

A220-300 RAMP HANDLING PRACTICES

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Ground Operations Department
Revised February 2023

COURSE OBJECTIVES

- Describe A220-300 aircraft specifics and relevant ground personnel activities
- Explain airBaltic requirements
- On completion of this course student will obtain necessary knowledge to complete A220-300 ground handling tasks in accordance with Carriers requirements.

TABLE OF CONTENTS

- Aircraft technical data, dimensions and areas
 - aircraft characteristics
 - aircraft dimensions and clearances
 - engine dangerous areas
 - composite/equipment restricted areas
- Aircraft doors and cabin
 - door diagram
 - passenger and cargo door operations
 - cabin layout
 - cabin lighting systems
- Loading in compartments
 - compartment sections, mass limits and volumes
 - compartment dimensions
 - lashing points
 - special loads (heavy items, dangerous goods, animals)

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- Aircraft servicing
 - GSE placement scheme
 - chocks and cones
 - grounding points
 - external electrical power
 - water and waste servicing
 - low and high pressure ground connections
 - aircraft pushback/towing

AIRCRAFT TECHNICAL DATA, DIMENSIONS AND AREAS

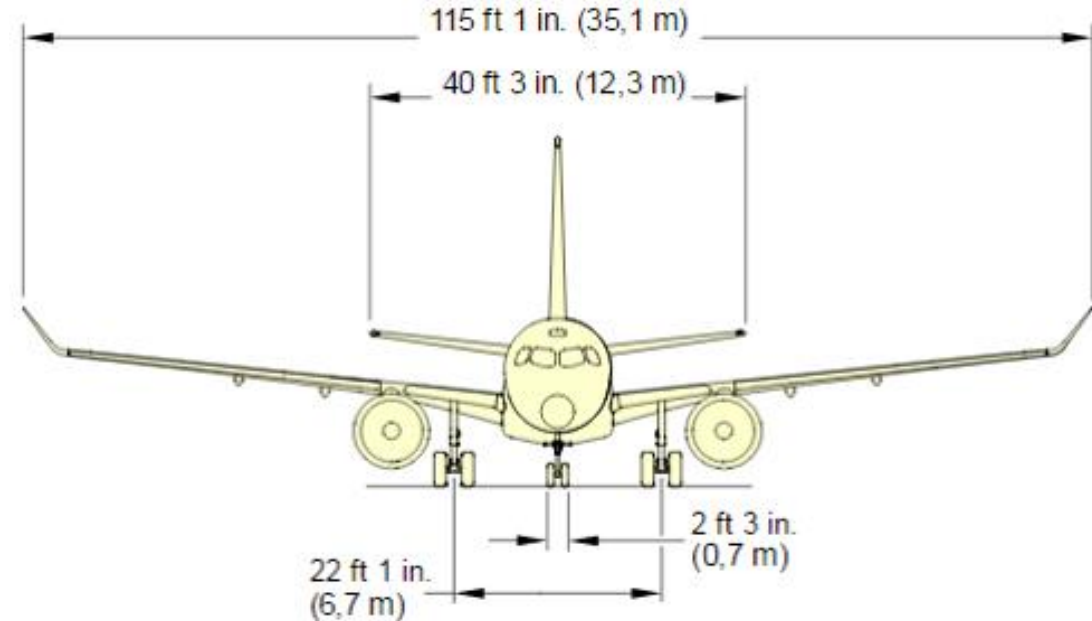
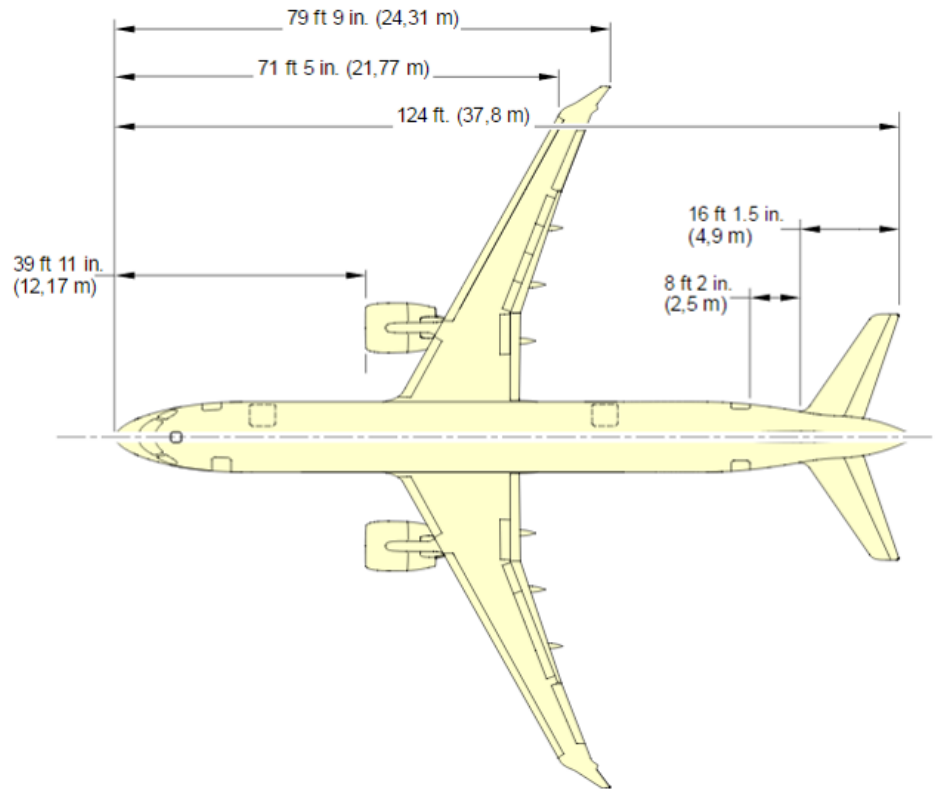
AIRCRAFT CHARACTERISTICS

| | |
|---------------------------|---------------|
| Seating Capacity | 145/148/149 |
| Wing span | 35.1 m |
| Length | 38.71 m |
| Height | 11.8 m |
| Maximum Take - off weight | 67 585 kg |
| Maximum Landing weight | 58 740 kg |
| Total fuel tank capacity | 21 574 liters |
| Maximum range | See map |
| Maximum speed | 871 km/h |

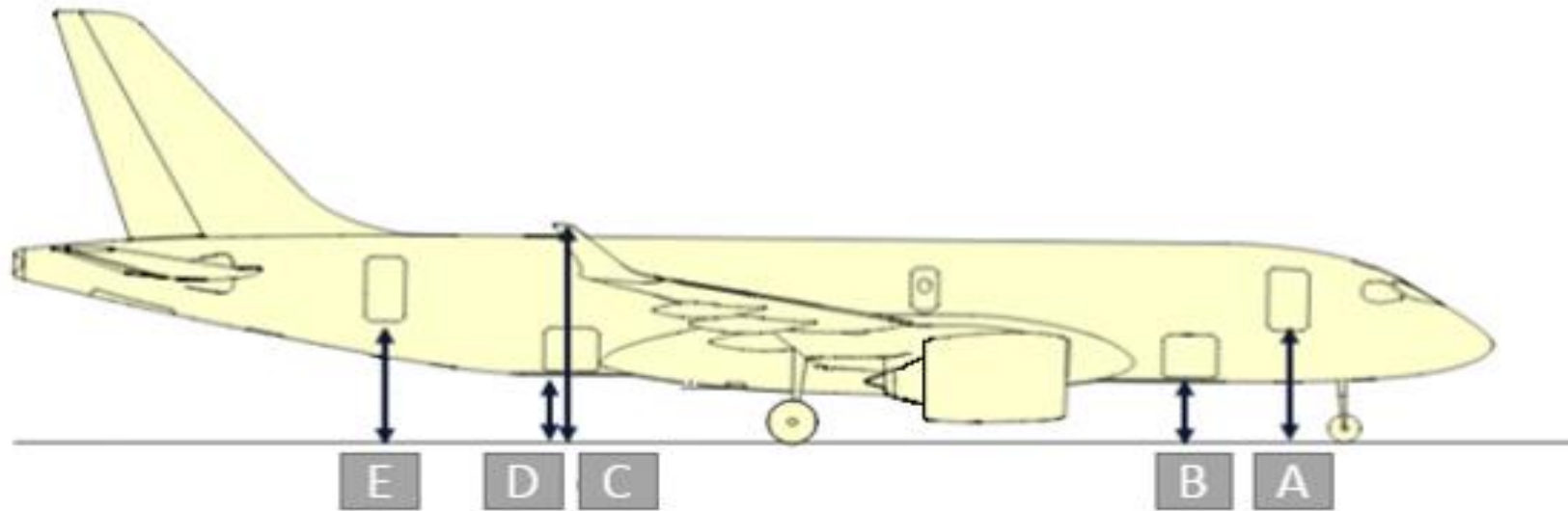


AIRCRAFT DIMENSIONS AND CLEARANCES

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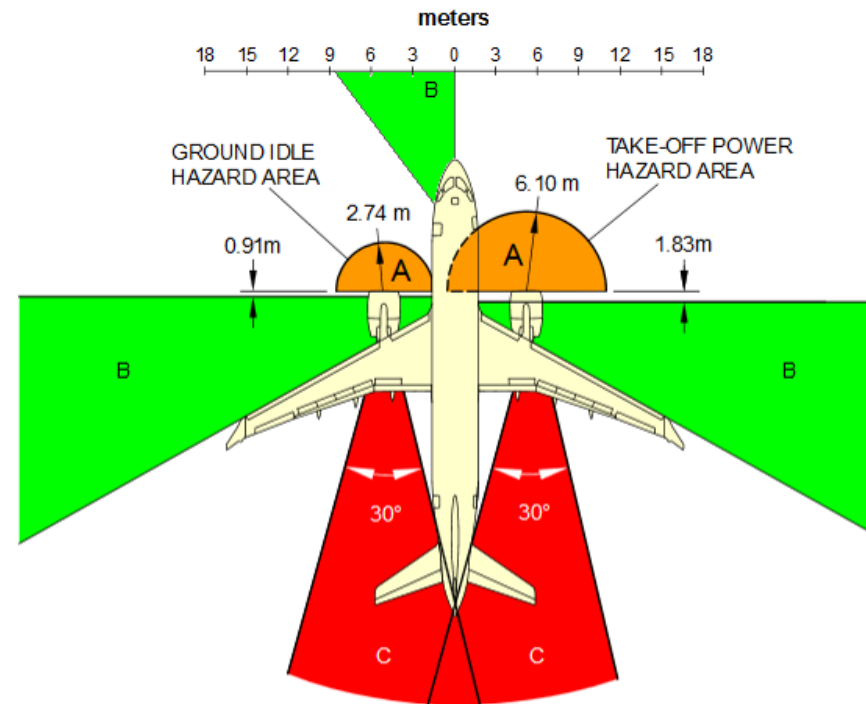


AIRCRAFT DIMENSIONS AND CLEARANCES



| Locator | Description (to ground) | Minimum | Maximum |
|---------|-------------------------------|---------|---------|
| A | Forward pax and service doors | 3.0 m | 3.1 m |
| B | Forward cargo CPT door | 1.7 m | 1.8 m |
| C | Wing tip | 5.8 m | 6.0 m |
| D | AFT cargo CPT door | 1.8 m | 2.0 m |
| E | AFT pax and service doors | 3.2 m | 3.4 m |

ENGINE HAZARD AREAS

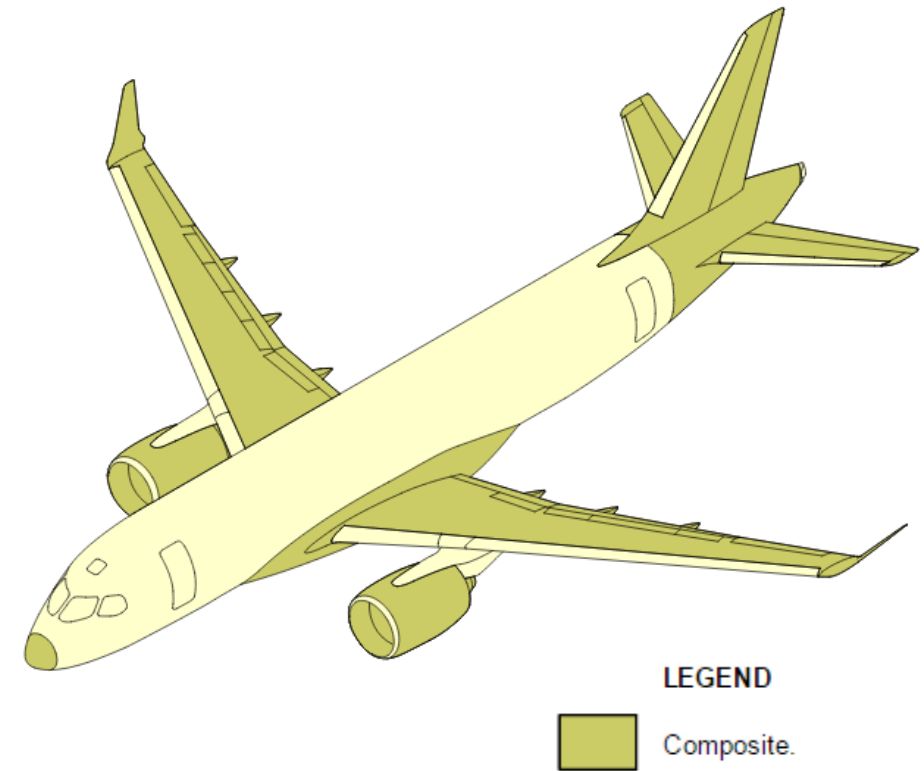


LEGEND

- AREA A** Intake suction danger area.
- AREA B** Entry corridor.
- AREA C** Exhaust danger area (Aft of exhaust nozzle):
 - 61 m - ground idle (20 kt headwind).
 - 183 m - take off power (20 kt headwind).

COMPOSITE AREAS

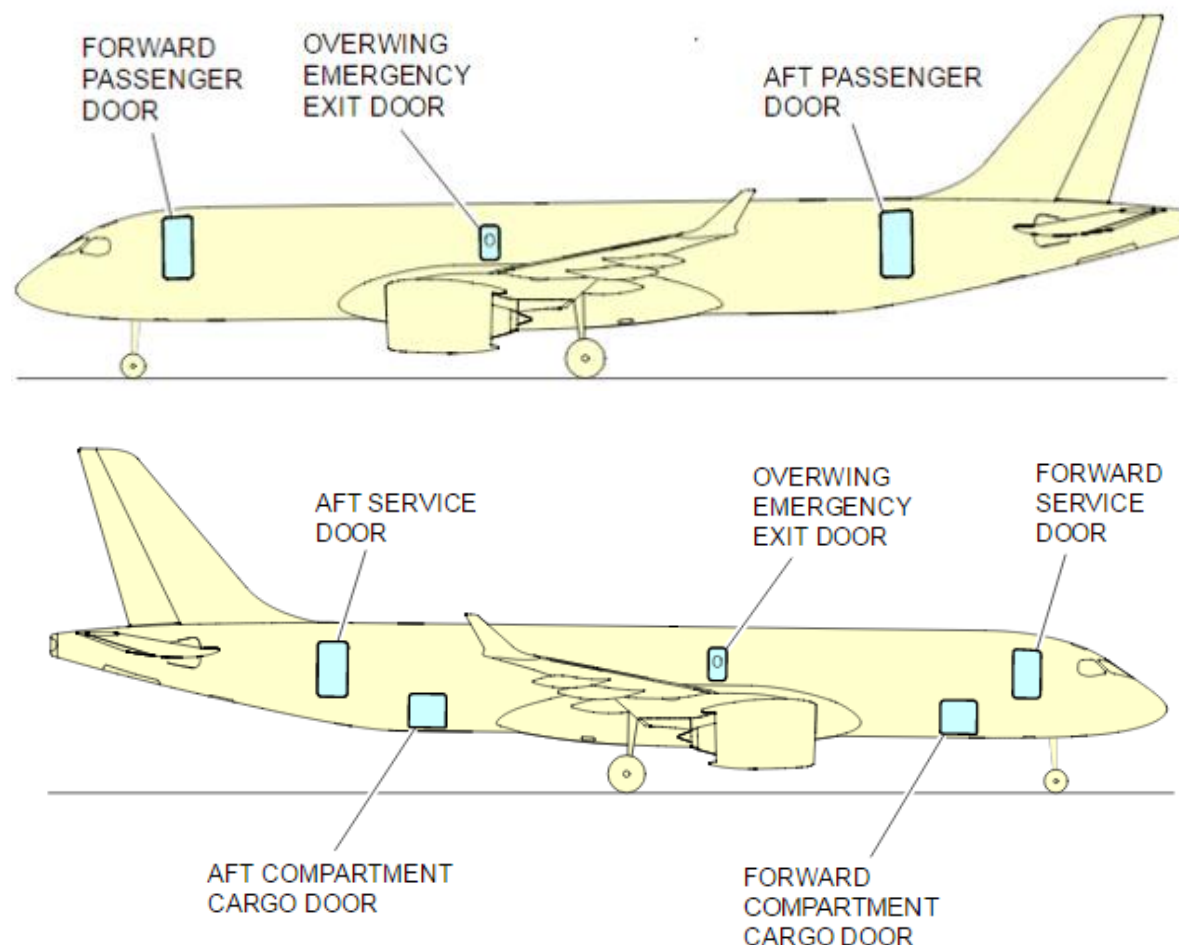
- A220 aircrafts are partly made out of composite materials.
- Composite structures are sensitive to damage caused by the hails, the bird strikes and the ground vehicles. Damages on the external aircraft surface doesn't show all possible internal surface damages. Any GSE contact with composite areas must be immediately reported to the flight crew.
- Note: The damage on the composite structures is not as evident as damage on the metal structure.



AIRCRAFT DOORS AND CABIN

AIRCRAFT DOORRS AND DIMENSIONS

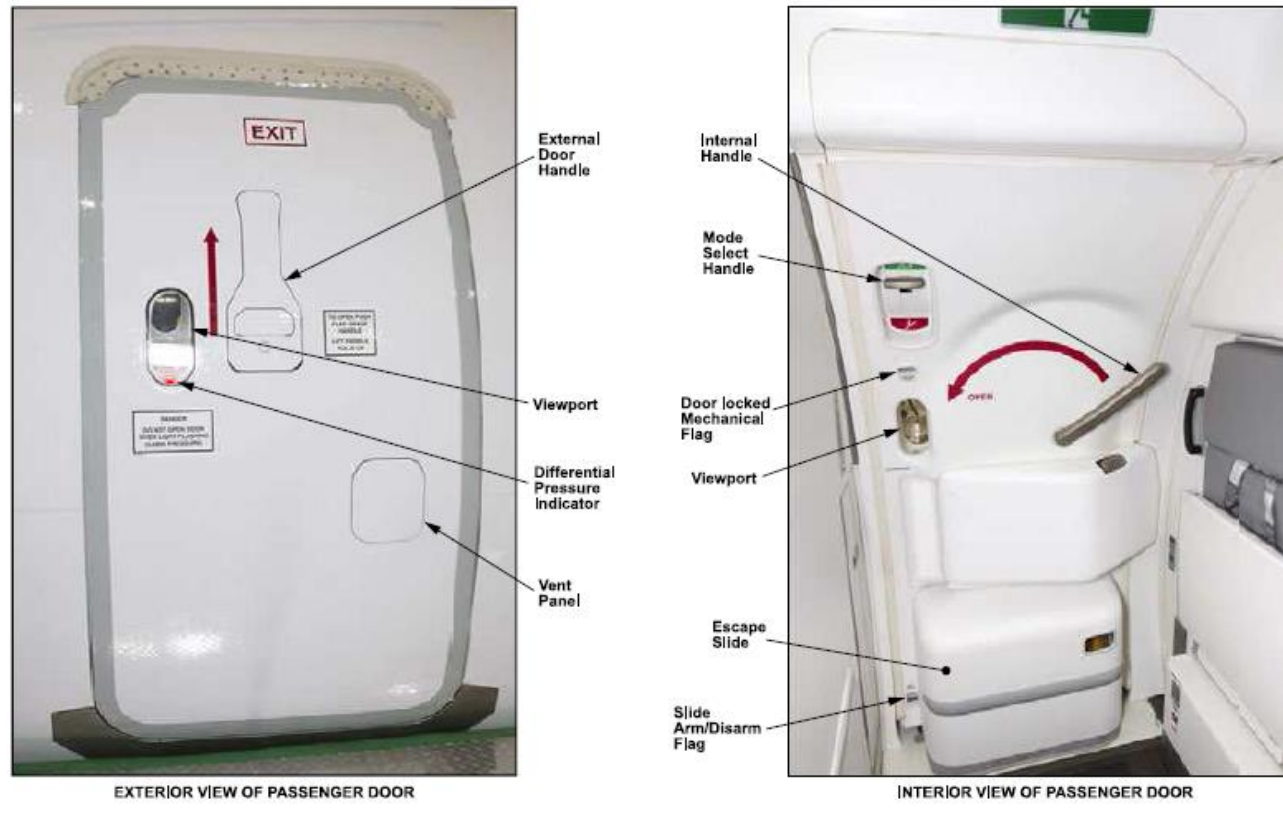
General aircraft door locations and dimensions



Door dimensions

| Door | Meters |
|---------------------------------|--------|
| Forward passenger door | |
| Height | 1.88 |
| Width | 0.81 |
| AFT passenger door | |
| Height | 1.83 |
| Width | 0.76 |
| Service doors – forward and AFT | |
| Height | 1.52 |
| Width | 0.76 |
| Cargo doors – forward and AFT | |
| Height | 0.81 |
| Width | 1.20 |

PASSENGER AND SERVICE DOORS



NOTE: If the door is opened using the external handle, the slide is automatically disarmed to ensure slide does not deploy.

PASSENGER AND SERVICE DOOR CONTROL INDICATIONS

■ Door locked status indicator

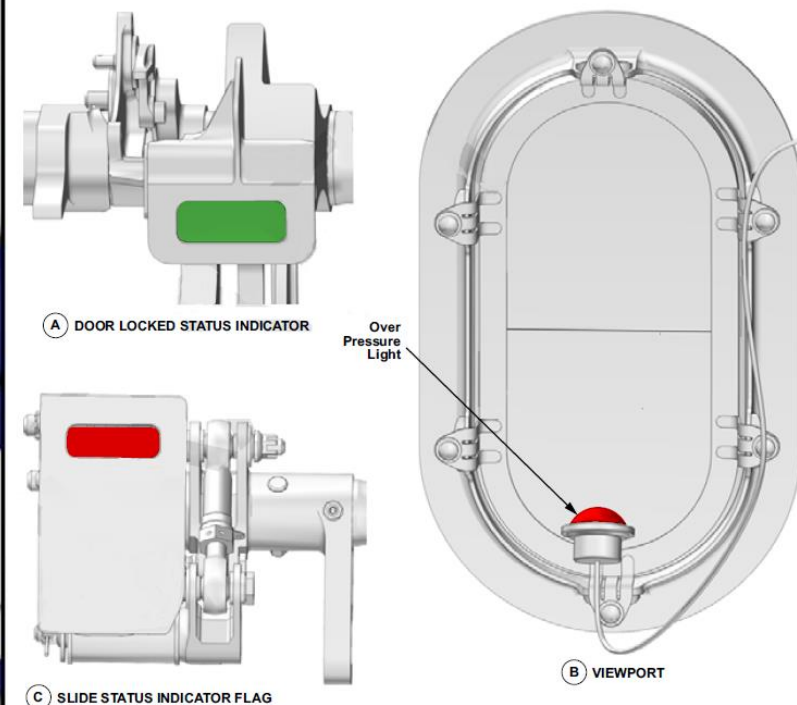
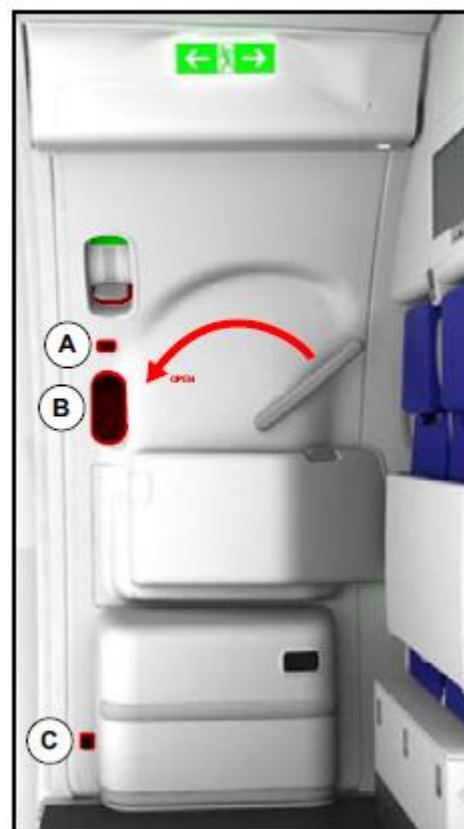
The door status indicator is green if the door is latched and locked. When the door is unlocked and unlatched, the indicator shows red.

■ Overpressure light

The red overpressure light is located in the view port. DON'T OPEN THE DOOR when this light is flashing, it indicates that a height differential pressure exists.

■ Slide status indicator

The slide status indicator shows green if the slide is disarmed and red if the slide is armed.



OPENING OF THE PASSENGER AND SERVICE DOOR FROM OUTSIDE



1 Check overpressure indicator light is not ON. Push flap in and grasp external handle.



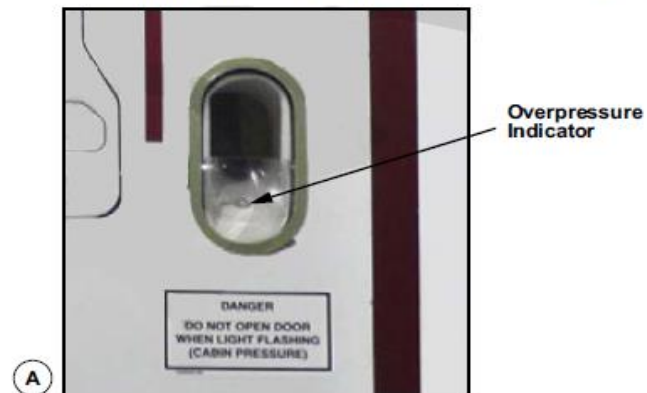
2 Lift handle up. Ensure vent panel opens.



3 Pull door outward and forward.



4 Ensure door locks in forward position.



CLOSING OF THE PASSENGER AND SERVICE DOORS FROM OUTSIDE



1 Pull the hold open handle to disengage the door.



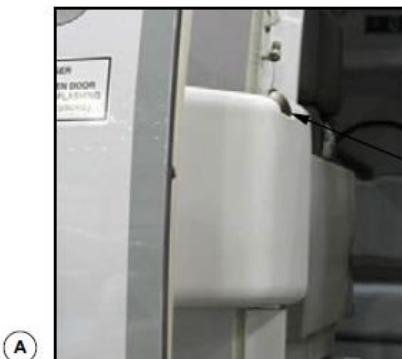
2 Pull door rearward into the frame.



3 Pull external door handle down.

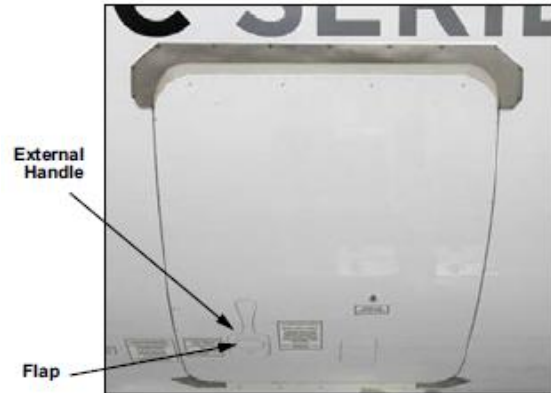


4 Ensure vent panel is closed and external handle is flush with the door.



Hold Open Handle

OPENING OF THE CARGO COMPARTMENT DOORS



1 Push flap in and grasp external handle.



2 Push external handle up ensure vent flap opens and visual indicator shows red.



3 Press OPEN button on cargo door control panel to open door.



4 Door automatically stops when fully open.

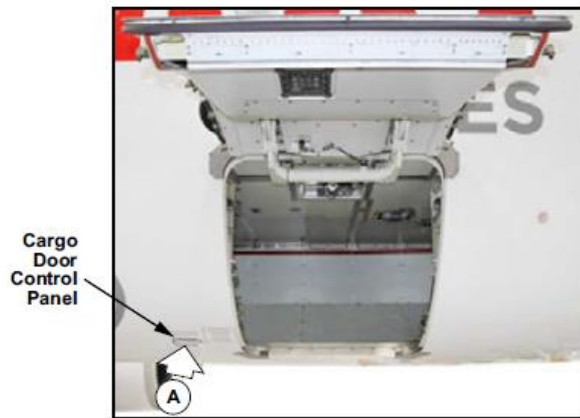


A



B

CLOSING OF THE CARGO COMPARTMENT DOORS



1 Press CLOSE button on cargo door control panel.



3 Check that vent flap is closed, external handle is flush with door and the visual indicator is green.

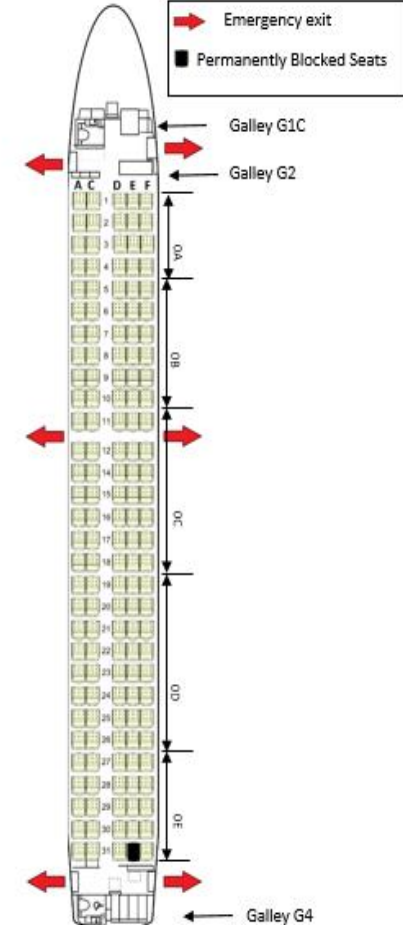
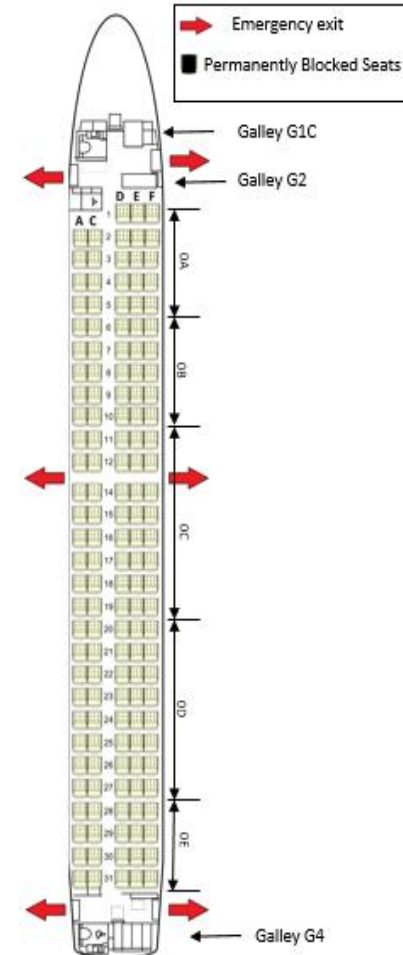
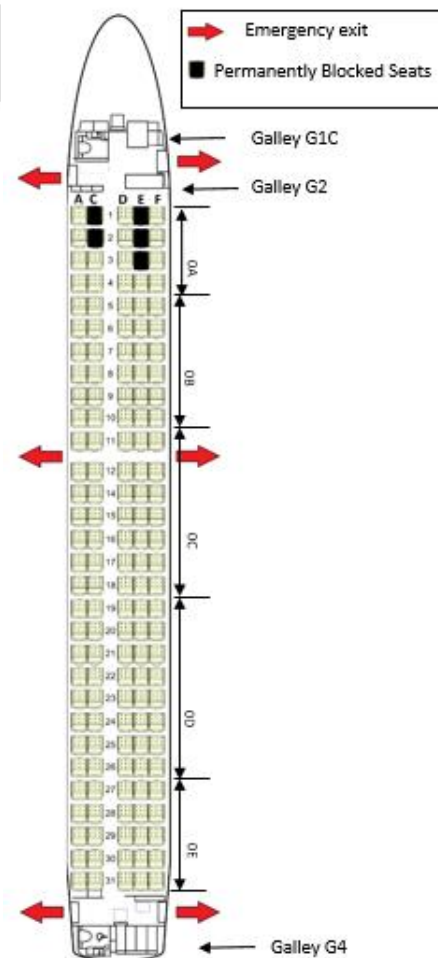
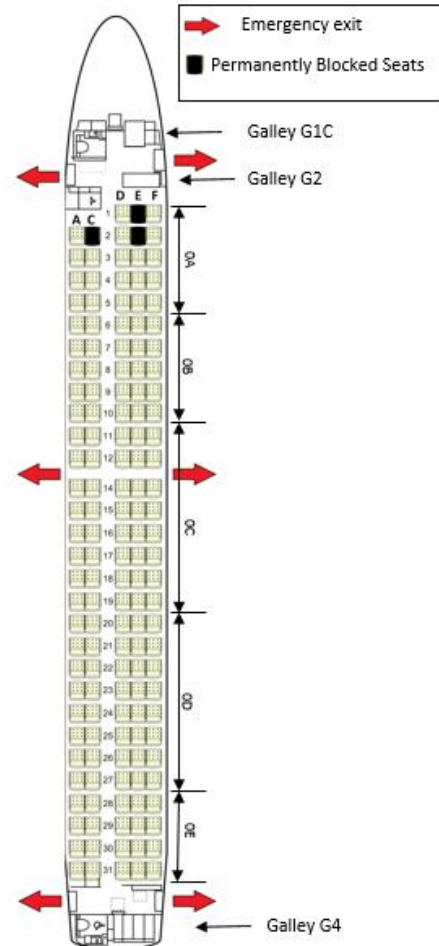


B VISUAL INDICATOR

CABIN LAYOUT

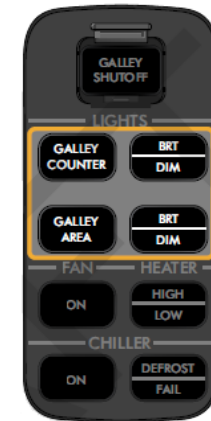
- Full economy class – 145/148/149 seats.
- Default blocked seats – 1E, 2C, 2E / 1C, 1E, 2C, 2E, 3E / 31E
- Seat selection – A,C and D,E,F
- Standard divider between rows 2/3
- Minimum divider between rows 1/2

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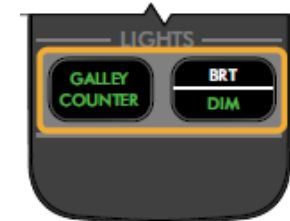


CABIN LIGHTING SYSTEM

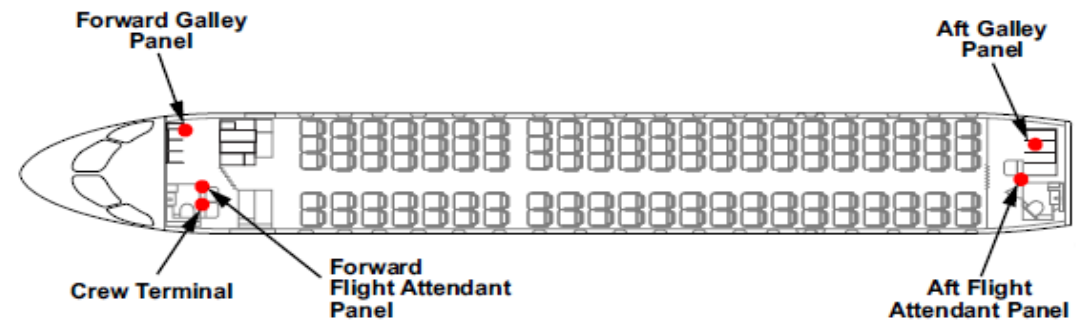
- Use forward flight attendant panel to light ceiling and sidewalls.
- The FWD flight attendant panel controls the dome light through the ENTRY switch when no power is on the aircraft



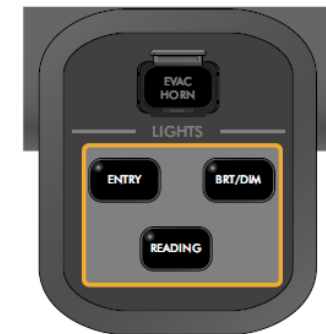
FORWARD GALLEY PANEL



AFT GALLEY PANEL



FORWARD FLIGHT ATTENDANT PANEL

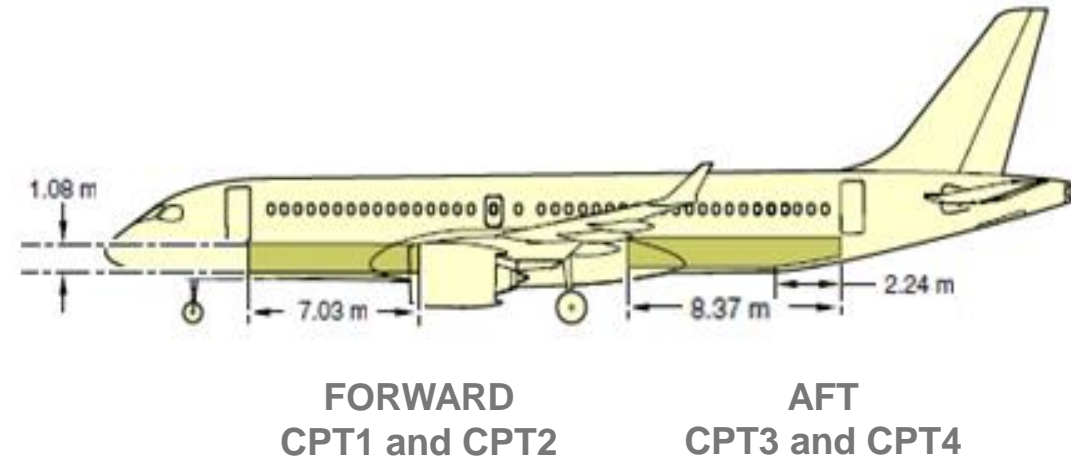


AFT FLIGHT ATTENDANT PANEL

LOADING IN COMPARTMENTS

LOWER CARGO COMPARTMENTS

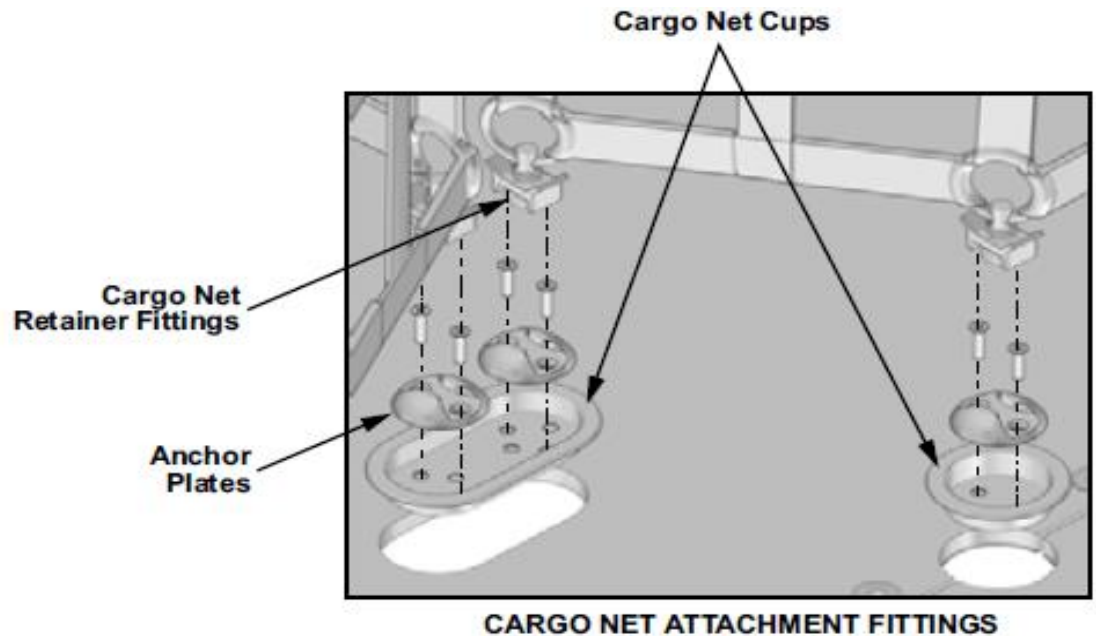
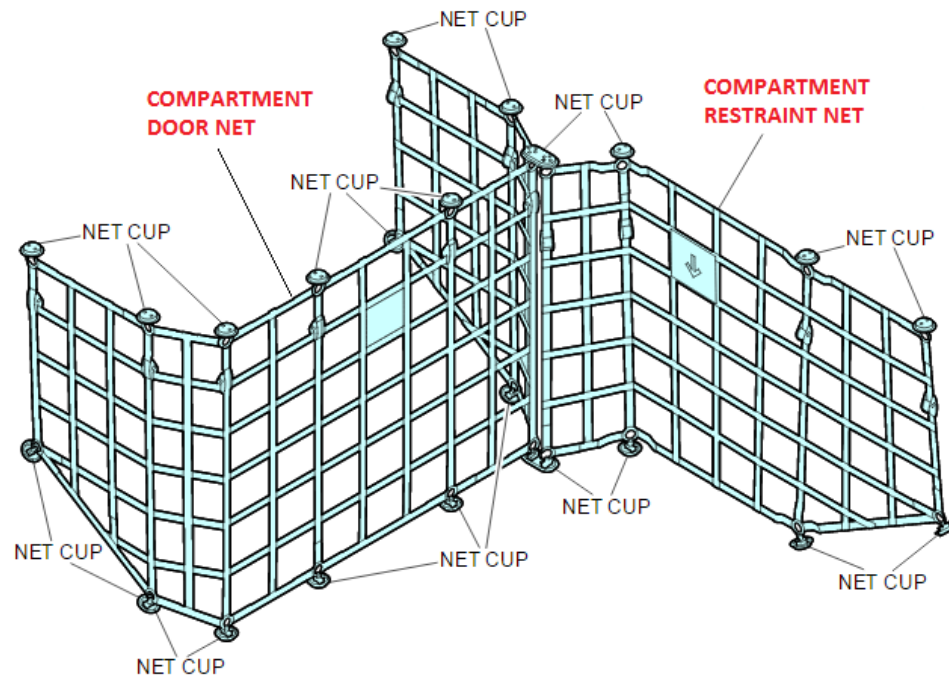
| Max allowable loading | Forward hold | | Aft hold | |
|-------------------------|--------------|------------|------------|------------|
| | CPT1 | CPT2 | CPT3 | CPT4 |
| | Section 11 | Section 21 | Section 31 | Section 41 |
| | 800kg | 1646kg | 1858kg | 1055kg |
| | 2446kg | | 2606kg | |
| Usable volume | 3.65m³ | 9.00m³ | 9.49m³ | 5.32m³ |
| | 12.65m³ | | 14.81m³ | |
| Max load (flat floor) | 732kg/m² | | | |
| Max load (curved floor) | 293 kg/m² | | | |



CAUTION: The total load of each compartment must not exceed the maximum allowed for the hold.

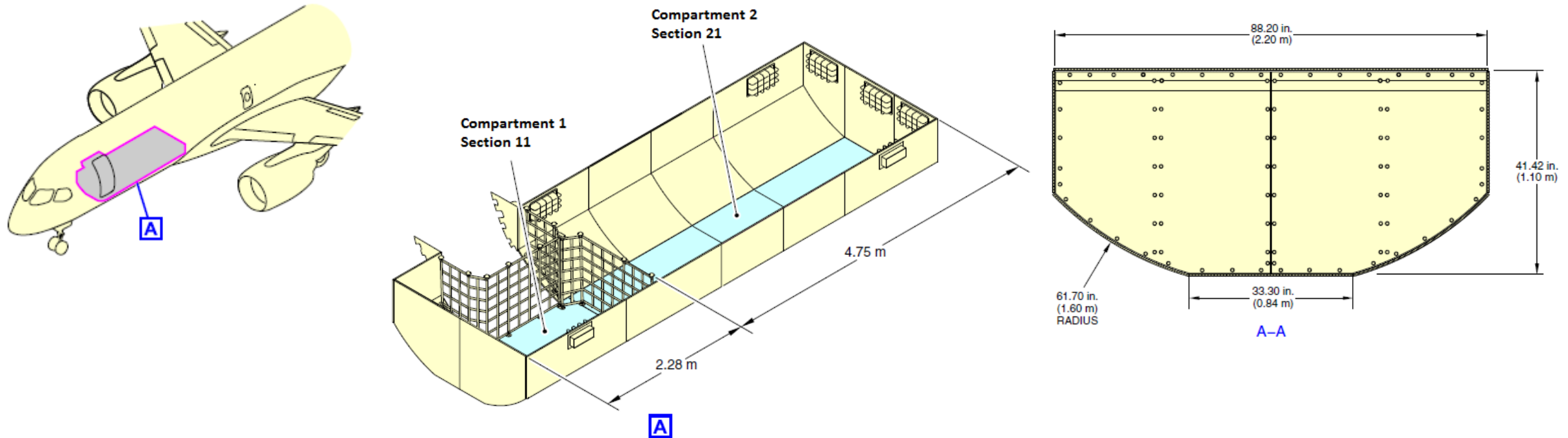
CARGO COMPARTMENT NETS

- The cargo compartment nets keep the baggage in their position and do not let the baggage hit the cargo compartment door. There are two types of cargo compartment nets: the compartment door net and the compartment restraint net.
- CAUTION: Door net must be installed for flight.



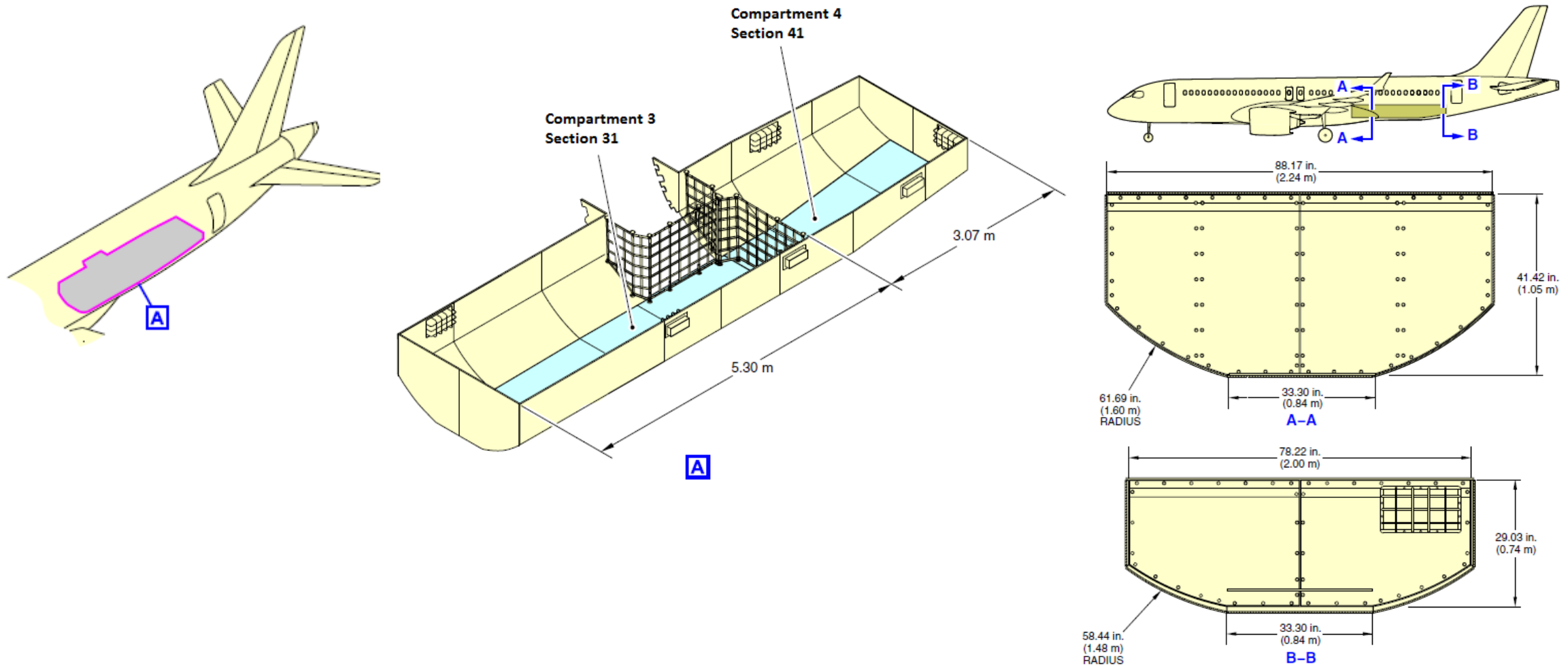
FORWARD COMPARTMENT DIMENSIONS

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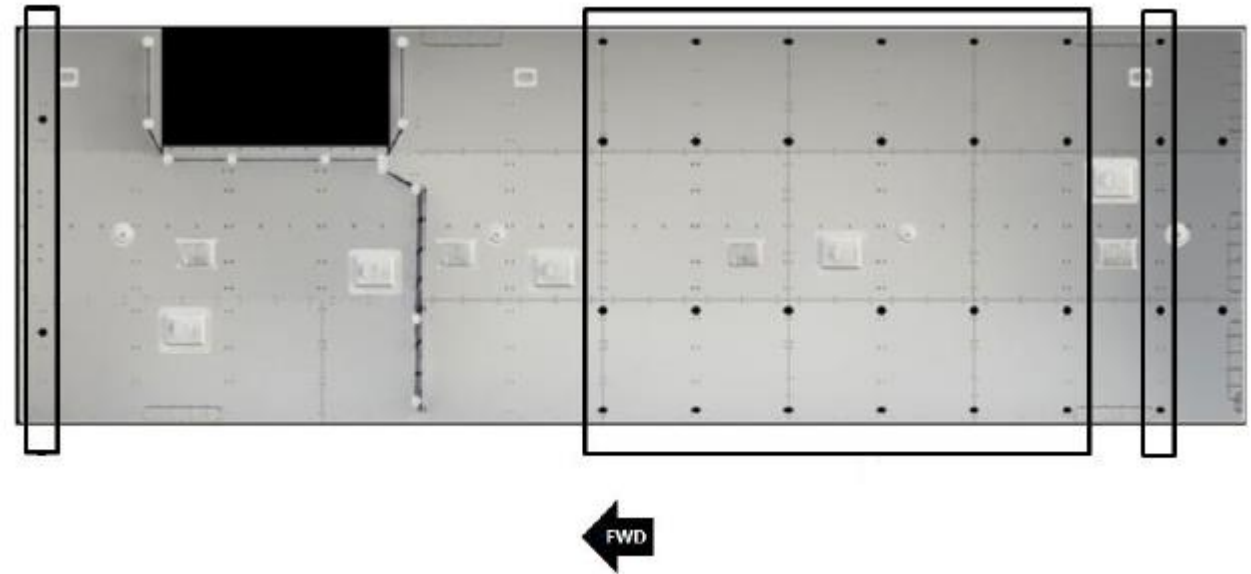
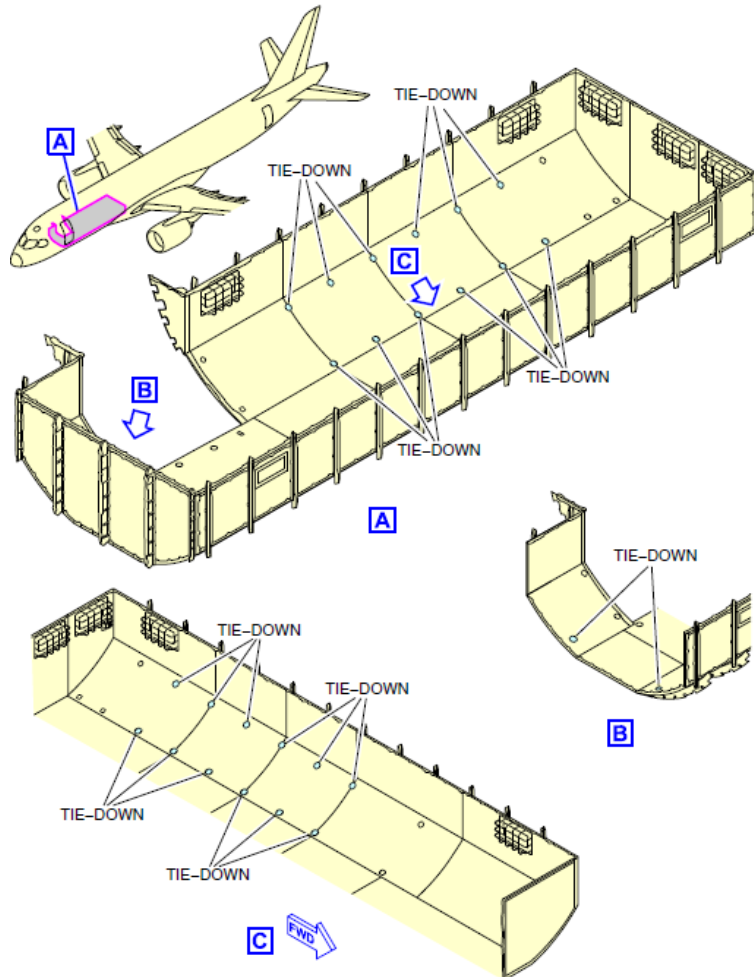
AFT COMPARTMENT DIMENSIONS

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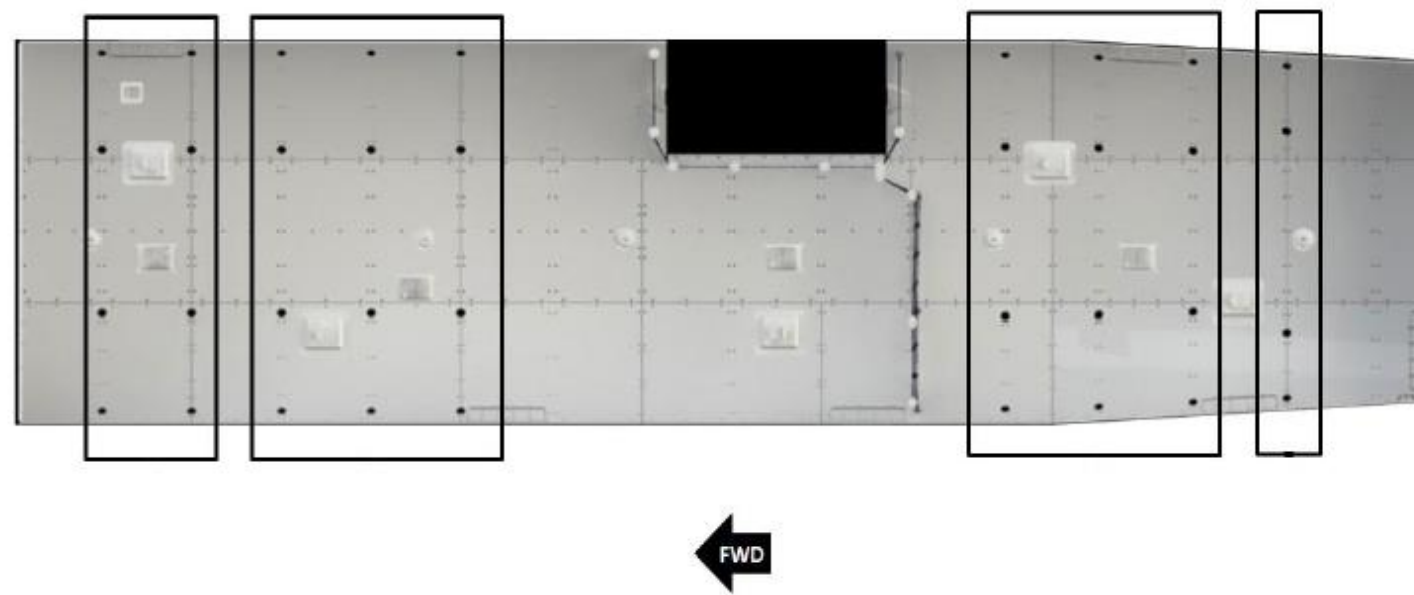
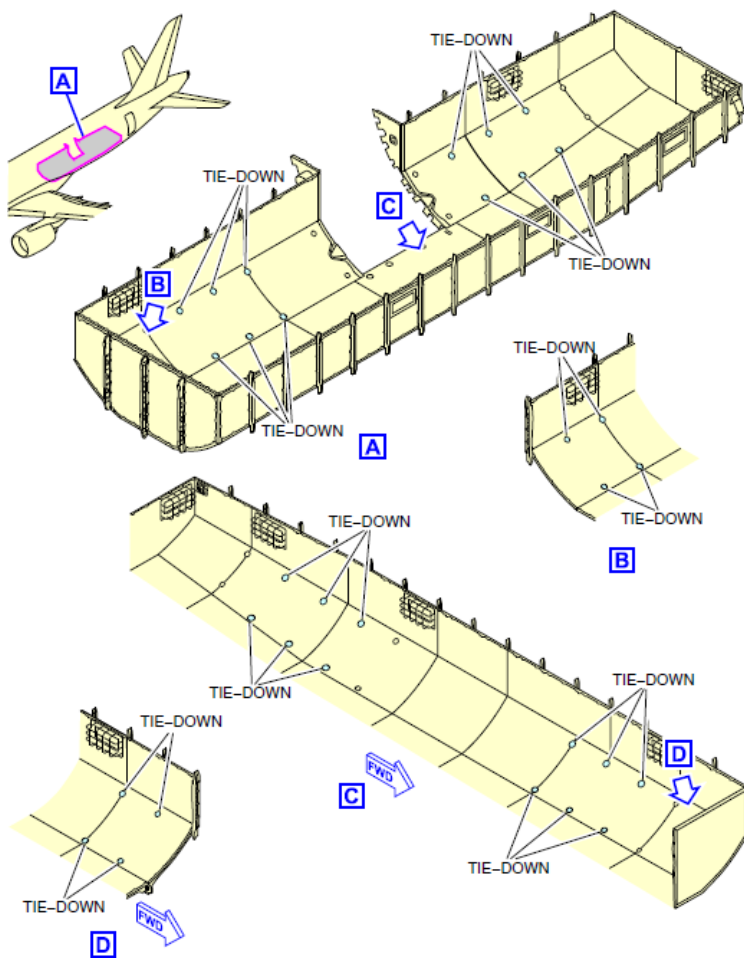
TIE DOWN POINTS IN FORWARD COMPARTMENT

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TIE DOWN POINTS IN AFT COMPARTMENTS

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LOADING IN COMAPRTMENTS

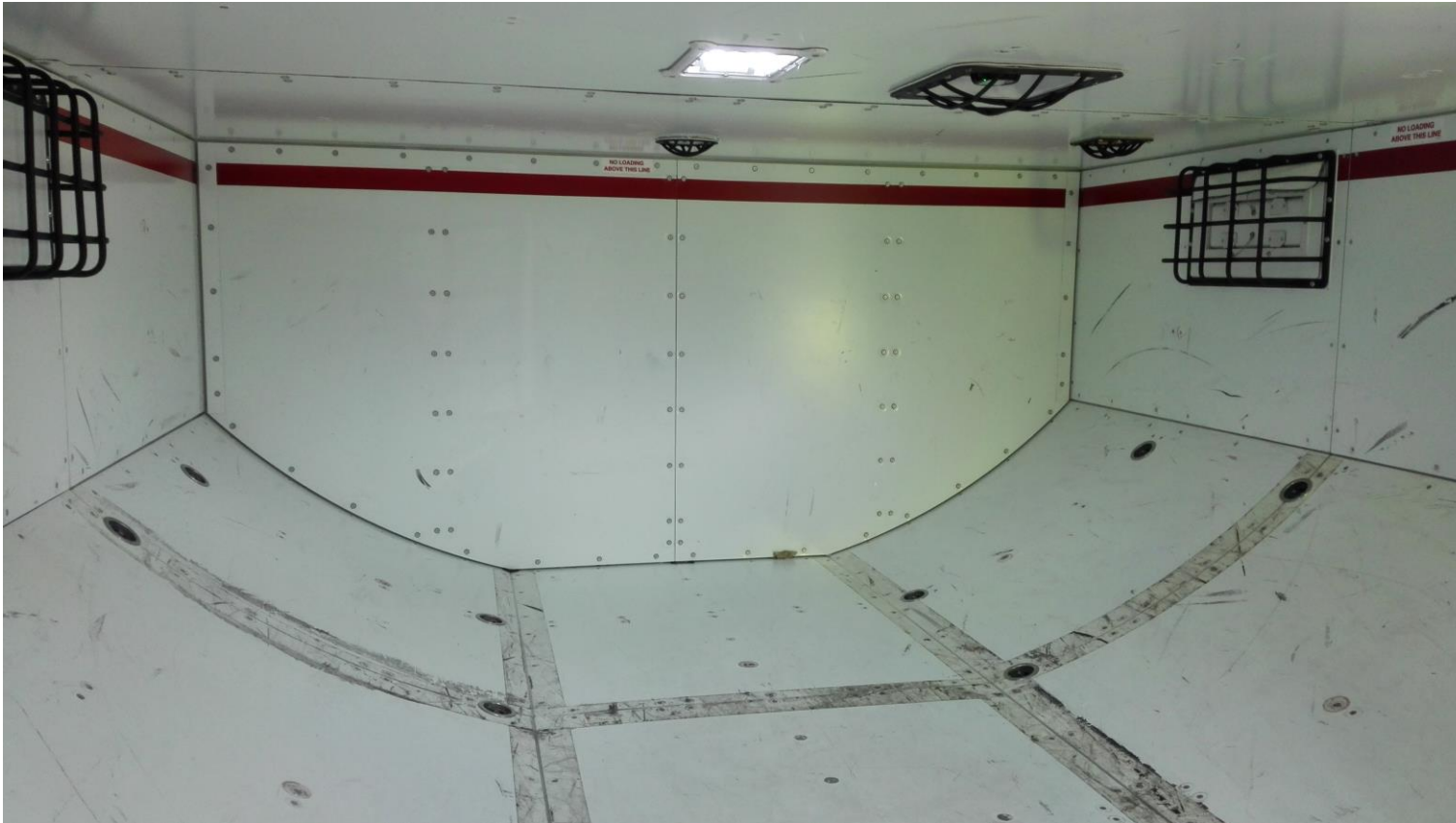
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- Low clearance warning!
- Be cautious and use guideman.



LOADING IN COMPARTMENTS

- Lower compartments are marked with red line indicating maximum loading heights and it must be observed during loading.



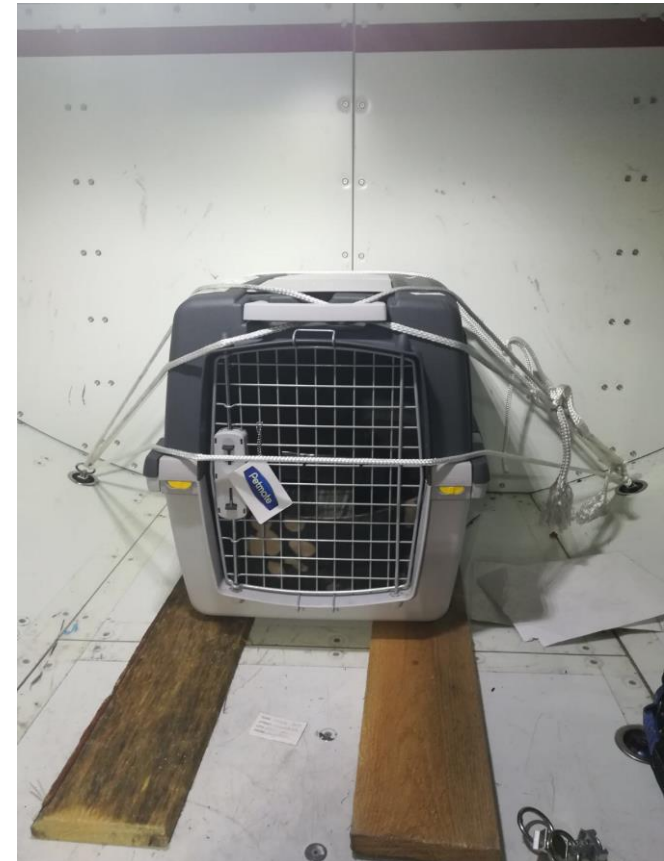
LOADING IN COMPARTMENTS

- Heating and Ventilation

Compartments 1 and 2 are equipped with both ventilation and heating and are suitable for carriage of live animals.

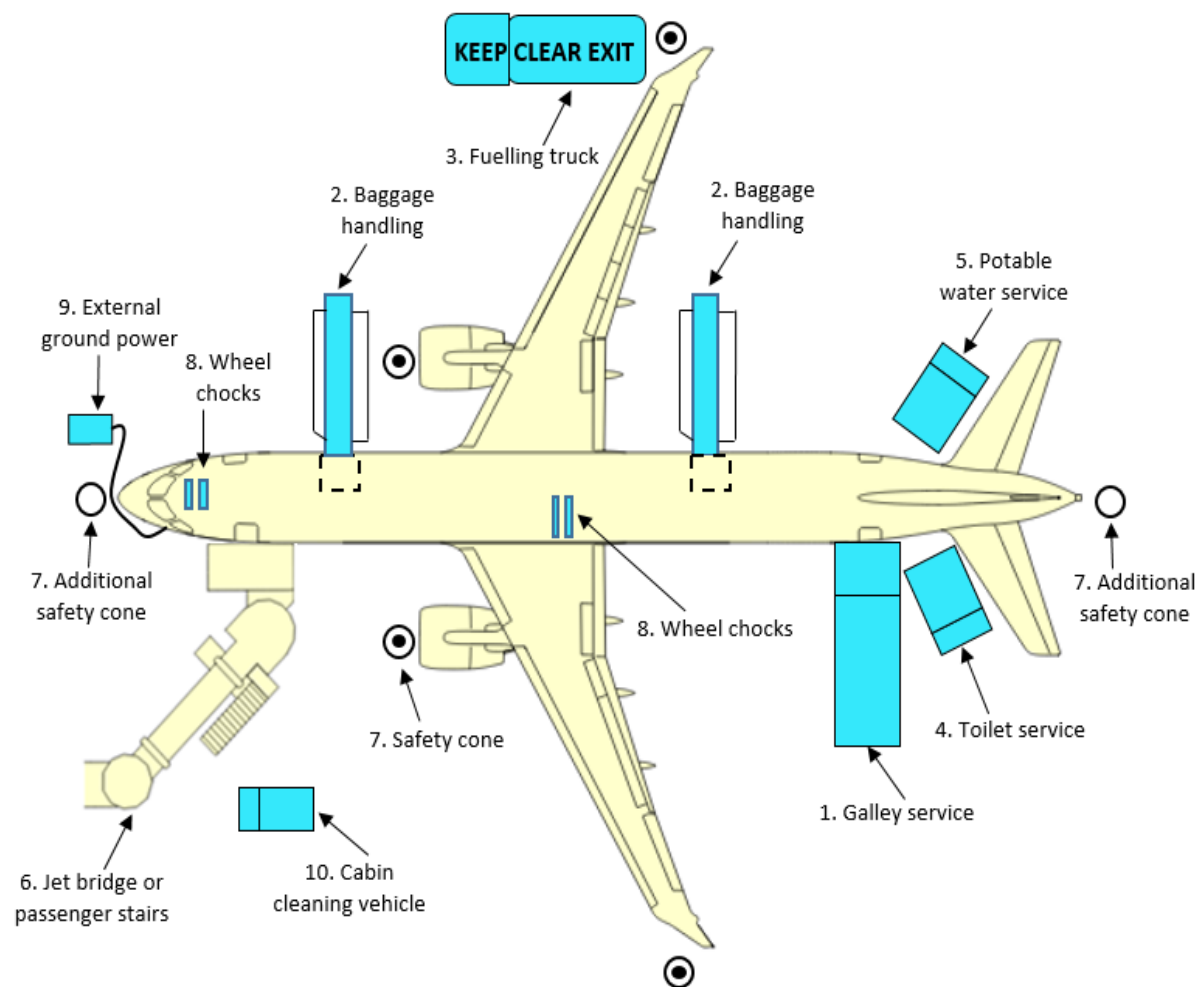
Compartments 3 and 4 are equipped with ventilation only and carriage of live animals is not permitted.

- Special loads and heavy cargo items – refer to GOM.

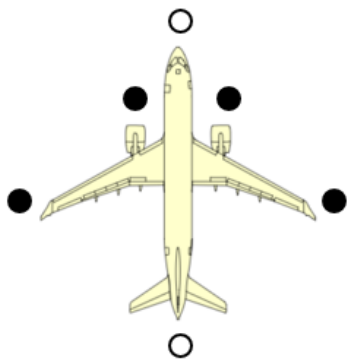
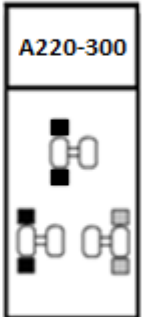


AIRCRAFT SERVICING

GROUND SERVICING EQUIPMENT PLACEMENT SCHEME

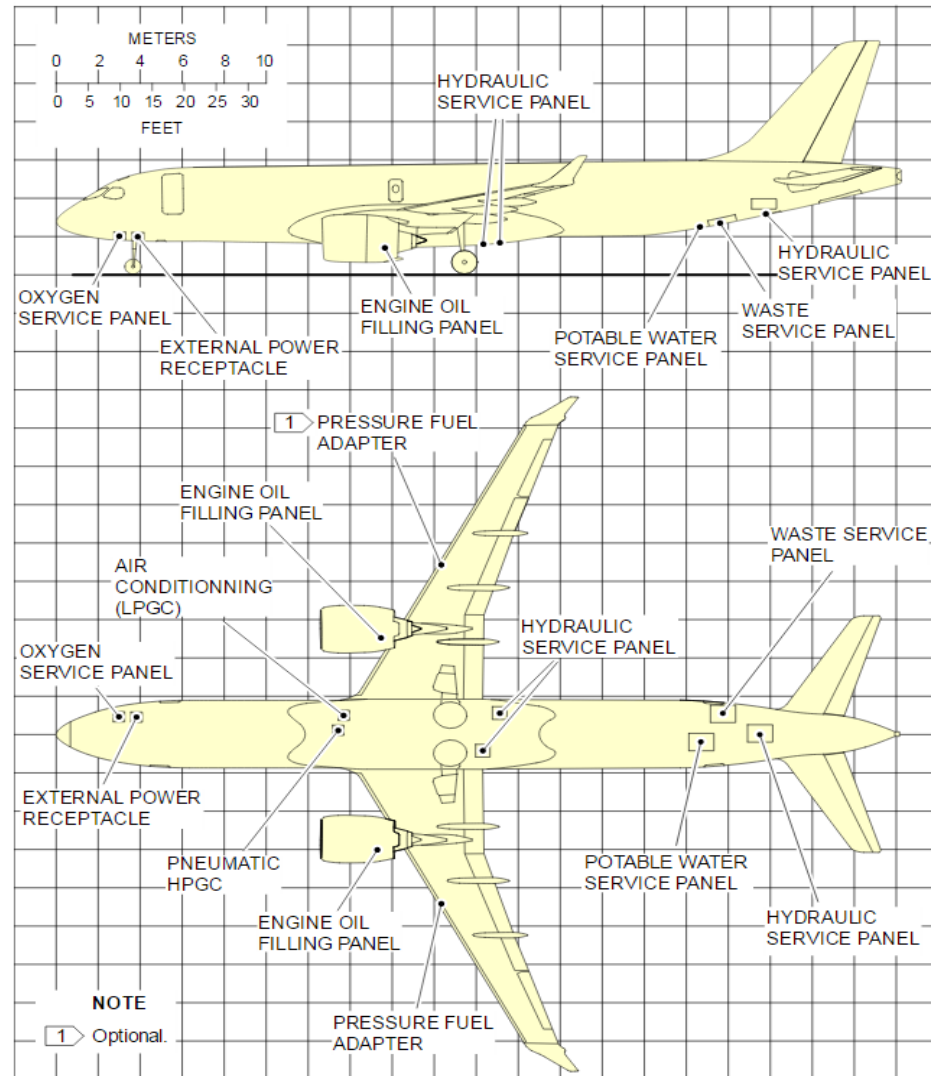


CHOCKS AND CONES

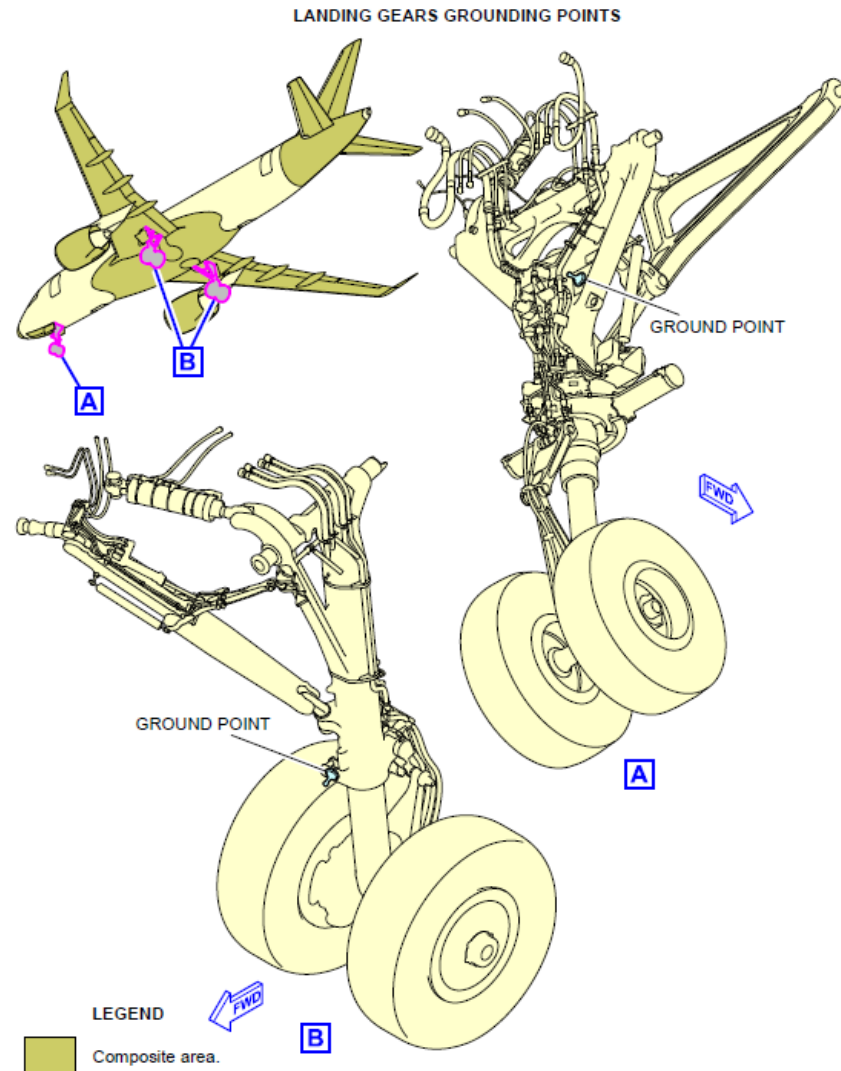
| Aircraft type | Position of Cones | Position of Chocks |
|---------------|--|--|
| A220-300 |  | <div><div>A220-300</div><p>■ = Normal parking conditions up to 4 hours ▣ = Additional chocks if parking more than 4 hours and/or unfavorable weather conditions</p></div> |

- ○ additional cones to be placed when parked on an open ramp adjacent to a service road
- Decision to place the wheel chocks on the right or left side of the main landing gear depends on local conditions or instructions.

GROUND SERVICING CONNECTIONS

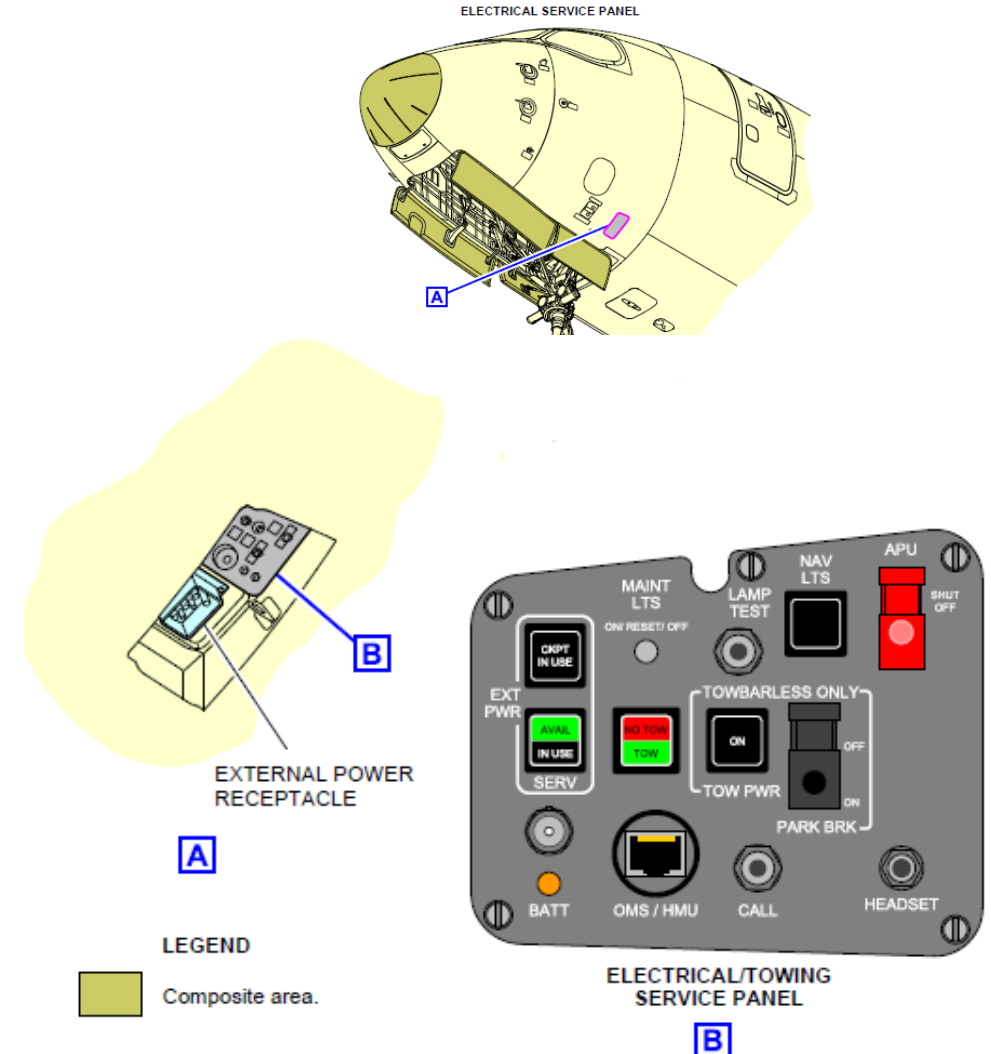


GROUNDING POINTS



EXTERNAL ELECTRICAL POWER

- External power requirements – 115/200 Volts AC, 400Hz
- It's recommended to use ground cart standard 75KVA and higher. Lower standard can lead to the nuisance messages in the cockpit.
- DO NOT disconnect external electrical power until authorized by flight crew (use IATA hand signals or headset)
- Before disconnecting external power source make sure that:
 - CKPT IN USE goes off
 - EXT PWR AVAIL comes on

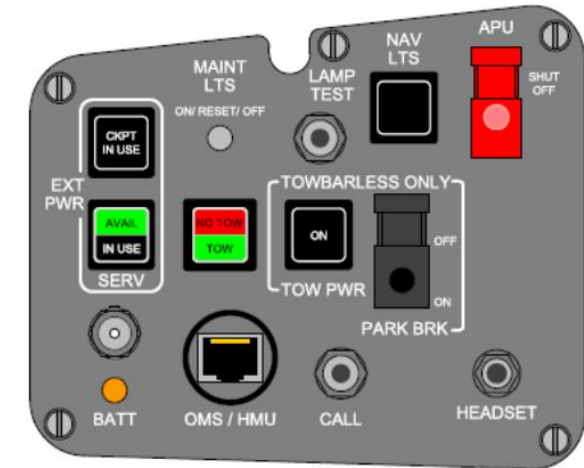


EXTERNAL ELECTRICAL POWER

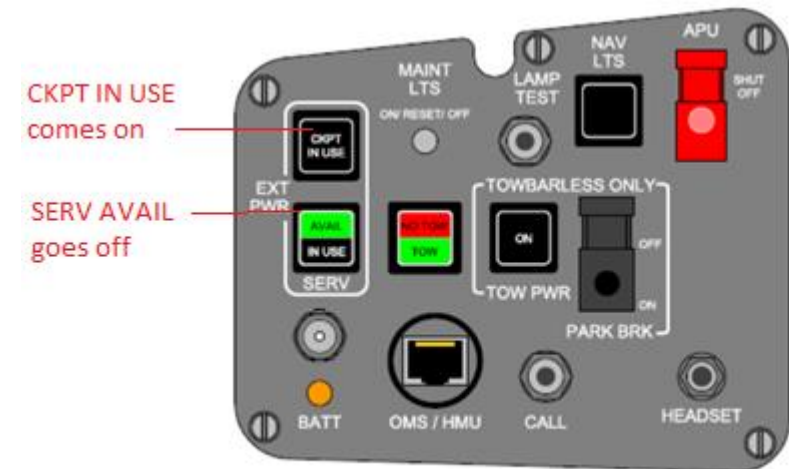
For A/C registrations: YL-CSA, YL-CSB, YL-CSC, YL-CSD, YL-CSG, YL-CSH, YL-CSI, YL-CSJ, YL-CSK, YL-CSN, YL-CSL, YL-CSM:

- Connect the power cable to the external power receptacle and make sure on the electrical towing service panel the intensity of the Push Button Annunciator (PBA) switches changes as follows:

- EXT PWR CKPT IN USE stays off
- EXT PWR SERV AVAIL comes on
- EXT PWR IN USE stays off



ELECTRICAL/TOWING SERVICE PANEL



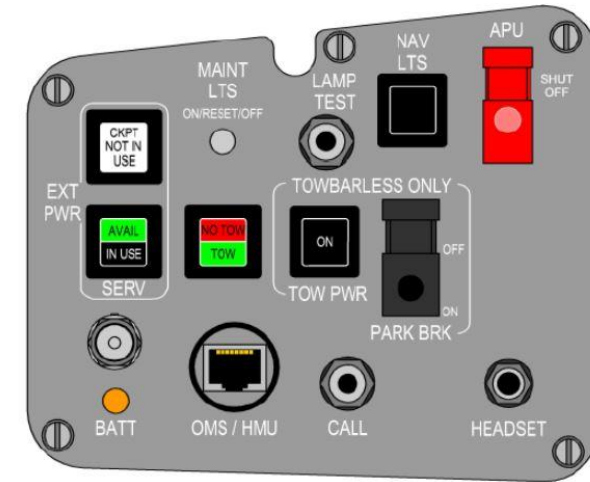
ELECTRICAL/TOWING SERVICE PANEL

- When flight crew switches to external power:
 - CKPT IN USE comes on
 - EXT PWR SERV AVAIL goes off

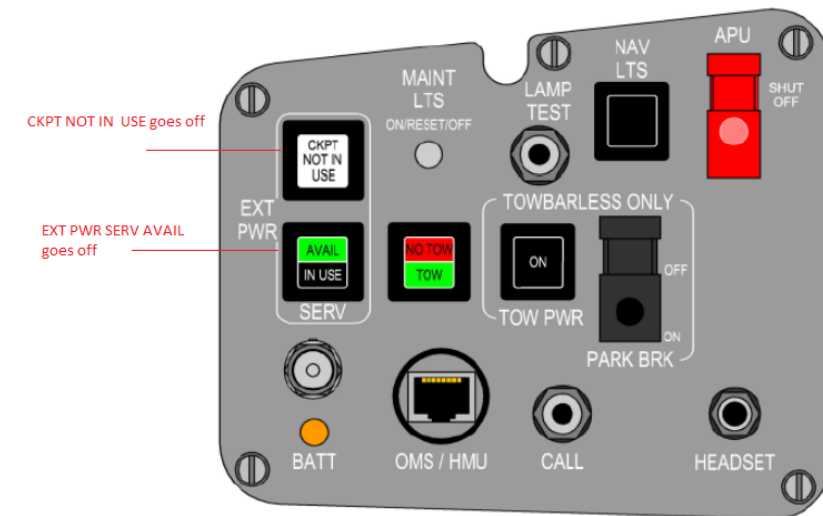
EXTERNAL ELECTRICAL POWER

For all other A220-300 A/C registrations:

- Connect the power cable to the external power receptacle and make sure on the electrical towing service panel the intensity of Push Button Annunciator (PBA) switches changes as follows:
 - CKPT NOT IN USE comes on
 - SERV AVAIL comes on
 - PWR IN USE stays off
- When flight crew switches to external power:
 - CKPT NOT IN USE goes off
 - PWR SERV AVAIL goes off



ELECTRICAL/TOWING SERVICE PANEL



ELECTRICAL/TOWING SERVICE PANEL

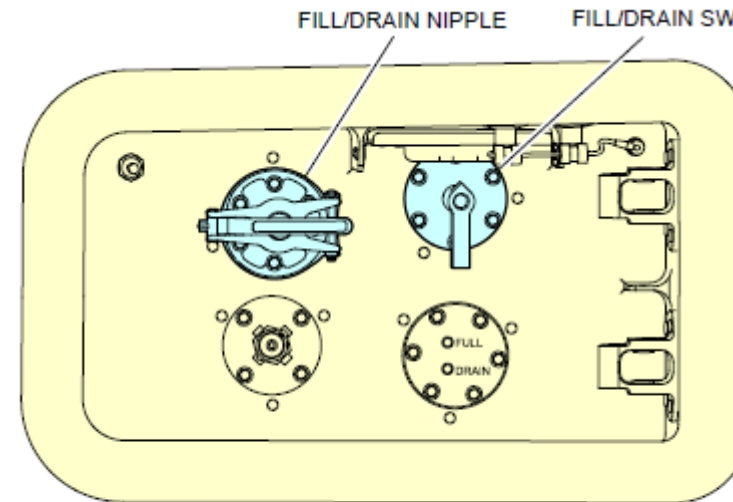
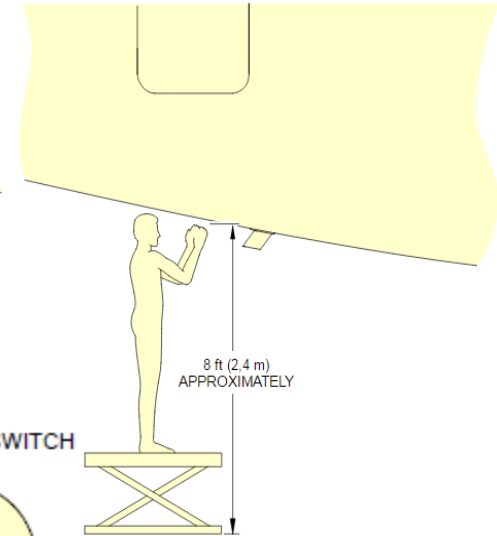
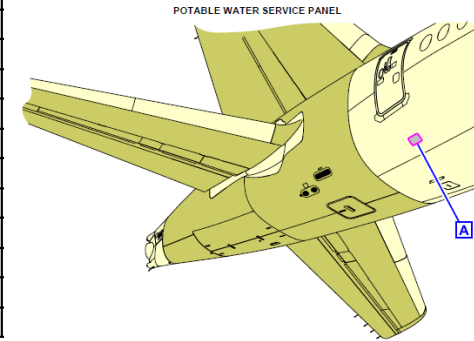
WATER SERVICING

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Potable Water System

- Water service panel clearance from the ground is approximately 2.4m!
- The quantity of water (10%-100%) is set by crew on the Cabin Management System (CMS) screen in cabin. 100% is 159 liters.
- Set switch to FILL or DRAIN in order to uplift or drain water. Select back to FLIGHT position once completed.
- Make sure that the fill pressure is at 25 to 60psig (172.35 to 413.68 kPa).
- The FULL light illuminates when the full level is reached and the valve closes automatically when preselected quantity is achieved. During the FILL mode, both water pumps are disabled to prevent back pressure.
- DRAIN light illuminates when switch is set to DRAIN position and light goes off when completed.
- Water servicing system and tank are heated. Aircraft must be energized during ground time, and it automatically switches on when outside temperature is +5°C or less and off when +10°C.
- NOTE:** please refer to GOM for full instructions

| Description | Volume |
|-----------------|--------|
| | L |
| 10% Water tank | 15.9 |
| 20% Water tank | 31.8 |
| 30% Water tank | 47.6 |
| 40% Water tank | 63.5 |
| 50% Water tank | 79.4 |
| 60% Water tank | 95.3 |
| 70% Water tank | 111.1 |
| 80% Water tank | 127.0 |
| 90% Water tank | 142.9 |
| 100% Water tank | 158.8 |



WATER AND WASTE SERVICING

LEGEND



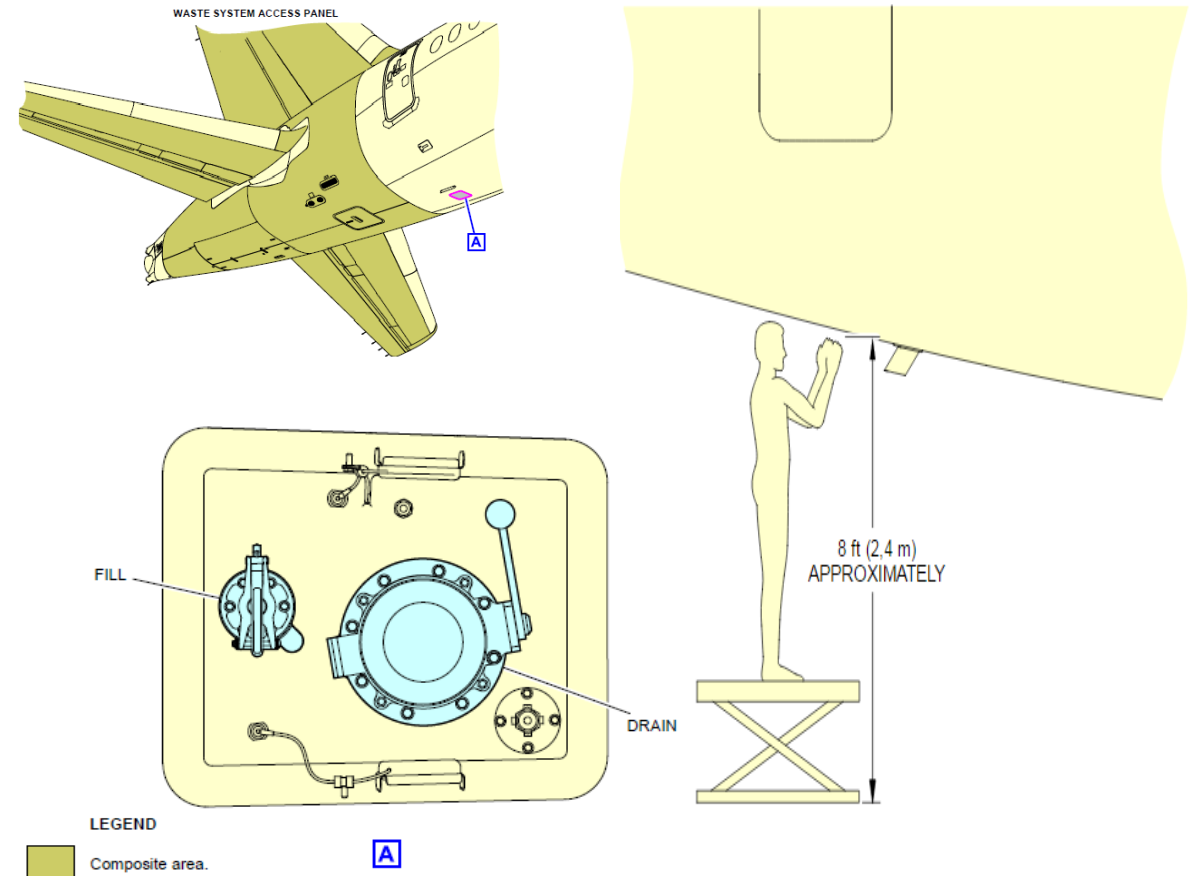
Composite area.

A

WASTE SERVICING

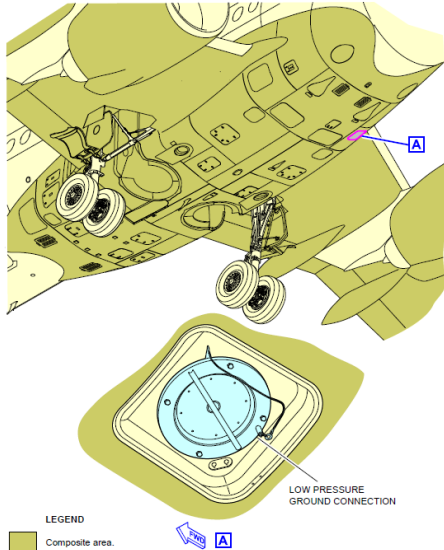
Waste system

- Waste servicing panel clearance from the ground is approximately 2.4 meters!
- There is just one panel located on the lower AFT fuselage.
- It is recommended that the tank be rinsed for 2-5 minutes at 40 psi. Rinsing should continue until the tank is drained completely. After rinsing 7.5 liters precharge fluid should be added.
- Waste servicing system and tank are heated. Aircraft must be energized during ground time, and it automatically switches on when outside temperature is $+5^{\circ}\text{C}$ or less and off when $+10^{\circ}\text{C}$.
- **NOTE:** please refer to GOM for full instructions



WATER AND WASTE SERVICING

LOW AND HIGH PRESSURE GROUND CONNECTIONS



Technical specifications:

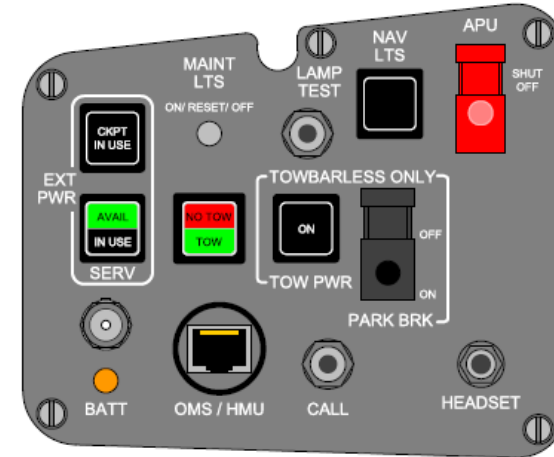
- Low pressure (air conditioning/heating)
 - Discharge pressure range: [0.7 to 1.0 PSIG (Max)] or [0.05 to 0.07 bar (Max)]
 - Temp range: [5°C to 50°C Max]
 - Max airflow: 140 lb/min
 - Fitting dimension: 20.32cm
- High pressure (air starter)
 - Bleed pressure range: [30 to 45 PSIG (Max)] or [2.07 to 3.10 bar (Max)]
 - Bleed temperature range: [170°C to 232°C Max]
 - Airflow range: 100 lb/min to 140 lb/min
 - Fitting dimension: 7.62cm



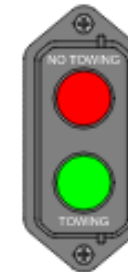
| Requirements | Conditions | Pressure | Airflow | Temperature |
|--|--|------------------------|-------------------------|-------------|
| Engine starting | -time allowed during start (to starter cutout) is 90 seconds -time to idle on ground is 45 seconds minimum -no bleed air extraction is permitted during start sequence | Inlet pressure 45 PSIG | 150 lb/min 68,04 kg/min | |
| To cool cabin to 24 °C (recirculation fan on) | | 0.6 psig (4.1 kPa g) | 135 lb/min; (61 kg/min) | 5 °C |
| To heat cabin to 24 °C (recirculation fan on) | | 0.9 psig (6.2 kPa g) | 135 lb/min; (61 kg/min) | 40 °C |

PUSHBACK/TOWING

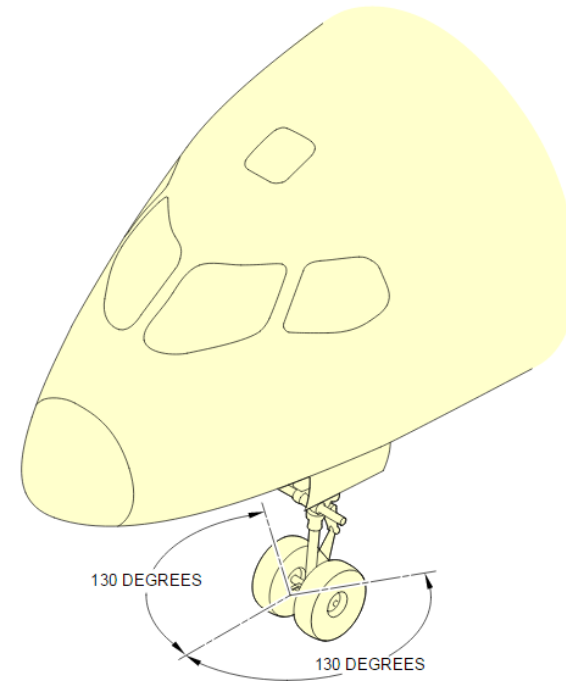
- The aircraft is designed for towing and push back with a tractor and tow bar, as well as with selected towbarless ground handling vehicles.
- Towing/pushback is permitted only with A220-300/Bombardier C series type certified towbars and towbarless vehicles.
- The steering angle limit when towing is 130° either side of center with upper and lower torque links connected or disconnected.
- Towbarless only and parking break switches on the electrical/towing panel are provided to enable towing of the aircraft without entering the flight deck. It can be used only when towing without engineer or captain in the cockpit is confirmed/approved. Aircraft must be completely power loss.
- Nosewheel steering system is disengaged from flight deck (no pin required). Verbal confirmation from flight deck crew must be received before connecting towbar or towbarless tractor!!
- Green tow(ing) light on electrical/towing panel and towing control box indicate that both - nose wheel steering and parking break are deactivated and aircraft is ready for towing/pushback.



ELECTRICAL/TOWING
SERVICE PANEL



TOWING CONTROL BOX



SUMMARY

- Low clearance when positioning baggage belt.
- Tail tipping. Follow offloading sequence from AFT and loading in FWD holds if load in AFT holds exceed 500kgs
- Systems on board are sensitive to electrical power disturbances. Never disconnect ground power without flight crew confirmation.
- Nose wheel steering is disengaged from flight deck. No pin required. No buttons should be pressed on electrical/towing panel.
- Always confirm with cockpit crew prior connection of towbar or towbarless vehicle

THANK YOU!

TOGETHER WE MAKE SURE THE
TRAVEL IS SAFE AND HEALTHY

