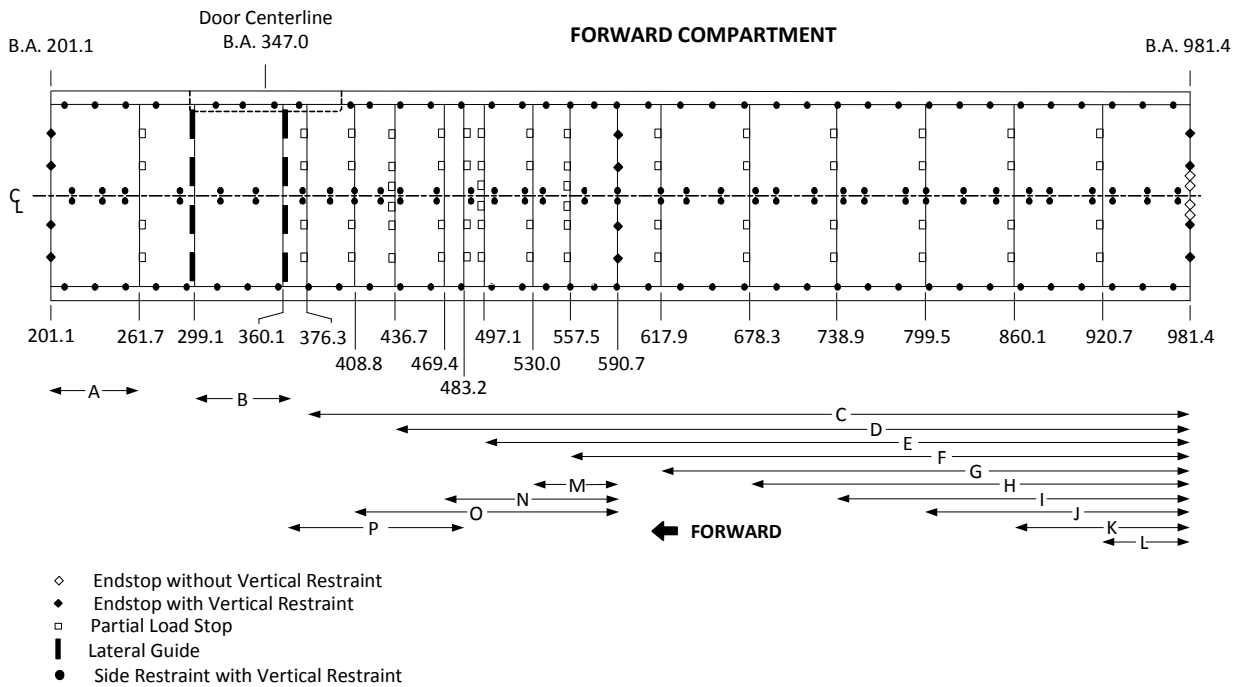


FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS

CARGO RESTRAINT SYSTEM - SIZE CODES K, L, & P

The longitudinal area between each combination of fwd / aft restraints is referred to as a zone. All zones in a cargo compartment are unique, and all restraints within the boundaries of a zone are either down or inoperative. The illustration below identifies the locations of the stops / locks / guides and the associated zones for Size Codes K, L, & P.



Unit Load Device Intermixing

Size Codes K, L, & P containers can be intermixed in the cargo compartments, provided that:

- A LD-1, LD-3, LD-5, LD-6, LD-10, or LD-11 container is located against the fwd and aft restraints for each string of containers.
- LD-2 containers are paired with another LD-2 or LD-3 container within a string.

If a fwd / aft restraint is broken or inoperative, containers can still be intermixed provided:

- The allowable zonal load per the missing restraint section is not exceeded.
- Only LD-1, LD-3, LD-5, LD-6, LD-10 and LD-11 containers are at the end of a string of containers at which a restraint is missing or inoperative. Do not place a pair of LD-2 containers (side by side) against inoperative restraints when intermixing containers.

Size Codes K, L & P containers can be intermixed in Zone O, provided that one Size Code L, or two Size Code K containers are located against the aft restraints. One Size Code K may be loaded against the aft restraints if the other side of Zone O is empty.

APPLICABLE CONFIGURATIONS	
All	

FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

LOAD LIMITS - SIZE CODES K, L, & P

The remaining sections of this subject describe loading considerations, restraint systems, missing or inoperable restraints, and provide maximum allowable loads for each restraint direction under various operational conditions.

Loading Considerations

The allowable weight for each zone is a function of the type of ULD that comes in contact with the forward and aft restraints, the load factors, and by the restraint and ULD capabilities.

CAUTION ENSURE THERE IS SUFFICIENT CLEARANCE BETWEEN THE TOP OF THE CARGO AND THE CARGO BAY CEILING WHILE LOADING AND UNLOADING CARGO. DAMAGE TO THE AIRPLANE CAN OCCUR IF THERE IS NOT SUFFICIENT VERTICAL CLEARANCE.

NOTE Airplanes with the -300ER nose landing gear move differently during loading and unloading than other 777 model airplanes.

Unless otherwise stated, the following guidelines must be followed to determine allowable loads in a zone.

- ❑ The operator determines the number of restraints available for each zone.
- ❑ The allowable zone weight includes ULD tare. Any load in excess of the allowables specified herein must be restrained by additional tiedowns (refer to CHP-SEC 1-68-00x for tiedown information).
- ❑ Allowable weights may further be restricted by limitations in this manual.
- ❑ Restraints at the fwd and aft end of a string of containers may be missing at the same time. However, the most limiting allowable zonal load for a missing fwd or aft restraint must be used.
- ❑ Missing / inoperative restraints in the same direction cannot be adjacent (i.e. two adjacent side restraints or two adjacent vertical restraints at the forward or aft side of the ULD may not be missing or inoperative). Also, two restraints adjacent to a common corner cannot be missing / inoperable. If this condition exists, the allowable weight of the associated zone is 0 LB (0 KG).
- ❑ LD-2 containers must be paired with another LD-2 or LD-3 container.
- ❑ LD-2 containers must be loaded in a string and must not occupy the first, last or doorway positions.
- ❑ A pair of LD-2's or paired LD-2 and LD-3 containers loaded in a unstrung zone, must be tied down.
- ❑ To reduce inadvertent cargo movement, it is recommended that all available restraints, including lateral guides, in unoccupied positions be raised.
- ❑ A maximum of two missing or inoperative restraints (one on the left side and one on the right side of the airplane) are allowed in each restraint direction.

APPLICABLE CONFIGURATIONS
All

FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

- For any ULD, restraints used to react the load in the inboard / outboard directions may not be missing / inoperative if restraints in the fwd / aft directions are also missing / inoperative. If this condition exists, tiedowns are required.
- Pallet position P22 cannot be tied down when a single Size Code K ULD is loaded in the position immediately forward of pallet position P22.

Missing / Inoperative Restraints

Maximum loads for unit load devices shown in this section assume all equipment is installed and operable. When equipment is missing or inoperative, allowable loading may be reduced. Certain instances of missing or inoperative equipment reduce the allowable loading to zero.

CAUTION CARE MUST BE EXERCISED DURING LOADING AND UNLOADING OF UNIT LOAD DEVICES WHEN EQUIPMENT IS MISSING / INOPERATIVE TO PREVENT DAMAGE TO AIRPLANE STRUCTURE. IT IS ADVISABLE THAT MALFUNCTIONING EQUIPMENT BE REPAIRED OR REPLACED TO PREVENT DAMAGE TO OPERATIVE EQUIPMENT.

The following equipment malfunctions do not constitute a load limit restriction:

- Jammed or missing sill rollers without vertical restraint
- Jammed or missing balls in a ball mat
- Jammed or missing rollers in a roller unit
- Split Side Guide rail

Restraint systems fall into three categories: side restraints, side/vertical restraints and forward/aft restraints. Each restraint direction is considered separately when missing / inoperative restraint equipment exists (i.e. forward, aft, side left, side right and vertical loading). When a missing or inoperative restraint condition exists, the allowable weight is determined by considering each restraint direction separately and using the most limiting resultant allowable weight.

Missing / inoperative restraints must not be adjacent to each other.

NOTE An empty ULD can be carried in any position provided at least one restraint is operable in each forward, aft, side left and side right direction. In addition, ULDs less than 63 inches in height require one vertical restraint on each edge (forward, aft, side left and side right) to be operable.

APPLICABLE CONFIGURATIONS
All



FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Forward and Aft Restraints (Pounds) - Size Codes K, L, & P

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative forward / aft restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - LB								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE^[a]	MAXIMUM LOAD^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD^[c]	1 AFT	2 AFT^[c]
A	201.1to 261.7	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	7000
B	299.1to 360.1	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	6635
C	376.3to 981.4	10	1	35000	29270	29270	29270	29270
			2	70000	35670	33060	70000	51890
			3	34200	29270	29270	29270	29270
			4	70000	35670	33060	70000	51890
			5	66500	29270	29270	29270	29270
D	436.7to 981.4	9	1	31500	26330	26330	29270	29270
			2	63000	46680	35770	63000	51890
			3	30700	26330	26330	29270	29270
			4	63000	46680	35770	63000	51890
			5	59500	26330	26330	29270	29270
E	497.1to 981.4	8	1	28000	26330	26330	28000	28000
			2	56000	46680	35770	56000	51890
			3	27200	26330	26330	27200	27200
			4	56000	46680	35770	56000	51890
			5	52500	26330	26330	29270	29270
F	557.5to 981.4	7	1	24500	17740	17740	24500	24500
			2	49000	30730	23550	49000	49000
			3	23700	17740	17740	23700	23700
			4	49000	30730	23550	49000	49000
			5	45500	17740	17740	29270	29270
G	617.9to 981.4	6	1	21000	17740	17740	21000	21000
			2	42000	21620	20030	42000	42000
			3	20200	17740	17740	20200	20200
			4	42000	21620	20030	42000	42000
			5	38500	17740	17740	29270	29270
H	678.3to 981.4	5	1	17500	17500	17500	17500	17500
			2	35000	21620	20030	35000	35000
			3	16700	16700	16700	16700	16700
			4	35000	21620	20030	35000	35000
			5	31500	17740	17740	29270	29270

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - LB (Continued)								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE ^[a]	MAXIMUM LOAD ^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD ^[c]	1 AFT	2 AFT ^[c]
I	738.9 to 981.4	4	1	14000	14000	14000	14000	14000
			2	28000	21620	20030	28000	28000
			3	13200	13200	13200	13200	13200
			4	28000	21620	20030	28000	28000
			5	24500	17740	17740	24500	24500
J	799.5 to 981.4	3	1	10500	8830	8830	10500	10500
			2	21000	10760	9970	21000	21000
			3	9700	8830	8830	9700	9700
			4	21000	10760	9970	21000	21000
			5	17500	8830	8830	17500	17500
K	860.1 to 981.4	2	1	7000	7000	7000	7000	7000
			2	14000	10760	9970	14000	14000
			5	10500	8830	8830	10500	10500
L	920.1 to 981.4	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	7000
M	530.0 to 590.7	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	7000
N	469.4 to 590.7	2	1	7000	7000	7000	7000	7000
			2	14000	14000	14000	12800	11860
			5	10500	10500	10500	10500	10500
O	408.8 to 590.7	3	1	10500	8830	8830	10500	10500
			2	21000	10760	9970	12800	11860
			3	9700	8830	8830	9700	9700
			4	21000	10760	9970	12800	11860
			5	17500	8830	8830	10500	10500
P	361.8 to 483.2	2	1	7000	7000	7000	5060	5060
			2	14000	9260	8780	6160	5710
			5	8240	8240	8240	5060	5060

[a] The load types are defined as follows:

1. Size Code K (load per side).
2. Size Code L.
3. Size Code K intermixed with Size Code P (load per side). Size Code K are located at both ends of a string.
4. Size Code L intermixed with Size Code K. Size Code L are located at both ends of a string.
5. Size Code L intermixed with Size Code K. Size Code K is located at one end of a string.

[b] All restraints are operational.

[c] Only one restraint may be missing from each side. Missing / inoperative restraints must not be adjacent to each other.

APPLICABLE CONFIGURATIONS
All

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Forward and Aft Restraints (Kilograms) - Size Codes K, L, & P

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative forward / aft restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - KG								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE ^[a]	MAXIMUM LOAD ^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD ^[c]	1 AFT	2 AFT ^[c]
A	201.1to 261.7	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3175
B	299.1to 360.1	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3009
C	376.3to 981.4	10	1	15875	13276	13276	13276	13276
			2	31751	16179	14995	31751	23536
			3	15512	13276	13276	13276	13276
			4	31751	16179	14995	31751	23536
			5	30163	13276	13276	13276	13276
D	436.7to 981.4	9	1	14288	11943	11943	13276	13276
			2	28576	21173	16224	28576	23536
			3	13925	11943	11943	13276	13276
			4	28576	21173	16224	28576	23536
			5	26988	11943	11943	13276	13276
E	497.1to 981.4	8	1	12700	11943	11943	12700	12700
			2	25401	21173	16224	25401	23536
			3	12337	11943	11943	12337	12337
			4	25401	21173	16224	25401	23536
			5	23813	11943	11943	13276	13276
F	557.5to 981.4	7	1	11113	8046	8046	11113	11113
			2	22226	13938	10682	22226	22226
			3	10750	8046	8046	10750	10750
			4	22226	13938	10682	22226	22226
			5	20638	8046	8046	13276	13276
G	617.9to 981.4	6	1	9525	8046	8046	9525	9525
			2	19050	9806	9085	19050	19050
			3	9162	8046	8046	9162	9162
			4	19050	9806	9085	19050	19050
			5	17463	8046	8046	13276	13276
H	678.3to 981.4	5	1	7937	7937	7937	7937	7937
			2	15875	9806	9085	15875	15875
			3	7574	7574	7574	7574	7574
			4	15875	9806	9085	15875	15875
			5	14288	8046	8046	13276	13276

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - KG (Continued)								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE ^[a]	MAXIMUM LOAD ^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD ^[c]	1 AFT	2 AFT ^[c]
I	738.9 to 981.4	4	1	6350	6350	6350	6350	6350
			2	12700	9806	9085	12700	12700
			3	5987	5987	5987	5987	5987
			4	12700	9806	9085	12700	12700
			5	11113	8046	8046	11113	11113
J	799.5 to 981.4	3	1	4762	4005	4005	4762	4762
			2	9525	4880	4522	9525	9525
			3	4399	4005	4005	4399	4399
			4	9525	4880	4522	9525	9525
			5	7937	4005	4005	7937	7937
K	860.1 to 981.4	2	1	3175	3175	3175	3175	3175
			2	6350	4880	4522	6350	6350
			5	4762	4005	4005	4762	4762
L	920.1 to 981.4	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3175
M	530.0 to 590.7	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3175
N	469.4 to 590.7	2	1	3175	3175	3175	3175	3175
			2	6350	6350	6350	5805	5379
			5	4762	4762	4762	4762	4762
O	408.8 to 590.7	3	1	4762	4005	4005	4762	4762
			2	9525	4880	4522	5805	5379
			3	4399	4005	4005	4399	4399
			4	9525	4880	4522	5805	5379
			5	7937	4005	4005	4762	4762
P	361.8 to 483.2	2	1	3175	3175	3175	2295	2295
			2	6350	4200	3982	2794	2590
			5	3737	3737	3737	2295	2295

[a] The load types are defined as follows:

1. Size Code K (load per side).
2. Size Code L.
3. Size Code K intermixed with Size Code P (load per side). Size Code K are located at both ends of a string.
4. Size Code L intermixed with Size Code K. Size Code L are located at both ends of a string.
5. Size Code L intermixed with Size Code K. Size Code K is located at one end of a string.

[b] All restraints are operational.

[c] Only one restraint may be missing from each side. Missing / inoperative restraints must not be adjacent to each other.

APPLICABLE CONFIGURATIONS
All

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Side Restraint Only - Size Codes K, L, & P Containers

The following table shows the maximum allowable unit load device weights with missing or inoperative side restraints. The data presented is independent of the type of restraint hardware.

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS SIDE RESTRAINTS ONLY - SIZE CODES K, L, & P							
NUMBER OF OPERATIVE RESTRAINTS	ZONE	UNIT LOAD DEVICE SIZE CODE					
		K		L		P	
		LB	KG	LB	KG	LB	KG
3	All except B	3500	1587	7000	3175	2700	1224
	B						
2	All except B	3500	1587	5620	2549	2700	1224
	B	3500	1587	7000	3175		
1	All except B	2810	1274	2810	1274	2700	1224
	B	3500	1587	7000	3175		

Side Restraint Only - Size Codes K & L Pallets

The following table shows the maximum allowable unit load device weights in pounds with missing or inoperative side restraints. The data presented is independent of the type of restraint hardware.

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS SIDE RESTRAINTS ONLY - SIZE CODES K & L PALLETS - LB													
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION											
		11	12	13	14	21	22	23	24	25	26	27	28
K	3	3500		3500	3500	3500	3500				3500	3500	3500
	2	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
	1	0	0	0	0	0	0	0	0	0	0	0	0
L	3	7000		6870	6830	7000	7000				7000	7000	7000
	2	5620	5920	5620	5620	5620	5620	5620	5400	5400	5620	5620	5620
	1	0	0	0	0	0	0	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable unit load device weights in kilograms with missing or inoperative side restraints. The data presented is independent of the type of restraint hardware.

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS SIDE RESTRAINTS ONLY - SIZE CODES K & L PALLETS - KG													
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION											
		11	12	13	14	21	22	23	24	25	26	27	28
K	3	1587		1587	1587	1587	1587				1587	1587	1587
	2	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587
	1	0	0	0	0	0	0	0	0	0	0	0	0
L	3	3175		3116	3098	3175	3175				3175	3175	3175
	2	2549	2685	2549	2549	2549	2549	2549	2449	2449	2549	2549	2549
	1	0	0	0	0	0	0	0	0	0	0	0	0

Vertical Restraint Only - Size Codes K, L, & P Containers

The following table shows the maximum allowable unit load device weights with missing or inoperative vertical restraints:

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS VERTICAL RESTRAINTS ONLY - SIZE CODES K, L, & P							
NUMBER OF OPERATIVE RESTRAINTS	ZONE	UNIT LOAD DEVICE SIZE CODE					
		K		L		P	
		LB	KG	LB	KG	LB	KG
6	All except B	3500	1587	7000	3175		
	B						
5	All except B	3500	1587	7000	3175		
	B						
4	All except B	3500	1587	7000	3175		
	B ^[a]	3500	1587	7000	3175		
3	All except B	3500	1587	5250	2381	2700	1224
	B ^[a]	3500	1587	6180	2803		
2	All except B	3480	1578	3500	1587	2700	1224
	B ^[a]	3090	1401	4430	2009		
1	All except B	0	0	0	0	0	0
	B ^[a]	0	0	0	0		

[a] Lateral guide vertical restraint flippers are not counted as restraints for Size Codes K, L, or P containers.

APPLICABLE CONFIGURATIONS
All



FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Vertical Restraint Only - Size Codes K & L Pallets

The following table shows the maximum allowable unit load device weights in pounds with missing or inoperative vertical restraints:

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS VERTICAL RESTRAINTS ONLY - SIZE CODES K & L PALLETS - LB													
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION											
		11	12	13	14	21	22	23	24	25	26	27	28
K	4-6	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
	3	3500	3500	3130	3500	3500	3500	3500	3500	3500	3500	3500	3500
	2	3440	3500	2080	3440	3440	3440	3440	3440	3440	3440	3440	3440
	1	0	0	0	0	0	0	0	0	0	0	0	0
L	6	7000		6870	6830	7000	7000				7000	7000	7000
	5	7000		5720	5690	7000	7000				7000	7000	7000
	4	7000	5920	4580	4550	7000	7000	5620	5400	5400	7000	7000	7000
	3	5250	4440	3430	3410	5250	5250	5050	4050	4050	5250	5250	5250
	2	3500	2960	2290	2270	3500	3500	3360	2700	2700	3500	3500	3500
	1	0	0	0	0	0	0	0	0	0	0	0	0

The following table shows the maximum allowable unit load device weights in kilograms with missing or inoperative vertical restraints:

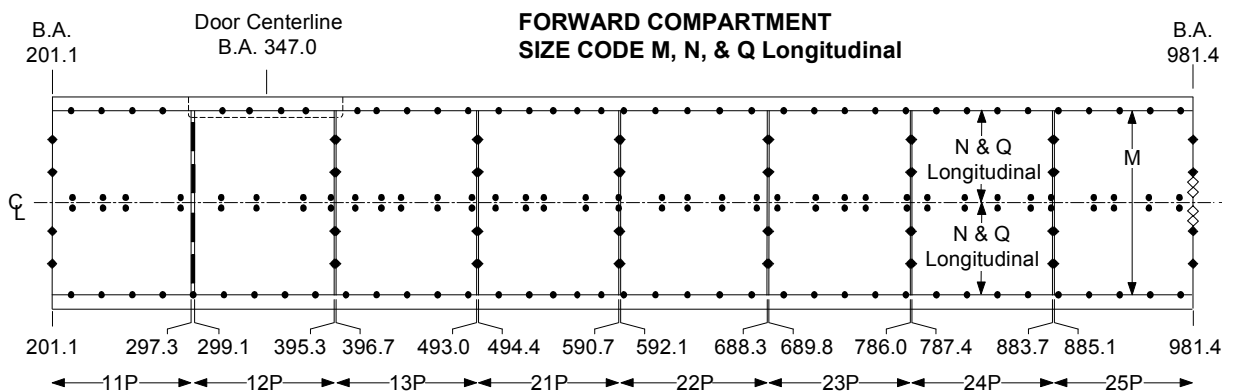
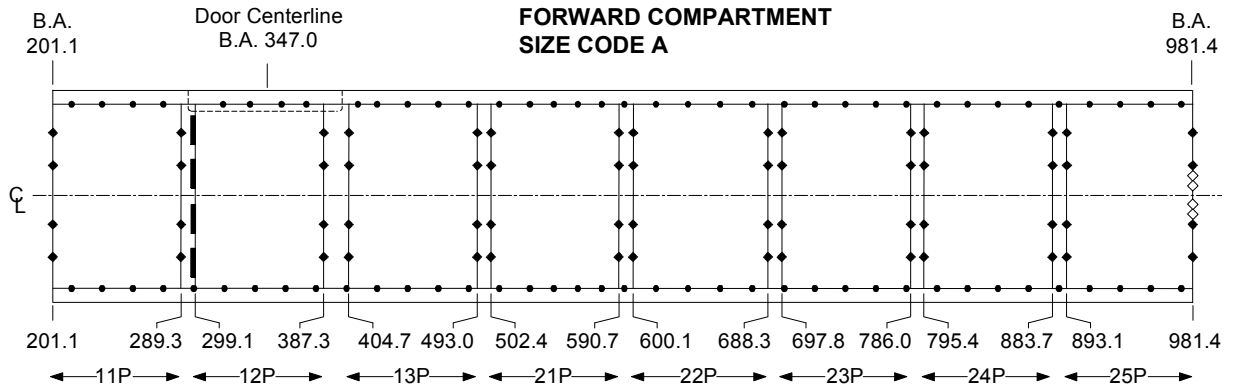
MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS VERTICAL RESTRAINTS ONLY - SIZE CODES K & L PALLETS - KG													
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION											
		11	12	13	14	21	22	23	24	25	26	27	28
K	4-6	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587
	3	1587	1587	1419	1587	1587	1587	1587	1587	1587	1587	1587	1587
	2	1560	1587	943	1560	1560	1560	1560	1560	1560	1560	1560	1560
	1	0	0	0	0	0	0	0	0	0	0	0	0
L	6	3175		3116	3098	3175	3175				3175	3175	3175
	5	3175		2594	2580	3175	3175				3175	3175	3175
	4	3175	2685	2077	2063	3175	3175	2549	2449	2449	3175	3175	3175
	3	2381	2013	1555	1546	2381	2381	2290	1837	1837	2381	2381	2381
	2	1587	1342	1038	1029	1587	1587	1524	1224	1224	1587	1587	1587
	1	0	0	0	0	0	0	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS

CARGO RESTRAINT SYSTEM - SIZE CODES A, M, N, & Q LONGITUDINAL

The longitudinal area between each combination of fwd / aft restraints is referred to as a zone. All zones in a cargo compartment are unique, and all restraints within the boundaries of a zone are either down or inoperable. The illustration below identifies the locations of the stops / locks / guides and the associated zones for Size Codes A, M, N, & Q Longitudinal.



- ◇ Endstop without Vertical Restraint
 - ◆ Endstop with Vertical Restraint
 - Side Restraint/Vertical Restraint
 - ▮ Lateral Guide with Vertical Restraint
- ← FORWARD

APPLICABLE CONFIGURATIONS	
All	

FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

LOAD LIMITS - SIZE CODES A, M, N, & Q LONGITUDINAL

The remaining sections of this subject describe loading considerations, restraint systems, missing or inoperable restraints, and provide maximum allowable loads for each restraint direction under various operational conditions.

Loading Considerations

The allowable weight for each zone is a function of the restraint capabilities, the load factors, and the ULD capabilities.

CAUTION ENSURE THERE IS SUFFICIENT CLEARANCE BETWEEN THE TOP OF THE CARGO AND THE CARGO BAY CEILING WHILE LOADING AND UNLOADING CARGO. DAMAGE TO THE AIRPLANE CAN OCCUR IF THERE IS NOT SUFFICIENT VERTICAL CLEARANCE.

NOTE Airplanes with the -300ER nose landing gear move differently during loading and unloading than other 777 model airplanes.

Unless otherwise stated, the following guidelines must be followed to determine allowable loads in a zone.

- ❑ The operator determines the number of restraints available for each zone.
- ❑ The allowable zone weight includes ULD tare. Any load in excess of the allowables specified herein must be restrained by additional tiedowns (refer to CHP-SEC 1-68-00x for tiedown information).
- ❑ Allowable weights may further be restricted by limitations in this manual.
- ❑ Missing / inoperative restraints in the same direction cannot be adjacent (i.e. two adjacent side restraints or two adjacent vertical restraints may not be missing or inoperative). Also, two restraints adjacent to a common corner cannot be missing / inoperative. If this condition exists, the allowable weight of the associated zone is 0 LB (0 KG).
- ❑ Size Code Q ULDs loaded longitudinally must be a minimum of 63 inches in height (per AS1677) and may have any number of vertical restraints on the side guides or center guides missing without a load limit restriction. Those less than 63 inches must be vertically restrained by tiedowns as specified in CHP-SEC 1-68-00x.
- ❑ All ULDs, except Size Code Q, must be restrained vertically along all four sides.
- ❑ A missing / inoperative side guide rail is equivalent to the loss of a side restraint.
- ❑ For any ULD, restraints used to react the load in one direction may not be missing / inoperative if restraints in other directions are also missing / inoperative. If this condition exists, tiedowns are required.
- ❑ Use of ULD's not specified in this manual require tiedowns for the ULD's gross weight and the specified load factors.
- ❑ Pallet position P22 cannot be tied down when a single Size Code K ULD is loaded in the position immediately forward of pallet P22.

APPLICABLE CONFIGURATIONS
All

FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Missing / Inoperative Restraints

Maximum loads for unit load devices shown in this section assume all equipment is installed and operable. When equipment is missing or inoperative, allowable loading may be reduced. Certain instances of missing or inoperative equipment reduce the allowable loading to zero.

CAUTION CARE MUST BE EXERCISED DURING LOADING AND UNLOADING OF UNIT LOAD DEVICES WHEN EQUIPMENT IS MISSING / INOPERATIVE TO PREVENT DAMAGE TO AIRPLANE STRUCTURE. IT IS ADVISABLE THAT MALFUNCTIONING EQUIPMENT BE REPAIRED OR REPLACED TO PREVENT DAMAGE TO OPERATIVE EQUIPMENT.

The following equipment malfunctions do not constitute a load limit restriction:

- Jammed or missing sill rollers without vertical restraint
- Jammed or missing balls in a ball mat
- Jammed or missing rollers in a roller unit
- Split Side Guide rail

Restraint systems fall into three categories: side restraints, side/vertical restraints and forward/aft restraints. Each restraint direction is considered separately when missing / inoperative restraint equipment exists (i.e. forward, aft, side left, side right and vertical loading). When a missing or inoperative restraint condition exists, the allowable weight is determined by considering each restraint direction separately and using the most limiting resultant allowable weight.

Missing / inoperative restraints must not be adjacent to each other.

A lock is considered to be fully effective at the corner of a ULD if the centerline of the lockhead lines up with the tangent of the ULD corner radius.

NOTE An empty ULD can be carried in any position provided at least one restraint is operable in each (forward, aft, left and right) direction. In addition, ULDs less than 63 inches in height require one vertical restraint on each edge (forward, aft, left and right) to be operable.

APPLICABLE CONFIGURATIONS
All



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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code A

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE A - LB									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		10310	10310	10310	10310	10310	10310	10310	11250
Vertical	18				10310		10310		
	17			10310	10310		10310		
	11 - 16	10310	10310	10310	10310	10310	10310	10310	11250
	10	0	0	0	0	0	0	0	0
Forward	4	10310	10310	10200	10310	10310	10310	10200	11250
	3	10310	9200	7650	8430	8430	8430	7650	8430
	2	10310	9160	5100	5620	5620	5620	5100	5620
	1	0	0	0	0	0	0	0	0
Aft	5 - 8								11250
	4	10310	10310	10310	10310	10310	10310	10310	11250
	3	8430	10310	10310	10310	10310	10310	10310	0
	2	5620	9370	9040	9040	9040	9040	9040	0
	1	0	0	0	0	0	0	0	0
Left	5			10310	10310		10310		
	4	10310	10310	10310	10310	10310	10310	10310	11250
	3	8440	10310	8440	8440	8440	8440	8440	8440
	2	5620	10310	5620	5620	5620	5620	5620	5620
	1	0	0	0	0	0	0	0	0
Right	5				10310		10310		
	4	10310	10310	10310	10310	10310	10310	10310	11250
	3	8440	10310	8440	8440	8440	8440	8440	8440
	2	5620	9900	5620	5620	5620	5620	5620	5620
	1	0	0	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All



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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE A - KG									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		4676	4676	4676	4676	4676	4676	4676	5102
Vertical	18				4676		4676		
	17			4676	4676		4676		
	11 - 16	4676	4676	4676	4676	4676	4676	4676	5102
	10	0	0	0	0	0	0	0	0
Forward	4	4676	4676	4626	4676	4676	4676	4676	5102
	3	4676	4173	3469	3823	3823	3823	3469	3823
	2	4676	4154	2313	2549	2549	2549	2313	2549
	1	0	0	0	0	0	0	0	0
Aft	5 - 8								5102
	4	4676	4676	4676	4676	4676	4676	4676	5102
	3	3823	4676	4676	4676	4676	4676	4676	0
	2	2549	4250	4100	4100	4100	4100	4100	0
	1	0	0	0	0	0	0	0	0
Left	5			4676	4676		4676		
	4	4676	4676	4676	4676	4676	4676	4676	5102
	3	3828	4676	3828	3828	3828	3828	3828	3828
	2	2549	4676	2549	2549	2549	2549	2549	2549
	1	0	0	0	0	0	0	0	0
Right	5				4676		4676		
	4	4676	4676	4676	4676	4676	4676	4676	5102
	3	3828	4676	3828	3828	3828	3828	3828	3828
	2	2549	4490	2549	2549	2549	2549	2549	2549
	1	0	0	0	0	0	0	0	0

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code M

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE M - LB									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		11250	11250	11250	11250	11250	11250	11250	14000
Vertical	17 - 18			11250	11250		11250		14000
	11 - 16	11250	11250	11250	11250	11250	11250	11250	14000
	10	0	0	0	0	0	0	0	0
Forward	4	11250	11250	11250	11250	11250	11250	11250	14000
	3	11250	9200	11250	11250	11250	11250	11250	13560
	2	11250	9160	9040	9040	9040	9040	9040	9040
	1	0	0	0	0	0	0	0	0
Aft	5 - 8								14000
	4	11250	11250	11250	11250	11250	11250	11250	14000
	3	7500	11250	11250	11250	11250	11250	11250	0
	2	7460	9040	9040	9040	9040	9040	9040	0
	1	0	0	0	0	0	0	0	0
Left	5			11250	11250		11250		14000
	4	11250	11250	11250	11250	11250	11250	11250	11250
	3	8440	11250	8440	8440	8440	8440	8440	8440
	2	5620	11250	5620	5620	5620	5620	5620	5620
	1	0	0	0	0	0	0	0	0
Right	5			11250	11250		11250		14000
	4	11250	11250	11250	11250	11250	11250	11250	11250
	3	8440	11250	8440	8440	8440	8440	8440	8440
	2	5620	9900	5620	5620	5620	5620	5620	5620
	1	0	0	0	0	0	0	0	0

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All



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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE M - KG									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		5102	5102	5102	5102	5102	5102	5102	6350
Vertical	17 - 18			5102	5102		5102		6350
	11 - 16	5102	5102	5102	5102	5102	5102	5102	6350
	10	0	0	0	0	0	0	0	0
Forward	4	5102	5102	5102	5102	5102	5102	5102	6350
	3	5102	4173	5102	5102	5102	5102	5102	6150
	2	5102	4154	4100	4100	4100	4100	4100	4100
	1	0	0	0	0	0	0	0	0
Aft	5 - 8								6350
	4	5102	5102	5102	5102	5102	5102	5102	6350
	3	3401	5102	5102	5102	5102	5102	5102	0
	2	3383	4100	4100	4100	4100	4100	4100	0
	1	0	0	0	0	0	0	0	0
Left	5			5102	5102		5102		6350
	4	5102	5102	5102	5102	5102	5102	5102	5102
	3	3828	5102	3828	3828	3828	3828	3828	3828
	2	2549	5102	2549	2549	2549	2549	2549	2549
	1	0	0	0	0	0	0	0	0
Right	5			5102	5102		5102		6350
	4	5102	5102	5102	5102	5102	5102	5102	5102
	3	3828	5102	3828	3828	3828	3828	3828	3828
	2	2549	4490	2549	2549	2549	2549	2549	2549
	1	0	0	0	0	0	0	0	0

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code N

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE N - LB									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		5400	5400	5400	5400	5400	5400	5400	5400
Vertical	14			5400	5400		5400		5400
	13			5400	5400		5400		5400
	8 - 12	5400	5400	5400	5400	5400	5400	5400	5400
	7	0	0	0	0	0	0	0	0
Forward	2	5400	5400	5400	5400	5400	5400	5400	5400
	1	5400	4680	4520	4520	4520	4520	4520	5400
	0	0	0	0	0	0	0	0	0
Aft	3 - 4								5400
	2	5400	5400	5400	5400	5400	5400	5400	5400
	1	4680	4680	4520	4520	4520	4520	4520	5400
	0	0	0	0	0	0	0	0	0
Left	5			5400	5400		5400		5400
	2 - 4	5400	5400	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0	0	0
Right	5			5400	5400		5400		
	2 - 4	5400	5400	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0	0	0

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All



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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE N - KG									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		2449	2449	2449	2449	2449	2449	2449	2449
Vertical	14			2449	2449		2449		2449
	13			2449	2449		2449		2449
	8 - 12	2449	2449	2449	2449	2449	2449	2449	2449
	7	0	0	0	0	0	0	0	0
Forward	2	2449	2449	2449	2449	2449	2449	2449	2449
	1	2449	2122	2050	2050	2050	2050	2050	2449
	0	0	0	0	0	0	0	0	0
Aft	3 - 4								2449
	2	2449	2449	2449	2449	2449	2449	2449	2449
	1	2122	2122	2050	2050	2050	2050	2050	2449
	0	0	0	0	0	0	0	0	0
Left	5			2449	2449		2449		2449
	2 - 4	2449	2449	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0	0	0
Right	5			2449	2449		2449		
	2 - 4	2449	2449	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code Q Longitudinal

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE Q LONGITUDINAL - LB									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		5400	5400	5400	5400	5400	5400	5400	5400
Vertical	14			5400	5400		5400		5400
	13			5400 ^[a]	5400 ^[a]		5400 ^[a]		5400 ^[a]
	4 - 12	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]
	3	0	0	0	0	0	0	0	0
Forward	2	5400	5400	5400	5400	5400	5400	5400	5400
	1	5400	4680	4520	4520	4520	4520	4520	5400
	0	0	0	0	0	0	0	0	0
Aft	3 - 4								5400
	2	5400	5400	5400	5400	5400	5400	5400	5400
	1	4680	4680	4520	4520	4520	4520	4520	5400
	0	0	0	0	0	0	0	0	0
Left	5			5400	5400		5400		5400
	2 - 4	5400	5400	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0	0	0
Right	5			5400	5400		5400		
	2 - 4	5400	5400	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0	0	0

[a] All end vertical restraints (endstops, pallet locks, lateral guides) must be operable.

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All



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FORWARD COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE Q LONGITUDINAL - KG									
RESTRAINT		PALLET POSITION							
DIRECTION	NUMBER OPERABLE	11P	12P	13P	21P	22P	23P	24P	25P
Maximum Load		2449	2449	2449	2449	2449	2449	2449	2449
Vertical	14			2449	2449		2449		2449
	13			2449 ^[a]	2449 ^[a]		2449 ^[a]		2449 ^[a]
	4 - 12	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]
	3	0	0	0	0	0	0	0	0
Forward	2	2449	2449	2449	2449	2449	2449	2449	2449
	1	2449	2122	2050	2050	2050	2050	2050	2449
	0	0	0	0	0	0	0	0	0
Aft	3 - 4								2449
	2	2449	2449	2449	2449	2449	2449	2449	2449
	1	2122	2122	2050	2050	2050	2050	2050	2449
	0	0	0	0	0	0	0	0	0
Left	5			2449	2449		2449		2449
	2 - 4	2449	2449	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0	0	0
Right	5			2449	2449		2449		
	2 - 4	2449	2449	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0	0	0

[a] All end vertical restraints (endstops, pallet locks, lateral guides) must be operable.

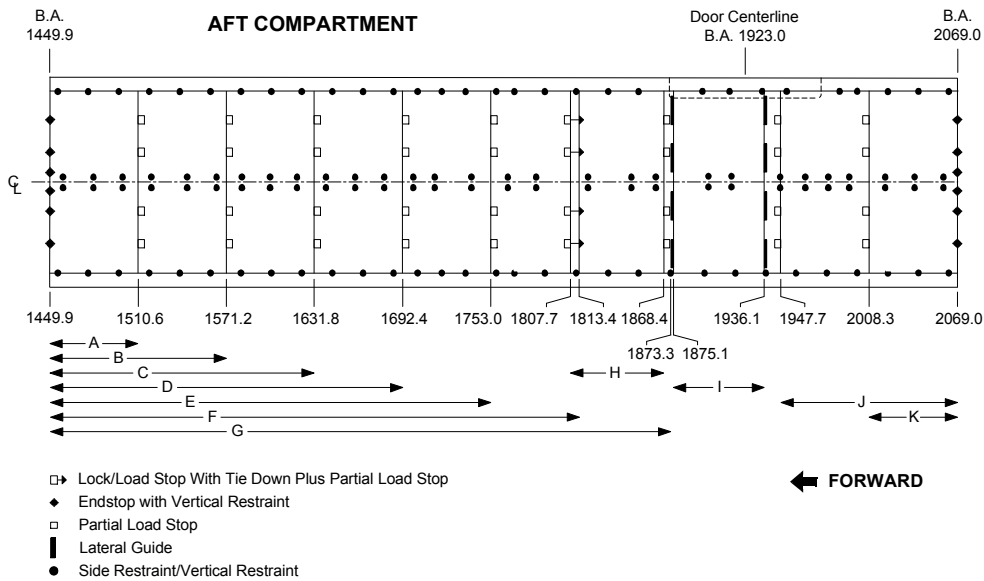
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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS

CARGO RESTRAINT SYSTEM - SIZE CODES K, L, & P

The longitudinal area between each combination of fwd / aft restraints is referred to as a zone. All zones in a cargo compartment are unique, and all restraints within the boundaries of a zone are either down or inoperative. The illustration below identifies the locations of the stops / locks / guides and the associated zones for Size Codes K, L, & P.



Unit Load Device Intermixing

Size Codes K, L, & P containers can be intermixed in the cargo compartments, provided that:

- A LD-1, LD-3, LD-5, LD-6, LD-10, or LD-11 container is located against the fwd and aft restraints for each string of containers.
- LD-2 containers are paired with another LD-2 or LD-3 container within a string.

If a fwd / aft restraint is considered broken or inoperative, containers can be still intermixed provided:

- The allowable zonal load per the missing restraint section is not exceeded.
- Only LD-1, LD-3, LD-5, LD-6, LD-10 and LD-11 containers are at the end of a string of containers at which a restraint is missing or inoperative. Do not place a pair of LD-2 containers (side by side) against inoperative restraints when intermixing containers.

APPLICABLE CONFIGURATIONS	
All	

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

LOAD LIMITS - SIZE CODES K, L, & P

The remaining sections of this subject describe loading considerations, restraint systems, missing or inoperable restraints, and provide maximum allowable loads for each restraint direction under various operational conditions.

Loading Considerations

The allowable weight for each zone is a function of the type of ULD that comes in contact with the forward and aft restraints, the load factors, and by the restraint and ULD capabilities.

CAUTION ENSURE THERE IS SUFFICIENT CLEARANCE BETWEEN THE TOP OF THE CARGO AND THE CARGO BAY CEILING WHILE LOADING AND UNLOADING CARGO. DAMAGE TO THE AIRPLANE CAN OCCUR IF THERE IS NOT SUFFICIENT VERTICAL CLEARANCE.

NOTE Airplanes with the -300ER nose landing gear move differently during loading and unloading than other 777 model airplanes.

Unless otherwise stated, the following guidelines must be followed to determine allowable loads in a zone.

- The operator determines the number of restraints available for each zone.
- The allowable zone weight includes ULD tare. Any load in excess of the allowables specified herein must be restrained by additional tiedowns (refer to CHP-SEC 1-68-00x for tiedown information).
- Allowable weights may further be restricted by limitations in this manual.
- Restraints at the fwd and aft end of a string of containers may be missing at the same time. However, the most limiting allowable zonal load for a missing fwd or aft restraint must be used.
- Missing / inoperative restraints in the same direction cannot be adjacent (i.e. two adjacent side restraints or two adjacent vertical restraints at the forward or aft side of the ULD may not be missing or inoperative). Also, two restraints adjacent to a common corner cannot be missing / inoperable. If this condition exists, the allowable weight of the associated zone is 0 LB (0 KG).
- A missing / inoperative center lateral guide (BL 0.0) is equivalent to one missing restraint in the right lane and one missing restraint in the left lane. This shall not be interpreted as two adjacent missing restraints.
- LD-2 containers must be paired with another LD-2 or LD-3 container.
- LD-2 containers must be loaded in a string and must not occupy the first, last or doorway positions.
- A pair of LD-2's or paired LD-2 and LD-3 containers loaded in a unstrung zone, must be tied down.
- To reduce inadvertent cargo movement, it is recommended that all available restraints, including lateral guides, in unoccupied positions be raised.

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

- A maximum of two missing or inoperative restraints (one on the left side and one on the right side of the airplane) are allowed in each restraint direction.
- For any ULD, restraints used to react the load in the inboard / outboard directions may not be missing / inoperative if restraints in the fwd / aft directions are also missing / inoperative. If this condition exists, tiedowns are required.
- Pallet position P22 cannot be tied down when a single Size Code K ULD is loaded in the position immediately forward of pallet position P22.

Missing / Inoperative Restraints

Maximum loads for unit load devices shown in this section assume all equipment is installed and operable. When equipment is missing or inoperable, allowable loading may be reduced. Certain instances of missing or inoperable equipment reduce the allowable loading to zero.

CAUTION CARE MUST BE EXERCISED DURING LOADING AND UNLOADING OF UNIT LOAD DEVICES WHEN EQUIPMENT IS MISSING / INOPERATIVE TO PREVENT DAMAGE TO AIRPLANE STRUCTURE. IT IS ADVISABLE THAT MALFUNCTIONING EQUIPMENT BE REPAIRED OR REPLACED TO PREVENT DAMAGE TO OPERATIVE EQUIPMENT.

The following equipment malfunctions do not constitute a load limit restriction:

- Jammed or missing sill rollers without vertical restraint
- Jammed or missing balls in a ball mat
- Jammed or missing rollers in a roller unit
- Split Side Guide rail

Restraint systems fall into three categories: side restraints, side/vertical restraints and forward/aft restraints. Each restraint direction is considered separately when missing / inoperative restraint equipment exists (i.e. forward, aft, side left, side right and vertical loading). When a missing or inoperative restraint condition exists, the allowable weight is determined by considering each restraint direction separately and using the most limiting resultant allowable weight.

Missing / inoperative restraints must not be adjacent to each other.

NOTE An empty ULD can be carried in any position provided at least one restraint is operable in each forward, aft, side left and side right direction. In addition, ULDs less than 63 inches in height require one vertical restraint on each edge (forward, aft, side left and side right) to be operable.

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Forward and Aft Restraints (Pounds) - Size Codes K, L, & P

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative forward / aft restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - LB								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE ^[a]	MAXIMUM LOAD ^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD ^[c]	1 AFT	2 AFT ^[c]
A	1449.9 to 1510.6	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	7000
B	1449.9 to 1571.2	2	1	7000	7000	7000	7000	7000
			2	14000	14000	14000	10760	9970
			5	10500	10500	10500	9240	9090
C	1449.9 to 1631.8	3	1	10500	10500	10500	8830	8830
			2	21000	21000	21000	10760	9970
			3	9700	9700	9700	8830	8830
			4	21000	21000	21000	10760	9970
			5	17500	17500	17500	8830	8830
D	1449.9 to 1692.4	4	1	14000	14000	14000	14000	14000
			2	28000	28000	28000	21620	20030
			3	13200	13200	13200	13200	13200
			4	28000	28000	28000	21620	20030
			5	24500	24500	24500	17740	17740
E	1449.9 to 1753.0	5	1	17500	17500	17500	17500	17500
			2	35000	35000	34860	21620	20030
			3	16700	16700	16700	16700	16700
			4	35000	35000	34860	21620	20030
			5	31500	25670	25670	17740	17740
F	1449.9 to 1813.4	6	1	21000	21000	21000	17740	17740
			2	42000	42000	34860	21620	20030
			3	20200	20200	20200	17740	17740
			4	42000	42000	34860	21620	20030
			5	38500	25670	25670	17740	17740
G	1449.9 to 1873.3	7	1	24500	24500	24500	24500	24500
			2	49000	45500	34860	29950	28090
			3	23700	23700	23700	23700	23700
			4	49000	45500	34860	29950	28090
			5	45500	25670	25670	25700	25700

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APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - LB (Continued)								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE^[a]	MAXIMUM LOAD^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD^[c]	1 AFT	2 AFT^[c]
H	1807.7 to 1868.4	1	1	3500	3500	3500	2930	2930
			2	7000	7000	7000	7000	7000
I	1875.1 to 1936.1	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	7000
J	1947.7 to 2069.0	2	1	7000	7000	7000	7000	7000
			2	14000	9210	8480	14000	14000
			5	10500	7800	7800	10500	10500
K	2008.3 to 2069.0	1	1	3500	3500	3500	3500	3500
			2	7000	7000	7000	7000	7000

[a] The load types are defined as follows:

1. Size Code K (load per side).
2. Size Code L.
3. Size Code K intermixed with Size Code P (load per side). Size Code K are located at both ends of a string.
4. Size Code L intermixed with Size Code K. Size Code L are located at both ends of a string.
5. Size Code L intermixed with Size Code K. Size Code K is located at one end of a string.

[b] All restraints are operational.

[c] Only one restraint may be missing from each side. Missing / inoperative restraints must not be adjacent to each other.

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Forward and Aft Restraints (Kilograms) - Size Codes K, L, & P

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative forward / aft restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - KG								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE ^[a]	MAXIMUM LOAD ^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD ^[c]	1 AFT	2 AFT ^[c]
A	1449.9 to 1510.6	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3175
B	1449.9 to 1571.2	2	1	3175	3175	3175	3175	3175
			2	6350	6350	6350	4880	4522
			5	4762	4762	4762	4191	4123
C	1449.9 to 1631.8	3	1	4762	4762	4762	4005	4005
			2	9525	9525	9525	4880	4522
			3	4399	4399	4399	4005	4005
			4	9525	9525	9525	4880	4522
			5	7937	7937	7937	4005	4005
D	1449.9 to 1692.4	4	1	6350	6350	6350	6350	6350
			2	12700	12700	12700	9806	9085
			3	5987	5987	5987	5987	5987
			4	12700	12700	12700	9806	9085
			5	11113	11113	11113	8046	8046
E	1449.9 to 1753.0	5	1	7937	7937	7937	7937	7937
			2	15875	15875	15812	9806	9085
			3	7574	7574	7574	7574	7574
			4	15875	15875	15812	9806	9085
			5	14288	11643	11643	8046	8046
F	1449.9 to 1813.4	6	1	9525	9525	9525	8046	8046
			2	19050	19050	15812	9806	9085
			3	9162	9162	9162	8046	8046
			4	19050	19050	15812	9806	9085
			5	17463	11643	11643	8046	8046
G	1449.9 to 1873.3	7	1	11113	11113	11113	11113	11113
			2	22226	20638	15812	13585	12741
			3	10750	10750	10750	10750	10750
			4	22226	20638	15812	13585	12741
			5	20638	11643	11643	11657	11657

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODES K, L, & P - KG (Continued)								
ZONE	B.A. IN.	NO. OF POSITIONS	LOAD TYPE^[a]	MAXIMUM LOAD^[b]	NO. OF RESTRAINTS MISSING / INOPERABLE			
					1 FWD	2 FWD^[c]	1 AFT	2 AFT^[c]
H	1807.7 to 1868.4	1	1	1587	1587	1587	1329	1329
			2	3175	3175	3175	3175	3175
I	1875.1 to 1936.1	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3175
J	1947.7 to 2069.0	2	1	3175	3175	3175	3175	3175
			2	6350	4177	3846	6350	6350
			5	4762	3538	3538	4762	4762
K	2008.3 to 2069.0	1	1	1587	1587	1587	1587	1587
			2	3175	3175	3175	3175	3175

[a] The load types are defined as follows:

1. Size Code K (load per side).
2. Size Code L.
3. Size Code K intermixed with Size Code P (load per side). Size Code K are located at both ends of a string.
4. Size Code L intermixed with Size Code K. Size Code L are located at both ends of a string.
5. Size Code L intermixed with Size Code K. Size Code K is located at one end of a string.

[b] All restraints are operational.

[c] Only one restraint may be missing from each side. Missing / inoperative restraints must not be adjacent to each other.

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Side Restraint Only - Size Codes K, L, & P Containers

The following table shows the maximum allowable unit load device weights with missing or inoperative side restraints. The data presented is independent of the type of restraint hardware.

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS SIDE RESTRAINTS ONLY - SIZE CODES K, L, & P							
NUMBER OF OPERATIVE RESTRAINTS	ZONE	UNIT LOAD DEVICE SIZE CODE					
		K		L		P	
		LB	KG	LB	KG	LB	KG
3	All except I	3500	1587	7000	3175	2700	1224
	I						
2	All except I	3500	1587	5620	2549	2700	1224
	I	3500	1587	7000	3175		
1	All except I	1750	793	2810	1274	2700	1224
	I	2510	1138	5030	2281		

Side Restraint Only - Size Codes K & L Pallets

The following table shows the maximum allowable unit load device weights in pounds with missing or inoperative side restraints. The data presented is independent of the type of restraint hardware.

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS SIDE RESTRAINTS ONLY - SIZE CODES K & L PALLETS - LB												
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION										
		31	32	33	34	35	36	41	42	43	44	
K	3	3500	3500	3500	3500	3500					3500	3500
	2	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
	1	0	0	0	0	0	0	0	0	0	0	0
L	3	7000	7000	7000	7000	7000					7000	7000
	2	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	6550
	1	0	0	0	0	0	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable unit load device weights in kilograms with missing or inoperative side restraints. The data presented is independent of the type of restraint hardware.

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS SIDE RESTRAINTS ONLY - SIZE CODES K & L PALLETS - KG											
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION									
		31	32	33	34	35	36	41	42	43	44
K	3	1587	1587	1587	1587	1587				1587	1587
	2	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587
	1	0	0	0	0	0	0	0	0	0	0
L	3	3175	3175	3175	3175	3175				3175	3175
	2	3175	3175	3175	3175	3175	3175	3175	3175	3175	2971
	1	0	0	0	0	0	0	0	0	0	0

Vertical Restraint Only - Size Codes K, L, & P Containers

The following table shows the maximum allowable unit load device weights with missing or inoperative vertical restraints:

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS VERTICAL RESTRAINTS ONLY - SIZE CODES K, L, & P							
NUMBER OF OPERATIVE RESTRAINTS	ZONE	UNIT LOAD DEVICE SIZE CODE					
		K		L		P	
		LB	KG	LB	KG	LB	KG
6	All except I	3500	1587	7000	3175		
	I						
5	All except I	3500	1587	7000	3175		
	I						
4	All except I	3500	1587	7000	3175		
	I ^[a]	3500	1587	7000	3175		
3	All except I	3500	1587	5250	2381	2700	1224
	I ^[a]	3030	1374	4800	2177		
2	All except I	2720	1233	3500	1587	2700	1224
	I ^[a]	2270	1029	3275	1485		
1	All except I	0	0	0	0	0	0
	I ^[a]	0	0	0	0		

[a] Lateral guide vertical restraint flippers are not counted as restraints for Size Codes K, L, or P Containers.

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Vertical Restraint Only - Size Codes K & L Pallets

The following table shows the maximum allowable unit load device weights in pounds with missing or inoperative vertical restraints:

MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS VERTICAL RESTRAINTS ONLY - SIZE CODES K & L PALLETS - LB												
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION										
		31	32	33	34	35	36	41	42	43	44	
K	4-6	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
	3	3500	3500	3500	3500	3500	3500	3500	3500	3330	3250	
	2	2960	2960	2780	2740	2610	2540	2440	2500	2220	2170	
	1	0	0	0	0	0	0	0	0	0	0	
L	4-6	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	
	3	7000	7000	7000	7000	7000	6900	6630	6350	6030	5890	
	2	5360	5360	5030	4960	4730	4600	4420	4230	4020	3920	
	1	0	0	0	0	0	0	0	0	0	0	

The following table shows the maximum allowable unit load device weights in kilograms with missing or inoperative vertical restraints:

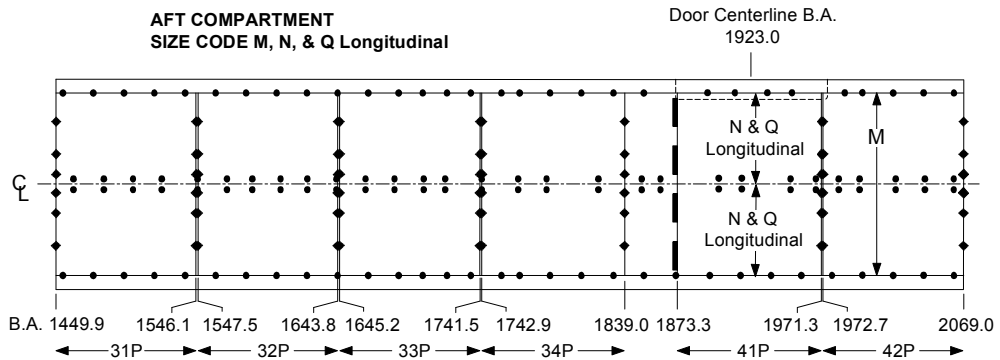
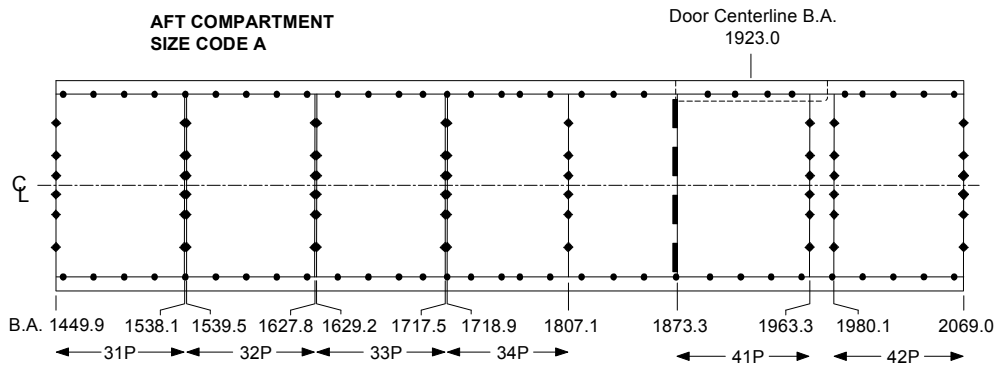
MAXIMUM ALLOWABLE LOAD WITH MISSING / INOPERATIVE RESTRAINTS VERTICAL RESTRAINTS ONLY - SIZE CODES K & L PALLETS - KG											
SIZE CODE	NUMBER OF OPERATIVE RESTRAINTS	PALLET POSITION									
		31	32	33	34	35	36	41	42	43	44
K	4-6	1587	1587	1587	1587	1587	1587	1587	1587	1587	1587
	3	1587	1587	1587	1587	1587	1587	1587	1587	1510	1474
	2	1342	1342	1260	1242	1183	1152	1106	1133	1006	984
	1	0	0	0	0	0	0	0	0	0	0
L	4-6	3175	3175	3175	3175	3175	3175	3175	3175	3175	3175
	3	3175	3175	3175	3175	3175	3129	3007	2880	2735	2671
	2	2431	2431	2281	2249	2145	2086	2004	1918	1823	1778
	1	0	0	0	0	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS

CARGO RESTRAINT SYSTEM - SIZE CODES A, M, N & Q LONGITUDINAL

The longitudinal area between each combination of fwd / aft restraints is referred to as a zone. All zones in a cargo compartment are unique, and all restraints within the boundaries of a zone are either down or inoperable. The illustration below identifies the locations of the stops / locks / guides and the associated zones for Size Codes A, M, N & Q Longitudinal.



← FORWARD

- ◆ Endstop with Vertical Restraint
- Side Restraint/Vertical Restraint
- ▮ Lateral Guide with Vertical Restraint

APPLICABLE CONFIGURATIONS	
All	

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

LOAD LIMITS - SIZE CODES A, M, N & Q LONGITUDINAL

The remaining sections of this subject describe loading considerations, restraint systems, missing or inoperable restraints, and provide maximum allowable loads for each restraint direction under various operational conditions.

Loading Considerations

The allowable weight for each zone is a function of the restraint capabilities, the load factors, and the ULD capabilities.

CAUTION ENSURE THERE IS SUFFICIENT CLEARANCE BETWEEN THE TOP OF THE CARGO AND THE CARGO BAY CEILING WHILE LOADING AND UNLOADING CARGO. DAMAGE TO THE AIRPLANE CAN OCCUR IF THERE IS NOT SUFFICIENT VERTICAL CLEARANCE.

NOTE Airplanes with the -300ER nose landing gear move differently during loading and unloading than other 777 model airplanes.

Unless otherwise stated, the following guidelines must be followed to determine allowable loads in a zone.

- ❑ The operator determines the number of restraints available for each zone.
- ❑ The allowable zone weight includes ULD tare. Any load in excess of the allowables specified herein must be restrained by additional tiedowns (refer to CHP-SEC 1-68-00x for tiedown information).
- ❑ Allowable weights may further be restricted by limitations in this manual.
- ❑ Missing / inoperative restraints in the same direction cannot be adjacent (i.e. two adjacent side restraints or two adjacent vertical restraints may not be missing or inoperative). Also, two restraints adjacent to a common corner cannot be missing / inoperative. If this condition exists, the allowable weight of the associated zone is 0 LB (0 KG).
- ❑ Size Code Q ULDs loaded longitudinally must be a minimum of 63 inches in height (per AS1677) and may have any number of vertical restraints on the side guides or center guides missing without a load limit restriction. Those less than 63 inches must be vertically restrained by tiedowns as specified in CHP-SEC 1-68-00x.
- ❑ All ULDs, except Size Code Q, must be restrained vertically along all four sides.
- ❑ A missing / inoperative side guide rail is equivalent to the loss of a side restraint.
- ❑ For any ULD, restraints used to react the load in one direction may not be missing / inoperative if restraints in other directions are also missing / inoperative. If this condition exists, tiedowns are required.
- ❑ Use of ULD's not specified in this manual require tiedowns for the ULD's gross weight and the specified load factors.

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Missing / Inoperative Restraints

Maximum loads for unit load devices shown in this section assume all equipment is installed and operable. When equipment is missing or inoperative, allowable loading may be reduced. Certain instances of missing or inoperative equipment reduce the allowable loading to zero.

CAUTION CARE MUST BE EXERCISED DURING LOADING AND UNLOADING OF UNIT LOAD DEVICES WHEN EQUIPMENT IS MISSING / INOPERATIVE TO PREVENT DAMAGE TO AIRPLANE STRUCTURE. IT IS ADVISABLE THAT MALFUNCTIONING EQUIPMENT BE REPAIRED OR REPLACED TO PREVENT DAMAGE TO OPERATIVE EQUIPMENT.

The following equipment malfunctions do not constitute a load limit restriction:

- Jammed or missing sill rollers without vertical restraint
- Jammed or missing balls in a ball mat
- Jammed or missing rollers in a roller unit
- Split Side Guide rail

Restraint systems fall into three categories: side restraints, side/vertical restraints and forward/aft restraints. Each restraint direction is considered separately when missing / inoperative restraint equipment exists (i.e. forward, aft, side left, side right and vertical loading). When a missing or inoperative restraint condition exists, the allowable weight is determined by considering each restraint direction separately and using the most limiting resultant allowable weight.

Missing / inoperative restraints must not be adjacent to each other.

A lock is considered to be fully effective at the corner of a ULD if the centerline of the lockhead lines up with the tangent of the ULD corner radius.

NOTE An empty ULD can be carried in any position provided at least one restraint is operable in each (forward, aft, left and right) direction. In addition, ULDs less than 63 inches in height require one vertical restraint on each edge (forward, aft, left and right) to be operable.

APPLICABLE CONFIGURATIONS
All



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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code A

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE A - LB							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		11250	10310	10310	10310	10310	10310
Vertical	21						10310
	19 - 20	11250	10310	10310	10310		10310
	14 - 18	11250	10310	10310	10310	10310	10310
	13	10810	10310	10310	10310	10240	10310
	12	0	0	0	0	0	0
Forward	5 - 6	11250	10310	10310	10310		10310
	4	11250	10310	10310	10310	10310	10310
	2 - 3	0	0	0	0	10310	0
	1	0	0	0	0	0	0
Aft	6	11250	10310	10310	10310	10310	10310
	5	11250	10310	10310	8500	10310	10310
	4	11250	10310	10310	6800	10310	10310
	3	0	0	0	0	0	0
Left	4	11250	10310	10310	10310	10310	10310
	3	8440	8440	8440	8440	10310	10310
	2	5620	5620	5620	5620	10310	10050
	1	0	0	0	0	0	0
Right	5						10310
	4	11250	10310	10310	10310	10310	10310
	3	8440	8540	8440	8440	8540	8440
	2	5620	5540	5620	5620	5540	5620
	1	0	0	0	0	0	0

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APPLICABLE CONFIGURATIONS
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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE A - KG							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		5102	4676	4676	4676	4676	4676
Vertical	21						4676
	19 - 20	5102	4676	4676	4676		4676
	14 - 18	5102	4676	4676	4676	4676	4676
	13	4903	4676	4676	4676	4644	4676
	12	0	0	0	0	0	0
Forward	5 - 6	5102	4676	4676	4676		4676
	4	5102	4676	4676	4676	4676	4676
	2 - 3	0	0	0	0	4676	0
	1	0	0	0	0	0	0
Aft	6	5102	4676	4676	4676	4676	4676
	5	5102	4676	4676	3855	4676	4676
	4	5102	4676	4676	3084	4676	4676
	3	0	0	0	0	0	0
Left	4	5102	4676	4676	4676	4676	4676
	3	3828	3828	3828	3828	4676	4676
	2	2549	2549	2549	2549	4676	4558
	1	0	0	0	0	0	0
Right	5						4676
	4	5102	4676	4676	4676	4676	4676
	3	3828	3873	3828	3828	3873	3828
	2	2549	2512	2549	2549	2512	2549
	1	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code M

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE M - LB							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		14000	11250	11250	11250	11250	11250
Vertical	21 - 22	14000		11250	11250		11250
	19 - 20	14000	11250	11250	11250		11250
	18	14000	11250	11250	11250	11250	11250
	17	13920	11250	11250	11250	11250	11250
	16	12410	11250	11250	11250	11250	11250
	15	11880	11250	11250	11250	11250	11250
	14	11350	11250	11250	11250	11250	10950
	13	10810	10810	10810	10810	11250	10420
	12	0	0	0	0	0	0
Forward	5 - 6	14000	11250	11250	11250		11250
	4	14000	11250	11250	11250	11250	11250
	2 - 3	0	0	0	0	11250	0
	1	0	0	0	0	0	0
Aft	6	14000	11250	11250	11250	11250	11250
	5	14000	11250	11250	9370	11250	11250
	4	14000	11250	11250	7500	11250	11250
	3	0	0	0	0	0	0
Left	5	14000		11250	11250		11250
	4	11250	11250	11250	11250	11250	11250
	3	8440	8440	8440	8440	11250	8440
	2	5620	5620	5620	5620	11250	5620
	1	0	0	0	0	0	0
Right	5	14000		11250	11250		11250
	4	11250	11250	11250	11250	11250	11250
	3	8440	8440	8440	8440	8540	8440
	2	5620	5620	5620	5620	5540	5620
	1	0	0	0	0	0	0

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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE M - KG							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		6350	5102	5102	5102	5102	5102
Vertical	21 - 22	6350	5102	5102	5102	5102	5102
	19 - 20	6350	5102	5102	5102	5102	5102
	18	6350	5102	5102	5102	5102	5102
	17	6314	5102	5102	5102	5102	5102
	16	5629	5102	5102	5102	5102	5102
	15	5388	5102	5102	5102	5102	5102
	14	5148	5102	5102	5102	5102	4966
	13	4903	4903	4903	4903	4903	5102
12	0	0	0	0	0	0	0
Forward	5 - 6	6350	5102	5102	5102	5102	5102
	4	6350	5102	5102	5102	5102	5102
	2 - 3	0	0	0	0	5102	0
	1	0	0	0	0	0	0
Aft	6	6350	5102	5102	5102	5102	5102
	5	6350	5102	5102	4250	5102	5102
	4	6350	5102	5102	3401	5102	5102
	3	0	0	0	0	0	0
Left	5	6350	5102	5102	5102	5102	5102
	4	5102	5102	5102	5102	5102	5102
	3	3828	3828	3828	3828	5102	3828
	2	2549	2549	2549	2549	5102	2549
	1	0	0	0	0	0	0
Right	5	6350	5102	5102	5102	5102	5102
	4	5102	5102	5102	5102	5102	5102
	3	3828	3828	3828	3828	3873	3828
	2	2549	2549	2549	2549	2512	2549
	1	0	0	0	0	0	0

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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code N

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE N - LB							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		5400	5400	5400	5400	5400	5400
Vertical	16	5400					5400
	14 - 15	5400	5400	5400	5400		5400
	9 - 13	5400	5400	5400	5400	5400	5400
	8	0	0	0	0	0	0
Forward	3	5400	5400	5400	5400		5400
	2	5400	5400	5400	5400	5400	5400
	1	5400	4520	4520	4520	0	4520
	0	0	0	0	0	0	0
Aft	2 - 3	5400	5400	5400	5400	5400	5400
	1	4520	4520	4520	4520	4520	5400
	0	0	0	0	0	0	0
Left	5	5400		5400	5400		5400
	2 - 4	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0
Right	5	5400	5400				5400
	2 - 4	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0

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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE N - KG							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		2449	2449	2449	2449	2449	2449
Vertical	16	2449	2449	2449	2449	2449	2449
	14 - 15	2449	2449	2449	2449	2449	2449
	9 - 13	2449	2449	2449	2449	2449	2449
	8	0	0	0	0	0	0
Forward	3	2449	2449	2449	2449	2449	2449
	2	2449	2449	2449	2449	2449	2449
	1	2449	2050	2050	2050	0	2050
	0	0	0	0	0	0	0
Aft	2 - 3	2449	2449	2449	2449	2449	2449
	1	2050	2050	2050	2050	2050	2449
	0	0	0	0	0	0	0
Left	5	2449	2449	2449	2449	2449	2449
	2 - 4	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0
Right	5	2449	2449	2449	2449	2449	2449
	2 - 4	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0

APPLICABLE CONFIGURATIONS
All

AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

Size Code Q Longitudinal

The following table shows the maximum allowable zone weights, in pounds, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE Q LONGITUDINAL - LB							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		5400	5400	5400	5400	5400	5400
Vertical	16	5400					5400
	14 - 15	5400 ^[a]	5400	5400	5400		5400 ^[a]
	4 - 13	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]	5400 ^[a]
	3	0	0	0	0	0	0
Forward	3	5400	5400	5400	5400		5400
	2	5400	5400	5400	5400	5400	5400
	1	5400	4520	4520	4520	0	4520
	0	0	0	0	0	0	0
Aft	2 - 3	5400	5400	5400	5400	5400	5400
	1	4520	4520	4520	4520	4520	5400
	0	0	0	0	0	0	0
Left	5	5400		5400	5400		5400
	2 - 4	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0
Right	5	5400	5400				5400
	2 - 4	5400	5400	5400	5400	5400	5400
	1	0	0	0	0	0	0

[a] All end vertical restraints (endstops, pallet locks, lateral guides) must be operable.

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AFT COMPARTMENT UNIT LOAD DEVICE LOAD LIMITS (Continued)

The following table shows the maximum allowable zone weights, in kilograms, with missing or inoperative restraints:

MAXIMUM ALLOWABLE LOADS WITH MISSING / INOPERATIVE RESTRAINTS SIZE CODE Q LONGITUDINAL - KG							
RESTRAINT		PALLET POSITION					
DIRECTION	NUMBER OPERABLE	31P	32P	33P	34P	41P	42P
Maximum Load		2449	2449	2449	2449	2449	2449
Vertical	16	2449					2449
	14 - 15	2449 ^[a]	2449	2449	2449		2449 ^[a]
	4 - 13	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]	2449 ^[a]
	3	0	0	0	0	0	0
Forward	3	2449	2449	2449	2449		2449
	2	2449	2449	2449	2449	2449	2449
	1	2449	2050	2050	2050	0	2050
	0	0	0	0	0	0	0
Aft	2 - 3	2449	2449	2449	2449	2449	2449
	1	2050	2050	2050	2050	2050	2449
	0	0	0	0	0	0	0
Left	5	2449		2449	2449		2449
	2 - 4	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0
Right	5	2449	2449				2449
	2 - 4	2449	2449	2449	2449	2449	2449
	1	0	0	0	0	0	0

[a] All end vertical restraints (endstops, pallet locks, lateral guides) must be operable.

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CARGO TIEDOWNS - LOWER DECK

GENERAL INFORMATION

A certified unit load device will not require tiedowns unless one of the following conditions exist:

- ❑ The unit load device contains cargo of such shape and/or densities as to pose a hazard to the airplane structure or systems. If so, the entire weight of the ULD and its cargo must be tied down.
- ❑ The unit load device is limited either by restraint configurations or by missing / inoperative restraints. If so, the weight in excess of the ULD load limit data in CHP-SEC 1-66-xxx, must be tied down.
- ❑ The unit load device does not satisfy the center of gravity limitations in CHP-SEC 1-63-xxx. If so, the entire weight of the ULD and its cargo must be tied down.

A non-certified unit load device will not require tiedowns unless one of the following conditions exist:

- ❑ The unit load device contains cargo of such shape and/or densities as to pose a hazard to the airplane structure or systems. If so, the entire weight of the ULD and its cargo must be tied down.
- ❑ The unit load device is limited either by restraint configurations or by missing / inoperative restraints. If so, the weight in excess of the ULD load limit data in CHP-SEC 1-66-xxx, must be tied down.
- ❑ The unit load device does not satisfy the center of gravity limitations in CHP-SEC 1-63-xxx. If so, the entire weight of the ULD and its cargo must be tied down.
- ❑ The unit load device is not specified in this manual. If so, the entire weight of the ULD and its cargo must be tied down.
- ❑ The unit load device is less than 63" in height. If so, the entire weight of the ULD and its cargo must be tied down.
- ❑ The unit load device is not serviceable, not well constructed, or loaded in a manner that could result in it being a hazard to the airplane structure or systems. If so, the entire weight of the ULD and its cargo must be tied down.

Bulk cargo will not require tiedowns unless one of the following conditions exist:

- ❑ The bulk cargo is loaded on rollers, balls or devices to assist in moving cargo within the compartment.
- ❑ The bulk cargo is of shape or density that could become a hazard to the airplane structure or systems (e.g. dense or piercing items that could become projectiles).
- ❑ Bulk cargo movement within the compartment due to operational loads would cause a large change in airplane C.G.

Good judgment must be used in selecting the location and number of tiedowns to give sufficient safety margin for uneven strap and net stretch, strap and cargo slippage, and for varying allowables of rings used in combination. To prevent overloading of hardware, ring loops should be correctly oriented as closely as possible to the strap direction.

CAUTION DO NOT MIX DIFFERENT STIFFNESSES OF TIEDOWN STRAPS (FOR EXAMPLE, KEVLAR AND NYLON WEBS) WHEN RESTRAINING CARGO. MIXING STRAP STIFFNESSES MAY CAUSE PREMATURE FAILURE OF THE STIFFER STRAP. THE USE OF CHAINS FOR TIEDOWNS IS NOT RECOMMENDED.

APPLICABLE CONFIGURATIONS
All