

## Appendix B: B747-400

### B.1 Introduction

The Boeing 747-400F cargo airplane is designed for commercial transportation of cargo. Dimensions, specifications, and detailed instructions contained herein do not supersede, nor do they take precedence over, the maintenance manual, operating manual, or other authorized FAA approved documents.

### B.2 B747-400 Aircraft - General Information

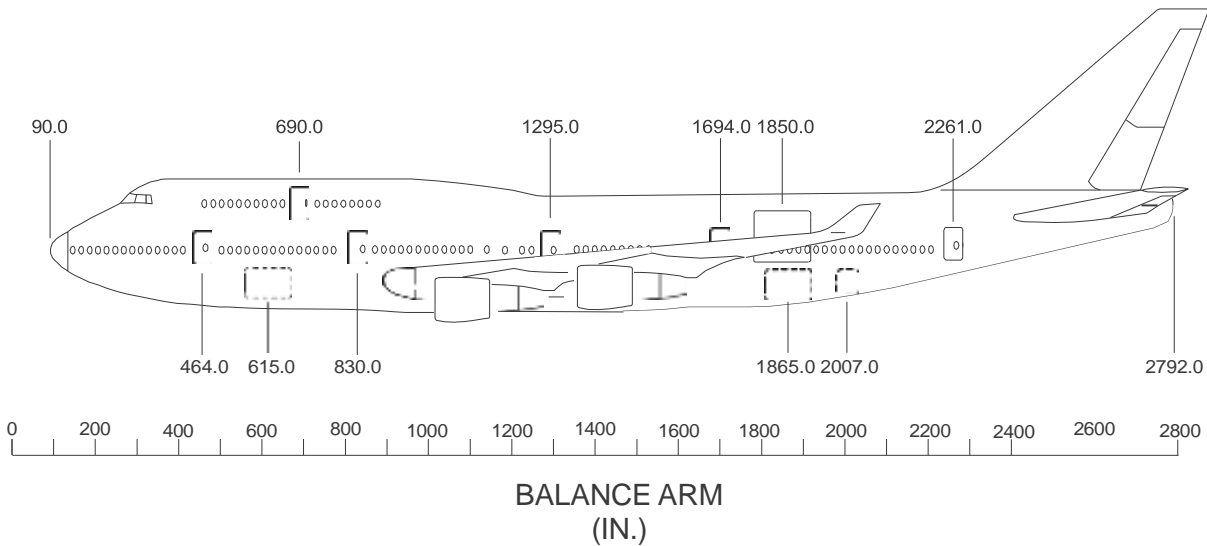
The Boeing 747-400 is a wide-body airliner produced by Boeing Commercial Airplanes. The first 747-400 was rolled out on January 26, 1988 and it made its maiden flight on April 29, 1988. Type certification was received on January 9, 1989, and it entered service with NWA on February 9, 1989. Western Global Airlines may operate B747-400 aircraft in various configurations. Standard B747-400 configurations are shown in this appendix. The 747-400 has multiple locations/holds in which cargo can be loaded.

#### B.2.1 Main Deck on B747-400 Freight Versions

- The main deck is configured to accept unitized, palletized, and bulk cargo.
- The forward cargo compartment (lower level) is designed to handle cargo in containers, secured on pallets, or in bulk form.
- The aft cargo compartment (lower level) is designed to handle cargo in containers, secured on pallets, or in bulk form
- The bulk cargo (lower level) compartment is designed to hold only bulk cargo, baggage.

**B.2.1.1 Balance Arms/Body Stations**

Longitudinal location of all airplane component centers of gravity identified throughout this manual will be referred to as Balance Arms. The Balance Arm is a true measure in inches from the reference datum 90.0 IN. forward of the airplane nose. Balance Arms are equivalent to Body Stations (B.S.).



**Figure B.1:**

**B.2.1.2 Mean Aerodynamic Chord**

The Mean Aerodynamic Chord, as used in this manual, is a wing reference distance with a length of 327.8 IN. The Leading Edge of the Mean Aerodynamic Chord is at Balance Arm 1258.0 IN. Conversion of the airplane center of gravity from Balance Arm, in inches, to a percentage of Mean Aerodynamic Chord is derived using the following formula:

$$\%MAC = \frac{(B.A. - 1258.0) 100.0}{327.8}$$

The reverse conversion of the airplane center of gravity from a percentage of Mean Aerodynamic Chord to Balance Arm, in inches, is derived using the following formula:

$$B.A. = \frac{327.8 \times \%MAC}{100} + 1258.0$$

**B.2.1.3 Body Buttock Line**

The Body Buttock Line is a vertical line or a vertical plane parallel to the centerline of the airplane used to locate points or planes to the left or right of the airplane centerline.

**B.2.1.4 Certified Weight Limits - MTW 873000 lb (395986 kg)**

The Maximum Certified Gross Weights and Center of Gravity Limits are shown graphically on pages 2 & 3. These Center of Gravity Limits are for taxi, takeoff, flight and landing unless otherwise specified, and are the absolute limits which must not be exceeded by the airplane center of gravity in any taxi, takeoff, flight, or landing configuration.

CERTIFIED GROSS WEIGHTS			
		LB	KG
Maximum Taxi Weight	(MTW)	873000	395986
Maximum Takeoff Weight	(MTOW)	870000	394625
Maximum Fuel Transfer Weight	(MFTW)	785000	356070
Maximum Weight with Landing Flaps (Flap Detents 25 and 30)		670000	303906
Maximum Landing Weight	(MLW)	652000	295742
Maximum Zero Fuel Weight	(MZFW)	610000	276691
Minimum Flight Weight	(MFW)	367500	166696

**Table B.1:**

**B.3 Aircraft Dimensions**

Practical loading challenges encountered with cargo aircraft might come in the form of package restrictions and/or size limitations. Having checked that a package can physically be placed upon a pallet or within an aircraft compartment, it is necessary to consider whether the piece will exceed additional load restrictions, refer to the limitations section of this appendix.

1. B747-400 General Arrangement and Primary Dimensions

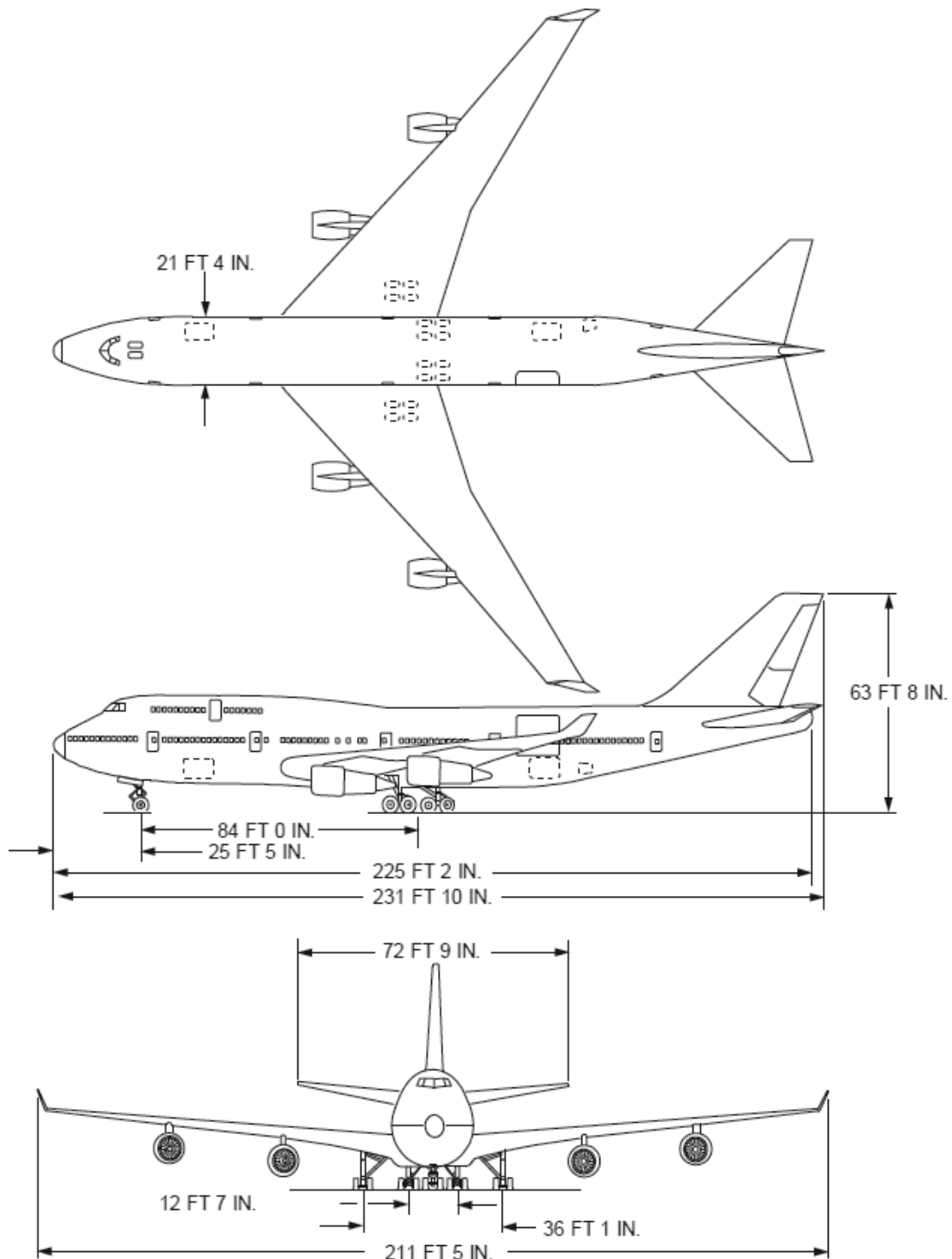


Figure B.2:

2. Forward Compartment Door

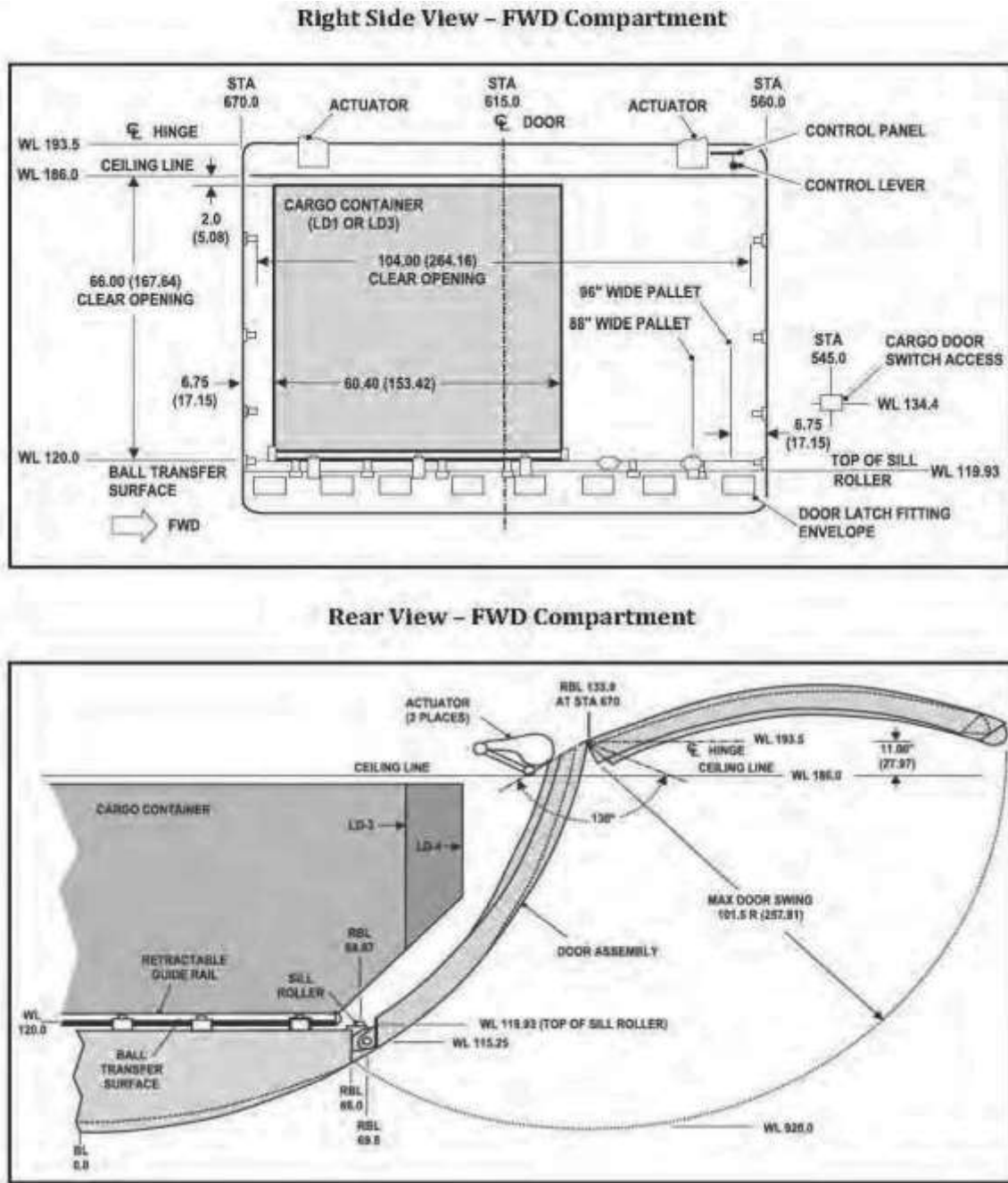
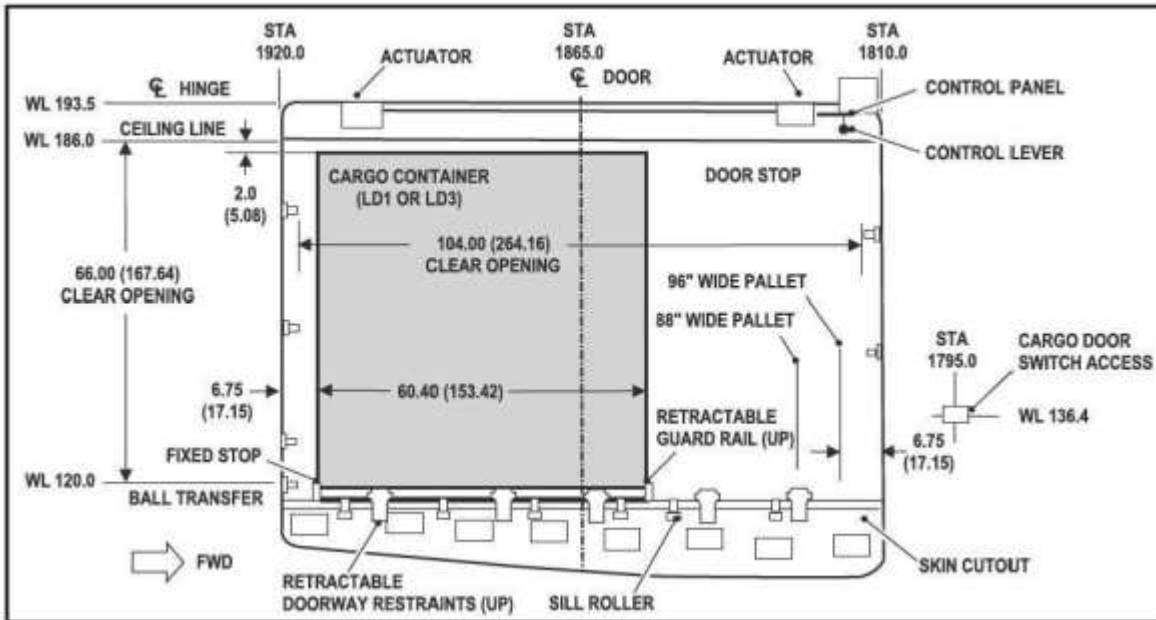


Figure B.3:

3. Aft Compartment Door

Right Side View - Aft Compartment



Rear View - Aft Compartment

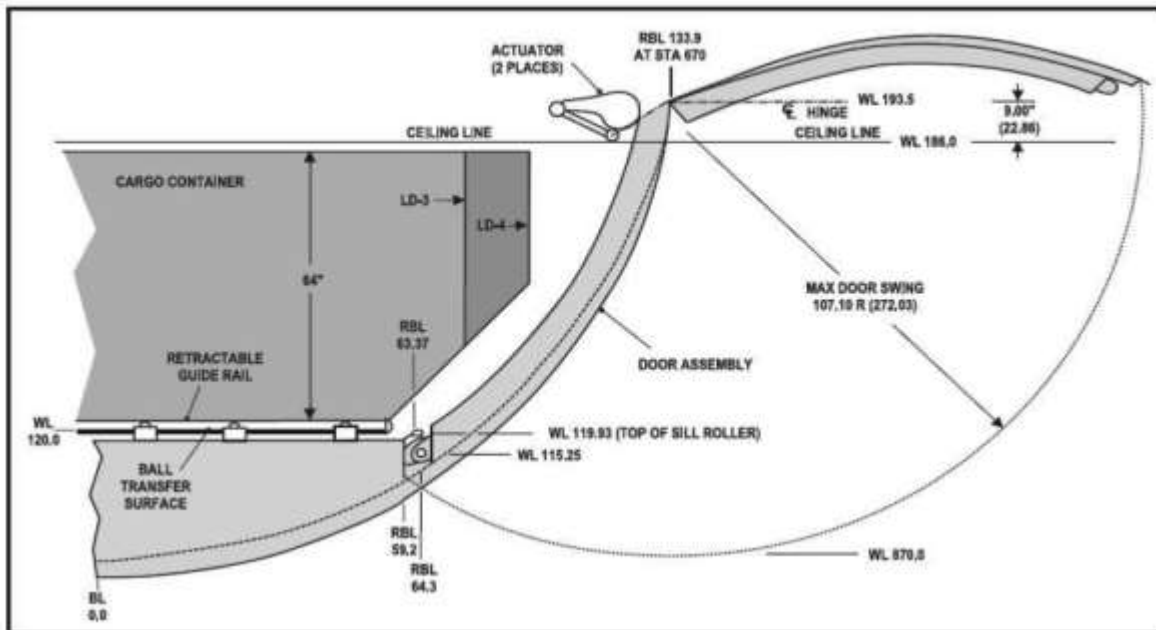


Figure B.4:

4. Bulk Compartment Door

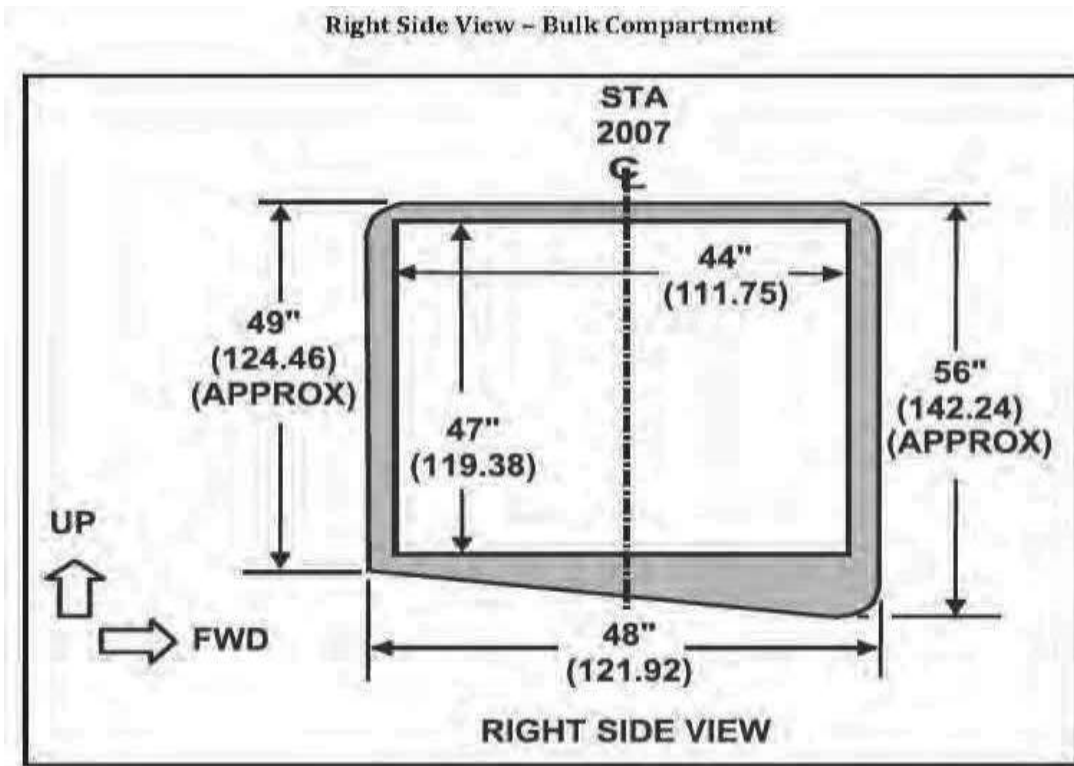


Figure B.5:

5. Main Deck Side Cargo Door

Main Deck Side Cargo Door

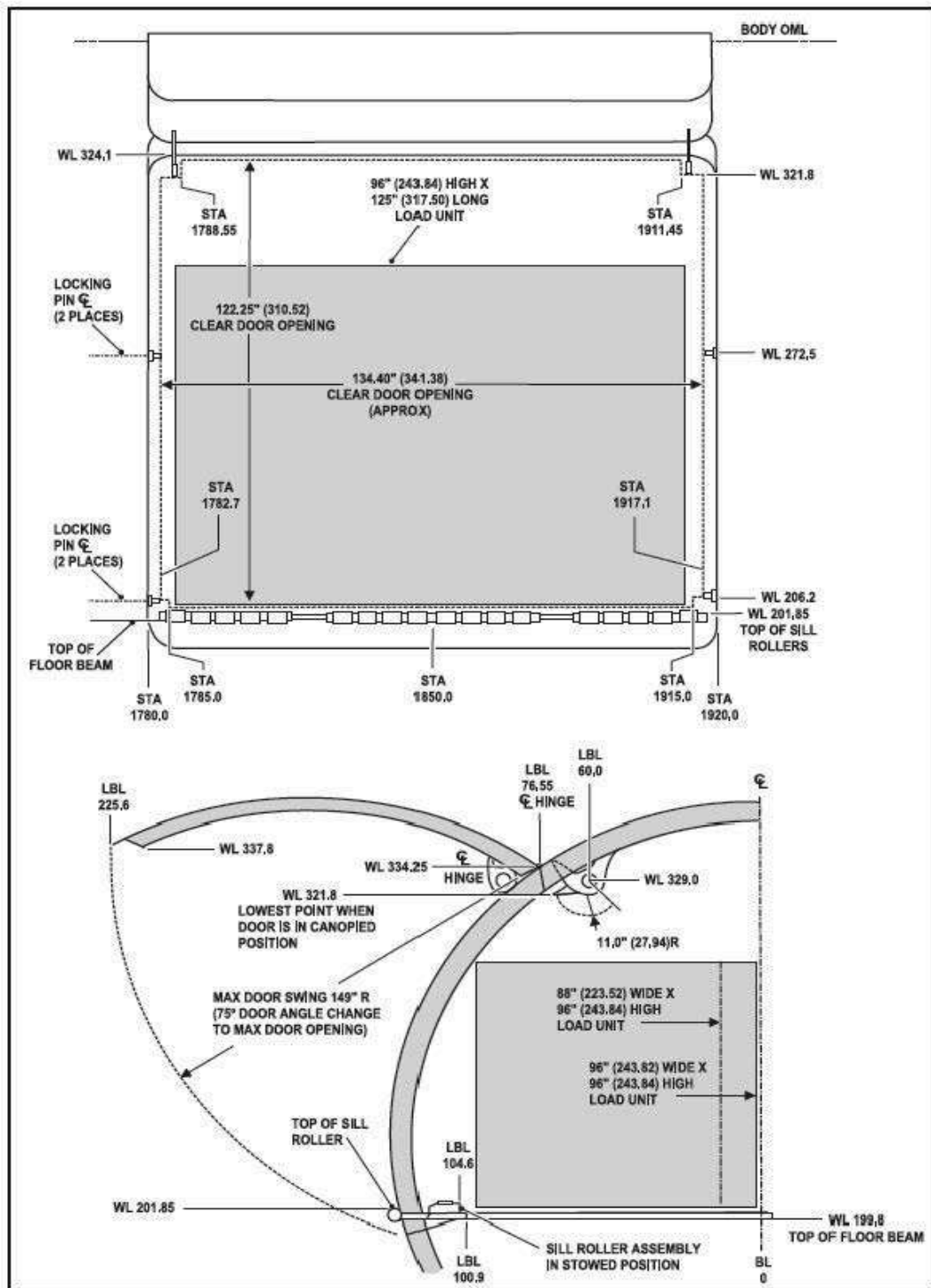


Figure B.6:



### B.3.1 Package Size Limits

This section provides dimensions of the maximum package sizes that will pass through the main deck, forward compartment, aft compartment and bulk cargo compartment doors. Package sizes are approximate. Tilting, twisting, bending and/or rotating packages through door openings will allow additional lengths in many cases, but should be determined for each situation. A trial loading is recommended for packages with dimensions close to maximum dimensions indicated in the tables.

The height dimensions do not include allowances for items increasing package height such as fork lift tyne thicknesses, pallet depths, skid tub heights, etc. Any such devices must be accounted for in the total height.

#### B.3.1.1 Forward Cargo Compartment

The following illustration shows package dimensioning used in the allowable package size tables.

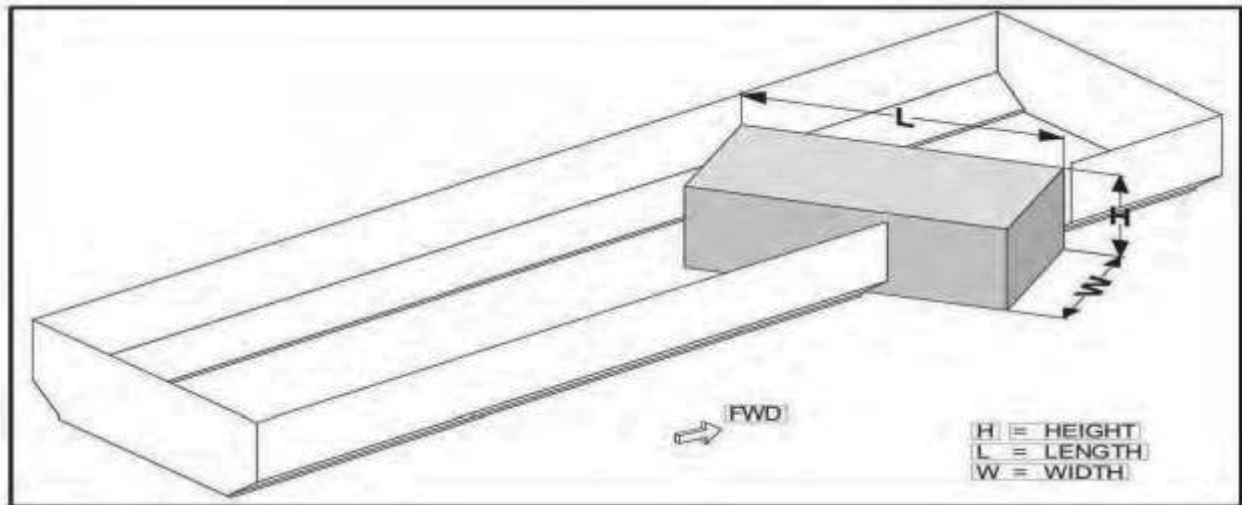


Figure B.7:

The following tables are applicable for packages loaded aft of the forward cargo door (8.A. 615.2 IN.).

FORWARD COMPARTMENT ALLOWABLE PACKAGE SIZES											
HEIGHT IN.	WIDTH IN.										
	10	20	30	40	50	60	70	80	90	100	104
	LENGTH IN.										
66	280	245	220	195	170	155	125	125	125	125	125
60	330	285	240	220	195	175	160	145	135	125	125
55	385	325	280	245	215	195	175	155	145	135	135
50	440	360	305	265	230	210	185	165	150	145	140
45	440	430	360	300	260	225	200	170	155	150	140
40	440	440	410	345	290	255	220	195	175	160	155
35	440	440	440	380	330	270	235	205	180	160	155
30	440	440	440	420	345	285	245	210	190	165	160
25	440	440	440	440	360	300	255	220	190	165	160
20	440	440	440	440	385	315	265	225	195	170	160
15	440	440	440	440	415	330	280	235	200	175	160
10	440	440	440	440	440	360	295	245	210	180	165
5	440	440	440	440	440	440	320	265	225	185	170

Figure B.8:

**B.3.1.2 Aft Cargo Compartment**

The following illustration shows package dimensioning used in the allowable package size tables.

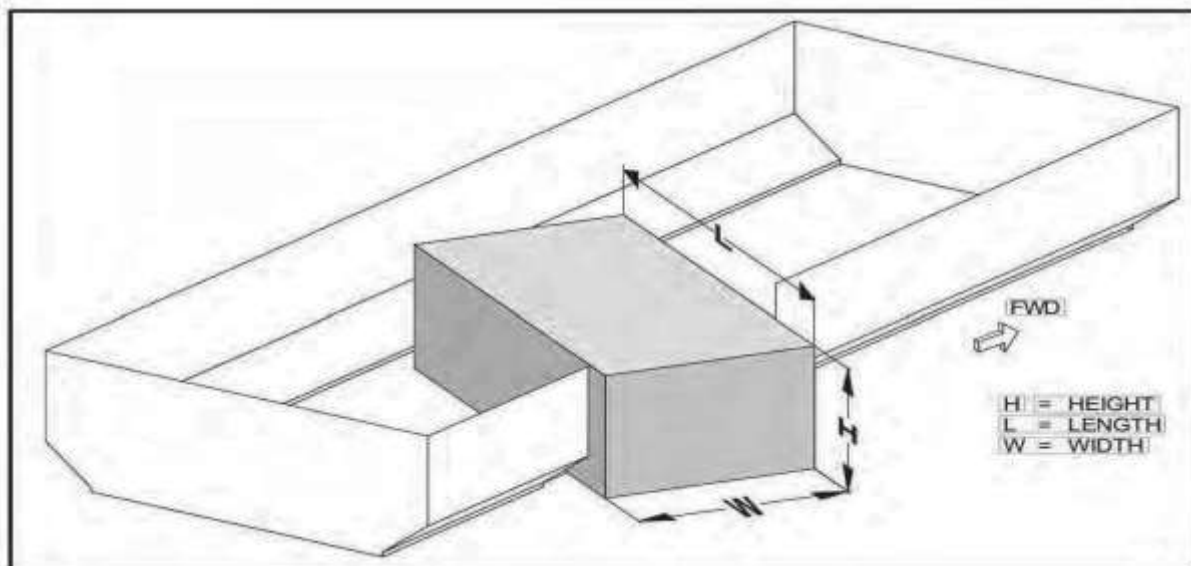


Figure B.9:

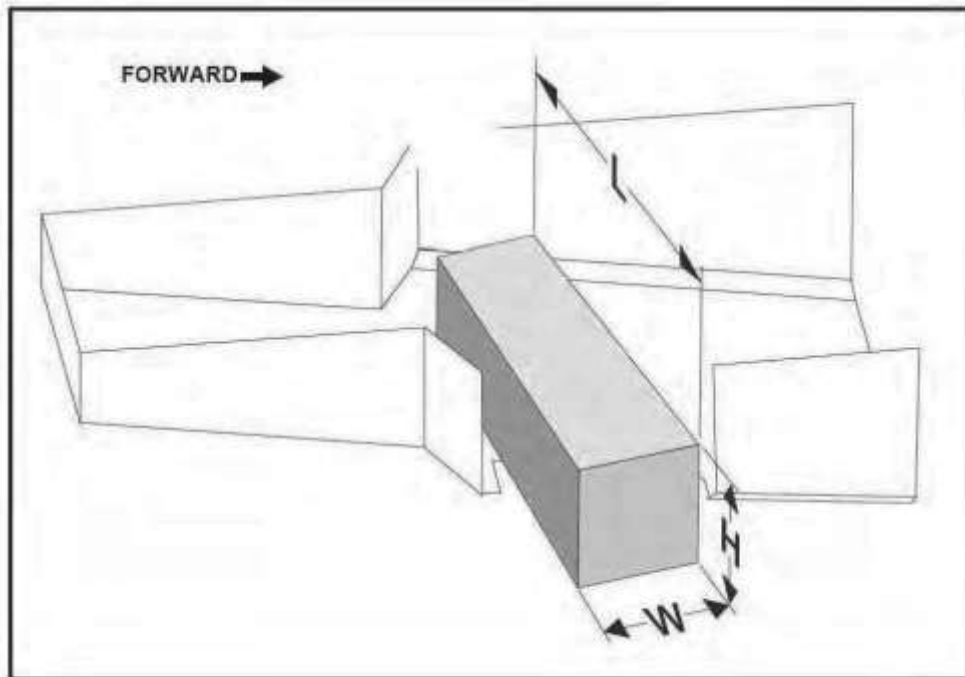
The following tables are applicable for packages loaded forward of the aft cargo door (8.A. 1865.0 IN.).

AFT COMPARTMENT ALLOWABLE PACKAGE SIZES											
HEIGHT IN.	WIDTH IN.										
	10	20	30	40	50	60	70	80	90	100	104
	LENGTH IN.										
66	280	245	220	195	170	155	125	125	125	125	125
60	330	285	240	220	195	175	160	145	135	125	125
55	385	325	280	245	215	195	175	155	145	135	135
50	440	360	305	265	230	210	185	165	150	145	140
45	440	430	360	300	260	225	200	170	155	150	140
40	440	440	410	345	290	255	220	195	175	160	155
35	440	440	440	380	330	270	235	205	180	160	155
30	440	440	440	420	345	285	245	210	190	165	160
25	440	440	440	440	360	300	255	220	190	165	160
20	440	440	440	440	385	315	265	225	195	170	160
15	440	440	440	440	415	330	280	235	200	175	160
10	440	440	440	440	440	360	295	245	210	180	165
5	440	440	440	440	440	440	320	265	225	185	170

Figure B.10:

**B.3.1.3 Bulk Cargo Compartment**

The following illustration shows package dimensioning used in the allowable package size tables.



**Figure B.11:**

The following table is applicable for upright [1] packages loaded forward of the bulk cargo door (8.A. 2007.0 IN.).

BULK COMPARTMENT ALLOWABLE PACKAGE SIZES											
HEIGHT IN.	WIDTH IN.										
	4	8	12	16	20	24	28	32	36	40	44
	LENGTH IN.										
47	140	140	140	132	126	121	117	114	110	108	108
43	160	160	155	145	140	135	130	125	120	115	110
39	180	165	155	150	140	135	130	125	120	120	120 <sup>[a]</sup>
36	185	170	160	150	145	135	130	125	120	120 <sup>[a]</sup>	120 <sup>[a]</sup>
32	190	175	165	155	150	140	135	130	125 <sup>[a]</sup>	120 <sup>[a]</sup>	120 <sup>[a]</sup>
28	200	185	170	160	155	145	135 <sup>[a]</sup>	130 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>	120 <sup>[a]</sup>
24	220	190	175	165	155	145	135 <sup>[a]</sup>	130 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>	120 <sup>[a]</sup>
20	220	195	180	170	155	145	135 <sup>[a]</sup>	130 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>	120 <sup>[a]</sup>
16	230	205	190	175	160	150	140	135 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>	120 <sup>[a]</sup>
12	235	220	200	180	165	155	145	135 <sup>[a]</sup>	130 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>
8	235	235	215	195	175	160	150	140	130 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>
4	235	235	225	210	185	170	155	145	135 <sup>[a]</sup>	125 <sup>[a]</sup>	120 <sup>[a]</sup>

[a] Indicates loading packages aft of the door

[1] An upright package refer to a package loaded with the assistance of mechanical ground support equipment and maneuvered through the door in an upright position.

**Figure B.12:**

The following table is applicable for tilted [1] packages loaded forward of the bulk cargo door (8.A. 2007.0 IN.).

BULK COMPARTMENT ALLOWABLE PACKAGE SIZES											
HEIGHT IN.	WIDTH IN.										
	4	8	12	16	20	24	28	32	36	40	44
	LENGTH IN.										
64	108	108									
60	108	108	108								
56	108	108	108	108							
52	108	108	108	108	108						
48	140	140	140	132	126	121	117	114	110	108	108

[1] A tilted package refers to a package refers to a low-density package, which requires hand maneuvering through the door in a tilted position to avoid obstructions.

**Figure B.13:**

**B.3.1.4 Main Deck - Side Cargo Door**

The following table is applicable for packages loaded through the side cargo door (8.A. 1850.0 IN.).

MAIN DECK COMPARTMENT ALLOWABLE PACKAGE SIZES - SIDE CARGO DOOR														
HEIGHT IN.	WIDTH IN.													
	10	20	30	40	50	60	70	80	90	100	110	120	130	134
	LENGTH IN.													
120	470	412	367	331	302	280	259	239	219	198	179	161		
118	470	412	367	331	302	280	259	239	219	198	179	161	144	137
116	495	434	386	346	314	290	268	248	228	208	188	169	151	145
114	536	458	404	361	326	299	277	256	237	217	196	177	158	153
112	546	474	417	370	334	306	282	261	242	222	202	182	163	157
110	573	492	429	380	342	312	287	266	246	226	207	187	168	161
108	600	509	441	391	350	318	293	271	251	231	212	192	173	165
106	600	525	455	399	356	326	297	275	254	234	215	196	176	170
104	600	543	468	409	363	333	303	279	258	239	219	199	181	175
102	600	561	481	418	373	338	309	284	263	243	224	204	185	180
100	600	574	492	428	378	346	313	288	267	246	227	207	188	183
98	600	586	505	438	386	353	318	292	270	250	230	210	192	186
0-96	600	600	517	447	395	355	323	297	275	254	232	213	196	192

**Table B.2:**

The package size table above does not pertain to internal engine carriage. However, when loading an aircraft engine through the Side Cargo Door, the full dimensions of the door shown above may be used when loading with care.

**B.4 Contours and Configurations**

**B.4.1 Upper Deck Configuration and Contours**

**B.4.1.1 ULD CG Limits**

ULD CG Limits

<b>TABLE 1 - ULD CENTER OF GRAVITY LIMITS</b> AIRCRAFT LOCATION: Z1 THRU Z16 (Z18 AMC) MAIN DECK					
CLASSIFICATION IDENTIFIER			C.G DEVIATION (INCHES)		
FT/PRINT	PALLET	NET	VERT [ 1 ]	LAT [ 2 ]	LONG [ 2 ]
88" x 125"	ALL TYPE A	ALL TYPE A	48	8,8	12,5
96" x 125"	ALL TYPE M	ALL TYPE M	48	9,6	12,5
88" x 108"	ALL TYPE B	ALL TYPE B	48	8,8	10,8
96" x 117.25"					
SIDE LCK	ALL TYPE F	ALL TYPE F	48	9,6	5,8
END LCK	ALL TYPE F	ALL TYPE F	48	9,6	11,7
96" x 196"					
SIDE LCK	ALL TYPE R	ALL TYPE R	48	9,6	9,8
END LCK	ALL TYPE R	ALL TYPE R	48	19,6	9,6
96" x 238,5"					
SIDE LCK	ALL TYPE G	ALL TYPE G	48	9,6	11,9
96" x 359,25"					
SIDE LCK	ALL TYPE H	ALL TYPE H	48	9,6	18
96" x 480"					
SIDE LCK	ALL TYPE J	ALL TYPE J	48	9,6	24

<b>TABLE 2 - ULD CENTER OF GRAVITY LIMITS</b> AIRCRAFT LOCATION: A THRU K LOWER LOBES					
CLASSIFICATION IDENTIFIER			C.G DEVIATION (INCHES)		
FT/PRINT	PALLET	NET	VERT [ 1 ]	LAT [ 2 ]	LONG [ 2 ]
88" x 125"	ALL TYPE A	ALL TYPE A	36	12,5	8,8
96" x 125"	ALL TYPE M	ALL TYPE M	48	12,5	9,6
88" x 108"	ALL TYPE B	ALL TYPE B	36	10,8	8,8
CONTAINER					
60.4" x 61.5"	ALL TYPE K - HALF WIDTH		34	6,2	6
60.4" x 125"	ALL TYPE L - FULL WIDTH		34	12,5	6

[ 1 ] MAX CARGO CENTER-OF-GRAVITY HEIGHT ABOVE THE UNDER SURFACE OF THE ULD.  
 [ 2 ] ALLOWABLE CARGO CENTER-OF-GRAVITY OFFSET FROM THE ULD GEOMETRIC CENTER.

TOP VIEW

LOAD ORIENTATION APPLICABLE IN TABLE 1  
(EXCEPT TYPE R END LOCKED)

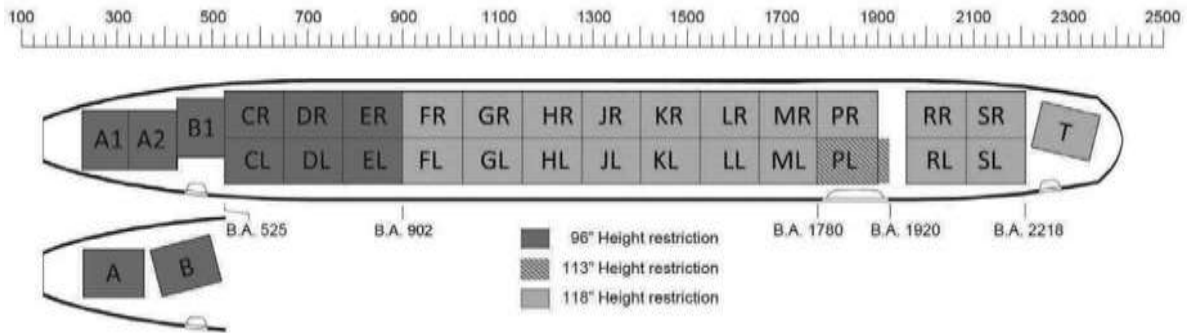
TOP VIEW

LOAD ORIENTATION APPLICABLE IN TABLE 2  
(+ TYPE R END LOCKED IN TABLE 1)

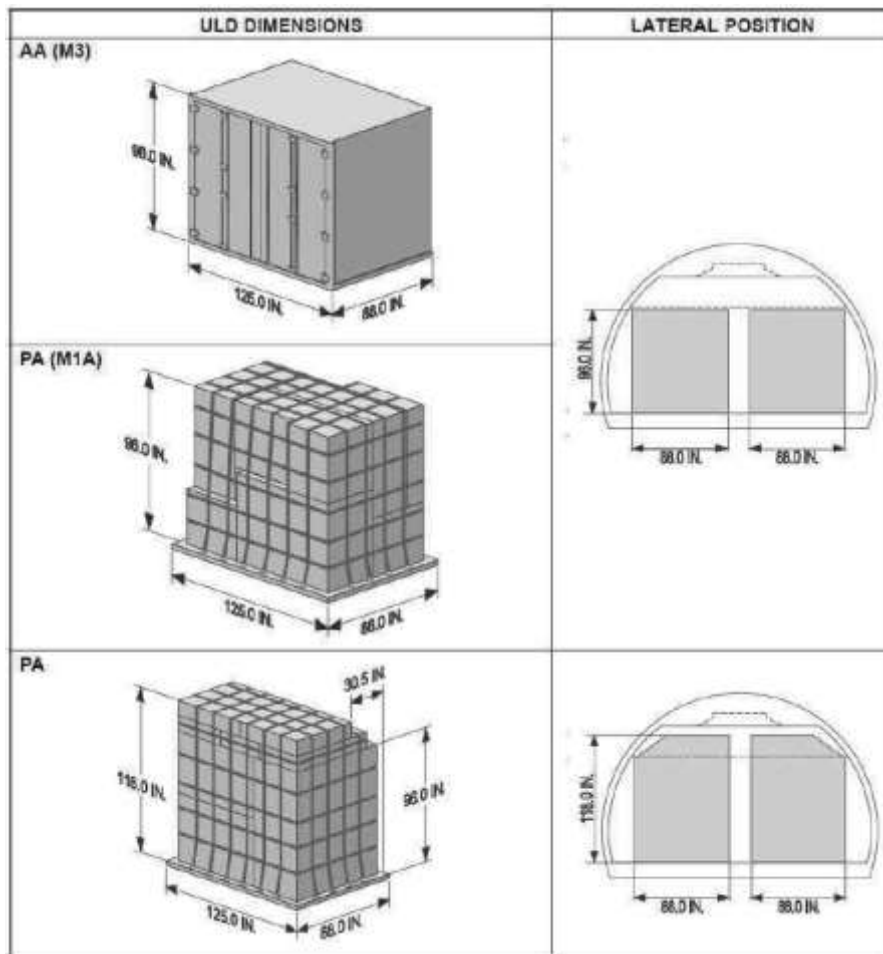
**B.4.1.2 32 (or 31) 88 x 125 Pallet Profiles (Yellow System)**

**Note:**

A1/A2 have specific contour, see Figure B.1.



**Figure B.14:**



**Figure B.15: Height Restrictions in 88x125 Configuration**



POSITION	IATA DESIGN.	CENTROID B.A. - IN.
M1a	A1	282.1
M1	A	320.0
M2a	A2	379.1
M2	B	449.2
M2b	B1	476.1
M3/M16	CR/CL	588
M4/M17	DR/DL	714
M5/M18	ER/EL	840
M6/M19	FR/FL	966
M7/M20	GR/GL	1092
M8/M21	HR/HL	1218
M9/M22	JR/JL	1344
M10/M23	KR/KL	1470
M11/M24	LR/LL	1596
M12/M25	MR/ML	1722
M13/M26	PR/PL	1848
M14/M27	RR/RL	2029
M15/M28	SR/SL	2155
M29	T	2296
E1/E2 <sup>(1)</sup>	QL/QR	1938.6
Q1/Q2 <sup>(1)</sup>	QL/QR	1938.6

<sup>(1)</sup> Q1/Q2 could be loaded alternatively to E1/E2

Figure B.16:

**B.4.1.3 32 (or 31) 96 x 125 Pallet Profiles (Green System)**

**Note:**

A1/A2 have specific contour, see Figure B.4

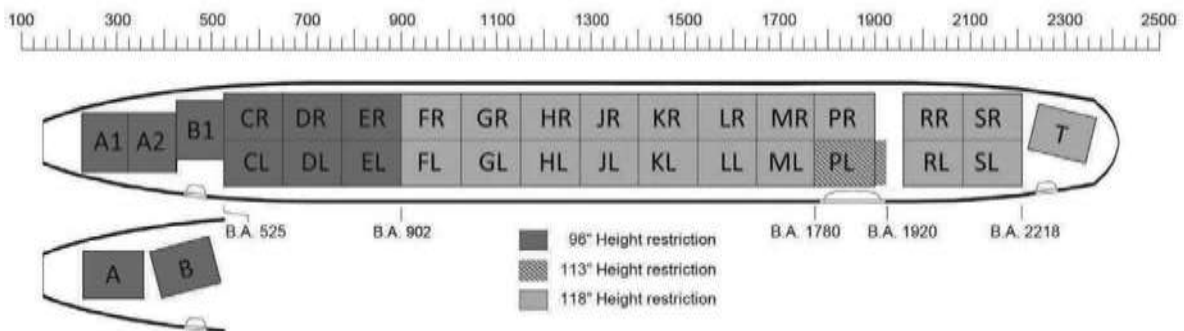


Figure B.17: Height Restrictions in 96x125 Configuration

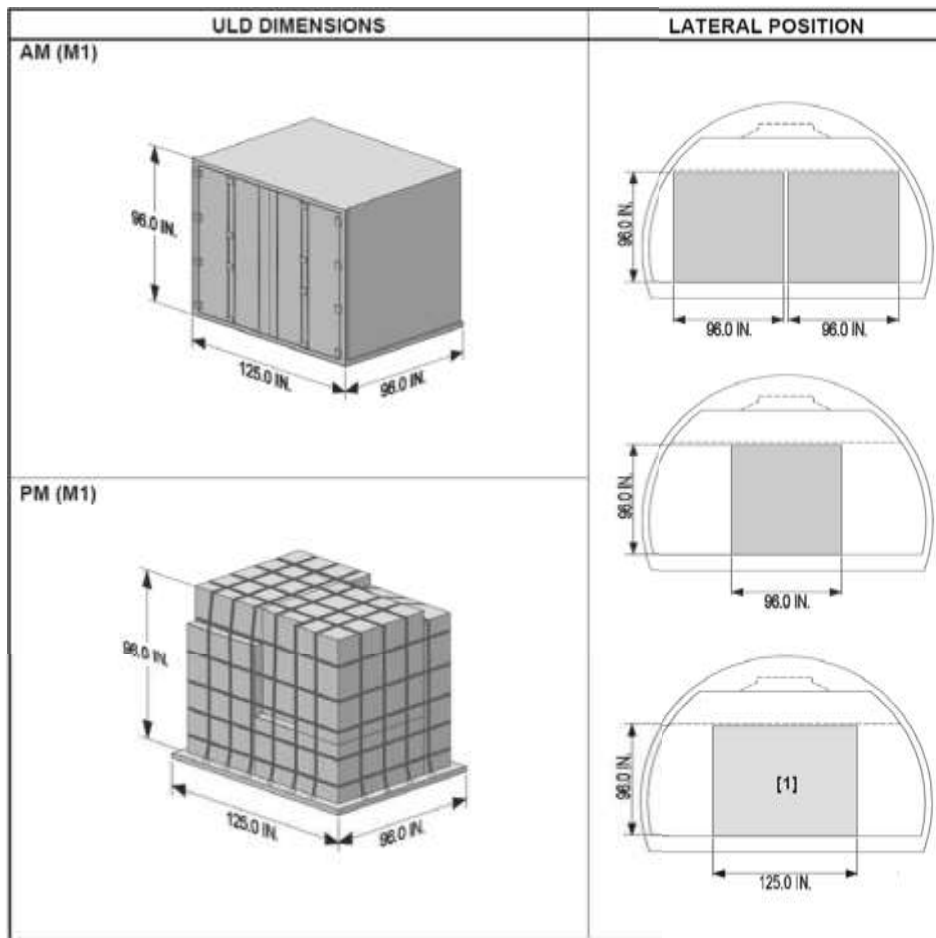


Figure B.18:

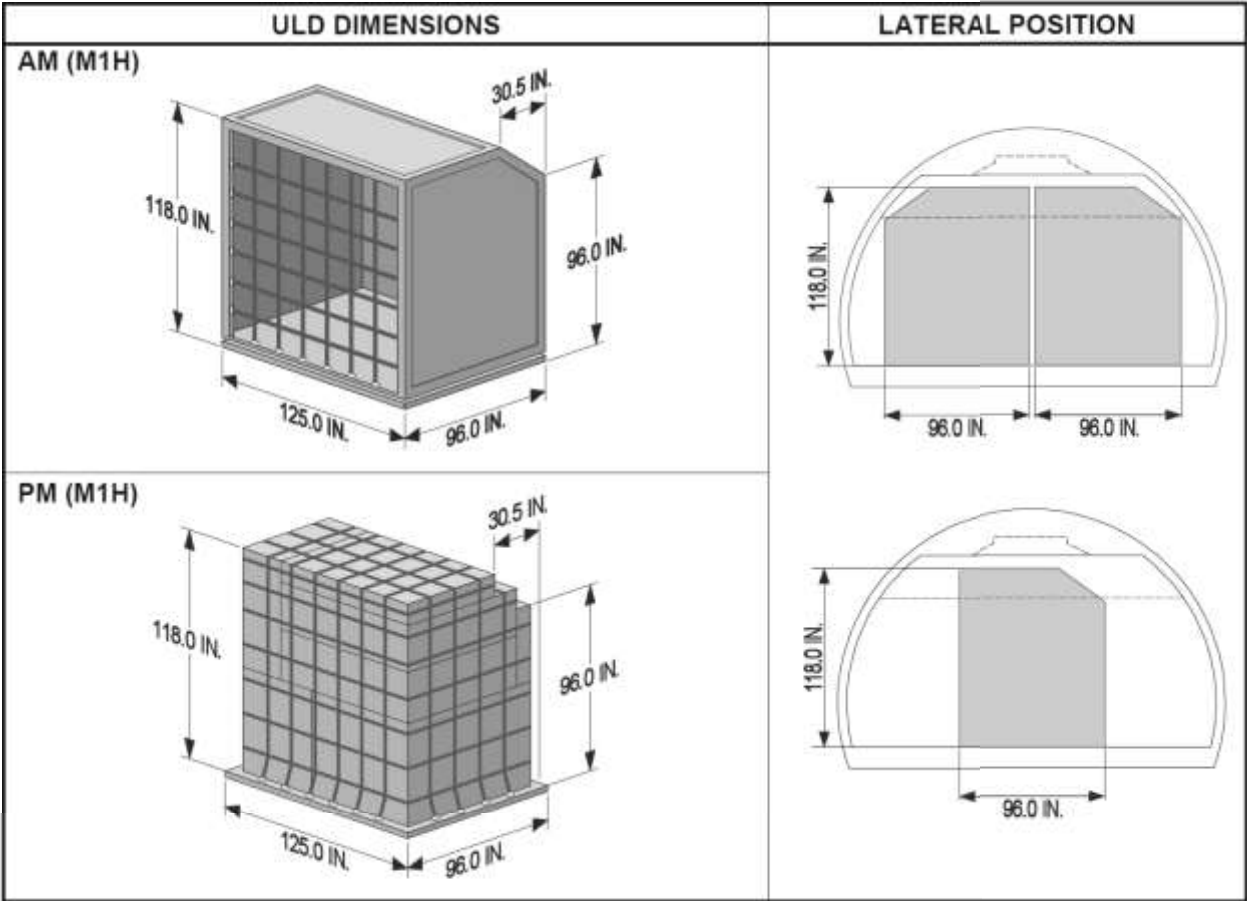


Figure B.19:

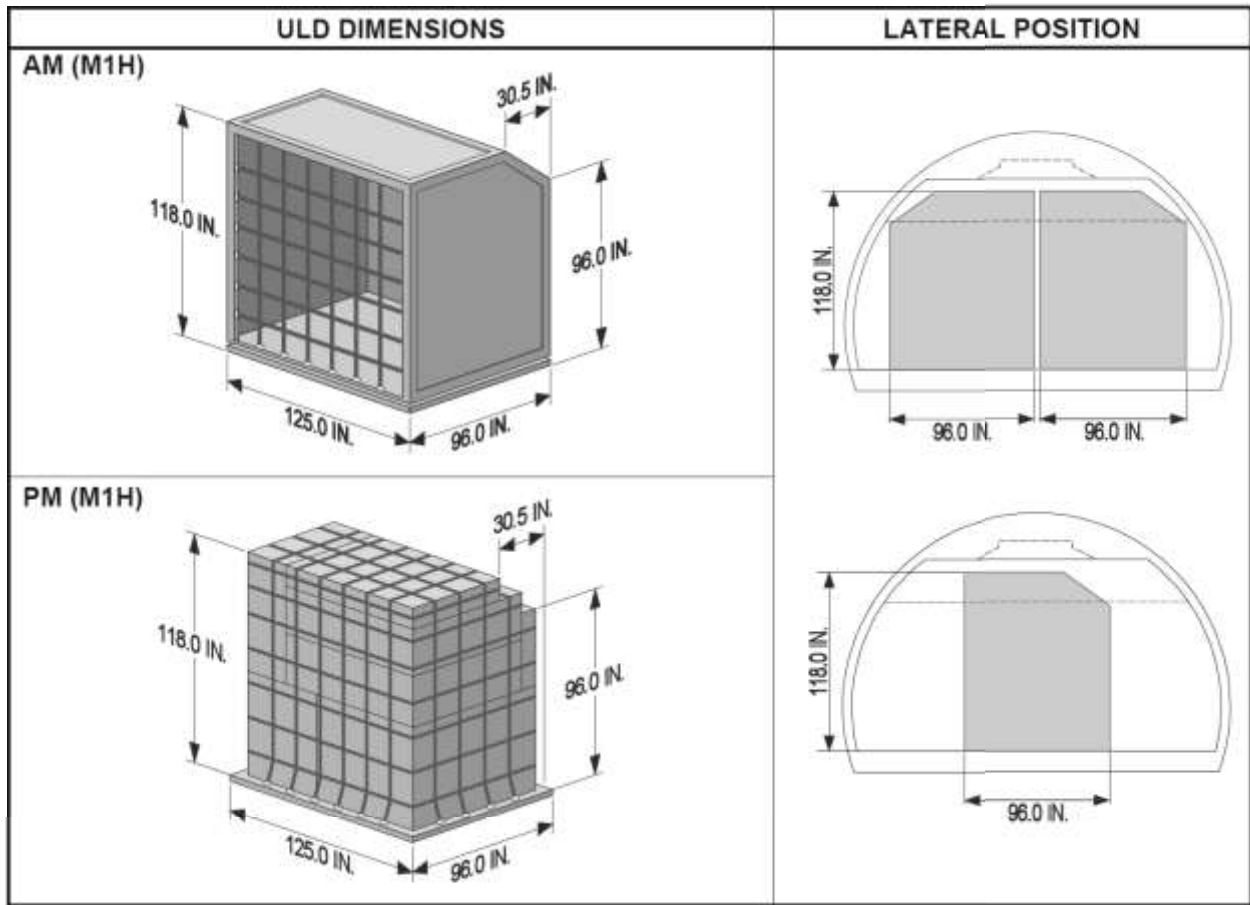


Figure B.20:

POSITION	IATA DESIGN.	CENTROID B.A. - IN.
M1a	A1	282.1
M1	A	320.0
M2a	A2	379.1
M2	B	449.2
M2b	B1	476.1
M3/M16	CR/CL	588
M4/M17	DR/DL	714
M5/M18	ER/EL	840
M6/M19	FR/FL	966
M7/M20	GR/GL	1092
M8/M21	HR/HL	1218
M9/M22	JR/JL	1344
M10/M23	KR/KL	1470
M11/M24	LR/LL	1596
M12/M25	MR/ML	1722
M13/M26	PR/PL	1848
M14/M27	RR/RL	2029
M15/M28	SR/SL	2155
M29	T	2296
E1/E2 <sup>[1]</sup>	QL/QR	1938.6
Q1/Q2 <sup>[1]</sup>	QL/QR	1938.6

<sup>[1]</sup> Q1/Q2 could be loaded alternatively to E1/E2

Figure B.21:

**B.4.1.4 88 x 108 Pallet Profiles (White System/463L)**

**Note:**

A1/A2 have specific contour, see Figure B.9.

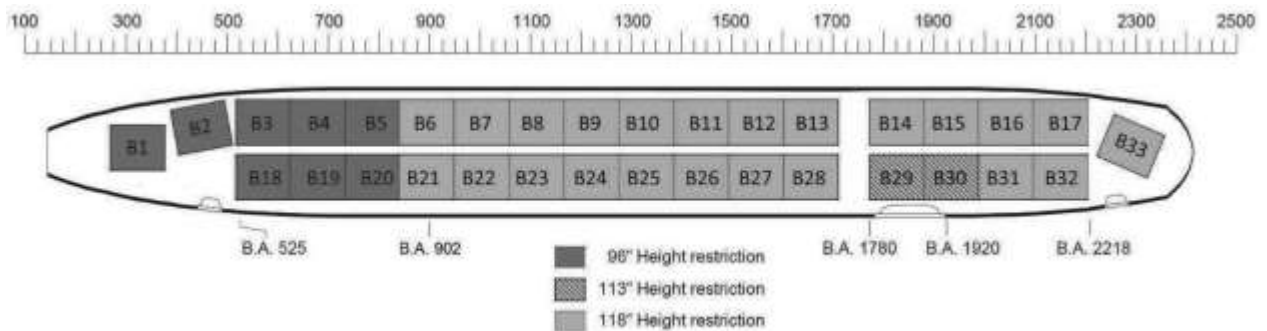


Figure B.22:

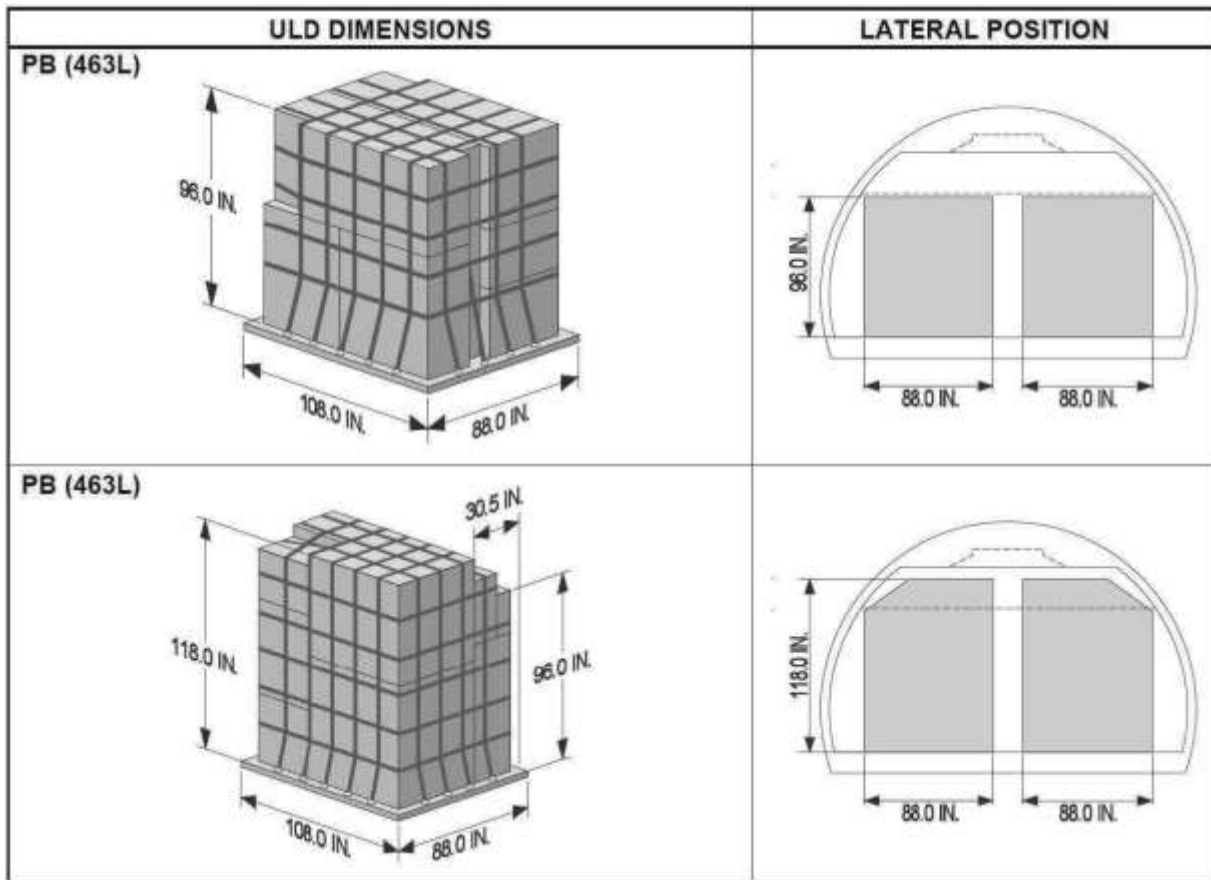


Figure B.23:

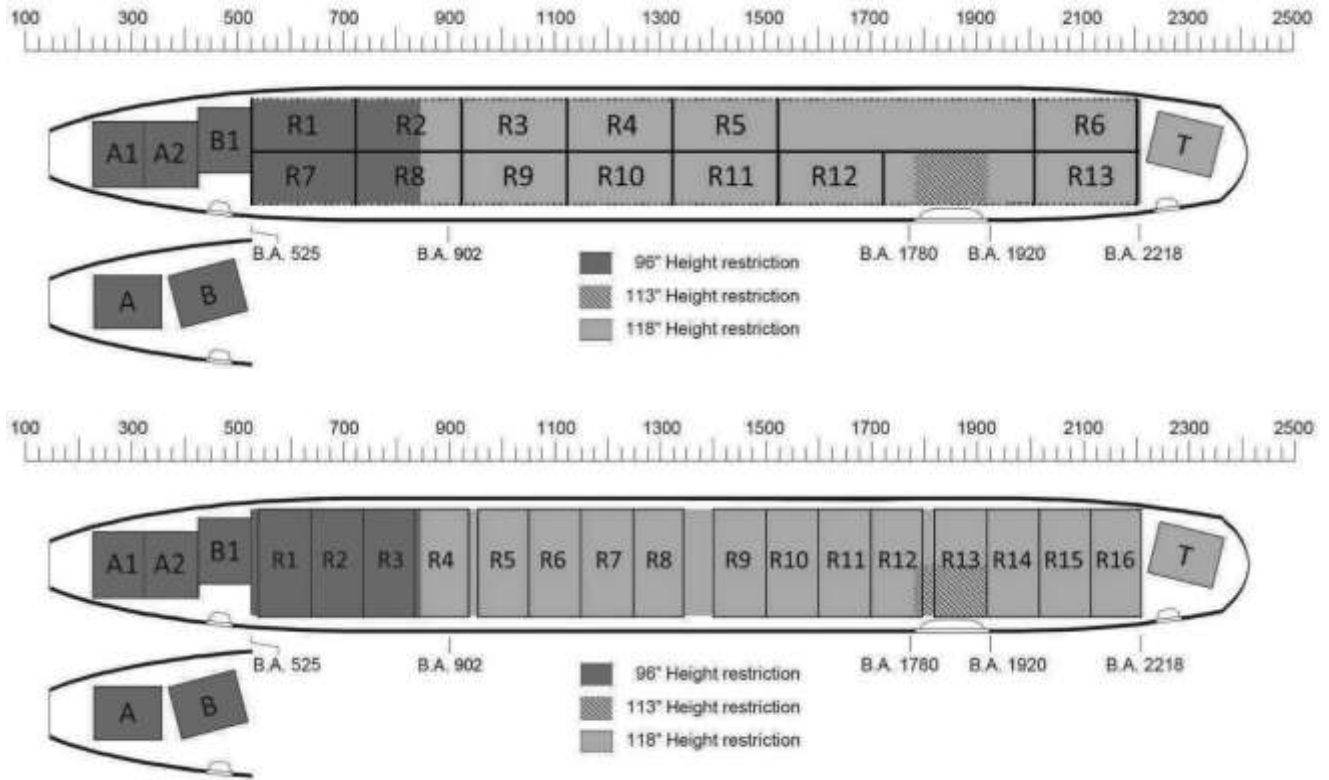
POSITION	CENTROID B.A. - IN.
B1	328
B2	457
B3/B18	579
B4/B19	688
B5/B20	797
B6/B21	906
B7/B22	1015
B8/B23	1124
B9/B24	1233
B10/B25	1342
B11/B26	1451
B12/B27	1560
B13/B28	1669
B14/B29	1837
B15/B30	1946
B16/B31	2055
B17/B32	2164
B33	2305

Figure B.24:

**B.4.1.5 96 x 196 Pallet Profiles**

**Caution:**

*PRA pallets loaded at or forward of sta. 840 must be must comply with height restrictions.*



**Figure B.25:**

**Note:**

Figure B.12 gives an example of available PRA positions. PRA pallet may be loaded 20.175 inch increments along the section with the supporting locks.

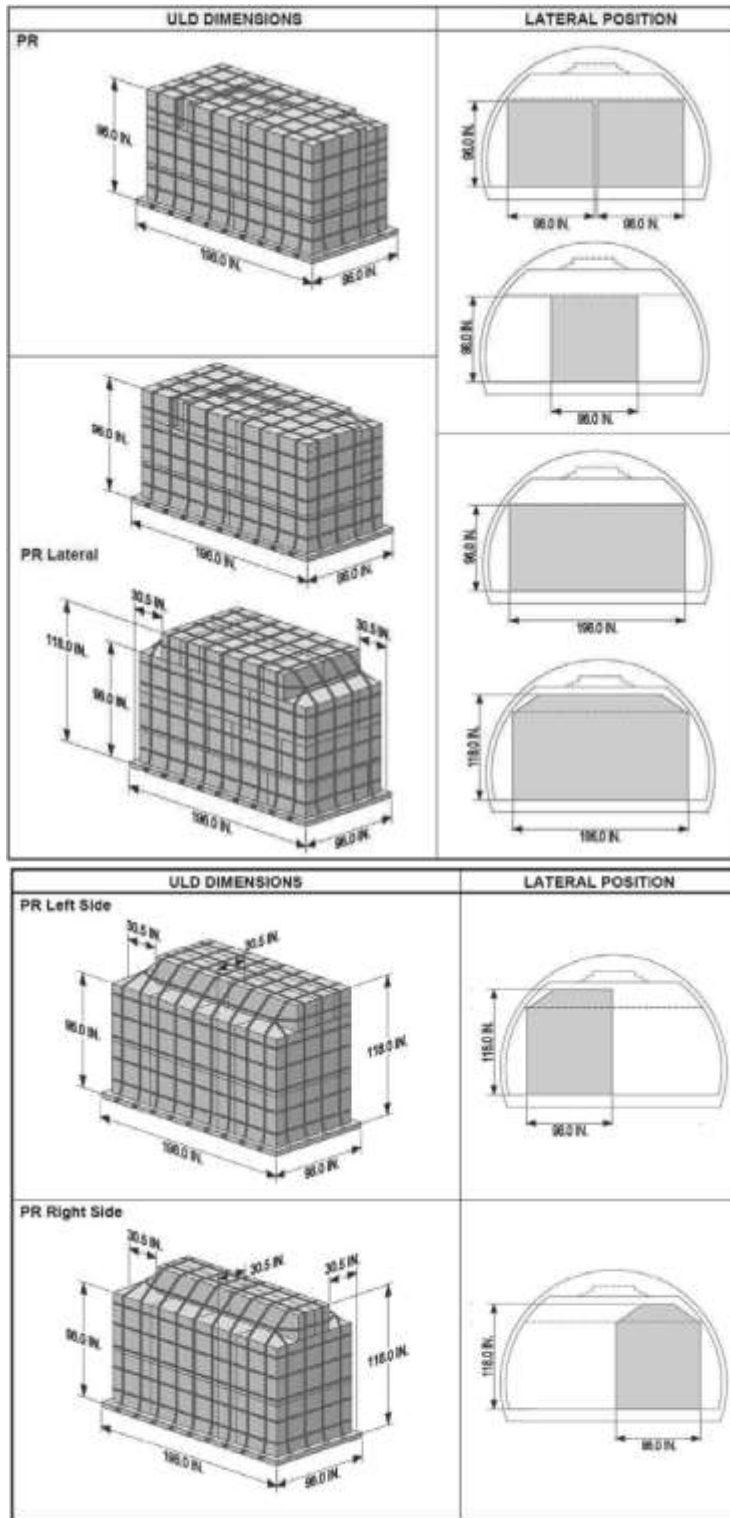


Figure B.26:



POSITION	CENTROID B.A. - IN.
R1/R7	710
R2/R8	911
R3/R9	1113
R4/R10	1314
R5/R11	1515
R12	1716
R6/R13	2119

Figure B.27:

**B.4.1.6 96 x 238.5 Pallet Profiles**

**Caution:**

*PRA pallets loaded at or forward of sta. 840 must be must comply with height restrictions.*

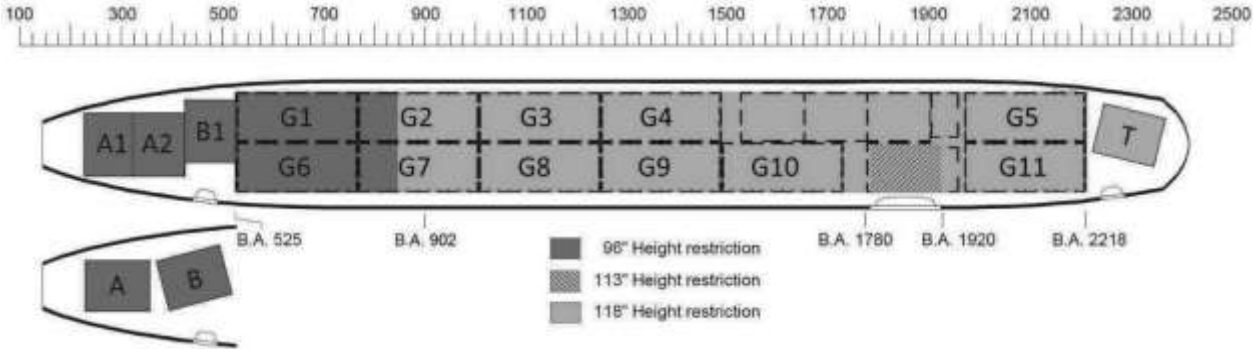


Figure B.28:

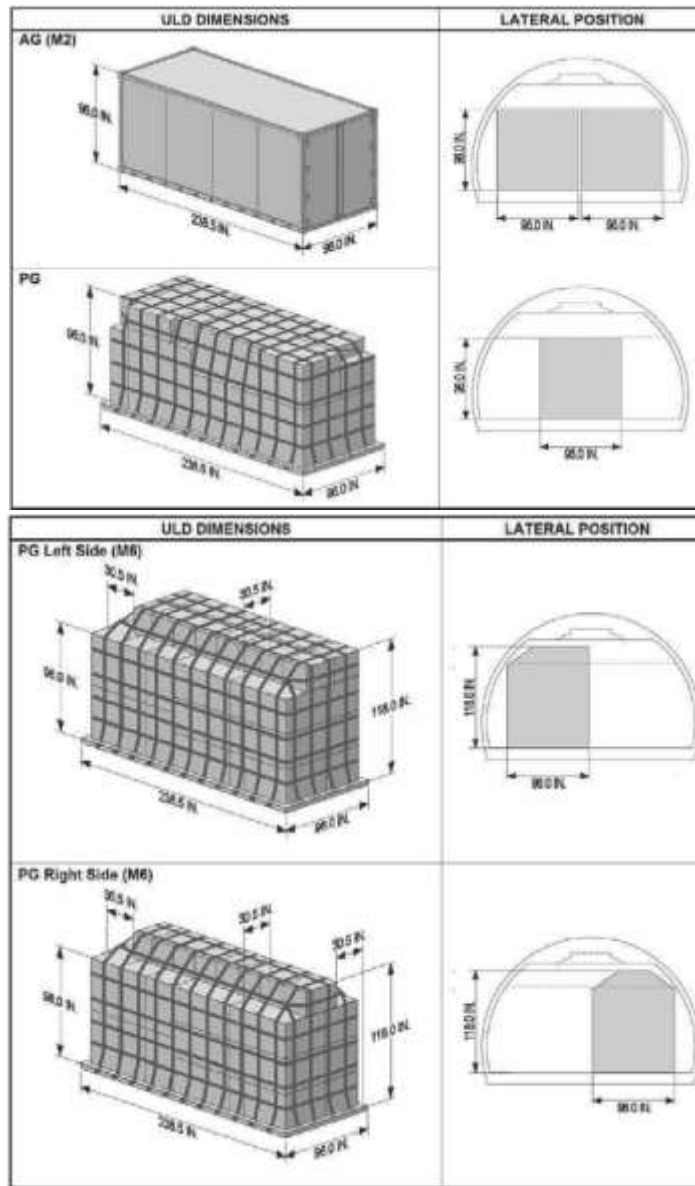


Figure B.29:

POSITION	CENTROID B.A. - IN.
R1/R7	710
R2/R8	911
R3/R9	1113
R4/R10	1314
R5/R11	1515
R12	1716
R6/R13	2119

Figure B.30:

**B.4.2 Lower Deck Configurations**

ULD Locations - Forward Lower Deck

**B.4.2.1 Size Code A (88 x 125") and B (88 x 108")**

The illustration below shows the allowable positions in the forward compartment for Size Code A and B ULDs.

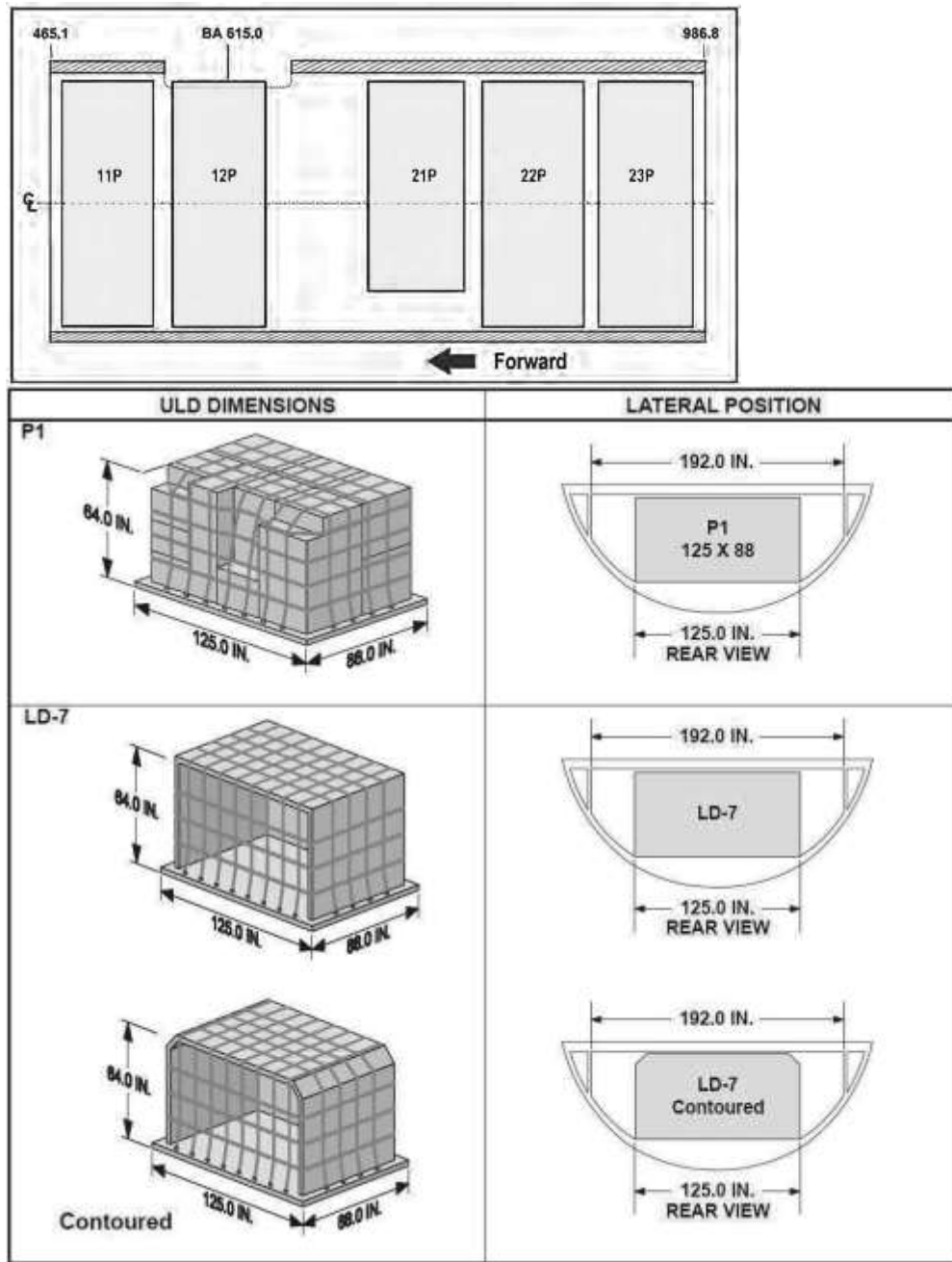


Figure B.31:

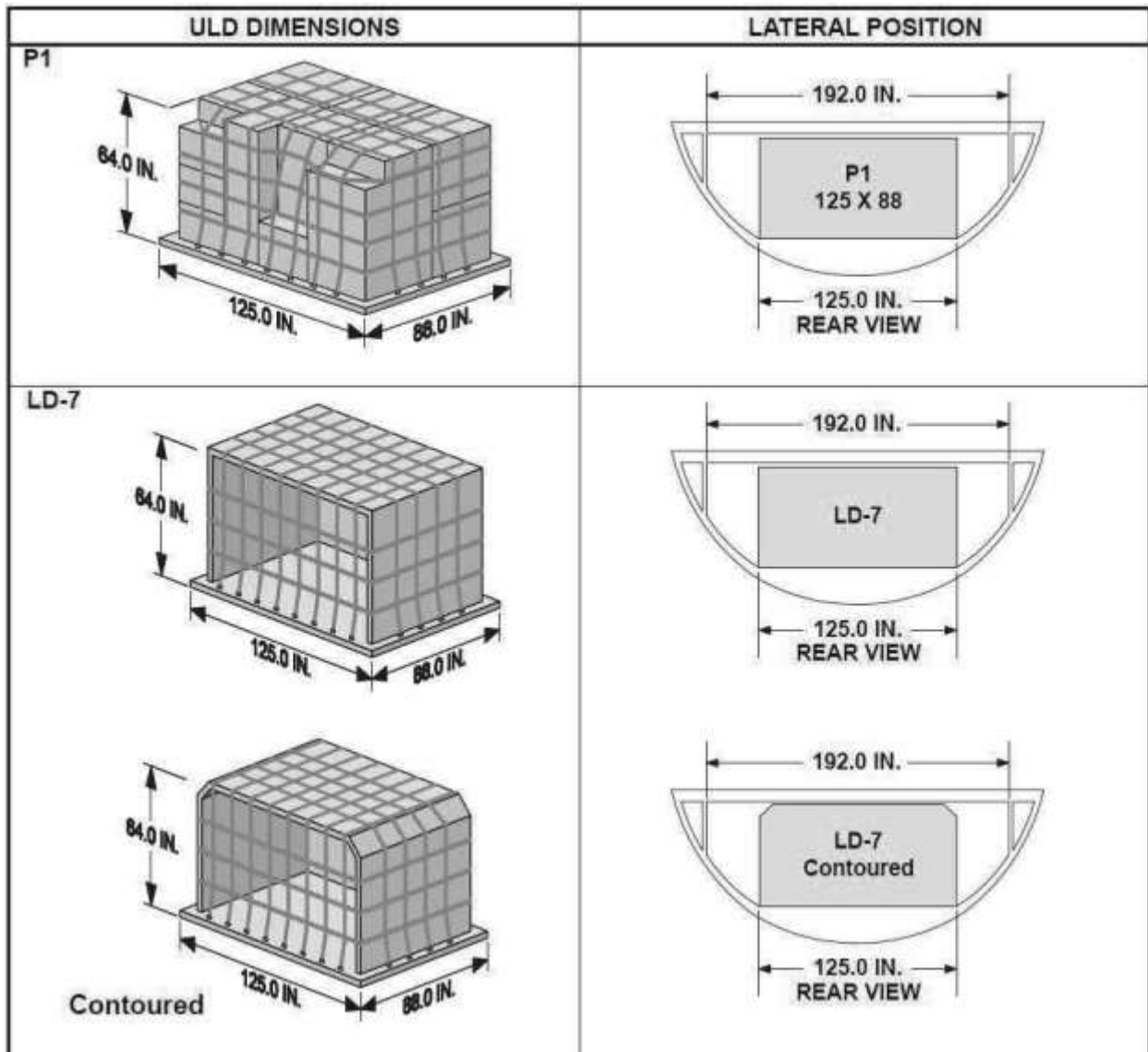


Figure B.32:

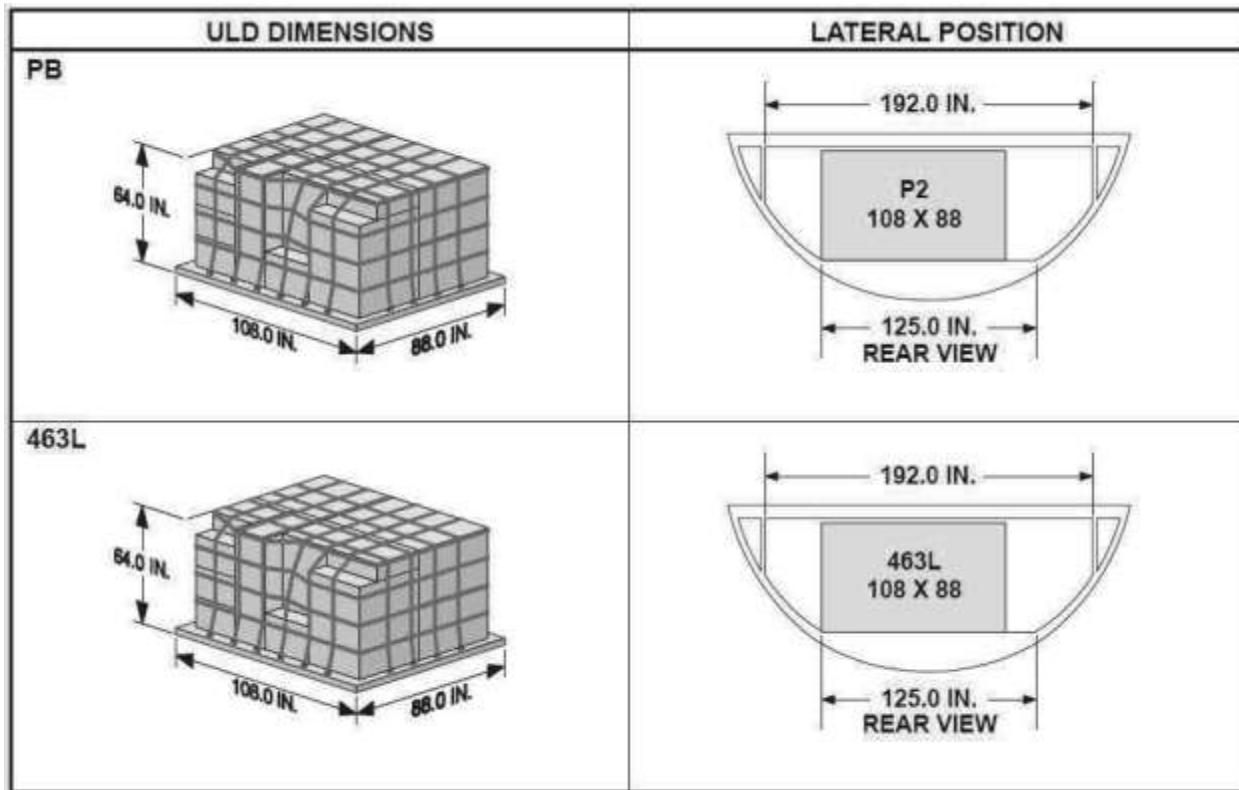


Figure B.33:

Assuming a uniformly distributed load for the positions shown in the above illustration, the following table tabulates the center of gravity for each individual position.

CENTERS OF GRAVITY - CG SIZE CODE A AND B			
BALANCE ARM - IN			
ULD POSITION DESIGNATIONS	START	END	CENTROID
11P	465.1	553.3	509.2
12P	562.1	650.3	606.2
21P	704.6	792.8	748.7
22P	801.6	889.8	845.7
23P	898.6	986.8	942.7

Figure B.34:

**B.4.2.2 Size Code M (96 x 125") and N (96 x 61.5")**

The illustration below shows the allowable positions in the forward compartment for Size Code M and N ULDs.

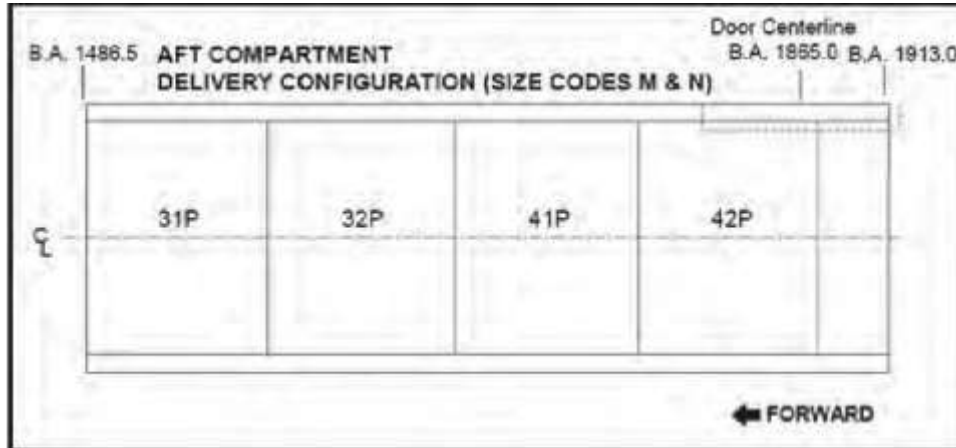


Figure B.35:

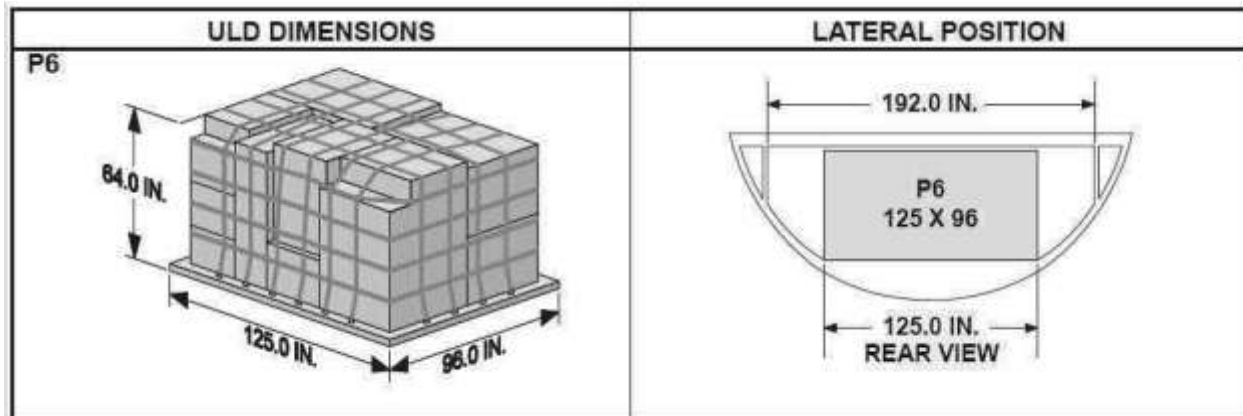


Figure B.36:

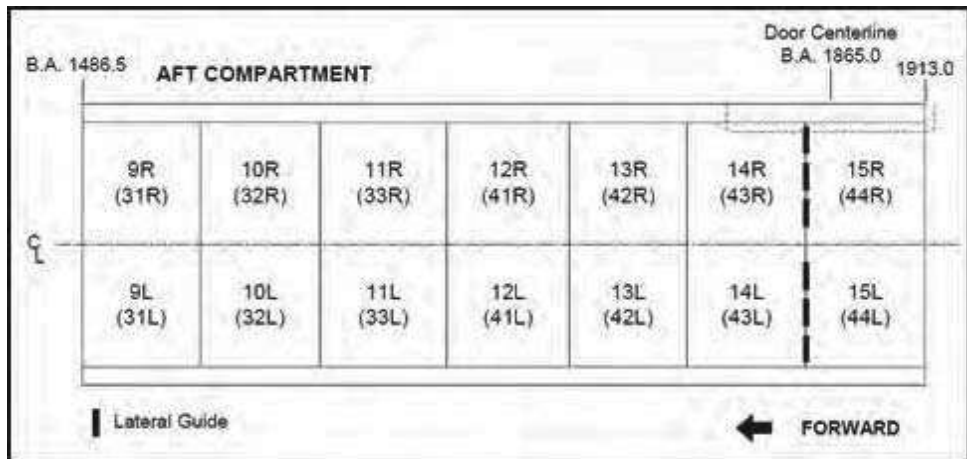
Assuming a uniformly distributed load for the positions shown in the above illustration, the following table tabulates the center of gravity for each individual position.

AFT COMPARTMENT UNIT LOAD DEVICE LOCATION CENTERS OF GRAVITY - SIZE CODES M & N			
ULD POSITION	BALANCE ARM - IN.		
	START	END	CENTROID
31P	1486.5	1582.7	1534.6
32P	1583.5	1679.7	1631.6
41P	1680.5	1776.7	1728.6
42P	1777.5	1873.7	1825.6

Figure B.37:

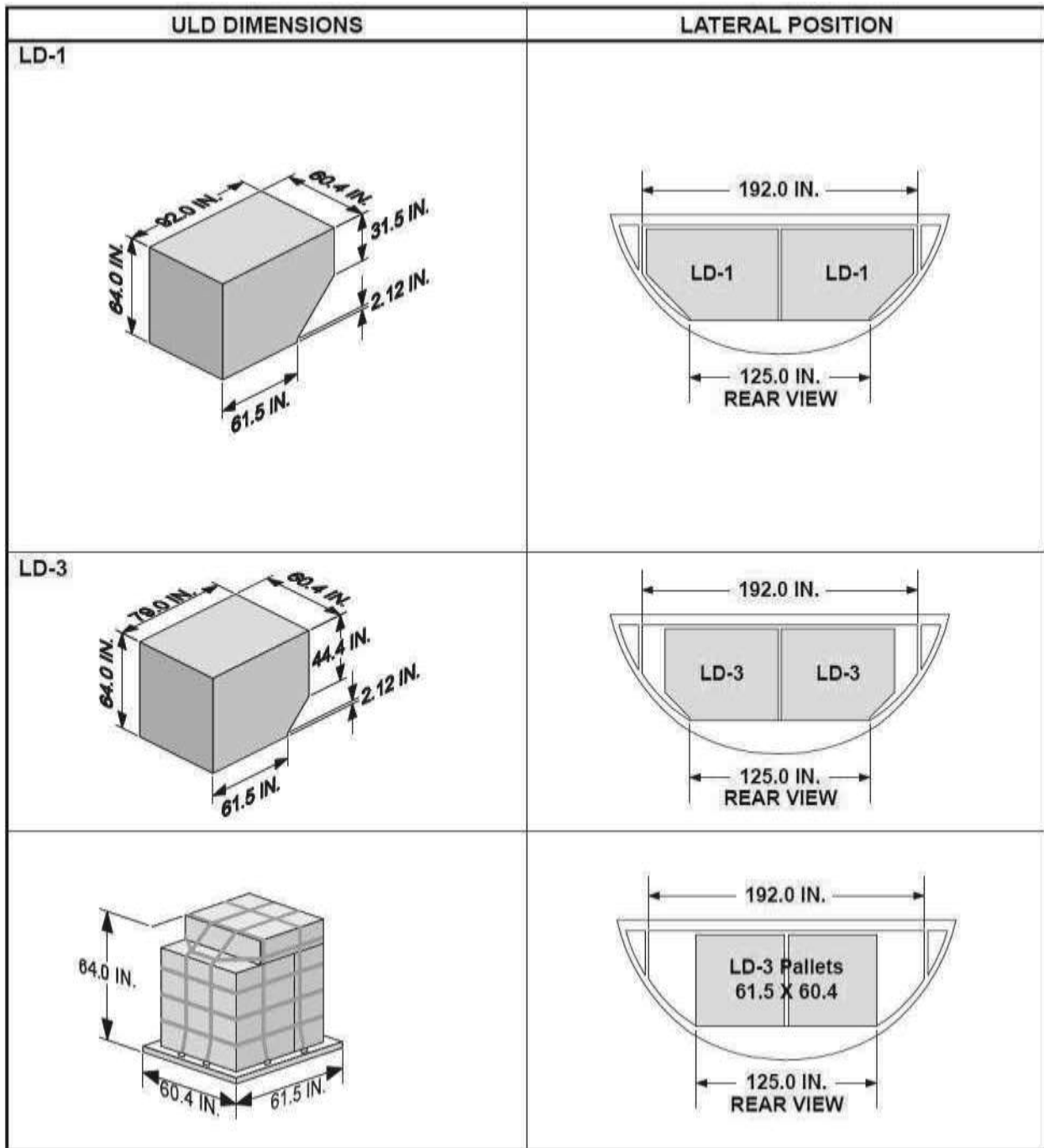
**B.4.2.3 Size Code K (60.4 x 61.5”) and L (60.4 x 125”)**

The illustration below shows typical positions in the aft compartment for size code K and L ULDs.



**Note:**

Position markings in parenthesis are equivalent IATA markings.



**Figure B.38:**

Assuming a uniformly distributed load for the positions shown in the above illustration, the following table tabulates the center of gravity for each individual position.



FORWARD COMPARTMENT UNIT LOAD DEVICE LOCATION CENTERS OF GRAVITY - SIZE CODES K & L			
ULD POSITION DESIGNATIONS	BALANCE ARM - IN.		
	POSITION	COMPARTMENT	TOTAL
11L & 11R	510.4	571.5	724.4
12L & 12R	571.3		
13L & 13R	632.9		
21L & 21R	694.7		
22L & 22R	756.1	816.2	
23L & 23R	816.6		
24L & 24R	876.5		
25L & 25R	937.4		

Figure B.39:

**B.4.3 ULD Locations - Aft Lower Deck**

**B.4.3.1 Size Code A (88 x 125") and B (88 x 108")**

The illustration below shows the allowable positions in the forward compartment for Size Code A and B ULDs.

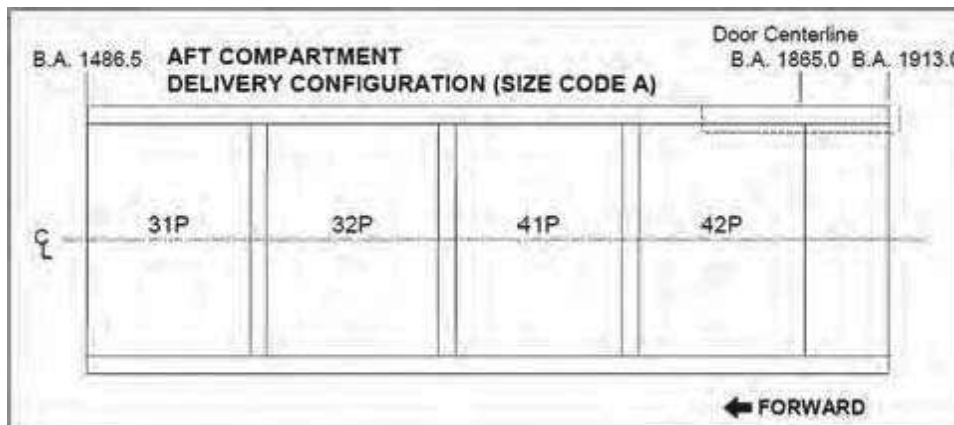


Figure B.40:

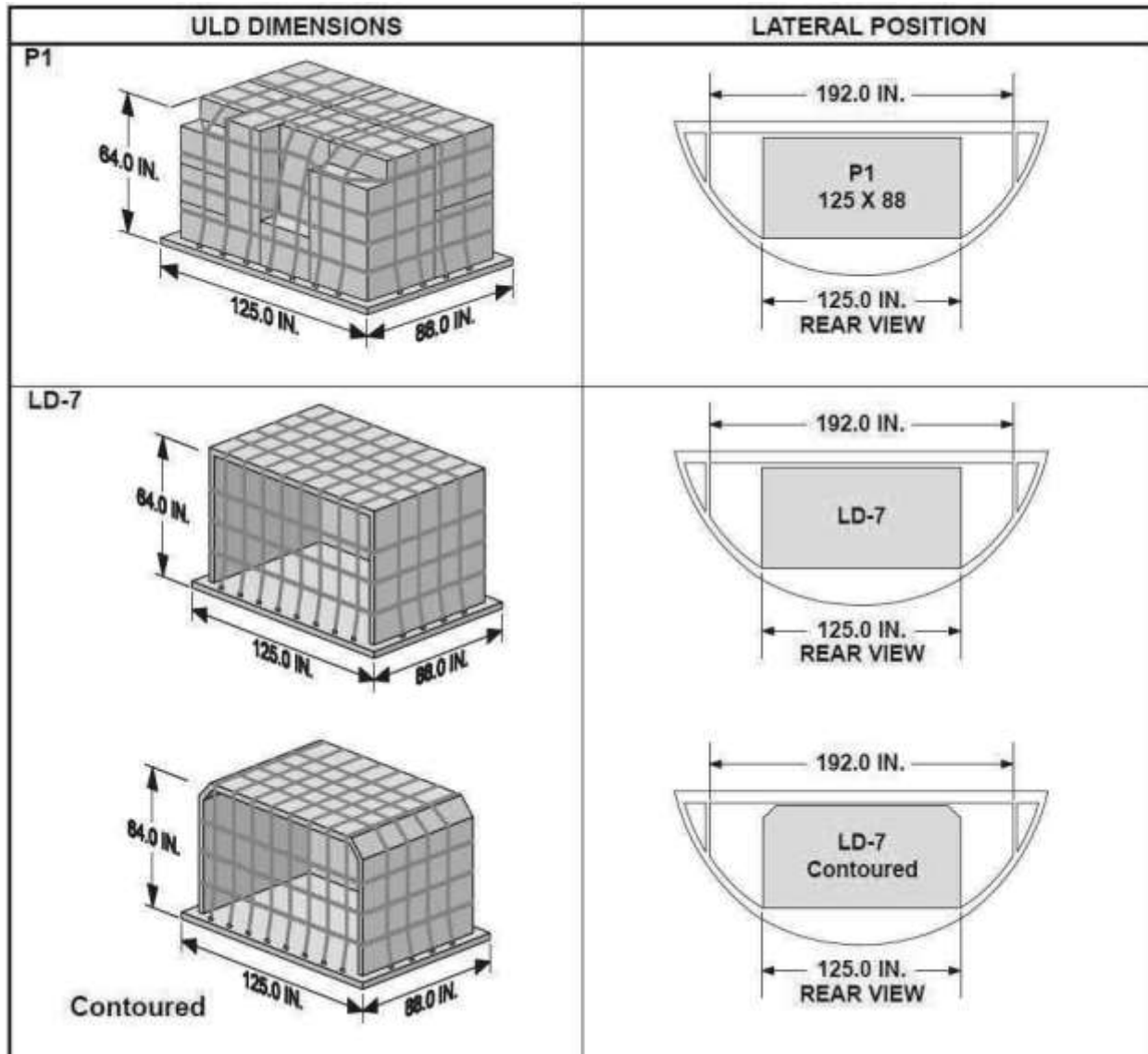


Figure B.41:

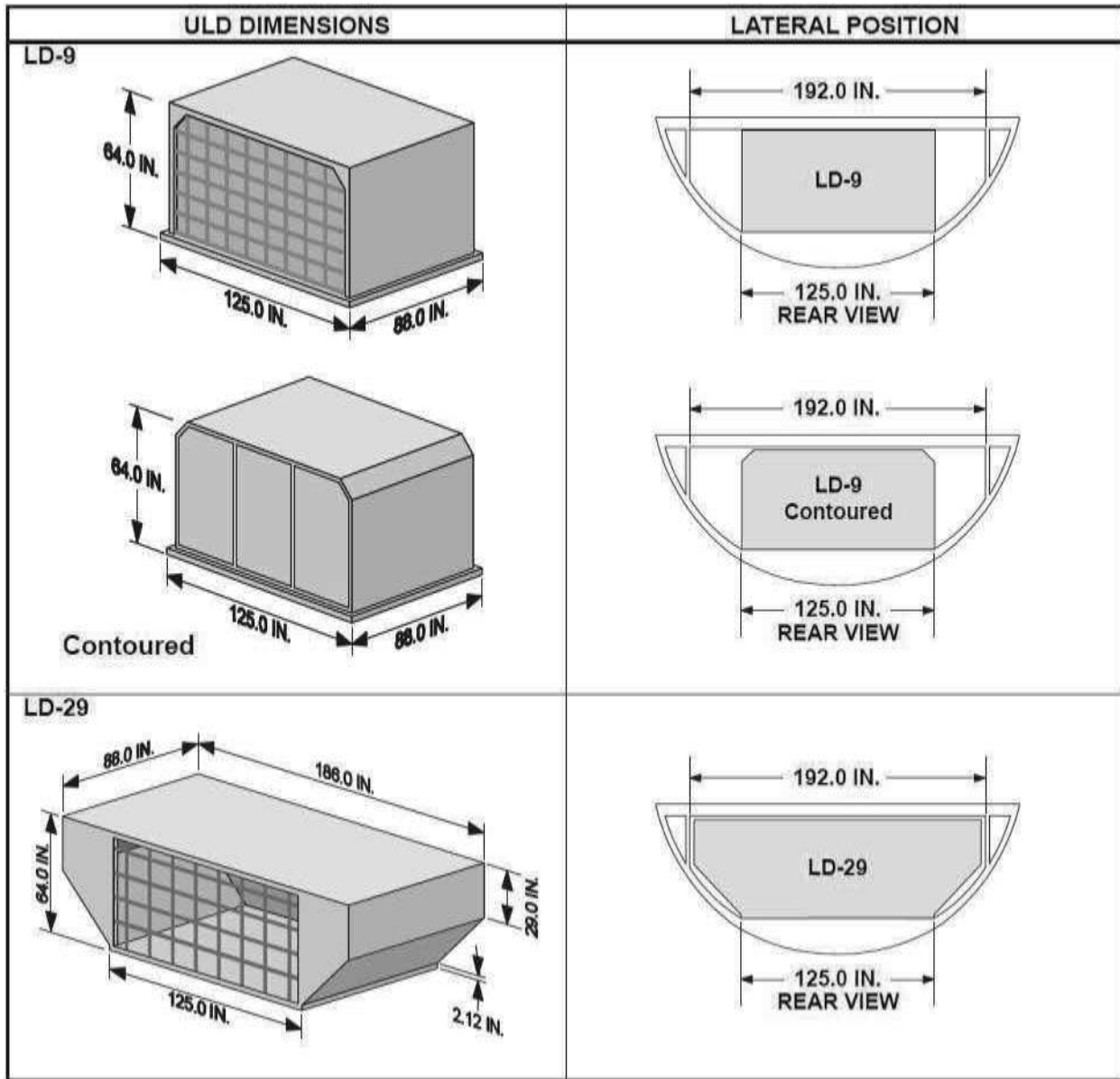
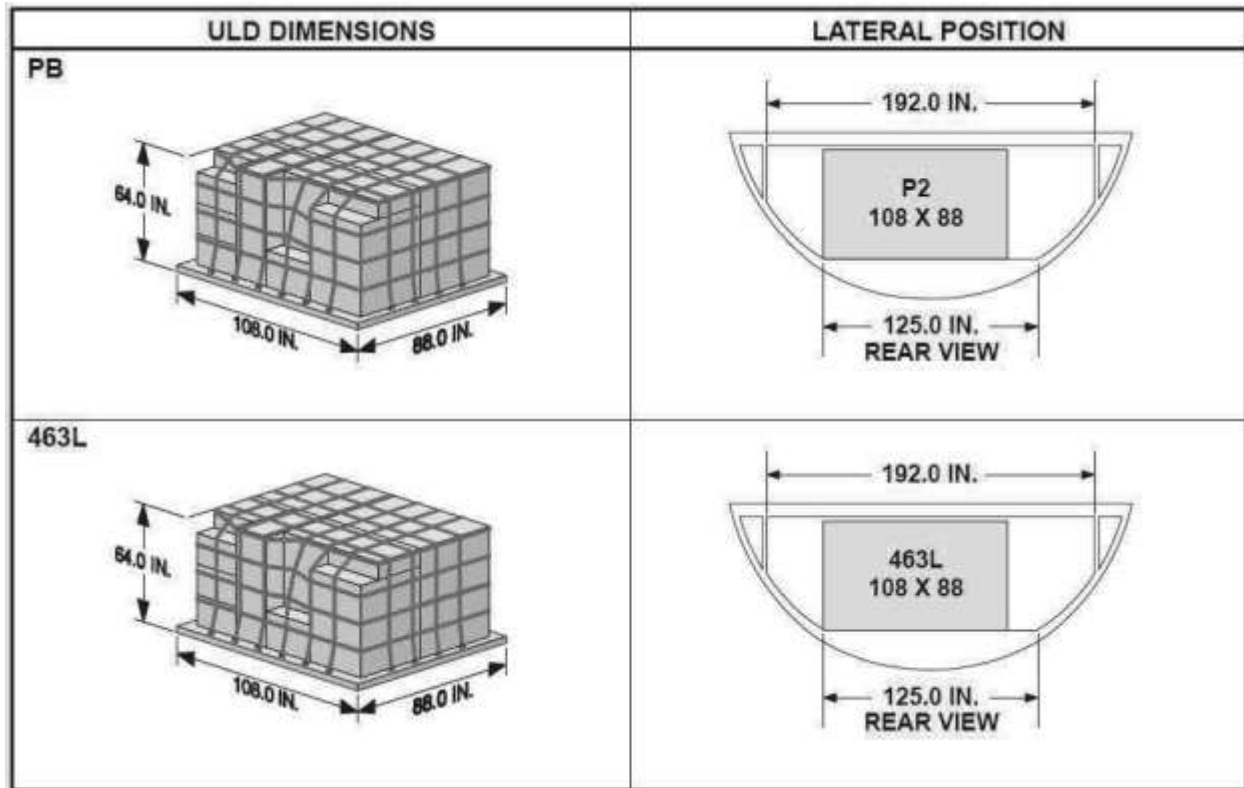


Figure B.42:



**Figure B.43:**

Assuming a uniformly distributed load for the positions shown in the above illustration, the following table tabulates the center of gravity for each individual position.

CENTERS OF GRAVITY - SIZE CODES A AND B			
BALANCE ARM - IN			
ULD POSITION DESIGNATIONS	START	END	CENTROID
31P	1486.5	1574.7	1530.6
32P	1583.5	1671.7	1627.6
41P	1680.5	1768.7	1724.6
42P	1777.5	1865.7	1821.6

**Figure B.44:**

**B.4.3.2 Size Code M (96 x 125") and N (96 x 61.5")**

The illustration below shows the allowable positions in the forward compartment for Size Code M and N ULDs.

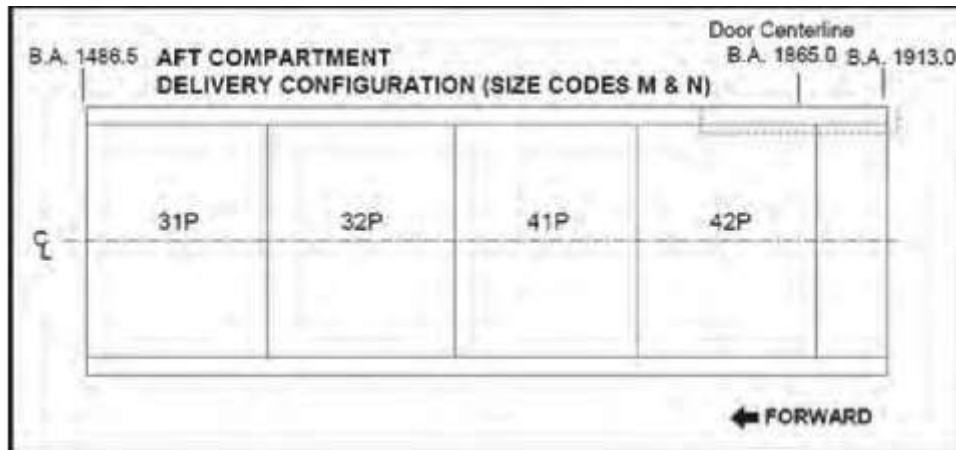


Figure B.45:

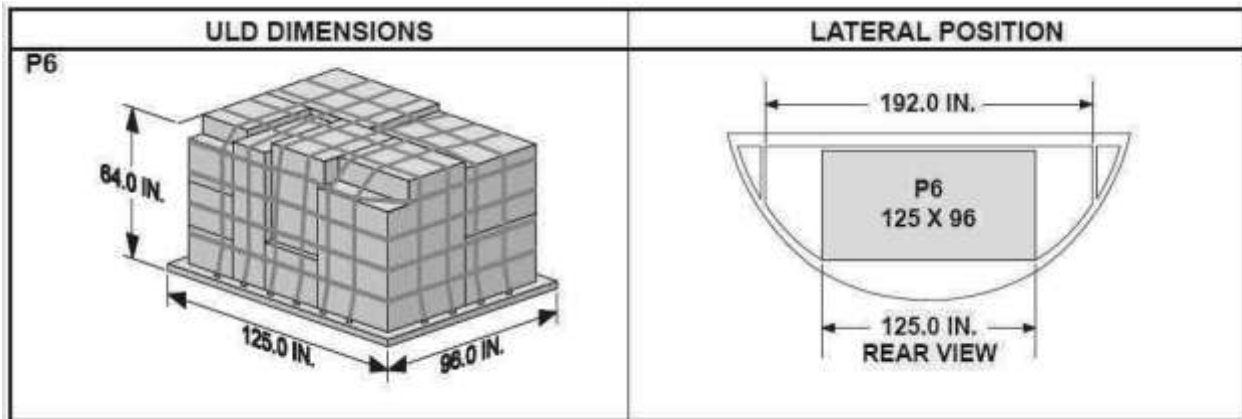


Figure B.46:

Assuming a uniformly distributed load for the positions shown in the above illustration, the following table tabulates the center of gravity for each individual position.

AFT COMPARTMENT UNIT LOAD DEVICE LOCATION CENTERS OF GRAVITY - SIZE CODES M & N			
ULD POSITION	BALANCE ARM - IN.		
	START	END	CENTROID
31P	1486.5	1582.7	1534.6
32P	1583.5	1679.7	1631.6
41P	1680.5	1776.7	1728.6
42P	1777.5	1873.7	1825.6

Figure B.47:

**B.4.3.3 Size Code K (60.4 x 61.5”) and L (60.4 x 125”)**

The illustration below shows typical positions in the aft compartment for size code K and L ULDs.

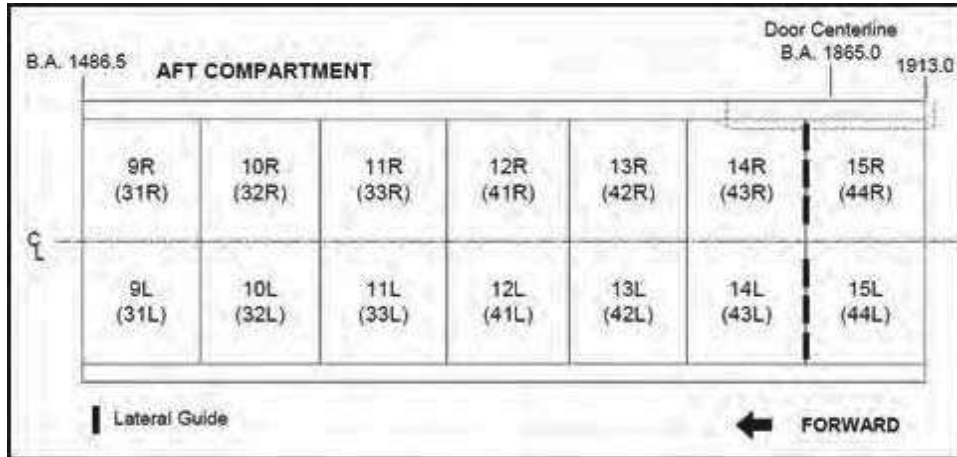
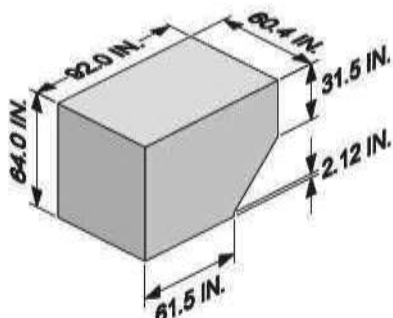
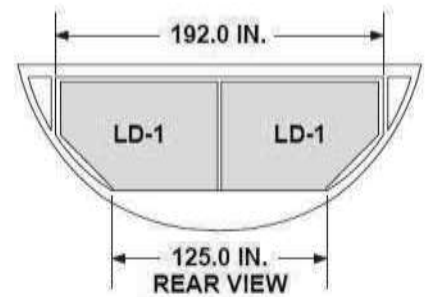
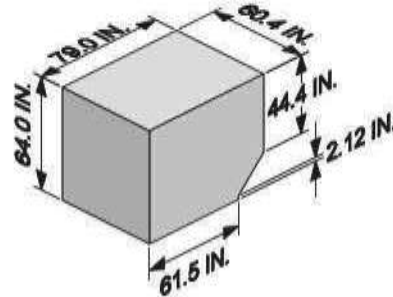
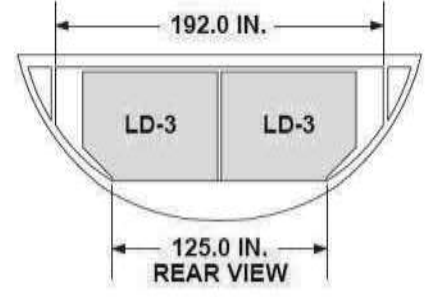
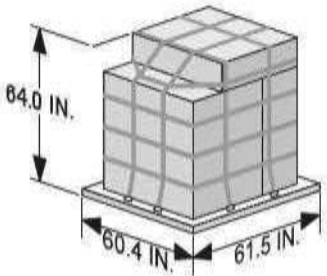
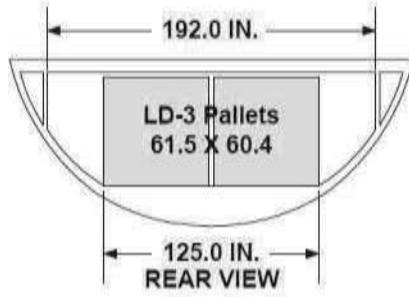


Figure B.48:

ULD DIMENSIONS	LATERAL POSITION
<p><b>LD-1</b></p> 	 <p>192.0 IN.</p> <p>LD-1 LD-1</p> <p>125.0 IN. REAR VIEW</p>
<p><b>LD-3</b></p> 	 <p>192.0 IN.</p> <p>LD-3 LD-3</p> <p>125.0 IN. REAR VIEW</p>
	 <p>192.0 IN.</p> <p>LD-3 Pallets 61.5 X 60.4</p> <p>125.0 IN. REAR VIEW</p>

**Note:**

Position markings in parenthesis are equivalent IATA markings.

Assuming a uniformly distributed load for the positions shown in the above illustration, the following table tabulates the center of gravity for each individual position.

AFT COMPARTMENT UNIT LOAD DEVICE LOCATION CENTERS OF GRAVITY - SIZE CODES K & L				
ULD POSITION MARKINGS		BALANCE ARM - IN.		
DELIVERY	IATA	POSITION	COMPARTMENT	TOTAL
9L & 9R	31L & 31R	1517.1	1577.5	1698.9
10L & 10R	32L & 32R	1577.7		
11L & 11R	33L & 33R	1637.7		
12L & 12R	41L & 41R	1698.2	1789.9	
13L & 13R	42L & 42R	1758.7		
14L & 14R	43L & 43R	1820.3		
15L & 15R	44L & 44R	1882.4		

Figure B.49:

**B.4.4 Non-Approved ULDs - Lower Deck**

Non-approved ULDs may be carried on Company B747 aircraft lower deck compartments provided:

- The maximum dimensions for the B747 aircraft forward and aft lower deck compartment's doors are not exceeded
- Tie-down is required for each non-approved ULD in accordance with the approved Tie-down procedures
- The minimum height dimension for each non-approved ULD is 63 inches
- The ULD must engage the restraint hardware similar to an approved ULD. Additionally, the same load limitations associated with equipment malfunctions must be observed in the same manner as approved ULDs to prevent damage to restraint equipment or its local support structure
- ULDs must be serviceable and loaded in such a manner to prevent them or their cargo from becoming a hazard or damaging airplane structure under operational loads.
- Open positions resulting from partial loading forward or aft of these ULDs without providing restraint in the forward or aft direction. These restraints are required to prevent the shifting of cargo under normal operational loads and may be fixed end stops, retractable guide rails, pallet locks or container stops.
- The maximum allowable loads specified in the following table are not to be exceeded. In addition, all other shear curve, linear load, and area load limits must be observed.

The maximum allowable load for non-approved containers and pallets in the forward and aft lower compartments is shown in the next table.

Non-approved ULDs - Lower Deck - Maximum Allowable Load					
ULD Size Code					
KGs	K	L	A	M	P
	1,587	3,175	4,626	5,034	1,224
NOTE					
Non-approved ULD weights represent the maximum weight of the ULD, including tare weight.					

Figure B.50: