CHAPTER 2

DESCRIPTION OF AIRCRAFT FEATURES

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CHAPTER 2

DESCRIPTION OF AIRCRAFT FEATURES

2.1 GENERAL DESCRIPTION OF THE AIRCRAFT

The C-295 is a twin-engine, high-wing monoplane, equipped with pressurization and air conditioning systems, and designed for land-based, medium-range operations. External dimensions and general aircraft configuration are shown in Figure 2-2. The C-295 is an aircraft mainly intended for cargo transport, although it may be easily configured for transport of vehicles, troops, and air evacuation missions. The aircraft is equipped with a palletized cargo handling system, compatible with the standard 463 L, whose features allow performing all kinds of airdrop.

On the C-295, the Reference Datum Line (RDL), origin of all longitudinal measurements, is 1587 mm forward of the nose of the aircraft. The main framework of the fuselage is made up of ribs, referred to as frames (FR), which also serve as references to designate positions within the cargo cabin. Correspondence between frames (FR) and their distances to the RDL, known as fuselage stations (STA), are shown in Figure 2-3 and Figure 4-7. In the cargo cabin, the distance between two consecutive frames is 508 mm (20 in.) from FR12 to FR29, and 370 mm (14.56 in.) from FR29 to FR30.

The fuselage of the aircraft is divided into three sections: the forward section or flight deck, from FR1 to FR10; the center section or cargo cabin, from FR10 to FR30; and the aft section, which includes the cargo ramp (FR30 to FR38), the cargo door and the aircraft tail.

The aircraft has a crew door located on the forward right side of the fuselage, two doors for the airdrop of paratroopers, located one on each side of the aft section of the cargo cabin, and an emergency-escape door on the forward left side of the fuselage. The aft cargo door and ramp permit onloading of passengers, troops, vehicles, etc. With the ramp in the horizontal position and the aid of an auxiliary vehicle, equipment restrained on sliding platforms can be onloaded, or wheeled loads can be transferred directly to the cargo cabin.

The C-295 has 70 seats for transport of troops or passengers. When configured for MEDEVAC, up to 24 stretchers plus seven attendants can be airlifted. For personnel airdrop missions, the C-295 can accommodate up to 50 paratroopers, including the jumpmaster. With the AM109 Cargo Handling and Aerial Delivery System (CHADS), four standard HCU-6/E pallets can be transported in the cargo cabin.

2.2 DIMENSIONS OF THE CARGO CABIN

The cargo cabin extends from FR10 (STA 4496) to FR30 (STA 17190). It is 12.694 m long (41.65 ft) by 2.344 m wide (92.28 in.) at cargo floor level. The usable height of the cargo cabin is 1.716 m (67.5 in.) (see Figure 2-4). The cargo floor has four longitudinal restraint tracks for installing the framing for a center row of seats, stretchers, and removable tiedown rings for securing loads. With the AM109 installed, available width at the cargo floor is 2.181 m (85.9 in.). The sidewalls of the cargo cabin have marks indicating fuselage station and frame number to be used as position references.

NOTE: If flight is performed with AM109 CHADS siderails removed, replace siderails with the cover assemblies of the lateral socles to cover the zone that remains disclosed. Intermediate roller trays may be removed as required.

The cargo ramp is 2.831 m (111.41 in.) long. The ramp, when closed, extends from FR30 (STA 17190) to FR38 (STA 19894), due to the angle created by the ramp and the cargo cabin floor. When fully open to ground level, the ramp presents a slope between 15.1 and 19.8 degrees, depending on the aircraft gross weight and position of its center of gravity. When closed, the cargo door extends from FR38 (STA 19894) to FR46 (STA 22598). The ramp also has four restraint tracks for installation of removable tiedown rings.

Figure 2-4 depicts interior dimensions for the cargo cabin and ramp, as well as available height at different cross sections. Figure 2-5 shows different heights of the cargo floor at the ramp crest, and the corresponding ramp slope for extreme maximum and minimum gross weight conditions, and most forward and aft limits of the permissible CG range, in terms of % MAC.

NOTE: The portion of cargo floor between FR10 and FR12, and the entire length of the cargo door, are not usable for loading purposes.

NOTE: To determine the maximum allowable height and overhang length for wheeled loads over the sloped ramp, refer to CHAPTER 4 - GENERAL LOADING PROCEDURES (Figure 4-1, Figure 4-2, Figure 4-3, Figure 4-4, Figure 4-5 and Figure 4-6).

NOTE: To determine the maximum allowable height for a load placed on the ramp, refer to Figure 4-43.

2.3 CARGO CABIN FLOOR

The cargo floor is composed of aluminum panels bolted to the longitudinal and cross beams that constitute the supporting framework of the aircraft floor (see Figure 2-6). These floor panels are separated from each other by the four restraint tracks; the cargo floor is covered by sheets of non-skid material to facilitate vehicle grip and movement of personnel.

2.3.1 Restraint tracks

The four restraint tracks (see Figure 2-6) serve, among other uses, for installing removable tiedown rings, fastening the intermediate roller trays that are part of the AM109 CHADS, and attaching the supporting frame for installation of stretchers in MEDEVAC configuration. The right inboard restraint track is also used for attaching the stanchions of the supporting frame for the center row of seats. The restraint tracks are located at BL330 and BL990, left and right, and extend to the entire length of the cargo cabin and ramp floor.

2.3.2 Strengthened zones

The cargo floor is strengthened on both sides to withstand the weight imposed by wheeled loads in flight (see Figure 2-7). These lateral strips stretch from FR15 to FR30. There are two different strips on each side, symmetrical with each other with respect to the longitudinal axis of the aircraft. Zone 1 extends from the BL990 (outboard restraint track) to BL565, and it is 425 mm (16.7 in.) wide. Zone 2 extends from BL565 to BL330 (inboard restraint track), and it is 235 mm (9.3 in.) wide. Loading capacities for both zones, in flight and on the ground, are shown in Figure 2-1 and Table 2-1.

2.3.3 Center zone

The center zone is the strip between both inboard restraint tracks (BL 330 left and right). Floor panels on the center zone are not strengthened, so loading capacities on this strip is lower than on zones 1 and 2. The central strip is 660 mm (26 in.) wide. Allowable loads for the center strip are shown in Figure 2-1 and Table 2-1.

2.4 CARGO FLOOR LOADING CAPACITIES

The cargo cabin has a general structural capacity between 1000 and 1300 kg/linear meter, depending on the zone. A linear meter is a strip equal to the total width of the cargo floor by one meter in length. Nevertheless, depending on how the load rests on the cargo floor, not all zones can withstand the same loads in flight. For a better understanding and easier reference to floor loading capacities, the cargo cabin and ramp are divided into compartments (see Figure 2-7). A compartment is a linear strip of the cargo floor having common physical characteristics in terms of construction and capacities; there is not a physical division (bulkhead) between consecutive compartments.

Regarding load distribution over the cargo floor, there are two main limitation categories: aircraft structural capabilities to withstand loads, on which beams, formers, and ribs have a bearing; and strength of floor panels themselves. For each load-resting category, (bulk, wheeled or palletized cargo), the former is expressed in terms of linear load (weight per length unit) or absolute figures, while the latter is expressed in terms of contact pressure (weight per area unit).

Table 2-1 depicts cargo floor loading capacities for each of the resting-support categories. The table shows different capabilities for on-the-ground onloading/offloading operations, and for in-flight conditions. In-flight capabilities include effects of downward accelerations caused by maneuvering or flight through turbulence, while on-the ground capabilities contemplate trailing of a cargo item during onloading along the cargo cabin to its final position for airlift, or during offloading. On-the-ground capacities are equal or greater than those in flight, so it is possible to move a cargo item to a position in the cargo cabin strong enough to withstand that load in flight. Capacities for each of the resting categories are explained in the following paragraphs.

2.4.1 Concentrated loads

Concentrated load is defined as a cargo item whose weight is concentrated in a very small area on the cargo floor when compared to the total size and weight of the item. This kind of items (crates on small cleats, chain-type vehicles, etc.) may damage and even perforate the aluminum cargo floor panels.

Expressed as contact pressure (weight/surface), Figure 2-1 shows floor loading capacities for concentrated loads, for areas of more or less than 80 cm^2. Figure 4-24 depicts some calculation examples of contact-pressure for different geometric shapes.

2.4.2 Bulk loads

This category, expressed in terms of linear capacities, reflects the capabilities of the framework for loads resting directly on the cargo floor, on each of the longitudinal strips. Regarding bulk loads, both reinforced lateral strips (zones 1 and 2) are considered only one.

NOTE: Capacities for concentrated loads, concerning floor aluminum panels, must also be observed when considering bulk loads.

2.4.3 Wheeled loads

Any cargo item resting on wheels falls under this category. Figure 2-1 indicates the maximum allowable weight per individual axle in a vehicle, with different figures for each of the strengthened lateral strips. In the C-295, the minimum distance between consecutive axles to be considered as individual is 90 cm (35 in.).

CAUTION: TANDEM AXLES LESS THAN 90 CM (35 IN.) APART WILL BE CONSIDERED AS A SINGLE AXLE FOR FLOOR LOADING CAPACITIES AND CG COMPUTATIONS. THE SUM OF BOTH AXLE WEIGHTS WILL NOT EXCEED MAXIMUM ALLOWABLE FIGURES.

2.4.3.1 PNEUMATIC TIRES

In the C-295, an internal pressure equal to 7.03 kg/cm^2 (100 PSI, 6.89 BAR) is the maximum permissible for the tire to be sufficiently flexible to prevent it from creating stress that might damage the floor panels, when positive G conditions (up to down) are experienced. Whenever internal tire pressure is lower than that figure, it will not be necessary to observe concentrated load limitations for vehicles resting on any of both strengthened zones, since contact area will be increased as the tire presses against the cargo floor. Pneumatic tires with an internal pressure higher than 7.03 kg/cm^2 must be considered solid tires, as well as those whose diameter is less than 20 cm, regardless of their internal pressure.

Tire internal pressure shall not be deflated at random in any case, since that pressure is established by the vehicle manufacturer according to the weight supported by each tire. Reduction at random of nominal pressure decreases tire internal consistency, which may cause the seal to break in flight.

NOTE: Internal pressure in pneumatic tires may be set to lower if a specific internal pressure for air transport has been established and properly certified, according to vehicle characteristics; air transport internal tire pressure must guarantee that the rim will not contact the cargo floor during flight in turbulence, and that steering control problems will not be encountered during loading/offloading operations, to prevent the vehicle frame from striking the fuselage of the aircraft.

2.4.3.2 TONGUE LOAD

This category indicates the maximum weight to be imposed by the tongue, steering yoke, center wheel, or center resting point over the cargo floor central strip for trailer-type cargo items, which usually have one axle only. Additionally, concentrated load limitations must also be observed for this type of cargo, to include pneumatic tires in spite of their internal pressure. In order to observe safe concentrated load limitations, the method for computing contact pressure for pneumatic tires is shown in Figure 4-25.

2.4.3.3 SOLID TIRES (HARD RUBBER, METALLIC OR OTHER MATERIALS)

During onloading and airlift, vehicles having hard rubber tires, pneumatic tires with more than 7.03 kg/cm^2 internal pressure, with a diameter smaller than 20 cm, metallic, or other materials create loads on the cargo floor far more critical than those created by pneumatic tires. In this case, contact pressure is concentrated along a very thin ribbon on each wheel. Tire width and length are determining factors when airlifting this kind of wheeled loads.

Cargo floor capacities for solid tires are shown in Table 2-1. On-the-ground capacities indicate whether rolling shoring will be required during loading/offloading (see paragraph 4.11.1.2).

2.4.4 Palletized loads

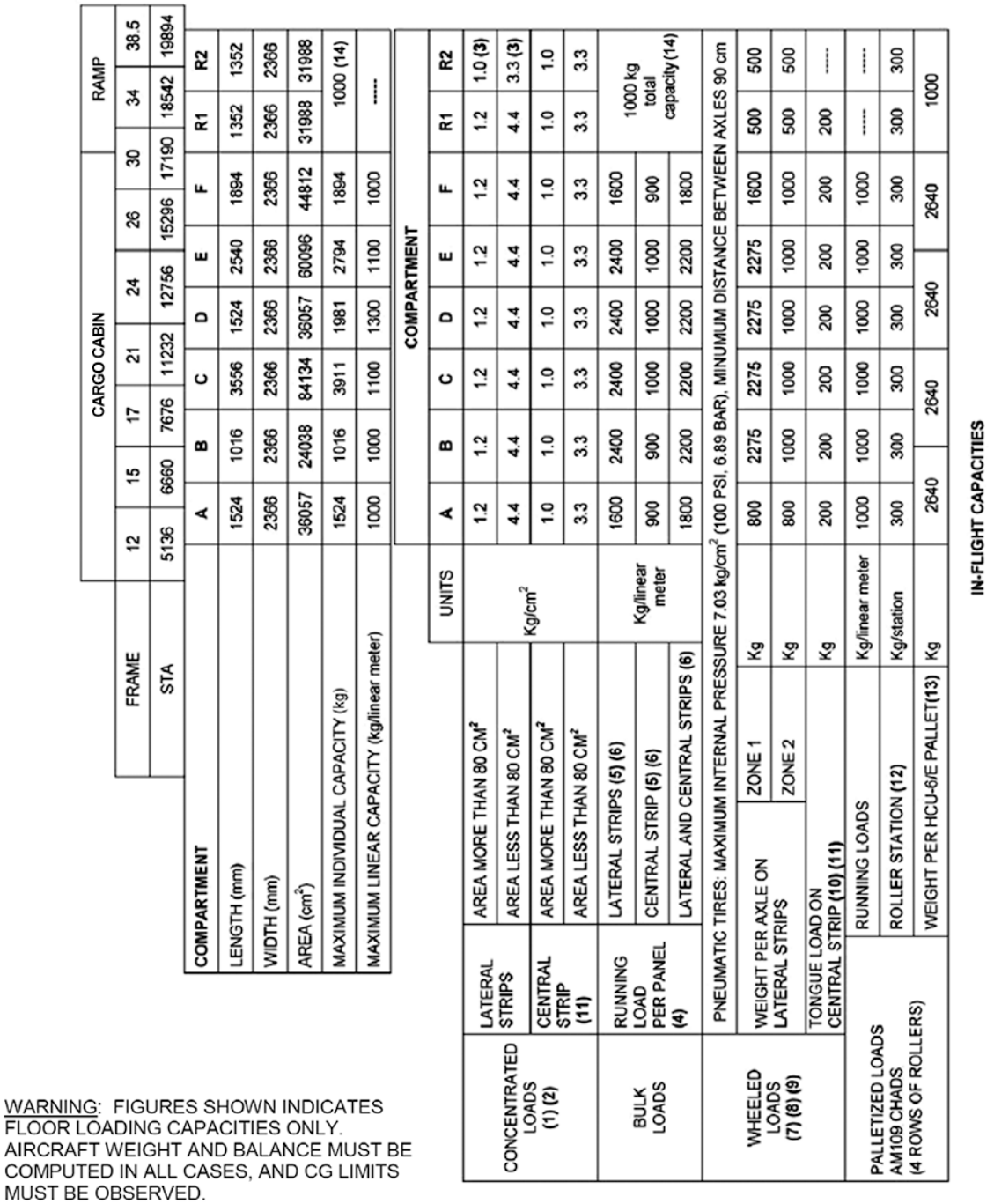
This category shows the aircraft loading capacities for HCU-6/E logistic pallets or airdrop platforms (see CHAPTER 7 - AIRDROP OF PERSONNEL AND EQUIPMENT) with the AM109 CHADS. Allowable weights are presented in terms of linear load, weight per roller station, and maximum weight per single pallet. Figure 4-42 depicts the HCU-6/E logistic pallet, and Figure 4-44 shows pallet positions in the cargo cabin.

Figure 2-9 shows the procedure to determine if a cargo item resting on a pallet is within the capabilities of the intermediate rollers. A roller station is defined as a set of four rollers laterally aligned on a fuselage station. Consecutive rollers are 25.4 cm (10 in.) longitudinally apart; therefore, when the cargo resting points are less than 25.4 cm long, only one roller station will be computed, since it will be impossible to determine the exact position of the item with respect to the rollers beneath the pallet. The table limits apply whether one roller or all four at a roller station are contacted. If a cargo item exceeds the limit per roller station, the item can be rotated or shoring can be used to achieve a longer resting point.

CAUTION: TO ACHIEVE MAXIMUM CAPABILITIES, ALL FOUR ROLLER TRAYS FORMING EACH ROW MUST BE INSTALLED ON THE RESTRAINT TRACKS REFERENCE MARKS, SO THE 25.4 CM (10 IN.) GAP BETWEEN CONSECUTIVE ROLLERS IS MAINTAINED, AND THERE ARE ALWAYS FOUR ROLLERS LATERALLY ALIGNED (ROLLER STATION).

2.4.5 Shoring

When the weight or pressure exerted by a cargo item on the cargo floor exceeds the maximum allowable values, planks of wood may be used underneath the item to shore the load, so distributing the weight over a larger surface, or transmitting that weight to a stronger area of the cargo floor. Use of shoring is covered in detail in paragraph 4.11.



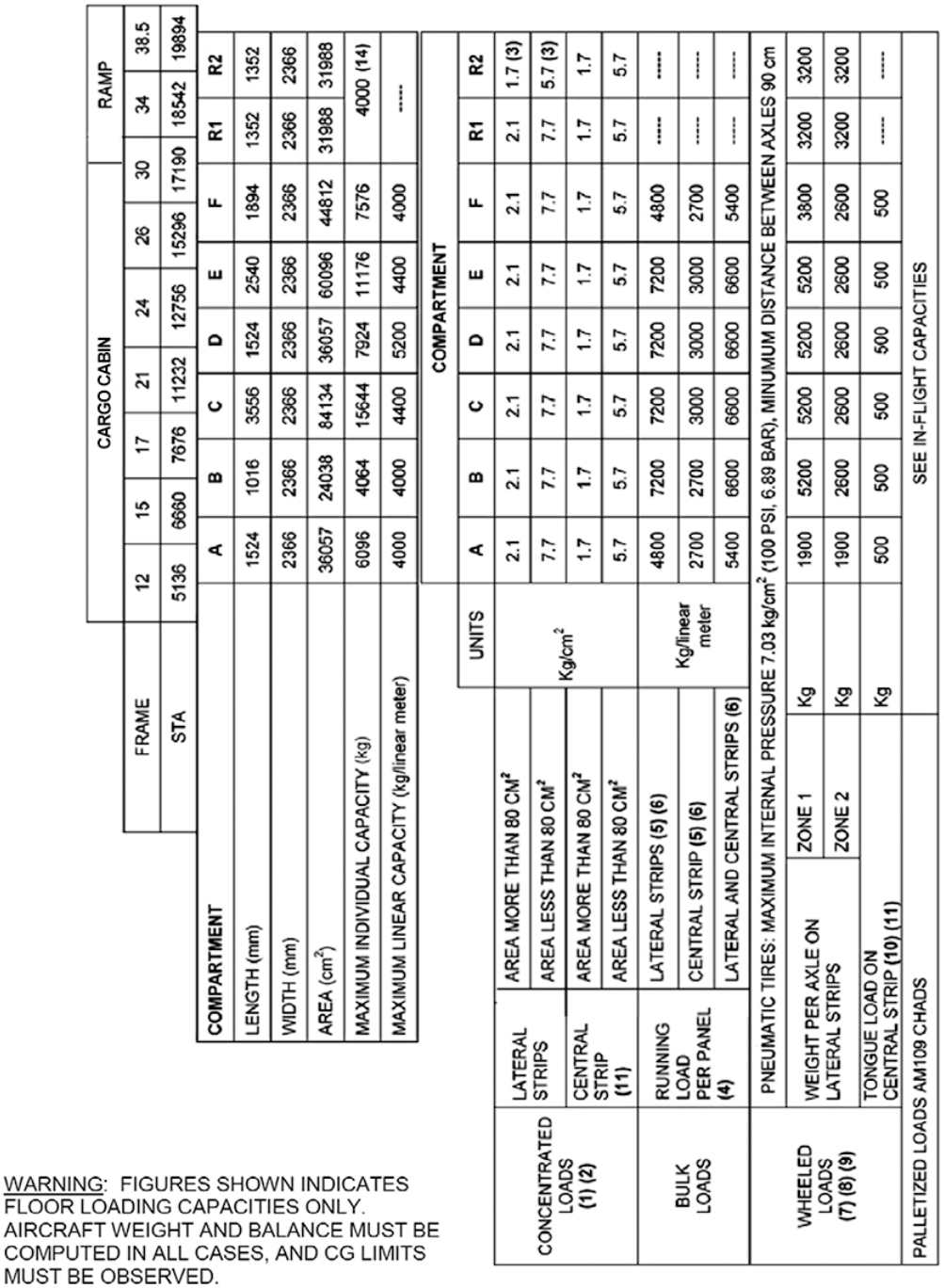
	FRAME	CARGO CABIN									RAMP	
		12	15	17	21	24	26	30	34	38.5		
	STA	5136	6660	7676	11232	12756	15296	17190	18542	19894		
	COMPARTMENT	A	B	C	D	E	F	R1	R2			
	LENGTH (mm)	1524	1016	3556	1524	2540	1894	1352	1352			
	WIDTH (mm)	2366	2366	2366	2366	2366	2366	2366	2366			
	AREA (cm^2)	36057	24038	84134	36057	60096	44812	31988	31988			
	MAXIMUM INDIVIDUAL CAPACITY (kg)	1524	1016	3911	1981	2794	1894	1000 (14)				
	MAXIMUM LINEAR CAPACITY (kg/linear meter)	1000	1000	1100	1300	1100	1000	-----				
						COMPARTMENT						
		UNITS	A	B	C	D	E	F	R1	R2		
CONCENTRATED LOADS (1) (2)	LATERAL STRIPS	AREA MORE THAN 80 CM^2	Kg/cm^2	1.2	1.2	1.2	1.2	1.2	1.2	1.0 (3)		
		AREA LESS THAN 80 CM^2		4.4	4.4	4.4	4.4	4.4	4.4	3.3 (3)		
	CENTRAL STRIP (11)	AREA MORE THAN 80 CM^2		1.0	1.0	1.0	1.0	1.0	1.0	1.0		
		AREA LESS THAN 80 CM^2		3.3	3.3	3.3	3.3	3.3	3.3	3.3		
BULK LOADS	RUNNING LOAD PER PANEL (4)	LATERAL STRIPS (5) (6)	Kg/linear meter	1600	2400	2400	2400	1600			1000 kg total capacity (14)	
		CENTRAL STRIP (5) (6)		900	900	1000	1000	900				
		LATERAL AND CENTRAL STRIPS (6)		1800	2200	2200	2200	1800				
WHEELED LOADS (7) (8) (9)	PNEUMATIC TIRES: MAXIMUM INTERNAL PRESSURE 7.03 kg/cm^2 (100 PSI, 6.89 BAR), MINUMUM DISTANCE BETWEEN AXLES 90 cm											
	WEIGHT PER AXLE ON LATERAL STRIPS	ZONE 1	Kg	800	2275	2275	2275	1600	500	500		
		ZONE 2	Kg	800	1000	1000	1000	1000	500	500		
	TONGUE LOAD ON CENTRAL STRIP (10) (11)		Kg	200	200	200	200	200	200	-----		
PALLETIZED LOADS AM109 CHADS (4 ROWS OF ROLLERS)	RUNNING LOADS		Kg/linear meter	1000	1000	1000	1000	1000	-----	-----		
	ROLLER STATION (12)		Kg/station	300	300	300	300	300	300	300		
	WEIGHT PER HCU-6/E PALLET(13)		Kg	2640	2640	2640	2640	2640	1000			

IN-FLIGHT CAPACITIES

WARNING: FIGURES SHOWN INDICATES FLOOR LOADING CAPACITIES ONLY. AIRCRAFT WEIGHT AND BALANCE MUST BE COMPUTED IN ALL CASES, AND CG LIMITS MUST BE OBSERVED.

NOTE: Cargo floor between FR10 (STA 4496) and FR12 (STA 5136) is not usable for loading purposes.

Figure 2-1 Cargo floor division and loading capacities per compartment (see Figure 2-7) (Sheet 1 of 4)



		CARGO CABIN								RAMP	
FRAME	12	15	17	21	24	26	30	34	38.5
STA	5136	6660	7676	11232	12756	15296	17190	18542	19894

COMPARTMENT	A	B	C	D	E	F	R1	R2
LENGTH (mm)	1524	1016	3556	1524	2540	1894	1352	1352
WIDTH (mm)	2366	2366	2366	2366	2366	2366	2366	2366
AREA (cm^2)	36057	24038	84134	36057	60096	44812	31988	31988
MAXIMUM INDIVIDUAL CAPACITY (kg)	6096	4064	15644	7924	11176	7576	4000 (14)	
MAXIMUM LINEAR CAPACITY (kg/linear meter)	4000	4000	4400	5200	4400	4000	-----	

			UNITS	COMPARTMENT							
				A	B	C	D	E	F	R1	R2
CONCENTRATED LOADS (1) (2)	LATERAL STRIPS	AREA MORE THAN 80 CM^2	Kg/cm^2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.7 (3)
		AREA LESS THAN 80 CM^2		7.7	7.7	7.7	7.7	7.7	7.7	7.7	5.7 (3)
	CENTRAL STRIP (11)	AREA MORE THAN 80 CM^2		1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
		AREA LESS THAN 80 CM^2		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
BULK LOADS	RUNNING LOAD PER PANEL (4)	LATERAL STRIPS (5) (6)	Kg/linear meter	4800	7200	7200	7200	7200	4800	-----	-----
		CENTRAL STRIP (5) (6)		2700	2700	3000	3000	3000	2700	-----	-----
		LATERAL AND CENTRAL STRIPS (6)		5400	6600	6600	6600	6600	5400	-----	-----
WHEELED LOADS (7) (8) (9)	PNEUMATIC TIRES: MAXIMUM INTERNAL PRESSURE 7.03 kg/cm^2 (100 PSI, 6.89 BAR), MINUMUM DISTANCE BETWEEN AXLES 90 cm										
	WEIGHT PER AXLE ON LATERAL STRIPS	ZONE 1	Kg	1900	5200	5200	5200	5200	3800	3200	3200
		ZONE 2	Kg	1900	2600	2600	2600	2600	2600	3200	3200
	TONGUE LOAD ON CENTRAL STRIP (10) (11)		Kg	500	500	500	500	500	500	-----	-----
PALLETIZED LOADS AM109 CHADS	SEE IN-FLIGHT CAPACITIES										

LOADING/OFFLOADING CAPACITIES (ON THE GROUND)

WARNING: FIGURES SHOWN INDICATES FLOOR LOADING CAPACITIES ONLY. AIRCRAFT WEIGHT AND BALANCE MUST BE COMPUTED IN ALL CASES, AND CG LIMITS MUST BE OBSERVED.

NOTE: Cargo floor between FR10 (STA 4496) and FR12 (STA 5136) is not usable for loading purposes.

Figure 2-1 Cargo floor division and loading capacities per compartment (see Figure 2-7) (Sheet 2 of 4)

WARNING: FIGURES SHOWN INDICATE FLOOR LOADING CAPACITIES ONLY. AIRCRAFT WEIGHT AND BALANCE MUST BE COMPUTED IN ALL CASES, AND CG LIMITS MUST BE OBSERVED.

NOTE: Cargo floor between FR10 (STA 4496) and FR12 (STA 5136) is not usable for loading purposes.

CONCENTRATED LOADS

1. An item whose weight is concentrated on a very small area when compared to the total weight and size of the item. It may damage or even perforate the cargo floor panels.

2. Gerenal capacities for concentrated loads, when contact surface is larger or smaller than 80 cm^2. If more accurate calculations are needed for different contact areas, refer to graphics shown in Figure 2-8.

3. Central strip capacity is applicable to the total floor width of the second ramp compartment (R2).

BULK LOADS

4. When a running load, or the combined weight of several items, exceeds the maximum linear capabilities in a determined position or compartment, the maximum load per linear unit may be increased by computing a longer portion of cargo floor, until a linear density equal or lower than the compartment linear capacity is obtained, provided no additional loads are placed within that area.

   EXAMPLE: A crate 1 meter long, and weighing 2400 kg, resting symmetrically on both lateral strips, may be transported on compartments D and E, provided no loads are placed on a 70-cm strip forward and aft of the crate (2400 kg divided by 2.4 m = 1000 kg/m <1100 kg/m).

5. Noted capacities for both lateral strips loaded simultaneously, and no loads are placed on the central strip. Loads must be symmetrical about the aircraft centerline. Both lateral strips and central strip must not be loaded simultaneously to maximum figures shown in the table (see Note 6).

6. When both lateral strips and central strip are loaded simultaneously, maximum allowable weights are distributed as follows:

Compartments A and F	Each lateral strip	600 kg/m
	Central strip	600 kg/m
Compartments B to E	Each lateral strip	800 kg/m
	Central strip	600 kg/m

Figure 2-1 Cargo floor division and loading capacities per compartment (see Figure 2-7) (Sheet 3 of 4)

WHEELED LOADS

7. Cargo on pneumatic tires. See Table 2-1 for solid tires (hard rubber or other materials).

8. Pneumatic tires with more than 7.03 kg/cm^2 (100 PSI, 6.89 Bar) internal pressure will considered solid regarding floor loading capabilities (see Table 2-1)

9. In spite of their internal pressure, pneumatic tires less than 20 cm in diameter will be considered solid regarding floor loading capabilities (see Table 2-1).

10. Maximum weight to be imposed by the tongue, steering yoke, center wheel, or center resting point over the cargo floor central strip for trailer-type cargo items, which usually have one axle only.

11. Concentrated load limitations on central strip must also be observed for center resting points or pneumatic tires having less than 7.03 kg/cm^2 (100 PSI, 6.89 Bar) internal pressure. The method for computing contact pressure for pneumatic tires is shown in Figure 4-25.

PALLETIZED LOADS

12. A roller station is a set of four rollers laterally aligned on a fuselage station. Distance between two consecutive rollers is 26 cm (10 in.) (see Figure 2-9). Consecutive roller trays forming each row must be installed on the restraint tracks reference marks in order to maintain this distance.

13. Weight per individual HCU-6/E pallet locked in the AM109 CHADS (refer to Figure 4-44 for pallet positions). For married pallets, weight supported by each pallet will be considered separately. For airdrop platforms and containers, compute maximum capacity according to the length of the sliding base (CHAPTER 7 – AIRDROP OF PERSONNEL AND EQUIPMENT).

CARGO ON RAMP

14. The maximum load that the ramp actuators can lift in order to close the ramp is limited as follow.

    - From fully open ramp to horizontal position, up to 1000 kg.

    - From horizontal position to fully close position (locked door), see Figure 2-47.

    CAUTION: IN USUAL OPERATION, TO LOAD ON RAMP, THE LOAD SHOULD BE UNIFORMLY DISTRIBUTED ON THE RAMP, ON PALLET OR RAMP SURFACE, AND PROPERLY ATTACHED TO AVOID LOAD MOVEMENTS.

Figure 2-1 Cargo floor division and loading capacities per compartment (see Figure 2-7) (Sheet 4 of 4)

SOLID TIRES. INFLIGHT CAPACITIES						
KILOGRAMS PER CENTIMETER OF TIRE WIDTH (POUNDS PER INCH OF TIRE WIDTH)						
Tire diameter cm (in.)	Without shoring		2 cm (3/4 in.) shoring		2.5 cm (1 in.) shoring	
	Not-reinforced panel (central strip)	Reinforced panel (lateral strips)	Not-reinforced panel (central strip)	Reinforced panel (lateral strips)	Not-reinforced panel (central strip)	Reinforced panel (lateral strips)
5 (2)	24 (134.4)	32 (179.2)	60 (336)	80 (448)	72 (403.2)	96 (537.6)
10 (4)	31 (173.6)	41 (229.6)	77.5 (434)	102.5 (574)	93 (520.8)	123 (688.8)
15 (6)	38 (212.8)	51 (285.6)	95 (532)	127.5 (714)	114 (638.4)	153 (856.8)
20 (8)	46 (257.6)	61 (341.6)	115 (644)	152.5 (854)	138 (772.8)	183 (1024.8)
25 (10)	53 (296.8)	70 (392)	132.5 (742)	175 (980)	159 (890.4)	200 (1120)
30 (11.8)	60 (336)	80 (448)	150 (840)	200 (1120)	180 (1008)	240 (1344)

NOTE: Maximum loads per wheel (without shoring) are as follows:

Non-reinforced panel (central strip): 200 kg (440 lb).
Reinforced panel (lateral zones): 300 kg (660 lb).
Metallic or other material wheels: Half total loads and figures shown in the table.

NOTE: When shoring is used, maximum values increase in the same proportion as they increase with respect to maximum allowable values without shoring.

Table 2-1 Floor loading capacities for solid tires inflight

SOLID TIRES. LOADING/OFFLOADING (ON-THE-GROUND CAPACITIES)						
KILOGRAMS PER CENTIMETER OF TIRE WIDTH (POUNDS PER INCH OF TIRE WIDTH)						
Tire diameter cm (in.)	Without shoring		2 cm (3/4 in.) shoring		2.5 cm (1 in.) shoring	
	Not-reinforced panel (central strip)	Reinforced panel (lateral strips)	Not-reinforced panel (central strip)	Reinforced panel (lateral strips)	Not-reinforced panel (central strip)	Reinforced panel (lateral strips)
5 (2)	40 (224)	56 (313.6)	100 (560)	140 (784)	120 (672)	168 (940.8)
10 (4)	51.5 (288.4)	71.5 (400.4)	129 (722.4)	179 (1002.4)	155 (868)	215 (1204)
15 (6)	63 (352.8)	89 (498.4)	158 (884.8)	223 (1249)	190 (1064)	267.5 (1498)
20 (8)	76.5 (428.4)	106.5 (596)	191.5 (1070)	267 (1495)	230 (1288)	320 (1792)
25 (10)	88 (492.8)	122.5 (686)	221 (1237)	306 (1713)	265 (1484)	350 (1960)
30 (11.8)	100 (560)	140 (784)	250 (1400)	350 (1960)	300 (1680)	420 (2352)

NOTE: Maximum loads per wheel (without shoring) are as follows:

Non-reinforced panel (central strip): 300 kg (660 lb).
Reinforced panel (lateral zones): 500 kg (1100 lb).
Metallic or other material wheels: Half total loads and figures shown in the table.

NOTE: When shoring is used, maximum values increase in the same proportion as they increase with respect to maximum allowable values without shoring.

Table 2-2 Floor loading capacities for solid tires on ground

2.5 DOORS AND EXITS

The aircraft is equipped with doors that provide access to the different compartments. Each door has one or several specific purposes (see Figure 2-10):

– Crew door: door used for the entrance and exit of passengers and the aircrew.

– Paratroop doors: doors used for the airdrop of personnel.

– Emergency escape side hatch: door used for ground egress in the event of an emergency.

– Ramp and cargo door: doors used for loading/offloading operations, aerial delivery of supplies and equipment, and tailgating personnel.

The aircraft doors are operated either mechanically or hydraulically. When closed, all doors are flush with the outer contour of the fuselage. A door warning system indicates the position of the doors to the crew in the flight deck. Some of the doors provide mechanical indication regarding their position.

WARNING: DO NOT ATTEMPT TO OPERATE ANY DOOR UNLESS THE AIRCRAFT IS COMPLETELY DEPRESSURIZED.

2.5.1 Crew door

(See Figure 2-11)

The crew door allows access to the cargo cabin; it is mounted on the forward section of the fuselage, on the right side of the aircraft. Two sets of handrails keep the door in the open position. An elastic strap prevents the door from moving sharply during operation. The door is equipped with a closure mechanism and locking latches; it can be opened or closed by means of the elastic strap, and locked by means of the exterior and interior handles. For opening and closing the door from inside or outside the aircraft, refer to paragraph 3.2.

2.5.2 Paratroop doors

(See Figure 2-12)

For the airdrop of personnel, the aircraft is equipped with two paratroop doors, one at each side of the rear fuselage between FR27 and FR29. The door has two sections, the upper section and the lower section. The upper section is approximately double the size of the lower section. The upper section is supported by a guide rail located at the top of the upper door section, which permits movement during opening and closing operations. The lower section is connected to the fuselage by two vertical guide rails.

Both sections are opened inboard and stored between FR29 and FR32 when open. In the closed position, a seal installed around the door is compressed to prevent loss of cabin pressurization. The lower section can only be opened when the upper section is already opened and locked, since the upper door hides the lower door handle. The upper section can only be closed when the lower section is already closed and locked, because its closing and locking mechanism depends on the lower door closing and locking mechanism. There are several closing and locking mechanisms to keep both door sections closed or open. To keep both door sections closed, the latching-locking mechanisms have a set of rods and lateral pins, which are moved into/out of the housings in the fuselage door frame when the doors are closed/open. A hinge installed in the fuselage allows rotation of the lower section to the stored/closed position. For opening/closing procedures refer to paragraph 3.3.

2.5.3 Emergency escape hatch

(See Figure 2-13)

The emergency escape hatch is located in the forward left side of the fuselage, opposite the crew door. The door has a window, a rod-driven closing mechanism, safety locking assemblies, and an exterior/interior operation handle. For opening and closing the door from inside or outside the aircraft, refer to paragraph 3.4.

2.5.4 Cargo door and ramp

The cargo door and ramp provide the opening required for onloading/offloading freight, vehicles, and boarding of troops or passengers, as well as for the aerial delivery of cargo and the airdrop of personnel.

The cargo door is mounted on the aft section of the fuselage. It is opened upward by means of a hydraulic actuator. The ramp is mounted on the aft section of the fuselage, and attached to the structure by means of two hinges; it can be opened to the horizontal position, for loading/offloading from auxiliary vehicles and airdrop, or fully to the ground level, for loading/offloading vehicles and embarking troops or passengers; opening and closure of the ramp is accomplished by means of electrical controls, which operate two hydraulic actuators. When the ramp is in the closed position, it is held by means of hydraulically-operated locking hooks.

Electrical operation of the cargo door and ramp is accomplished from the HYDR UTILITY control unit in the flight deck, or from the ATTENDANT CONTROL panel, located on the aft left side of the cargo cabin. Both the cargo door and ramp are opened sequentially, when operated from the flight deck; when operated from the aft of the cargo cabin, they can be opened either separately or sequentially. For opening and closing the cargo door, refer to paragraph 3.5.

2.6 DOOR OPEN WARNING SYSTEM

The aircraft is equipped with a door-open warning system that provides the crew with visual indications about the locked/unlocked condition of all side doors, cargo door and ramp.

The exterior doors indicator unit (EXT DOORS) is mounted on the center instrument panel in the flight deck. This unit pictures the silhouette of the aircraft with the door locations represented by red lights. A glowing red light indicates that the corresponding door is not correctly locked. The indicator DOOR UNLK in the Integrated Engine Display System (IEDS) glows when any of the doors or the ramp is unlocked.

WARNING: IF AN OPEN DOOR IS INDICATED IN FLIGHT, THE CREWMEMBER ENCHARGED OF CHECKING THE AFFECTED DOOR MUST WEAR A SAFETY HARNESS. THE LIFELINE SHALL BE ADJUSTED TO LENGTH TO PREVENT THE PERSON FROM FALLING OUT OF THE AIRCRAFT IF THE DOOR SUDDENLY OPENS.

2.7 PERSONNEL-CARRYING EQUIPMENT

The cargo cabin has all the necessary equipment for the transport of troopers, paratroopers and civil passengers. This equipment can be as follows: troop/paratroop seats, stretchers, civil seats, VIP seats and VIP table.

2.7.1 Troop/Paratroop seats

Troop seats are mounted on both sidewalls and center of the aircraft. The aircraft can accommodate up to 70 troopers or passengers, and up to 50 paratroopers fully equipped, including jumpmasters. Troop seats allow a seating space of 46 cm per person and paratroop seats allow a seating space of 54 cm.

Up to 28 double seats, 10 single seats, and two double seats specifically designed for installation in front of the paratroop doors, can be installed on the cargo cabin. The center row support frame is composed of eight vertical stanchions, which are fastened to the ceiling and the right inboard restraint track by means of two brackets. The rods supporting the backrest of the seats are attached to the stanchions, as well as the seat support beams. When the center row of seats is not installed, the seat support beams (seat rails) are stowed on both sides of the cargo cabin, on the lower part of the sidewalls while the stanchions are stowed at the cargo door.

The seats have two positions: deployed and retracted. This latter has provisions to prevent the seat from being accidentally deployed. When deployed for use, the seats rest on two or three support legs, and they can be folded and stowed over the sidewall of the aircraft by means of a pushbutton. Seats have stowage provisions to accommodate life vests. Safety belts are independent from the seats.

Paratroop door seats are installed on the lower section of the door frame by means of screwed support brackets. The seats allow opening of the upper section of the door from inside or outside the aircraft. They have three positions: deployed for use, upper retracted, and lower retracted. The latter is used to open the lower section of the door, so the seat can be stowed against the upper section of the paratroop door.

NOTE: For installation and removal of the personnel-carrying equipment, refer to paragraph 3.6.

NOTE: For the airdrop of paratroopers, the center seat row is not used.

2.7.2 Stretchers

The cargo cabin can be configured for air evacuation of the wounded by means of NATO stretcher compatible supports on both sides of the aircraft, permanently installed as structural provisions. 24 NATO stretchers are tiered on eight stations, each of them with a capacity for three stretchers: two hanging and one resting on the cargo floor. There are two single seats for sanitary attendants, in addition to the two double seats that can be installed in front of the paratroop doors. Electrical receptacles available along the cargo cabin allow connecting different medical equipment.

NOTE: For installation and removal of stretchers, refer to paragraph 3.6.5.

2.7.3 Civil seats

The aircraft has provisions to be configured to passenger transport. The aircraft can be fitted with up to 25 civil seats, mounted on both sides of cargo cabin, in restraint tracks. The final configuration depends on mission requirements.

The civil double seat is a removable assembly fitted with two independent civil seats. Each independent seat is provided with civil-type upholstery, safety belt, a limited reclining capability and a foldable table into the rear part of the backrest. In addition, the front passenger double seats are provided with a foldable in arm table. Each seat has stowage provisions to accommodate life vests.

NOTE: For installation and removal of civil seats, refer to paragraph 3.6.6.

For civil transport, Figure 2-18 shows possible seats distribution in a civil transport configuration.

2.7.4 VIP seats

The VIP double seat is a removable assembly fitted with two independent seats. Each independent seat is provided with civil-type upholstery, safety belt, a limited reclining capability and a foldable in arm table, headrest, footrest, armrest, and stowage provisions to accommodate life vests.

The VIP seats have two positions, one position into flight direction and the other position into opposite flight direction.

NOTE: For installation and removal of VIP seats, refer to paragraph 3.6.7.

2.7.5 VIP tables

The VIP double table is a foldable table installed at the same restraint tracks in which the VIP seats are installed.

NOTE: For installation and removal of VIP tables, refer to paragraph 3.6.8.

For VIP transport, Figure 2-19 shows possible seats distribution in a VIP transport configuration.

2.8 CARGO CABIN CONFIGURATIONS

WARNING: WHEN THE AIRCRAFT IS IN A TROOP TRANSPORTATION CONFIGURATION AT MAXIMUM CAPACITY, THIS CAN CAUSE THE AIRCRAFT'S CENTER OF GRAVITY TO MOVE OUT OF THE CERTIFIED LIMITS. THE LM SHALL CHECK THE SITUATION AND REDISTRIBUTE PART OF THE LOAD IF REQUIRED (I.E. PLACE LUGGAGE ON THE RAMP ZONE).

The cargo cabin can be configured with the following transport configurations: troops transport, paratroops transport, MEDEVAC and cargo transport.

2.8.1 Troop transport

Seat configuration for carrying troopers is shown in Figure 2-15. Seating arrangement for carrying troopers is described as follows:

– 25 seats on the left-hand sidewall and 24 seats on the right-hand sidewall and 21 on the center row seats.

2.8.2 Paratroop transport

Seat configuration for carrying paratroopers is shown in Figure 2-16. Seating arrangement for carrying paratroopers is described as follows:

– 25 seats on the left-hand sidewall and 24 seats on the right-hand sidewall.

2.8.3 MEDEVAC

MEDEVAC configuration is shown in Figure 2-17. Seating arrangement for MEDEVAC is described as follows:

– 12 stretchers and three seats on each sidewall.

2.8.4 Cargo transport

The cargo configurations (see Figure 2-14) depend on the type of pallets to be airlifted:

– Five HCU-6/E pallets (one on the ramp).

– Ten HCU-12/E pallets (two of these on the ramp).

2.9 MILITARY TOILET

(See Figure 2-20)

The toilet is a removable compartment which contains the lavatory. It is located on the forward left side of the cargo cabin, between the bulkhead at FR10 and FR12. It has an overhead light, operated from the Forward Control Panel at FR10 (STA 4496), and it is vented through the baseboard grille.

2.10 ELECTRIC POWER

Electric power is required for the lighting system, interphone and public address system, opening and closure of the cargo door and ramp, and the aircraft winch. Electrical power is supplied either by the engine generators, the batteries, or an external power source.

The aircraft AC system supplies 115 or 26 volts, 400 Hz. The aircraft DC system supplies 28 volts. The two aircraft batteries supply a 24VDC source of spare electrical power to operate systems in the event of an emergency.

2.10.1 External power supply

WARNING: PRIOR TO SUPPLYING EXTERNAL ELECTRICAL POWER TO THE AIRCRAFT, ENSURE ALL CIRCUITS TO BE OPERATED ARE ISOLATED, AND A “DO NOT SUPPLY POWER” SIGN IS NOT BEING DISPLAYED.

External power supply to the aircraft electrical systems during operation on the ground guarantees that battery spare power does not decrease. By means of the external DC power supply system, 28VDC are supplied to the aircraft using an auxiliary ground power unit (GPU). The external DC power receptacle is located on the right side of the nose. Using an AC auxiliary ground power unit, 115/200VAC can be supplied to the aircraft. The external AC power receptacle is located on the right main landing gear fairing.

NOTE: Figure 2-21 and Figure 2-22 depict the external DC and AC power receptacles, respectively, as well as the corresponding switches in the flight deck. Refer to the Aircraft Maintenance Manual for detailed procedures regarding connecting external power supply.

2.11 ELECTRIC RECEPTACLES IN THE CARGO CABIN

(See Figure 2-23)

The cargo cabin is equipped with three 115V, 50Hz AC, and three 28V, 20A DC outlets. For AC supply, it is required to have previously pressed the pushbutton of the AC POWER Control Panel located on the rack at FR10 (STA 4496). Their location is as follows:

A. The forward outlets are next to the Forward Control Panel, between FR10 and FR11 (STA 4496 and STA 4792).

B. The center outlets are on the left side between FR20.1 and FR20.2 (STA 9708 and STA 10216).

C. The rear outlets are next to the Aft Control Panel, aft of the left paratroop door, between FR29 and FR30 (STA 16820 and 17190).

2.12 INTERPHONE AND PA (INTEGRATED AUDIO SYSTEM)

(See Figure 2-24)

The Public Address (PA) and Interphone (INPH) are part of the Integrated Audio System. The interphone system allows communication among all crewmembers inside the aircraft, and the ground crew if required. The PA system provides the capacity to transmit announcements to personnel through loudspeakers located along the cargo cabin ceiling. For voice communication through the interphone, headsets equipped with a microphone (AUX) are used. Message transmission through the PA can be accomplished either via the hand-held microphone (HAND), or through the headset boom mike. Earphones and mike incorporated to the flight helmet and oxygen mask may also be used with the interphone system (MASK). The interphone includes hot-mike circuit features (HOT) so that, operating the appropriate switch, the microphone is permanently open. In this case, it is not required to press the button (PTT) to transmit. When the COLD position has been selected, it is necessary to maintain the PTT button pressed during transmission to keep the mike open.

NOTE: Refer to the Aircraft Operations Manual for a detailed description and operation of the different components.

In the cargo cabin the integrated audio system includes the following items:

A. Forward Control Panel (FR10, STA 4496): composed of audio control panel, connection panel, and function selector PTT, INPH/PA. The audio control panel allows communication through the interphone and PA, and listening over the radio.

B. Aft Control Panel, located aft of the left paratroop door (STA 17190): composed of interphone station and connection panel.

C. Aft of the right paratroop door (STA 17190): composed of interphone station and connection panel.

D. Audio jacks (STA 17190): two audio jacks are installed on the ceiling of the aircraft to be used when operations are being performed when the paratroop doors are open.

E. Loudspeakers: ten loudspeakers are installed on the ceiling and distributed along the cargo cabin.

In addition, there are two exterior interphone sockets to allow communication between inside and outside the aircraft, by selecting CKPT RAMP. The forward socket is located on the right hand side of the nose (STA 4309); the aft socket is located next to the refueling control panel, on the aft right side.

2.13 LIGHTING

The cargo cabin is illuminated by means of overhead incandescent lamps, and the crew door area by means of a single overhead light. In the cargo cabin, lights are controlled from the ATTENDANT CONTROL units, located in the forward and aft control panels. For illuminating the loading area during night operations, the aircraft is equipped with three lamps, mounted on the aft area of the cargo cabin and cargo door.

2.13.1 Lights in the cargo cabin

(See Figure 2-25)

The system provides white, red, or infrared lighting to the cargo cabin.

An overhead lamp is mounted in the crew door area (STA 5136). This light is controlled from the switch ENTR on the Forward Control Panel, located in the ATTENDANT CONTROL unit at FR10 (STA 4792).

The overhead lights are mounted throughout the length of the cargo cabin, on both sides of the aircraft centerline, alternating the white-red and white-infrared configurations. In the cargo cabin, these lights are controlled from the WHITE/OFF/RED switch, and the adjustable control knob DIM/BRT, located in the rear ATTENDANT CONTROL unit in the Aft Control Panel (STA 17190).

NOTE: These lights cannot be used when the NVG MASTER switch in the flight deck has been pressed.

In the cargo cabin, the NVG-compatible infrared lighting mode is controlled from the NVG switch, located in the rear ATTENDANT CONTROL unit on the Aft Control Panel.

NOTE: To activate these lights, it is necessary to press the NVG MASTER switch in the flight deck.

2.13.2 Cargo area lights

(See Figure 2-26)

The purpose of the cargo area lights is to illuminate the inside aft portion of the cargo cabin, the ramp and its surroundings, to facilitate night loading operations. The set includes an exterior lamp installed on the fuselage aft of the cargo door, and a lamp and a floodlight mounted on the ceiling. Cargo area lights are controlled from switches on the rear ATTENDANT CONTROL unit, at the Aft Control Panel:

A. The exterior cargo area light is controlled from the EXT CARGO LIGHTS switch.

B. The interior cargo area light is controlled from the INT CARGO LIGHTS switch.

C. The cargo area floodlight is controlled from the FOCUS CARGO LIGHTS switch.

2.13.3 Emergency lights

(See Figure 2-27 and Figure 2-28)

The emergency lighting system provides internal illumination, illumination of exits, and lighting with floodlights in emergency situations, or in the event of a power supply failure.

The interior emergency lighting system in the cargo cabin (Figure 2-27) consists of five aisle lights, mounted on the ceiling on both sides of the aircraft centerline; an emergency exit light next to each paratroop door and side escape hatch; and one above the crew door. In addition, there is an emergency exit light indication next to each door and the side hatch.

The exterior emergency lighting system (Figure 2-28) consists of four floodlights, each of them mounted next to each door and the side hatch, which illuminate the surroundings of the corresponding exit for the event of a ground evacuation, and to indicate rescue personnel the position of the door.

In the cargo cabin, the emergency lights are controlled from the EMER switch, located in the Forward Control Panel. When ARM has been selected, the emergency lights glow immediately after an electrical power failure.

2.14 RESTRAINT TRACKS

(See Figure 2-7 and Figure 2-29)

The aircraft has four longitudinal tracks on the cargo cabin and ramp floor, usable for tiedown purposes. In addition, there is a track along each sidewall up to FR30 that is discontinued at the paratroop door location. These tracks serve also for the installation of the supporting frame of the center row of seats and litters, as well as the intermediate roller trays of the AM109 CHADS.

The cargo floor restraint tracks are located on BL330 and BL990, left and right. They are 66 cm (26 in.) laterally apart from each other. Sidewall restraint tracks are 36 cm (14 in.) above the cargo floor.

2.14.1 Rated capacities for restraint tracks in the cargo cabin

Restraint tracks have reference marks for installation of removable tiedown rings (see Figure 2-30), according to restraint provided by each point. Installation of a ring at any point of the track provides 2500 lb of restraint. Cross points between tracks and frames provide four laterally-aligned tiedown points of 5000 lb each. In addition, fourteen 10000 lb points are provided on the outboard tracks.

2.14.2 Rated capacities for restraint tracks on the cargo ramp

On the ramp, cross points between tracks and each frame provide four 2500 lb tiedown points. Removable rings installed on the ramp as tiedown points must be, at least, 50 cm (20 in.) longitudinally apart.

WARNING: DO NOT INSTALL RINGS AS TIEDOWN POINTS LESS THAN 25 CM (10 IN.) FROM THE FRONT OR REAR END OF THE RESTRAINT TRACK ON THE RAMP.

2.14.3 Rated capacity on the sidewall tracks

Sidewall tracks may be used for installation of removable rings between FR14 and FR26 (right-hand side, both frames included), and between FR16 and FR26 (left side, both frames included). Installation of a ring at any point of the sidewall tracks provides 2500 lb of restraint. Cross points between sidewall tracks and frames provide tiedown points of 5000 lb.

WARNING: DO NOT USE TWO CONSECUTIVE CROSS FRAME-TRACK POINTS AS 5000 LB TIEDOWN POINTS (MINIMUM LONGITUDINAL DISTANCE BETWEEN TWO POINTS LOADED WITH 5000 LB IS TWO METERS).

WARNING: DO NOT USE AS A 2500 LB TIEDOWN POINT ANY INTERMEDIATE POSITION IN THE SIDEWALL TRACK BETWEEN FRAME POINTS BEING USED AS 5000 LB POINTS.

2.15 REMOVABLE TIEDOWN RINGS

NOTE: Tiedown principles and procedures are explained in CHAPTER 4 - GENERAL LOADING PROCEDURES.

There are two different types of removable tiedown rings (see Figure 2-29): 5000 lb (5K) and 10000 lb (10K) rings; they are easily inserted and secured into the restraint tracks. When installed and besides of its own restraint rated capacity, effective strength of each ring depends ultimately on its installation spot (see Figure 2-30).

2.16 15000 LB TIEDOWN RINGS

(See Figure 2-31)

The C-295 cargo cabin has twelve 15000 lb tiedown rings permanently installed on the siderails of the AM109 CHADS.

There are two 15000 lb rings permanently installed at FR12 (STA 5136), for emergency restraint during aerial deliveries, which may be also used as tiedown attaching points. These rings provide 15000 lb of restraint each, at an angle of attachment of 45º ± 20º with the longitudinal axis (lateral outboard), and with a floor angle no higher than 30º.

WARNING: DO NOT USE SIMULTANEOUSLY AS TIEDOWN ATTACHING POINTS THE EMERGENCY RINGS AND THE CROSS POINTS BETWEEN FR12 AND THE INBOARD RESTRAINT TRACKS (5000 LB).

2.17 SUMMARY OF SIMULTANEOUS USE OF TIEDOWN POINTS

Limitations for simultaneous use of tiedown attaching points, resulting from strength at junction of restraint tracks and frames, are as follows:

A. Simultaneous use of a 15000 lb tiedown ring and its adjacent 10000 lb point on the floor track, or adjacent 5000 lb point on the sidewall track, is not permitted

B. No more than two consecutive tiedown points shall be used along any of the cargo floor tracks. 15000 lb rings mounted on the CHADS siderails shall be considered to be located on its adjacent outboard cargo floor track for the purpose of compliance with this limitation.

C. Up to four floor track points laterally aligned in any station may be used, provided tiedown points in consecutive stations located on both inboard tracks are not used. Otherwise no more than three floor laterally-aligned track points shall be used. 5000 lb tiedown points on the sidewall tracks shall be taken into account to comply with this limitation.

D. Do not use two consecutive cross frame-sidewall track points as 5000 lb tiedown points (minimum longitudinal distance between two points loaded with 5000 lb is two meters).

E. Do not use as 2500 lb tiedown point any intermediate position in the sidewall track between frame points being used as 5000 lb points.

F. Do not use simultaneously as tiedown attaching points the emergency rings and the cross points between FR12 and the inboard restraint tracks (5000 lb).

G. Removable rings installed on the ramp as tiedown points must be, at least, 50 cm (20 in.) longitudinally apart. Do not install rings as tiedown points less than 25 cm (10 in.) from the front or rear end of the restraint track on the ramp.

NOTE: When rigging loads for aerial delivery, removable rings may be used at any point on the cargo cabin and/or ramp floor for securing lines, slings, extraction systems, or extraction/drogue line bags.

2.18 TIEDOWN DEVICES

Along with rings, tiedown devices are used for restraining cargo items inside the aircraft; these devices include MB-1/CGU-4/E chain-type devices, and tiedown straps with different restraint capacities.

NOTE: Number and type of tiedown devices to be permanently carried in the aircraft as tiedown equipment will be as specified by appropriate MAJCOM.

2.18.1 MB-1/CGU-4/E chain tiedown devices

MB-1/CGU-4/E chain tiedown devices (see Figure 2-32) have a rated capacity of 10000 lb. They are preferably used for securing wheeled loads, over metallic items with sharp edges which prevent the use of tiedown straps, and as emergency restraint in aerial delivery. Each tiedown includes a chain and a device with a locking mechanism.

2.18.2 10K tiedown straps

10K tiedown straps (see Figure 2-33) consist of a piece of nylon webbing 5 cm (2 in.) wide, with a tensioning ratchet and hook with a safety clip on one end, and a hook with a safety clip on the opposite end. They have a restraint rated capacity of 10000 lb. The approximate length of the strap when fully elongated for tiedown, including ratchet, is 5.30 m (17 ft).

2.18.3 15K tiedown straps

15K tiedown straps (see Figure 2-33) consist of a piece of nylon webbing TBD cm (TBD in.) wide, with a tensioning ratchet and hook with a safety clip on one end, and a hook with a safety clip on the opposite end. They have a restraint rated capacity of 15000 lb. The approximate length of the strap when fully elongated for tiedown, including ratchet, is TBD m (TBD ft).

2.18.4 CGU-1/B tiedown straps

The CGU-1/B tiedown strap (Figure 2-34) is used to secure light weight cargo items. It consists of a piece of nylon webbing 5.5 cm (1.75 in.) wide, with a tensioning ratchet on one end and a flat hook with a safety clip on the opposite end. It has a rated capacity of 5000 lb. The length of the strap is 6 m (20 ft), approximately.

2.19 LOADING AIDS

The following paragraphs describe the items and equipment which serve as loading aids in the C-295: the ramp, cargo door, auxiliary loading ramps, fuselage support legs, and the aircraft cargo winch.

2.19.1 Cargo ramp

The cargo ramp is the most important loading aid available in the C-295 (see paragraph 2.5.4 and Figure 2-35). It is 2.831 m (111.41 in.) long. It has the same usable width as the cargo cabin floor. The ramp is equipped with two independent cargo handling siderail assemblies, which are part of the AM109 CHADS, for accommodating an HCU-6/E logistic pallet. The ramp floor has the same features as the cargo cabin floor, including four restraint tracks.

The aft end of the ramp has 12 fittings for installation of the auxiliary loading ramps; the distance between any two of these fittings is 19 cm (7.5 in.), so the auxiliary ramps can be adjusted laterally to match the axle width of the vehicles to be onloaded (see Figure 2-36). During loading operations, the ramp is used in either of two positions: open to the horizontal position, or fully open to the ground level. In the horizontal position the ramp allows loading with 463L-compatible auxiliary loading vehicles, such as forklifts and cargo loaders. When fully open to ground level, the ramp presents a slope between 15.1 and 19.8 degrees, permitting access to the cargo cabin of vehicles, either self-propelled or hauled with the aircraft winch. When open to the horizontal position and along with the cargo door, the ramp permits the aerial delivery of cargo and the airdrop of personnel. Two hydraulic stops, together with two telescopic bars, prevent the ramp from opening beyond the horizontal position. Telescopic bars are disconnected when opening the ramp to ground level or when at least one of the telescopic bars is inoperative.

For transferring cargo items to the cargo cabin on the ground, the ramp can withstand the weight of any load that may be airlifted in the aircraft. Bulk cargo can be loaded and secured on the ramp according to floor loading capacities shown in Figure 2-1. The ramp can be opened and closed with a weight up to 1000 kg (2200 lb). When the telescopic bars are disconnected, only vehicles and palletized cargo with a weight up to 500 kg (1100 lb) can be loaded with the ramp in horizontal position. When closed, it forms a 160-degree angle with the cargo cabin floor, so cargo items eligible for being airlifted on the ramp will be those which can remain in a sloped position in flight.

2.19.2 Cargo door

The cargo door, along with the ramp, provides the necessary opening for onloading all types of cargo, as well as for the aerial delivery of cargo and airdrop of personnel. The cargo door has stowage provisions for the auxiliary loading ramps and the stanchions which are part of the frame for installing the center row of seats. Miscellaneous stowage bags are also located on the cargo door for storing tiedown devices and other equipment.

2.19.3 Auxiliary loading ramps

For onloading and offloading wheeled loads, two auxiliary loading ramps (see Figure 2-36), 100 cm long by 37 cm wide (39 x 14.6 in.), are furnished with each aircraft. The flat surface of these ramps is covered with nonskid material. The auxiliary loading ramps have two sets of latches for attaching them to the fittings located at aft edge of the ramp, so they can be used to bridge the gap between the ground or auxiliary loading vehicle and the aft edge of the ramp. When not in use, they are stowed on the aft cargo door. The auxiliary loading ramps should be installed so the distance between them matches, as closely as possible, the width of the axles of any vehicle to be driven over them.

2.19.3.1 POSITION FOR THE AUXILIARY LOADING RAMPS

The auxiliary loading ramps can be installed in the following positions (see Figure 2-36):

A. Sloped ramp: the auxiliary ramps are installed flat side up to allow wheeled loads to be loaded up the inclined ramp from ground level to the cargo cabin, or to facilitate passenger loading using the cargo ramp. The ramps are attached to the cargo ramp by means of the hooks located in their forward end. Under these conditions, an axle weighing up to 2100 kg (4630 lb) can be imposed on both auxiliary ramps, or a maximum of 1050 kg (2315 lb) per auxiliary loading ramp.

B. Horizontal ramp: the ramps are installed with the curved side up, to bridge the gap between an auxiliary loading vehicle and the cargo cabin, so wheeled cargo can be loaded into the aircraft, or to facilitate transit of the loading crew when cargo is being loaded by hand from a truck bed. The ramps are attached to the aft edge of the cargo ramp by means of the hooks located in their longitudinal center. Under these conditions, an axle weighing up to 2100 kg (4630 lb) can be imposed on both auxiliary ramps, or a maximum of 1050 kg (2315 lb) per auxiliary loading ramp.

   CAUTION: WHEN INSTALLED WITH THE RAMP IN THE HORIZONTAL POSITION, THE AUXILIARY LOADING RAMPS MUST OVERLAP, AT LEAST, 10 CM (4 IN.) THE BED OF THE AUXILIARY LOADING VEHICLE.

2.19.4 Fuselage support legs

Two fuselage support legs are furnished with the aircraft (see Figure 2-37). These are used to prevent the nose wheels from rising from the ground when a load is placed on the rear of the aircraft. The fuselage support legs must be always installed prior to beginning any loading/offloading operation. They are installed by means of quick-release pins to fittings located under the line of the ramp hinge. The height of the fuselage supports is adjustable, so their length can be set to the required height to accomplish on-the-ground operations. These supports are stowed on the right sidewall of the ramp area at STA 19248.

2.19.5 Cargo winch system

The aircraft has an electrical cargo winch, permanently installed in a compartment under the forward section of the cargo cabin floor (see Figure 2-38). The winch system is used to load wheeled or palletized cargo into the aircraft, either from an auxiliary loading vehicle with the ramp in the horizontal position, or up the sloped ramp. In both cases, the auxiliary loading ramps are used to bridge the gap between the auxiliary loading vehicle, or the ground, and the aircraft ramp. After an airdrop of personnel, the winch is also used to retrieve the parachute D-bags and static lines, and to retrieve a towed paratrooper in the event of an emergency situation.

The winch system includes the winch assembly, a control box, a circuit breaker in the flight deck, a pushbutton located in the Forward Control Panel (FR10, STA 4496), and a control pendant assembly with an extensible cable, which can be connected in three different positions in the cargo cabin.

The winch develops a maximum pulling power of 1000 kg (2200 lb) at a speed up to 0.17 m/s (33 ft/min). However, for loading purposes, the maximum weight of a cargo item actually depends on the ramp slope, and the friction coefficient applicable to the cargo item, based on its resting/rolling support.

NOTE: Refer to paragraph 4.22.6 and Table 4-4 to determine winch capabilities and ramp slope.

2.19.5.1 WINCH ASSEMBLY

The winch assembly is located in a compartment under the cargo floor in STA 5644; it operates on 28 VDC, and is energized from the electrical system of the aircraft, either from the engine-driven generators or from an external power source. It has a cable with an attaching hook and a safety keeper on its end, while the other end of the cable is attached to the winch drum by means of an adjustable screw. The cable drum is connected to the motor by means of a gear mechanism. The usable length of the cable is 25.9 m (85 ft).

As safety devices the winch has an overload clutch which disconnects the drum from the motor when tension on the cable exceeds the winch capacities, an integral brake which operates automatically when an electrical supply failure is experienced or the cable reaches the full in or full out position, and a mechanical brake which controls reeling out of the cable to prevent the load from dragging the motor. In addition, the system has a temperature detector which causes a light on the control pendant assembly to come on in the event of motor overheating, although motor operation does not stop.

Limit switches stop operation automatically when the cable reaches the full in or full out position. During rewinding, a small adjustable stop (winch cable stop), consisting on a small ball screwed to the cable, operates the switch located on the cable guide. To stop the winch at a determined distance, the position of the ball can be changed along the cable.

2.19.5.2 PULLEY ASSEMBLY

The pulley assembly eases the operation of the winch. It has two positions: stowed, above the cable drum, and deployed on the floor. The pulley is used to route the cable through it, with the help of a keeper with two pins which ensure the position of the cable.

2.19.5.3 SWITCHES

The winch system is energized through the WINCH pushbutton, located on the ATTENDANT CONTROL unit on the Forward Control Panel (FR10). When power is being supplied from an external source, it is also required to close the CARGO WINCH circuit breaker, located on the L MISCELLANEOUS circuit breaker panel in the flight deck.

2.19.5.4 CONTROL PENDANT ASSEMBLY

The winch system is operated from the control pendant assembly; it provides the loadmaster with freedom of movement while operating the winch. A thumbwheel is provided on the pendant to reel the cable in or out, and to control the speed of the winch pull. The thumbwheel returns to neutral (center) position when force is removed. Sunlight readable, NVG compatible indicator lights for full in, full out, and motor overtemperature are located on the pendant to show the status of the system, as well as a lighted pushbutton for emergency stopping the winch.

The control pendant can be connected to three different locations:

A. ATTENDANT CONTROL unit on the Forward Control Panel (FR10, STA 4496): this is the most suitable position when it is required to pull continuously a cargo item to place it in the forward sections of the cargo cabin.

B. Left paratroop door area (STA 16829 - STA 17190): operating the winch from this position enables the loadmaster observing directly the progress of the loading/offloading operation and, if required, immediate stopping the winch to make adjustments when handling large cargo items which can create contact or overhead projection problems.

C. Overhead at the aft cargo cabin area (STA 16820 - STA 17190): this is the most suitable position for operating the winch for retrieving static lines and a towed paratrooper on board during personnel airdrop missions.

2.20 MISCELLANEOUS EQUIPMENT AND STOWAGE PROVISIONS

Stowage provisions and equipment on FR10 are as depicted in Figure 2-39. The foldable loadmaster's seat has stowage provisions on the bottom to store a life vest. A security-box is also available in the galley located at frame 10 (FR10).

The aircraft has a ramp-cover to bridge the gap between the forward edge of the ramp and the aft edge of the cargo cabin floor. Also has a curtain that can be installed at the ramp hingeline (FR30, STA 17190) to separate the cargo cabin from the ramp area. It is composed of different pieces joined together by means of snap fasteners. When not in use, it is stowed in two bags between FR30 and FR31, left and right side.

Four removable stowage bags are installed on the forward end of the cargo door for storing tiedown devices and miscellaneous equipment.

Two retractable handles are installed on the forward and aft frame of each paratroop door. These handles are provided with quick-release pins to move them to the deployed or stowed position.

Covers are provided for all windows in the cargo cabin. These covers can be installed for tactical night operation so internal lighting cannot be seen from outside the aircraft.

2.21 EMERGENCY EQUIPMENT

The emergency equipment includes the equipment that is essential in case of an emergency. It is compound of first aid kits, portable extinguishers and portable oxygen system.

2.21.1 Portable extinguishers

There are two extinguishers in cargo cabin (see Figure 2-40):

– A manually operated halon extinguisher (1), located on the outer wall of the toilet compartment, in the cargo cabin. This type of extinguisher must be used on class B fires (i.e. caused by inflammable liquids, butane gas, grease or paint) and class C fires (i.e. electrical fires). However, it can also be used to extinguish ordinary fires.

– A manually operated water gas type extinguisher (2), located on the outer wall of the toilet compartment in the cargo cabin. This type of extinguisher must only be used on class A fires, such as caused by burning fabric, paper or wood.

NOTE: For more information, refer to AIRCRAFT OPERATIONS MANUAL, CHAPTER 26 – FIRE PROTECTION.

2.21.2 Portable oxygen system

Portable oxygen system (see Figure 2-41), on cargo cabin, is composed of:

– Oxygen bottles (2): four portable bottles with a pressure regulator. Located at the forward main compartment. Two bottles are at the rack in FR10 (STA 4496). The other two are on the toilet panel.

– Passenger masks (3): the passenger mask has a replaceable face seal and an elastic headband. The mask connects with the outlet of the portable oxygen bottle through a flexible hose assembly and a connector. The flexible hose assembly has a flow indicator.

– Therapeutic mask (4): the therapeutic passenger mask provides the passenger with continuous oxygen flow. The mask connects with the outlet of the portable oxygen bottle through a flexible hose assembly and a quick-connect bayonet. The flexible hose assembly has a flow indicator.

– Tote bags (5): two tote bags are in front of the two portable oxygen bottles at frame 10 rack. Each bag includes two oxygen passenger masks. Other two bags are adjacent to the two portable oxygen bottles, on the toilet panel. Each bag contains one oxygen passenger and one therapeutic mask.

NOTE: For more information, refer to AIRCRAFT OPERATIONS MANUAL, CHAPTER 35 - OXYGEN.

2.21.3 First aid kits

The cargo cabin has provisions for storing five first-aid kits. One of them is stored in a compartment at FR10; the other four are stowed on the sidewalls on STA 9962 and STA 14206, both sides (see Figure 2-42).

2.22 AIRDROP AND AERIAL DELIVERY SYSTEMS

The C-295 has all the systems required to perform personnel airdrop missions. Aerial delivery systems and equipment are the static line anchor cables, including equipment required for the retrieval of a towed paratrooper and static lines, jump lights and bells, and the ramp air deflectors.

2.22.1 Static line anchor cables

The static line anchor cables are used for attaching the parachute static line hooks during personnel airdrop with parachute automatic opening. The C-295 is fitted with two anchor cables, each one being 14.13 m (46.36 ft) long.

The anchor cables can be installed in the central configuration, for the airdrop of personnel through the paratroop doors, or in the lateral configuration, for tailgating paratroopers. Figure 2-43 shows the different anchor cable configurations and details of the system components.

Each anchor cable has a clevis on its aft end and a turnbuckle on its forward end. The C-295 has two sets of attaching points on each side of the aircraft for installation of the anchor cables in the lateral or central configuration, depending on the type of airdrop. Each set consists of two forward attaching points, located at FR13 (STA 5644), and two aft attaching points, located at FR38 (STA 19894), to which the anchor cables are attached in the appropriate configuration (central or lateral) for each kind of airdrop.

Each anchor cable has a movable cylinder that, along with the retrieving spool, serves as a stop for the static line hooks. Each static line stop can be moved and fixed along the anchor cable in the appropriate position, according to the type of airdrop.

The static lines can be retrieved either manually or with the winch for an easier retrieval.

NOTE: For a detailed description of the anchor cable system configuration and the static line stops positions, refer to appropriate CHAPTER 7 - AIRDROP OF PERSONNEL AND EQUIPMENT. For installation of the anchor cables, refer to CHAPTER 3 - AIRCRAFT CONFIGURATION.

2.22.2 Jump lights and bells

The aircraft has six sets of red and green lights, and two bells to provide personnel in the cargo cabin with visual and sound indications during personnel airdrop and cargo aerial delivery (Figure 2-44). The jump lights and the bells are activated by pressing the corresponding pushbuttons (RED and HORN, respectively), located on the AERIAL DELIVERY control unit at the flight deck pedestal.

The sets containing red and green jump lights are located one aft of each paratroop door, and in the ramp area (FR38, STA 19894, both sides), and they are compatible with night vision devices. The RED pushbutton in the flight deck pedestal activates the red light, which remains steadily illuminated. When the GREEN pushbutton is pressed, the green light comes on and blinks, so it can be easily identified while wearing Night Vision Goggles (NVG). The night vision mode is activated and deactivated by pressing the NVG MODE pushbutton, located on the control unit EXT LT in the flight deck.

2.23 RAMP AIR DEFLECTORS

The C-295 has two air deflectors to decrease the turbulence experienced on the ramp area when it is open to the horizontal position in flight (see Figure 2-45). Each air deflector has a guide that keeps the air deflector in place when it is installed on the ramp and maintains it perpendicular to the ramp. In addition, the left deflector is provided with a wedge-shaped piece on its outboard side, to prevent jamming with the stowed paratrooper retrieval bar during operation of the ramp.

2.24 AM109 CARGO HANDLING AND AERIAL DELIVERY SYSTEM (CHADS)

(See Figure 2-46)

The AM109 Cargo Handling and Aerial Delivery System (CHADS) is a dual-rail, 463L-compatible cargo system employing four rows of intermediate rollers, which are fastened to the four restraint tracks of the cargo cabin floor of the aircraft. The system includes the following main components:

A. Left and right cargo cabin siderail assemblies (nine sections on each side).

B. Left and right lock detents (nine latches on each side).

C. Left and right cargo cabin control boxes.

D. Cargo cabin roller-tray assemblies (twenty-eight standard and four offset).

E. Left and right ramp siderail assemblies (two sections on each side).

F. Ramp lock-flange assemblies (four on each side).

G. Ramp offset roller-tray assemblies (eight).

H. Pallet/platform buffer stops (four).

This system is compatible with a wide variety of cargo transport sliding platforms, which include 463L full (HCU-6/E) and half pallets (HCU-12/E), civil pallets size A, C, and E (88 in. wide). Along with the aircraft internal winch and the anchor cables, the system permits gravity airdrop of A-22 series containers and A-7A/A-21 ramp bundles. The general arrangement of the AM109 is shown in Figure 2-46.

2.24.1 Cargo cabin siderail assemblies

The two siderails of the CHADS consist of 18 siderail sections installed on the cargo cabin floor: nine on the right-hand side and nine on the left-hand side of the aircraft. They extend from STA 5644 to STA 17190. The installed rails provide a lateral guide for sliding pallets/platforms and prevent lateral (side-to-side) and vertical (upward) movement of palletized cargo. Left siderail assembly is referred to as Logistic rail, and right siderail assembly is the Airdrop or Tactical rail. Attached along the length of each assembly there are nine Airdrop Lock Assemblies on the Airdrop side, and nine Logistic Lock Assemblies on the Logistics side. These detent lock assemblies prevent forward and aft movement of the cargo pallets/airdrop platforms. For the airdrop of personnel using the paratroop doors, the siderail assemblies adjacent to both doors can be removed and stowed forward of each paratroop door.

NOTE: If flight is performed with AM109 CHADS siderails removed, replace siderails with the cover assemblies of the lateral socles to cover the zone that remains disclosed.

2.24.2 Left- and right-hand control boxes

The locks are engaged and disengaged by a series of actuator/connecting rods. The control box assemblies are located at the forward ends of both siderails. Moving the handle on the desired control box assembly controls the actuator rods.

2.24.2.1 LEFT-HAND CONTROL HANDLE

The Logistic control handle (left side) allows sequential engagement/disengagement of latches one by one. Moving the handle to the FULL LOCK position sequentially engages and locks all left-hand latches, starting at the forward-most detent. Taking the control handle to the RELEASE position unlocks and disengages all logistic latches, starting at the aft-most detent, and retains them all disengaged until relocked. Holes and a safety pin in the intermediate positions allow selecting the desired quantity of detents to engage/disengage. Intermediate positions are stenciled with the corresponding lock detent number to facilitate control.

2.24.2.2 RIGHT-HAND CONTROL HANDLE

The Airdrop control handle (right side) actuates simultaneously on all right-hand detent locks. It has three positions: FULL LOCK (LOCK), AIRDROP (AD), and RELEASE (REL). Moving the right control handle to the LOCK position simultaneously engages and locks all right detent latches while when the right control handle is set to the REL position, all right detents are simultaneously retracted. A safety pin is provided to prevent the control handle from being inadvertently moved beyond the desired position during operation.

2.24.3 Cargo cabin roller-tray assemblies

Twenty-eight standard roller-tray and four offset roller-tray assemblies are installed on the cargo cabin. These roller trays allow the transfer of logistic palletized cargo and airdrop platforms, as well as CDS containers, into and out of the aircraft cargo cabin. They also provide vertical (downward) support for all palletized cargo. The roller-tray assemblies are secured to the restraint tracks using shear restraint assemblies. Restraint tracks have marks to provide a reference for installation of the roller-trays in a longitudinal regular pattern, so consecutive trays keep the distance between two consecutive rollers.

NOTE: Roller-tray assemblies may be removed as required to allow clear floor handling capability.

2.24.4 Ramp rail assemblies

Two rails consisting on two sections each are installed on the cargo ramp: one on the Airdrop side and one on the Logistic side. These rails provide lateral restraint for palletized cargo as it enters and exits the cargo system. Along with the ramp restraint lock-flange assemblies incorporated to them, both rails provide all required forward/aft, lateral, and vertical restraint for a pallet locked on the ramp.

2.24.5 Ramp restraint lock-flanges

The ramp restraint kit consists of eight ramp lock-flange assemblies, four on the left siderail and four on the right siderail. These lock assemblies provide restraint for upward and forward/aft movement of an HCU-6/E cargo pallet when transported in this position. The assemblies are individually engaged (manually, with the ramp open, from outside the aircraft). Pulling up and aft on the release handles, located on both sides of the aircraft, near the aft end of the cargo cabin, disengages these ramp locks simultaneously.

2.24.6 Ramp roller-tray assemblies

Eight offset roller-tray assemblies are installed on the cargo ramp. These rollers provide vertical (downward) support for palletized cargo carried on the ramp, and allow easy movement of cargo pallets, airdrop platforms, CDS containers, and aerial delivery bundles during on/offloading, logistic and airdrop operations. The last two rollers on these assemblies are vertically offset (1.56 mm / 0.0625 in. lower) to compensate for the difference in height between the ramp and cargo floor section of the aircraft.

2.24.7 Pallet/platform buffer stop assemblies

The CHADS include four pallet/platform buffer stop assemblies that can be installed immediately forward of the most-forward pallet/platform. These assemblies prevent forward movement of pallets or airdrop platforms while loading cargo into the aircraft. These devices also provide vertical restraint for pallets transported forward of FR13 (STA 5644). The pallet buffer stops have a ring for installation of the release gate.

2.25 AM109 CARGO RESTRAINT CRITERIA

The load capacity of the AM109 CHADS is 1000 kg/m in the cargo cabin and 1000 kg total on the cargo ramp, and provides restraint of pallets and platforms to the ultimate factors indicates on Table 2-1.

The AM109 CHADS guarantees restraint in all directions for individual HCU-6/E pallets weighing up to 2640 kg (5808 lb) in the cargo cabin, and 1000 kg on the cargo ramp. When airdrop platforms or other 463L-compatible devices are used for logistic airlift (terminal-to-terminal operations), maximum allowable weight shall be determined according to their length and floor loading capacities depicted in Figure 2-1.

CAUTION: IN ADDITION TO MAXIMUM LOAD PER LINEAR METER, MAXIMUM WEIGHT PER ROLLER STATION MUST NOT BE EXCEEDED.

CARGO CABIN			RAMP AREA	
DIRECTION	RESTRAINT		DIRECTION	RESTRAINT
Forward (FWD)	9.0 G		Forward (FWD)	9.0 G
Rearward (AFT)	1.5 G		Rearward (AFT)	1.5 G
Sideward (LAT)	1.5 G		Sideward (LAT)	1.5 G
Upward (UP)	5.0 G		Upward (UP)	5.5 G
Downward (DOWN)	7.5 G		Downward (DOWN)	8.0 G
NOTE: Loads specified on this table are considered to be acting separately.				

Table 2-3 AM109 CHADS restraint criteria

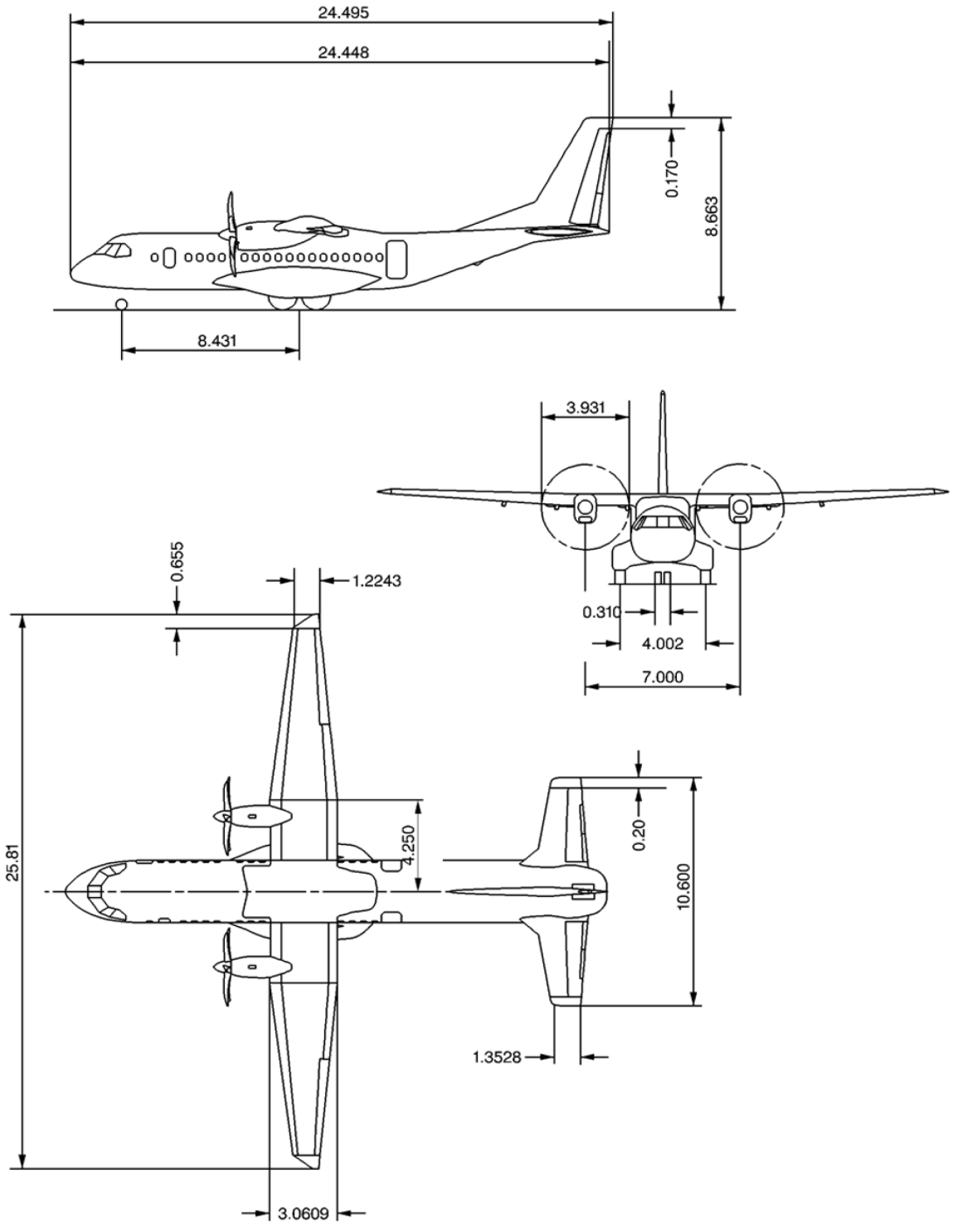


Figure 2-2 Aircraft external dimensions

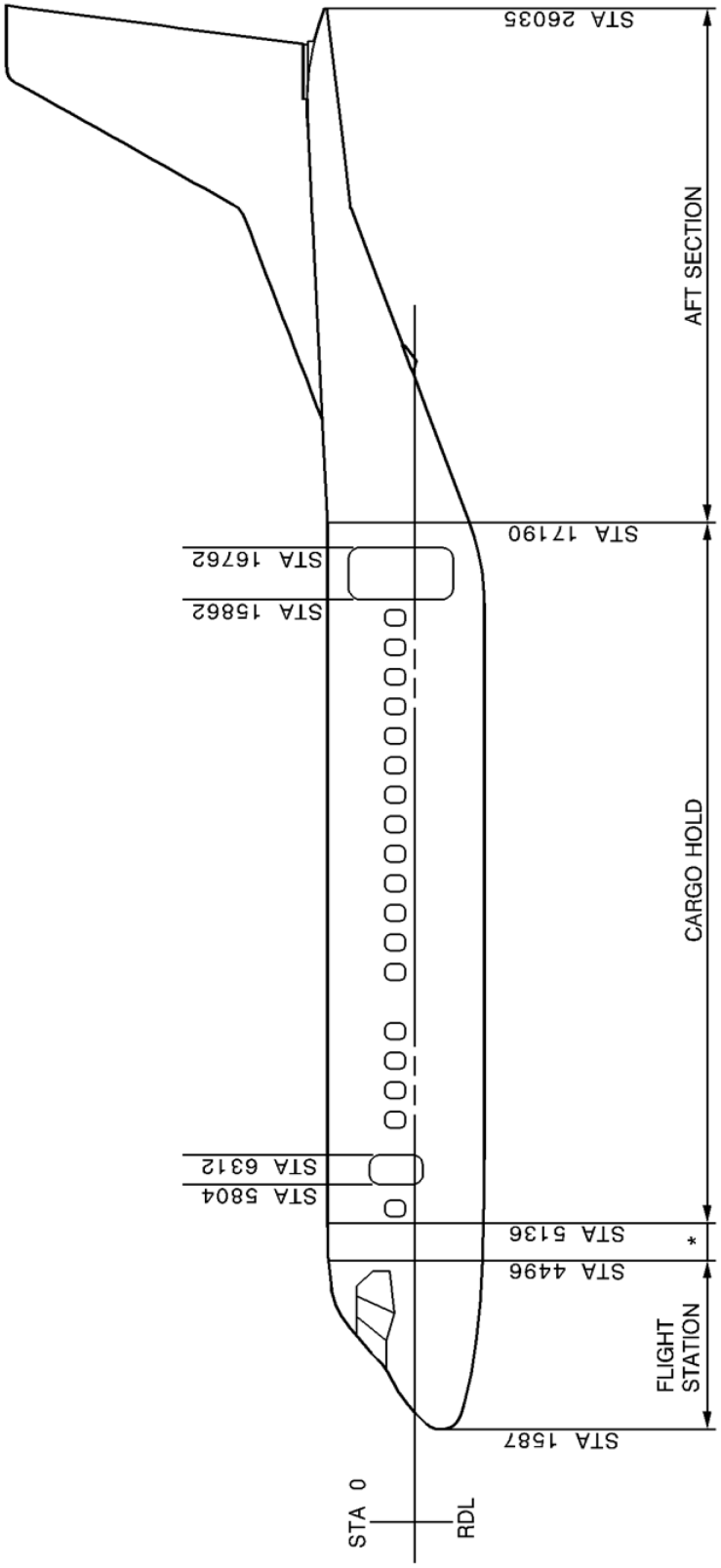


Figure 2-3 Frame numbers and stations

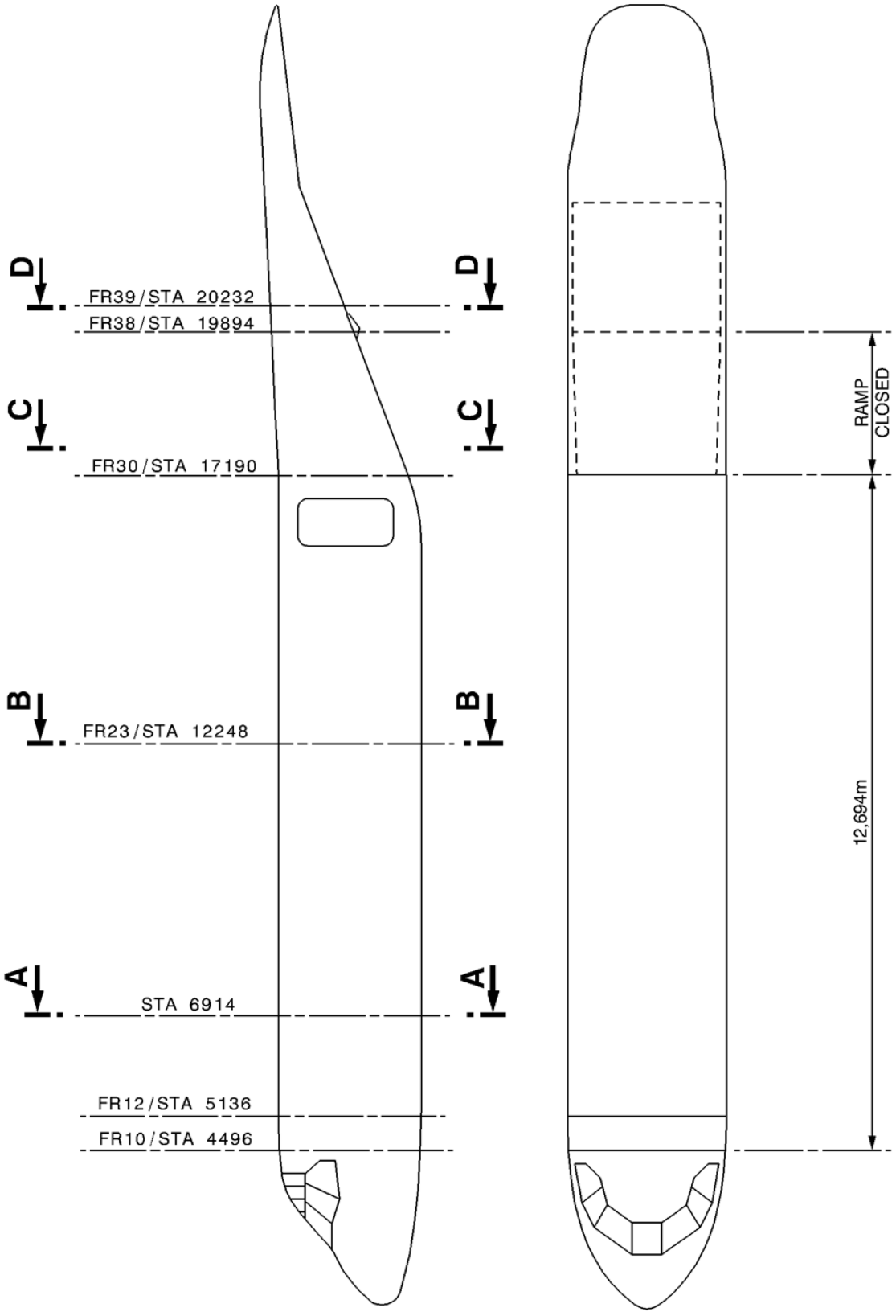
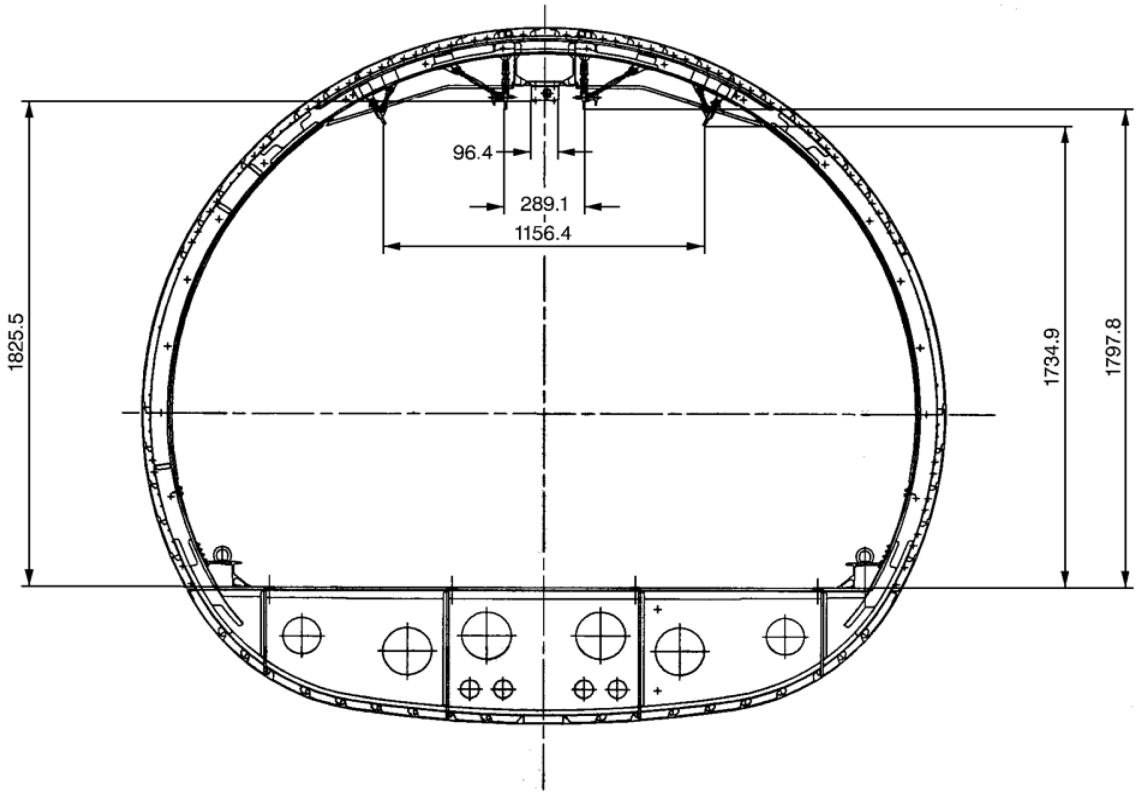
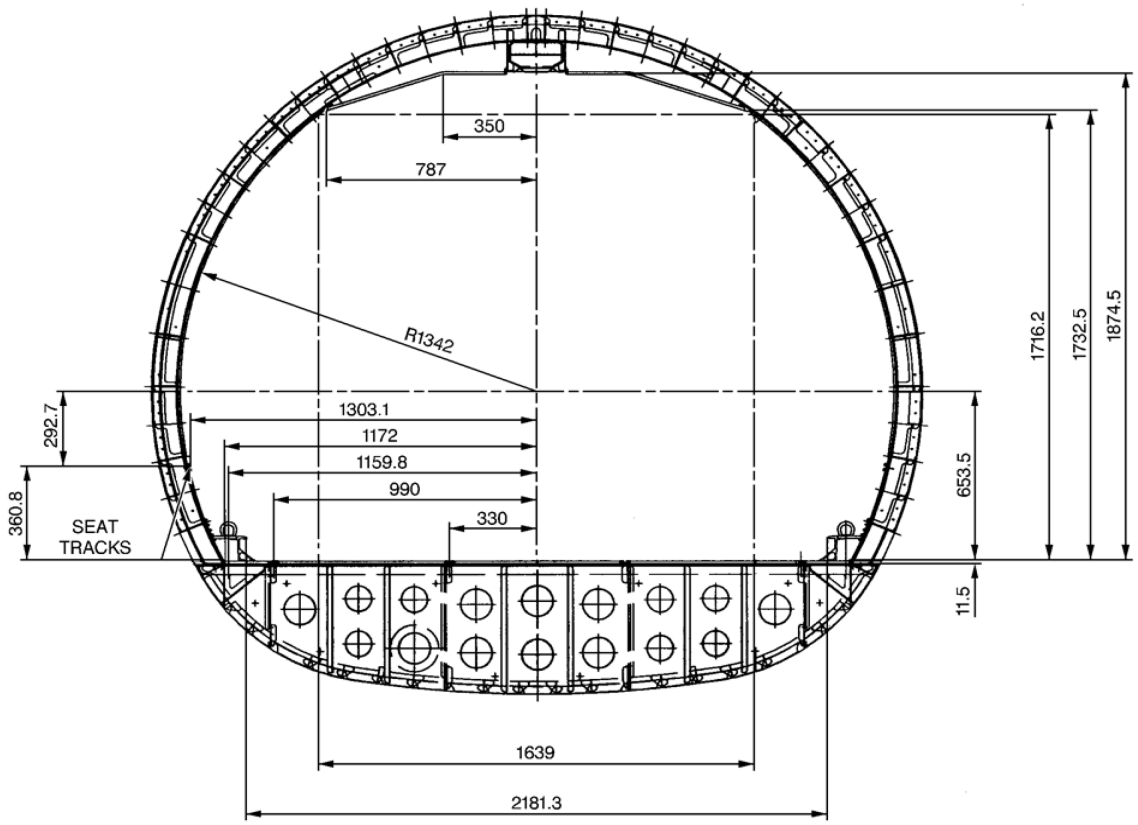


Figure 2-4 Cargo cabin dimensions (Sheet 1 of 5)



SECTION A-A

Figure 2-4 Cargo cabin dimensions (Sheet 2 of 5)



SECTION B-B

Figure 2-4 Cargo cabin dimensions (Sheet 3 of 5)

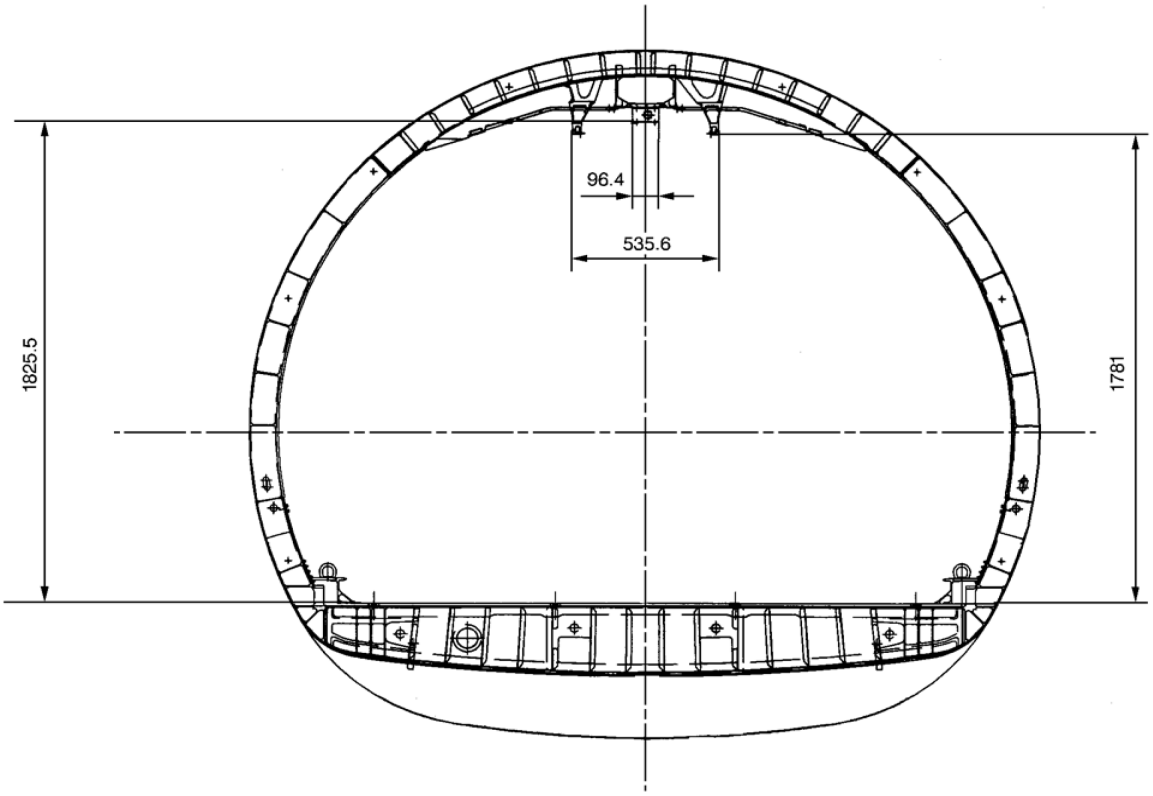
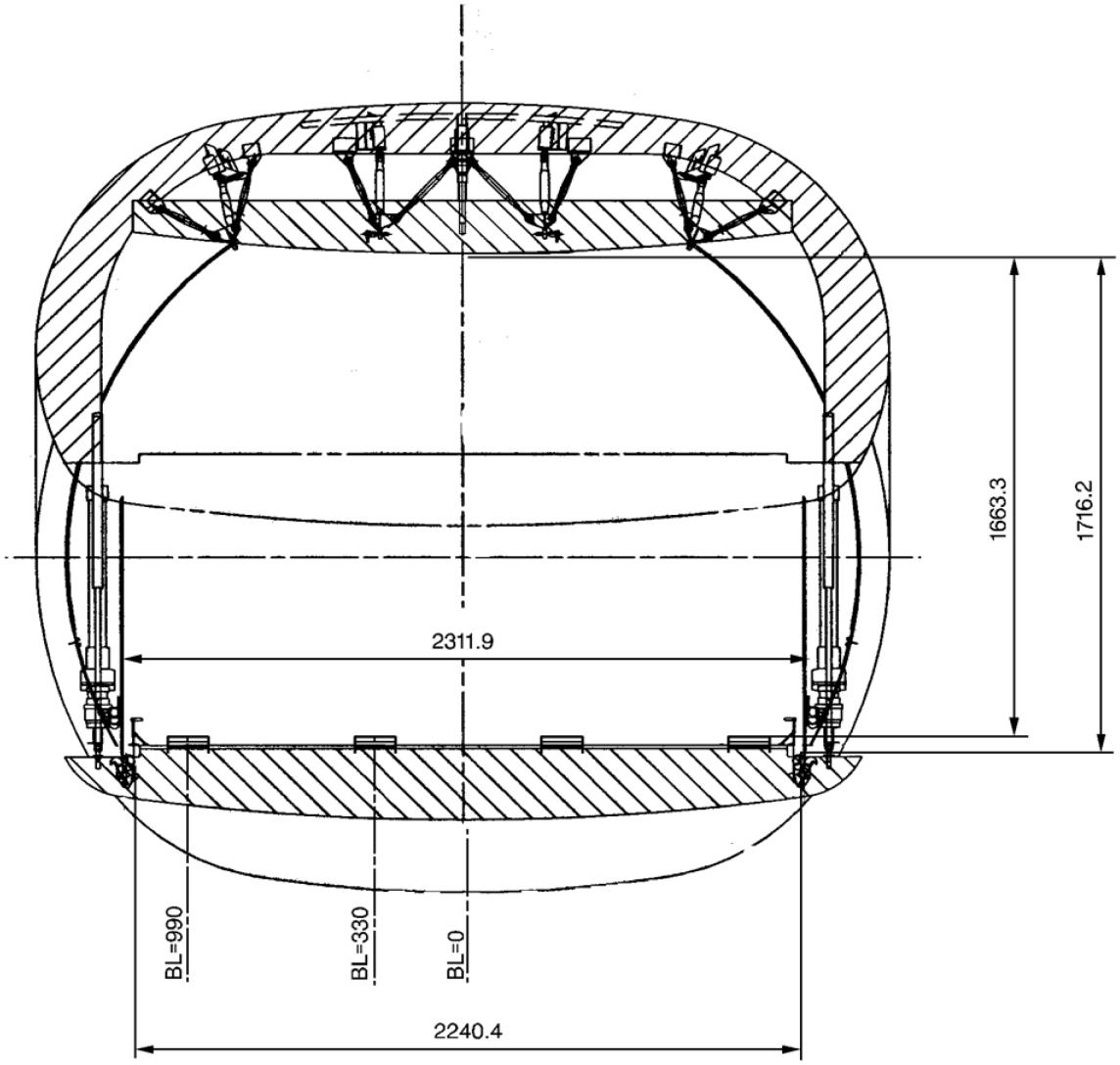


Figure 2-4 Cargo cabin dimensions (Sheet 4 of 5)



SECTION D-D

Figure 2-4 Cargo cabin dimensions (Sheet 5 of 5)

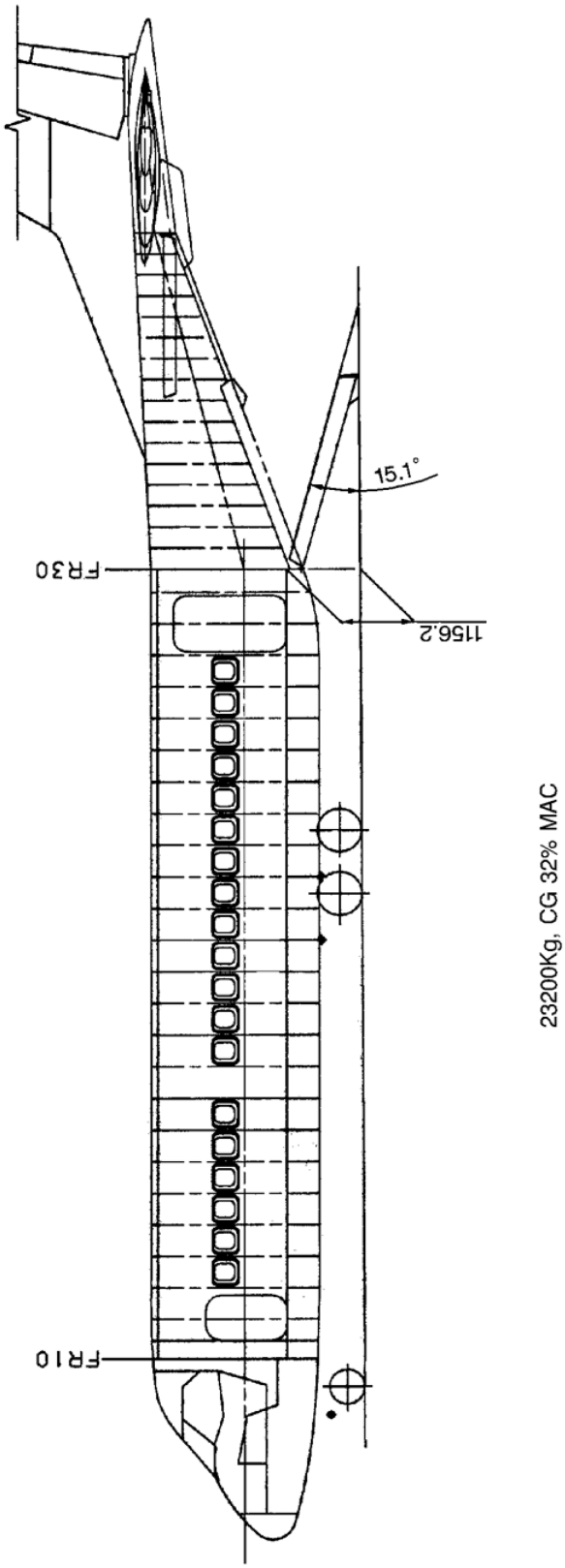


Figure 2-5 Relationship between ramp crest height and ramp slope (Sheet 1 of 4)

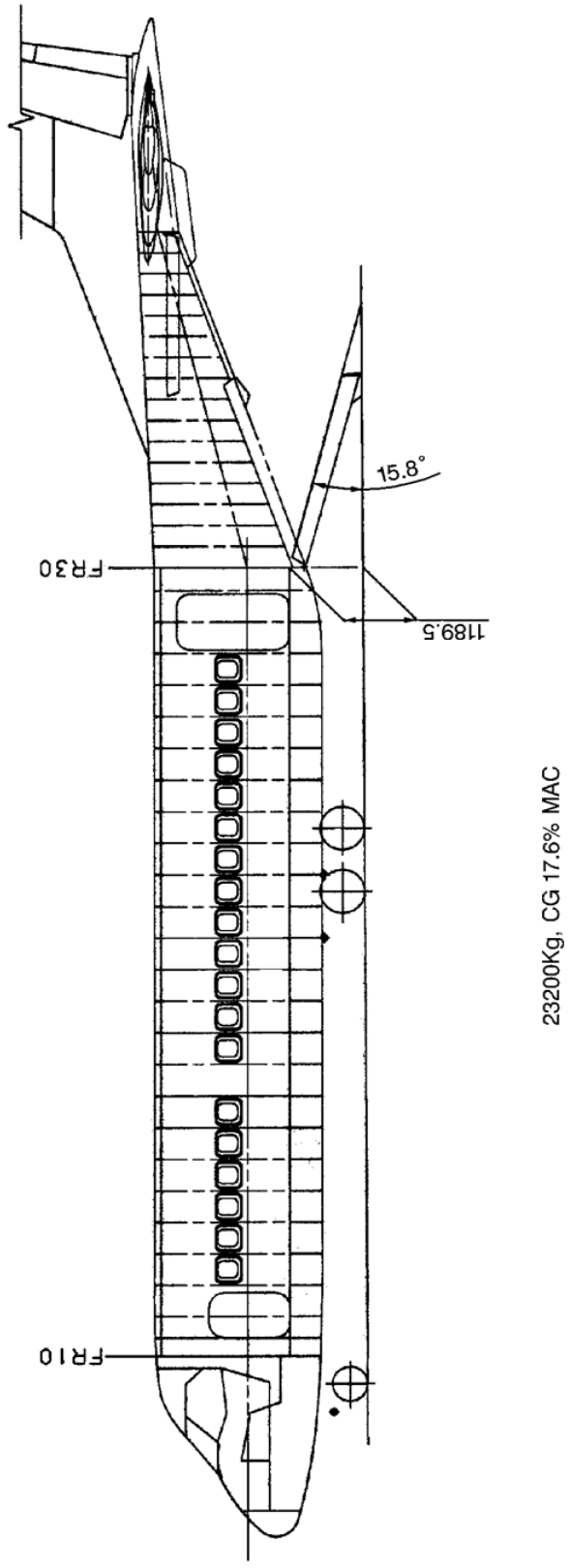


Figure 2-5 Relationship between ramp crest height and ramp slope (Sheet 2 of 4)

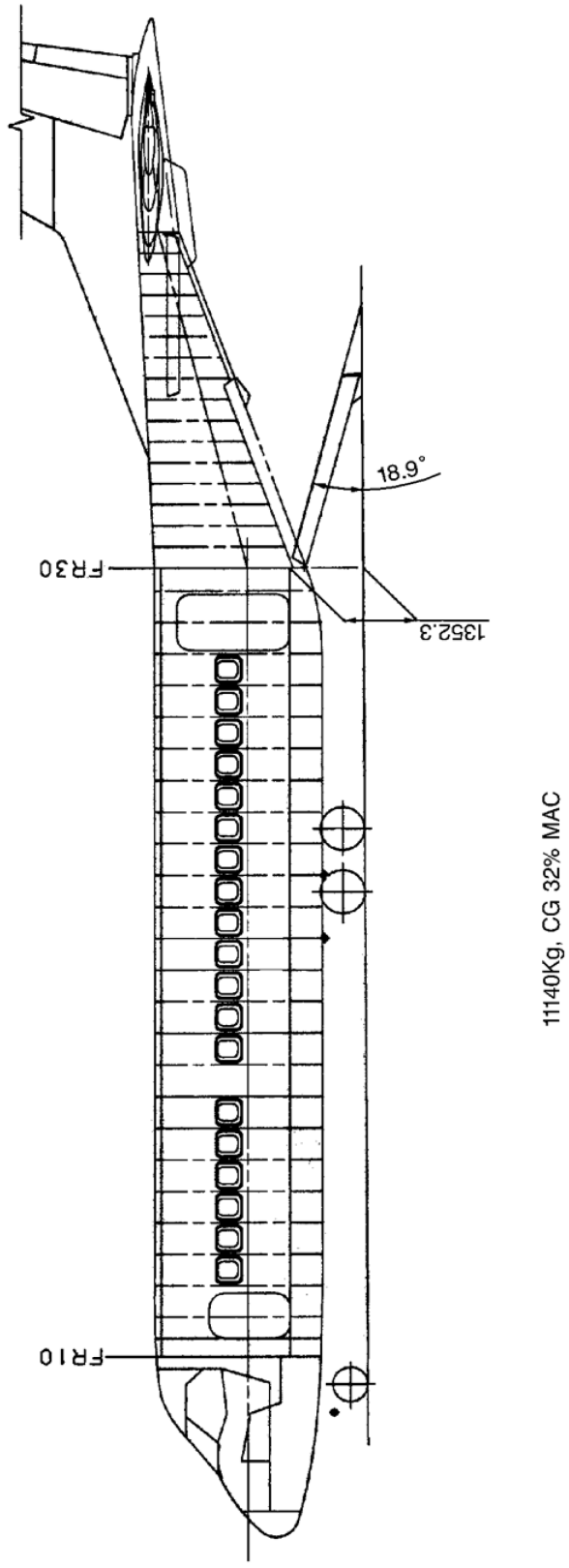


Figure 2-5 Relationship between ramp crest height and ramp slope (Sheet 3 of 4)

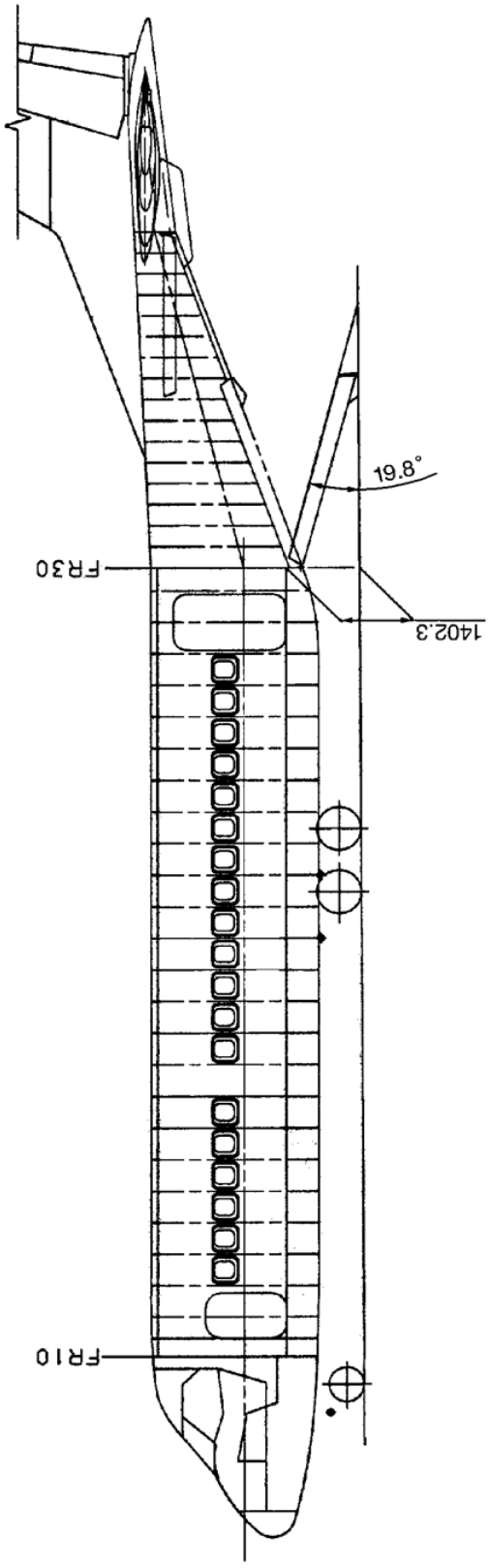


Figure 2-5 Relationship between ramp crest height and ramp slope (Sheet 4 of 4)

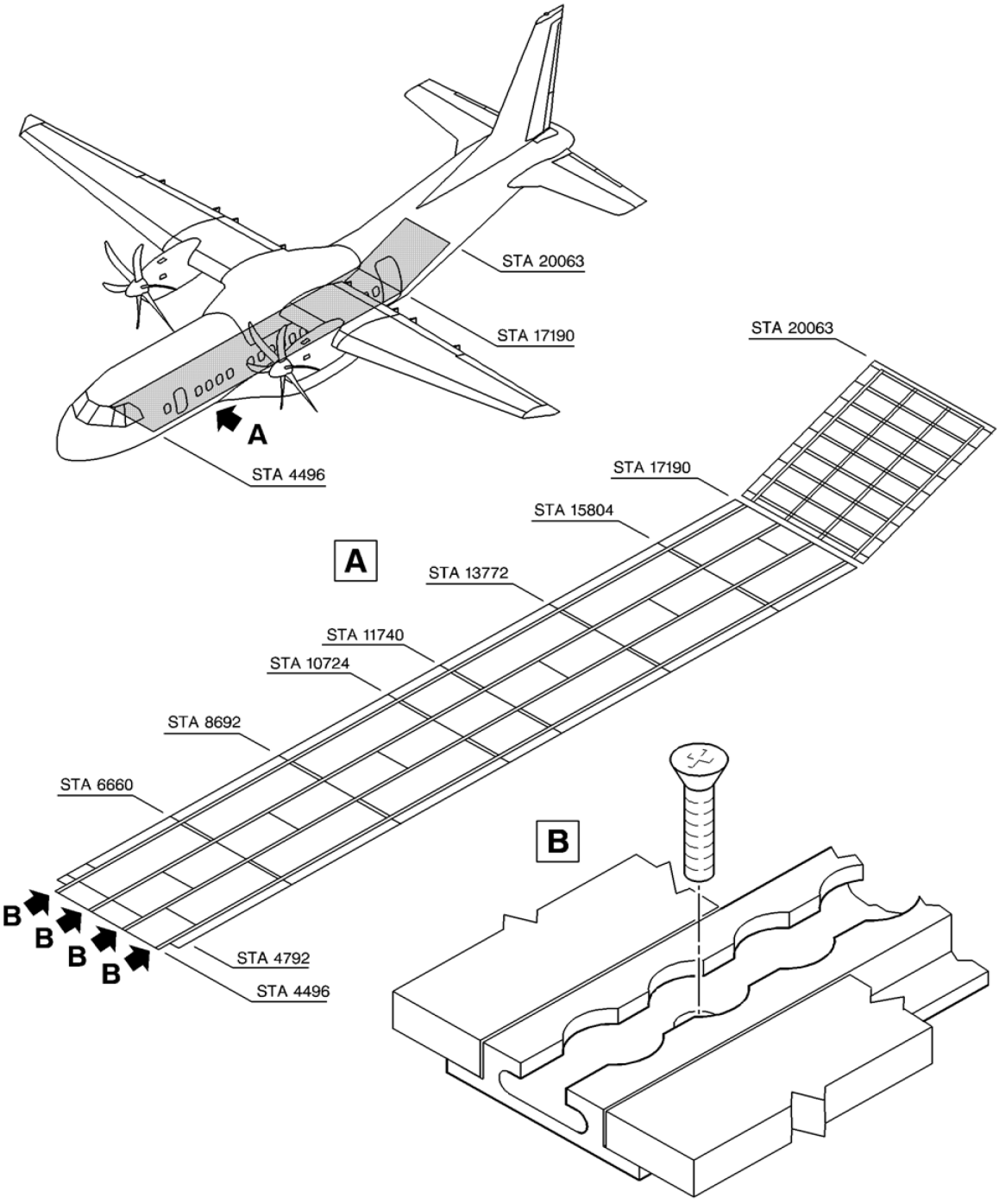


Figure 2-6 Cargo floor panels

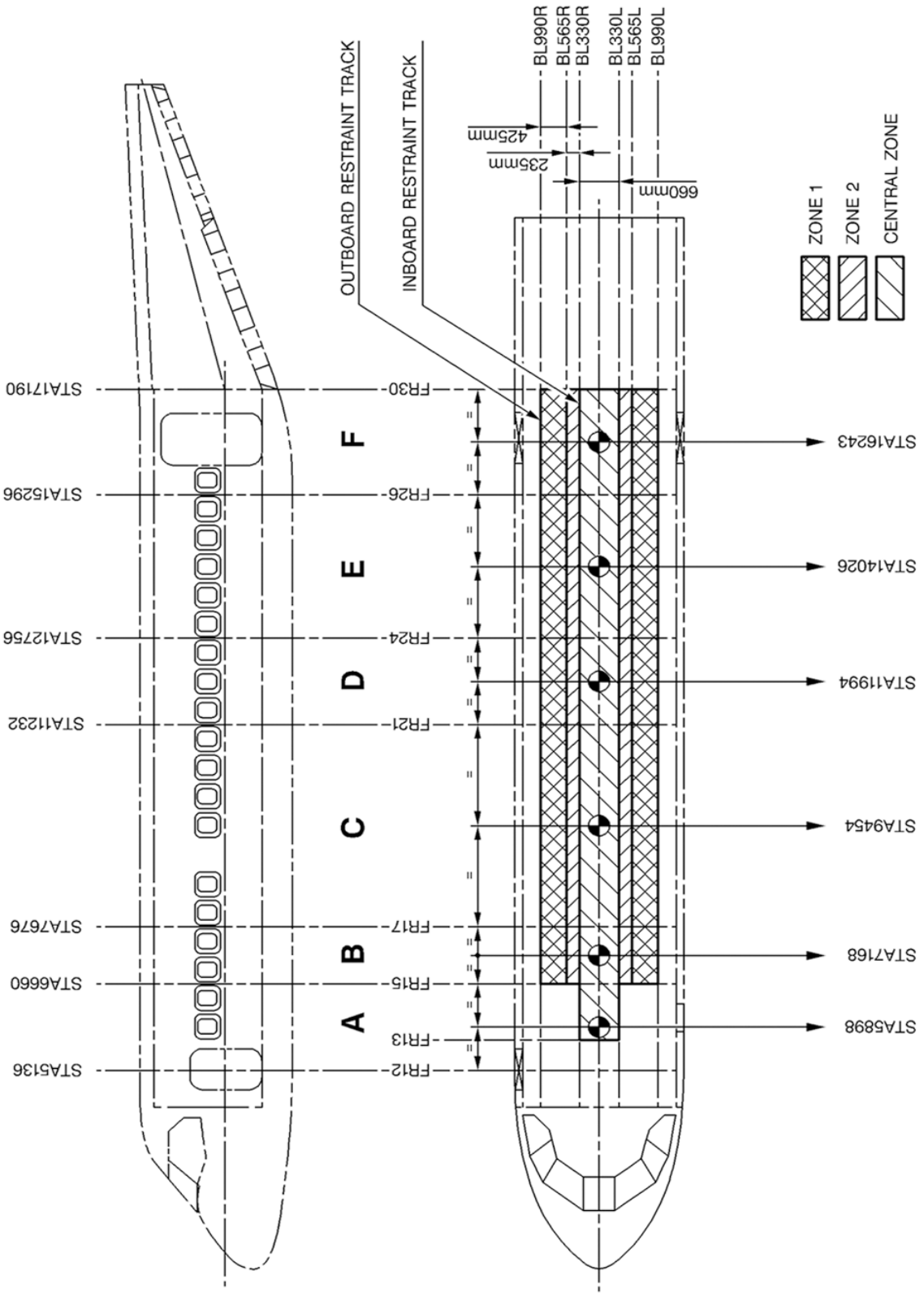


Figure 2-7 Compartments and cargo floor zones

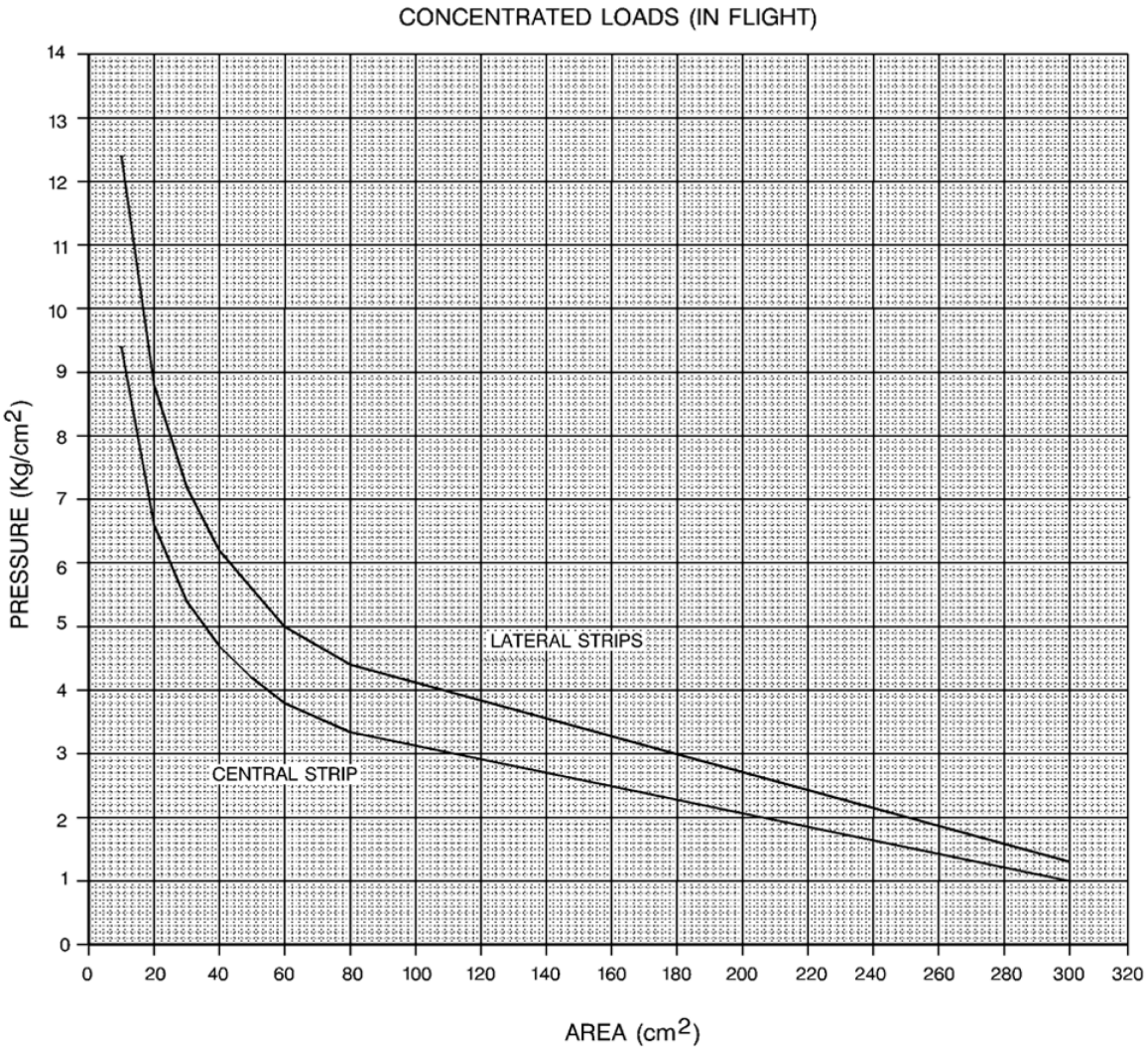


Figure 2-8 Floor loading capacities for concentrated loads (Sheet 1 of 2)

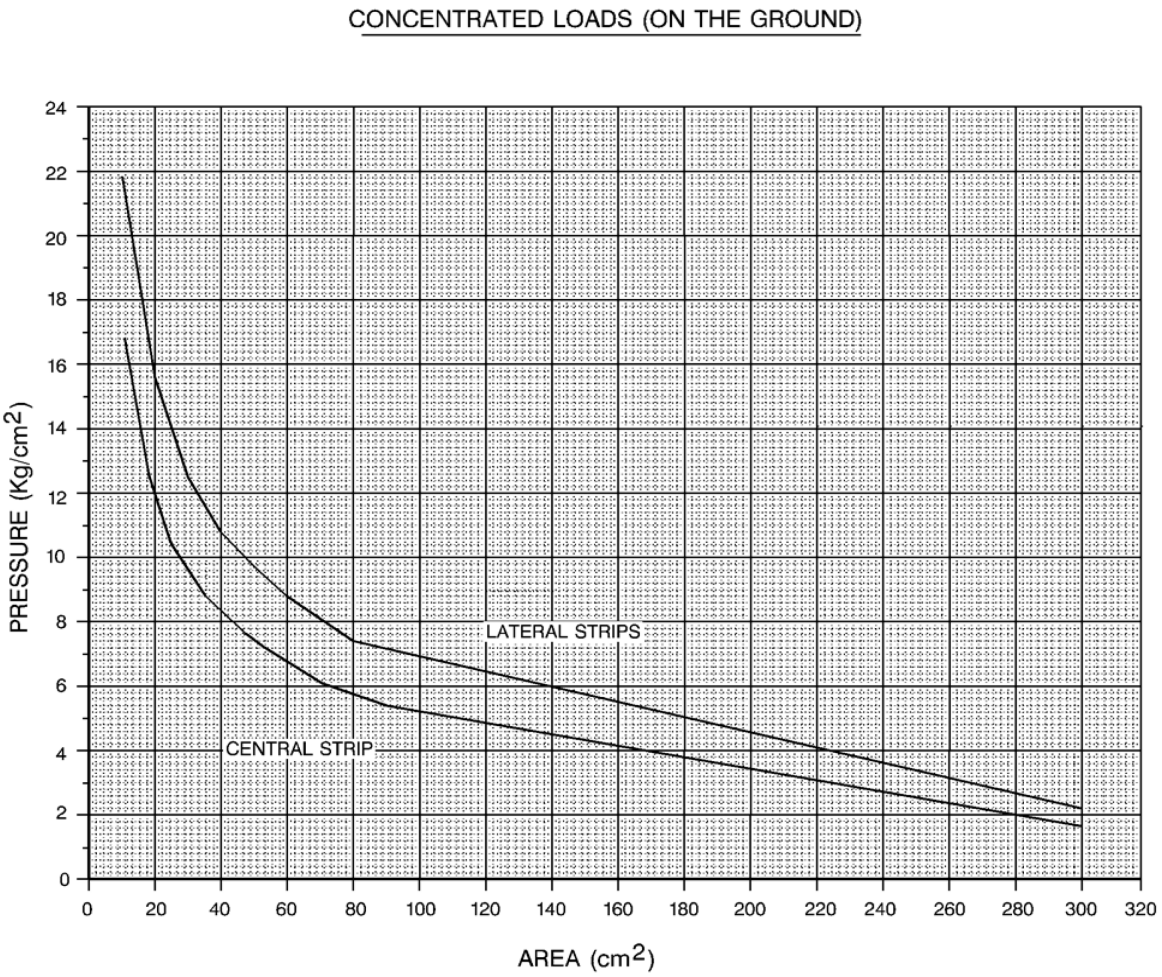
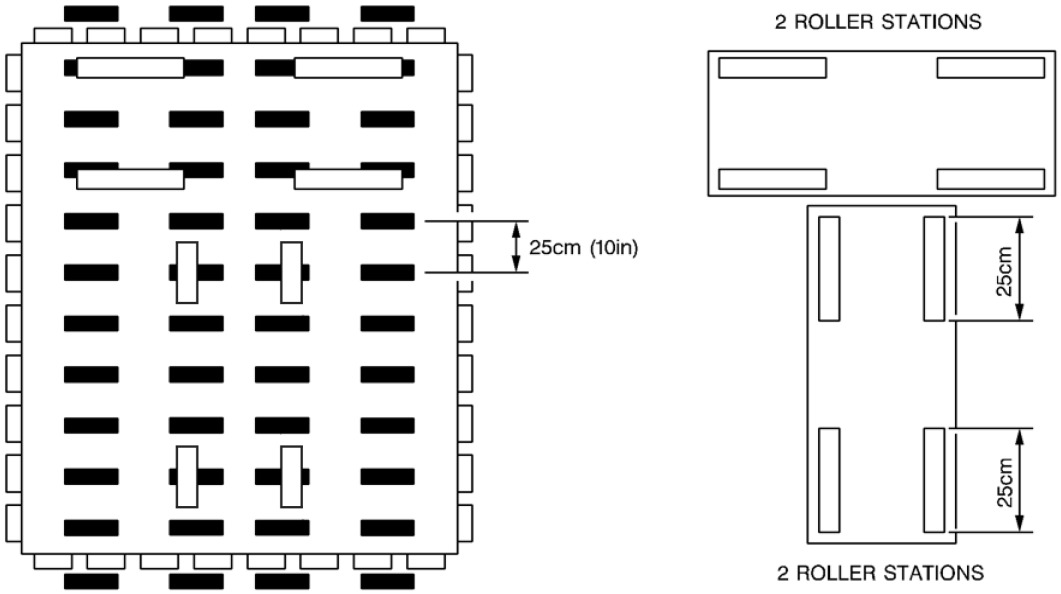


Figure 2-8 Floor loading capacities for concentrated loads (Sheet 2 of 2)



MAXIMUM ALLOWABLE WEIGHT FOR EACH BOX: 300x2=600 KG

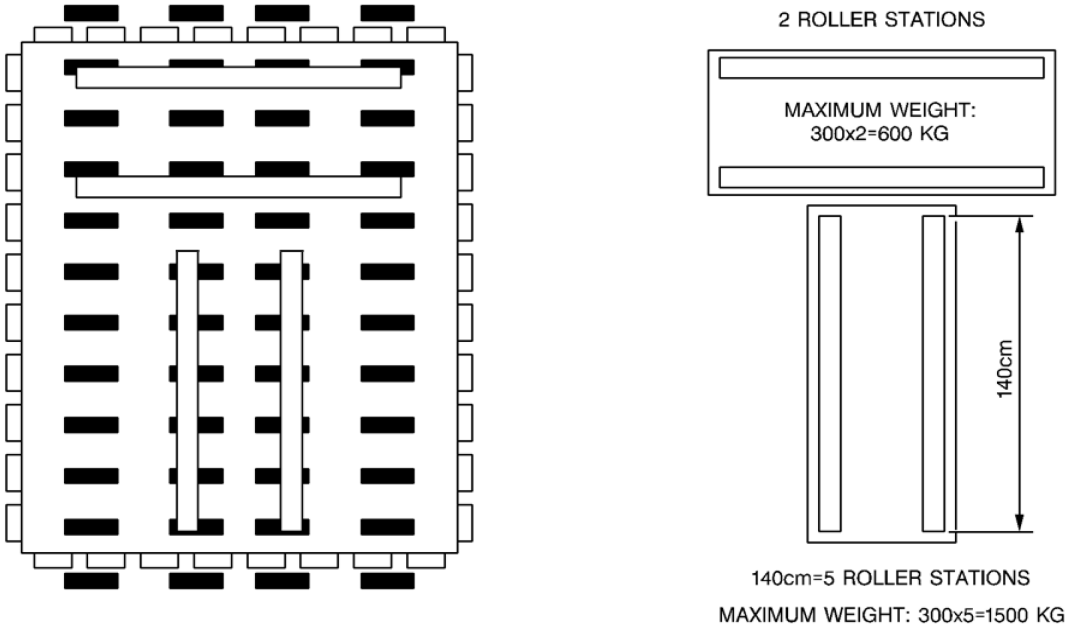


Figure 2-9 Roller convey or capacities

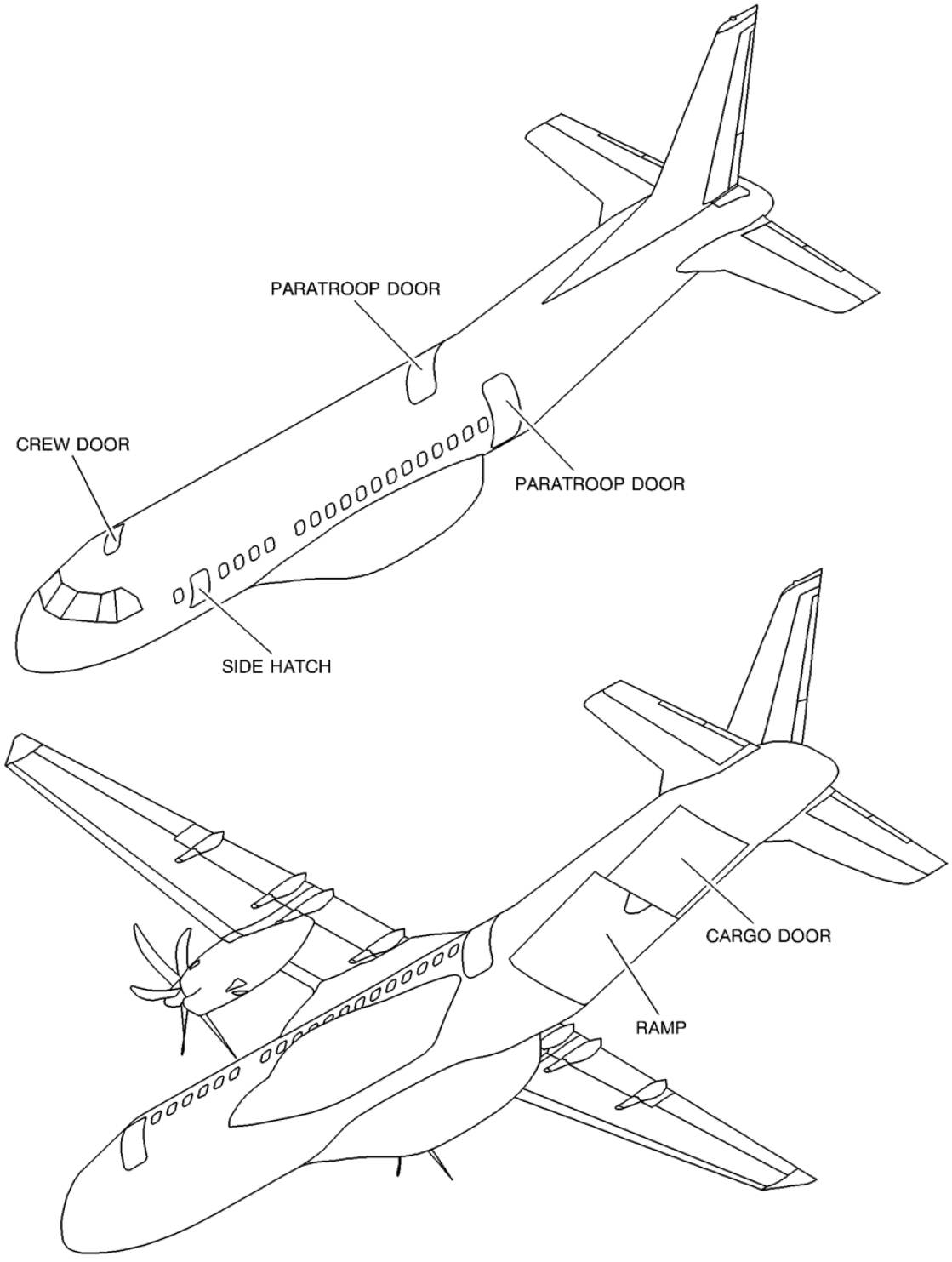


Figure 2-10 Doors and exits

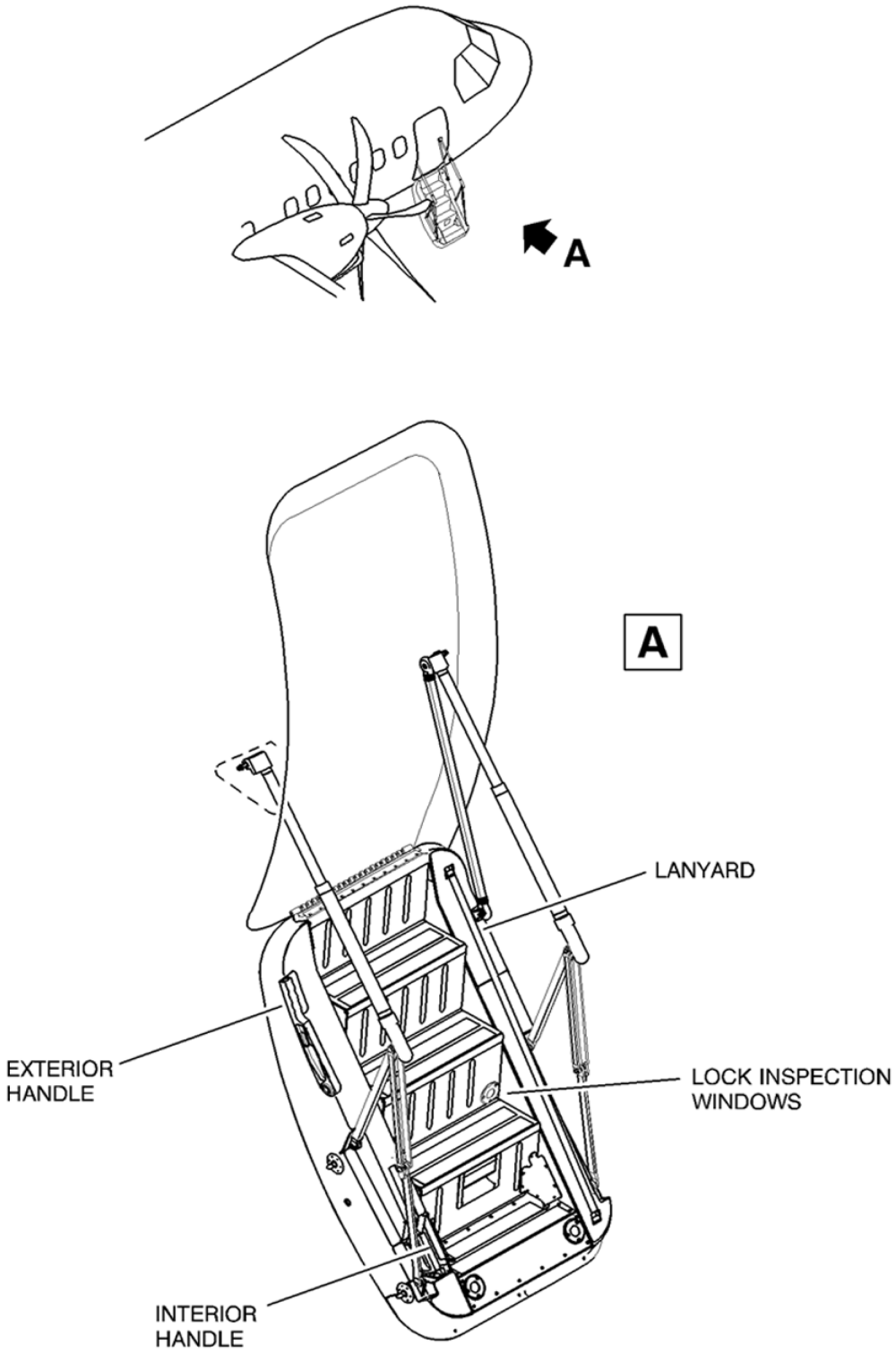
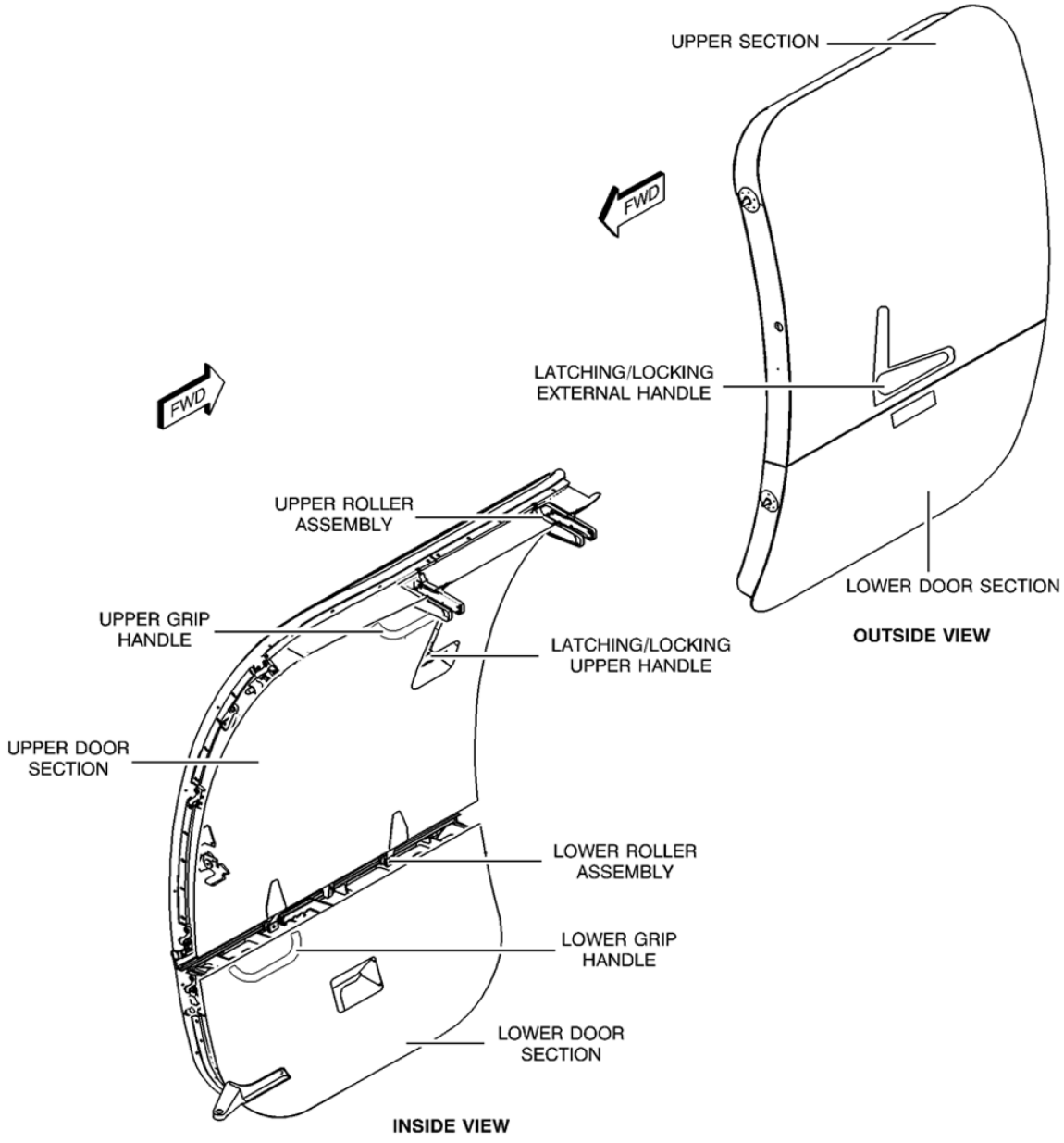


Figure 2-11 Crew door



NOTE: LEFT DOOR SHOWN, RIGHT DOOR IS SYMMETRICAL

Figure 2-12 Paratroops door

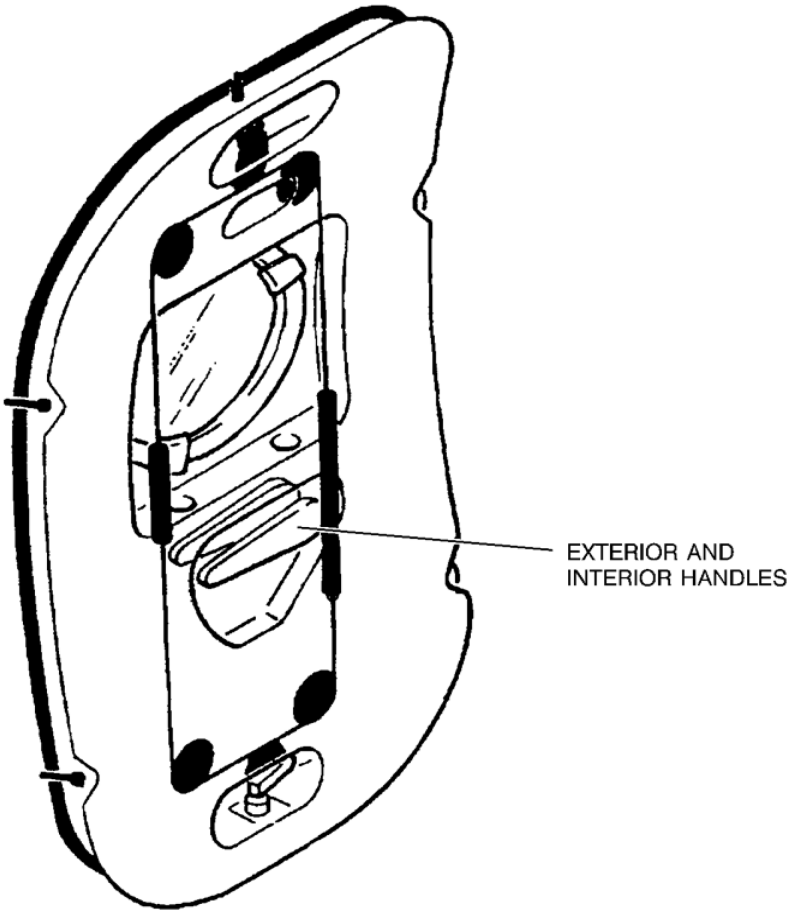


Figure 2-13 Side escape hatch

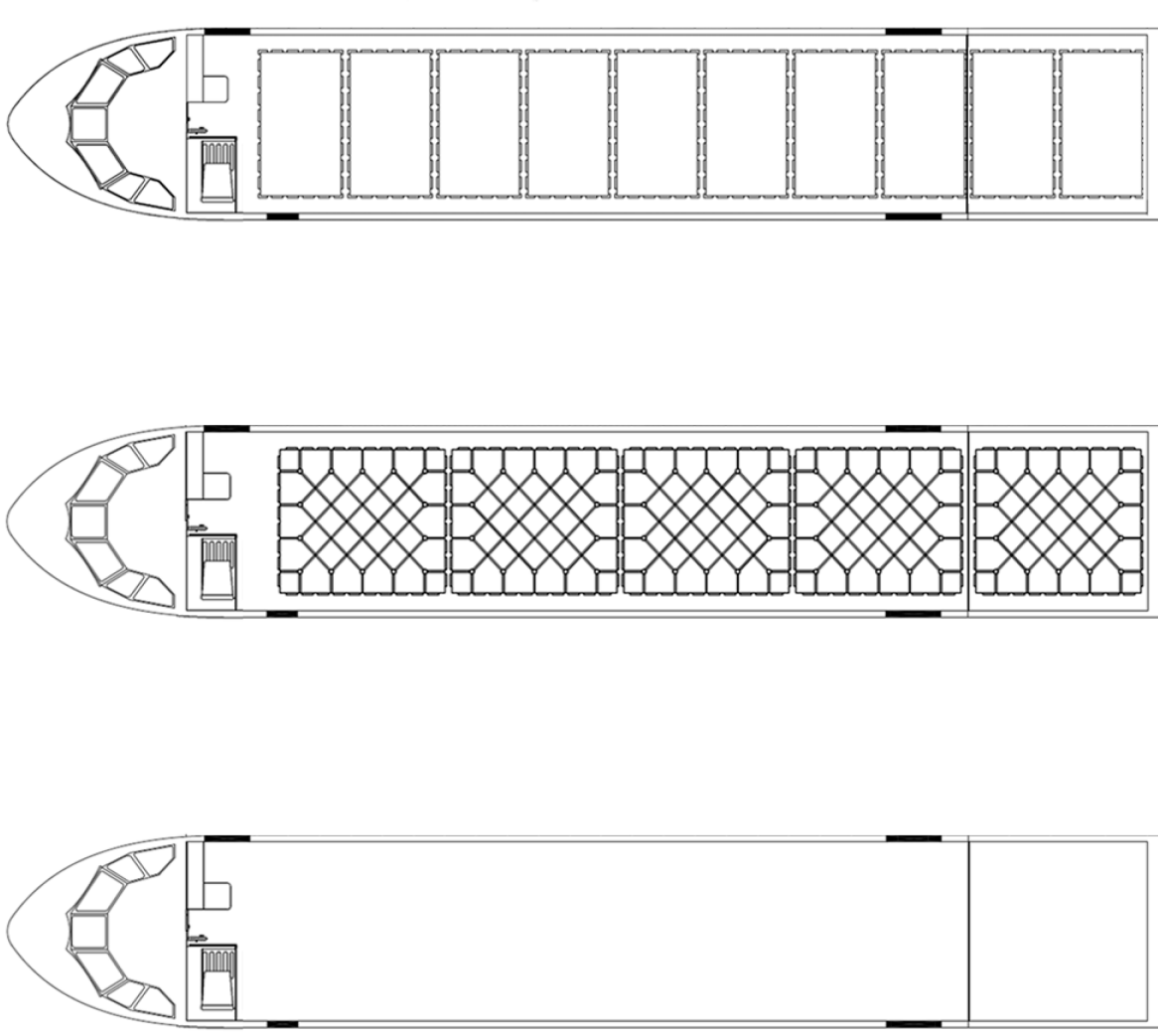


Figure 2-14 Cargo transport configurations

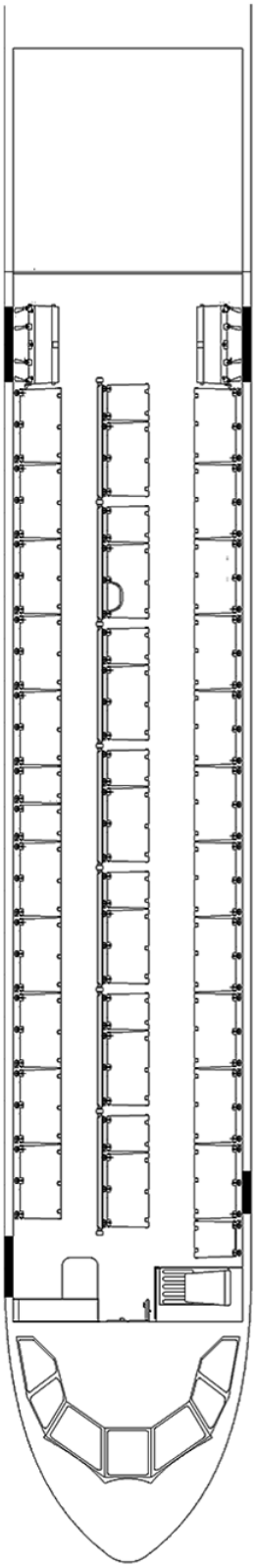


Figure 2-15 Troop transport configuration

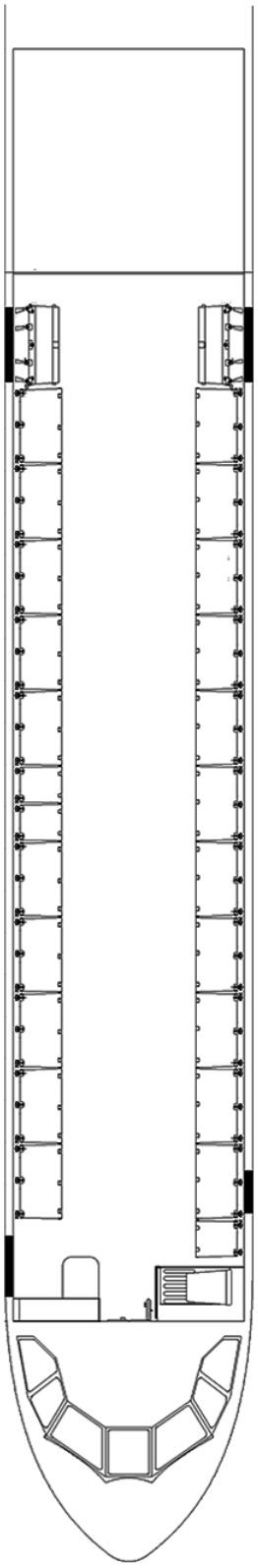


Figure 2-16 Paratroop transport configuration

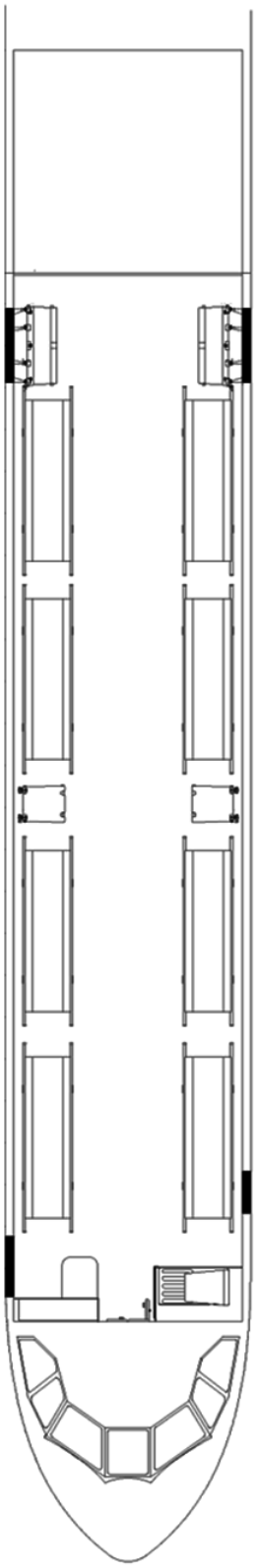


Figure 2-17 MEDEVAC configuration

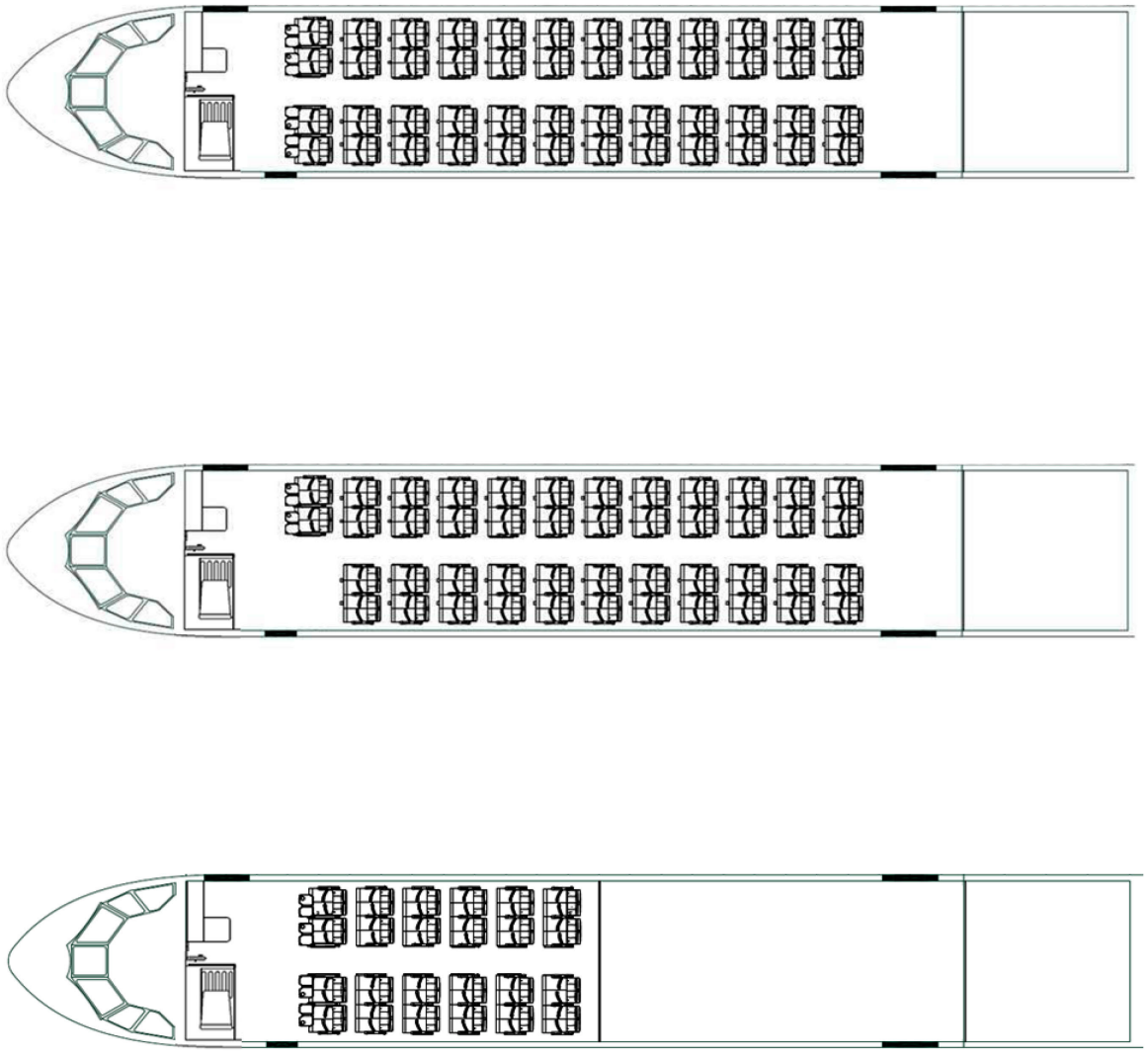


Figure 2-18 Passengers transport configuration

Figure 2-19 VIP transport configuration

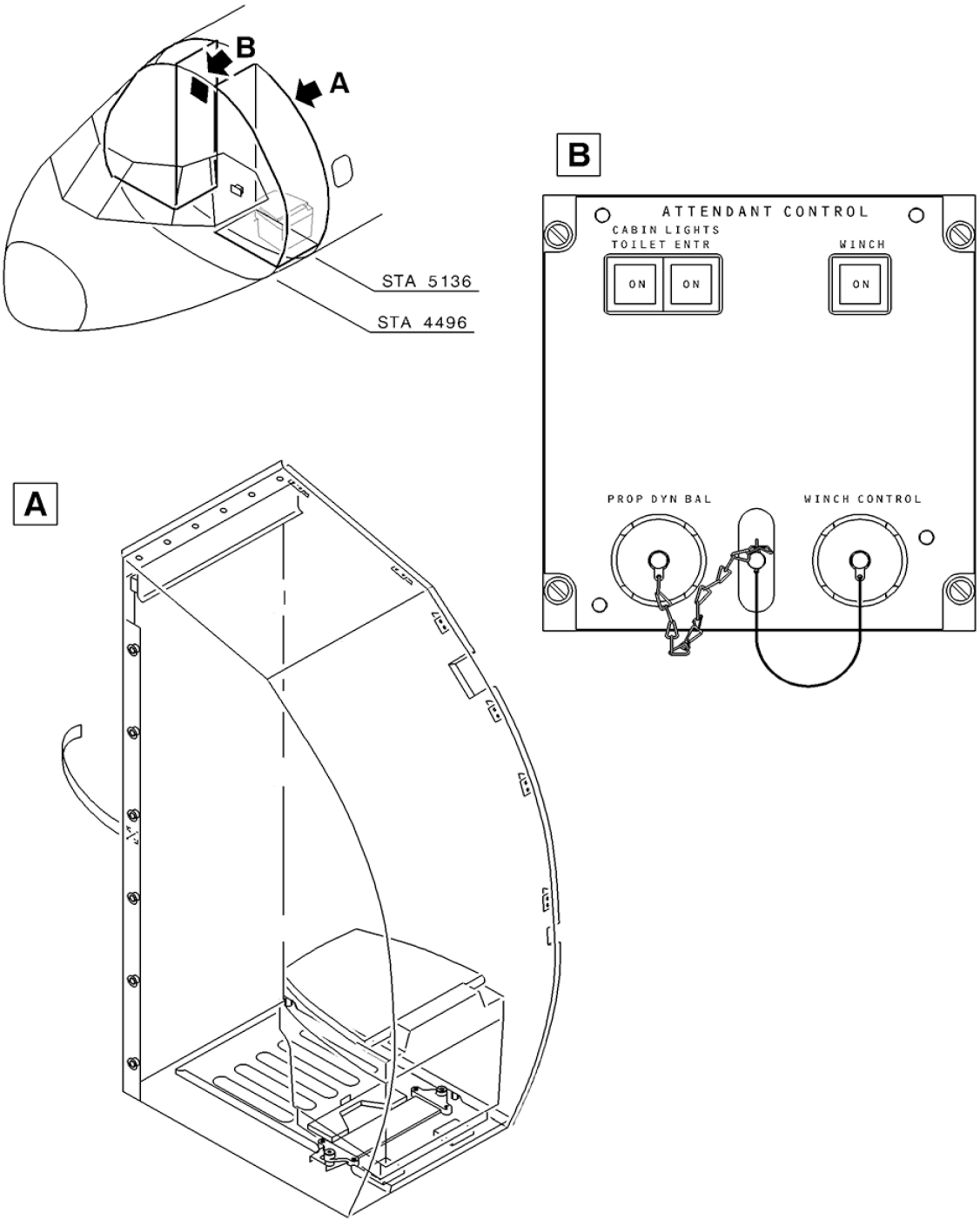


Figure 2-20 Military toilet

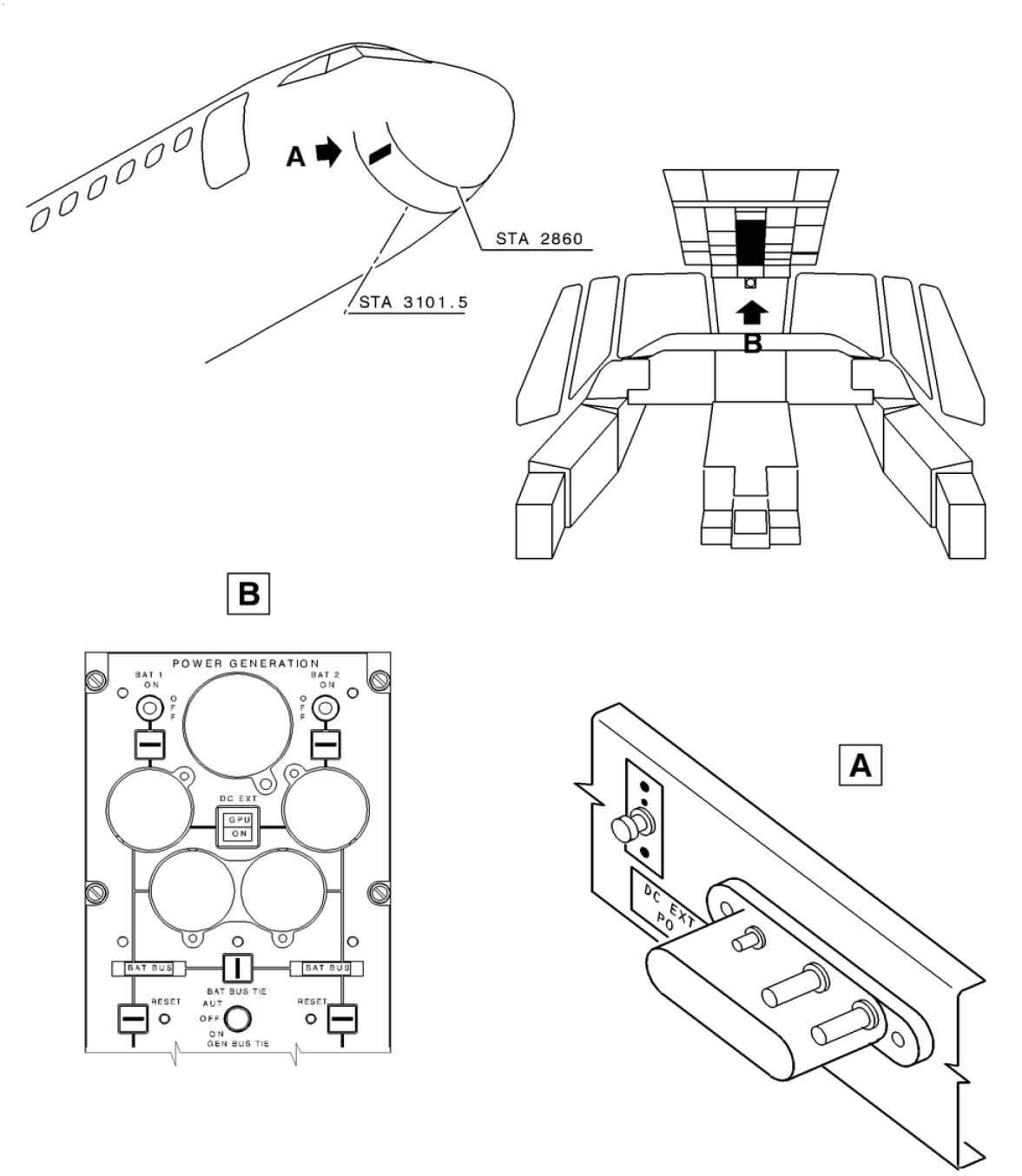


Figure 2-21 External DC power supply

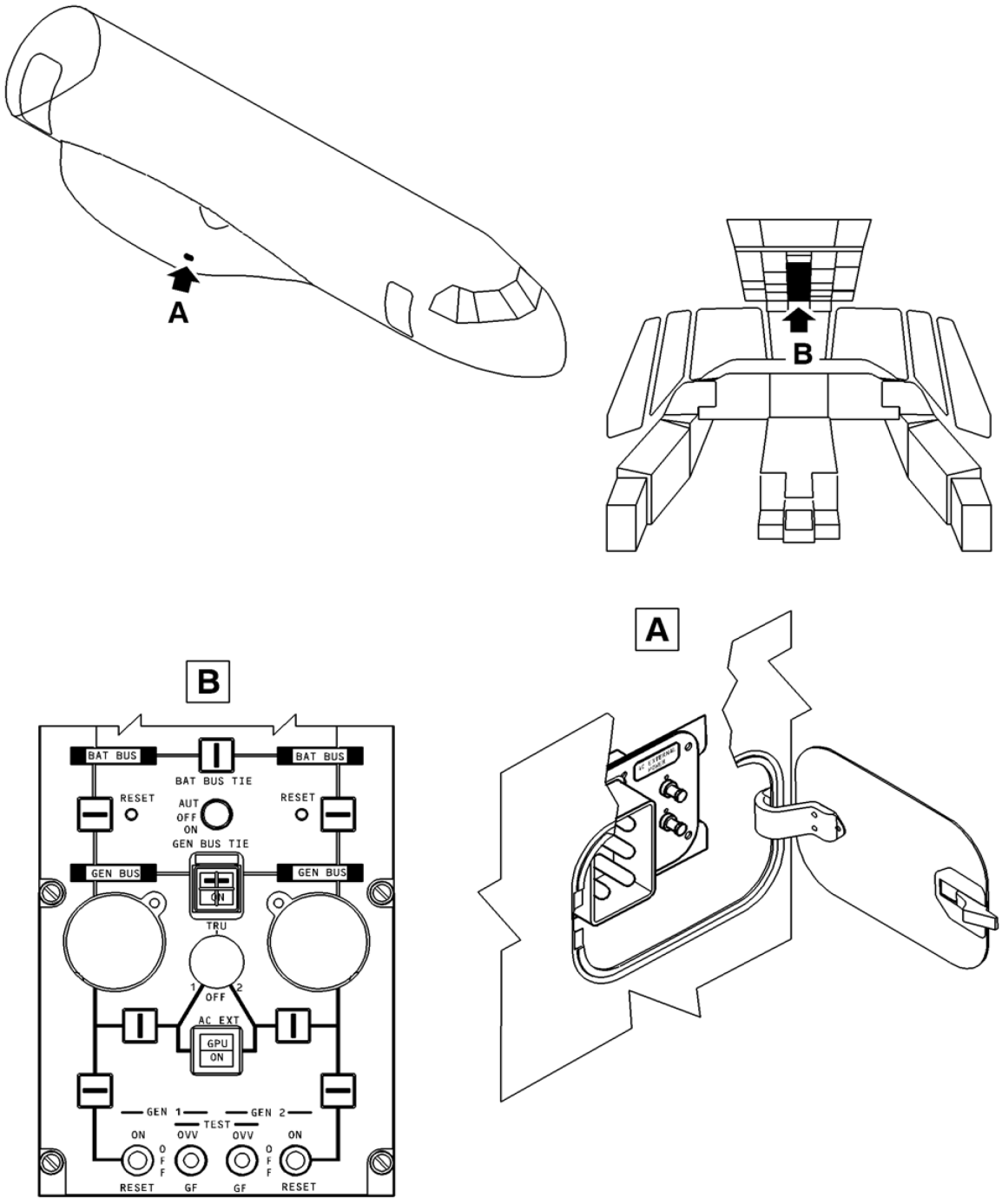


Figure 2-22 External AC power supply

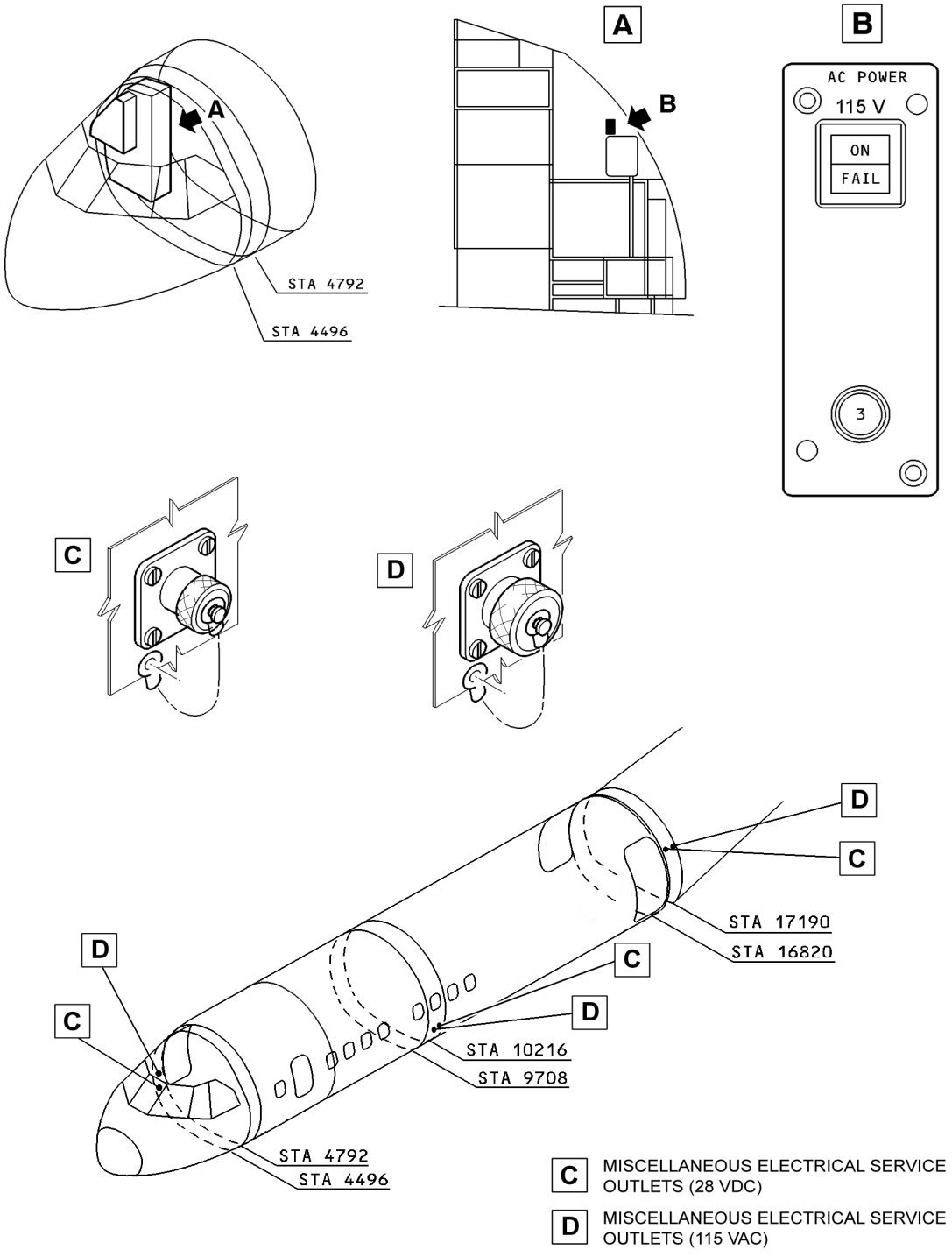


Figure 2-23 Electrical receptacles in the cargo cabin

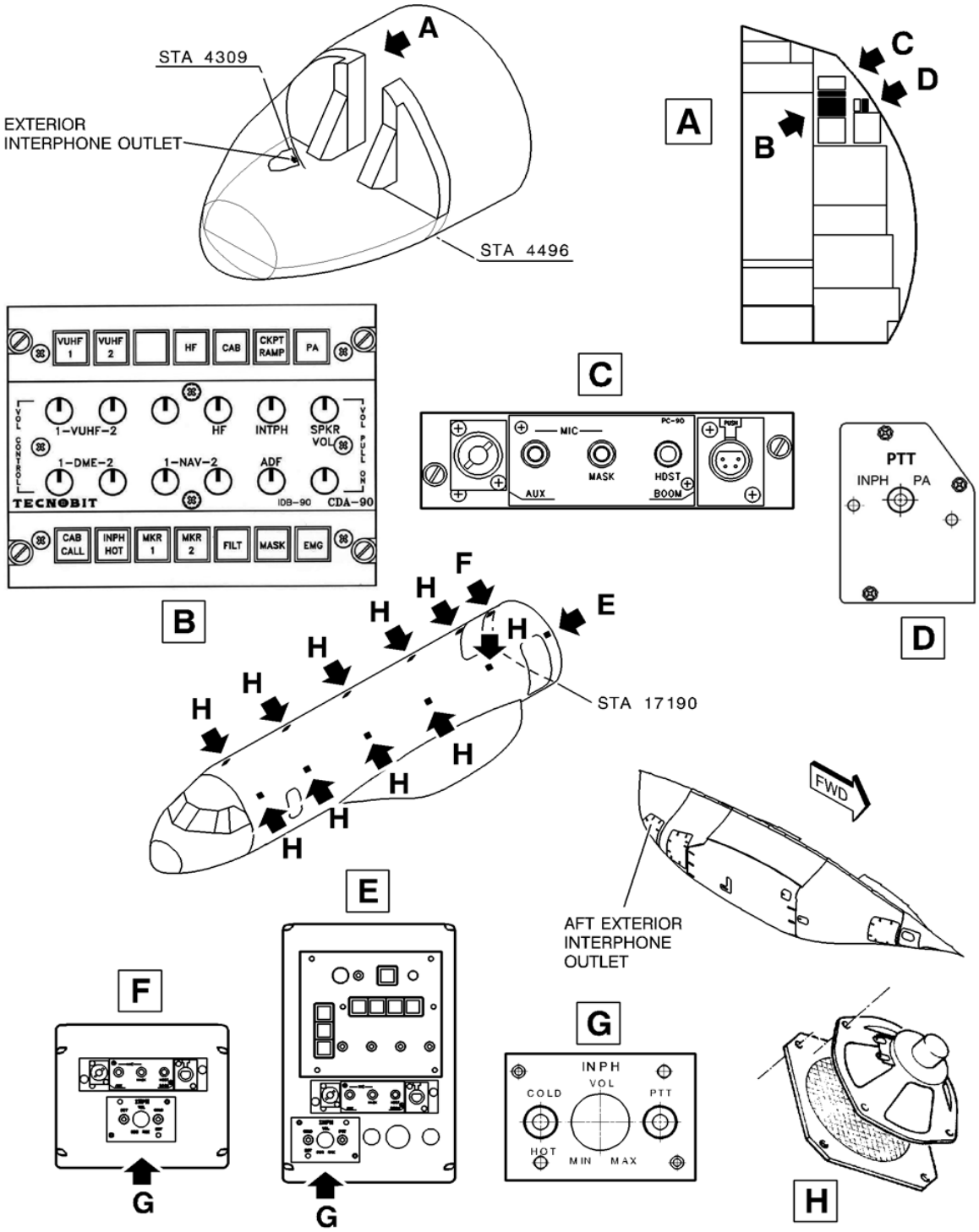


Figure 2-24 Interphone and public address system

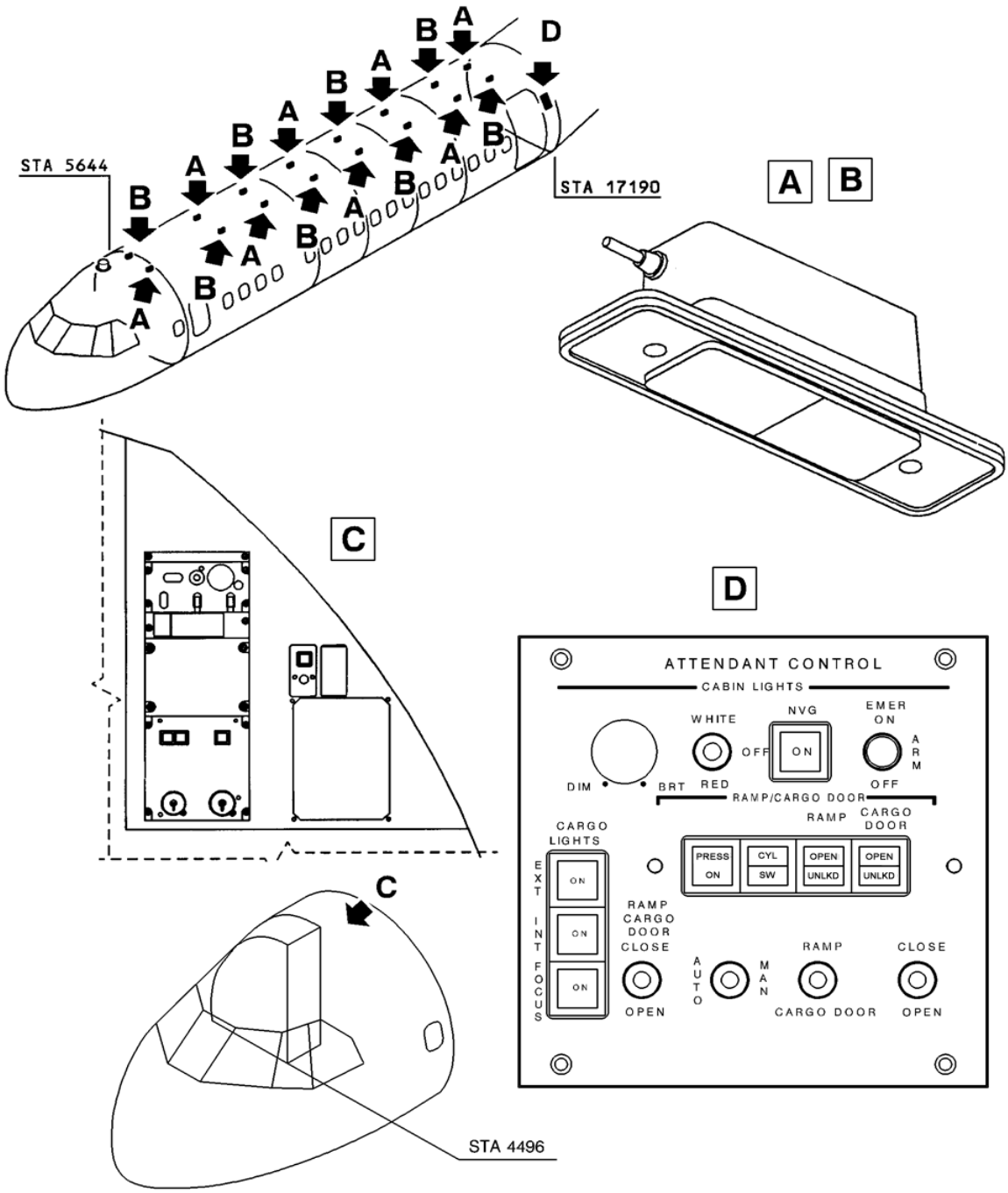


Figure 2-25 Cargo cabin lights

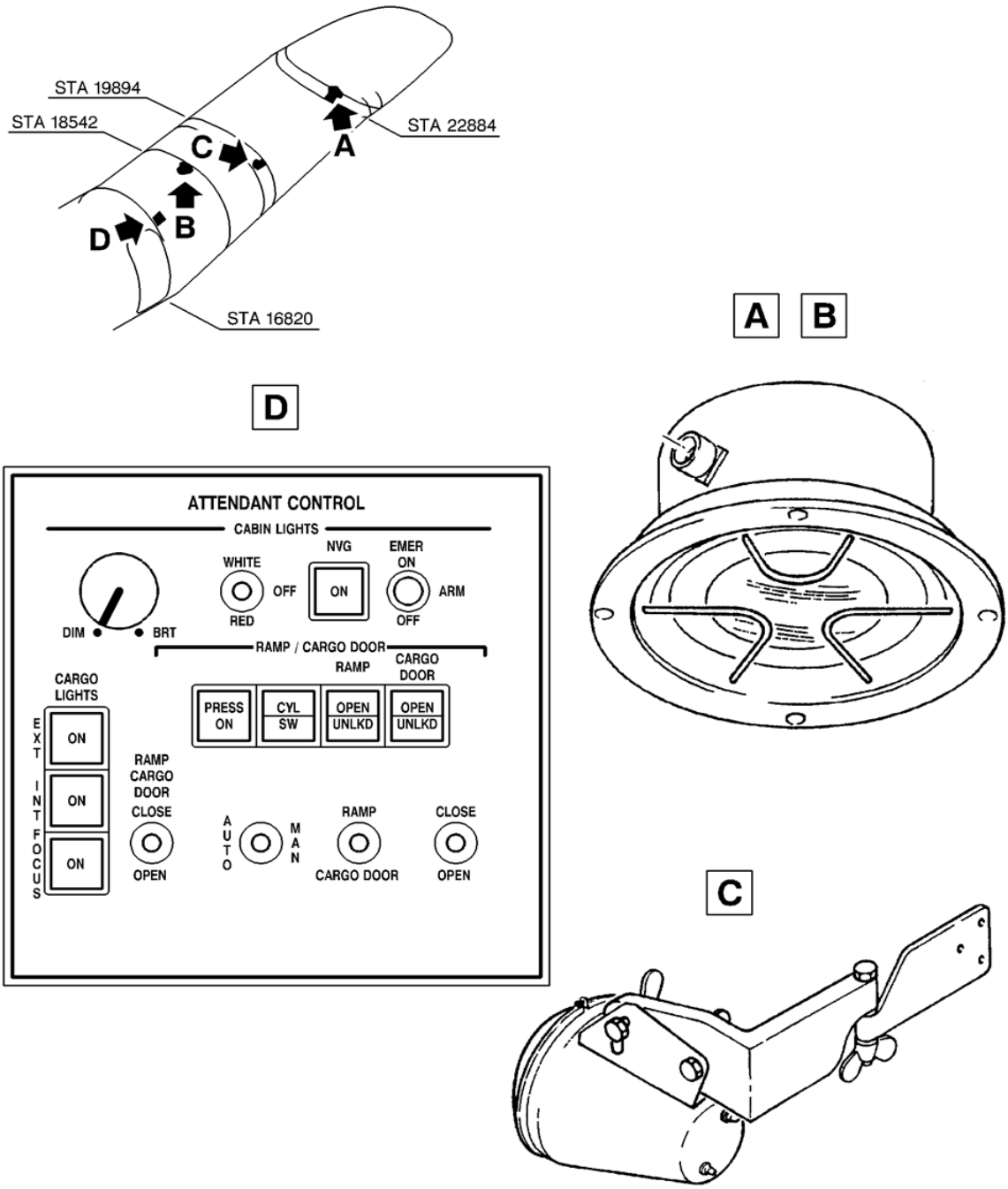


Figure 2-26 Loading area lights

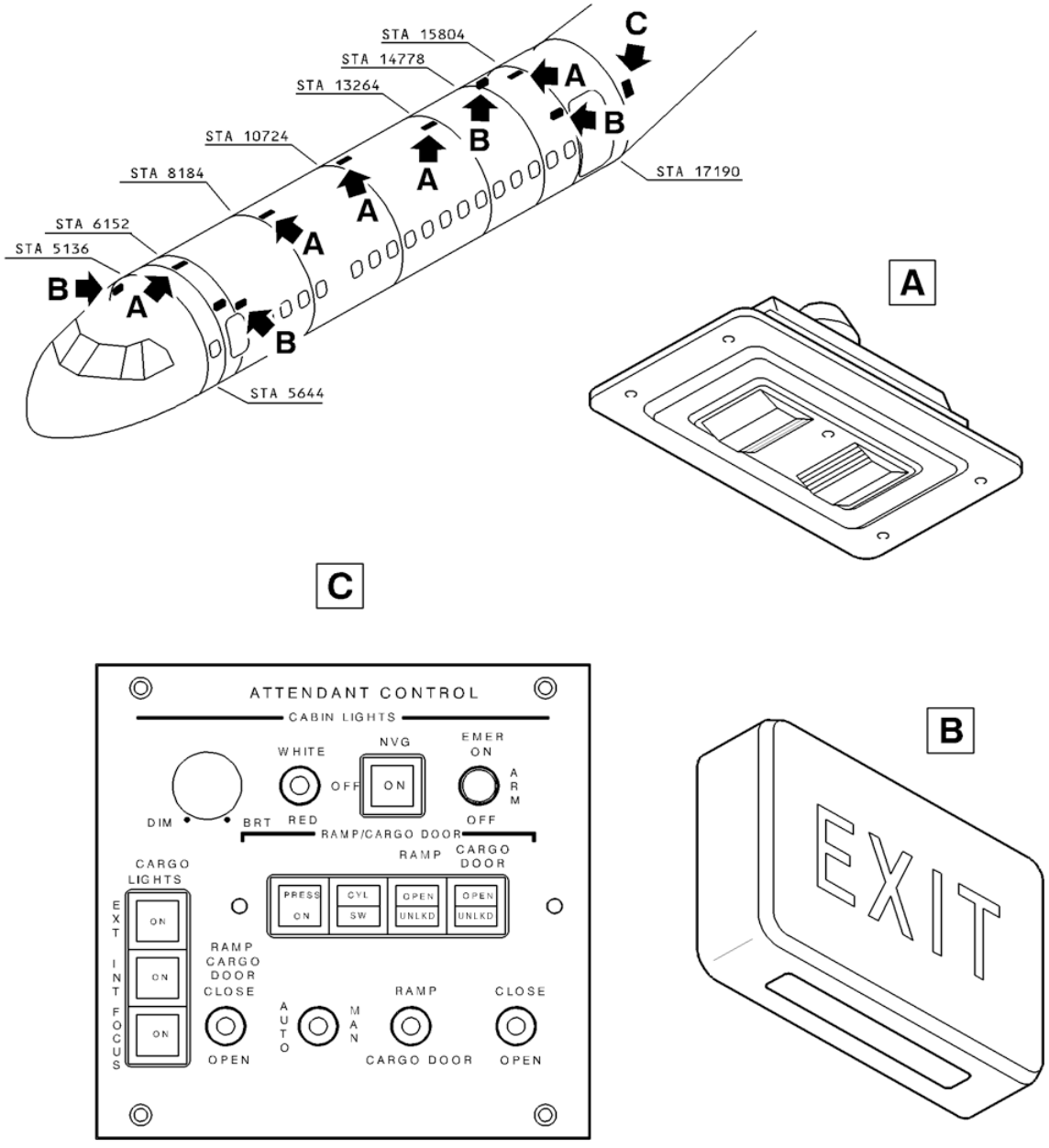


Figure 2-27 Internal emergency lights

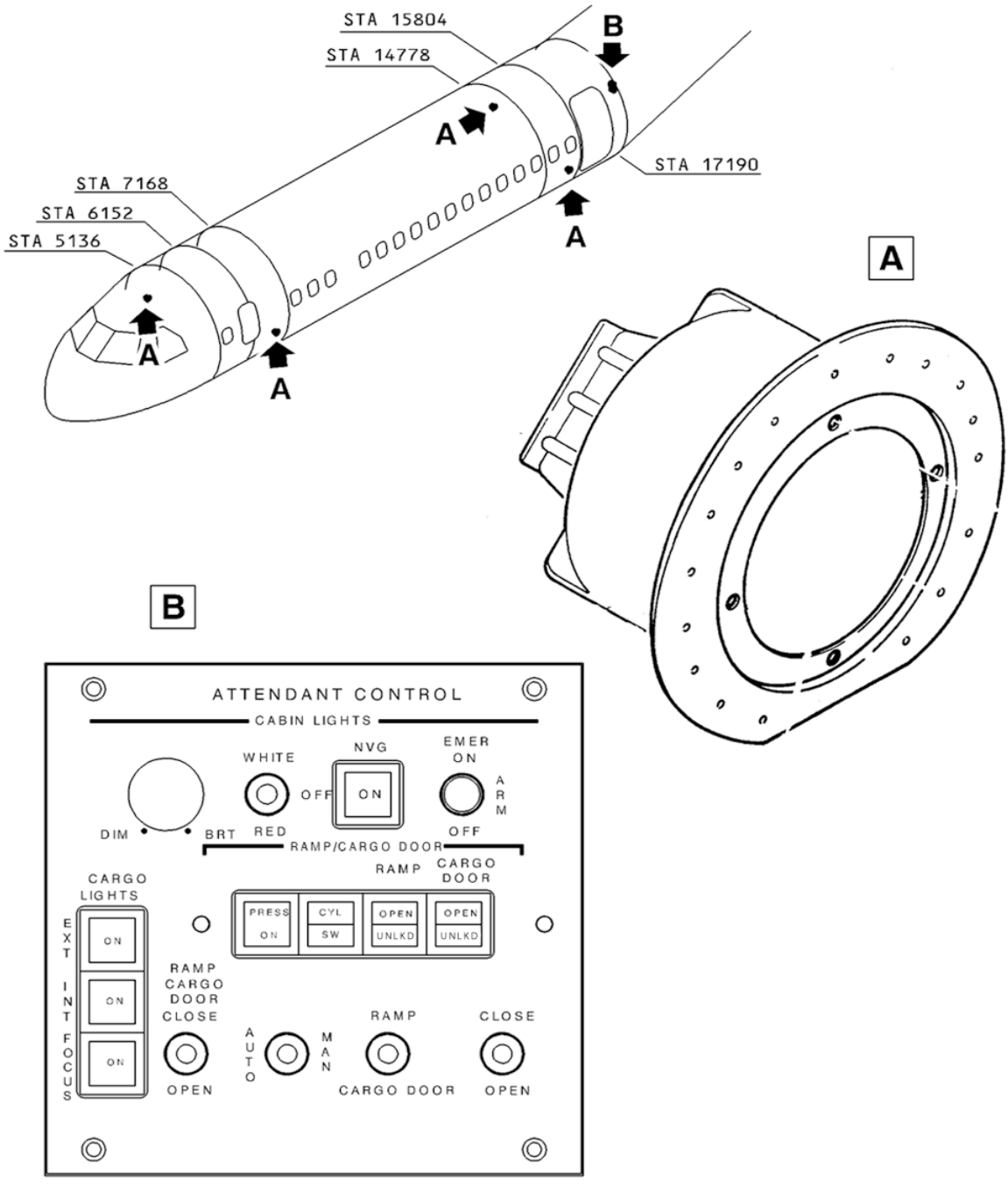


Figure 2-28 External emergency lights

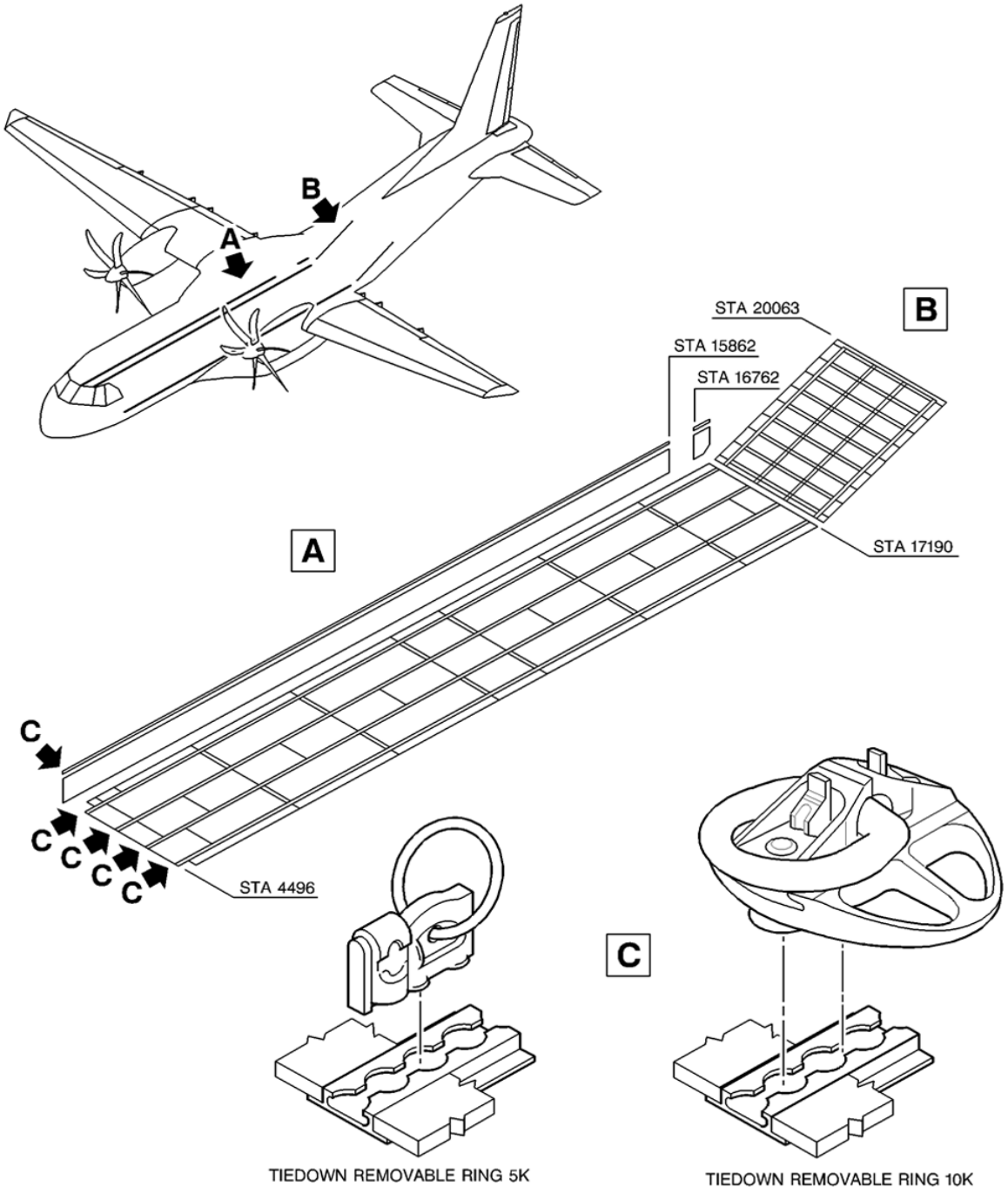


Figure 2-29 Restraint tracks

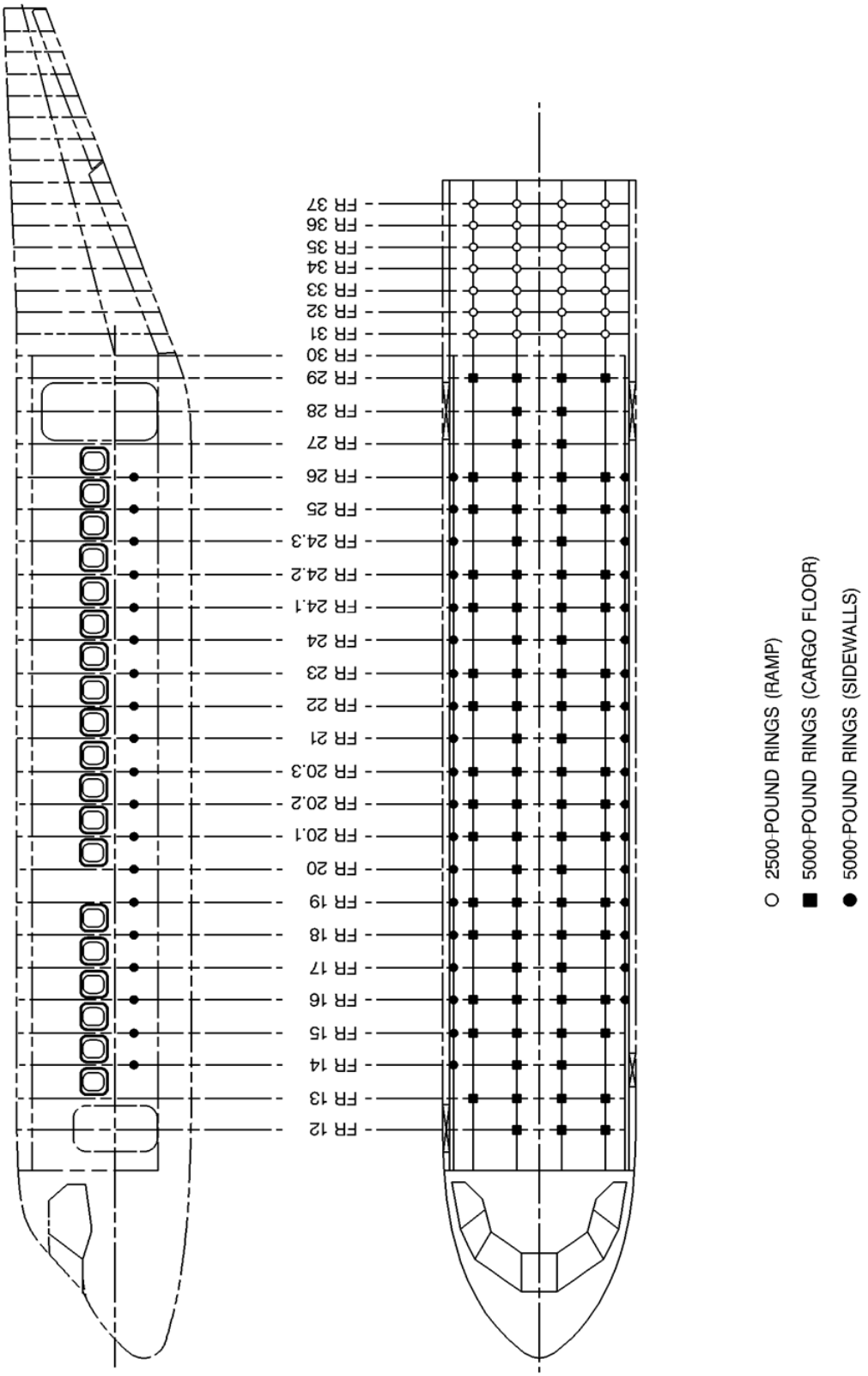


Figure 2-30 Points for installation of removable tiedown rings (Sheet 1 of 2)

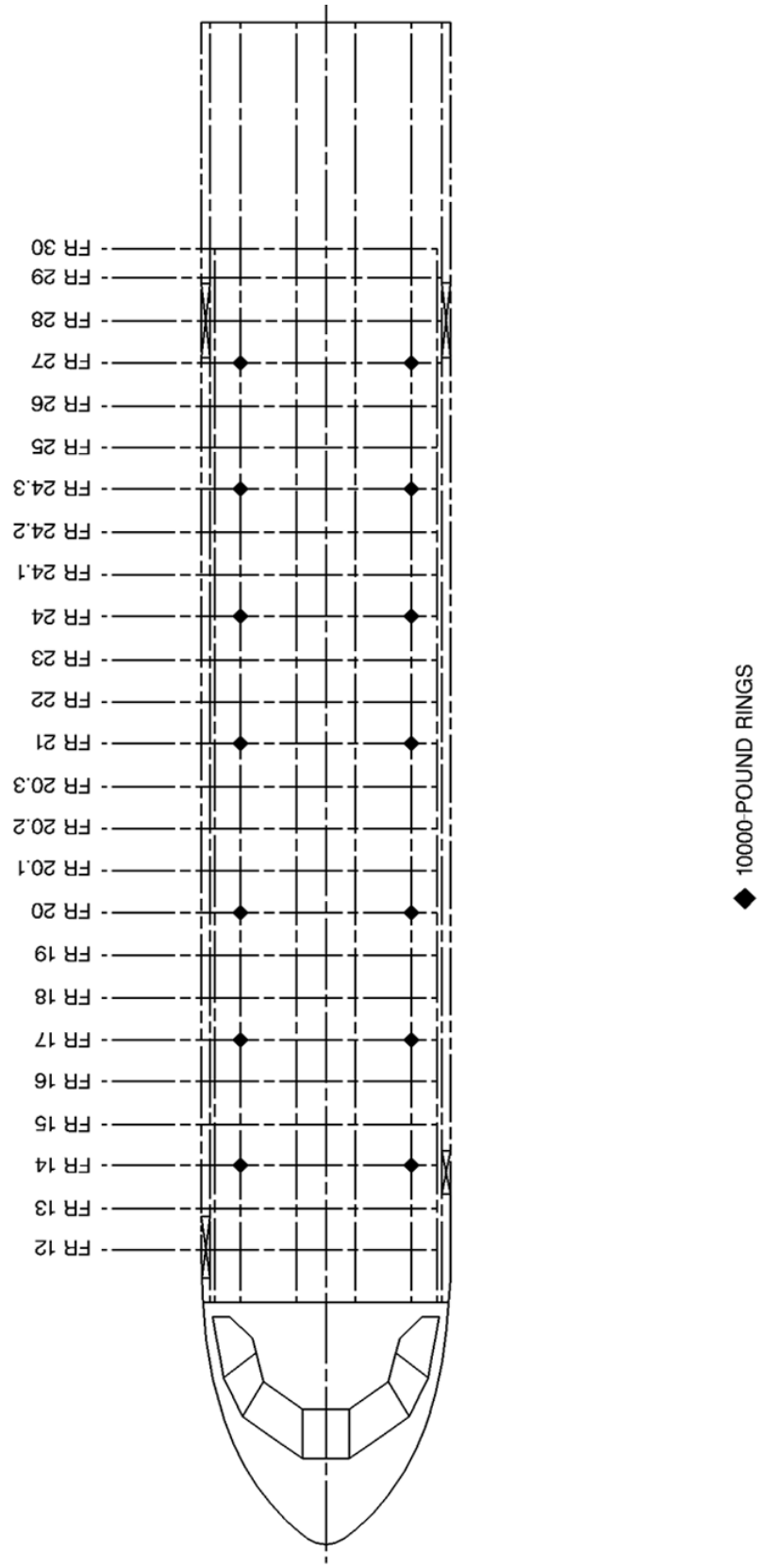


Figure 2-30 Points for installation of removable tiedown rings (Sheet 2 of 2)

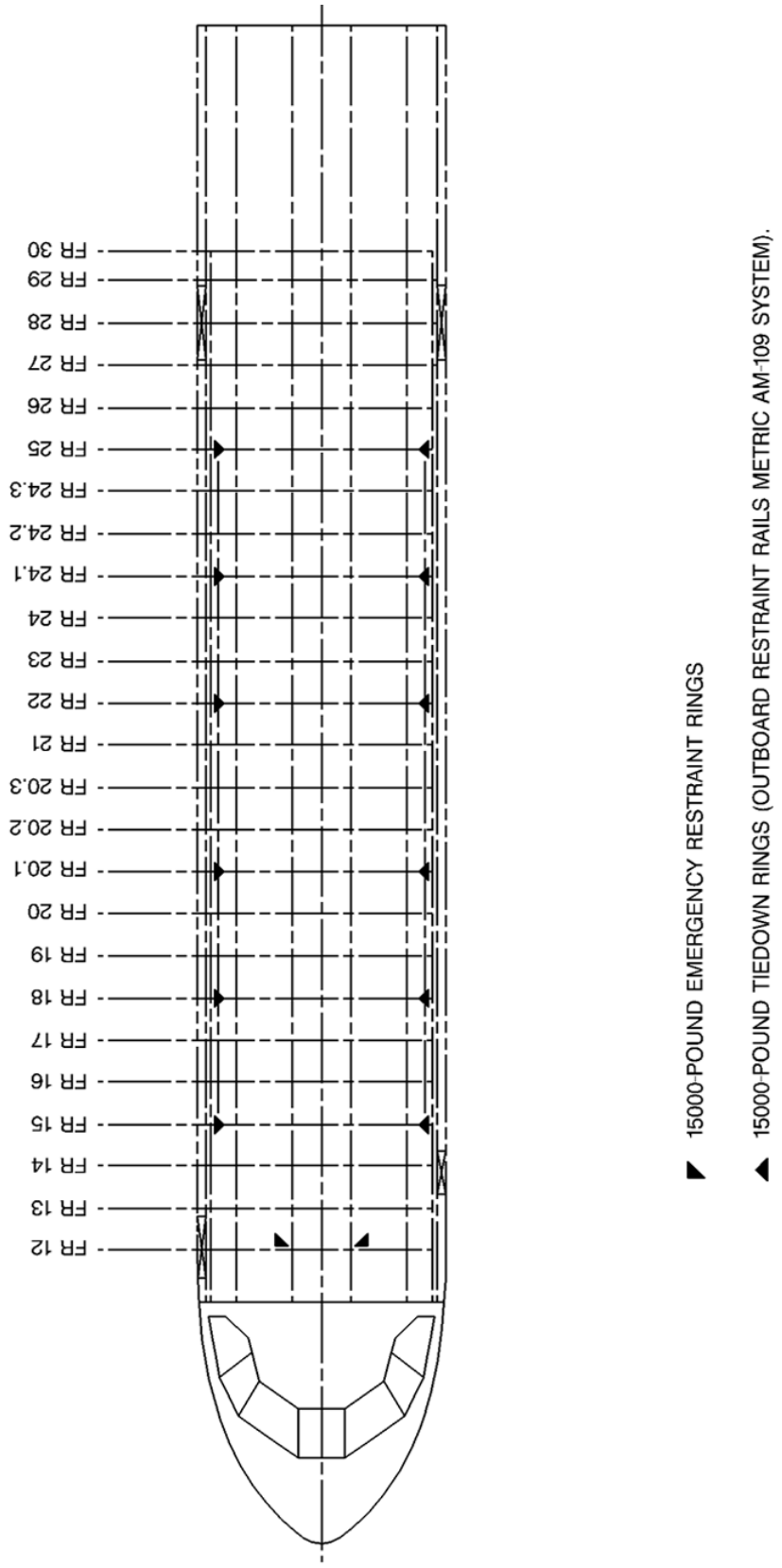


Figure 2-31 15000 lb tiedown rings

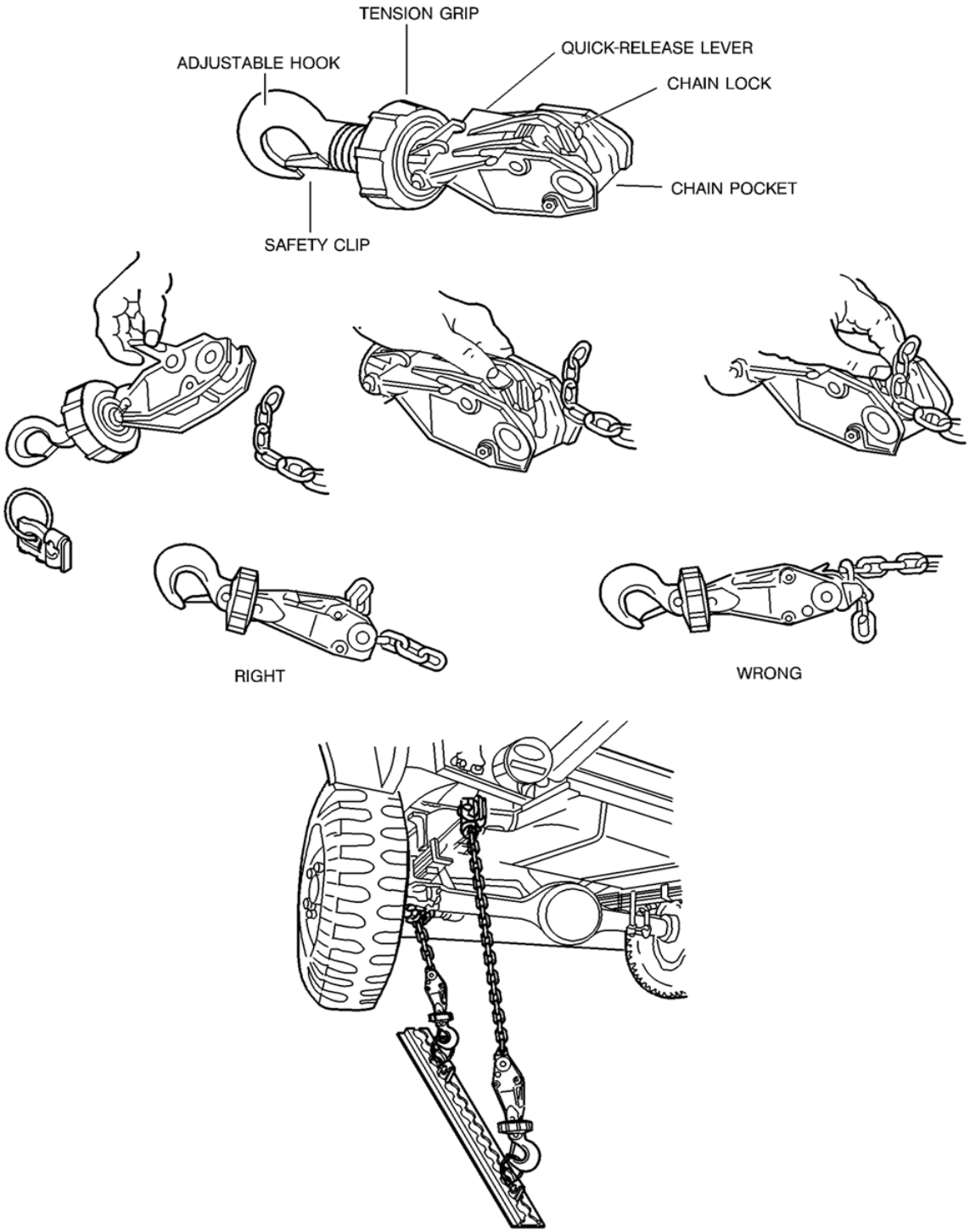


Figure 2-32 MB-1/CGU-4/E (10000 lb) chain tiedown devices

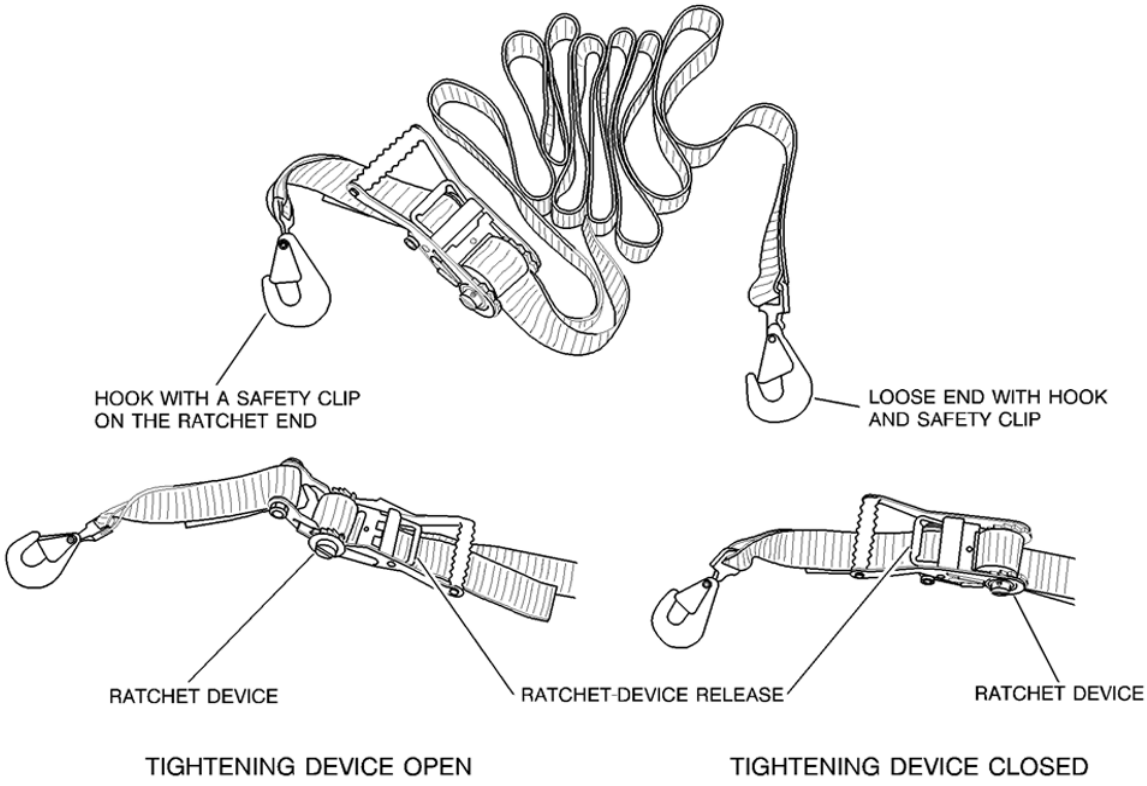


Figure 2-33 Tiedown straps

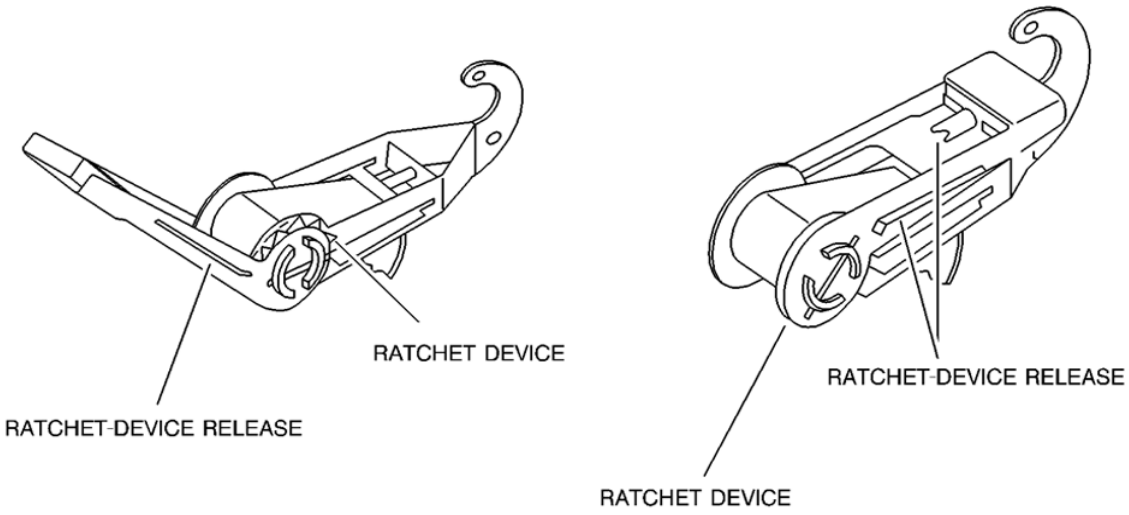


Figure 2-34 5000 lb tiedown strap

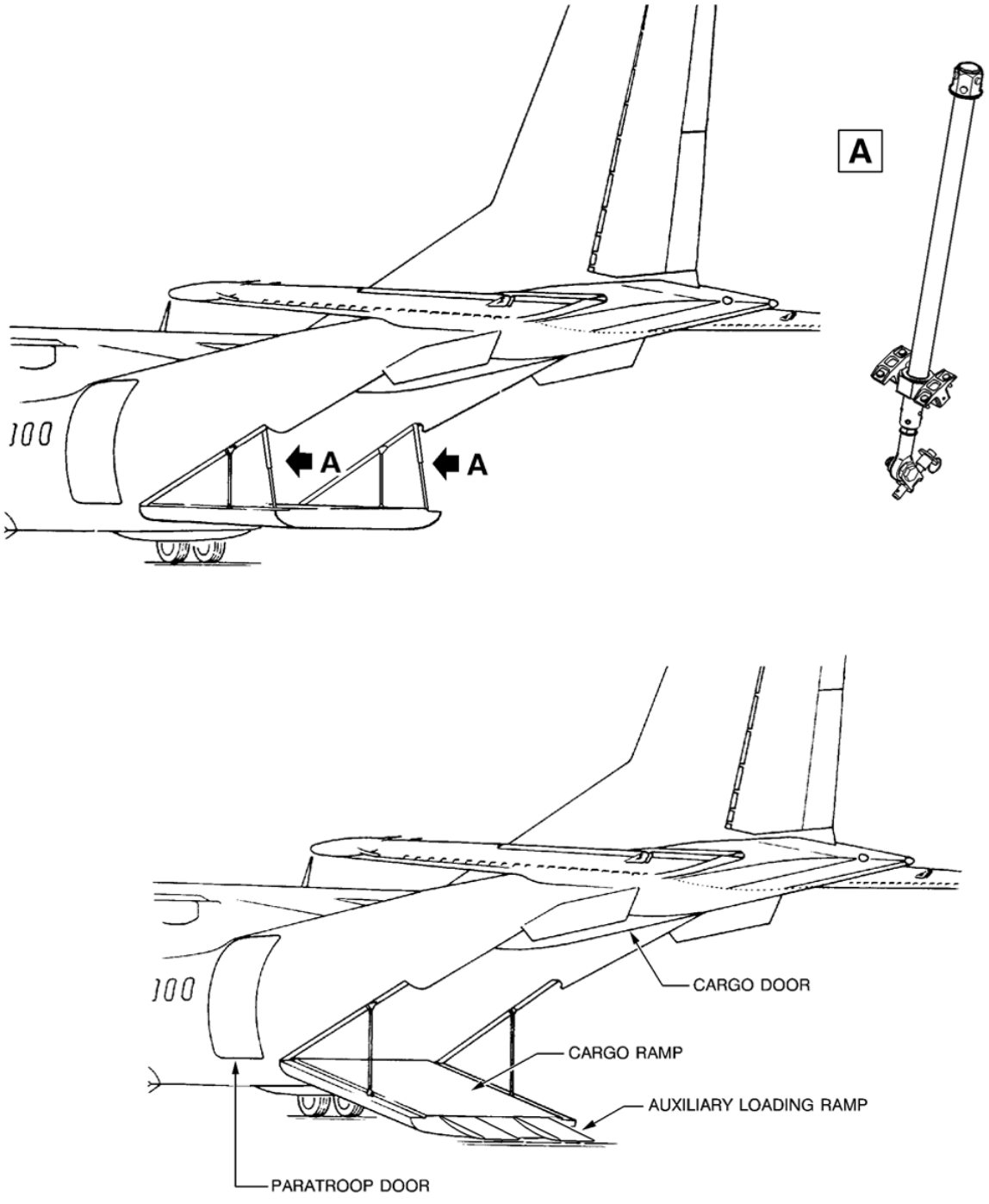


Figure 2-35 Aircraft cargo door and ramp

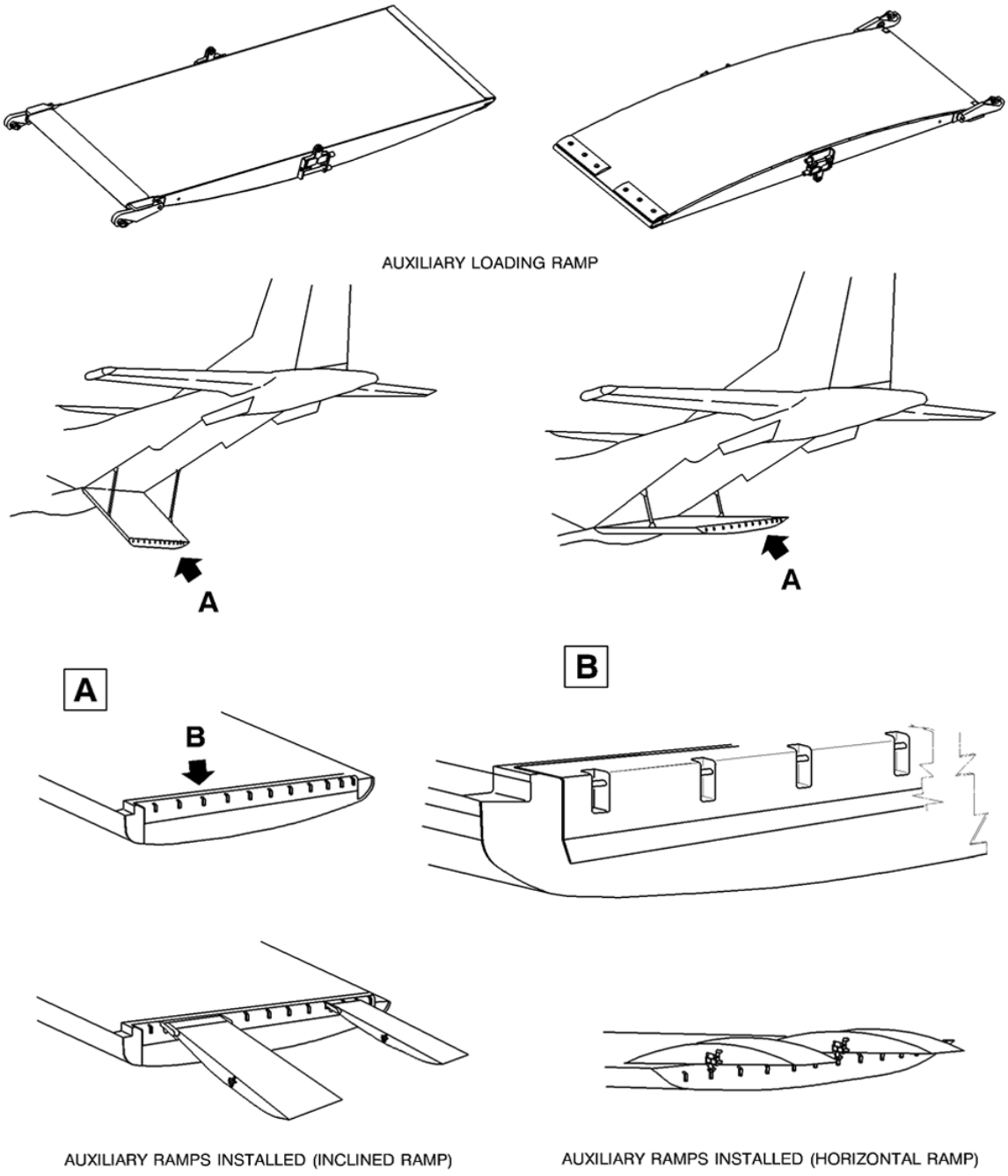
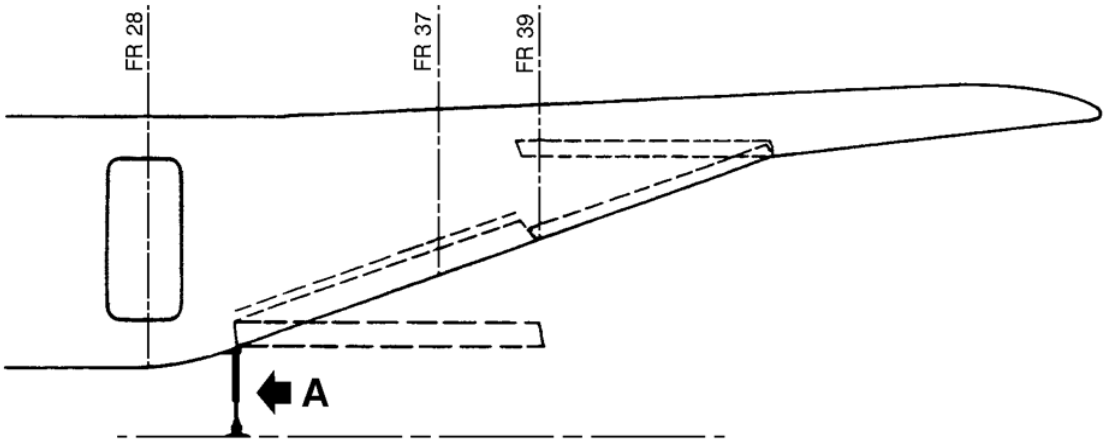


Figure 2-36 Auxiliary loading ramps



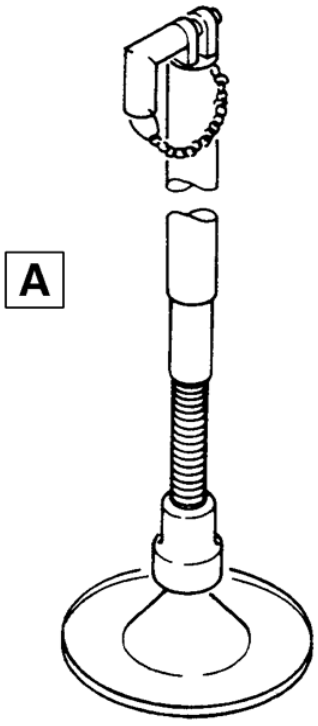


Figure 2-37 Fuselage support leg

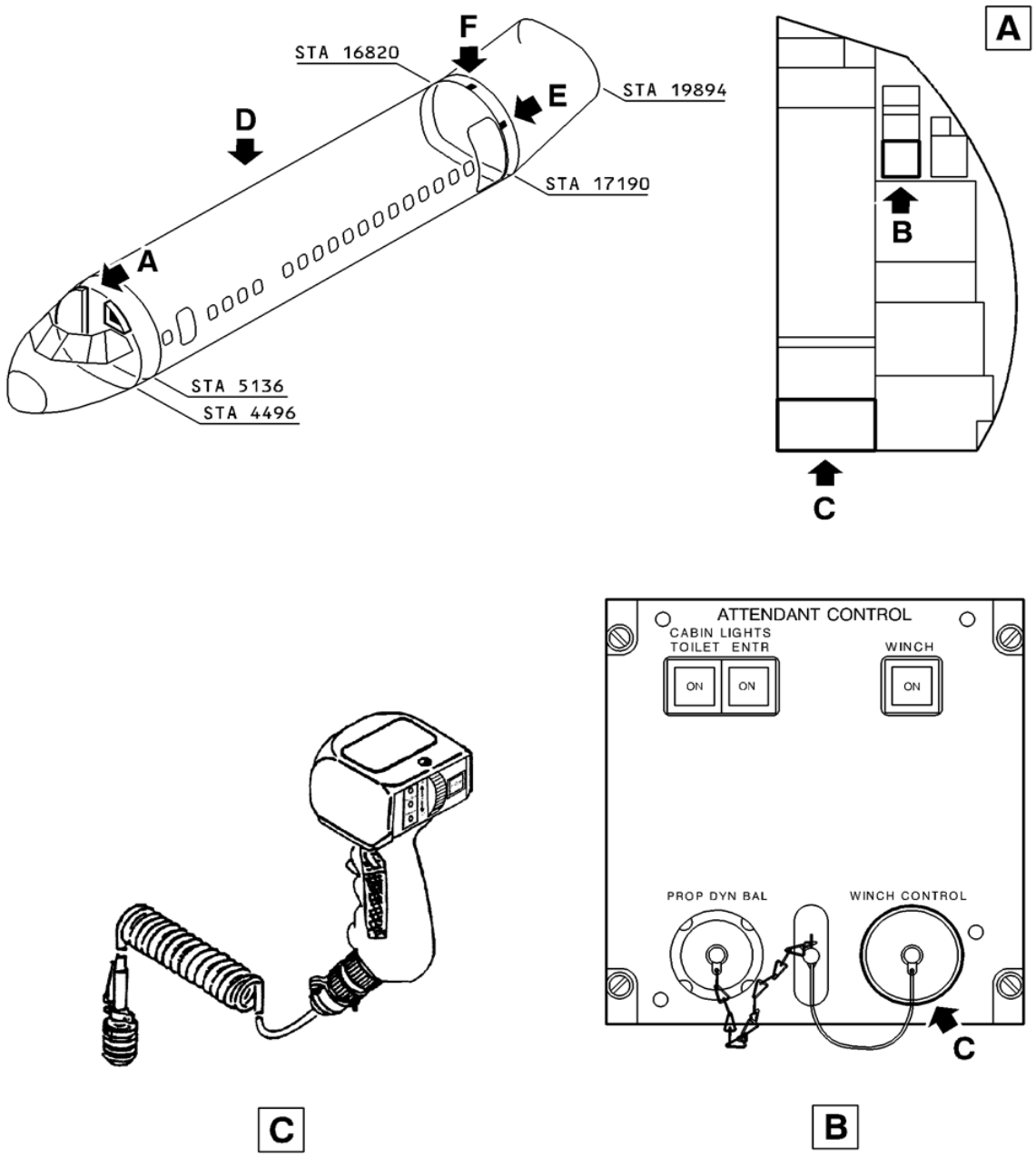


Figure 2-38 Aircraft cargo winch (Sheet 1 of 2)

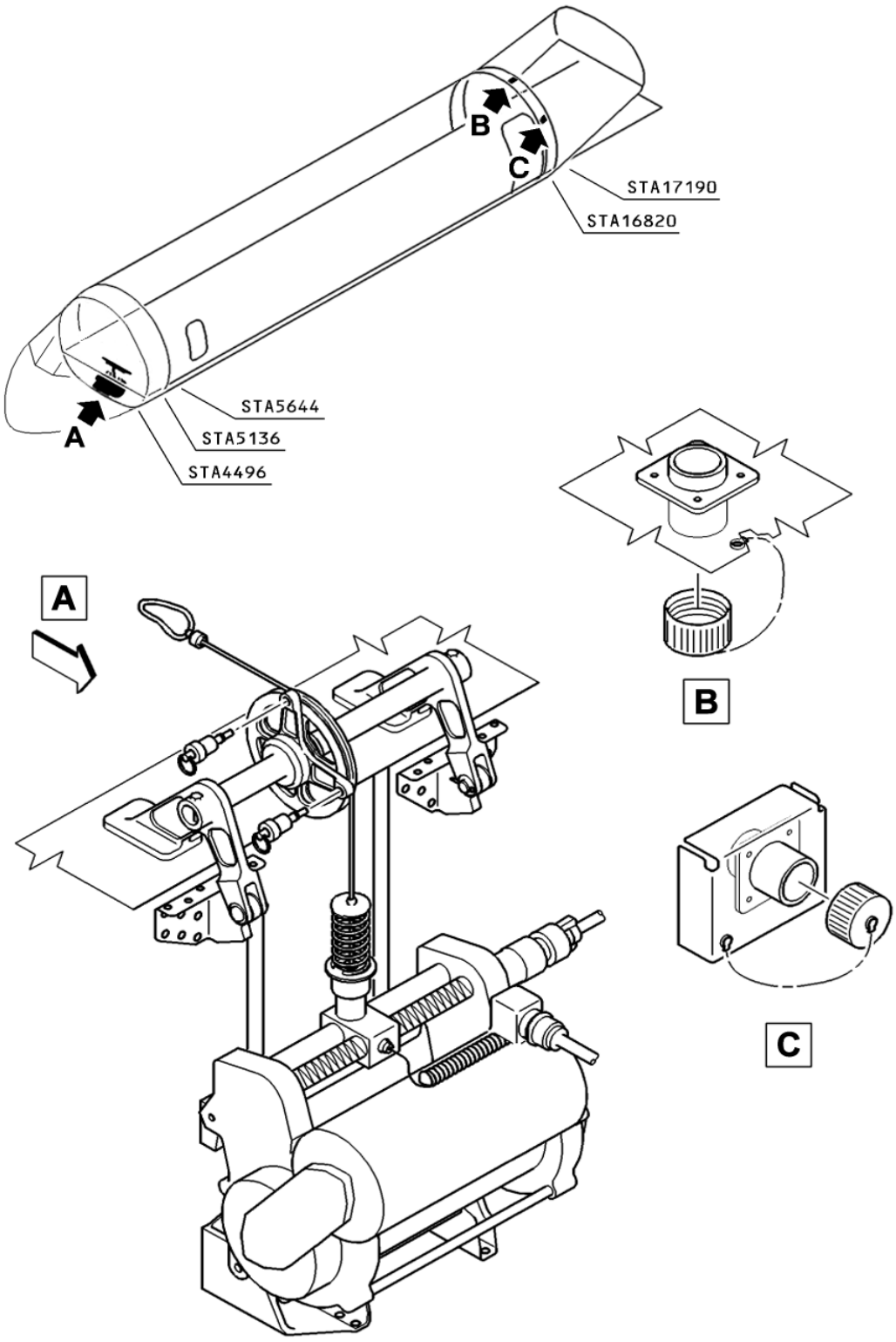


Figure 2-38 Aircraft cargo winch (Sheet 2 of 2)

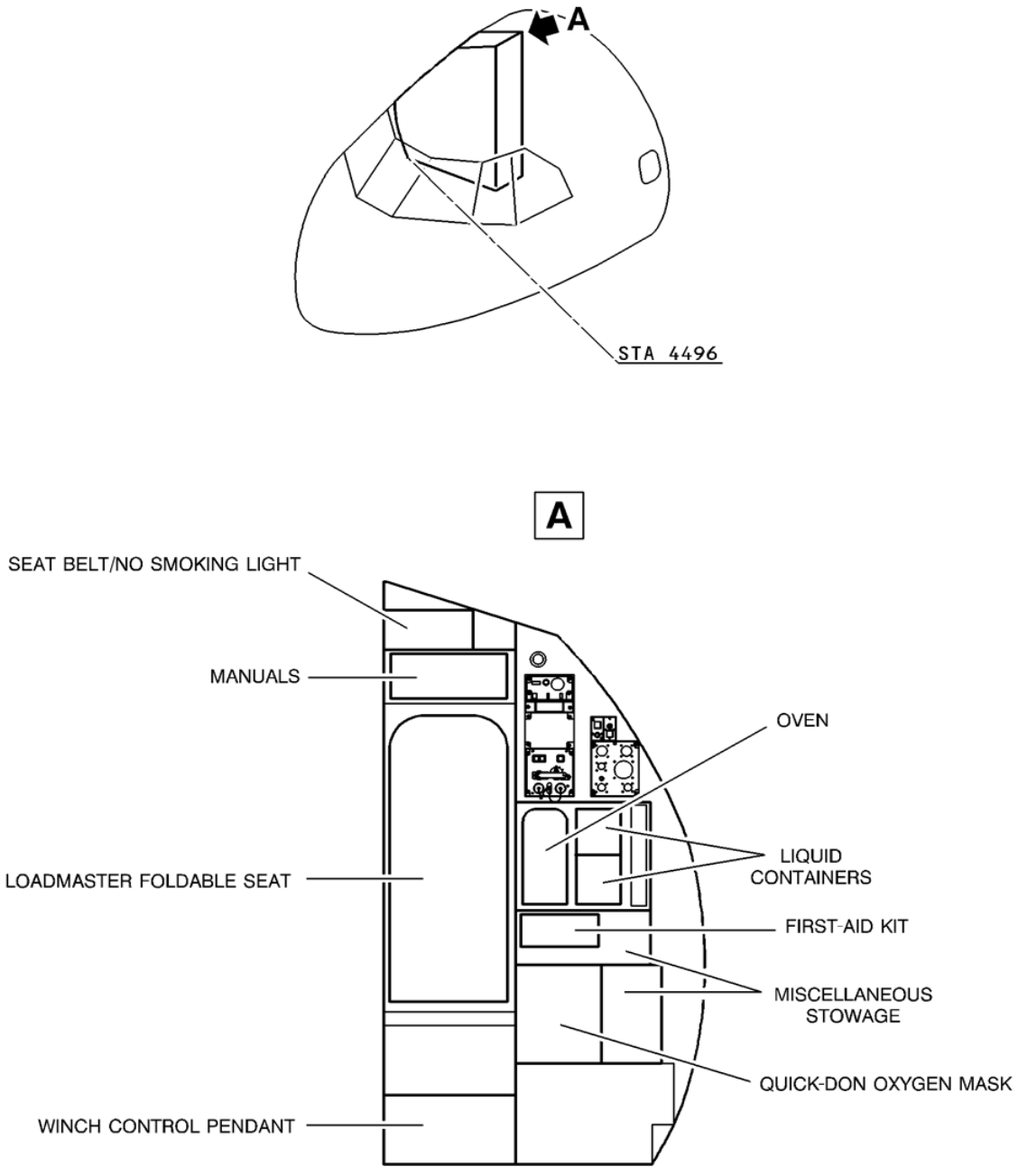


Figure 2-39 Miscellaneous equipment and storage provisions (Sheet 1 of 4)

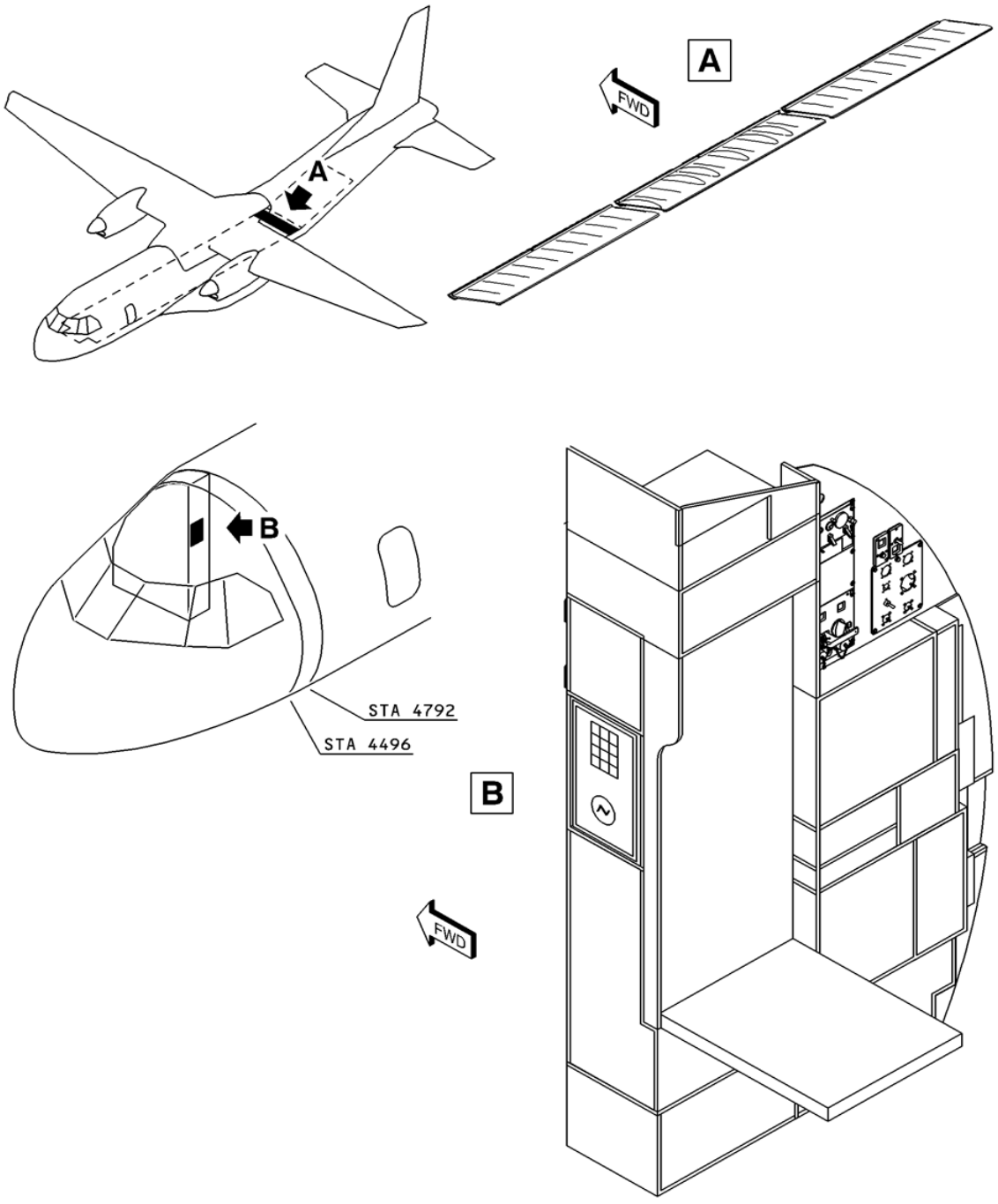


Figure 2-39 Miscellaneous equipment and storage provisions (Sheet 2 of 4)

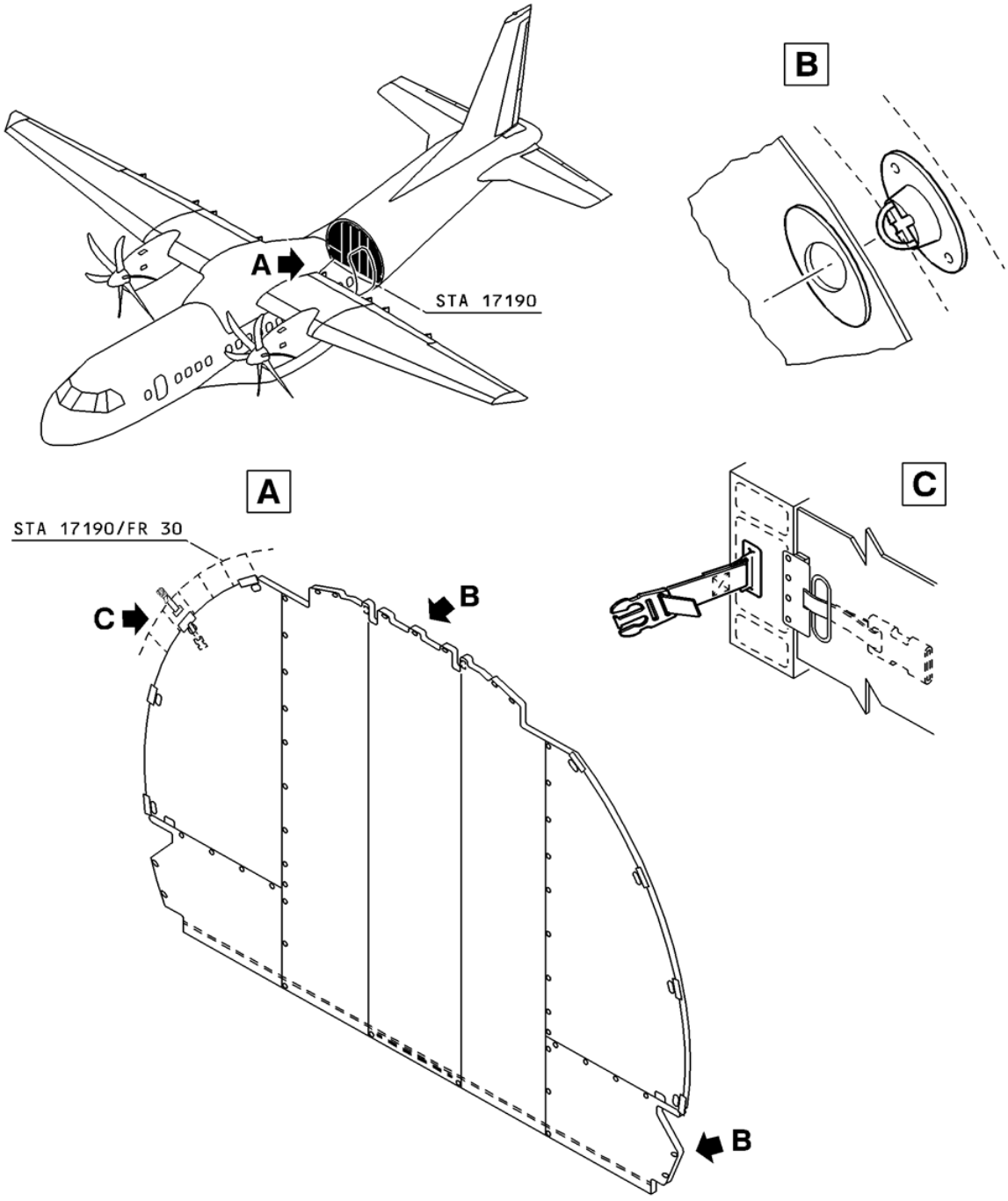


Figure 2-39 Miscellaneous equipment and storage provisions (Sheet 3 of 4)

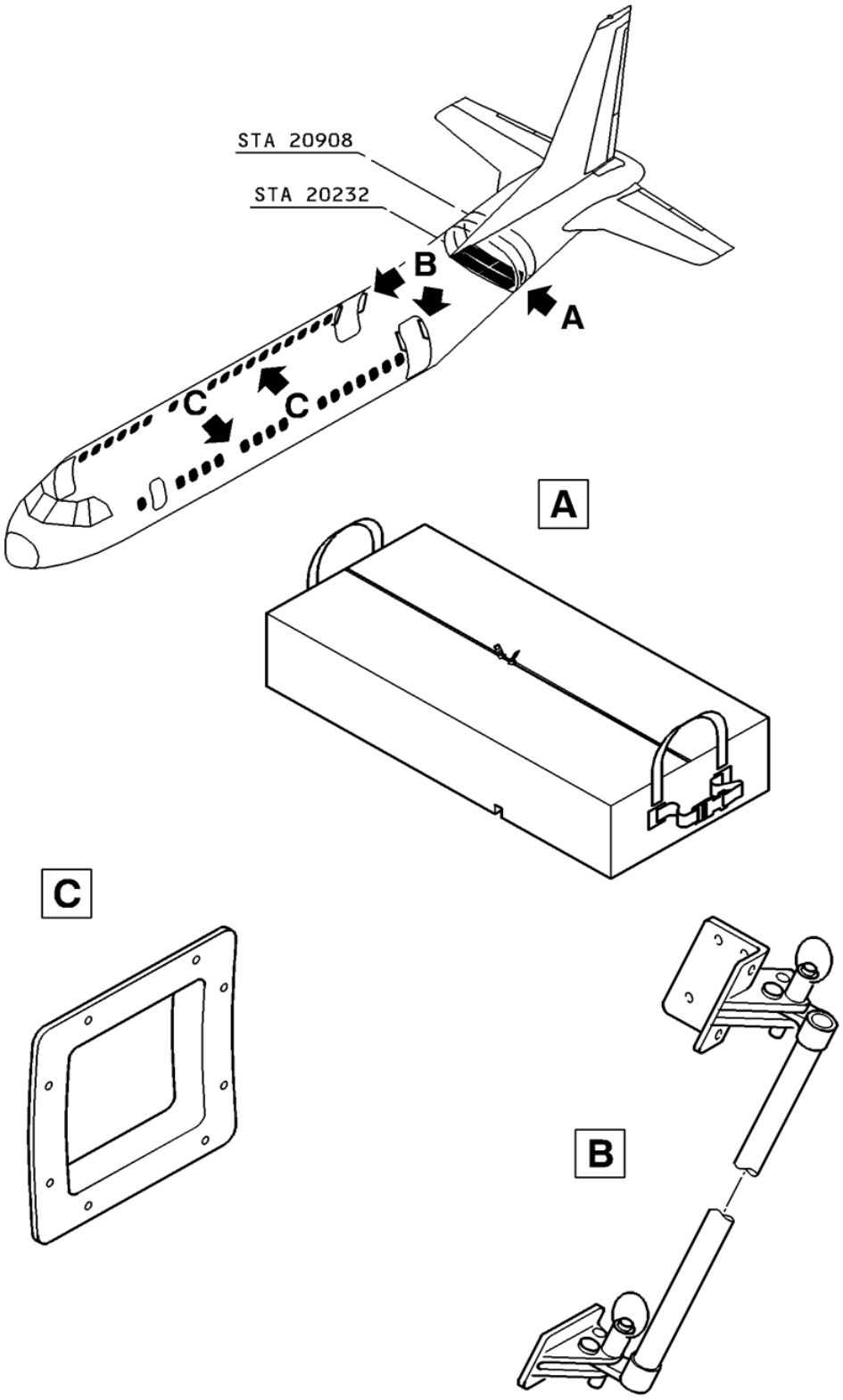


Figure 2-39 Miscellaneous equipment and storage provisions (Sheet 4 of 4)

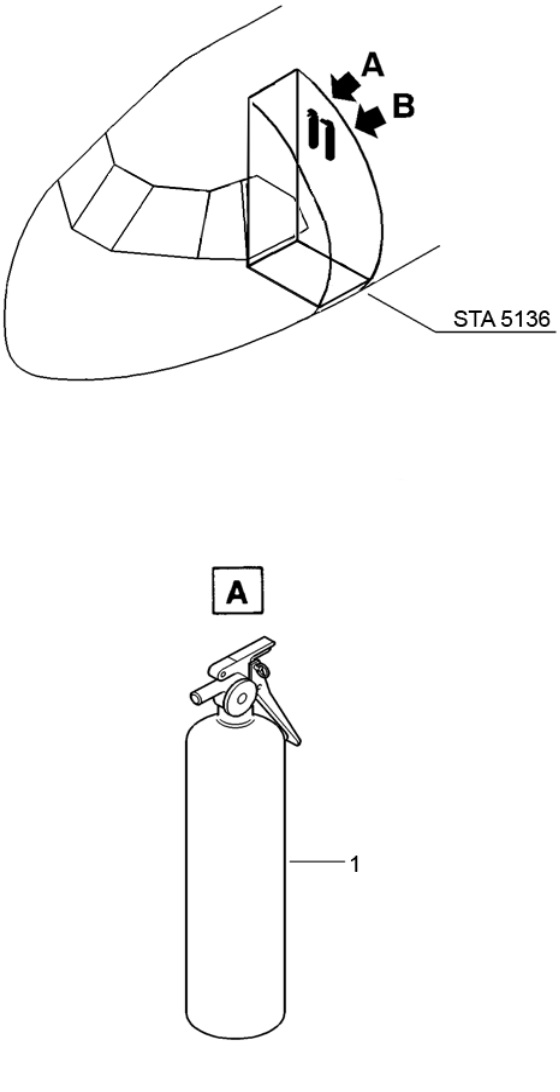


Figure 2-40 Extinguishers

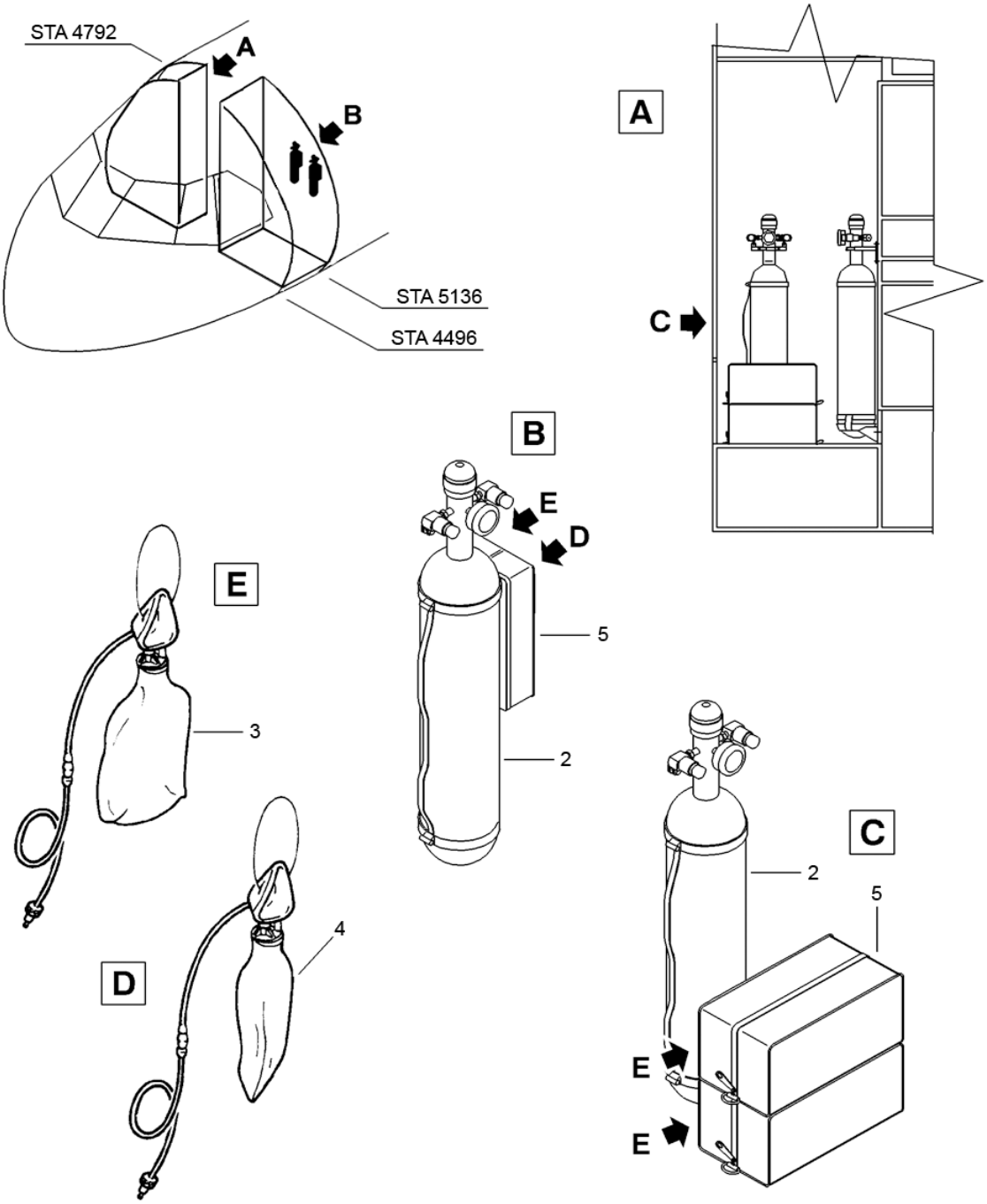


Figure 2-41 Portable oxygen system

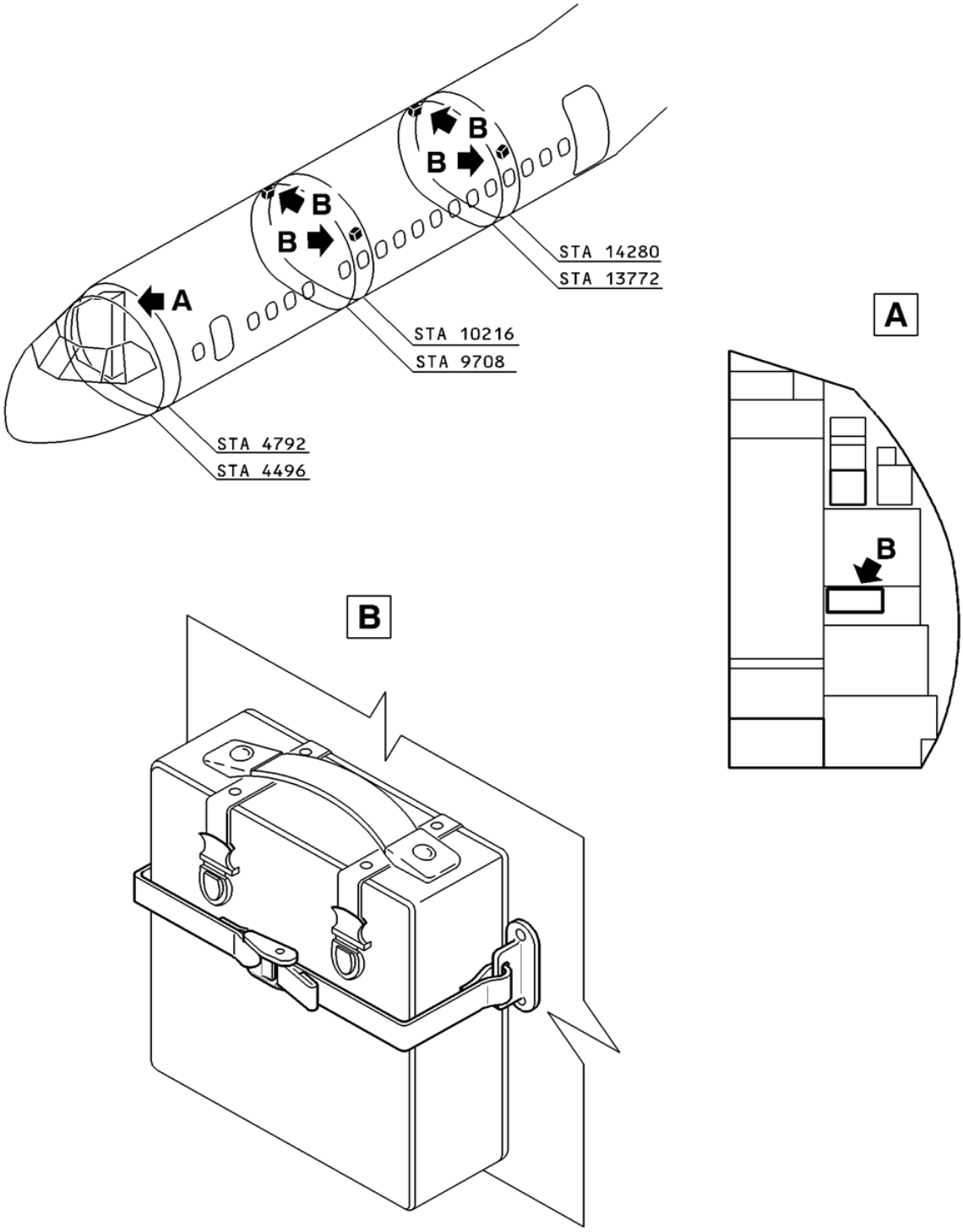
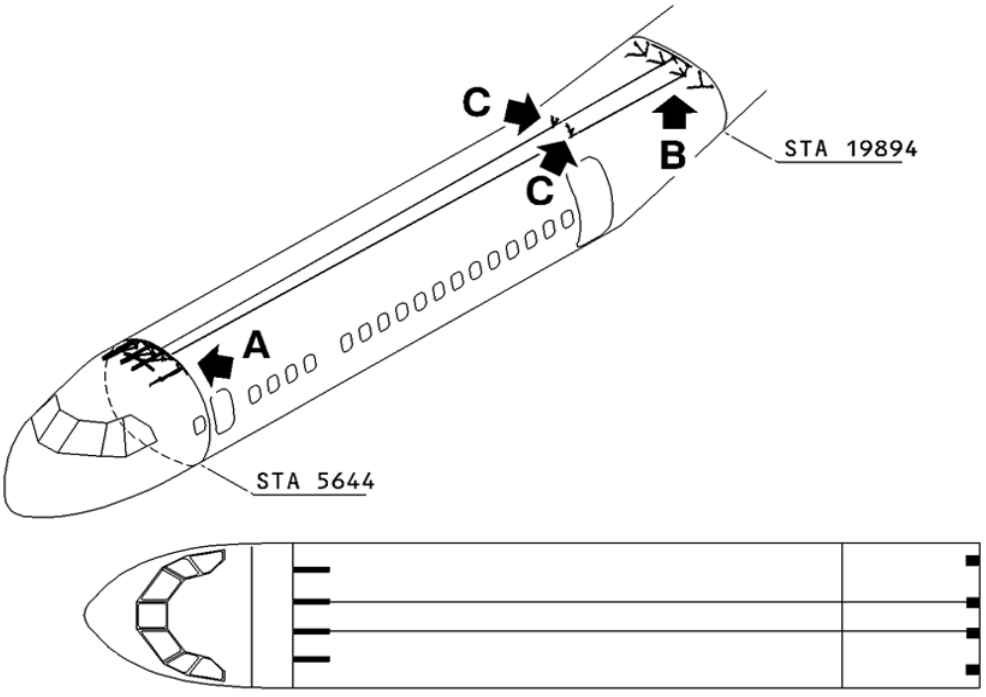
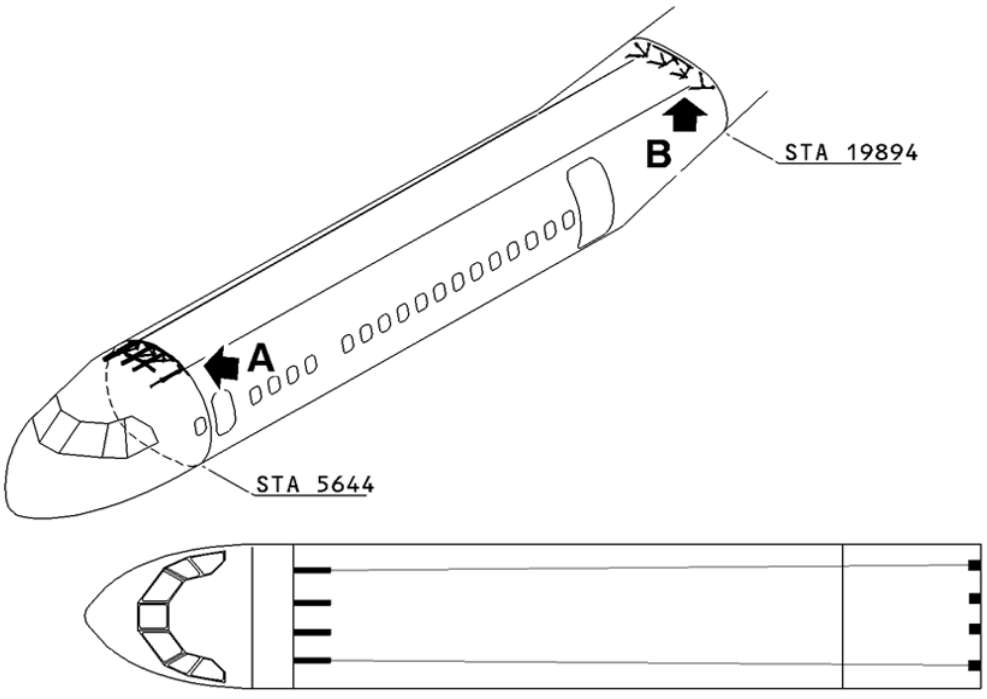


Figure 2-42 First aid kits



CENTRAL CONFIGURATION



LATERAL CONFIGURATION

Figure 2-43 Static line anchor cables (Sheet 1 of 3)

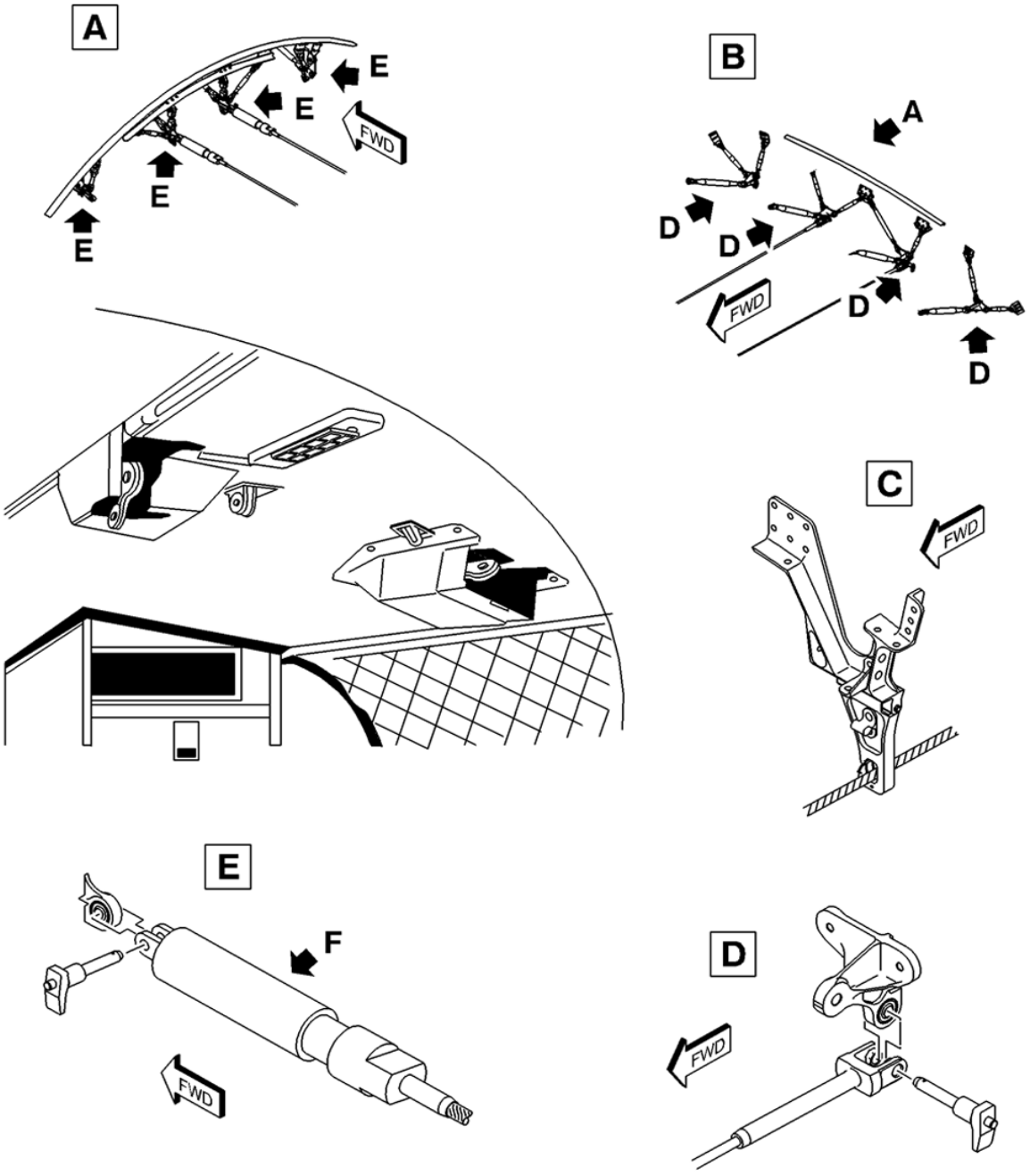
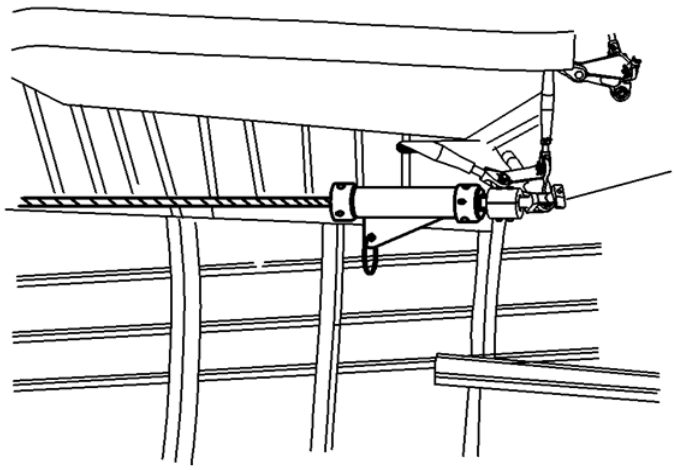
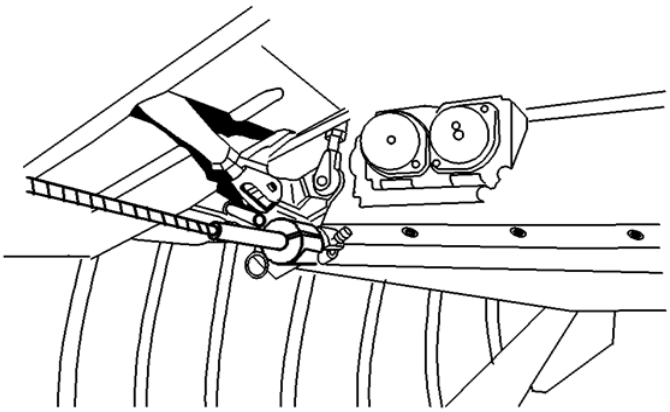


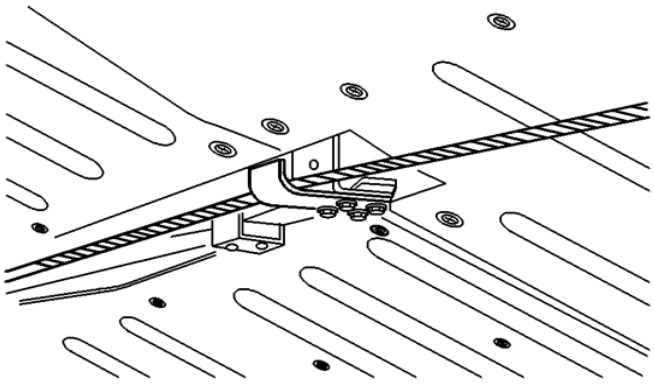
Figure 2-43 Static line anchor cables (Sheet 2 of 3)



STATIC LINE RETRIEVING SPOOL



STOP AT CABLE END



ANCHOR CABLE OVERHEAD BRACKET

Figure 2-43 Static line anchor cables (Sheet 3 of 3)

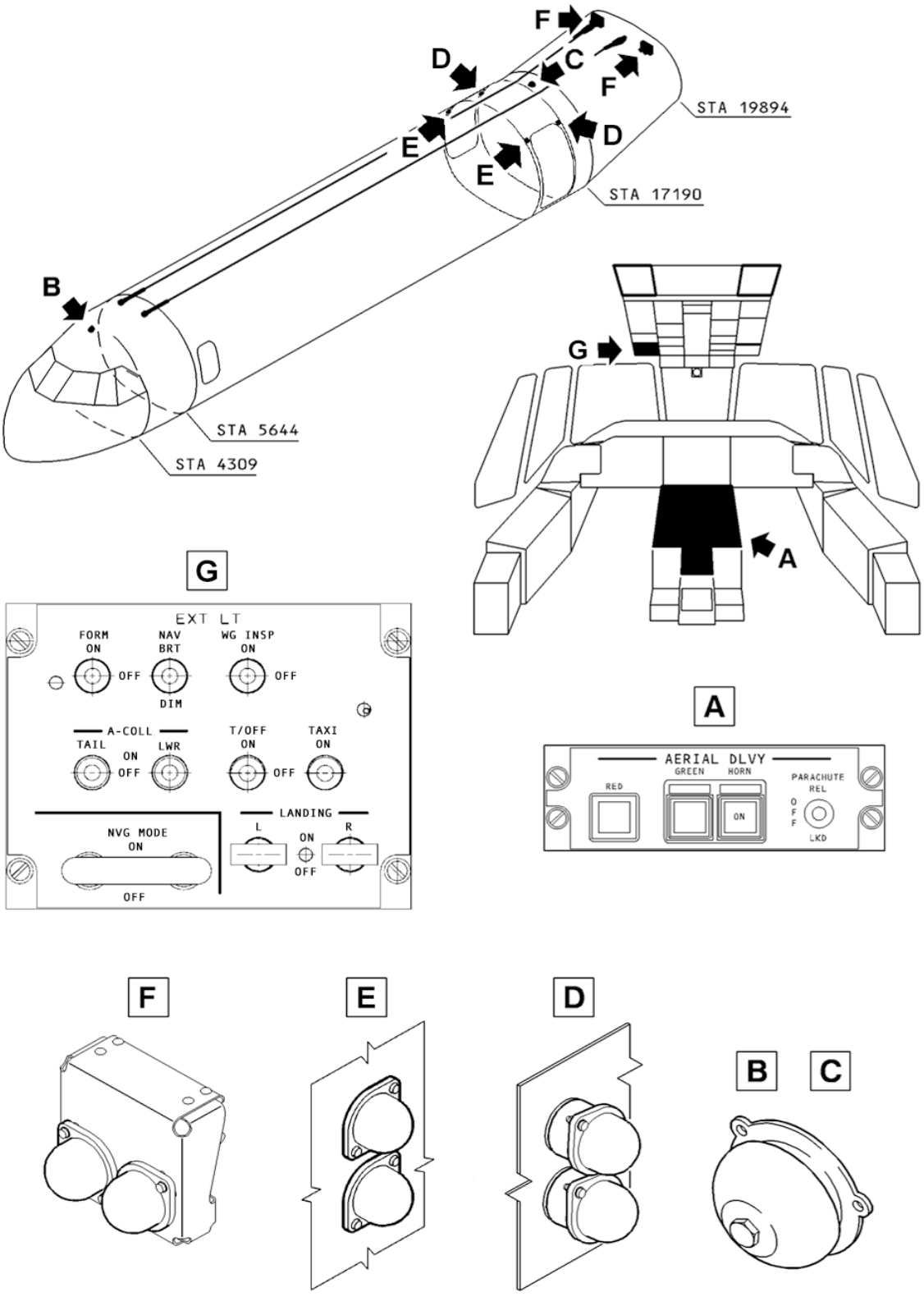


Figure 2-44 Jump lights and horns

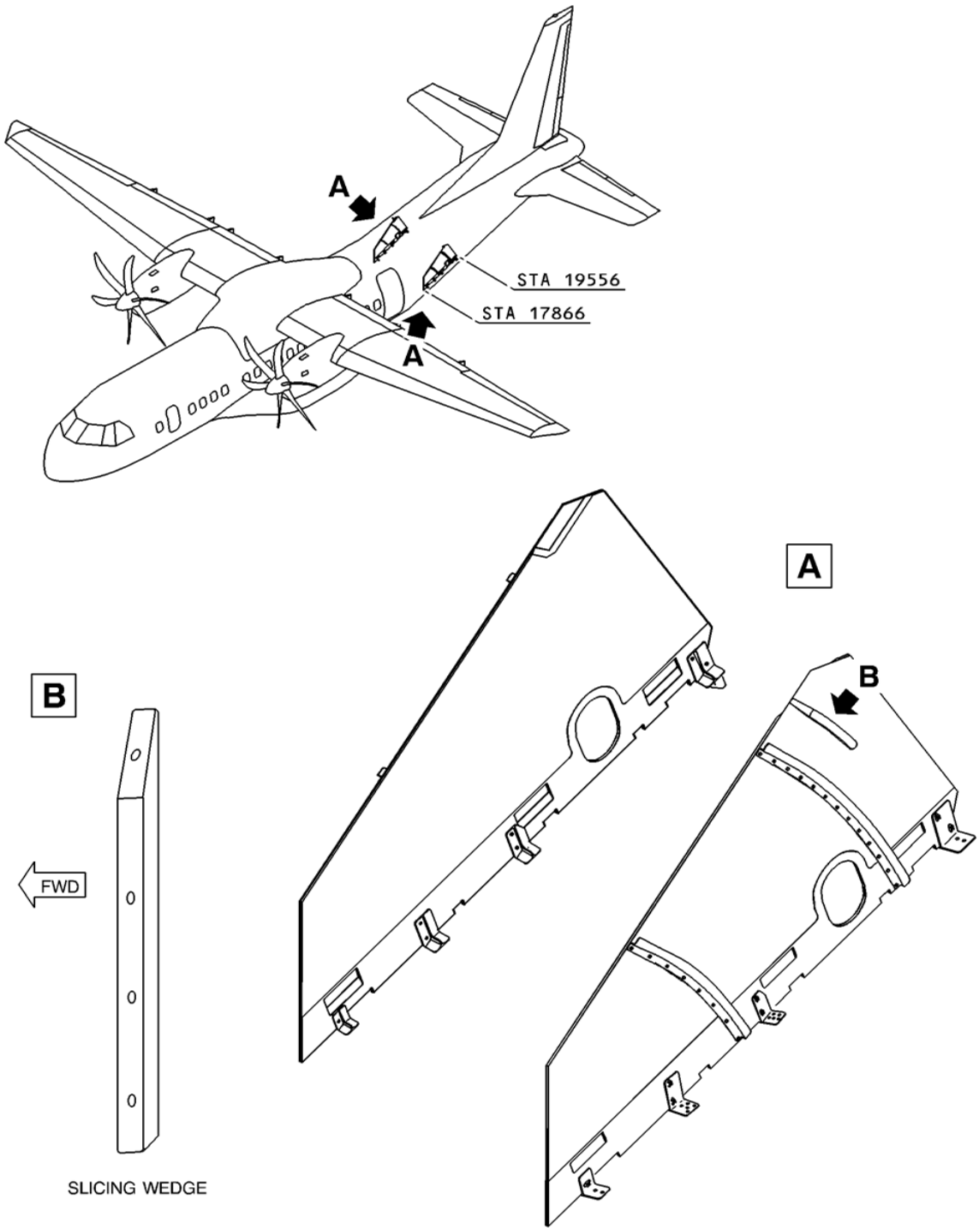


Figure 2-45 Air deflectors

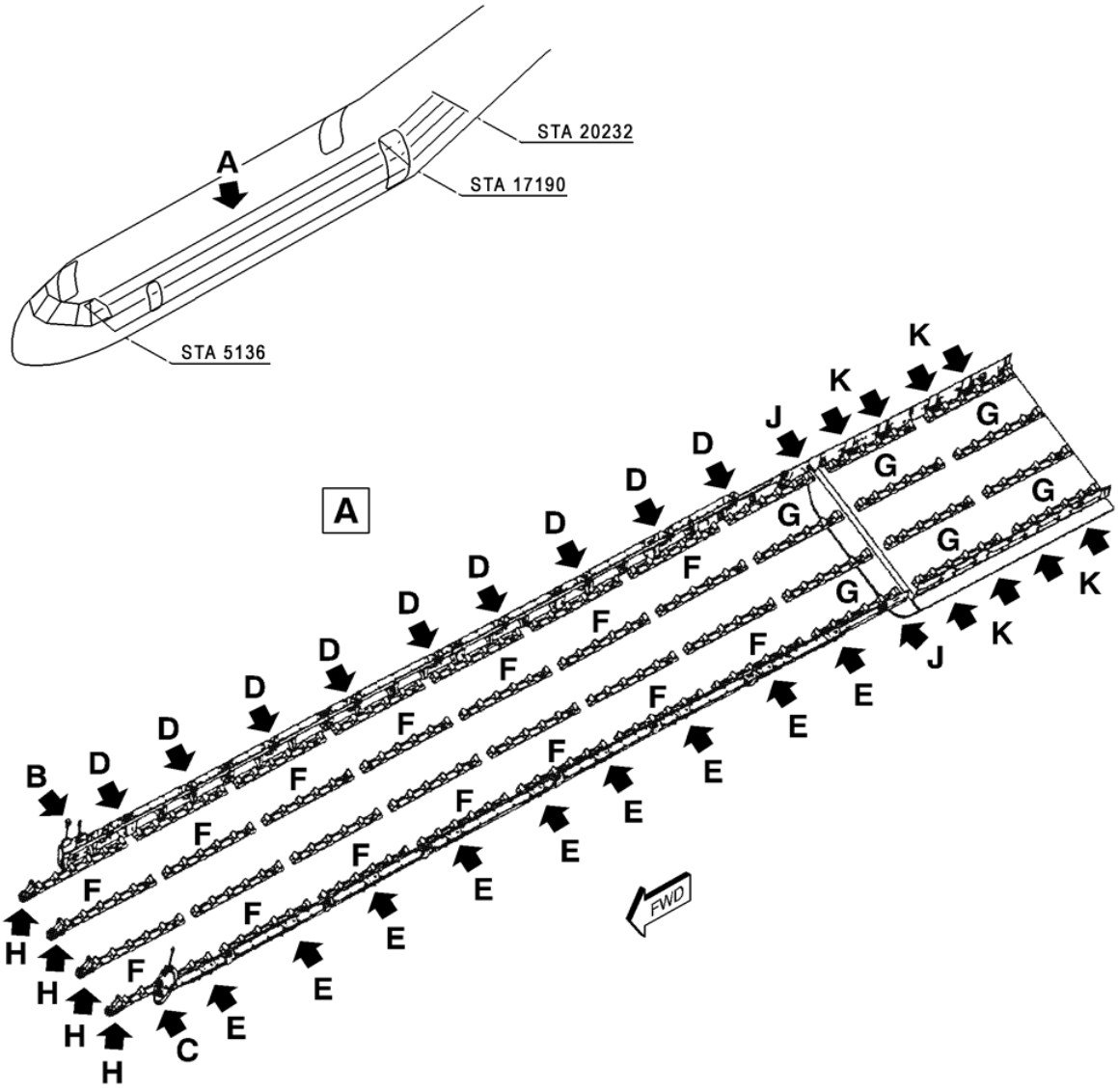
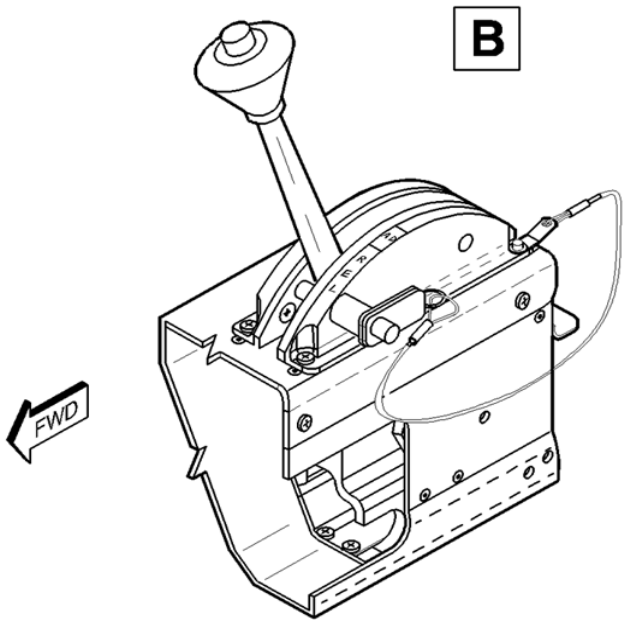
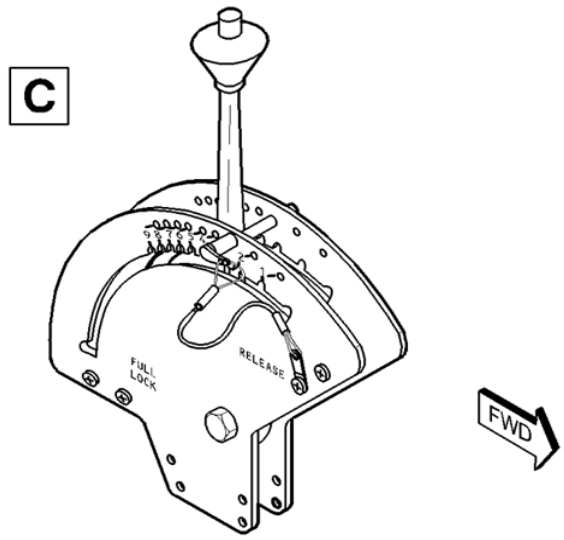


Figure 2-46 AM109 Cargo Handling and Aerial Delivery System (CHADS) (Sheet 1 of 5)

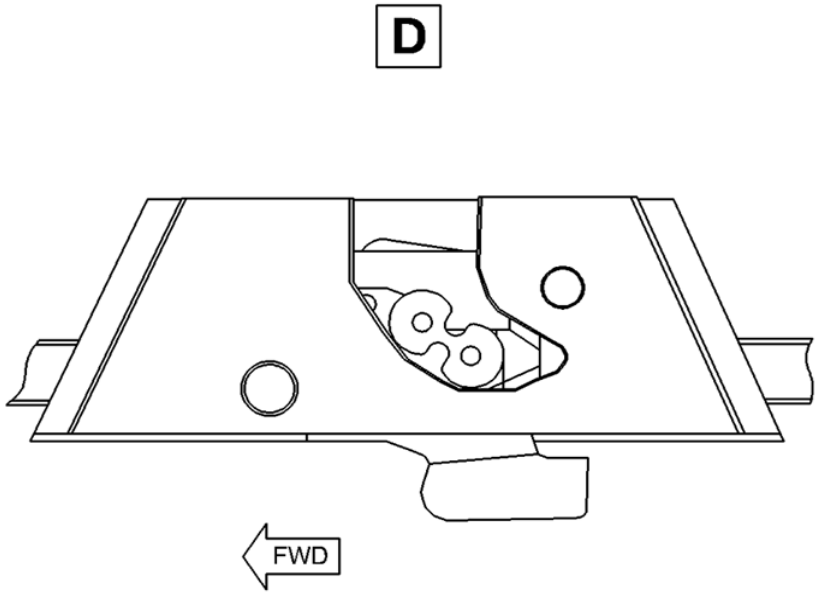


RIGHT-HAND CONTROL HANDLE (AIRDROP SIDE)

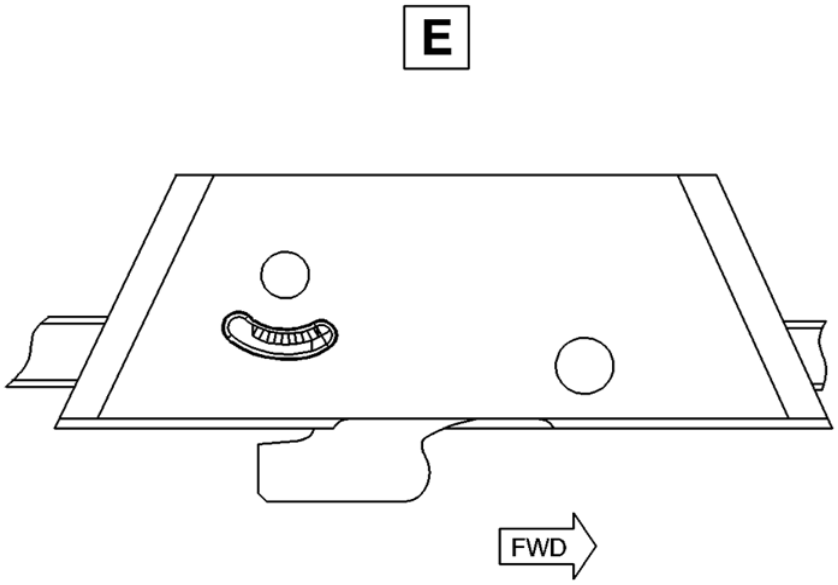


LEFT-HAND CONTROL HANDLE (LOGISTICS SIDE)

Figure 2-46 AM109 Cargo Handling and Aerial Delivery System (CHADS) (Sheet 2 of 5)



RIGHT-HAND DETENT LOCK
(BREAK LINK INSTALLED, CONTROL HANDLE IN AD POSITION)



LEFT-HAND DETENT LOCK (POSITION 1)

Figure 2-46 AM109 Cargo Handling and Aerial Delivery System (CHADS) (Sheet 3 of 5)

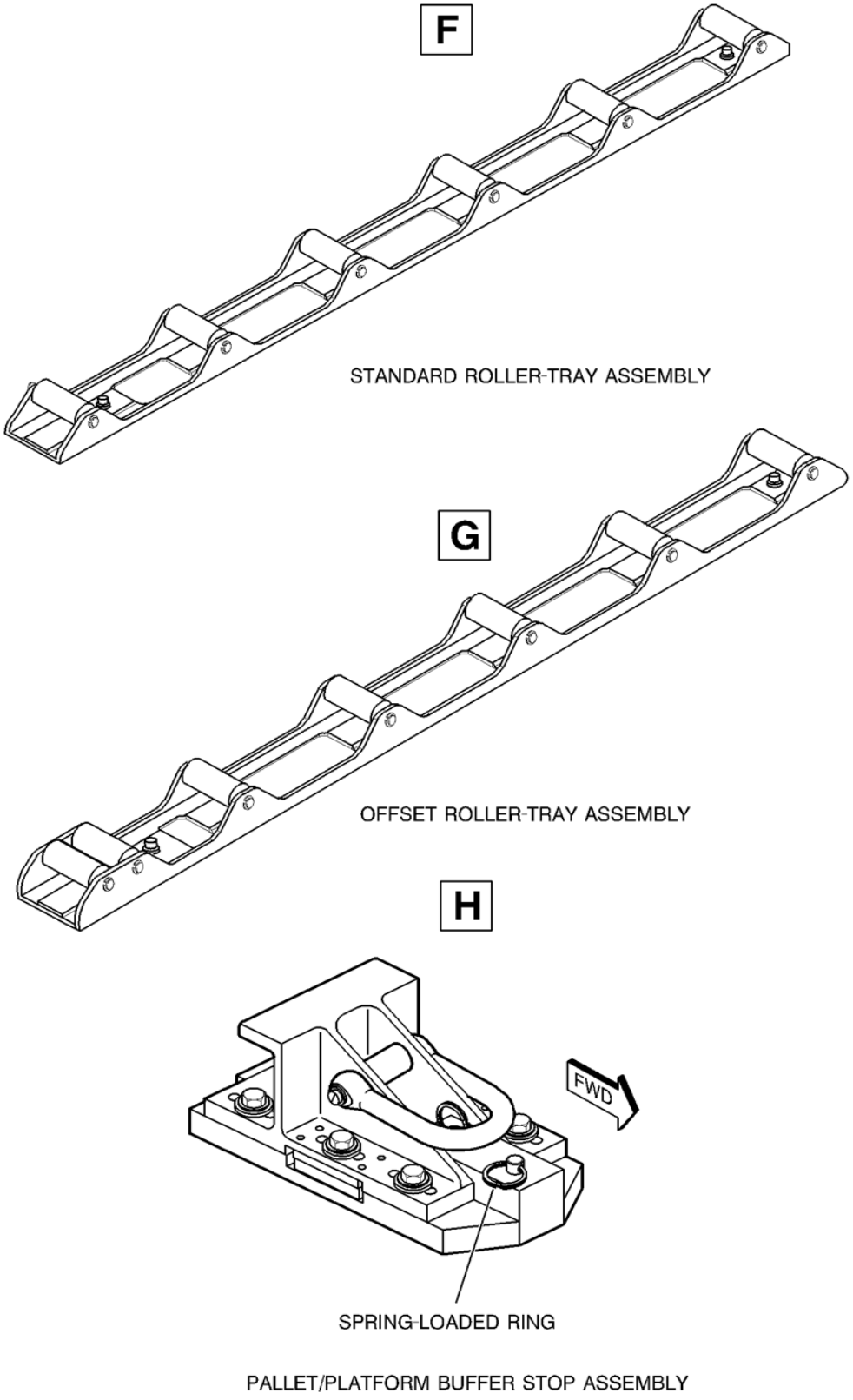


Figure 2-46 AM109 Cargo Handling and Aerial Delivery System (CHADS) (Sheet 4 of 5)

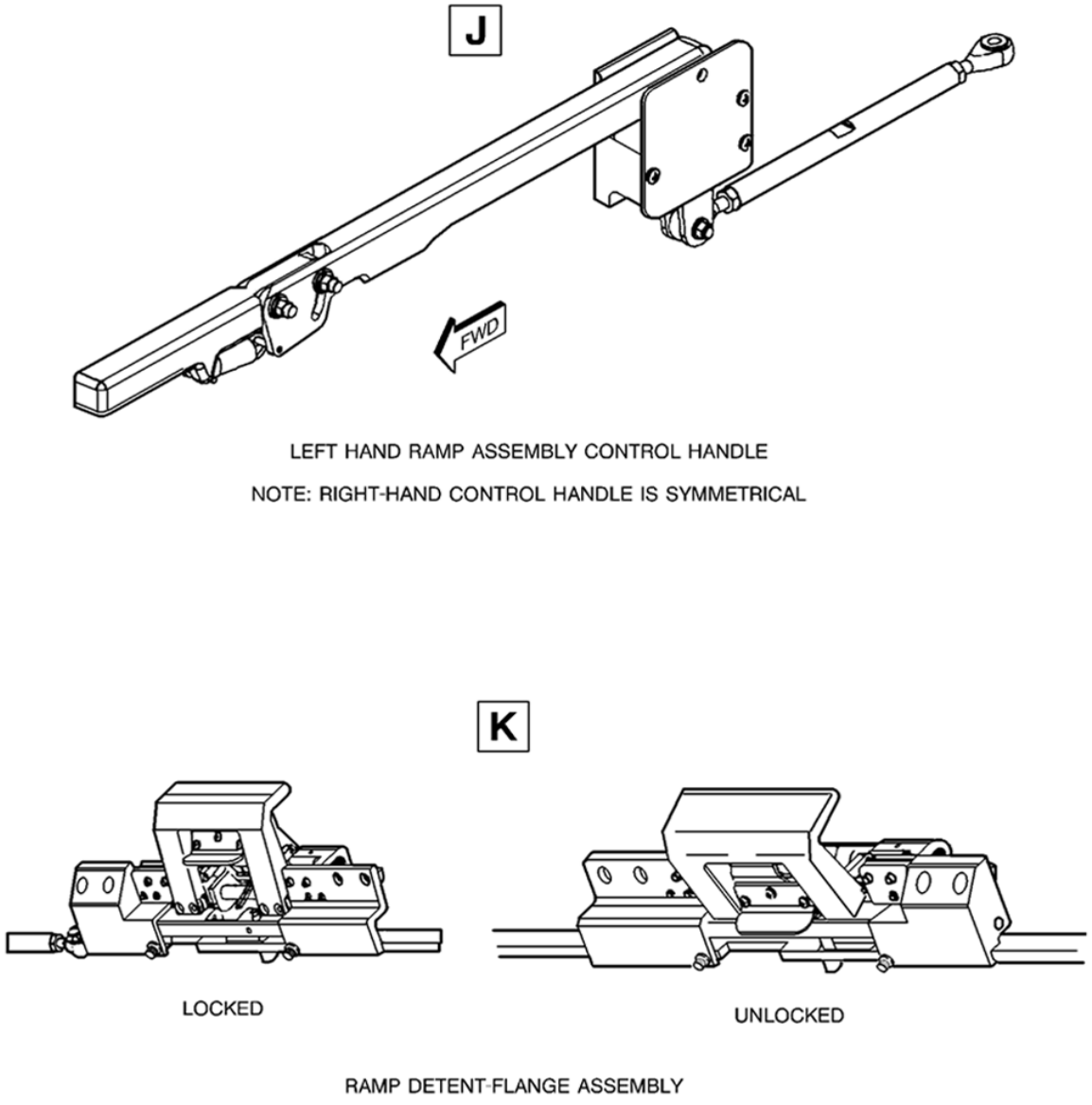


Figure 2-46 AM109 Cargo Handling and Aerial Delivery System (CHADS) (Sheet 5 of 5)

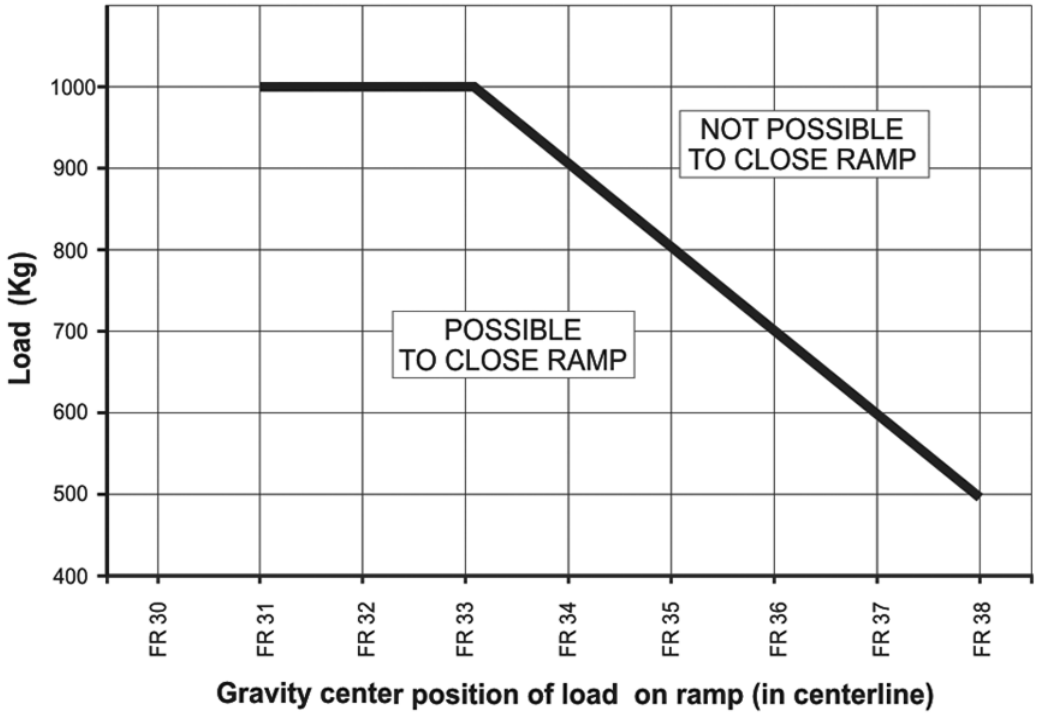


Figure 2-47 Load capacity on ramp

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