

9.3 Passenger Compartment

Examples of cabin cross sections may be found on the Boeing or Airbus websites, such as that shown in Fig. 9.3.1. Seating arrangements (of which there are many, sometimes for one type of aircraft operated by one airline) may be found on airline websites.

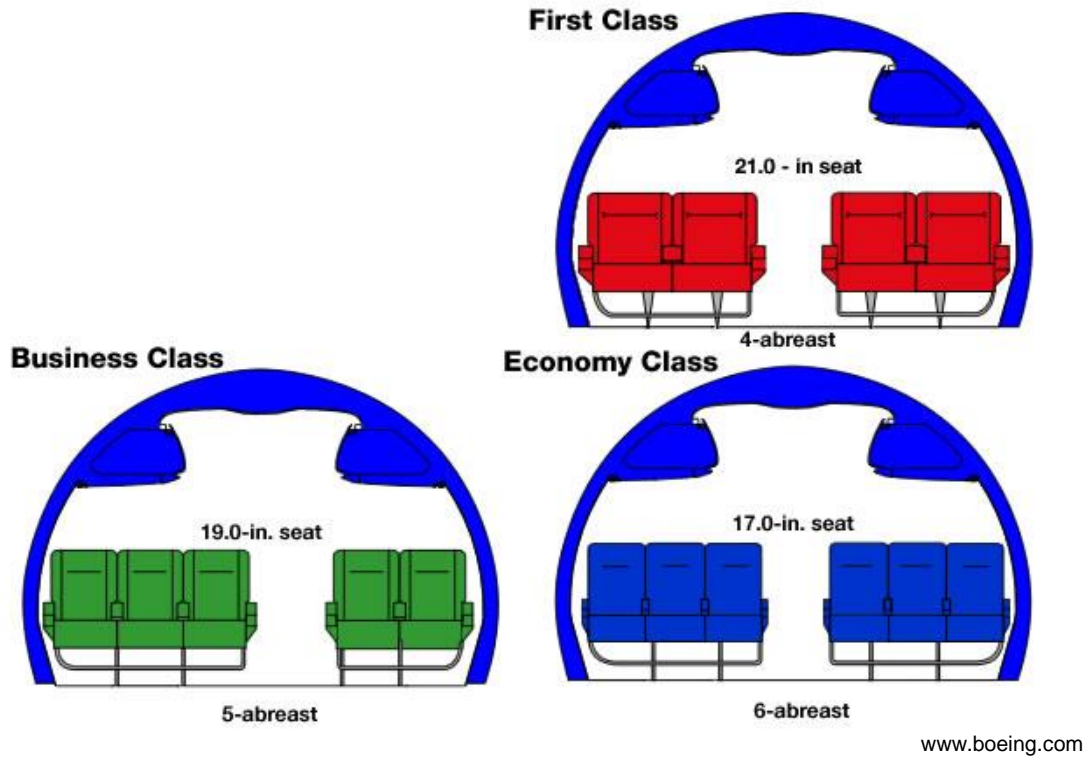
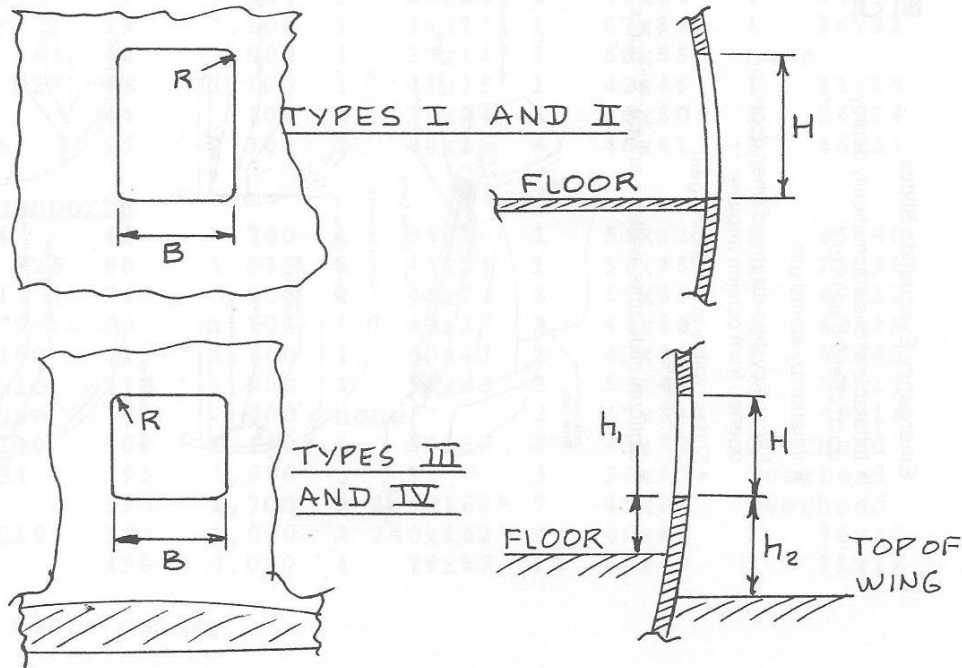


Figure 9.3.1 Boeing 737 Seating Options

All transport category aircraft must have provisions for the emergency exit of passengers and crew. These are defined in FAR §25.801 - §25.820, of which the sections of most interest to the conceptual designer are:

- §25.801 Ditching
- §25.803 Emergency evacuation
- §25.807 Emergency exits
- §25.809 Emergency exit arrangements
- §25.810 Emergency exit assist means and escape routes



Source: Roskam Airplane Design Vol III

Figure 9.3.2 Definitions of Dimensions of Exits

Exit type and location		Min. exit dimension			Max. step height	
		Dim. B [in]	Dim. H [in]	Dim. R [in]	Dim. h ₁ [in] inside	Dim. h ₂ [in] outside
I	Floor level	24	48	8.0	Not applicable	
II	Floor level	20	44	6.7	Not applicable	
	Above wing				10	17
III	Above wing	20	36	6.7	20	27
IV	Above wing	19	26	6.3	29	36
Ventral	Through pressure shell and bottom fuselage skin	At least equivalent to Type I			Not applicable	
Tailcone	Through pressure shell with openable cone aft of pressure shell	20	60	7.0	24	27
A	Floor level	42	72	7.0	Not applicable	
B	Floor level	32	72	6.0		
C	Floor level	30	48	10.0		

Source: Schaufele (updated)

Table 9.3.1 Minimum Door Dimensions of Exits for Transport Aircraft (FAR 25.807)

The minimum dimensions (defined in Fig. 9.3.2) required for passenger exits are listed in Table 9.3.1 and number of exits required in Tables 9.3.2 and 9.3.3. This is a slight simplification of FAR 25.807 requirements. For a complete set of requirements, consult the Electronic Code of Federal Regulations (www.ecfr.gov) Title 14, Part 25.

Number of pax. seats	Emergency exits on each side			
	Type I	Type II	Type III	Type IV
1 - 9				1
10 - 19			1	
20 – 39		1	1	
40 – 79	1		1	
80 – 109	1		2	
110 – 139	2		1	
140 – 179	2		2	
180 and above	See Table 9.3.3			

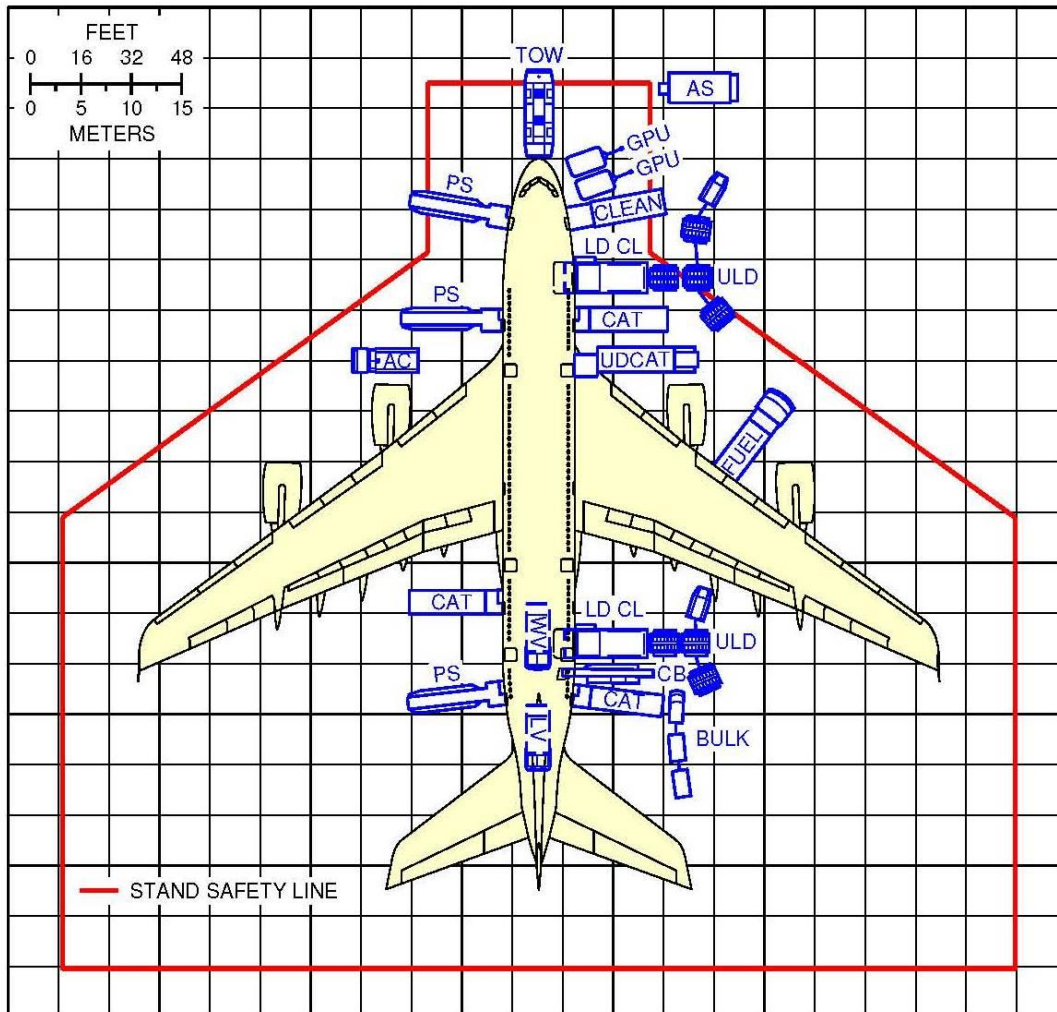
Source: Schaufele (updated)

Table 9.3.2 Number and Type of Emergency Exits

Additional type exit	Additional seat credit	
A	110	Pairs
B	75	
C	55	
I	45	
II	40	
III	35	
IV	9	
Ventral	12	Singles
Tailcone*	25	
* If less than minimum dimension of Table 9.3.1 but at least equivalent to Type III then seat credit of 15		

Source: Schaufele (updated)

Table 9.3.3 Additional Seat Credit for Seats greater than 179



Source: Airbus

Figure 9.3.3 A380 Ground Service

When the aircraft is at a gate, access must be provided for functions such as

- Passenger loading and unloading
- Passenger baggage loading and unloading
- Cargo loading and unloading
- Catering and potable water
- Cabin cleaning
- Toilet maintenance and cleaning
- Fuelling
- Electrical power from ground power unit (GPU)
- Air conditioning
- Towing tug

Documentation for current aircraft may be found on the Boeing or Airbus websites. For example, for Boeing commercial airplanes look for a document titled “Airplane Characteristics for Airport Planning” or similar.