA + 35°C.



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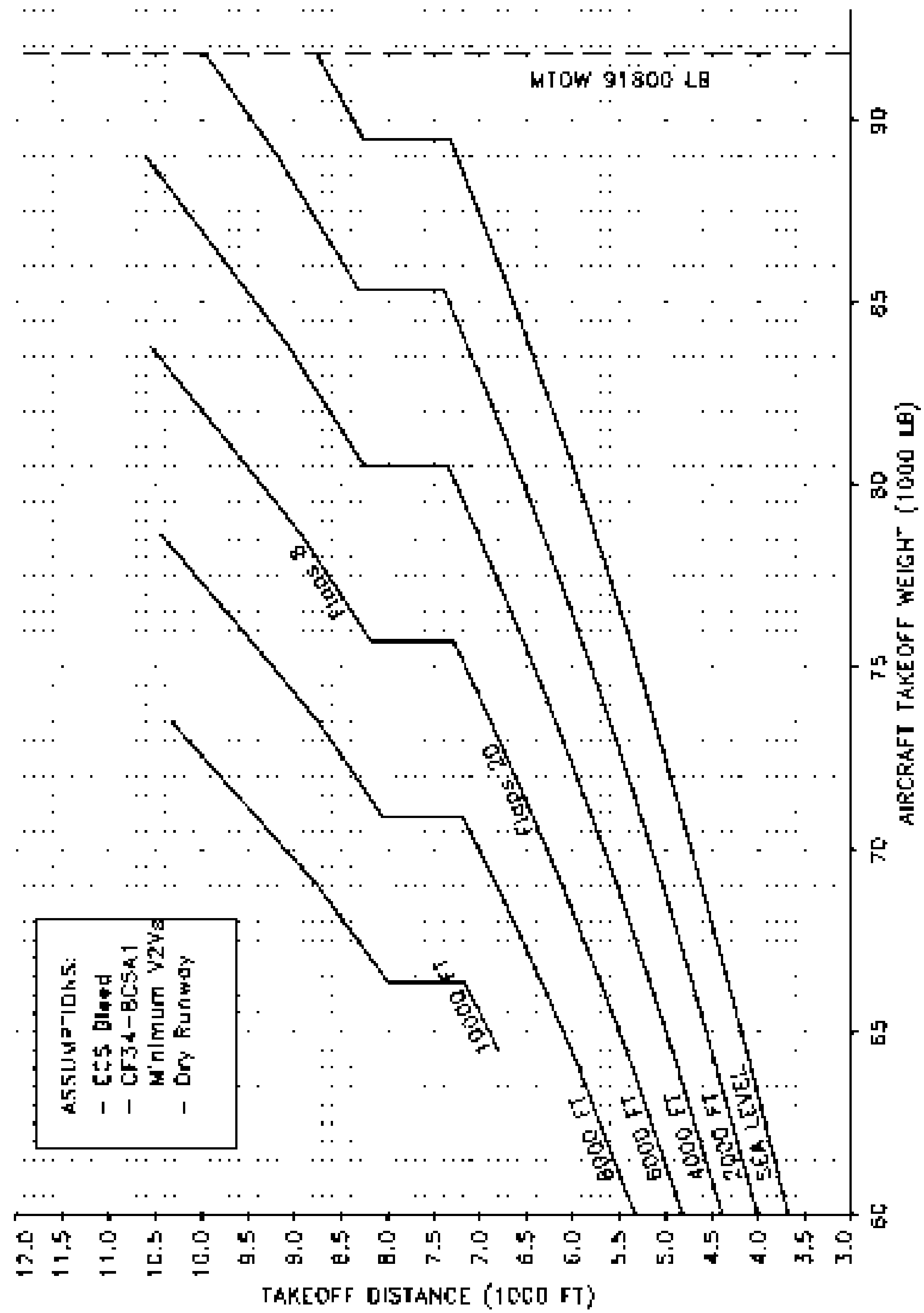
Take−Off Field Length − ISA
Figure 1



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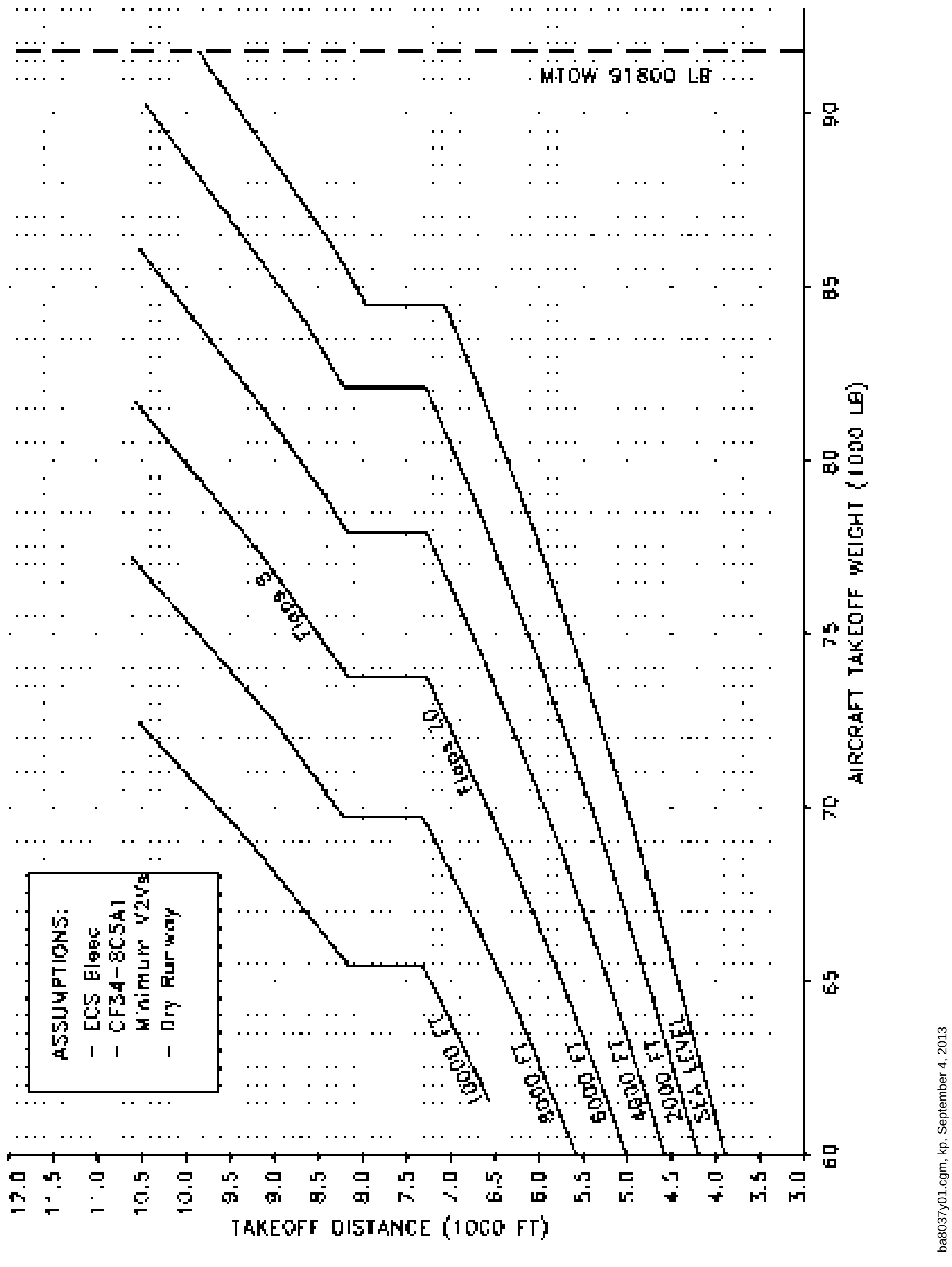
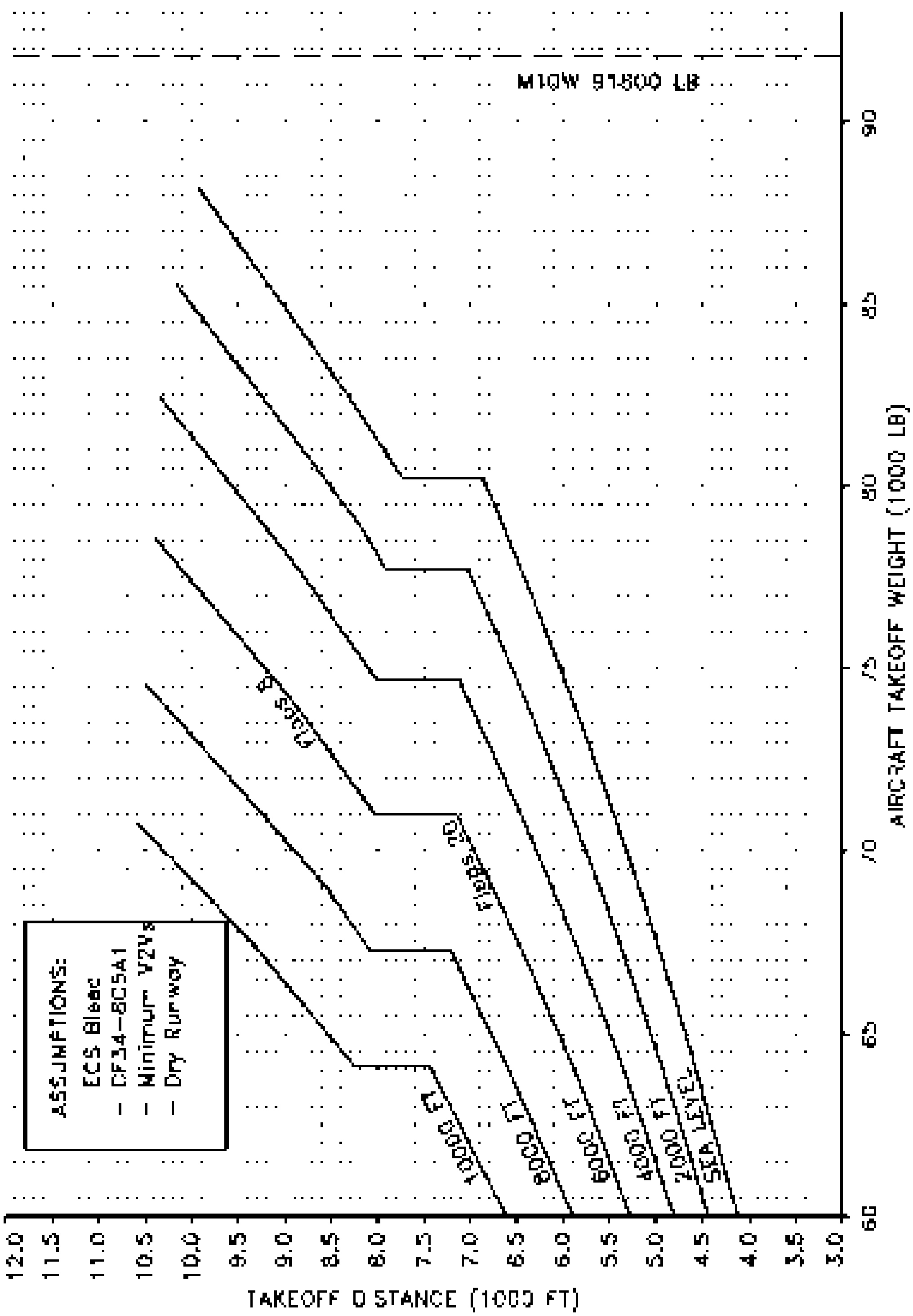
Take−Off Field Length − ISA + 15 Degrees C
Figure 2



Take−Off Field Length − ISA + 20 Degrees C
Figure 3



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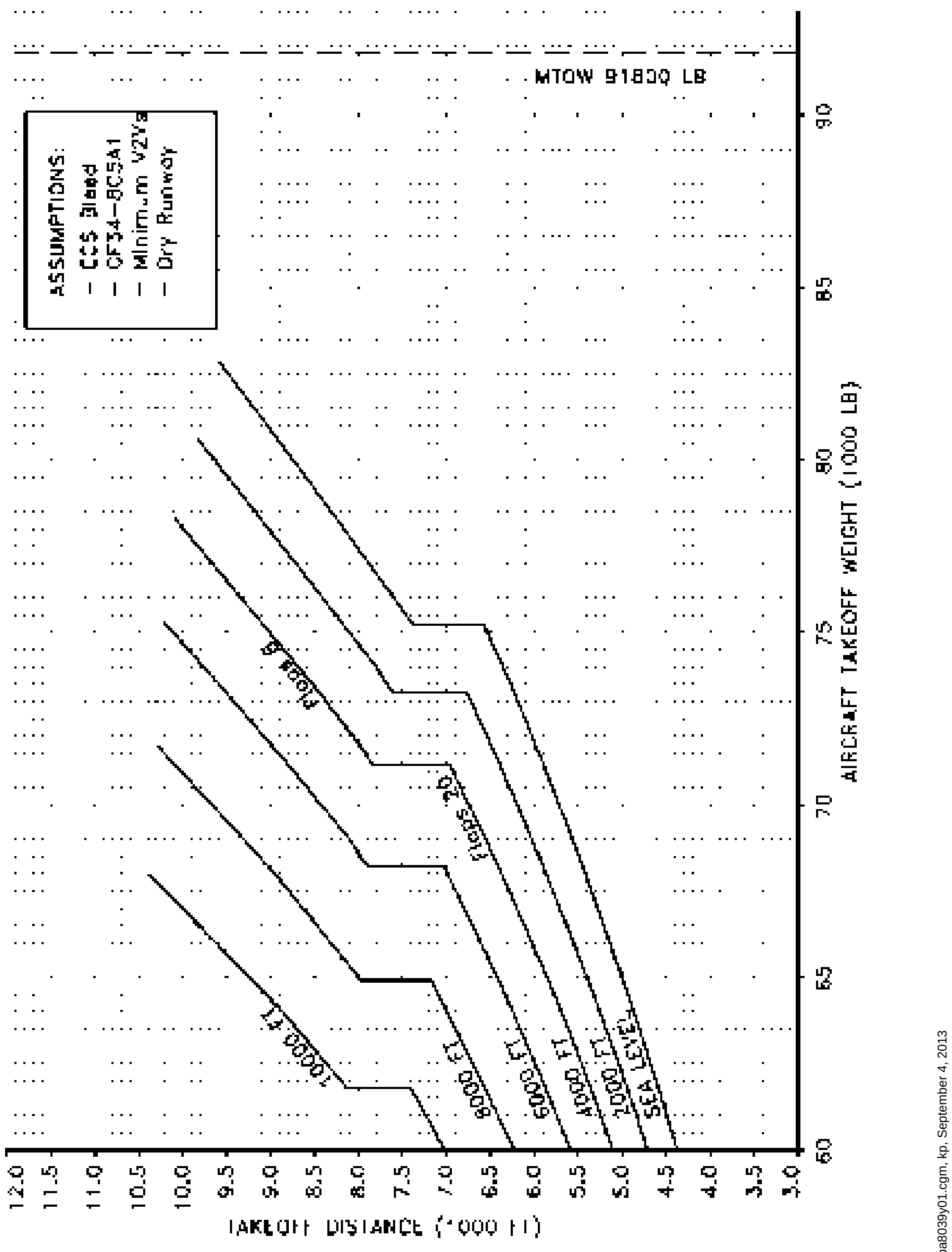
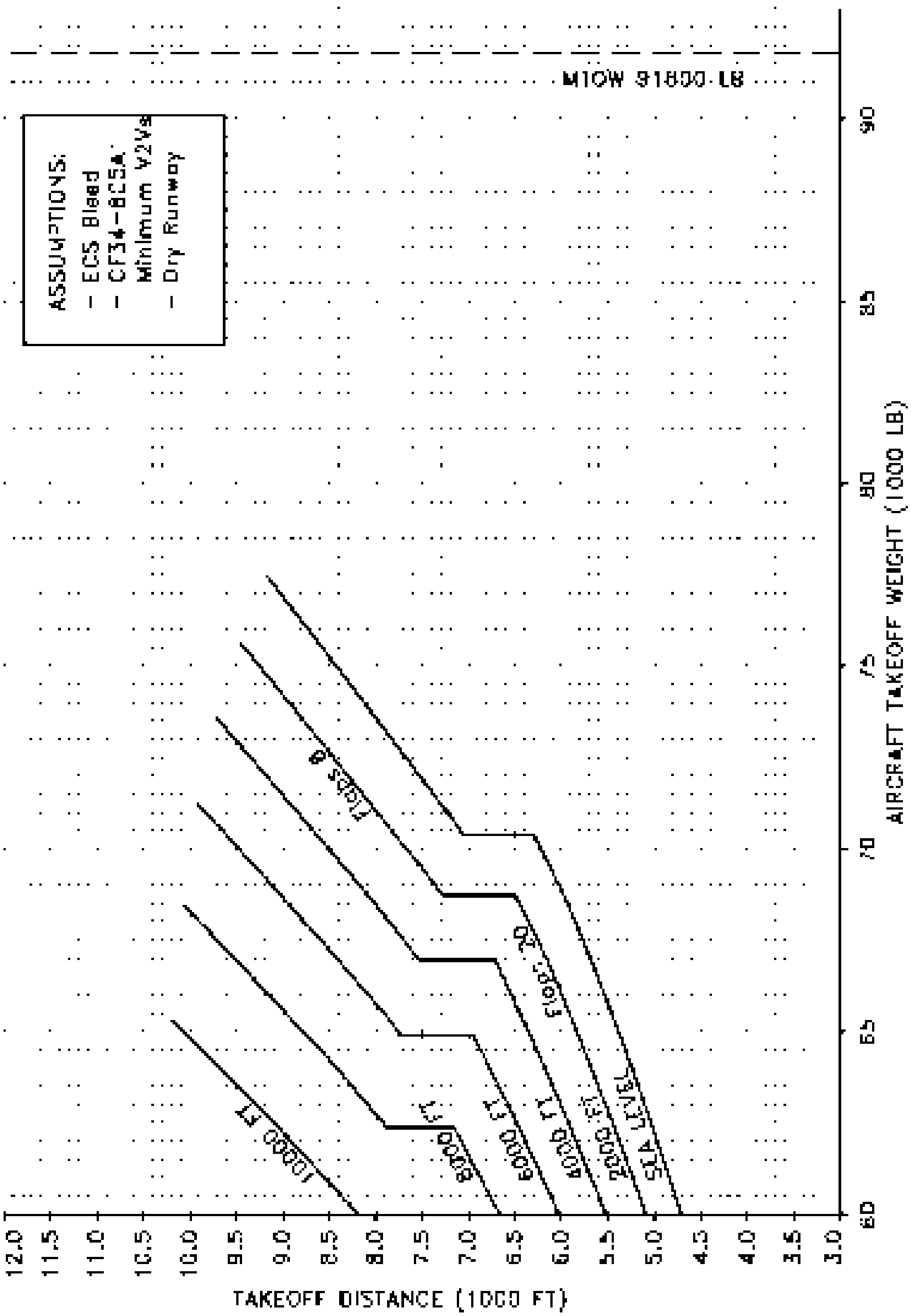
Take−Off Field Length − ISA + 25 Degrees C
Figure 4



Take−Off Field Length − ISA + 30 Degrees C
Figure 5



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Take−Off Field Length − ISA + 35 Degrees C
Figure 6

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LANDING FIELD LENGTH REQUIREMENTS

1. General

This subsection gives data on the aircraft performance and field length requirements related to landing during normal operations. This subsection is divided into the chapters that follow:

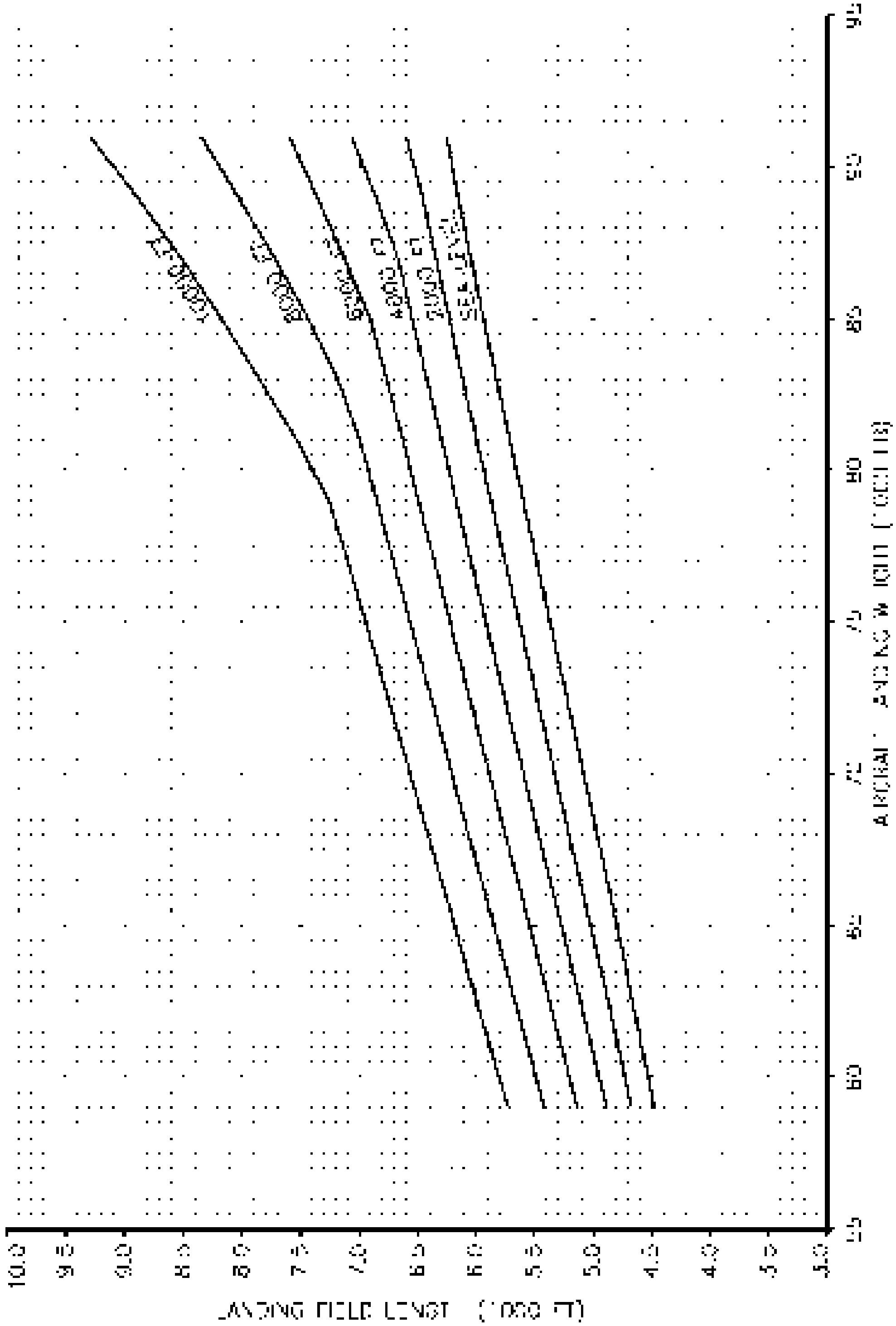
- FAR landing field length requirements
- Landing speed restrictions

2. FAR Landing Field Length Requirements

NOTE: FAR 25 landing field length versus landing weight are for dry runway and ISA conditions. The actual landing distance on a dry runway is equal to the dry runway landing field length multiplied by 0.6.

A. For more information about landing field, refer to the Aircraft Flight Manual (CSP D−012).

B. Refer to 1 for aircraft dry landing field length with flaps at 45 degrees/slats extended.



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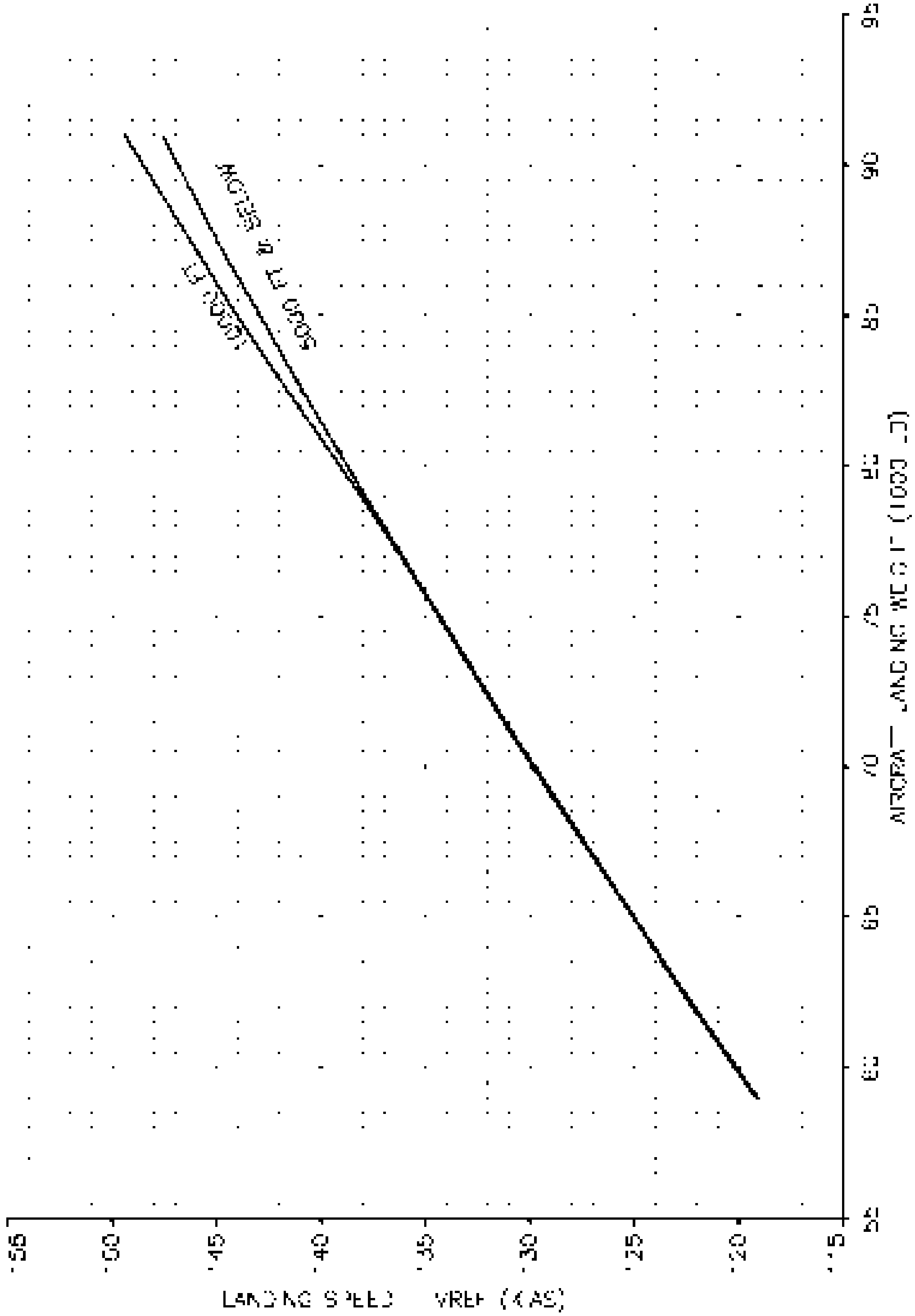
Landing Field Length − Flaps at 45 Degrees/Slats Extended
Figure 1

3. Landing Speed Restrictions

A. Refer to Figure 2 for aircraft landing speed with flaps at 45 degrees/slats extended.



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Landing Speed − Flaps at 45 Degrees/Slats Extended
Figure 2

GROUND MANEUVERING

1. Introduction

This section contains data for the ground maneuvering of the aircraft during normal operations. This section is divided into the subsections that follow:

- Landing gear turning radii, including minimum turning radii
- Angles of visibility from the flight compartment
- Runway and taxiway turn paths

2. General

For ease of presentation, this data is taken from the theoretical limits given by the geometry of the aircraft and, where noted, provides for the normal allowance of tire slippage and reflects the turning capability of the aircraft in favorable operating circumstances. This data should only be used as a guideline for the method of determining the turning capabilities and maneuvering characteristics of the aircraft.

For ground maneuvering operations, different airlines can demand more conservative turning procedures be adopted to avoid too much tire wear and reduce possible maintenance problems. Maneuvering limits and performance levels will vary over a wide range of operating circumstances. Changes from the standard operating policies are sometimes necessary to agree with the physical limits found in the maneuvering area. This can include adverse grades, limited access areas or maneuvering in areas where there is a high risk of jet blast damage. For these reasons, airline ground maneuvering operations and limits should be known before you do the actual layout planning.

3. Landing gear turning radii, including minimum turning radii

A. This section 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.

B. Refer to Table 1 for the values to use with Figure 1 to know the minimum turn radii.

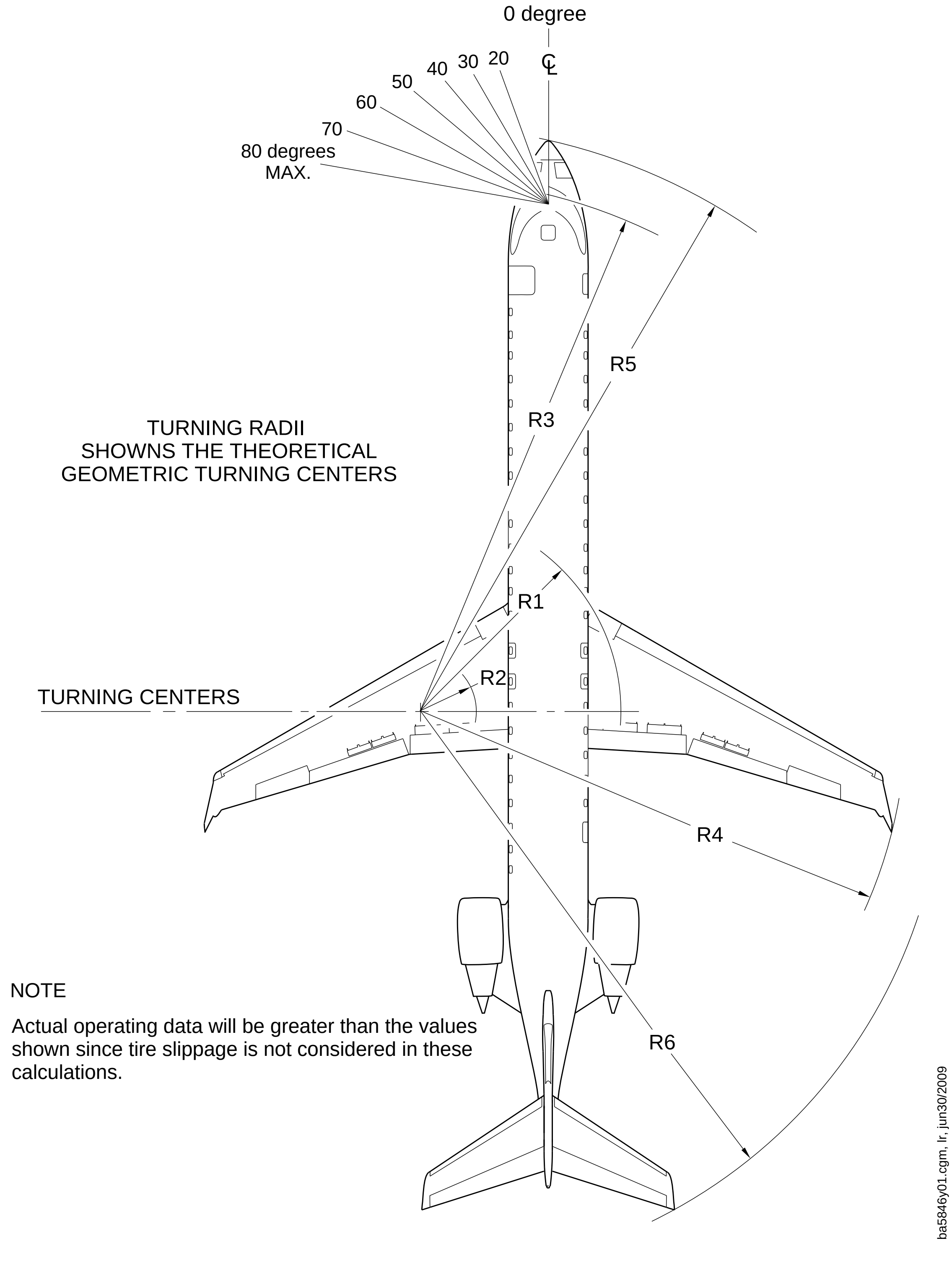
Table 1 − Turn Radii

Angle (Degrees)	20	30	40	50	60	70	77 (3 Degree Slip Angle)
R1	1938.7 in. (49.24 m)	1185.7 in. (30.12 m)	785.1 in. (19.94 m)	523.5 in. (13.3 m)	329.3 in. (8.36 m)	171.0 in. (4.34 m)	72.9 in. (1.85 m)

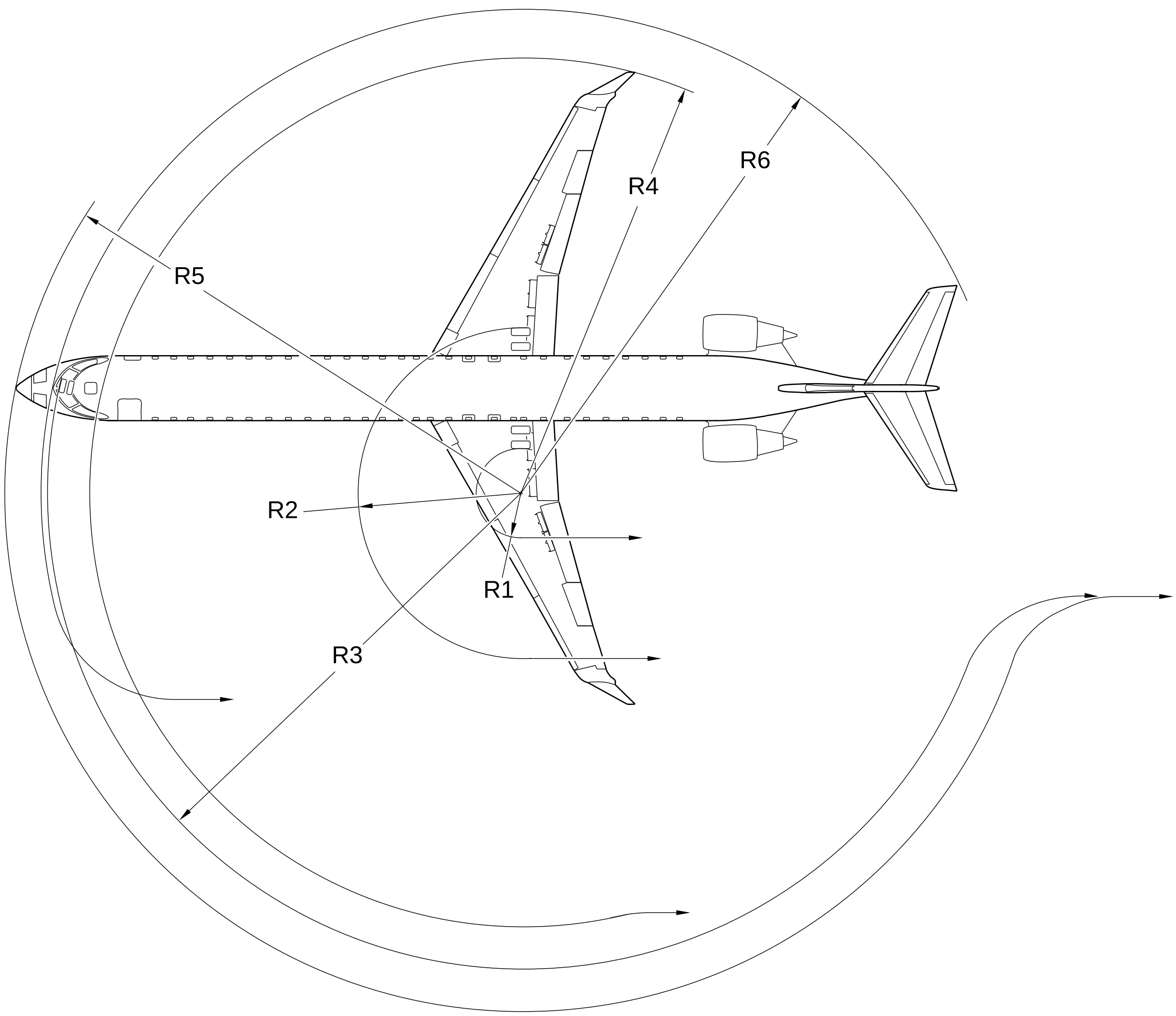
Angle (Degrees)	20	30	40	50	60	70	77 (3 Degree Slip Angle)
R2	2137.9 in. (50.3 m)	1384.9 in. (35.18 m)	984.2 in. (25.0 m)	722.7 in. (18.36 m)	528.5 in. (13.42 m)	370.1 in. (9.4 m)	265.5 in. (6.74 m)
R3	2169.2 in. (55.10 m)	1484.1 in. (37.62 m)	1154.8 in. (29.33 m)	969.4 in. (24.62 m)	857.9 in. (21.79 m)	791.0 in. (20.09 m)	773.1 in. (19.64 m)
R4	2559.1 in. (65.0 m)	1809.1 in. (45.95 m)	1411.2 in. (35.84 m)	1152.3 in. (29.27 m)	961.0 in. (24.41 m)	708.9 in. (18.01 m)	712.6 in. (18.1 m)
R5	2209.5 in. (56.12 m)	1529.7 in. (38.85 m)	1210.2 in. (30.74 m)	1033.0 in. (26.24 m)	929.8 in. (23.62 m)	868.1 in. (22.05 m)	843.3 in. (21.42 m)
R6	2311.6 in. (58.71 m)	1613.4 in. (40.98 m)	1267.6 in. (32.2 m)	1062.7 in. (26.99 m)	929.2 in. (23.6 m)	838.1 in. (21.29 m)	792.4 in. (20.13 m)

C. Refer to Figures 1 and 2 for the turn radii with 3 degree slip angle.

NOTE: The Minimum Turn Radii illustration is not available at time of publishing. It will be included at the next revision.



Minimum Turn Radii − CRJ1000
Figure 1



NOTE

Maximum steering:
− 80 Degree Steering Angle
− 3 Degree Slip.

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Runway and Taxiway Turn Radius − CRJ1000
Figure 2

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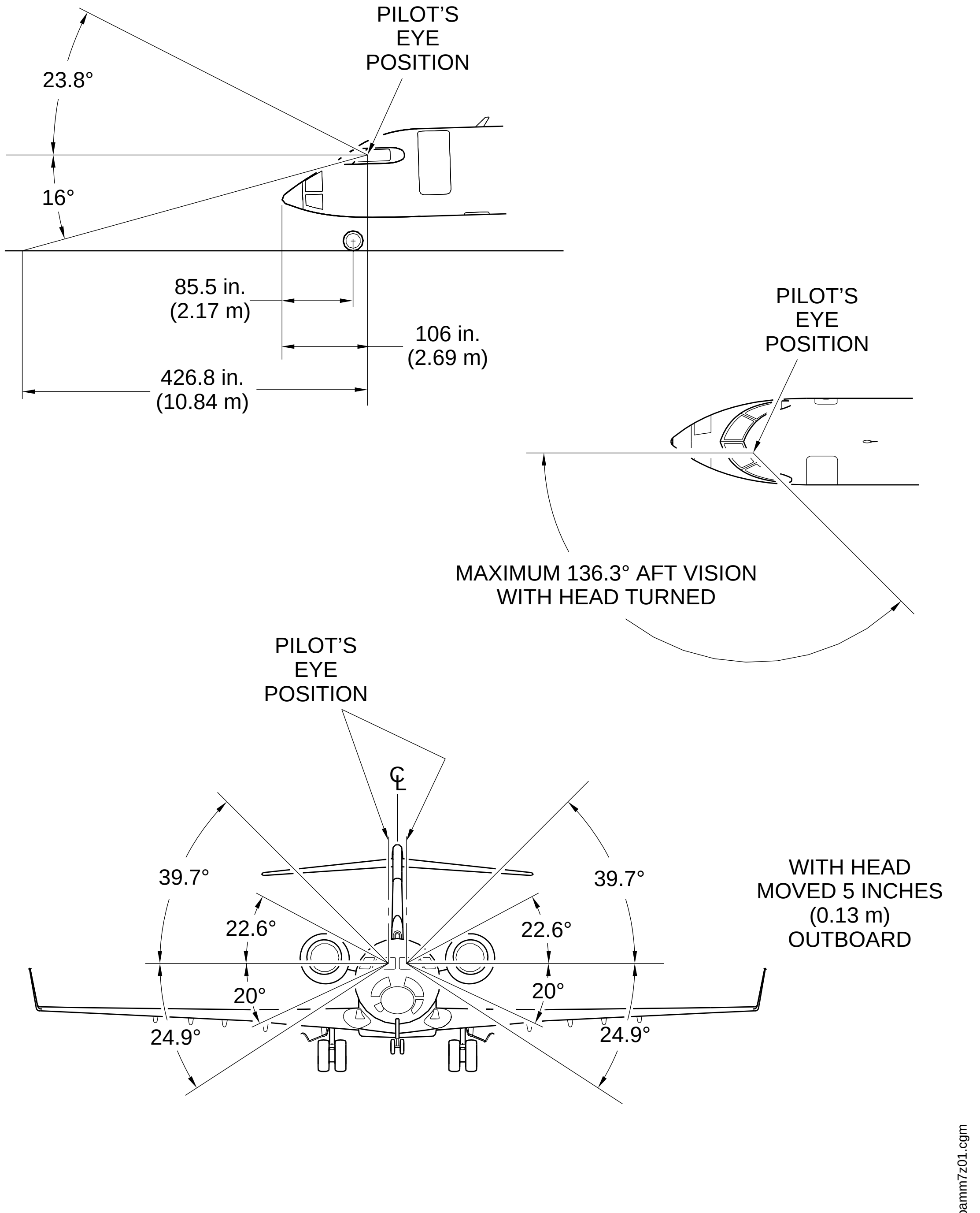
VISIBILITY FROM FLIGHT COMPARTMENT

1. Visibility from Flight Compartment

A. This subsection gives data about the visibility from the flight compartment.

B. Refer to Figure 1 for the distance you can see from the flight compartment (aircraft at rest).



Distance You Can See from the Flight Compartment
Figure 1

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RUNWAY AND TAXIWAY

1. Introduction

This subsection contains data for the runway and taxiway maneuvering of the aircraft during normal operations. This subsection is divided into the chapters that follow:

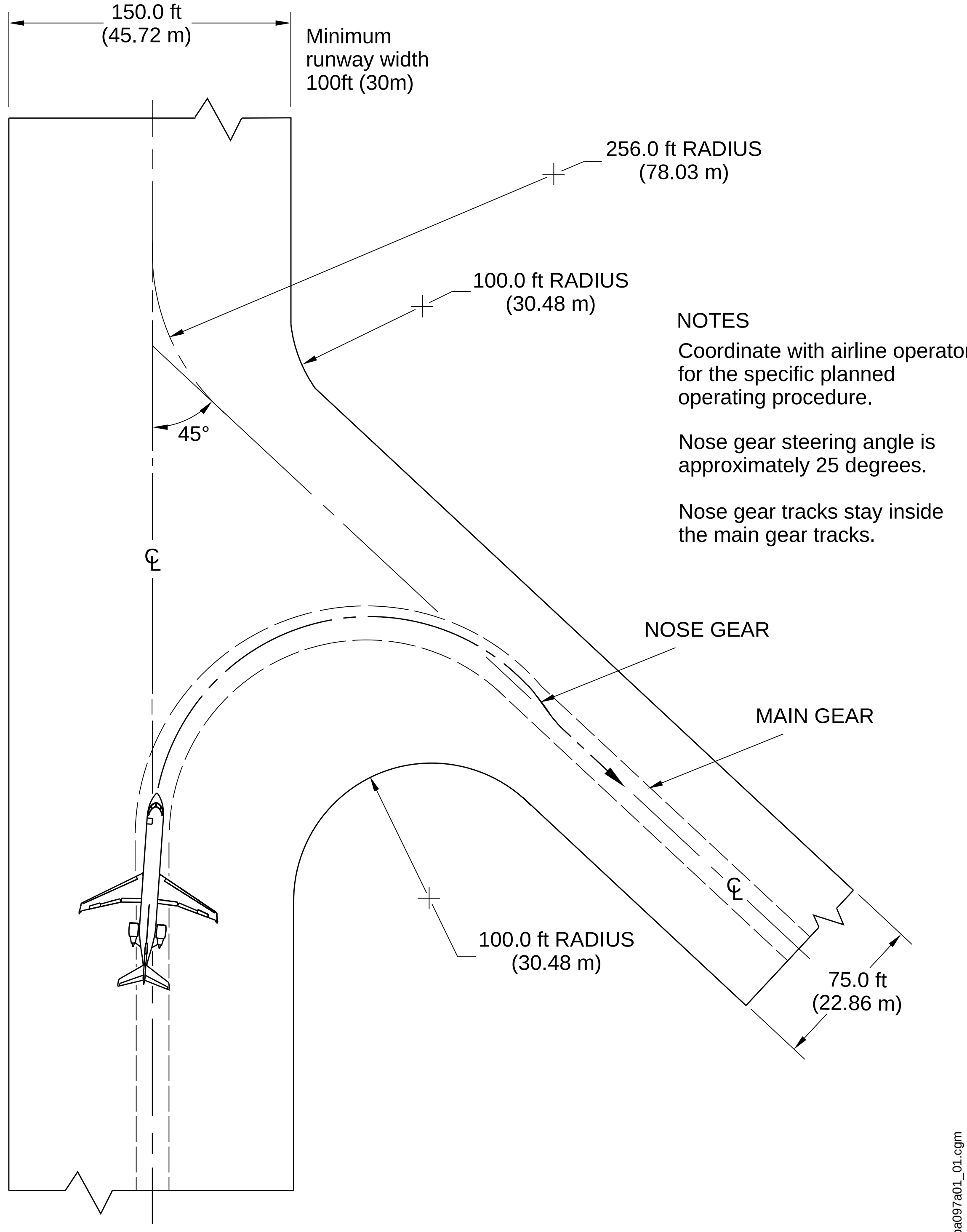
– Runway and taxiway turn paths

– Minimum holding bay (apron) widths.

2. Runway and Taxiway Turn Paths

A. This chapter gives data about the Runway and taxiway turn paths.

B. Refer to Figures 1, 2, and 3 for the 45 and 90 degree turns from runway to taxiway.



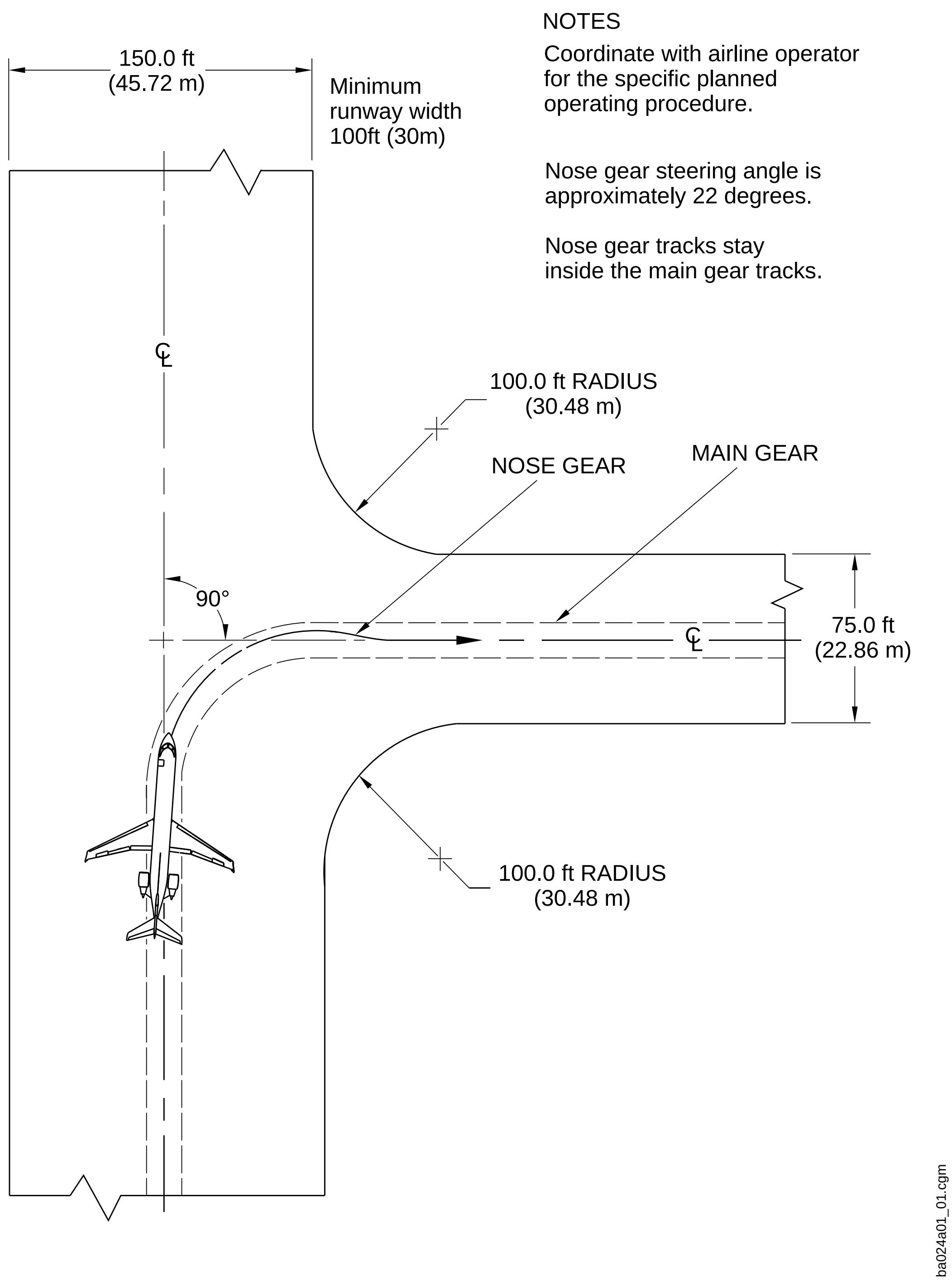
NOTES

Coordinate with airline operator for the specific planned operating procedure.

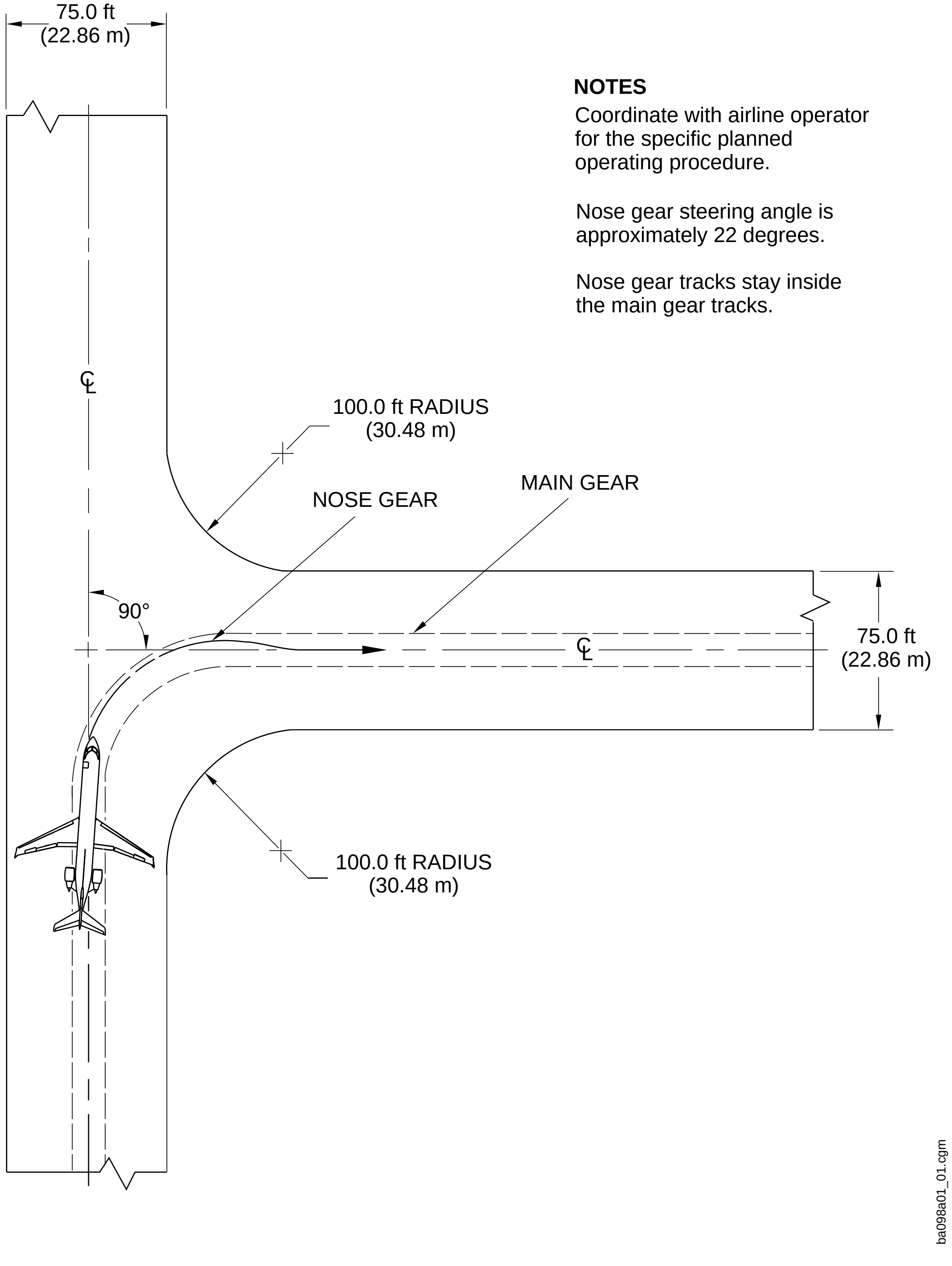
Nose gear steering angle is approximately 25 degrees.

Nose gear tracks stay inside the main gear tracks.

Runway and Taxiway Turn−Paths
Figure 1



90 Degree Turn − Runway to Taxiway
Figure 2

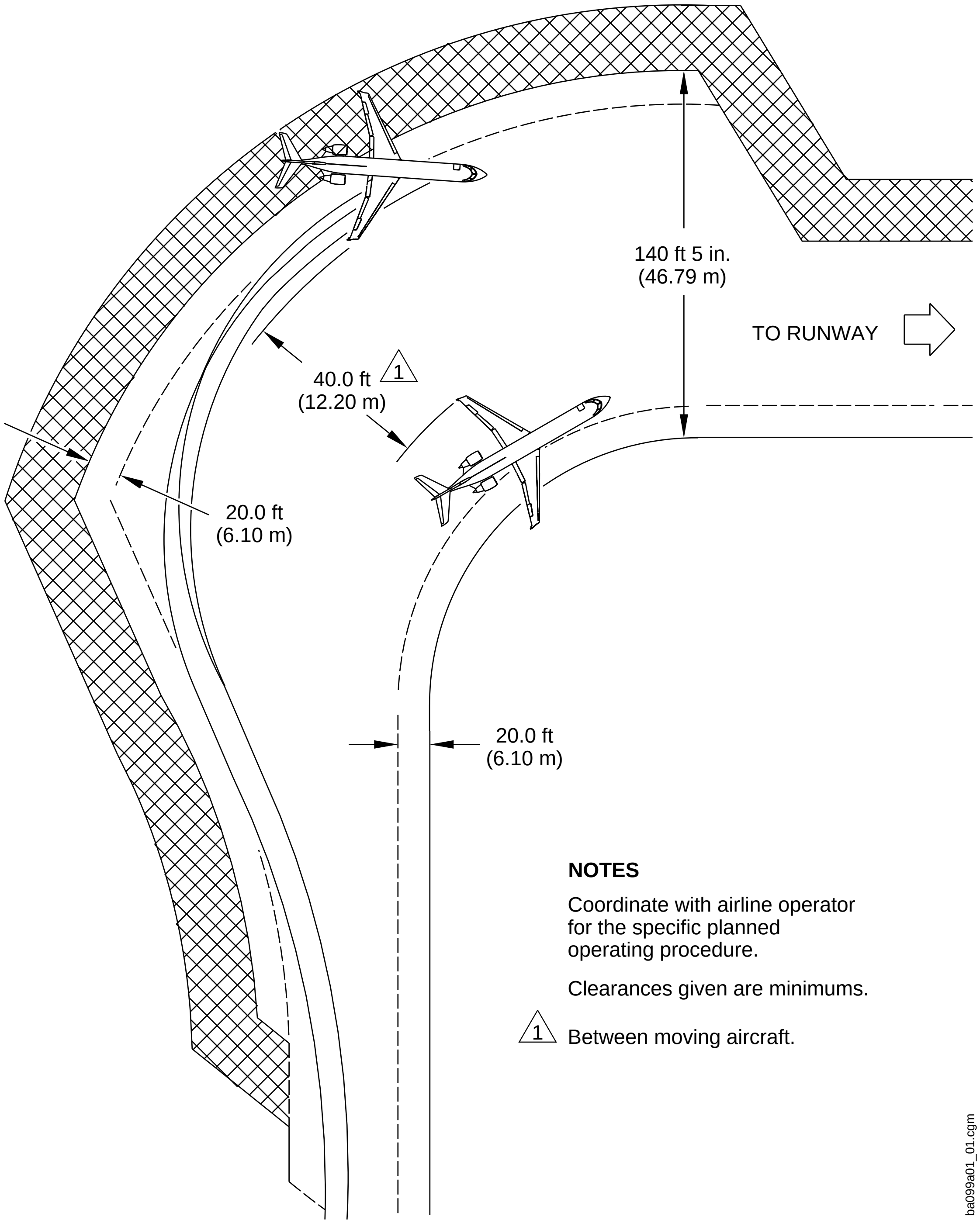


90 Degree Turn − Taxiway to Taxiway
Figure 3

3. Minimum Holding Bay

A. This chapter gives data about the minimum holding bay (apron) widths.

B. Refer to Figure 4 for the runway holding area.



Runway Holding Area
Figure 4

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TERMINAL SERVICING

1. Introduction

A. This section contains the 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 is special and can operate under have 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 is divided into the subsections that follow:

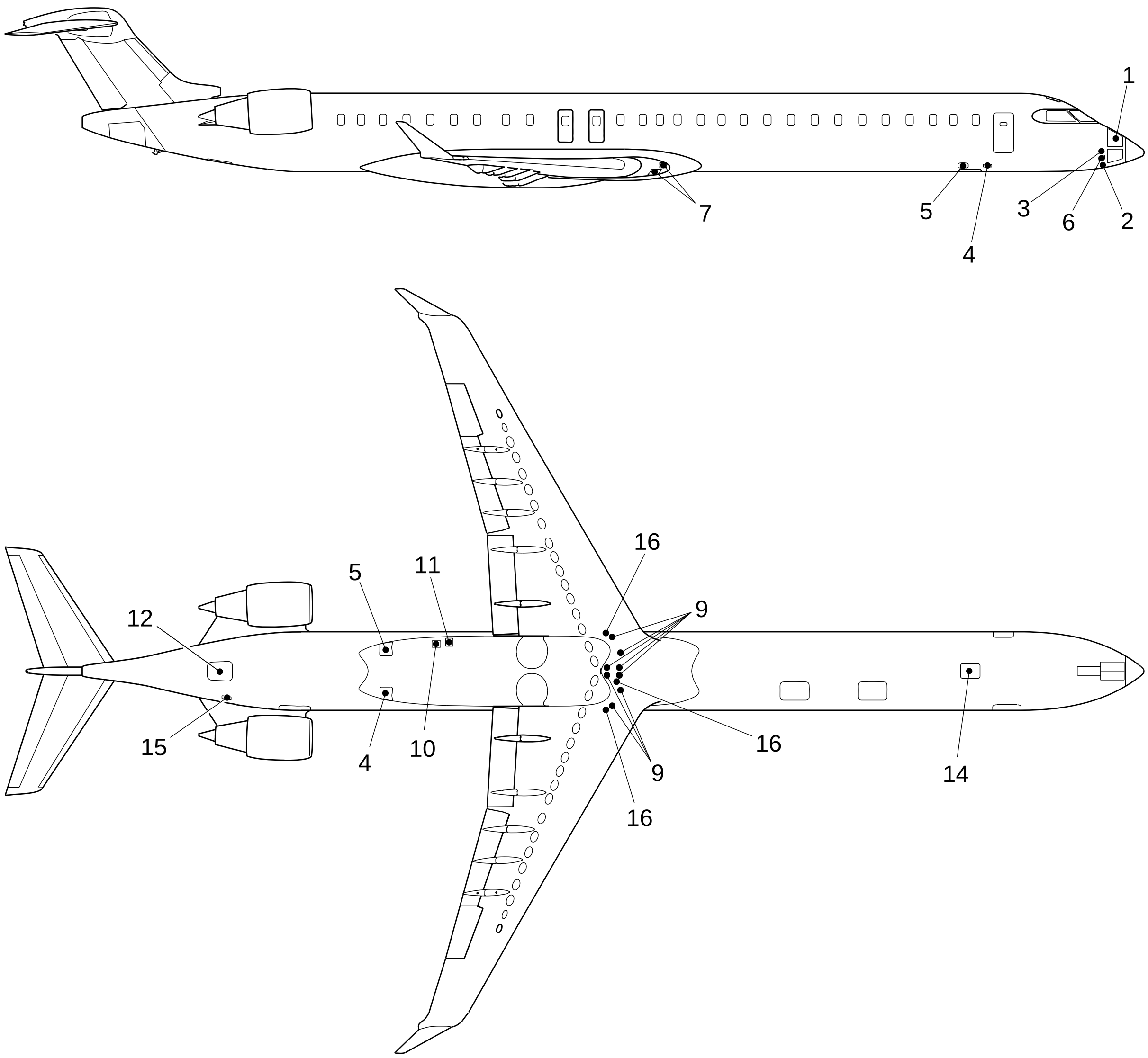
- Ground towing requirements
- Ground servicing connections
- Ground servicing connection data
- Aircraft servicing arrangement
- Terminal operations
- Ground electrical power requirements
- Preconditioned airflow requirements − air conditioning
- Ground pneumatic power requirements − engine starting.

2. Ground Towing Requirements

A. The recommended towing vehicle for the CRJ1000 is P/N HTLPAG80DDWCN. For more information, refer to the Illustrated Tool and Equipment Manual (CSP B−007) and the Aircraft Maintenance Manual (CSP B−001).

3. Ground Servicing Connections

A. Refer to Figure 1 for the ground servicing connection points. For servicing procedures, refer to the Aircraft Maintenance Manual (CSP B−001).



LEGEND

1. ADG oil servicing.
2. AC ground−power connection.
3. Oxygen fill service panel.
4. Forward/aft potable water connection.
5. Forward/aft water waste connections.
6. External service panel with interphone.
7. Refuel−defuel control panel and refuel access door with interphone.
9. Water drain valves.
10. Accumulator pressure fill point access door.
11. Hydraulic system no. 3 service panel access.
12. Access to engine oil replenisment tank and hydraulic systems no. 1 and no. 2 components access and interphone.
14. Interphone.
15. Ground air conditionning connection.
16. Magnetic fuel level indicator.

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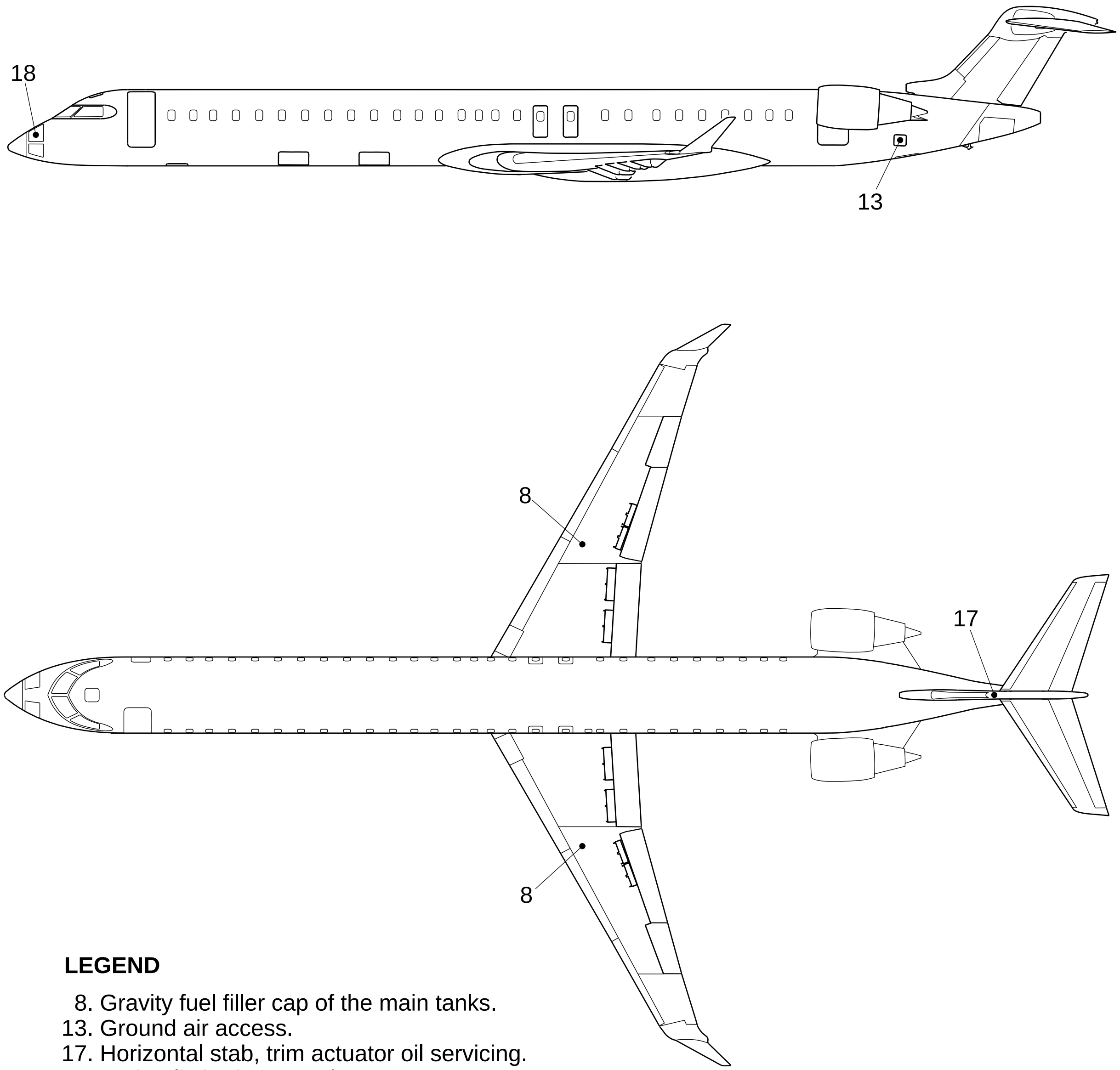
Terminal Servicing
Figure 1 (Sheet 1 of 2)



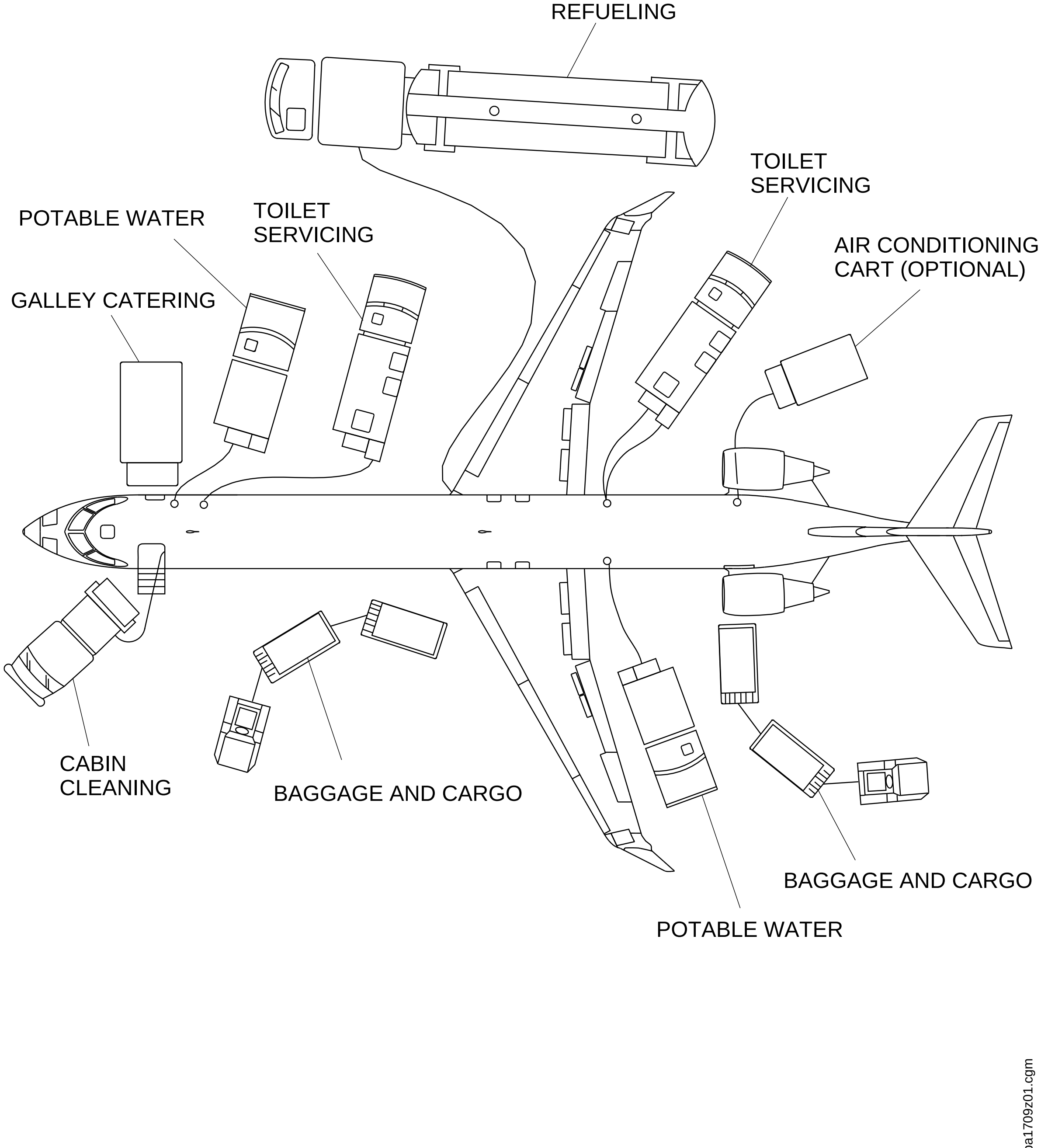
LEGEND

8. Gravity fuel filler cap of the main tanks.
13. Ground air access.
17. Horizontal stab, trim actuator oil servicing.
18. Hydraulic brake control.

Terminal Servicing
Figure 1 (Sheet 2 of 2)

4. Aircraft Servicing Arrangement

A. Refer to Figure 2 for the aircraft servicing arrangement.



Aircraft Servicing Arrangement
Figure 2

5. Ground Electrical Power Requirements

A. The external power system is used to connect AC electrical power from a ground power connection. 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. The tables show the external AC power requirements data, the external power quality limitations data, the external AC power quality limitations data, and the external AC power requirements data.

B. Refer to Table 1 for the External AC Power Requirements data.

C. Refer to Table 2 for the External Power Quality Limitations data.

D. Refer to Table 3 for the External AC Power Limitations data.

E. Refer to Table 4 for the Voltage Regulation data.

F. Refer to Figure for overcurrent protection.

G. The external AC power requirements are shown in Table 1.

Table 1− External AC Power Requirements

VOLTAGE	FREQUENCY	Phase	KVA
115/200Vac	400Hz	3−Phase	40kVA minimum

H. The external power quality limitations are shown in Table 2.

Table 2− External Power Quality Limitations

PARAMETER	SETTING LIMIT	RESPONSE TIME
Overvoltage (High)	150 V ±2%	< 0.25 SEC
Overvoltage (Normal)	124 V ±2%	0.75 ±0.25 SEC
Undervoltage	106 V ±2%	6.00 ±0.75 SEC
Overfrequency	430 Hz ±2%	< 0.25 SEC
Underfrequency	370 Hz ±2%	< 0.25 SEC
Phase Sequence	A−B−C	< 0.25 SEC

I. The external AC power limitations are shown in Table 3.

Table 3− External AC Power Limitations

CURRENT	LIMITATION
Between 122 A and 130 A	300 SEC
Between 130 A and 250 A	5 SEC
More than 250 A	0.7 SEC

J. The voltage regulation is shown in Table 4.

Table 4− Voltage Regulation

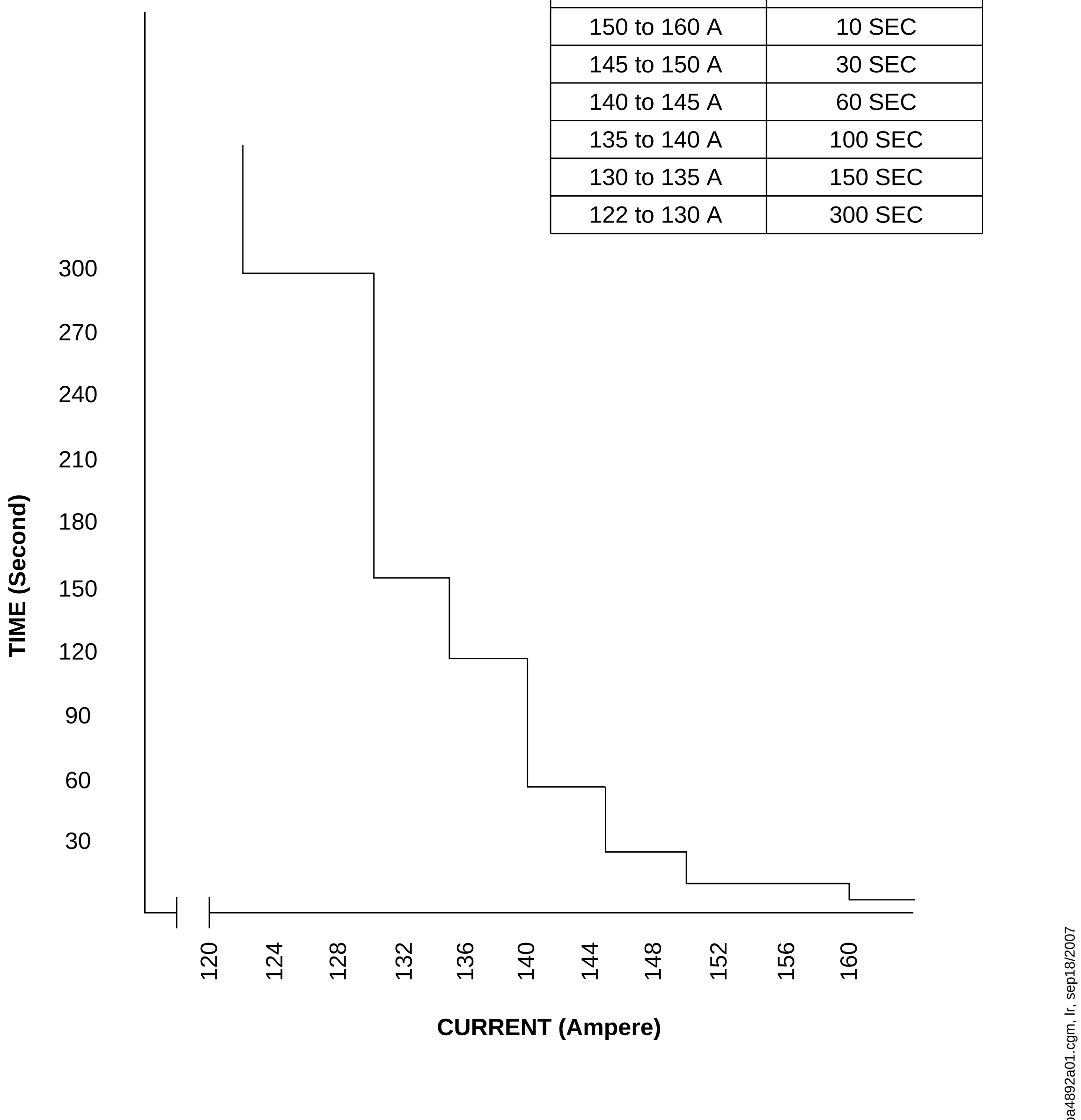
LOAD	LIMITATION	VOLTAGE
0 to 40 kVA	0.75 lag to 1.0 pF	115 ±1.5 V
40 to 45 kVA	0.75 lag to 1.0 pF	115 ±1.5, −2.0 V
45 to 60 kVA	0.75 lag to 1.0 pF	115 ±2.0, −2.5 V

K. Refer to Figure 3 for overcurrent protection.

NOTE

⚠1 Current is ±5 amperes.

CURRENT ⚠1	TIME
> 160 A	5 SEC
150 to 160 A	10 SEC
145 to 150 A	30 SEC
140 to 145 A	60 SEC
135 to 140 A	100 SEC
130 to 135 A	150 SEC
122 to 130 A	300 SEC



Overcurrent Protection Ampere versus Time Delay
Figure 3

6. Preconditioned Airflow Requirements − Air Conditioning

A. The ground air supply requirements for air conditioning and airflow requirements are shown in Table 5.

Table 5 − Preconditioned Airflow Requirements − Air Conditioning

Ground Air Supply − Requirements for Cooling and Heating			
Requirements	**Pressure**	**Airflow**	**Temperature**
To Cool Cabin to 80 °F (26.67 °C) Conditions: 1. Initial cabin temp. is 103 °F (39.44 °C) 2. Outside air temp. is 103 °F (39.44 °C) 3. Galley (s) is (are) off 4. Auto full cold, two packs 5. Total of maximum passengers and crew	35 psi (241.32 kPa)	60 lb/min. (27.2 kg/min.)	Less than 400 °F (204.4 °C)
To Heat Cabin to 75 °F (23.89 °C) Conditions: 1. Initial cabin temp. is 0 °F (−17 °C) 2. Outside cabin temp. is 0 °F (−17 °C) 3. Cloudy day 4. Auto full hot, two packs 5. No crew and passengers	35 psi (241.32 kPa)	70 lb/min. (31.75 kg/min.)	300 − 400 °F (148.9 − 204.4 °C)

7. Ground Pneumatic Power Requirements − Engine Starting

A. The ground air supply requirements for engine starting are shown in Table 6. Refer to AMM 71−00−00−866−806 − Engine Start (with external air) for more details.

Table 6 − Ground Pneumatic Power Requirements − Engine Starting

Ground Air Supply − Requirements for Engine Starting			
Requirements	**Pressure**	**Airflow**	**Temperature**
To Provide Starter Air Pressure Conditions: 1. Time allowed during start (to starter cutout) is 90 seconds. 2. Time−to−IDLE on ground is 45 seconds minimum. 3. No bleed air extraction is permitted during start sequence.	60 p si (413.7 kPa) maximum		

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OPERATING CONDITIONS AND NOISE DATA

1. Introduction

This section 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 intake and exhaust

– Airport and community noise data for powerplants

– Engine emission data

2. General

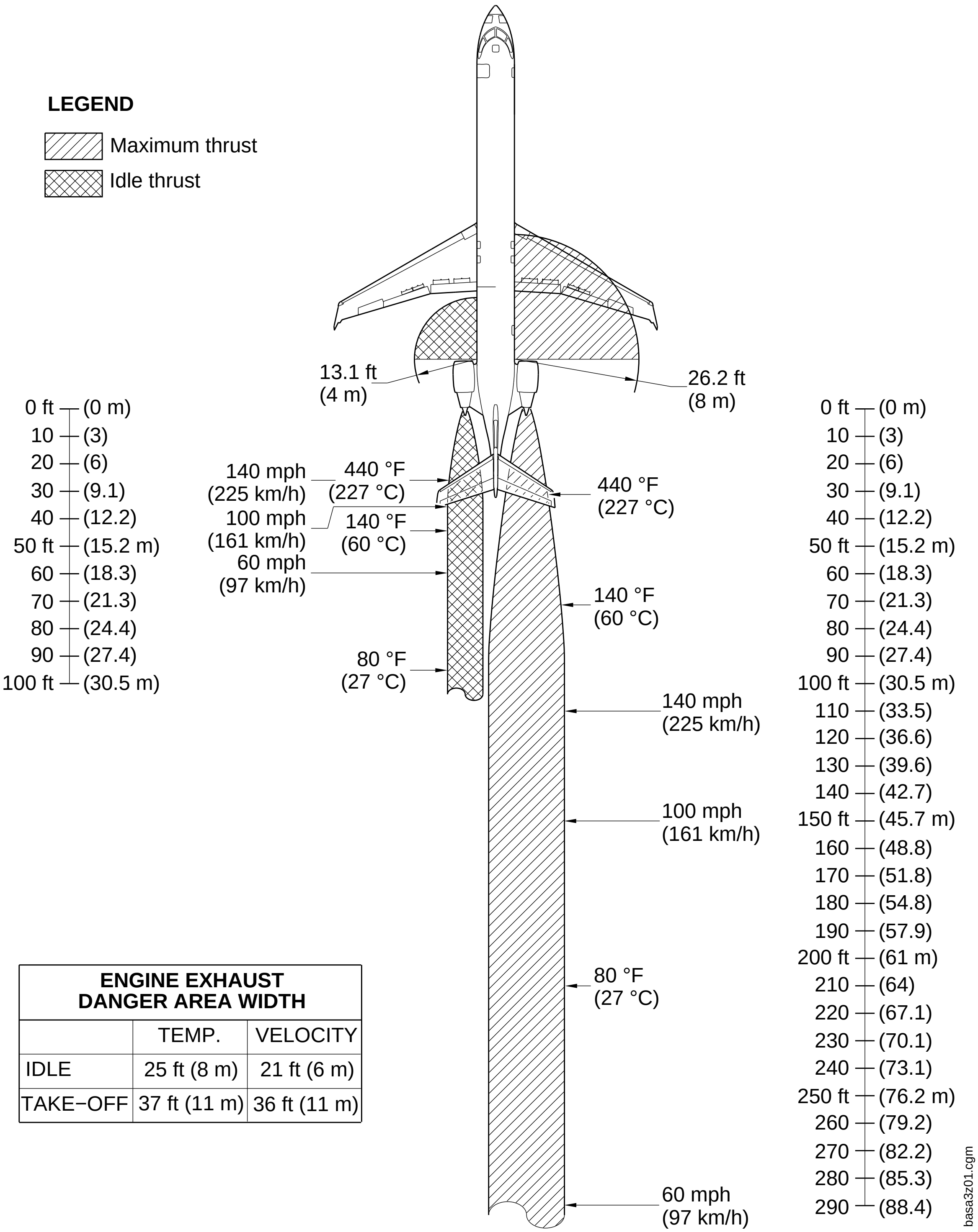
A. Aircraft operating conditions and noise are important to airport and community planners. While an airport is a major element in a community transportation system and is vital to its growth, it must also be accountable to the best interests of the neighborhood in which it is located. This can only be accomplished with proper planning. Because aircraft noise extends beyond the boundaries of the airport, it is important to consider the impact on surrounding communities located near the airport.

B. The CRJ Series aircraft is designed with advanced, quite, turbofan technology. Its noise impact is minimal compared to most commercial aircraft, larger and smaller, currently being operated in a typical airport.

3. Engine Dangerous Areas − Engine Intake and Exhaust

A. This section contains data on the engine intake and exhaust dangerous areas.

B. Refer to Figure 1 for the zones and distances that should be considered dangerous during engine operation.



ENGINE EXHAUST DANGER AREA WIDTH		
	TEMP.	VELOCITY
IDLE	25 ft (8 m)	21 ft (6 m)
TAKE−OFF	37 ft (11 m)	36 ft (11 m)

Engine Intake and Exhaust Danger Areas
Figure 1

4. Airport and Community Noise Data for Powerplants

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

B. Refer to Table 1 for the demonstrated effective perceived noise levels (EPNdB), limits, and the relative difference (margin of compliance) for the engines.

C. Refer to Table 2 for the Auxiliary Power Unit (APU) noise measurements.

Table 1 − Engine Noise Levels and Restrictions

Phase of Flight	Actual Noise Level (EPNdB)	Maximum Allowable Noise Level (dB)	Margin of Compliance (dB)
Takeoff/Flyover	82.0	89.0	−7.0
Sideline/Lateral	89.6	94.0	−4.4
Approach	92.6	98.0	−5.4

NOTE: These estimated noise level values are stated for reference conditions of standard atmospheric pressure at sea level, at 77 °F (25 °C) ambient temperature, 70% relative humidity, and zero wind.

Table 2 − Auxiliary Power Unit (APU) Noise Measurements

Measurement Location	Corrected dB (A) Level with ECS at Maximum Cooling
Aft Lavatory Drain Port	86.0
Worst Case Perimeter Location*	84.0

* Worst case perimeter location is located on the right side of the aircraft at 65 feet 8 inches from the centerline and 32 feet 10 inches aft of the rudder trailing edge.

NOTE: Atmosheric conditions during the test: Barometric pressure: 975.3 hPa, relative humidity: 60.1−72.7%, outside temperature: 3.0−4.9 °C.

5. Engine Emission Data

A. The engine emission data must agree with ICAO Annex 16, Volume 2, Part III, Appendix 3.

B. Refer to Table 3 for the CO, HC, and NOx emission data on CF34−8C5A1 engines.

C. Refer to Table 4 for the smoke emission data on engine Model CF34−8C5A1.

Table 3 − Engine Emission Data − Engine Model CF34−8C5A1

Type of Emission	Average Characteristic Emission Value (g/kN)	Maximum Allowable Average Emission Value (g/kN)
CO	41.5	118.0
HC	0.5	19.6
NOx	43.7	69.6
NOTE: The average characteristic emission values are given for single engine operation only.		

Table 4 − Engine Smoke Emission Data − Engine Model CF34−8C5A1

Type of Emission	Average Characteristic Smoke Number	Maximum Allowable Smoke Number
Smoke Number	12.8	27.2
NOTE: The average characteristic smoke number is given for single engine operation only.		

**ON A/C ALL

PAVEMENT DATA

1. Introduction

This section contains data about 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 centre−of−gravity (CG), with two recommended methods: Load Classification Number (LCN) and Aircraft Classification Number (ACN). This section is divided into the subsections that follow:

– Pavement chart explanations

– Footprint, tire size and inflation pressure

– Flexible pavement requirements

– Rigid pavement requirements.

2. Pavement Chart Explanations

The pavement requirements for commercial aircraft come from the static analysis loads imposed on the main landing−gear wheels and tires through the shock struts.

NOTE: Make sure that all runways or pavements to be used meet these minimum LCN and ACN requirements.

A. The pavement data necessary for this aircraft are from the fixed analysis of the loads applied to the Main Landing Gear (MLG) struts. The MLG loads are put into Tables 1 to 4.

B. Refer to Figures 1 and 2 to find these loads through the stability limits of the aircraft (at rest on the pavement).

C. Refer to Airplane Flight Manual (CSP D−012) for the maximum permissible CG limits and find the approximate average MLG load per side. Enter the total aircraft weight in the aircraft Weight column at the applicable aircraft CG, and use the applicable multiplier to find the gear load.

D. Flexible pavement design data is based on procedures given in Instruction Report 77−1 “Procedures for Development of CBR Design Curves,” dated June 1977. This report was written for the U.S. Army Corps of Engineers. Also, “Airport Pavement Design and Evaluation” was revised to include the procedures given in FAA Advisory Circular 150/5320−6C dated December 7, 1978.

E. An aircraft will have two Load Classification Numbers (LCN) for any given weight and tire pressure. One for rigid pavement (usually concrete) and the second for flexible pavement (usually layered asphalt).

F. An aircraft will have eight Aircraft Classification Numbers (ACN) for any given weight and tire pressure. Four ACN numbers are given for flexible pavement, one for each subgrade strength. Another four ACN numbers are given for rigid pavement, one for each subgrade strength.

G. The ACN/PCN procedure shows that tire pressure makes a minimum change on the ACN. Unless an airport maximum−pressure is given, a decrease in the aircraft operating weight can make the ACN much better. Thus, operators can decrease the applicable ACN as necessary by a decrease in the aircraft operating weight, and not in the tire pressure.

H. The subgrade categories are divided as follows:

- High strength is characterized by k = 150 MN/m^3 for rigid pavement and by CBR = 15 for flexible pavement.

- Medium strength is characterized by k = 80 MN/m^3 for rigid pavement and by CBR = 10 for flexible pavement.

- Low strength is characterized by k = 40 MN/m^3 for rigid pavement and by CBR = 6 for flexible pavement.

- Ultra low strength is characterized by k = 20 MN/m^3 for rigid pavement and by CBR = 3 for flexible pavement.

I. An aircraft with an ACN equal to or less than the reported Pavement Classification Number (PCN) for a given airport can operate without restrictions.

J. Tables 1 and 2 show the LCN and ACN load data, the Equivalent Single−Wheel Load (ESWL) compared to the pavement thickness for flexible pavement. Tables 3 and 4 show the LCN and ACN load data for the loads against the radius of relative stiffness for rigid pavements.

Table 2 Main Gear Load (Approx. Average)											
A/C C.G.		Multiplier	MLG Load (lb per side) A/C Weight (lb)						A/C Weight	MLG Load	Comment
%MAC	X-arm (inch)		50000	60000	70000	80000	90000	92300	(lb)	(lb)	
2	897.5	0.4514	22570	27084	31598	36112	40626	41664			
1	898.9	0.4523	22615	27138	31661	36184	40707	41747			
0	900.3	0.4533	22665	27198	31731	36264	40797	41840			
1	901.6	0.4542	22710	27252	31794	36336	40878	41923			
2	903.0	0.4551	22755	27306	31857	36408	40959	42006			
3	904.4	0.4560	22800	27360	31920	36480	41040	42089			
4	905.7	0.4569	22845	27414	31983	36552	41121	42172			
5	907.1	0.4579	22895	27474	32053	36632	41211	42264			
6	908.5	0.4588	22940	27528	32116	36704	41292	42347			
7	909.8	0.4597	22985	27582	32179	36776	41373	42430			
8	911.2	0.4606	23030	27636	32242	36848	41454	42513			
9	912.6	0.4616	23080	27696	32312	36928	41544	42606			
10	914.0	0.4625	23125	27750	32375	37000	41625	42689			
11	915.3	0.4634	23170	27804	32438	37072	41706	42772			
12	916.7	0.4643	23215	27858	32501	37144	41787	42855			
13	918.1	0.4653	23265	27918	32571	37224	41877	42947			
14	919.4	0.4662	23310	27972	32634	37296	41958	43030			
15	920.8	0.4671	23355	28026	32697	37368	42039	43113			
16	922.2	0.4680	23400	28080	32760	37440	42120	43196			
17	923.6	0.4690	23450	28140	32830	37520	42210	43289			
18	924.9	0.4699	23495	28194	32893	37592	42291	43372			
19	926.3	0.4708	23540	28248	32956	37664	42372	43455			
20	927.7	0.4717	23585	28302	33019	37736	42453	43538			
21	929.0	0.4727	23635	28362	33089	37816	42543	43630			
22	930.4	0.4736	23680	28416	33152	37888	42624	43713			
23	931.8	0.4745	23725	28470	33215	37960	42705	43796			
24	933.1	0.4754	23770	28524	33278	38032	42786	43879			
25	934.5	0.4764	23820	28584	33348	38112	42876	43972			
26	935.9	0.4773	23865	28638	33411	38184	42957	44055			
27	937.3	0.4782	23910	28692	33474	38256	43038	44138			
28	938.6	0.4791	23955	28746	33537	38328	43119	44221			
29	940.0	0.4801	24005	28806	33607	38408	43209	44313			
30	941.4	0.4810	24050	28860	33670	38480	43290	44396			
31	942.7	0.4819	24095	28914	33733	38552	43371	44479			CAUTION Towing NOT allowed when less than 2000 lb on Nose Landing Gear
32	944.1	0.4828	24140	28968	33796	38624	43452	44562			
33	945.5	0.4838	24190	29028	33866	38704	43542	44655			
34	946.8	0.4847	24235	29082	33929	38776	43623	44738			
35	948.2	0.4856	24280	29136	33992	38848	43704	44821			
36	949.6	0.4865	24325	29190	34055	38920	43785	44904			
37	951.0	0.4875	24375	29250	34125	39000	43875	44996			
38	952.3	0.4884	24420	29304	34188	39072	43956	45079			
39	953.7	0.4893	24465	29358	34251	39144	44037	45162			
40	955.1	0.4902	24510	29412	34314	39216	44118	45245			
41	956.4	0.4912	24560	29472	34384	39296	44208	45338			
42	957.8	0.4921	24605	29526	34447	39368	44289	45421			
43	959.2	0.4930	24650	29580	34510	39440	44370	45504			
44	960.5	0.4939	24695	29634	34573	39512	44451	45587			
45	961.9	0.4949	24745	29694	34643	39592	44541	45679			DANGER of Tip Over (Nose < 500 lb)
46	963.3	0.4958	24790 *	29748	34706	39664	44622	45762			
47	964.7	0.4967	24835 *	29802 *	34769 *	39736	44703	45845			
48	966.0	0.4976	24880 *	29856 *	34832 *	39808 *	44784 *	45928 *			
49	967.4	0.4986	24930 *	29916 *	34902 *	39888 *	44874 *	46021 *			
50	968.8	0.4995	24975 *	29970 *	34965 *	39960 *	44955 *	46104 *			

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Center of Gravity Limits − Main Landing Gear
Figure 1

Table 1 - Nose Gear Load (Approx. Average)

A/C CG		Multiplier	NLG Load (lb)						A/C Weight	NG Load	Comment
%MAC	X arm		A/C Weight (lb)						(lb)	(lb)	
	(inch)		50000	60000	70000	80000	90000	92300			
-2	497.5	0.0970	4850	5820	6790	7760	8730	8953			
-1	498.8	0.0952	4760	5712	6664	7615	8566	8787			
0	500.0	0.0933	4665	5598	6531	7464	8397	8612			
1	501.4	0.0915	4575	5490	6405	7320	8235	8445			
2	503.0	0.0896	4480	5376	6272	7168	8064	8270			
3	504.4	0.0878	4390	5268	6146	7024	7902	8104			
4	505.7	0.0860	4300	5160	6020	6880	7740	7938			
5	507.1	0.0841	4205	5046	5887	6728	7569	7762			
6	508.5	0.0823	4115	4938	5761	6584	7407	7596			
7	509.8	0.0804	4020	4824	5628	6432	7236	7421			
8	511.2	0.0786	3930	4716	5502	6288	7074	7255			
9	512.6	0.0767	3835	4602	5369	6136	6903	7079			
10	514.0	0.0749	3745	4494	5243	5992	6741	6913			
11	515.3	0.0730	3650	4380	5110	5840	6570	6738			
12	516.7	0.0712	3560	4272	4984	5695	6408	6572			
13	518.1	0.0693	3465	4158	4851	5544	6237	6396			
14	519.4	0.0675	3375	4050	4725	5400	6075	6230			
15	520.8	0.0656	3280	3936	4592	5248	5904	6055			
16	522.2	0.0638	3190	3828	4466	5104	5742	5889			
17	523.6	0.0619	3095	3714	4333	4952	5571	5713			
18	524.9	0.0601	3005	3606	4207	4808	5409	5547			
19	526.3	0.0582	2910	3492	4074	4656	5238	5372			
20	527.7	0.0564	2820	3384	3948	4512	5076	5206			
21	529.0	0.0545	2725	3270	3815	4360	4905	5030			
22	530.4	0.0527	2635	3162	3689	4216	4743	4864			
23	531.8	0.0508	2540	3048	3556	4064	4572	4689			
24	533.1	0.0490	2450	2940	3430	3920	4410	4523			
25	534.5	0.0471	2355	2826	3297	3768	4239	4347			
26	535.9	0.0453	2265	2718	3171	3624	4077	4181			
27	537.3	0.0434	2170	2604	3038	3472	3906	4006			
28	538.6	0.0416	2080	2496	2912	3328	3744	3840			
29	540.0	0.0397	1985	2382	2779	3176	3573	3664			
30	541.4	0.0379	1895	2274	2653	3032	3411	3498			
31	542.7	0.0360	1800	2160	2520	2880	3240	3323			CAUTION Towing NOT allowed when less than 2000 lb on Nose Landing Gear
32	544.1	0.0342	1710	2052	2394	2736	3078	3157			
33	545.5	0.0323	1615	1938	2261	2584	2907	2981			
34	546.8	0.0305	1525	1830	2135	2440	2745	2815			
35	548.2	0.0286	1430	1716	2002	2288	2574	2640			
36	549.6	0.0268	1340	1608	1876	2144	2412	2474			
37	551.0	0.0249	1245	1494	1743	1992	2241	2298			
38	552.3	0.0231	1155	1386	1617	1848	2079	2132			
39	553.7	0.0212	1060	1272	1484	1696	1908	1957			
40	555.1	0.0194	970	1164	1358	1552	1746	1791			
41	556.4	0.0175	875	1050	1225	1400	1575	1615			
42	557.8	0.0157	785	942	1099	1256	1413	1449			
43	559.2	0.0138	690	828	966	1104	1242	1274			
44	560.5	0.0120	600	720	840	960	1080	1108			
45	561.9	0.0101	505	606	707	808	909	932			*DANGER of Tip Over (Nose < 500 lb)
46	563.3	0.0083	415*	498*	581	664	747	766			
47	564.7	0.0064	320*	384*	448*	512	576	591			
48	566.0	0.0046	230*	276*	322*	368*	414*	424*			
49	567.4	0.0027	135*	162*	189*	216*	243*	249*			
50	568.8	0.0009	45*	54*	63*	72*	81*	83*			

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Center of Gravity Limits − Nose Landing Gear
Figure 2

3. Footprint, Tire Size and Inflation Pressure

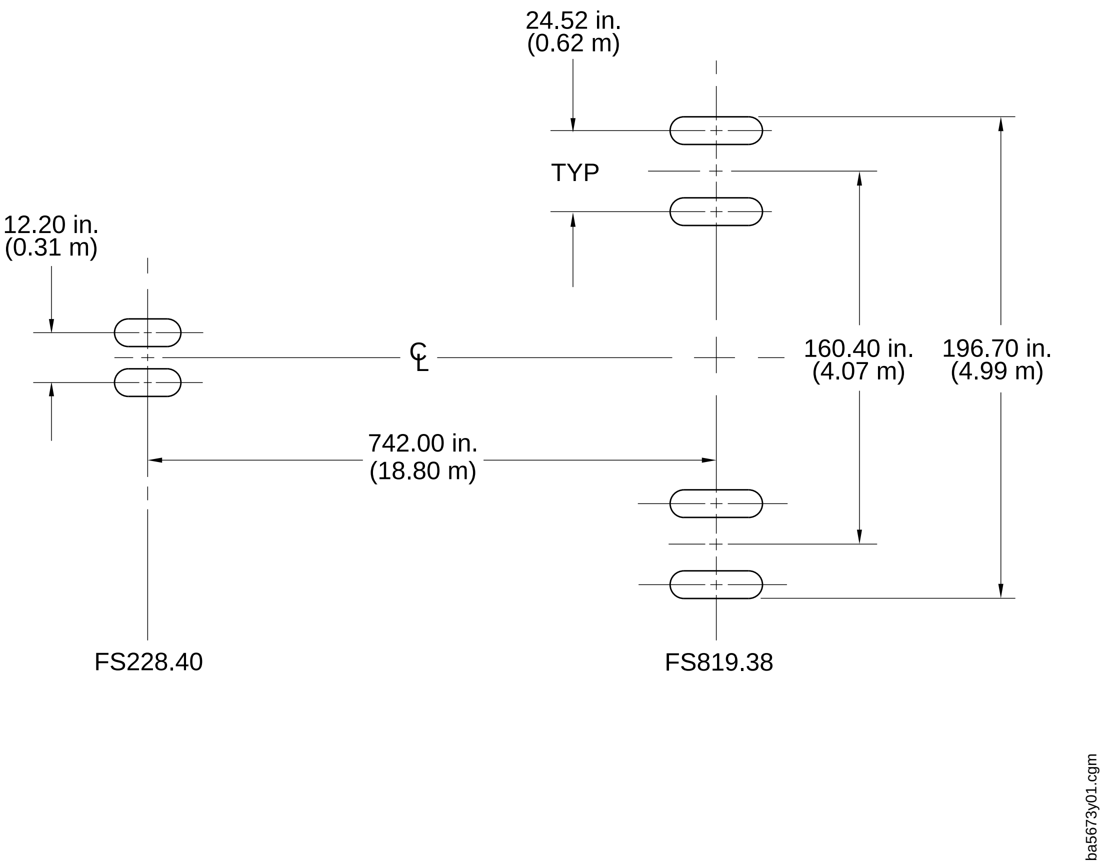
A. This section defines the flotation classification for different weights, fixed tire pressure, and aft CG, with two recommended methods: LCN and ACN classification systems.

B. Refer to Figure 3 for the aircraft footprint, tire size and inflation pressure.

TIRE TYPE : NOSE : H20.5 x 6.75 − 10 12 PR
MAIN : H36 x 11.5 − 19 18 PR

UNLOADED TIRE PRESSURE : NOSE: 143 psi
MAIN : 193 psi

MAIN GEAR CONFIGURATION : DUAL WHEEL



Footprint, Tire Size and Inflation Pressure
Figure 3

4. Flexible Pavement Requirements

A. The pavement data necessary for this aircraft are from the fixed analysis of the loads applied to the Main Landing Gear (MLG) struts. Refer to Figures to find these loads through the stability limits of the aircraft (at rest on the pavement). The MLG loads are put into the pavement design tables (Table 1 and Table 2).

B. Flexible pavement design−data is based on procedures set out in Instruction Report 77 −1 "Procedures for Development of CBR Design Curves" dated June 1977. This report was written for the U.S. Army Corps of Engineers. Also, "Airport Pavement Design and Evaluation" changed to include the procedures given in FAA Advisory Circular 150/5320−6C dated December 7, 1978.

C. An aircraft will have two Load Classification Numbers (LCN) for any given weight and tire pressure. One for rigid pavement (usually concrete) and the second for flexible pavement (usually layered asphalt).

D. The tables show the LCN and loads, and the Equivalent Single−Wheel Load (ESWL) compared to the pavement thickness for flexible pavement.

E. Refer to Airplane Flight Manual (CSP D−012) for the maximum permissible CG limits and find the approximate average MLG load per side. Enter the total aircraft weight in the aircraft Weight column at the applicable aircraft CG, and use the applicable multiplier to find the gear load.

F. Refer to Table 1 for the LCN Flexible Pavement data.

G. Refer to Table 2 for the ACN Flexible Pavement data.

H. The data included in the tables that follow is related to the International Civil Aviation Organization (ICAO) Document No. 9157−AN/901, Aerodrome Design Manual (Part 3 − Pavement), Second Edition 1983.

Table 1 − LCN Flexible Pavement

Aircraft Weight	Pavement Thickness							
	10 in.		15 in.		20 in.		30 in.	
	0.25 m		0.38 m		0.51 m		0.76 m	
	ESWL	LCN	ESWL	LCN	ESWL	LCN	ESWL	LCN
92300 lb (41867 kg)	22300 lb (10115 kg)	36	26090 lb (11834 kg)	44	29160 lb (13226.9 kg)	50	34115 lb (15474.5 kg)	58

Table 2 − ACN Flexible Pavement

Aircraft Weight	Subgrade Categories			
	Ultra Low Strength CBR=3	Low Strength CBR=6	Medium Strength CBR=10	High Strength CBR=15
	ACN	ACN	ACN	ACN
92300 lb (41867 kg)	28.38	25.10	22.60	21.74

I. If the aircraft LCN for weight, tire pressure, and pavement (relative stiffness of thickness) is not more than 10% above the published pavement LCN, then the aircraft is allowed “unlimited” use of a runway.

J. If the aircraft LCN is not in the limits, the aircraft can be considered for occasional use.

5. Rigid Pavement Requirements

A. The pavement data necessary for this aircraft are from the fixed analysis of the loads applied to the Main Landing Gear (MLG) struts. Refer to Figures to find these loads through the stability limits of the aircraft (at rest on the pavement). The MLG loads are put into the pavement design tables (Table 3 and Table 4).

B. An aircraft will have two Load Classification Numbers (LCN) for any given weight and tire pressure. One for rigid pavement (usually concrete) and the second for flexible pavement (usually layered asphalt).

C. The tables show the LCN and loads, the Equivalent Single−Wheel Load (ESWL) compared to the pavement thickness for flexible pavement, as well as the loads against the radius of relative−stiffness for rigid pavements.

D. Refer to Airplane Flight Manual (CSP D−012) for the maximum permissible CG limits and find the approximate average MLG load per side. Enter the total aircraft weight in the aircraft Weight column at the applicable aircraft CG, and use the applicable multiplier to find the gear load.

E. Refer to Table 3 for the LCN Rigid Pavement data.

F. Refer to Table 4 for the ACN Rigid Pavement data.

G. The data included in the tables that follow is related to the International Civil Aviation Organization (ICAO) Document No. 9157−AN/901, Aerodrome Design Manual (Part 3 − Pavement), Second Edition 1983.

Table 3 − LCN Rigid Pavement

Aircraft Weight	Tire Pressure	Radius of Relative Stiffness					
		30 in.		40 in.		50 in.	
		0.76 m		1.02 m		1.27 m	
		ESWL	LCN	ESWL	LCN	ESWL	LCN
92300 lb (41867 kg)	199 psi (1372 kPa)	30065 lb (13637 kg)	50	31380 lb 14233.9(kg)	53	32570 lb (14773.7 kg)	55

Table 4 − ACN Rigid Pavement

Aircraft Weight	Subgrade Categories							
	Ultra Low Strength K=20 N/m³		Low Strength K=40 N/m³		Medium Strength K=80 N/m³		High Strength K=150 N/m³	
	Pavement Thickness	ACN	Pavement Thickness	ACN	Pavement Thickness	ACN	Pavement Thickness	ACN
92300 lb (41867 kg)	10.54 in. (267.7 mm)	28.84	9.93 in. (252.2 mm)	27.80	9.29 in. (253.9 mm)	26.56	8.66 in. (219.9 mm)	25.24

H. If the aircraft LCN for weight, tire pressure, and pavement (relative stiffness of thickness) is not more than 10% above the published pavement LCN, then the aircraft is allowed “unlimited” use of a runway.

I. If the aircraft LCN is not in the limits, the aircraft can be considered for occasional use.

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DERIVATIVE AIRCRAFT

1. General

A. At this time, no additional models are planned for the Canadair Regional Jet family.

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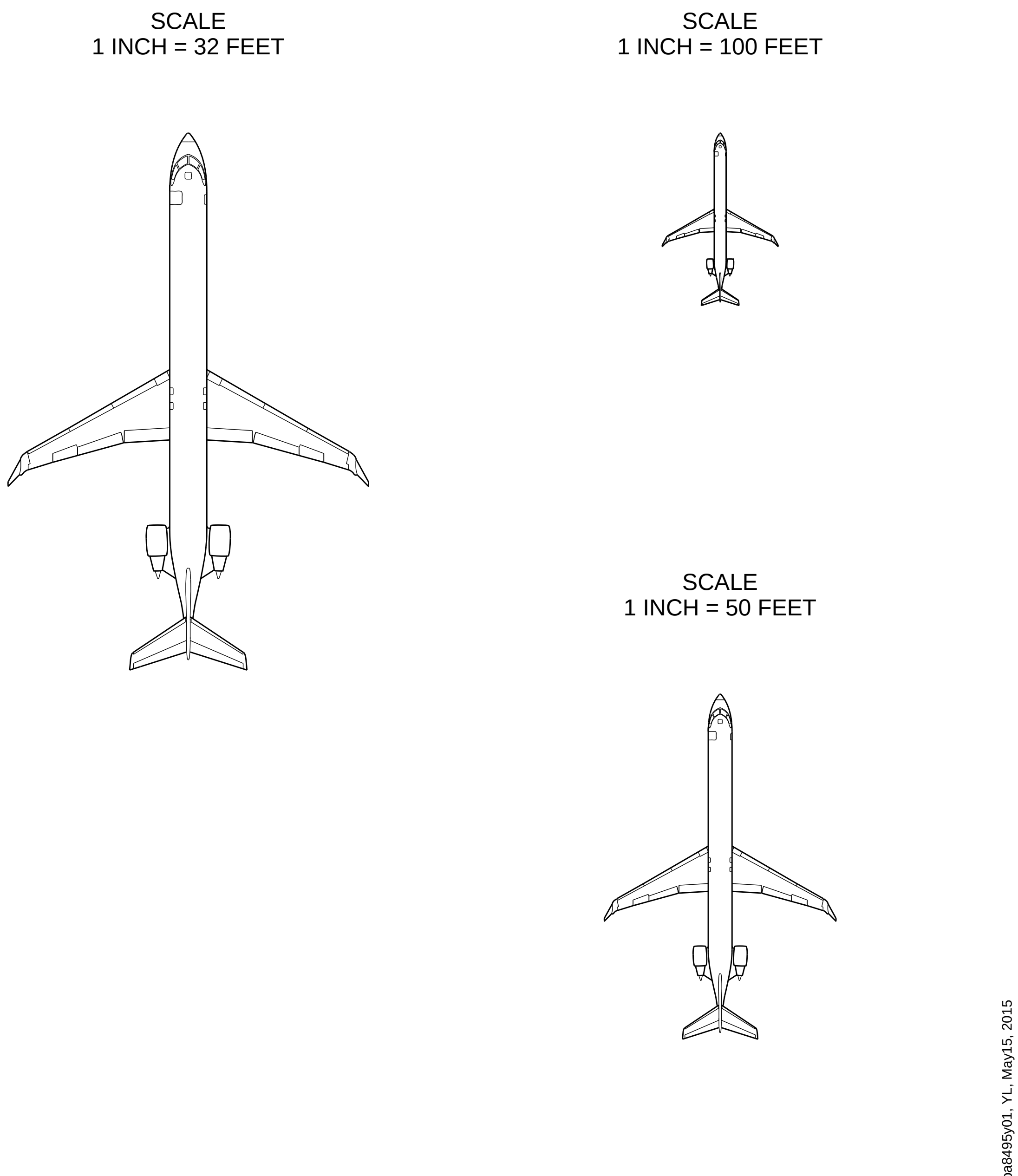
SCALED DRAWINGS

1. General

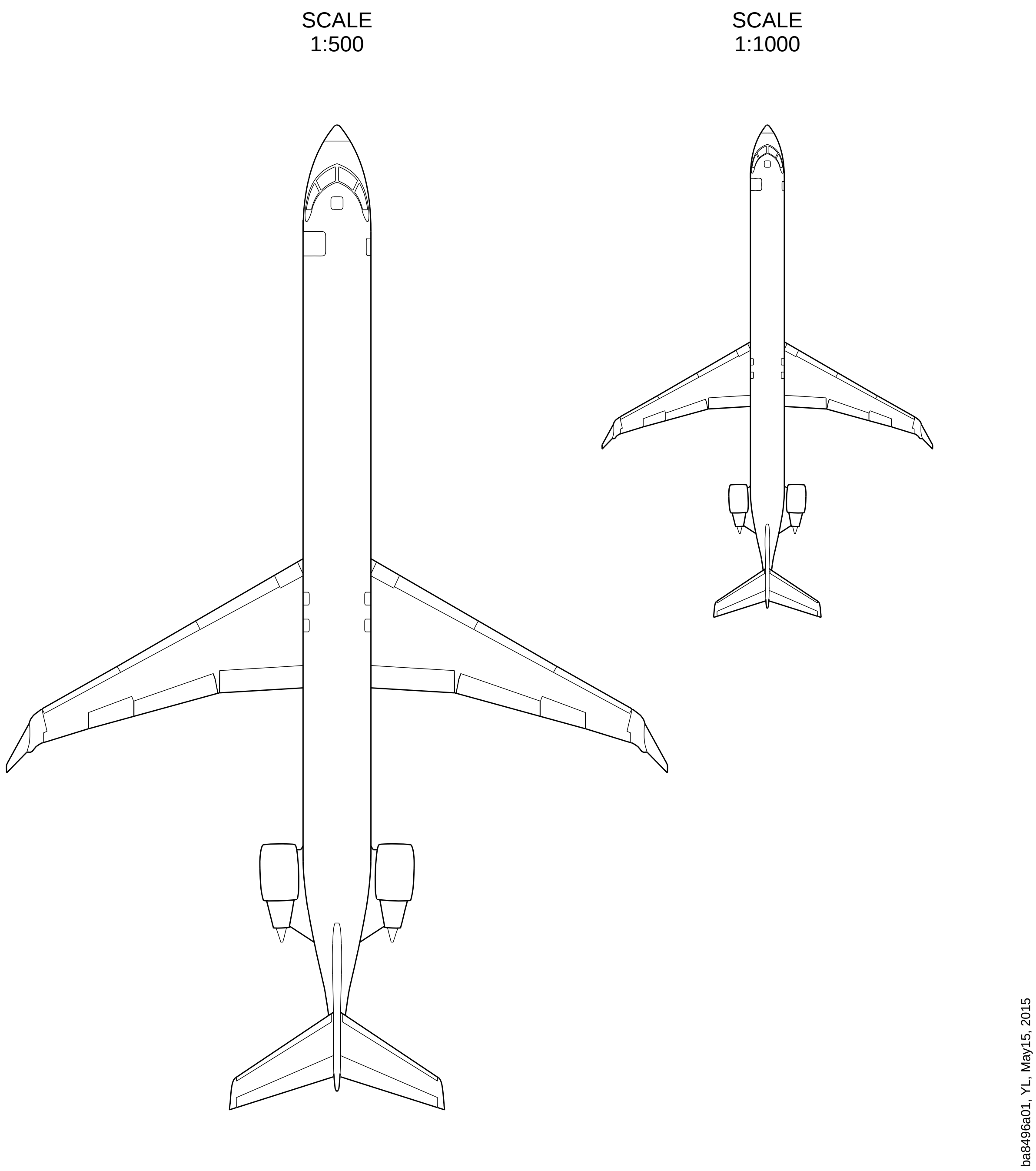
A. This section contains the scaled drawings. They can be used to plan/verify runway, ramp, and maintenance facility layouts.

B. Refer to Figure 1 for the US Standard scaled drawing.

C. Refer to Figure 2 for the Metric scaled drawing.



Scaled Drawing − US Standard
Figure 1



Scaled Drawing − Metric
Figure 2

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