



## **2. AIRCRAFT DESCRIPTION**

### **2.1. AIRCRAFT CHARACTERISTICS**

The aircraft is:

- All-metal;
- Low winged;
- Conventional tailed;
- Monoplane;
- Features a retractable tricycle-type twin-wheeled landing-gear system.

There are two high bypass ratio turbofan GEAE CF34-10 with 82.3 kN (18500 lbf) maximum takeoff thrust (Sea Level, Static Condition and ISA) installed under the wings.

The aircraft has two versions, with different ranges as a result of the difference between the MTOWs:

- The STD aircraft model - MTOW 48790 kg (107564 lb);
- The LR aircraft model - MTOW 50790 kg (111973 lb);
- The IGW aircraft model - MTOW 52290 kg (115280 lb).

#### **2.1.1. Definitions**

##### **MRW**

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

##### **MLW**

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

##### **MTOW**

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

##### **BOW**

It is the weight of the structure, powerplant, instruments, flight controls, hydraulic, electronic, electrical, air conditioning, oxygen, anti-icing and pressurization systems, interior furnishings, portable and emergency equipment and other items of equipment that are an integral part of the aircraft configuration. It also includes unusable fuel, total engine and APU oil, total hydraulic fluid, toilet fluid and water, potable water, crew and crew baggage, navigation kit (manuals, charts), catering (beverages and food) and removable service equipment for the galley.

##### **MZFW**

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



# EMBRAER 195 AIRPORT PLANNING MANUAL

## Maximum Payload

It is the difference between the MZFW and the BOW.

## Maximum Seating Capacity

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

## Maximum Cargo Volume

It is the maximum space available for cargo.

## Usable Fuel

Fuel available for the aircraft propulsion.

Table 2.1 - Aircraft General Characteristics

DESIGN WEIGHTS	AIRCRAFT MODELS		
	STD	LR	IGW
MRW	48950 kg (107916 lb)	50950 kg (112326 lb)	52450 kg (115632 lb)
MTOW	48790 kg (107564 lb)	50790 kg (111973 lb)	52290 kg (115280 lb)
MLW	45000 kg (99208 lb)		45800 kg (100972 lb)
BOW <sup>[1]</sup>	28970 kg (63868 lb)		
MZFW	42500 kg (93696 lb)		42600 kg (93917 lb)
Maximum Payload <sup>[1]</sup>	13800 kg (30424 lb)		13900 kg (30644 lb)
Maximum Seating Capacity	118 passengers		
Maximum Cargo Volume	25.66 m <sup>3</sup> (906.17 ft <sup>3</sup> )		
Usable Fuel <sup>[2]</sup>	13100 kg (28881 lb)		
	16029 ℓ (4234 gal.)		

1. Typical standard configuration (weights may vary according to optional equipment installed or interior layouts).

2. Adopted fuel density of 0.811 kg/ℓ (6.77 lb/gal.)

## 2.2. GENERAL AIRCRAFT DIMENSIONS

### 2.2.1. External Dimensions

- Span over winglets - 28.72 m (94 ft 3 in);
- Height (maximum) - 10.55 m (34 ft 7 in);
- Overall length - 38.67 m (126 ft 10 in).

### 2.2.2. Wing

- Reference area - 92.50 m<sup>2</sup> (996 ft<sup>2</sup>);
- Reference aspect ratio - 8.1

EFFECTIVITY: ALL

**Section 2**

Page 2-2

May 11/07



# **EMBRAER 195** AIRPORT PLANNING MANUAL

## **2.2.3. Fuselage**

- Total Length - 38.65 m (126 ft 10 in);
- Length of pressurized section - 31.49 m (103 ft 4 in).

## **2.2.4. Horizontal Tail**

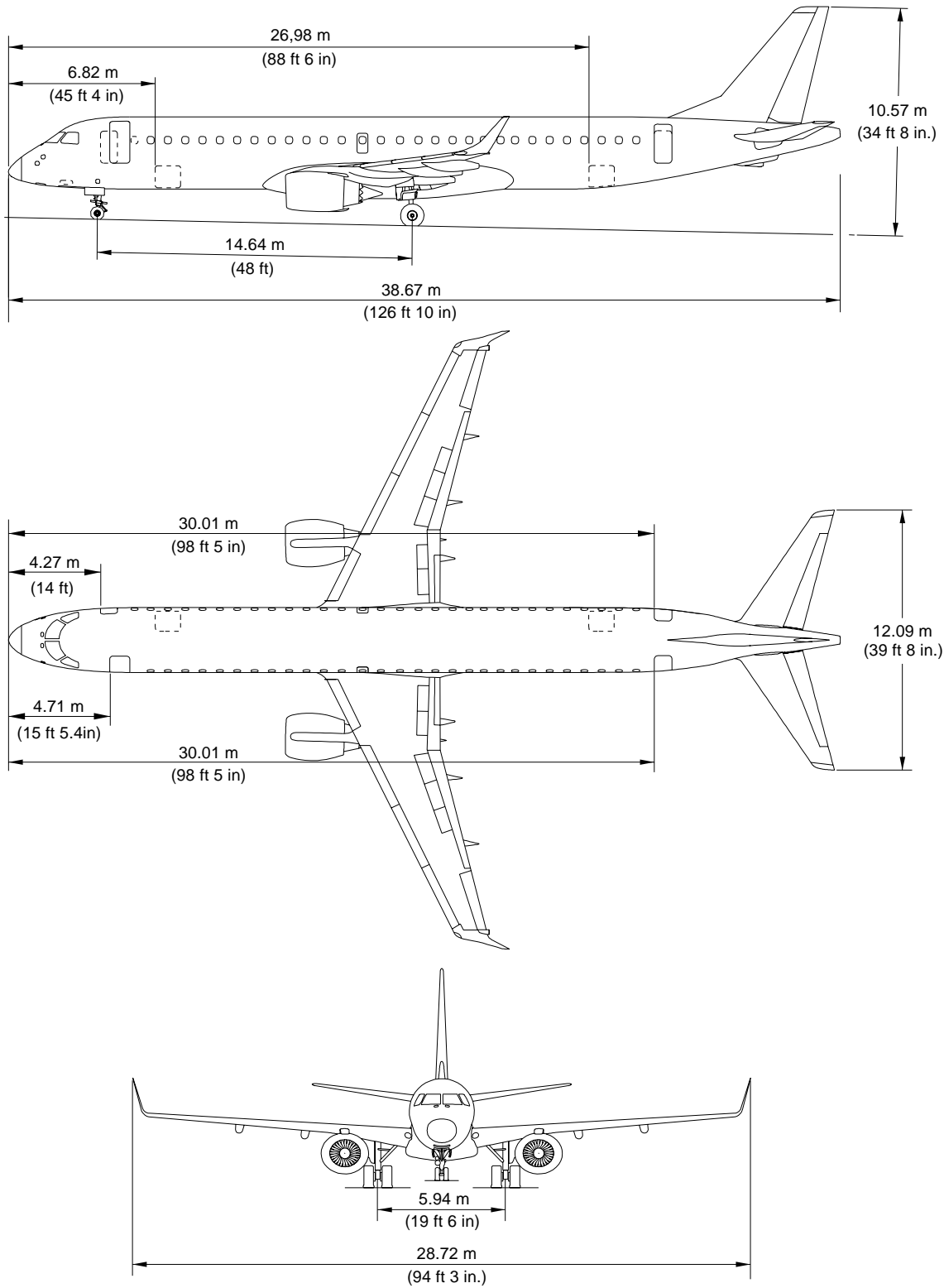
- Span - 12.08 m (39 ft 8 in);
- Area - 26.00 m<sup>2</sup> (280 ft<sup>2</sup>).

## **2.2.5. Vertical Tail**

- Reference area - 16.20 m<sup>2</sup> (174 ft<sup>2</sup> 54 in<sup>2</sup>)



# EMBRAER 195 AIRPORT PLANNING MANUAL



EM170APM020015B.DGN

General Aircraft Dimensions  
Figure 2.1

EFFECTIVITY: ALL

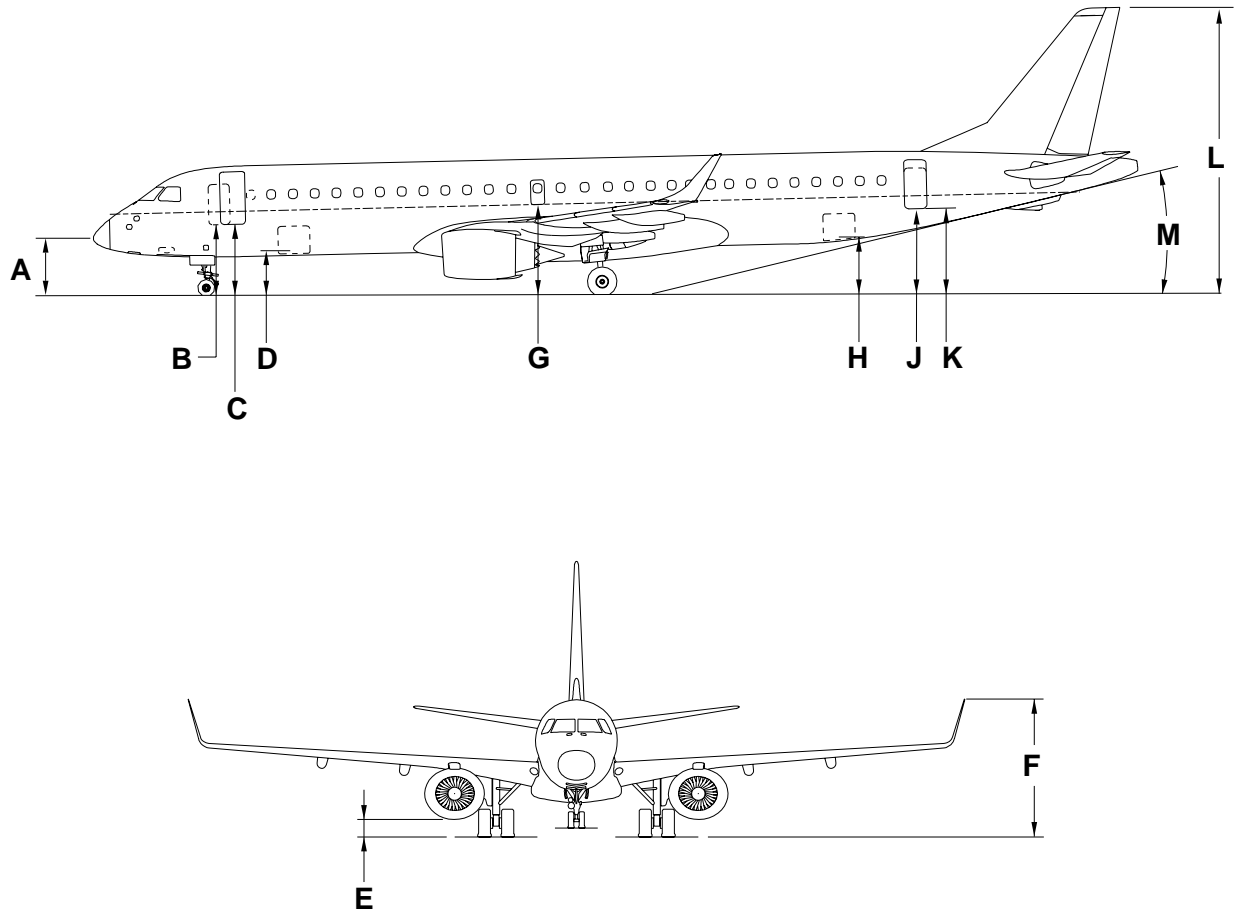
Section 2

Page 2-4

May 11/07



### 2.3. GROUND CLEARANCES



Aircraft Ground Clearances  
Figure 2.2

EFFECTIVITY: ALL



Table 2.2 - Ground Clearance — STD Aircraft Model

WEIGHT	CG (%MAC)	NOSE (A)	FOR- WARD SERVICE DOOR (B)	FOR- WARD PASSEN- GER DOOR (C)	FOR- WARD CARGO DOOR (D)	NACELLE (E)	WINGLET (F)	EMER- GENCY EXIT (G)	AFT CARGO DOOR (H)	AFT SERVICE DOOR (J)	AFT PASSEN- GER DOOR (K)	VERTI- CAL TAIL (L)	TAIL SKID ANGU- LAR CLEAR- ANCE (DEG) (M)
48950 kg 107916 lb	11.3	2.07 m 6 ft 9 in	2.58 m 8 ft 5 in	2.59 m 8 ft 6 in	1.57 m 5 ft 2 in	0.49 m 1 ft 7 in	5.08 m 16 ft 8 in	3.24 m 10 ft 7 in	2.00 m 6 ft 7 in	3.03 m 9 ft 11 in	3.03 m 9 ft 11 in	10.41 m 34 ft 2 in	11.19
48950 kg 107916 lb	31.0	2.16 m 7 ft 1 in	2.65 m 8 ft 8 in	2.66 m 8 ft 9 in	1.62 m 5 ft 4 in	0.50 m 1 ft 8 in	5.04 m 16 ft 6 in	3.24 m 10 ft 7 in	1.94 m 6 ft 4 in	2.96 m 9 ft 9 in	2.96 m 9 ft 9 in	10.30 m 33 ft 10 in	10.82
48790 kg 107563 lb	11.3	2.06 m 6 ft 9 in	2.58 m 8 ft 5 in	2.59 m 8 ft 6 in	1.57 m 5 ft 2 in	0.49 m 1 ft 8 in	5.08 m 16 ft 8 in	3.24 m 10 ft 7 in	2.00 m 6 ft 7 in	3.04 m 10 ft	3.04 m 10 ft	10.41 m 34 ft 2 in	11.19
48790 kg 107563 lb	31.0	2.16 m 7 ft 1 in	2.65 m 8 ft 8 in	2.66 m 8 ft 9 in	1.62 m 5 ft 4 in	0.50 m 1 ft 8 in	5.04 m 16 ft 6 in	3.24 m 10 ft 7 in	1.94 m 6 ft 4 in	2.96 m 9 ft 9 in	2.96 m 9 ft 9 in	10.30 m 33 ft 10 in	10.83
45000 kg 99208 lb	7.0	2.07 m 6 ft 9 in	2.59 m 8 ft 6 in	2.60 m 8 ft 6 in	1.58 m 5 ft 2 in	0.50 m 1 ft 8 in	5.09 m 16 ft 8 in	3.25 m 10 ft 8 in	2.01 m 6 ft 7 in	3.05 m 9 ft 2 in	3.05 m 9 ft 2 in	10.43 m 34 ft 3 in	11.26
45000 kg 99208 lb	31.0	2.17 m 7 ft 2 in	2.66 m 8 ft 9 in	2.67 m 8 ft 9 in	1.63 m 5 ft 4 in	0.51 m 1 ft 8 in	5.05 m 16 ft 7 in	3.25 m 10 ft 8 in	1.95 m 6 ft 5 in	2.97 m 9 ft 9 in	2.97 m 9 ft 9 in	10.31 m 33 ft 10 in	10.88
42500 kg 93696 lb	7.0	2.08 m 6 ft 9 in	2.59 m 8 ft 6 in	2.60 m 8 ft 9 in	1.58 m 5 ft 2 in	0.51 m 1 ft 9 in	5.10 m 16 ft 9 in	3.26 m 10 ft 8 in	2.02 m 6 ft 8 in	3.06 m 10 ft	3.06 m 10 ft	10.45 m 34 ft 3 in	11.31
42500 kg 93696 lb	31.0	2.18 m 7 ft 2 in	2.67 m 8 ft 9 in	2.68 m 8 ft 10 in	1.64 m 5 ft 5 in	0.52 m 1 ft 8 in	5.06 m 16 ft 7 in	3.26 m 10 ft 8 in	1.96 m 6 ft 5 in	2.98 m 9 ft 9 in	2.98 m 9 ft 9 in	10.32 m 33 ft 10 in	10.92
29500 kg 65036 lb	18.4	2.15 m 7 ft 1 in	2.66 m 8 ft 9 in	2.67 m 8 ft 9 in	1.65 m 5 ft 5 in	0.57 m 1 ft 11 in	5.16 m 16 ft 11 in	3.32 m 10 ft 11 in	2.08 m 6 ft 10 in	3.12 m 10 ft 3 in	3.12 m 10 ft 3 in	10.49 m 34 ft 5 in	11.53

EFFECTIVITY: ALL


**Table 2.3 - Ground Clearance — LR Aircraft Model**

WEIGHT	CG (%MAC)	NOSE (A)	FOR- WARD SERVICE DOOR (B)	FOR- WARD PASSEN- GER DOOR (C)	FOR- WARD CARGO DOOR (D)	NACELLE (E)	WINGLET (F)	EMER- GENCY EXIT (G)	AFT CARGO DOOR (H)	AFT SERVICE DOOR (J)	AFT PASSEN- GER DOOR (K)	VERTI- CAL TAIL (L)	TAIL SKID ANGU- LAR CLEAR- ANCE (DEG) (M)
50950 kg 112325 lb	11.3	2.07 m 6 ft 9 in	2.58 m 8 ft 5 in	2.59 m 8 ft 6 in	1.57 m 5 ft 2 in	0.48 m 1 ft 7 in	5.07 m 16 ft 8 in	3.23 m 10 ft 7 in	1.98 m 6 ft 6 in	3.02 m 9 ft 11 in	3.02 m 9 ft 11 in	10.40 m 34 ft 2 in	11.12
50950 kg 112325 lb	31.0	2.16 m 7 ft 1 in	2.65 m 8 ft 8 in	2.65 m 8 ft 8 in	1.62 m 5 ft 4 in	0.49 m 1 ft 7 in	5.03 m 16 ft 6 in	3.23 m 10 ft 7 in	1.93 m 6 ft 4 in	2.95 m 9 ft 8 in	2.95 m 9 ft 8 in	10.29 m 33 ft 9 in	10.79
50790 kg 111973 lb	11.3	2.07 m 6 ft 9 in	2.58 m 8 ft 5 in	2.59 m 8 ft 6 in	1.57 m 5 ft 2 in	0.48 m 1 ft 7 in	5.07 m 16 ft 8 in	3.23 m 10 ft 7 in	1.98 m 6 ft 6 in	3.02 m 9 ft 11 in	3.02 m 9 ft 11 in	10.40 m 34 ft 2 in	11.13
50790 kg 111973 lb	31.0	2.16 m 7 ft 1 in	2.65 m 8 ft 8 in	2.65 m 8 ft 8 in	1.62 m 5 ft 4 in	0.50 m 1 ft 8 in	5.03 m 16 ft 6 in	3.24 m 10 ft 7 in	1.93 m 6 ft 4 in	2.95 m 9 ft 8 in	2.95 m 9 ft 8 in	10.29 m 33 ft 9 in	10.80
45000 kg 99208 lb	7.0	2.07 m 6 ft 9 in	2.59 m 8 ft 6 in	2.60 m 8 ft 6 in	1.58 m 5 ft 2 in	0.50 m 1 ft 8 in	5.09 m 16 ft 8 in	3.25 m 10 ft 8 in	2.01 m 6 ft 7 in	3.05 m 9 ft 2 in	3.05 m 9 ft 2 in	10.43 m 34 ft 3 in	11.26
45000 kg 99208 lb	31.0	2.17 m 7 ft 2 in	2.66 m 8 ft 9 in	2.67 m 8 ft 9 in	1.63 m 5 ft 4 in	0.51 m 1 ft 8 in	5.05 m 16 ft 7 in	3.25 m 10 ft 8 in	1.95 m 6 ft 5 in	2.97 m 9 ft 9 in	2.97 m 9 ft 9 in	10.31 m 33 ft 10 in	10.88
42500 kg 93696 lb	7.0	2.08 m 6 ft 9 in	2.59 m 8 ft 6 in	2.60 m 8 ft 9 in	1.58 m 5 ft 2 in	0.51 m 1 ft 9 in	5.10 m 16 ft 9 in	3.26 m 10 ft 8 in	2.02 m 6 ft 8 in	3.06 m 10 ft	3.06 m 10 ft	10.45 m 34 ft 3 in	11.31
42500 kg 93696 lb	31.0	2.18 m 7 ft 2 in	2.67 m 8 ft 9 in	2.68 m 8 ft 10 in	1.64 m 5 ft 5 in	0.52 m 1 ft 8 in	5.06 m 16 ft 7 in	3.26 m 10 ft 8 in	1.96 m 6 ft 5 in	2.98 m 9 ft 9 in	2.98 m 9 ft 9 in	10.32 m 33 ft 10 in	10.92
29500 kg 65036 lb	18.4	2.15 m 7 ft 1 in	2.66 m 8 ft 9 in	2.67 m 8 ft 9 in	1.65 m 5 ft 5 in	0.57 m 1 ft 11 in	5.16 m 16 ft 11 in	3.32 m 10 ft 11 in	2.08 m 6 ft 10 in	3.12 m 10 ft 3 in	3.12 m 10 ft 3 in	10.49 m 34 ft 5 in	11.53

EFFECTIVITY: ALL

**Table 2.4 - Ground Clearance — IGW Aircraft Model**

<b>WEIGHT</b>	<b>CG (%MAC)</b>	<b>NOSE (A)</b>	<b>FOR- WARD SERVICE DOOR (B)</b>	<b>FOR- WARD PASSEN- GER DOOR (C)</b>	<b>FOR- WARD CARGO DOOR (D)</b>	<b>NACELLE (E)</b>	<b>WINGLET (F)</b>	<b>EMER- GENCY EXIT (G)</b>	<b>AFT CARGO DOOR (H)</b>	<b>AFT SERVICE DOOR (J)</b>	<b>AFT PASSEN- GER DOOR (K)</b>	<b>VERTI- CAL TAIL (L)</b>	<b>TAIL SKID ANGU- LAR CLEAR- ANCE (DEG) (M)</b>
52450 kg 115632 lb	11.3	2.07 m 6 ft 9 in	2.58 m 8 ft 5 in	2.59 m 8 ft 6 in	1.57 m 5 ft 2 in	0.48 m 1 ft 7 in	5.06 m 16 ft 7 in	3.23 m 10 ft 7 in	1.98 m 6 ft 6 in	3.01 m 9 ft 11 in	3.01 m 9 ft 11 in	10.38 m 34 ft 1 in	11.08
52450 kg 115632 lb	31.0	2.15 m 7 ft 1 in	2.64 m 8 ft 8 in	2.65 m 8 ft 8 in	1.62 m 5 ft 4 in	0.49 m 1 ft 7 in	5.03 m 16 ft 6 in	3.23 m 10 ft 7 in	1.93 m 6 ft 4 in	2.95 m 9 ft 8 in	2.95 m 9 ft 8 in	10.28 m 33 ft 9 in	10.77
52290 kg 115280 lb	11.3	2.07 m 6 ft 9 in	2.58 m 8 ft 5 in	2.59 m 8 ft 6 in	1.57 m 5 ft 2 in	0.48 m 1 ft 7 in	5.06 m 16 ft 7 in	3.23 m 10 ft 7 in	1.98 m 6 ft 6 in	3.01 m 9 ft 11 in	3.01 m 9 ft 11 in	10.38 m 34 ft 1 in	11.08
52290 kg 115280 lb	31.0	2.15 m 7 ft 1 in	2.64 m 8 ft 8 in	2.65 m 8 ft 8 in	1.61 m 5 ft 3 in	0.49 m 1 ft 7 in	5.03 m 16 ft 6 in	3.23 m 10 ft 7 in	1.93 m 6 ft 4 in	2.95 m 9 ft 8 in	2.95 m 9 ft 8 in	10.28 m 33 ft 9 in	10.78
45800 kg 100972 lb	7.0	2.07 m 6 ft 9 in	2.59 m 8 ft 6 in	2.59 m 8 ft 6 in	1.58 m 5 ft 2 in	0.50 m 1 ft 8 in	5.09 m 16 ft 8 in	3.25 m 10 ft 8 in	2.00 m 6 ft 7 in	3.05 m 10 ft	3.05 m 10 ft	10.43 m 34 ft 3 in	11.25
45800 kg 100972 lb	31.0	2.17 m 7 ft 2 in	2.65 m 8 ft 8 in	2.67 m 8 ft 9 in	1.63 m 5 ft 4 in	0.51 m 1 ft 8 in	5.05 m 16 ft 7 in	3.25 m 10 ft 8 in	1.95 m 6 ft 5 in	2.97 m 9 ft 9 in	2.97 m 9 ft 9 in	10.31 m 33 ft 10 in	10.87
42600 kg 93917 lb	7.0	2.08 m 6 ft 9 in	2.59 m 8 ft 6 in	2.60 m 8 ft 9 in	1.58 m 5 ft 2 in	0.51 m 1 ft 8 in	5.10 m 16 ft 9 in	3.26 m 10 ft 8 in	2.02 m 6 ft 8 in	3.06 m 10 ft	3.06 m 10 ft	10.45 m 34 ft 3 in	11.31
42600 kg 93917 lb	31.0	2.18 m 7 ft 2 in	2.67 m 8 ft 9 in	2.67 m 8 ft 9 in	1.64 m 5 ft 5 in	0.52 m 1 ft 8 in	5.06 m 16 ft 7 in	3.26 m 10 ft 8 in	1.96 m 6 ft 5 in	2.98 m 9 ft 9 in	2.98 m 9 ft 9 in	10.32 m 33 ft 10 in	10.92
29500 kg 65036 lb	18.4	2.15 m 7 ft 1 in	2.66 m 8 ft 9 in	2.67 m 8 ft 9 in	1.65 m 5 ft 5 in	0.57 m 1 ft 11 in	5.16 m 16 ft 11 in	3.32 m 10 ft 11 in	2.08 m 6 ft 10 in	3.12 m 10 ft 3 in	3.12 m 10 ft 3 in	10.49 m 34 ft 5 in	11.53

EFFECTIVITY: ALL



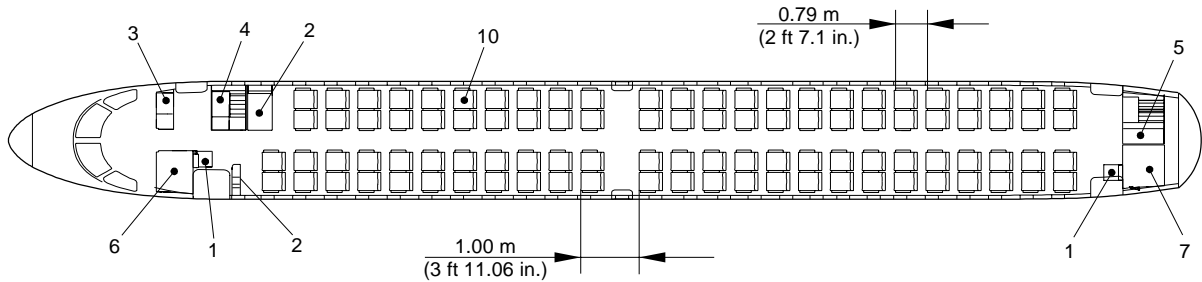
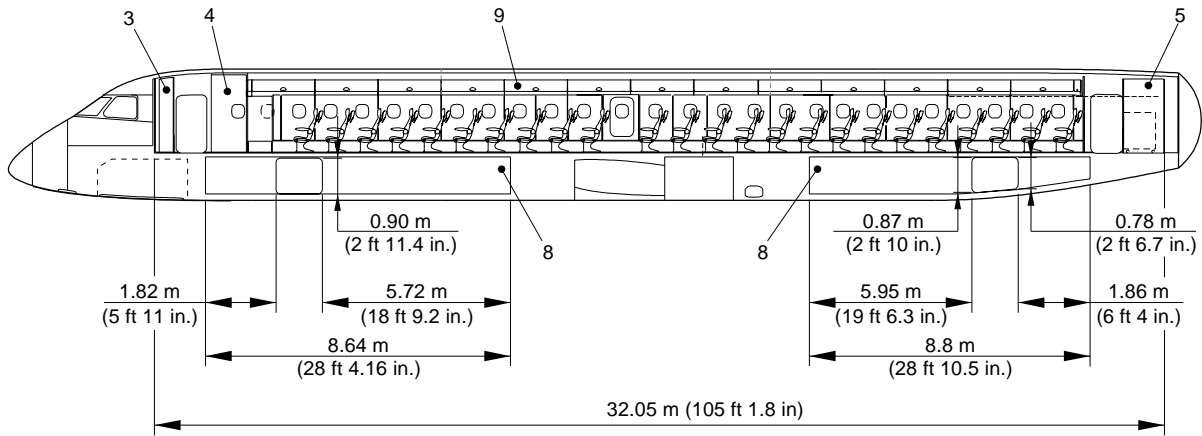


## **2.4. INTERIOR ARRANGEMENTS**

The interior arrangement provides accommodation for two pilots, one observer, three flight attendants, and 108 passengers in 32 in pitch standard configuration. One additional flight attendant seat is available as an option.



# EMBRAER 195 AIRPORT PLANNING MANUAL



- |                           |                        |
|---------------------------|------------------------|
| 1 – FLIGHT ATTENDANT SEAT | 6 – AIRSTAIRS WARDROBE |
| 2 – FWD RH LAVATORY       | 7 – AFT LAVATORY       |
| 3 – FWD RH G1 GALLEY      | 8 – CARGO COMPARTMENT  |
| 4 – FWD RH G2 GALLEY      | 9 – OVERHEAD BIN       |
| 5 – AFT RH GALLEY         | 10 – PASSENGER SEAT    |

CARGO/BAGGAGE VOLUME	
CARGO COMPARTMENT	25.66 m <sup>3</sup> (906.17 ft <sup>3</sup> )
OVERHEAD BIN	0.06 m <sup>3</sup> / pax (2.0 ft <sup>3</sup> / pax)
UNDERSEAT VOLUME	0.04 m <sup>3</sup> / pax (1.4 ft <sup>3</sup> / pax)

EM170APM020020B.DGN

Interior Arrangements  
Figure 2.3

EFFECTIVITY: ALL

Section 2

Page 2-10

May 11/07



## 2.4.1. Passenger Cabin

The passenger cabin accommodates 108 passengers in 27 double seats on both sides.

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

The main dimensions of passenger cabin are presented below:

- Height - 2.00 m (6 ft 7 in)
- Width - 2.74 m (9 ft)
- Aisle wide - 0.49 m (1 ft 7 in)
- Pitch - 0.82 m (32 in)

## 2.4.2. Cargo Compartments

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

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

The table below contain the capacity for the cargo compartment:

Table 2.5 - Capacity for the Cargo Compartment

CARGO COMPARTMENT	LOADING	VOLUME
FWD	1900 kg (4188 lb)	12.71 m <sup>3</sup> (448.85 ft <sup>3</sup> )
Aft	1800 kg (3968 lb)	12.95 m <sup>3</sup> (457.32 ft <sup>3</sup> )
Total	3700 kg (8156 lb)	25.66 m <sup>3</sup> (906.17 ft <sup>3</sup> )

The cargo compartments are provided with the following features:

- Optional vertical nets - to avoid damage due to cargo shifting (two for each cargo compartments). Also, there are provisions for two extra vertical nets in the forward cargo compartment and one in the aft cargo compartment;
- Door net at each cargo door.

## 2.4.3. Cockpit

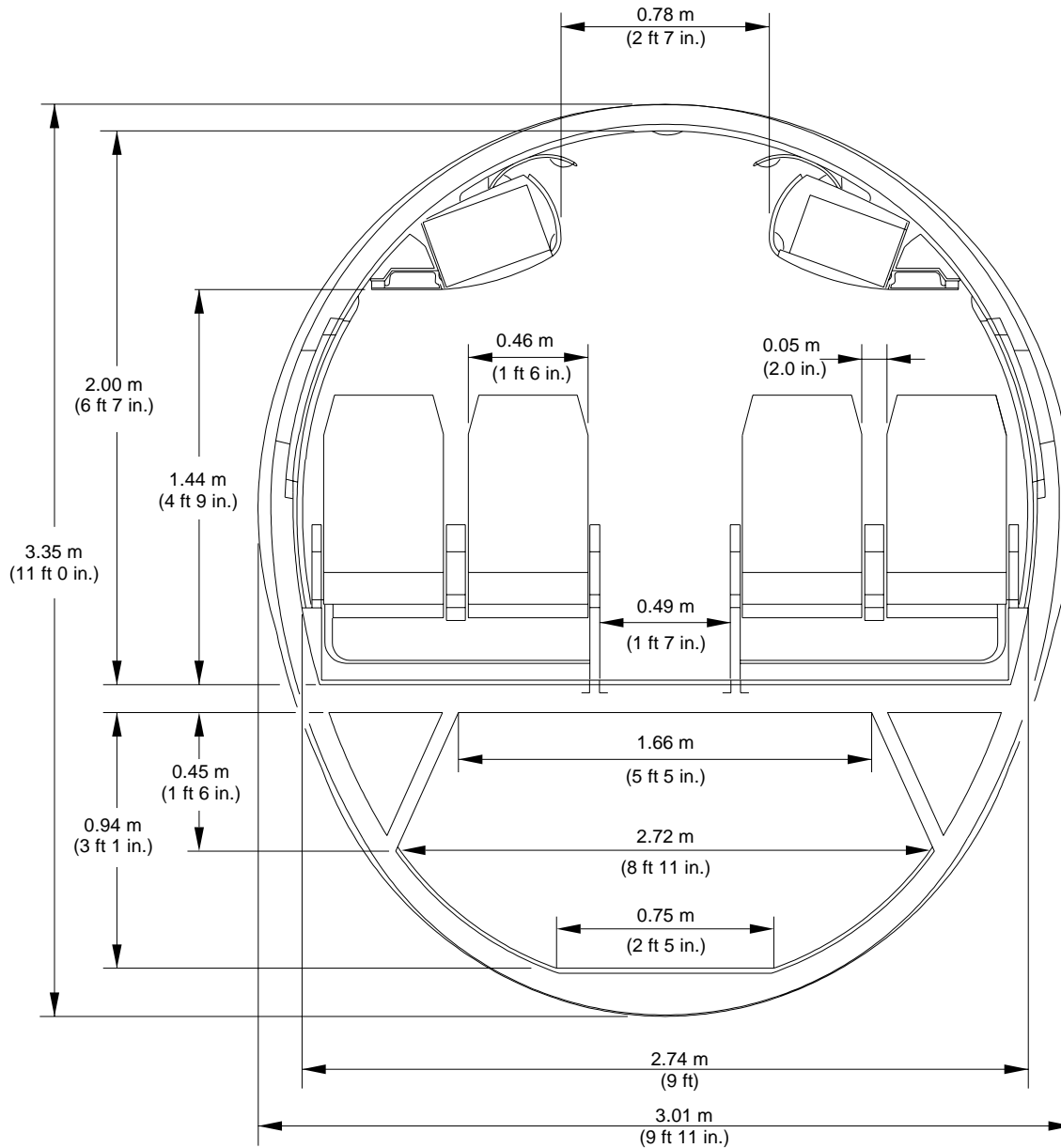
The cockpit is acoustically and thermally insulated for appearance and durability. It follows the worldwide trend of rounded edges, which avoids harm to the flight crew.

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



# EMBRAER 195 AIRPORT PLANNING MANUAL

## 2.5. PASSENGER CABIN CROSS SECTION



EM170APM020001A.DGN

Economy Class Passenger Cabin Cross-Section  
Figure 2.4

EFFECTIVITY: ALL

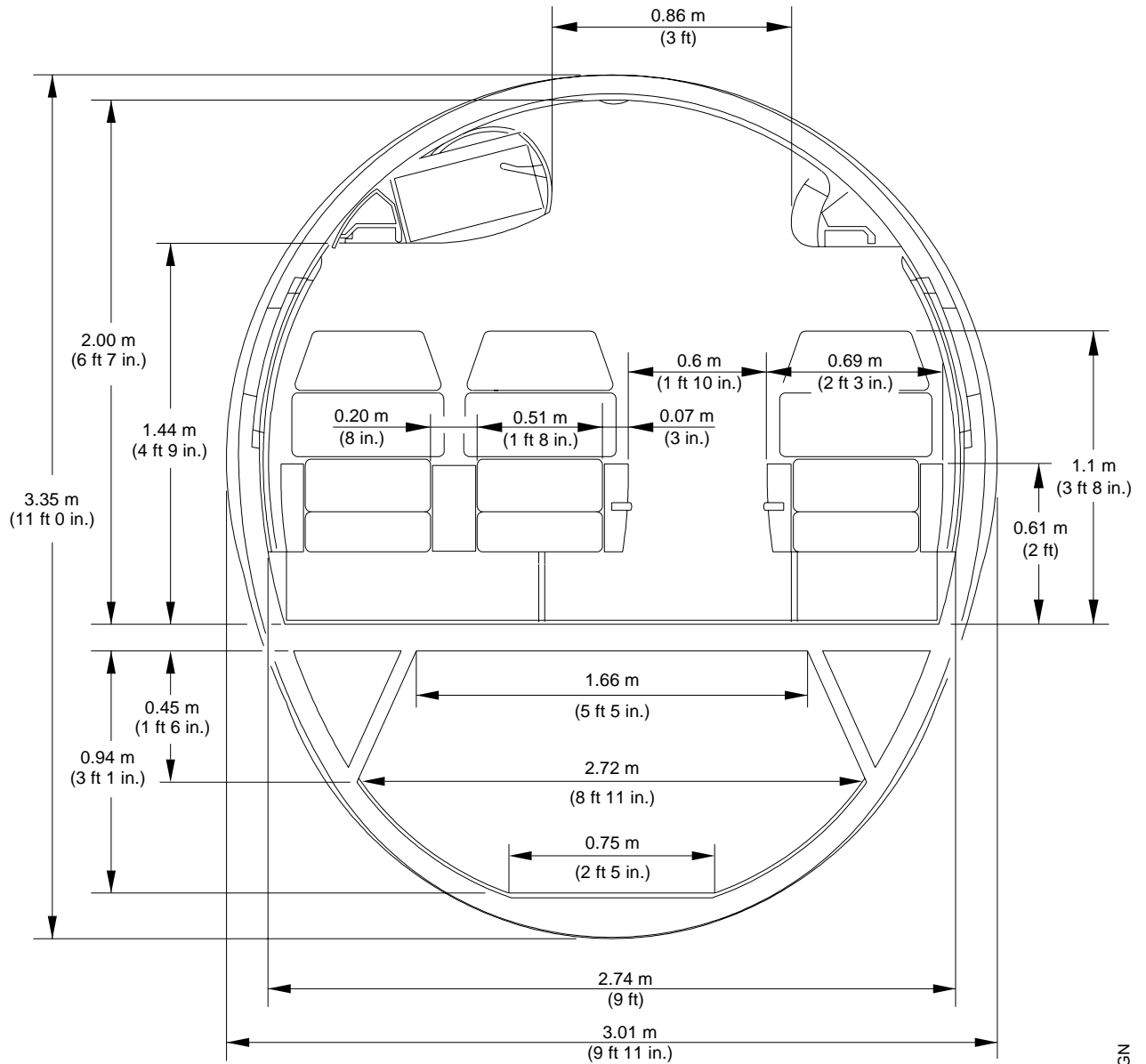
Section 2

Page 2-12

May 11/07



# EMBRAER 195 AIRPORT PLANNING MANUAL



EM170APM020002A.DGN

First Class Passenger Cabin Cross-Section  
Figure 2.5

EFFECTIVITY: ALL



# **EMBRAER 195** AIRPORT PLANNING MANUAL

## **2.6. LOWER COMPARTMENT CONTAINERS**

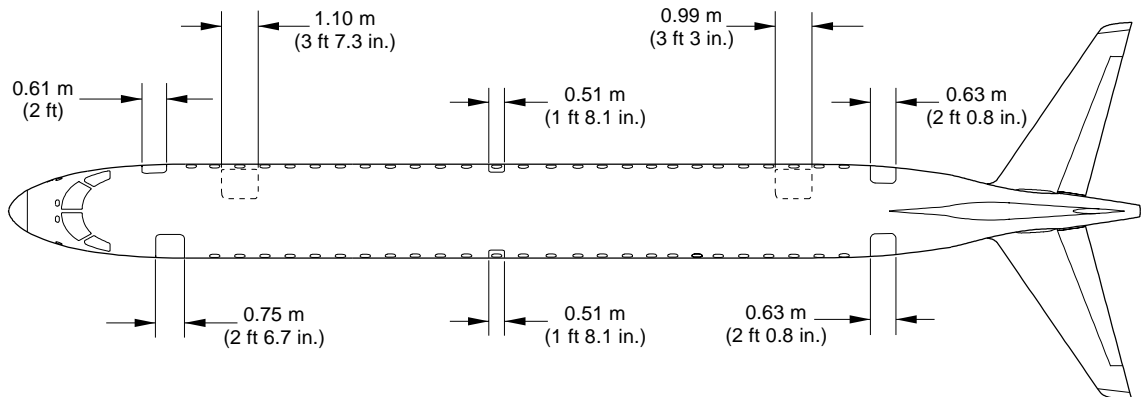
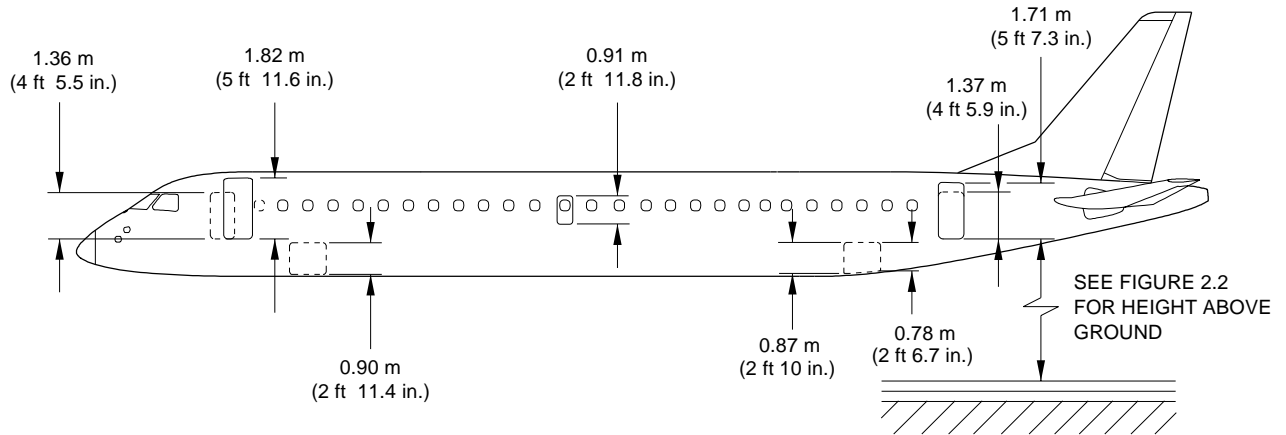
Not Applicable

EFFECTIVITY: ALL



# EMBRAER 195 AIRPORT PLANNING MANUAL

## 2.7. DOOR CLEARANCES



**NOTE:** FOR DIMENSIONS OF ALL DOORS, CONSIDER THAT AIRCRAFT IS IN OPERATION, THAT IS, EQUIPPED WITH DOOR LININGS AND DOOR SURROUNDS.

Door Dimensions  
Figure 2.6

EFFECTIVITY: ALL

