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Load Control Manual

General & A380 Fleet

Revision No.:	**5**
Revision Date:	**12 SEP 17**

Thai Airways International Public Company Limited

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0 GENERAL

0.1 Introduction

0.1.1 Foreword

The Load Control Manual (LCM) is designed for use as a guidance and reference on policies, regulations and instructions, procedures and related to Ground Services Business personnel and representatives. The LCM is the property of Thai Airways International Public Company Limited. Revelation of its contents in any manner to persons not associated with THAI is forbidden.

The contents of the manual is edited and issued by the Procedures & Manual Department (BKKKG-M). It is the responsibility of manual holders to inform BKKKG-M of errors or discrepancies found. Any constructive suggestions or comments are always welcome and will be taken into careful consideration to improve the manual.

This manual is a part of Flight Safety Document System (FSDS). The management and control of this manual shall follow the requirements of FSDS as described in Chapter 9 of Quality Assurance Manual (QAM).

0.1.2 Purpose and Scope

The LCM contains detailed instructions based on policies and procedures to be followed by personnel involved with passenger handling of Ground Customer Services based on Company policies and requirements that have been mandated by Thai regulator and aligned with IATA Ground Operations Manaual. All instructions in the manual must be adhered to in the manner outlined, but personnel may, in case of necessity, act in accordance with the best judgement within the limit of their authority.

The Training Programs and Dangerous Goods Regulations (DGR) contained in the manual is based on provisions and procedures issued in the IATA DGR.

0.1.3 Responsibility

Procedures and Manual Department (KG-M) shall be responsible for updating the LCM and ensure that the contents in LCM are kept up-to-date and in accordance with the regulatory requirements.

KG-M shall review all proposed revisions by calling a meeting except:

- Company policies or related standards and requirements changes
- reference of standard practices published by Thai Regulator and IATA
- organization changes
- editorial error
- any changes that effect internal department activity.

0.1.4 Organization

This manual is divided into two parts:

- Part 1 contains general loading instructions, and;
- Part 2 contains fleet-specific aircraft loading information.

0.1.5 Page Identification

The manual is divided into chapters which are broken into sections and subsections.

Each page has an index reference consisting of manual type, chapter title and number, section title and number, page number revision number and revision date.

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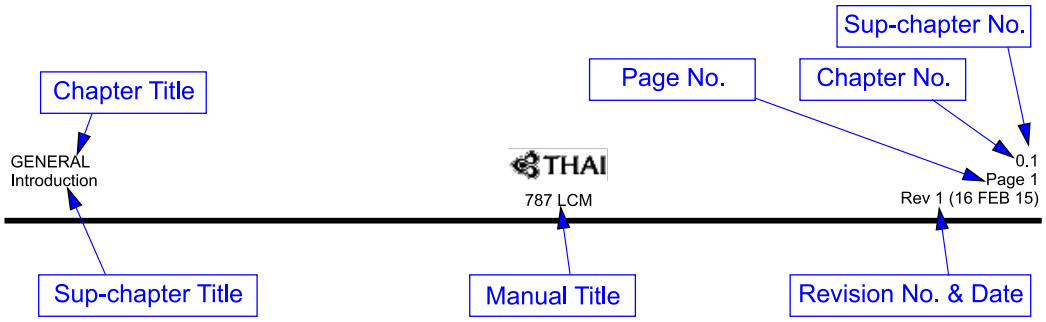
Example of Page Identification



An oOo mark indicates the end of sections/subsections.

0.1.6 Terms Used

Shall/must/require indicates that compliance is considered mandatory.

Shall not/must not indicates something is not allowed/permitted, or is forbidden.

Note indicates an importance point about which manual user needs to be made aware.

0.1.7 Revisions

A revision is a necessary tool to provide a new source of informations associated to flight safety, flight operation, and flight handling in order to maintain up-to-date contents of the manual.

Any deem significant changes filed in the manual shall be reported to the authority. The manual must be periodically reviewed twice a year on basis or in case of any changes related to this manual.

Gray shading indicates a change or addition of text or an illustration for the current revision of that section. The shading is removed at the next revision, however, the section revision date remains. This is only updated if these is a future revision to that section.

A deletion marker appears when either text or an illustration from the previous revision has been removed.

The LCM is published from a database. Occasionally, because the editors reorganized the database, shading may appear on text or illustration whose content is unchanged.

0.1.8 Temporary Revision

KG-M will issue Handling Procedure Notice if there is any revisions contained in DK Operating Manual in order to meet urgent needs for designated temporary instructions during the revision process where the amendment/revision becomes immediate effective.

A consecutive issue number and effective date shown in the Notice are controlled by KG-M.

0.1.9 Publication

In each revision, a summary is given in the Revision Highlights section to explain where changes have been made. The new revision shall be issued on electronic media (Thaisphere Homepage/D1 webpage) as soon as the new revision become effective.

The LCM must be available in case of the internet connecting failure and to ensure that all operating staffs are ready to access to them. Therefore, all DK operational functions shall download the latest LCM (uncontrolled version) on any kinds of devices that can be reached when needed.

Paper copies of the LCM obtained by any means by personnel are considered to be uncontrolled. It is the responsibility of the holders to ensure that the documents are kept up-to-date by incorporating all revisions as soon as they are received. Use the information on the Filing Instruction and the List of Effective Sections to verify the manual content. Use the Revision Record sheet provided in front of the Title Page to record the filing date.

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0.1.10 Distribution

Revision of LCM will be uploaded once the updated revision become effective on DK Webpage by BKK1J-S. A revision announcement will be sent to the below lists via company electronic mail. It is the duty of herewith listed to ensure that all concerned staff, service providers and outsourcing are acknowledged and ready to access to the manuals and revisions when required:

- DK head of front-line staff: BKKJK-3, BKKKI, BKKKB, BKKKK, BKKKL, BKKLL, BKKKN, BKKKP, BKKKX, BKKLP, BKKKW, BKKKH-Q, BKKKH-V.

Bangkok, 12 September 2017
THAI AIRWAYS INTERNATIONAL PUBLIC COMPANY LIMITED

Aviation Business Unit (D1)

Phakkhra Ruangsiradecho
Executive Vice President

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0.2 Abbreviations, Unit Conversions, Traffic Services Codes and Terms

0.2.1 Abbreviation

AC	Alternate Current
Amp	Ampere
avdp	Avoirdupois
Btu	British thermal unit
°C	Degree Celcius
cm	Centimeter
cm²	Square centimeter
dB	Decibel
DC	Direct Current
°F	Degree Fahrenheit
Ft	Foot
ft²	Square foot
ft³	Cubic foot
ft/min	Foot per minute
ft/s	Foot per second
g	Gram
h	Hour
Hz	Hertz
imp gal	Imperial gallon
in	Inch
in²	Square inch
in³	Cubic inch
kg	Kilogram
kg/cm	Kilogram per centimeter
kg/cm²	Kilogram per square centimeter
kgf	Kilogram-force
kg/m	Kilogram per meter
kg/m²	Kilogram per square meter
kg/m³	Kilogram per cubic meter
km	Kilometer
km/h	Kilometer per hour
kv	Kilovolt
L or ℓ	Liter
Lb	Pound avoirdupois
lb/ft	Pound avoirdupois per foot
lb/ft²	Pound avoirdupois per square foot
lbf	Pound-force
lt	Long ton
M	Meter
m²	Square meter
m³	Cubic meter

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min	Minute
mm	Millimeter
m/min	Meter per minute
mph	Miles per hour
N	Newton
NA	Not applicable
n.o.s.	Not otherwise specified
oz	Ounce
p.s.i.	Pound per square inch
s	Second
st	Short ton
t	Ton (metric)
v	Volt
yd	Yard

0.2.2 Conversions

Measurements are shown as follows:

- decimal points are indicated by a full stop on the line, for example, 15.25
- quantities less than one are preceded by a zero, for example, 0.05.

0.2.2.1 General Conversions

To convert	Into	Multiply by
Celsius (C)	Fahrenheit (F)	9/5 + 32
Centimeter (cm)	Inch (in)	0.3937
Centimeter (cm)	Meter (m)	0.0100
Cubic foot (ft³)	Cubic centimeter (cm³)	28320.0000
Cubic foot (ft³)	Cubic inch (in³)	1728.0000
Cubic foot (ft³)	Liter (ℓ)	28.3200
Cubic inch (in³)	Cubic centimeter (cm³)	16.3900
Cubic meter (m³)	Cubic foot (ft³)	35.3100
Cubic meter (m³)	Cubic inch (in³)	61.0230
Fahrenheit (F)	Celsius (C)	-32 × 5/9
Foot (ft)	Centimeter (cm)	30.4800
Foot (ft)	Meter (m)	0.3048
Foot (ft)	Inch (in)	12.0000
Imperial gallon (imp gal)	Liter (ℓ)	4.5460
Imperial gallon (imp gal)	US gallon (US gal)	1.2009
Inch (in)	Centimeter (cm)	2.5400
Kilogram (kg)	Pound (lb)	2.2046
Kilogram per cubic foot (kg/ft³)	Kilogram per cubic meter (kg/m³)	35.3100
Kilogram per cubic foot (kg/ft³)	Pound per cubic foot (lb/ft³)	2.2046
Kilogram per cubic meter (kg/m³)	Pound per cubic foot (lb/ft³)	0.0624
Kilogram per square centimeter (kg/cm²)	Pound per square inch (lb/in²)	14.2234
Kilogram per square foot (kg/ft²)	Pound per square foot (lb/ft²)	2.2046
Kilogram per square foot (kg/ft²)	Kilogram per square meter (kg/m²)	10.7600

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To convert	Into	Multiply by
Kilogram per square meter (kg/m²)	Kilogram per square foot (kg/ft²)	0.0930
Liter (ℓ)	Imperial gallon (imp gal)	0.2200
Liter (ℓ)	US gallon (US gal)	0.2642
Meter (m)	Centimeter (cm)	100.0000
Meter (m)	Foot (ft)	3.2808
Meter (m)	Inch (in)	39.3700
Millimeter (mm)	Centimeter (cm)	0.1000
Millimeter (mm)	Inch (in)	0.0394
Pound (lb)	Kilogram (kg)	0.4536
Pound per cubic foot (lb/ft³)	Kilogram per cubic foot (kg/ft³)	0.4536
Pound per cubic foot (lb/ft³)	Kilogram per cubic meter (kg/m³)	16.0166
Pound per cubic meter (lb/m³)	Kilogram per cubic foot (kg/ft³)	0.0128
Pound per inch (lb/in)	Kilogram per centimeter (kg/cm)	0.17858
Pound per square foot (lb/ft²)	Kilogram per square foot (kg/ft²)	0.4536
Pound per square foot (lb/ft²)	Kilogram per square meter (kg/m²)	4.8830
Pound per square inch (lb/in²)	Kilogram per square centimeter (kg/cm²)	0.0703
Square inch (in²)	Square centimeter (cm²)	6.451589
Square centimeter (cm²)	Square inch (in²)	0.155001
Ton (long) (lt)	Kilogram (kg)	1016.0000
Ton (long) (lt)	Pound (lb)	2240.0000
Ton (long) (lt)	Ton (short) (st)	1.1200
Ton (metric) (t)	Kilogram (kg)	1000.0000
Ton (metric) (t)	Pound (lb)	2205.0000
Ton (short) (st)	Pound (lb)	2000.0000
Ton (short) (st)	Kilogram (kg)	907.1849
Ton (short) (st)	Ton (long) (lt)	0.8929
Ton (short) (st)	Ton (metric) (t)	0.9072
US gallon (US gal)	Imperial gallon (imp gal)	0.8327
US gallon (US gal)	Liter (ℓ)	3.7853

0.2.2.2 Quantities and Units of Mechanics

Length

To convert	Into	Multiply by
Pound (lb)	Kilogram (kg)	0.45359237
Pound-force (lbf)	Newton (N)	4.448222
Short ton (st—2000 lb)	Kilogram (kg)	907.185
Short ton (st—2000 lb)	Metric ton (t)	0.907185
Long ton (lt—2240 lb)	Kilogram (kg)	1016.05

Force/Area

To convert	Into	Multiply by
Pound-force per square inch (p.s.i.)	Kilogram-force per square centimeter (kgf/cm²)	0.070307

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To convert	Into	Multiply by
Pound-force per square inch (p.s.i.)	Newton per square meter (N/m²)	689.4757
Pound-force per square foot (p.s.f.)	Kilogram-force per square meter (kgf/m²)	4.88243
Pound-force per square foot (p.s.f.)	Newton per square meter (N/m²)	47.88026

Mass/Volume (Density)

To convert	Into	Multiply by
Ounce per cubic inch (oz/in³)	Kilogram per cubic meter (kg/m³)	1729.994
Pound per cubic foot (lb/ft³)	Kilogram per cubic meter (kg/m³)	16.01846
Ton (long) per cubic yard (lt/yd³)	Kilogram per cubic meter (kg/m³)	1328.939

Mass/Capacity

To convert	Into	Multiply by
Ounce per US gallon (oz/US gal)	Gram per liter (g/ℓ)	7.489152
Pound per US gallon (lb/US gal)	Gram per liter (g/ℓ)	119.8264

Velocity

To convert	Into	Multiply by
Foot per second (ft/s)	Meter per second (m/s)	0.3048
Mile per hour (mph)	Kilometer per hour (km/h)	1.609344
Mile per hour (mph)	Meter per second (m/s)	0.44704

Flow

To convert	Into	Multiply by
Cubic foot per minute (ft³/min)	Liter per second (ℓ/s)	0.4719474
US gallon per minute (US gal/min)	Liter per second (ℓ/s)	0.00630902

0.2.2.3 Quantities and Units of Space

Length

To convert	Into	Multiply by
Inch (in)	Millimeter (mm)	25.4
Foot (ft)	Meter (m)	0.3048
Yard (yd)	Meter (m)	0.9144
Mile (statute)	Kilometer (km)	1.609344

Area

To convert	Into	Multiply by
Square inch (in²)	Square millimeter (mm²)	645.16
Square foot (ft²)	Square meter (m²)	0.09290304
Square yard (yd²)	Square meter (m²)	0.8361274
Square mile (mile²)	Square kilometer (km²)	2.58999

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Volume

To convert	Into	Multiply by
Cubic inch (in³)	Cubic centimeter (cm³)	16.3871
Cubic foot (ft³)	Cubic meter (m³)	0.0283168
Cubic yard (yd³)	Cubic meter (m³)	0.764555

0.2.3 Directory of Traffic Services Codes

All information contained in this directory is derived from the procedures contained in the LCM, GCSM and PHM.

Code	Name/Meaning	Use
AA	Arrival identifier	Aircraft movement code
AAF	125 × 88 in certified full-size lower deck LD26 container (structural igloo)	Load control
AAP	125 × 88 in certified full-size lower deck LD9 container (structural igloo)	Load control
A/C	Aircraft	Load control
ACT	Actual	Load control
AD	Departure identifier	Aircraft movement code
AD	(88) RESTRICTIONS AT AIRPORT OF DESTINATION	Delay code
ADJ	Adjustment	Load control
ADL	Additions and Deletions List	Standard message identifier
AE	(83) ATFM DUE TO RESTRICTION AT DESTINATION AIRPORT	Delay code
AF	(87) AIRPORT FACILITIES, parking, stands, ramp congestion, lighting, buildings, gate limitations, etc.	Delay code
AFT	Rear of the aircraft	Load control
AG	(86) IMMIGRATION, CUSTOMS, HEALTH	Delay code
AHM	Airport Handling Manual	General code/abbreviation
AKE	LD3 certified container	Load control
ALF	60.4 × 125 in certified full-size lower deck LD6 container (half igloo)	Load control
ALI	Abbreviated Load Information message	Standard message identifier
ALP	Automated Load Planning	Load control
AM	(89) RESTRICTIONS AT AIRPORT OF DEPARTURE WITH OR WITHOUT ATFM RESTRICTIONS	Delay code
AMF	125 × 96 in certified full-size lower deck LD36 container (structural igloo)	Load control
AMK	Airborne Maintenance Kit	Load control
AMM	Aircraft Maintenance Manual	General code/abbreviation
AO	Autres objects (Printed matter)	Mail document
AOG	Aircraft On Ground	Load control
APU	Auxiliary Power Unit	General code/abbreviation
AS	(85) MANDATORY SECURITY	Delay code
ASM	Airport Service Manager or KK	THAI generic code
AT	(81) ATFM DUE TO ATC EN ROUTE DEMAND/CAPACITY	Delay code
ATA	Actual Time of Arrival	General code/abbreviation

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Code	Name/Meaning	Use
ATC	Air Traffic Control	General code/abbreviation
ATM	Aircraft Transition Manual	General code/abbreviation
ATS	Air Traffic Services	General code/abbreviation
AV6	Envelope for airmail documents	General code/abbreviation
AV7	Delivery bill for airmail	General code/abbreviation
AV7S	Delivery bill for empty airmail bags	General code/abbreviation
AV8	Airmail bag labels	General code/abbreviation
AV9	Envelope for small or late airmail shipment	General code/abbreviation
AVE	LD3 certified container	Load control
AVI	Live animals	Load control
AW	(84) ATFM due to weather at destination	Delay code
AWB	Air waybill	General code/abbreviation
AX	(82) ATFM due to ATC staff/equipment en-route	Delay code
B	Baggage (General designator)	Load control
B	Bassinet position	Load control
B	Economy class discounted	Load control
BAL	Ballast (unmanifested)	Load control
BED	Stretcher installed (unmanifested)	Load control
BEH	Stretcher compt loaded (unmanifested)	Load control
BI	Basic index	Load control
BIG	Item loaded on two or more pallets	Load control
BIM	Budget Instruction Manual	General code/abbreviation
BIS	Baggage In Seat	Load control
BC	Royal Silk Class Baggage	Load control
BF	Royal First Class Baggage	Load control
BL	Local Baggage	Load control
BLKD	Blocked seat	Load control
BT	Transfer Baggage	Load control
BW	Basic Weight	Load control
BY	Economy Class Baggage	Load control
C	Class of service designator—Royal Silk Class	Load control
C	Cargo	Load control
CA	Cabin attendant seat	Load control
CA	(29) LATE ACCEPTANCE	Delay code
CAA	Civil Aviation Authority	Load control
Cab	Cabin	General code/abbreviation
CAO	Dangerous goods Cargo Aircraft Only (labeled)	Load control
CC	(23) LATE ACCEPTANCE	Delay code
CCM	Cabin Crew Manual	General code/abbreviation
CD	(21) DOCUMENTATION, errors, etc.	Delay code
CE	(27) DOCUMENTATION, PACKING, etc.	Delay code
CG	Center of Gravity	Load control
CGO	Cargo	Load control

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Code	Name/Meaning	Use
CI	(24) INADEQUATE PACKING	Delay code
CL	28) LATE POSITIONING	Delay code
CM	Centimeter	Load control
CO	(25) OVERSALES, booking errors	Delay code
COD	Cash On Delivery	General code/abbreviation
COM	Company mail (unmanifested)	Load control
COR	Correction message	Standard message identifier
COU	Courier baggage loaded in passenger seat	Load control
CP	Colis postaux (parcel mail)	Load control
CP	(22) LATE POSITIONING	Delay code
CPM	Container/Pallet Distribution Message	Standard message identifier
Cpt	Compartment	General code/abbreviation
CRB	Crew Baggage	Load control
CRT	Cathode Ray Tube	General code/abbreviation
CSOM	Cabin System Operating Manual	General code/abbreviation
CSQI	Customer Services Quality Instructions	General code/abbreviation
CSQM	Customer Services Quality Manual	General code/abbreviation
CSQP	Customer Services Quality Proecdures	General code/abbreviation
CTL	Control	General code/abbreviation
CTR	Cabin Crew Training & Reference Handbook	General code/abbreviation
CU	(26) LATE PREPARATION IN WAREHOUSE	Delay code
CUT	Company utilization channel	General code/abbreviation
CUTE	Common Use Terminal Equipment	General code/abbreviation
D	Crew baggage	Load control
D	Defuel	Fuel monitoring
DCS	Departure Control System	Load control
DF	(51) DAMAGE DURING FLIGHT OPERATIONS, bird or lightning strike, turbulence, heavy or overweight landing, collision during taxiing	Delay code
DG	(52) DAMAGE DURING GROUND OPERATIONS, collisions (other than during taxiing) loading/offloading damage, towing, extreme weather conditions	Delay code
DGR	Dangerous Goods Regulations	General code/abbreviation
DHC	Dead Head Crew, or crew positioning to/from duty, occupying passenger seats	Load control
DIP	Diplomatic mail	Load control
DIV	Aircraft diversion message	Standard message identifier
DL	Delay identifier	Aircraft movement control
DLI	Deadload index	Load control
DOI	Dry Operating Index	Load control
DOW	Dry Operating Weight	Load control
DR	Diversion Reason identifier	Aircraft movement control
E	Equipment	Load control
E	Emergency exit	Load control
EA	Estimated time of arrival identifier	Aircraft movement control

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Code	Name/Meaning	Use
ERPP	Emergeney Response Plans and Procedures	General code/abbreviation
EAT	Foodstuff for human consumption other than meat and fish/ seafood	Load control
EC	(56) CARGO PREPARATION/DOCUMENTATION	Delay code
ED	(55) DEPARTURE CONTROL	Delay code
ED	Estimated time of departure identifier	Aircraft movement control
EDP	Electronic Data Processing (computer)	Load control
EDP	EDP-System Semi-Permanent Data (AHM 560)	DCS/Load control
EF	(57) FLIGHT PLANS	Delay code
EIC	Equipment In Compartment (unmanifested)	Load control
ELD	Extra Load Devices (ULD loaded on top of another ULD)	Load control
EO	(58) OTHER SYSTEMS	Delay code
EO	Estimated takeoff identifier	Aircraft movement control
F	Class of service designator—Royal First Class	Load control
FA	(68) CABIN CREW ERROR OR SPECIAL REQUEST, not within operational requirements	Delay code
FAL	Facilitation	Load control
FAST	Family Assistance & Support Team Manual	General code/abbreviation
FB	(69) CAPTAIN'S REQUEST FOR SECURITY CHECK, extraordinary	Delay code
FC	(67) CABIN CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.	Delay code
FCT	Flight Crew Training Manual	General code/abbreviation
FF	(62) OPERATION REQUIREMENTS, fuel, load alteration	Delay code
FIL	Undeveloped Film/Unexposed Film	Load control
FL	(66) LATE CABIN CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby	Delay code
FKT	Flight kit (unmanifested), extra or additional AMK loaded in compt	Load control
FMM	Fuel Monitoring Message	Standard message identifier
FP	(61) FLIGHT PLAN, late completion or change of flight documentation	Delay code
FR	(65) FLIGHT DECK CREW SPECIAL REQUEST, not within operational requirements	Delay code
FR	Forced Return identifier	Aircraft movement control
FRG	Unbooked non-revenue cargo (service 2 cargo)	Load control
FS	(64) FLIGHT DECK CREW SHORTAGE, sickness, awaiting standby, flight time limitations, crew meals, valid visa, health documents, etc.	Delay code
FT	(63) LATE CREW BOARDING OR DEPARTURE PROCEDURES, other than connection and standby (flight deck or entire crew)	Delay code
FWD	Forward	Load control
G	Non–revenue passenger	Load control
G	Gravity force	Load control
G	Groups	Load control

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Code	Name/Meaning	Use
GB	(37) CATERING, late delivery or loading	Delay code
GC	(35) AIRCRAFT CLEANING	Delay code
GCSM	Ground Customer Services Manual	General code/abbreviation
GD	(31) AIRCRAFT DOCUMENTATION, LATE/INACCURATE, weight and balance, general declaration, pax manifest, etc.	Delay code
GE	(33) LOADING EQUIPMENT; lack of or breakdown	Delay code
GF	(36) FUELING/DEFUELING, fuel supplier	Delay code
GHA	Ground Handling Agent	General code/abbreviation
GL	(32) LOADING/UNLOADING, bulky, special load, cabin load, late/lack of loading staff	Delay code
GMM	Group Movement Message	Standard message identifier
GMT	Greenwich Mean Time	Load control
GPO	General Post Office	Load control
GS	(34) SERVICING EQUIPMENT, lack of or breakdown, steps, ground power, pushback equipment etc., lack of staff	Delay code
GSE	Ground Support Equipment	Load control
GT	(39) TECHNICAL EQUIPMENT, lack of or breakdown	Delay code
GU	(38) ULD, lack of or serviceability	Delay code
GWC	Gross Weight Chart Manual	General code/abbreviation
H	Transship ULD and/or its load	Load control
H	Incapacitated passenger	Load control
HEA	Heavy cargo above 150 kg per piece	Load control
HEG	Hatching eggs	Load control
HUM	Human remains in coffin	Load control
I	Infant preference rows/seats	Load control
IATA	International Air Transport Association	General code/abbreviation
ICAO	International Civil Aviation Organization	General code/abbreviation
ICE	Carbon dioxide, solid (dry ice) shipment	Load control
ICRM	Integrated Crew Resource Management Manual	General code/abbreviation
IDM	Industry Discount Message	Standard message identifier
IG	Imperial Gallon	Fuel monitoring message
IMS	Information Management System	General code/abbreviation
IN	Inch	Load control
IN	ULD added to inventory identifier	Load control
K, KG, kg, kgs	Kilogram (weight)	Load control
KAP	88 × 125 in livestock container (2 levels)	Load control
KK	Airline airport management (Airport Services Manager)	Office function designator
KL	Load planning/load control (General)	Office function designator
KM	Automated passenger check-in and departure control system	Office function designator
KO	Duty officer/airport station control/coordination	Office function designator
KP	Passenger handling	Office function designator
L	Litre	Load control
L	Indicator for applicable maximum weight	Load control
LAR	Live Animals Regulations	General code/abbreviation

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Code	Name/Meaning	Use
LB, lb	Pound (weight)	Load control
LC	Lettre Close (letter mail)	Load control
LCC	Load Control Center, Load planning (BKK)	Load control
LCA	Large Capacity Aircraft	Load control
LCF	Load Control Folder	Load control
LCM	Load Control Manual	Load control
LCS	Load Control Supervisor	Load control
LD	Lower deck identifier	Load control
LD3	Lower deck container (half-width)	Load control
LDM	Load message	Standard message identifier
LEMAC	Leading Edge of the MAC	Load control
LHO	Living Human Organs/Blood	Load control
LIZFW	Loaded Index at Zero Fuel Weight	Load control
LL	Primary baggage tracing	Office function designator
LLCP	Local Load Control Procedure	Load control
LM	Load Master	Load control
LM	Automated primary baggage tracing	Office function designator
LMC	Last Minute Change	Load control
LPM	Load Planning Message	Standard message identifier
LSA	Loadsheet agent	Load control
LT	Local Time	Load control
LTR	Liter	Load control
LUC	Unit load device exchange control	Standard message identifier
LW	Landing Weight	Load control
LZ	Central baggage tracing office	Office function designator
M	Mail	Load control
M	Mandatory element in message format	LCM message format
MAC	Mean Aerodynamic Cord	Load control
MAG	Magnetised materials	Load control
MAX	Maximum	Load control
MD	Main deck identifier	Load control
MI	(97) INDUSTRIAL ACTION WTIH OWN AIRLINE	Delay code
MO	(98) INDUSTRIAL ACTION OUTSIDE OWN AIRLINE	Delay code
MOS	Miscellaneous operational staff (other than crew), occupying passenger seats	Load control
MVT	Aircraft movement message	Standard message identifier
MX	(99) NOT ELSEWHERE SPECIFIED	Delay code
N	No smoking	Load control
N	No ULD at position	Load control
N/A	Not applicable/available/acceptable	Load control
NCD	Nose Cargo Door ULD	Load control
NI	Time of next information identifier	Aircraft movement control
NIL	No items loaded or manifested	Load control
NR	Number	Load control

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Code	Name/Meaning	Use
O	Overwing seat	Load control
O	Optional element in message format	AHM message format
OA	(06) NO GATE/STAND AVAILABILITY DUE TO OWN AIRLINE ACTIVITY	Delay code
OBX	Obnoxious dead load that produces strong offensive odor	Load control
OHG	Overhang, item loaded on one or more pallets that overhangs position(s) other than those on which it is loaded	Load control
OM-A	Operation Manual Part A	General code/abbreviation
OP	Operations planning and procedures	Office function designator
OUT	ULD removed from inventory identifier	Load control
OW	Flight planning/flight watch/flight dispatch	Office function designator
OW	Operation Weight	Load control
PAD	Passenger available for disembarkation (ID-2)	Load control
PAH	Public Address Handbook	General code/abbreviation
P1P	88 × 125 in pallet with net	Load control
PAJ/PAG		
PAP		
PAT	88 × 125 in pallet with tray	Load control
PAU	88 × 125 in pallet equipped with extension wings	Load control
PAW		
PAX	Passenger identifier	Load control
PB	(18) BAGGAGE PROCESSING, sorting, etc.	Delay code
PC	(17) CATERING ORDER, late or incorrect order given to supplier	Delay code
PD	(11) LATE CHECK-IN, acceptance after deadline	Delay code
PDM	Possible Duplicate Message	Standard message identifier
PE	(13) CHECK-IN ERROR, passenger and baggage	Delay code
PEA	Hunting trophies, skin, hide and all articles made from or containing parts of species listed in the CITES	Load control
PEF	Flowers	Load control
PEM	Meat	Load control
PEP	Fruits and vegetables	Load control
PER	Perishable cargoes other than flowers, meat and fish/ seafood	Load control
PES	Seafood/fish	Load control
PFS	Passenger Final Sales message	Standard message identifier
PGA	96 × 238.5 in pallet with net	Load control
PH	(15) BOARDING, discrepancies, paging and missing checked-in passengers	Delay code
PHM	Passenger Handling Manual	General code/abbreviation
P-i-C	Pilot-in-Command	Load control
PIL	Passenger Information List message	Standard message identifier
PIR	Property Irregularity Report	Standard paper size
PL	(12) LATE CHECK-IN, congestion in check-in area	Delay code
PLA	60.4 × 125 in pallet with net	Load control

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Code	Name/Meaning	Use
PLD	Pallet Lower Deck	Load control
PMC	96 × 125 in pallet with net	Load control
PMD	Pallet Main Deck	Load control
PO	(14) OVERSALES, booking errors	Delay code
POS	Position	Load control
PNL	Passenger Name List	Standard message identifier
PS	(16) COMMERCIAL PUBLICITY, PASSENGER CONVENIENCE	Delay code
PSM	Passenger Service Message	Standard message identifier
PSM	Passenger Service Manual	General code/abbreviation
PTM	Passenger Transfer Message	Standard message identifier
PX	Passenger identifier	Aircraft movement code
Q	Courier baggage	Load control
RA	(93) AIRCRAFT ROTATION, late arrival of aircraft from another flight or previous sector	Delay code
RAP	88 × 125 in certified full-size lower deck insulated container	Load control
RAR	Royal-Amadeus Reservation and Ticketing Manual	General code/abbreviation
RC	(95) CREW ROTATION, awaiting crew from another flight (flight deck or entire crew)	Delay code
RCL	Cryogenic Liquids (refrigerated liquefied gases)	Load control
RCM	Corrosive (labelled)	Load control
RDS	Biological substance, category B (UN3373)	Load control
REX	Normally forbidden explosive (Divisions 1.1, 1.2, 1.3, 1.4F, 1.5 and 1.6)	Load control
RFG	Flammable Compressed Gas (labelled)	Load control
RFL	Flammable Liquid (labelled)	Load control
RFS	Flammable Solid (labelled)	Load control
RFW	Dangerous When Wet (labelled)	Load control
RIS	Infectious Substance (labelled)	Load control
RKN	60.4 × 61.5 in certified half–size lower deck forkliftable insulated LD3	Load control
RL	(91) LOAD CONNECTION, awaiting load from another flight	Delay code
RM	Route Manual	General code/abbreviation
RMD	Miscellaneous dangerous goods	Load control
RNG	Nonflammable Compressed Gas (labelled)	Load control
RO	(96) OPERATIONS CONTROL, rerouting, diversion, consolidation, aircraft change for reasons other than technical	Delay code
ROP	Organic Peroxide (labelled)	Load control
ROX	Oxidizer (labelled)	Load control
RPB	Poison (labelled)	Load control
RPG	Toxic Gas (labelled)	Load control
RQL	Request list message	Standard message identifier
RQM	Request information message	Standard message identifier
RR	Return to ramp identifier	Aircraft movement code

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Code	Name/Meaning	Use
RRM	Royal Reservation Manual	General code/abbreviation
RRW	Radioactive material, Category I—White	Load control
RRY	Radioactive material, Categories II and III—Yellow	Load control
RS	(94) CABIN CREW ROTATION, awaiting cabin crew from another flight	Delay code
RSB	Polymeric Beads (labelled)	Load control
RSC	Spontaneously Combustible (labelled)	Load control
RT	(92) THROUGH CHECK-IN ERROR, passenger and baggage	Delay code
RTM	Reservation and Ticketing Manual	General code/abbreviation
RXB	Explosive 1.4B (labelled)	Load control
RXC	Explosive 1.4C (labelled)	Load control
RXD	Explosive 1.4D (labelled)	Load control
RXE	Explosive 1.4E (labelled)	Load control
RXG	Explosive 1.4G (labelled)	Load control
RXS	Explosive 1.4S (labelled)	Load control
S	Sort on arrival (rummage/sort container)	Load control
S	Non-revenue cargo-stores	Load control
SAL	Seat Available List message	Standard message identifier
SCD	Side Cargo Door ULD	Load control
SCM	ULD Stock Check Message	Standard message identifier
SDS	Service Delivery Standard	General code/abbreviation
SEC	Item removed from passenger for security reason	Load control
SEPM	Safety and Emergency Procurement Manual	General code/abbreviation
SG	(09) SCHEDULED GROUND TIME LESS THAN DECLARED MINIMUM GROUND TIME	Delay code
SGHA	Standard Ground Handling Agreement	General code/abbreviation
SHB	Ship Handbook	General code/abbreviation
SI	Supplementary Information	Load control, aircraft movement control
SLS	Statistical Load Summary	Standard message identifier
SOC	Seats occupied by baggage, cargo and/or mail	Load control
SOM	Seats Occupied Message	Standard message identifier
SOP	Service Operation Procedure	General code/abbreviation
SPCL	Special information identifier	Load control
SPM	Security Program Manual	General code/abbreviation
SSM	Standard Schedule Message	Standard message identifier
STA	Reference point on an aircraft	Load control
STA	Scheduled Time of Arrival	Aircraft movement control
STD	Scheduled Time of Departure	Aircraft movement control
T	Near toilet seat	Load control
T	Transfer load	Load control
T	Total	Load control
TA	(45) AOG SPARES, to be carried to another station	Delay code
TC	(46) AIRCRAFT CHANGE, for technical reasons	Delay code

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Code	Name/Meaning	Use
TCM	THAI Cargo Manual	General code/abbreviation
TD	(41) AIRCRAFT DEFECTS	Delay code
TF	Trip Fuel	Load control
THRU	Throughload identifier	Load control
TI	Transport Index of RRY	Load control
TL	(47) LACK OF AIRCRAFT FOR TECHNICAL REASONS	Delay code
TM	(42) SCHEDULED MAINTENANCE, late release	Delay code
TMT	Technical Manual THAI	General code/abbreviation
TN	(43) NON-SCHEDULED MAINTENANCE, special check and/or additional works beyond normal maintenance schedule	Delay code
TOF	Takeoff Fuel	Load control
TOGW	Takeoff Gross Weight	Load control
TOW	Takeoff Weight	Load control
TPD	Through processing	Load control
TPM	Teletype Passenger Manifest message	Standard message identifier
TS	(44) SPARES AND MAINTENANCE EQUIPMENT, lack of or breakdown	Delay code
TSQM	THAI Safety and Quality Manual	General code/abbreviation
TTL	Total	Load control
TTPM	THAI Technical Procedure Manual	General code/abbreviation
TTQM	THAI Technical Quality Manual	General code/abbreviation
TV	(48) SCHEDULED CABIN CONFIGURATION/VERSION ADJUSTMENTS	Delay code
TW	Total Weight	Load control
U	Unserviceable ULD	Load control
U	Class of service—Premium Economy Class	Load control
UCM	ULD Control Message	Standard message identifier
ULD	Unit Load Device	Load control
UM	Unaccompanied minor	Load control
US	US gallon	Fuel monitoring message
UWS	ULD/Bulk-load Weight Signal	Standard message identifier
V	Seat left vacant/offered last	Load control
VAL	Valuable cargo	Load control
VR	Volume available	Load control
W	Cargo in security controlled ULD	Load control
WET	Wet materials not packed in watertight containers	Load control
WG	(77) GROUND HANDLING IMPAIRED BY ADVERSE WEATHER CONDITIONS	Delay code
WI	(75) DE-ICING AND DE-SNOWING OF AIRCRAFT	Delay code
WO	(71) DEPARTURE STATION, weather below aircraft operating minima	Delay code
WR	(73) EN ROUTE OR ALTERNATE, weather below aircraft operating minima	Delay code
WS	(76) REMOVAL OF SNOW, ICE, WATER AND SAND FROM AIRPORT	Delay code

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Code	Name/Meaning	Use
WT	(72) DESTINATION STATION, weather below aircraft operating minima	Delay code
X	No facility seat	Load control
X	Empty ULD	Load control
XCR	Additional crew requiring passenger seat(s)	Load control
XPS	Priority small packages	Load control
Y	Class of service designator—Economy Class	Load control
Z	Buffer zone	Load control
Z	Load deliberately mixed by destination for destinations beyond planned reloading station	Load control
ZFW	Zero Fuel Weight	Load control
0	No volume available	Load control
1	More than one-quarter volume available	Load control
2	More than one-half volume available	Load control
3	More than three-quarters volume available	Load control

0.2.4 Terms and Definitions

Aerobridge — A corridor at, above or below ground level to connect aircraft stands to a passenger building.

Agent—Handling — See LCM, Chapter 0.2.4—Terms and Definitions; Company—Handling.

Agent—Ramp — A person who supervises and co-ordinates on the ramp the tasks of ground handling for an aircraft departure or arrival.

Aircraft Configuration — Planned utilisation layout of aircraft interior space.

Aircraft—Containerized — An aircraft of which the cargo compartments are equipped with unit load devices conveyance and restraint system, in order to accommodate containers or pallets. This may be either a wide body or a narrow body aircraft.

Aircraft—Wide-Body/High Capacity/Twin Aisle — Designates aircraft types with two aisles in the passenger cabin. Specifically refers to 747, 777, 787, A330, A350, A380 models.

Aircraft—Maintenance Area — All the ground space and facilities provided for aircraft maintenance. It includes aprons, hangars, buildings and workshops, vehicle parks and roads associated therewith.

Aircraft—Narrow-Body/Small Capacity/Single Aisle — Any type of passenger aircraft with 6 seats abreast or less and a single aisle in the passenger cabin.

Airport—Alternate — Planned alternative en route and destination airport(s) for a flight.

Airport—Departure — The airport from which the aircraft last departed, using the same flight number.

Airport—Destination — Ultimate intended terminating airport of a flight.

Airport—Movement — See LCM, Chapter 0.2.4—Terms and Definitions; Airport—Departure, see LCM, Chapter 0.2.4—Terms and Definitions; Airport—Destination and see LCM, Chapter 0.2.4—Terms and Definitions; Airport—Origin.

Airport—Origin — The place from where the flight commences.

Air Side — The movement area of an airport, adjacent terrain and buildings or portions thereof, access to which is controlled.

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Air Waybill	The document entitled “Air Waybill/Air Consignment Note” made out by or on behalf of the shipper which evidences the contract between the shipper and carrier(s) for carriage of goods over routes of the carrier(s).
Allowed Traffic Load	The load which can be carried on the aircraft on anyone sector and is the difference between the allowed weight for take-off and operating weight.
Altea FM	Load Control module of Departure Control System (DCS) performed by Electronic Data Processing (EDP).
Apron	A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, refueling, parking or maintenance.
Area Load	Maximum load that can be loaded on a specific area.
Baggage	Equivalent to the term “Luggage”. Such articles, effects and other personal property of a passenger as are necessary or appropriate for wear, use, comfort, or convenience in connection with the trip. Unless otherwise specified, it includes both checked and unchecked baggage.
Baggage—Cabin	Baggage of which the passenger retains custody (also known as “Hand” and/or “Unchecked”).
Baggage—Carry-on	All articles in the possession of passenger and crew which are accessible to them in flight.
Baggage—Checked	(Also known as “Registered”). Equivalent to “Registered luggage”, means baggage of which the carrier takes sole custody and for which carrier has issued a baggage check.
Baggage—Container	A receptacle in which baggage is loaded for conveyance in aircraft.
Baggage—Crew	Baggage which is the property of operating crew and which is separatedly identified.
Baggage Sorting Area	Space in which departure baggage is sorted into flight loads.
Baggage—Transfer	Baggage arriving at a point on one flight and continuing its journey therefrom on another flight within a defined time limit.
Baggage—Transit	Baggage departing from an airport on the same flight as that on which they arrived.
Baggage—Unaccompanied	Baggage not carried on the same aircraft with the passenger or crew to whom it belongs and includes baggage submitted by passenger for carriage as cargo.
Balance Condition	A numerical expression of the position of the center of gravity.
Balance limits	The end points forward and aft of the range within which the center of gravity must lie for safe flight.
Ballast	Deadload weight carried to achieve a particular balance condition.
Basic Index (BI)	A numerical expression of the center of gravity of the aircraft at its basic weight.
Basic Weight (BW)	See LCM, Chapter 0.2.4—Terms and Definitions; Weight—Basic.
Bay	A subdivision of a containerised/palletised compartment, i.e. unit load device position.
Boarding	Equivalent to the term “Embarkation”, means passengers entering an aircraft.

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Bomb Threat	Communicating information as such to jeopardize the safety of an aircraft in flight, or on the ground, or at an airport or a civil aviation facility, of crew, passengers, ground personnel or the public.
Breaking Strength	The breaking strength quoted for a lashing or tiedown fitting represents the maximum load which an item of equipment (lashing or lashing point) can sustain without: • loss in strength due to deformation under repeated application of load during normal flight condition • risk of breaking at 1G.
Bulk	Loading piece by piece.
Bulkhead	A rigid partition.
Bulkhead—Stressed	A bulkhead which in combination with the aircraft structure has been designated to restrain load.
Cabin	A compartment of an aircraft where passenger seats are installed.
Cabin Section	A division of the cabin into zones for the purpose of balance
Cargo	Any goods carried on an aircraft which are covered by an air waybill.
Cargo—Service	Any goods the property of an airline carried on an aircraft.
Carrier	The air carrier issuing the ticket (or air waybill) and all air carriers that carry or undertake to carry passenger and/or his baggage (or cargo) thereunder or to perform any other services related to such air carriage.
Category	The nature of the load.
Center of Gravity (C of G)	The C of G of an aircraft is the point at which its total weight may be considered to act as a concentrated force.
CG Targeting	An automatic refueling is carried out using CG (Center of Gravity) targeting, this is available in automatic refuel and Automatic ground transfer modes of A380 only.
Check-in	The process of reporting to an aircraft operator for acceptance on a particular flight.
Check-in-Counter	The location of facilities at which check-in is carried out.
Class	Segregation of passengers according to the facilities and service offered.
Cockpit	(Also known as “Flight Deck”). The part of an aircraft from which the crew control the aircraft.
Company—Handling	A company/organization appointed by an airline to perform ground handling functions.
Compartment	A space designated within a hold
Conditional	A format element marked “C” becomes mandatory under certain circumstances which have to be specified in the table of format. The element may be omitted if these circumstances do not prevail.
Configuration	See LCM, Chapter 0.2.4—Terms and Definitions; Aircraft Configuration.
Consignment	Equivalent to the term “Shipment”. One or more pieces of goods accepted by the carrier from one shipper at one time and at one address, receipted for in one lot and moving on one air waybill to one consignee at one destination address

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Consignment Note	See LCM, Chapter 0.2.4—Terms and Definitions; Air Waybill.
Container	See LCM, Chapter 0.2.4—Terms and Definitions; Unit Load Device (ULD).
Crew—Cabin	Persons performing duties on the flight other than in the flight deck
Crew—Flight Deck or Cockpit	Persons operating the flight in the flight deck
Crushable Load	• Single pieces of cargo shall not consist of large rigid units. • The cargo shall be deformable and must not have sharp edges which could destroy the container walls respectively cut the pallet nets. No sharp edges shall result from deformation or destruction of the cargo. • Smaller pieces of cargo have to be consolidated to larger units, which keep their integrity. • The cargo shall have a load density between 80 and 240 kg/m³ (5 and 15 lbs/ft³). • Density variations shall be kept to a minimum assuming good loading practice.
Dangerous Goods	Articles or substances which are capable of posing a significant risk to health, safety or property when transported by air and which are classified as such in the IATA Dangerous Goods Regulations.
Deadload	Baggage, cargo, mail, ballast and equipment in compartments not included in dry operating weight of the aircraft.
Dead Load Index (DLI)	Center of gravity at dry operating weight plus all deadload in compartments, used by flight crew to reseat passengers in case of emergency.
Deck	A structural floor level. For aircraft having one structural level only, this floor level shall be referred to as the “MAIN DECK”. For aircraft having more than one structural floor level, the different floor levels shall be referred to as “LOWER DECK”, “MAIN DECK” and “UPPER DECK”, starting from bottom to top.
Density	The relationship of weight to volume in a unit, i.e. kg per m³ or kg/m³
Departure Control System (DCS)	An automated method of performing for check-in, capacity and load control and dispatch of flights.
Destination	See LCM, Chapter 0.2.4—Terms and Definitions; Airport—Destination.
Diplomatic Bag	The diplomatic bag and the packages constituting the diplomatic bag must bear visible external marks of their character and may contain only diplomatic documents or articles intended for official use.
Dolly	A small platform type vehicle equipped with rollers used to convey or move aircraft unit load device on the ground.
Dry Operating Index (DOI)	Center of gravity at Dry Operating Weight (DOW)
Dry Operating Weight (DOW)	See LCM, Chapter 0.2.4—Terms and Definitions; Weight—Dry Operating (DOW).
EDP System	Electronic data processing system, i.e. electronic computer system
Embarkation	See LCM, Chapter 0.2.4—Terms and Definitions; Boarding.

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En Route	Equivalent to “Through”. Movement or point between point of departure and point of destination.
Equipment in Compartment (EIC)	Equipment which is carried on the aircraft but which is not manifested and which is not, elsewhere, included in the weight composition, such as additional flight kit.
Facilitation (FAL)	A general term reflecting the action taken within the airline industry with government and other bodies to reduce costs, simplify procedures and improve formalities.
Flight	The operation of an aircraft between two or more points
Flight Number	An alpha/numerical designator of a flight Prefixed by a two letter and three charactor designator
Floating Pallet	A unit load device (ULD), including its load, which is positioned over at least two pallet positions, and it is not secured by the pallet locking devices of the ULD restraint system, but is restrained to the aircraft structure by means of tiedown fittings and lashings.
Fore and Aft	The front and the rear (tail) of an aircraft related to the length of the aircraft
Fuel—Takeoff	The amount of fuel on board less the fuel consumed before takeoff run
Fuel—Trip	The amount of fuel planned to be consumed from takeoff to the station of first intended landing
Fuel—Taxi	Fuel used from the time the aircraft leaves the ramp until takeoff. It includes fuel required for start of engines and APU.
Fueling	Fueling and defueling, aircraft fuel tank calibration, aircraft fuel flow tests and the draining of aircraft tanks
G Forces	Increase/decrease of gravity forces exerted upon load during flight. Acceleration or deceleration can cause the weight of a load to increase or decrease and the change is expressed in “G”. Thus 2G would indicate that an item is, or must be, capable of withstanding, double the weight.
Galley	The integral part of the aircraft where pantry/catering material is stored.
General Declaration	A standard document giving details about a flight required for aircraft clearance by government authorities in certain countries
Hard Copy	A printed copy of an electronically transmitted text
High Capacity Aircraft	See LCM, Chapter 0.2.4—Terms and Definitions; Aircraft—Wide-Body/High Capacity/Twin Aisle.
Hijack	Or “unlawful seizure of aircraft”, as the Hague Convention, 1970, prefers to call it, lays down that: • Any person who on board an aircraft in flight: – Unlawfully, by force or threat thereof, or by any other form of intimidation, seizes or exercises control of, that aircraft or attempts to perform any such act, or – Is an accomplice of a person who performs or attempts to perform any such act, commits an offence.
Hold	A space confined by ceiling, floor, walls and bulkhead, used for carrying load.
Igloo–Non-Structural	A bottomless rigid shell made of fiberglass, metal or other suitable material. Its shape conforms to the contours of cargo aircraft

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	envelopes. It covers the maximum usable area of an aircraft pallet to which it is secured during flight. This unit used in combination with an aircraft pallet and net assembly is known as a non-structural igloo.
Igloo–Structural	A fully enclosed rigid shell which in combination with an aircraft pallet has been stressed to restraint deadload without the use of nets; as such the pallet is structurally attached to the shell to form a single structural unit.
Index Unit	An expression of moment, i.e. weight x lever arm caused by weight added to the aircraft, in order to establish the C of G
Inflight	The operation of an aircraft from the moment when all its external doors are closed following embarkation until the moment when any such door is opened for disembarkation.
Interchange	Transfer between different types of aircraft, or usable on different types of aircraft, whether owned by the same carrier or by different carriers
Interline	Transfer from one carrier to another
Joining	Boarding or loading at a transit station
Landing Weight (LW)	See LCM, Chapter 0.2.4—Terms and Definitions; Weight.
Land Side	That area of an airport and buildings to which the non-traveling public has free access.
Lashing	See LCM, Chapter 0.2.4—Terms and Definitions; Tie-down.
Layout	See LCM, Chapter 0.2.4—Terms and Definitions; Aircraft Configuration.
Left	Understood as left-hand side in the direction of flight.
Load	Any item carried in an aircraft other than is included in the “Dry Operating Weight”.
Load Category	See LCM, Chapter 0.2.4—Terms and Definitions; Category.
Load Control	A function to ensure the optimum utilisation of the aircraft capacity and distribution of load as dictated by safety and operational requirements.
Load Planning	A part of load control.
Load Securing Equipment	See LCM, Chapter 0.2.4—Terms and Definitions; Tie-down—Equipment.
Load Index Zero Fuel Weight (LIZFW)	An expression of the C of G of an aircraft after it has been loaded and passenger weight included.
Loading	Stowing load or ULD's on board the aircraft in accordance with loading instructions.
Loading Accessories	Includes tiedown equipment, seat containers (for the carriage of load on passenger seats in the cabin of an aircraft), containers for carriage of load which have been installed after removal of seats, stretchers, any containers used for isolation or protection of goods e.g. plastic bowls or plastic bags, garment racks, supporting planks and platforms, equipment for valuable cargo (pouches), collecting nets and bags, kennels for live animals, covers of any kind. *Note: Unit load devices are not loading accessories.*

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Loading Instruction	Instructions given by Load Control to the person responsible for the aircraft loading
Loading Report	Signed loading instruction, with any deviations recorded, passed back to Load Control for action as required
Loadsheet	A completed loadsheet contains all weight data pertaining to a particular flight, i.e. the weight of the aircraft, crew, pantry, fuel, passengers, baggage, cargo and mail. It also contains necessary details of the distribution of this load in the aircraft.
Lower Deck	Deadload compartments below the main deck cabin.
Mail	Goods carried under the terms of an international postal convention.
Mail Diplomatic	Governments' property carried under special agreements.
Mail Service	Correspondence inter- or intra-airline which is carried on an aircraft under special permission from postal authorities.
Mandatory	A format element marked “M” contains information which forms a fundamental part of the procedures and must always be included.
Manifest—Cargo	A traffic document listing the details of the cargo to be carried on a flight.
Manifest—Passenger	A traffic document listing the names of passengers to be carried on a flight.
Max Landing Weight	Structural limitation for landing gears.
Max Takeoff Weight	Structural limitation for landing gears and wing joints. Operational limitation due to aircraft climb requirements.
Max Zero Fuel Weight	Structural limitation for strength of wing joints.
Message	Where quoted, it is assumed that the fastest possible means of sending a message be used. This refers to SITA, telex or data link.
Movement	The arrival or departure of an aircraft.
Nets	A network of webbing affixed to an aircraft within its holds or to an aircraft ULD for the purpose of restraining a load within the hold or in the ULD.
Net Section	See LCM, Chapter 0.2.4—Terms and Definitions; Section.
Net Weight	The difference between total weight and the tare weight.
On-line	Within one airline or one system or connected to a computer system.
Optional	A format element marked “O” may be omitted if not required by the carrier's or governmental regulations. Omission of this element is independent of all other elements and does not have any effect on other elements.
Pallet—Aircraft	A platform with a flat under-surface, to standard aircraft requirements on which goods are assembled and secured by nets/straps/igloos, and subsequently locked into the aircraft, to achieve rapid loading/unloading on compatible aircraft conveying and restraint systems. As such, it becomes a component of the aircraft loading and restraint system.
Pallet—Extension Wings	A part of equipment which can be installed on the short sides of a pallet in order to increase the loading capacity of such pallet up to the standard LD3, LD5, LD6, etc. contours.
Pantry	See LCM, Chapter 0.2.4—Terms and Definitions; Weight—Pantry.

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Passenger Area	All the ground space and facilities provided for passenger processing. It includes aprons, passenger buildings, vehicle parks and roads.
Passenger Close-Out Time	The time after which further passengers will not be accepted for carriage on that flight.
Payload	The weight of passengers, baggage, cargo and mail and includes both revenue and non-revenue items
Pilot-in-Command	The Commander of the aircraft
Real Time	A computer system which processes the input and gives a response immediately or within seconds
Registration—Aircraft	A unique alpha/numerical designator for an aircraft
Restraint	See LCM, Chapter 0.2.4—Terms and Definitions; Tie-down.
Restrictions—Seating	The limitations applied to the occupying of certain seats to achieve a satisfactory balance. Such restricted seats are not to be occupied during takeoff and landing.
Right	Understood as right-hand side in the direction of flight
Seating	The procedure whereby passengers obtain their seats; it may be free, allocated or selected.
Seating Condition	The situation achieved after passengers are seated
Section	A subdivision of a non-containerised/palletised compartment, i.e., net section.
Section—Cabin	A division of the cabin into zones for the purpose of balance.
Sector	Equivalent to “Leg” means the space between two consecutive scheduled stops on any given flight.
Security	A combination of measures and human and material resources intended to safeguard civil aviation against acts of unlawful interference.
Security Control	A means by which the introduction of weapons, explosives or articles likely to be utilized to commit and act of unlawful interference can be prevented.
Security Equipment	Devices of a specialized nature for use, individually or as part of a system, in safeguarding against acts of unlawful interference with civil aviation and its facilities
Security Screening	The application of x-ray, explosive detectors or physical search which are intended to detect weapons, explosives or other dangerous devices which may be used to commit an act of unlawful interference.
Shipment	See LCM, Chapter 0.2.4—Terms and Definitions; Consignment.
Sort Container	A container to be sort on arrival (describes a rummage container), i.e. contents of different categories and on-line destinations.
Special Load	A load which, owing to its nature or value, requires special attention and treatment during the process of acceptance, storage, transportation, loading and unloading.
Spreader	Devices, usually boards, on which items of dead load are placed to distribute the weight of the load over a greater area to ensure that maximum floor loading limitations are not exceeded.
Station	Equivalent to the term “Airport”.

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Structural Igloo	See LCM, Chapter 0.2.4—Terms and Definitions; Igloo–Structural.
System	An automated method, including equipment and programs for performing functions like reservations, weight and balance, etc.
Takeoff Fuel	See LCM, Chapter 0.2.4—Terms and Definitions; Fuel—Takeoff.
Takeoff Weight	See LCM, Chapter 0.2.4—Terms and Definitions; Weight—Takeoff.
Tare Weight	The weight of an empty unit load device. It includes all liners and/or fittings, etc., when these are required by the specification or as registered with IATA.
Taxi Fuel	See LCM, Chapter 0.2.4—Terms and Definitions; Fuel—Taxi.
Tie-down	Equivalent to “Restrain/Secure/Lash”, means the term used to describe the securing of the bulk load or part thereof to fixed restraint points within an aircraft or in a ULD, to conform to restraint and safety requirements.
Tie-down—Equipment	May comprise any or all of the following items which have been authorized for use: Tie-down/lashing rings, straps, webbing, nets, cable, chains and ropes.
Tie-down—Points	Attachment points for the tie-down equipment to secure load on aircraft and/or ULD's
Top Up	Additional load that may be added because capacity is still available.
Traffic	The activity of the transportation of passengers, baggage, cargo and mail
Traffic Load	See LCM, Chapter 0.2.4—Terms and Definitions; Payload and see LCM, Chapter 0.2.4—Terms and Definitions; Allowed Traffic Load.
Transfer	Traffic which arrives on a flight and continues on another flight of the same airline or another airline within a defined time limit
Transit	Traffic which arrives on a flight and continues on the same flight
Transit Flight or Through Flight	A flight transiting one or more airports en route
Transit Station/Airport	A scheduled en route stopping place on a flight
Transit Time	The time an aircraft remains in transit
Transhipment	A direct aircraft to aircraft transfer of ULD and/or its load
Underload	The difference between the allowed traffic load and the payload (total traffic load).
Unit Load Device (ULD)	A unit in which deadload is bulk loaded and subsequently loaded as a unit into the aircraft.
Unloading	Removing load from an aircraft.
Version	The designator used to indicate the aircraft configuration together with the details of the equipment carried.
Weapons Or Dangerous Articles	The following guidelines are furnished in making a reasonable determination of what personal property of a passenger should considered as a weapon or a dangerous article: **Firearm** Any weapon from which a shot may be fired by the force of an explosion, including

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	starter pistols, compressed air or BB guns, and flare pistols.
Knives	Sabres, swords, hunting knives, and other cutting instruments which are considered dangerous.
Bludgeons	Blackjacks, billy clubs, or similar instruments.
Explosives/ Ammunition	Any type of explosives, ammunition, incendiaries, or fireworks, whether commercially manufactured, homemade, or any combination of these components.
Explosive/ Incendiary Devices	Any combination of explosives, incendiaries or other components which can result in an explosion or fire.
Gases and Chemical Agents	Tear gas, mace and similar chemicals and gases, whether in a pistol, canister or other container.
Other Dangerous Articles	Such items as ice picks straight razors, elongated scissors, even though not commonly thought of as deadly or dangerous weapons, but which could be used as a weapon, including toy or “dummy” weapons or grenades.

Weight	The term “weight” is used herein in lieu of the correct technical term “mass”, in order to conform to standard industry terminology.
Weight—Basic	The “Basic Empty Weight” or “Fleet Empty Weight” which includes all fixed equipment, system fluids, unusable fuel and configuration equipment including galley structure.
Weight—Catering	Equipment and supplies for inflight distribution to passengers and crew
Weight—Dry Operating (DOW)	The basic weight plus operational items, e.g. crew, flight equipment and pantry and is equivalent to “Operational Empty Weight”
Weight—Landing	Takeoff weight minus trip fuel
Weight—Pantry	Removable catering equipment.
Weight—Standard (Weights)	The statistically arrived at weights approved by government authorities for weight and balance purposes for items of load regularly carried
Weight—Takeoff	Zero fuel weight plus takeoff fuel
Weight—Zero Fuel	Dry operating weight plus total traffic load

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0.3 Revision Information

0.3.1 General

The Company issues LCM revisions to provide new or revised procedures and information. Revisions include Filing Instructions, Revision Status, Revision Highlights, and a List of Effective Sections.

Use the information in the Filing Instructions and the List of Effective Sections to verify the manual content.

oOo indicates the end of sections/subsections.

0.3.2 Revision Record

No.	Revision date	Date filed & Signature
1	20 APR 15	Incorporated
3	23 JAN 17	Incorporated
5	12 SEP 17	
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2	18 AUG 16	Incorporated
4	03 MAY 17	Incorporated
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0.3.3 Revision Highlights

0.3.3.1 Revision Status

TG Revision:	No. 5, dated 12 SEP 17

0.3.3.2 Revision Highlights

0 GENERAL

0.1 Introduction

0.1 Page 2—Updated info on Revisions.

0.1 Page 3—Updated info on Distribution.

0.1 Page 3—Updated the title of D1 authorized person.

0.2 Abbreviations, Unit Conversions, Traffic Services Codes and Terms

0.2 Page 5—Updated the manual title GOM to GCSM.

0.2 Page 9—Updated the manual title GOM to GCSM.

0.2 Page 13—Added abbreviation SPM.

0.2 Page 14—Deleted abbreviation TSP.

0.2 Page 15—Deleted A340.

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1 LOAD CONTROL POLICIES

1.5 Load Control Forms

1.5 Page 1—Updated a cross-reference.

1.5 Page 1—Added Balance Table 787-9 in the List of Supplies.

1.5 Page 2—Added Loading Instruction/Report 787-9 in the List of Supplies.

1.7 Returned Flight Documents

1.7 Page 1—Editorial correction.

2 LOAD CONTROL RESPONSIBILITIES

2.2 Airport Services Manager (ASM)

2.2 Page 1—Updated Airport Services Manager (ASM).

3 FOLLOW-UP ON LOAD CONTROL STANDARDS

3.4 Weight Check

3.4 Page 1—Updated Weight Check.

4 QUALIFICATION REQUIREMENTS

4.1 Basic Principles

4.1 Page 1—Updated Handling Agent’s Staff.

4.2 Training Requirements

4.2 Page 1—Added SMS in training requirements.

4.3 Validation of Qualifications

4.3 Page 1—Updated a cross-reference.

5 LOAD CONTROL PROCEDURES

5.2 Airport Services with Regular THAI Traffic

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5.2 Page 10—Updated responsible function and editorial correction.

6 AIRCRAFT HANDLING

6.2 Load Control Process Flow

6.2 Page 1—Updated Load Control Process Flow.

14 LOADING

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14.1 Page 1—Updated info on Loading.

14.1 Page 1—Updated Loading of ULDs.

14.1 Page 9—Updated Unloading.

14.1 Page 9—Added a new topic: Safety Precaution for Offload.

15 SPECIAL LOADS, HANDLING AND LOADING

15.4 Live Animals

15.4 Page 4—Added Note for Handling.

15.4 Page 5—Updated Loading.

15.6 Quick Reference

15.6 Page 1—Updated Quick Reference Table.

15.6 Page 4—Updated the title and added Dangerous Goods Quick Reference Table (from TDGM 12.16).

17 DOCUMENTATION

17.3 Loading Instruction/Report

17.3 Page 1—editorial correction.

17.3 Page 1—Updated Responsibilities.

17.4 Loadsheet—Manual

17.4 Page 1—Updated Load Control Supervisor—LCS.

17.5 Loadsheet—EDP

17.5 Page 2—Updated Signature.

17.6 Balance Table

17.6 Page 1—Added A330 table in Direction for Use.

17.6 Page 1—Added 787-9.

17.6 Page 2—Deleted A330 from the table title.

17.6 Page 2—Deleted A340.

17.10 Load Control Message

17.10 Page 5—Updated a cross reference.

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Part 1: General Load Control Manual

Thai Airways International Public Company Limited

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1 LOAD CONTROL POLICIES

1.1 Principles

The safety of a flight requires accurate planning, recording and reporting of all actual load boarded on an aircraft.

Documented communication is required to ensure correct weight & balance calculations are conducted prior to an aircraft's departure.

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1.2 Objectives

Load Control is a function which ensures the production of all applicable documentation to comply with any requirements of THAI and Authority which guarantees the safety of the flight. The main objectives of the THAI Load Control system are to:

- prevent any excess of aircraft operational or structural limitations
- ensure the center of gravity of aircraft is within an acceptable limitation
- ascertain the load on board is distributed and secured in accordance with relevant instructions
- ensure the number of persons on board does not exceed the maximum allowed for the aircraft concerned
- ensure the load and its distribution on board are correctly recorded on all documents involved.

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1.3 Priority

For flight safety reasons, correct adherence to the rules and regulations concerning load control has priority over other Company policies governing the handling of aircraft on the ground, including the policy with regard to punctual operations.

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1.4 Documents

All documents issued in connection with load control shall be prepared and properly signed in accordance with THAI regulations.

Entries on documents shall be accurate and legible on all copies.

If corrections make a document unclear, a new form shall be prepared.

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1.5 Load Control Forms

1.5.1 General

The Load Control forms to be used in any load control process must be in accordance with the list provided in 1.5.4.

Any deviation forms must be consulted with and approved by OU-W and KG-M.

1.5.2 Ordering

See General LCM, Chapter 1.5.4—List of Supplies when placing order. The documents, forms, etc. shall be ordered from BKKWR-S by means of a Stationery Requisition (THAI 0412).

Refer to GCSM 1.3.1—Ordering and Record for examples of form completion.

Documents and forms shall, as a rule, be ordered in quantities covering three months' consumption.

Note: Orders must not be placed by telex.

1.5.3 Stock Control

Each office keeping a stock of documents and forms shall establish a control system to secure that additional supplies for another three months' consumption are ordered in due time.

Note: A simple method for controlling stock is to place colored warning sheets between the documents/forms at the levels at which new supplies shall be ordered.

1.5.4 List of Supplies

Description	Form no.	SAP code	Unit	By
Aircraft Unit Load Device Control Receipt	2652	N/A	Pad	PO-L
Balance Table 747-400, Version 7443/7444	2685-2	10003062	Pad	WR-S
Balance Table 747-400, Version 7443/7444 No HST	N/A	10003212	Pad	WR-S
Balance Table 747-400, Version 7445	N/A	N/A	PDF File	D1 Web
Balance Table 747-400, Version 7445 No HST	N/A	N/A	PDF File	D1 Web
Balance Table 737-400, Version 7341	2924	10000010	Pad	WR-S
Balance Table 777-200, Version 7724	N/A	N/A	PDF File	D1 Web
Balance Table 777-200ER, Version 77E1	N/A	10003023	Pad	WR-S
Balance Table 777-300, Version 7732	N/A	10003022	Pad	WR-S
Balance Table 777-300ER, Version 77B1	N/A	N/A	PDF File	D1 Web
Balance Table 787-8, Version 7871	N/A	N/A	PDF File	D1 Web
Balance Table 787-9, Version 7891	N/A	N/A	PDF File	D1 Web
Balance Table A320-200, Version 3201/3202	N/A	N/A	PDF File	D1 Web
Balance Table A320-200, Version 3203/3204	M/A	N/A	PDF File	D1 Web
Balance Table A350-900, Version 3591	M/A	N/A	PDF File	D1 Web
Balance Table A330-300, Version 3302	2722-2	10000018	Pad	WR-S
Balance Table A330-300, Verison 3302 for HS-TEM	2722-3	10000019	Pad	WR-S
Balance Table A330-300, Verison 3303/3304	N/A	10003211	Pad	WR-S
Balance Table A340-600, Verison 3461	2721	10002539	Pad	WR-S
Note: See Fleet-Specific LCM, Chapter 8.2.7—Balance Table to be Used for the latest fleet-specific Weight & Balance information.				
Checklist for Acceptance/Refusal of Dangerous Goods	1693	N/A	Pad	WT-P
Container Identification Tag for Baggage, Royal First	N/A	10003604	Pcs	WR-S
Container Identification Tag for Baggage, Royal Silk	N/A	10003605	Pcs	WR-S
Container Identification Tag for Baggage, Economy	N/A	10003606	Pcs	WR-S

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Description	Form no.	SAP code	Unit	By
Container Identification Tag for Baggage, Transfer Bag (BT)	N/A	10003607	Pcs	WR-S
Container Identification Tag for Baggage, HOT	N/A	10003608	Pcs	WR-S
Container/Pallet Identification Tag for Cargo	1639	10000398	Pcs	WR-S
Container/Pallet Identification Tag for Mail	1639-A	10000399	Pcs	WR-S
Container/Pallet Identification Tag for Dangerous Goods	1643	10000416	Pcs	WR-S
Co-mail Checklist	2642	10000152	Pad	WR-S
Co-mail Tag	2547	10000397	Pcs	WR-S
Delay Codes	N/A	N/A	PDF File	D1 Web
Label for Equipment Damaged	1677	N/A	Pcs	PO-L
LCS Checklist	2610	10000128	Pad	WR-S
LEAP-Local Emergency & Accident Procedures	N/A	N/A	Pcs	JR
Loading Instructio/Report 747-400, Multiple Versions	2713M	10000298	Pad	WR-S
Loading Instructio/Report A350-900, Multiple Versions	N/A	N/A	PDF File	D1 Web
Loading Instruction/Report A330-300, Multiple Versions	2715M	10000295	Pad	WR-S
Loading Instruction/Report A330-300-3303, Multiple Versions	N/A	10003214	Pad	WR-S
Loading Instruction/Report A340-600, Multiple Versions	2719M	10000291	Pad	WR-S
Loading Instruction/Report A320, Multiple Versions	N/A	N/A	PDF File	D1 Web
Loading Instruction/Report 777-200, Multiple Versions	2716M	10000299	Pad	WR-S
Loading Instruction/Report 777-200ER, Multiple Versions	2720M	10002794	Pad	WR-S
Loading Instruction/Report 777-300, Multiple Versions	2717M	10000300	Pad	WR-S
Loading Instruction/Report 777-300ER, Multiple Versions	N/A	N/A	PDF File	D1 Web
Loading Instruction/Report 787-8, Multiple Versions	N/A	N/A	PDF File	D1 Web
Loading Instruction/Report 787-9, Multiple Versions	N/A	N/A	PDF File	D1 Web
Loading Instruction/Report 737-400, Multiple Versions	2925	10000311	Pad	WR-S
Loadsheet & Loadmessage-Passenger A/C, 3 destinations	2666-2	10000289	Pad	WR-S
Special Load-Notification to Captain (NOTOC)	2649-1	10000290	Pad	WR-S

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1.6 Filing Requirements and Periods

Documents and forms concerning Load Control and Load Planning must be properly filed in order to secure quick reference.

One copy of individual documents and forms listed here must be kept on file for at least six months:

- Loadsheet and Balance Table
- Loading Instruction/Report
- Fueling Order
- General Declaration
- Special Load—Notification to Captain (NOTOC)
- Copies of all relevant telexes (MVT, LDM, UCM, CPM, etc.)

Note: Local laws must be taken into account, but filing periods shall never be shorter than those given above.

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1.7 Returned Flight Documents

The necessary document signed by flight crew, in term returned flight documents and forms, shall be retained and properly filed in functions concerned area responsibilities in order to secure quick reference.

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2 LOAD CONTROL RESPONSIBILITIES 1

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2.2 Airport Services Manager (ASM) 1

2.3 Load Control Supervisor (LCS) 1

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2 LOAD CONTROL RESPONSIBILITIES

2.1 Ground Operations Administration

Load control forms a part of an airline's operational responsibility. Within THAI, Procedures & Manual Department (BKKKG-M) has been delegated to be functionally responsible for the Company's load control.

In consequence of this, BKKKG-M establishes procedures and instructions for load control work as well as qualification requirements for Load Control Supervisors. Furthermore, BKKKG-M is responsible for a regular follow-up on the standard of load control at all stations where flights are operated under THAI's responsibility and for taking corrective actions as required.

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2.2 Airport Services Manager (ASM)

Airport Services Managers (ASMs) (BKKKL for BKK) are functionally responsible to BKKKG-M for the establishment of Local Load Control Procedure (LLCP) which must be approved by BKKKG-M.

ASMs are, furthermore, responsible for keeping their load control staff informed of THAI rules and regulations, for ensuring that procedures are followed at all times and for bringing changes and revisions with regard to load control to the attention of staff concerned.

ASMs must ensure that the load control, ramp control and flight handling control at their stations is performed by staff currently qualified in accordance with international and valid THAI standardized qualification requirements, in order to bring the highest safety and maximum efficiency in flight operation. And for those stations where THAI's flight operation & handling are contracted, supervised and supported by Ground Handling Agent (GHA) via mutually singed Standard Ground Handling Agreement (SGHA), ASMs have the vigilance of duty to ensure the performances of such GHA is commenced in the manner of terms and conditions outlined and agreed.

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2.3 Load Control Supervisor (LCS)

Load Control Supervisors (LCSs) are responsible for performing their work with strict adherence to THAI procedures stated this LCM, and at all times bear in mind the importance of flight safety.

Note: The duty checklist must be applied at every departure, but the use must not limit the general supervision and control required to ensure a correct load control. See General LCM, Chapter 5—LOAD CONTROL PROCEDURES.

At every departure, the LCS is responsible for issuing a “Load Control Release” of the flight concerned, thereby certifying that:

- the load has been correctly distributed and secured;
- none of the aircraft limitations has been exceeded;
- all relevant procedures have been followed, and;
- the load control documents correctly reflect the amount of load and its distribution as well as the correct number of persons on board.

If deemed necessary, the LCS shall request cabin attendants to perform a headcount.

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2.4 Pilot-in-Command (P-i-C)

The acceptance of a “Load Control Release” does not relieve the P-i-C from the responsibility for checking the information on the loadsheet and, whenever possible for ensuring that correct procedures for load control have been applied. Refer to OM-A 1.4 para 1.4.1.2.

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2.5 Special Flights

2.5.1 Training and Test Flights—Bangkok

Station services, Thailand, is responsible for load control and ground handling according to the established procedure for regular flights.

BKKOP will inform all parties concerned regarding the scheduling of training and test flights.

2.5.2 THAI Charter Flights

THAI charter flights planned to operate to stations without regular THAI traffic shall be supervised by an approved LCS with qualifications. See General LCM, Chapter 4—QUALIFICATION REQUIREMENTS.

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3 FOLLOW-UP ON LOAD CONTROL STANDARDS 1

3.1 Check of Load Control Documents 1

3.2 Load Control Inspections 1

3.3 Load Control Errors 1

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3.3.3 Category 3 2

3.4 Weight Check 1

3.5 Specimen of Load Control Document Check Form 1

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3 FOLLOW-UP ON LOAD CONTROL STANDARDS

3.1 Check of Load Control Documents

The station manager or ASM shall ensure that at least 1% of all departure flights per year, but a minimum of 20 flights are checked for correctness of loadsheet and supporting documentation. The checks shall be performed quarterly and be kept on file.

The Load Control Document Checking form shall be used when checking the correctness of a loadsheet and supporting loading documentations. And a copy of completed check form shall be filed at station for reference.

Whenever errors in Category 2 or 3 are found an additional copy shall be forwarded to BKKKG-M. See General LCM, Chapter 3.4—Weight Check.

Major stations wishing to deviate from any of the above rules shall apply for BKKKG-M's approval.

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3.2 Load Control Inspections

All scales (weighbridges) used for weight determination of load and clearance measuring systems must be inspected to ensure properly calibrated at intervals determined by the state regulations.

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3.3 Load Control Errors

Load control errors shall be evaluated and managed as described following.

3.3.1 Category 1

Minor errors judged to have no influence on flight safety, for example:

- DOW, DOI, TOF and maximum gross weight not ticked off[a)];
- empty ULD weight not included;
- DLI/LIZFW and seating conditions not corrected for last minute changes;
- weight of cabin bag (stretcher, seeing eye dogs, etc.) not shown;
- incorrect seats occupied (SOC);
- XCR and COU not properly registered[b)];
- special load requirements not properly registered;
- incorrect seating conditions;
- incorrect total number/weight of passengers[b)];
- estimated weight for baggage, cargo and mail missing[b)], and;
- relevant notes/remarks not included in load message.

Action

1. First error, the employee in question shall be verbally guided.
2. Second error within three months, the error type shall be considered to be a Category 3.

   The following table has been established to evaluate some errors in Category 1.

Aircraft type	Category 1		
	Incorrect passenger number	Incorrect passenger weight (kg)	Incorrect seating
747/777/A380	1–5	1–500	1–5
787/A330/A350	1–4	1–400	1–4
737	1	1–100	1

3.3.2 Category 2

Major errors which might have influence on flight safety, for example:

- incorrect seating conditions[b)];
- incorrect total number/weight of passengers[b)];
- transit load not shown in accordance with LDM[b)];
- incorrect DLI/LIZFW;
- maximum tolerances exceeded on Loadsheet/Loading Report;
- loading report not signed;
- actual loading not corresponding to LIR;
- LMC (if any) not included in LDM, and;
- loadsheet not countersigned (neither in writing nor by electronic signature).

Action

1. First error, the employee in question shall be given a warning in writing with the acknowledgement signature of the employee in question. The employee shall consequently be verbally and/or practically guided.
2. Second error within three months, the error type shall be considered to be a Category 3.

   The following table has been established to evaluate some errors in Category 2.

a) Not applicable to ACARS loadsheet.
b) Applicable to manual loadsheet.

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Aircraft type	Category 2						
	Incorrect passenger number	**Incorrect passenger weight (kg)**	**Incorrect seating**	**Transit load not shown (kg)**	**DLI/LIZFW (+/–)**	**Deadload TOL (kg)**	**LIR (+/–)**
747/777/A380	6–10	501–1000	6–9	1–1000	1.0–3.0/ 1.0–5.5	1001–2000	3.1–6.0
787/A330/ A350	5–8	401–800	5–7	1–800	1.0–3.0/ 1.0–5.0	801–1600	3.1–6.0
737	2–3	101–250	2	1–250	1.0–2.0/ 1.0–4.0	251–500	2.1–4.0
Note: *All errors exceeding the limits shown above shall be regarded as Category 3 errors.*							

3.3.3 Category 3

Major errors which can definitely be proven to be an intentional bypassing of load control/safety regulations, for example:

- incorrect total number/weight of passengers[b)];
- transit load not shown in accordance with LDM[b)];
- incorrect DLI/LIZFW;
- maximum tolerances exceeded on Loadsheet/Loading Report;
- incorrect aircraft maximum gross weights[b)];
- maximum gross weight exceeded[b)];
- compartment/loading position capacity exceeded[b)];
- underload exceeded after LMC amendments;
- combined load limitations exceeded[b)];
- DGR requirements not properly indicated;
- number of persons on board exceeded the number of seats provided with seat belts;
- actual loading not corresponding to LIR (with effect to DLI) and/or Dangerous Goods Regulations;
- loading instruction not properly indicated;
- pre-calculated DLI/LIZFW not shown in LIR (for manual load planning), and;
- actual loading incompatible with Dangerous Goods Regulations[b)].

Action

1. First error, the employee in question shall attend on-the-job training program for five departure flights.
2. Second error, the employee in question shall attend the re-certification process, and also an on-the-job training program for ten departure flights. See General LCM, Chapter 4—QUALIFICATION REQUIREMENTS.

Notes: 1. *Some errors may be categorized into more than one category depending on degree of each error. Details are described as in the load control error tables shown above.*

2. *All errors within Categories 2 and 3 shall be reported immediately to BKKKG-M.*

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3.4 Weight Check

In case of suspected loading errors or when the longitudinal stability of the aircraft has been impaired, the P-i-C may order a weight check of the load.

When a weight check has been ordered, ground staff shall, in cooperation with flight crew, ensure that the following actions are taken:

- check and note whether the compartment load is properly separated and note the position of the separation nets;
- check and note the actual position of the load in each compartment;
- offload and weigh each type of load (B/C/M/E) from each compartment separately, and;
- hand over all notations and checked weights to the P-i-C or delegated crew member.

The P-i-C or delegated crew member is responsible for compiling and reporting all details in connection with weight check according to standard procedures. Refer to OM-A 8.1.8.3.3—After Takeoff—Suspected Load Error.

Bangkok station shall refer to Load Control Process Flow (see General LCM, Chapter 6.2—Load Control Process Flow) as to cross check with the concerned functions.

Other stations shall comply to the local procedure in order to facilitate the safe handling of weight check.

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3.5 Specimen of Load Control Document Check Form

THAI

Load Control Document Check

Station	Period	Number of flights checked
Checked performed by	Date	Station Management Signature (ASM or Authorized person)

Number of errors found per item is listed below :

	Category		
Loadsheet	1	2	3
BW/BI and TOF not ticked off			
DOW/DOI and max gross weight not ticked off			
Empty ULD' s weight not included			
Loadsheet not countersigned (neither in written nor electronic signature)			
LIZFW and seating conditions not corrected for last minute changes			
DLI not corrected for last minute changes			
Weight of cabin bag (stretcher, seeing eyes dog, etc) not shown			
Incorrect seats occupied (SOC)			
XCR and COU not properly registered			
Special load requirements not properly registered			
Incorrect seating conditions			
Incorrect total number/weight of passengers			
Transit load not shown in accordance with LDM			
Incorrect DLI/LZFW			
Max tolerances exceeded on Loadsheet / Loading Report			
Fuel not corresponding to Flight Plan Fuel			
Incorrect BW/BI			
Incorrect aircraft max gross weights			
Aircraft max gross weight exceeded			
Compartment / loading position capacity exceeded			
Underload exceeded after LMC amendments			
Combined load limitations exceeded			
DGR requirements not properly indicated			
Number of persons on board exceeded the number of seats provided with seat belts			
Loading Instruction / Report			
Estimated weight for baggage, cargo and mail missing			
Loading report not signed			
Actual loading not corresponding to LIR (with effect to DLI and/or Dangerius Goods Regulations)			
Load Instruction not properly indicated			
Pre-calculated DLI / LIZFW not shown LIR (for manual load planning)			
Actual loading incompatible with Dangerous Goods Regulations			
Load message			
Relevant notes / remarks not included			
LMC not included			
TOTAL NUMBER OF ERRORS PER CATEGORY			

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4 QUALIFICATION REQUIREMENTS

4.1 Basic Principles

4.1.1 TG Staff

To be accepted for training as a Load Control Supervisor (LCS), candidates must have at least six-month's experience in general traffic work.

See General LCM, Chapter 4.2—Training Requirements for training details. In addition to ensuring that the specific requirements have been met, the Station Manager (BKKKL for BKK) must, in each individual case, ensure that LCS candidates are fully qualified before being accepted as an LCS. In this regard, special emphasis must be placed on checking that candidates have benefited from the practical training given and, on the whole, are deemed acceptable for this type of work.

The practical training noted above must commence within three months from the date that the LCS candidate has proved to possess the theoretical knowledge required and be completed no later than six months after the course. LCS candidates shall carry out all the duties and responsibilities of an LCS during their practical training, with the exception that “Load Control Releases” shall be given by a qualified LCS.

Notes: 1. *An LCS is qualified for the calendar year during which he/she is given practical training.*

2. *Qualified LCS’s who supervise the practical training of LCS candidates may consider the flights concerned as qualifying with regard to the number of flights required for the past calendar year.*

As a general rule the practical training and practical work noted above shall be performed on THAI aircraft. However, training/work may also be performed on other airlines' aircraft, provided that their procedures conform to THAI standards. In such cases, BKKKG-M shall be consulted.

4.1.2 Handling Agent’s Staff

THAI, at station where loading control is agreed and purchased from local GHA via SGHA, it is thus the duty & responsibility of such GHA to delegate a current qualified Load Control personnel to supervise and to support loading control activities to THAI's operating flights. It is necessary for the Airport Services Manager (ASM) to ensure Ground Handling Providers (GHA) is strictly adhered to TG course requirements, not less than those mandated by IATA, Local Authorities and also the other specific courses to THAI's requirements. In additions, ASM has the comparative role to consequently monitor and evaluate the performance of those staff and be able to make consideration if further theoretical and practical training is required. The ASM shall consult with BKKH-V for appropriate course arrangements.

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4.2 Training Requirements

4.2.1 Load Master—TG Staff

4.2.1.1 THAI Aircraft

- THAI course in Basic Load Control conducted by BKKKH-V in order to:
  - understand THAI Load Control policies and responsibilities
  - comprehend THAI load Control basic knowledge as per Load Control manual
  - familiarize with THAI Load Control Procedures and coordinate with functions concerned efficiency
  - have preliminary knowledge of Load Control Documents, Load Planning, Loadsheet and Balance table.
- Dangerous Goods Regulations (DGR CAT10) for Load Handling.
- Aviation Security Awareness.
- Human Factor.
- Safety Management System (SMS).

4.2.2 Load Control Supervisor (LCS) or REDCAP—TG Staff

4.2.2.1 THAI Aircraft

- THAI course in Basic Load Control conducted by BKKKH-V.
- THAI course in Advance Load Control conducted by BKKKH-V in order to:
  - know and understand THAI aircraft characteristic (all types)
  - be able to issue Load Planning and Loadsheet for all current THAI aircraft types
  - commence practical training on THAI flight and be able to perform duty as Load Control Supervisor (LCS)
  - be able to perform "Load Control Release" (countersigned) for all current THAI aircraft types after evaluation of practical training.
- Dangerous Goods Regulations (DGR CAT10) for Load Handling.
- Aviation Security for Supervisors.
- Human Factor.
- SMS
- Practical demonstration in handling of loading equipment.
- Practical Training under supervision of a qualified LCS continuously at least 15 THAI departure flights.

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4.3 Validation of Qualifications

To remain qualified for any given calendar year, all LCS's must meet the following theoretical and practical requirements:

- a load control qualification test must be performed within 24 months. Tests shall be requested to BKKKH-V and the ASM is responsible for the supervision of the test. After completion of a test, it shall be returned to BKKKH-V
- practical work as an LCS continuously with at least 10 departures within a year and the flight files of this practical work must be kept at the station as references and records.
- recurrent training for DGR must be take place within 24 months according to the IATA Dangerous Goods training requirement (DGR 1.5)
- reference to SPM 2.6 Para 5—Recurrent Training for the recurrent training requirements for Aviation Security
- the Altea recertification and LLCP revalidation must be made every 24 months (effective for LLCP submitted after 18Aug16)
- the manual loadsheet exercise must be performed every 6 months.

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4.4 Renewal of Expired Qualifications

- Absence from performing duty as an LCS for between six and twelve months:
  - staff concerned must be brought up-to-date on new or revised instructions that have been issued during the period of absence;
  - as deemed necessary by the ASM, practical training must be given under the supervision of a qualified LCS.
- Absence from performing duty an LCS for more than 12 months:
  - See General LCM, Chapter 4.1—Basic Principles, and;
  - See General LCM, Chapter 4.3—Validation of Qualifications for details of the required qualification test. This test must also be passed.

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5.3 Stations Without Regular THAI Traffic 1

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5 LOAD CONTROL PROCEDURES

5.1 Applicability

The instructions in the Load Control Procedures apply to all flights operated by THAI flight crew, except:

- flights diverting to a station where qualified load control staff is not available.

In such a case, the P-i-C will act as the LCS and issue the necessary instructions to the handling staff.

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5.2 Airport Services with Regular THAI Traffic

5.2.1 Load Control Supervision by THAI

General

A Local Load Control Procedure (LLCP) shall be issued and maintained by each station.

The procedure shall cover all phases of the load control and must be approved by BKKKG-M before it is applied. The procedure shall comprise of:

- The LLCP cover page. See General LCM, Chapter 5.2.1.1—LLCP Cover Page.
- The load control skeleton form that reflects the Company Policy for load control. See General LCM, Chapter 5.2.1.2—Example of Load Control Skeleton Form.
- Local Responsibility form to be completed as appropriate. See General LCM, Chapter 5.2.1.3—Example of Local Responsibility Form
- LCS Standard Checklist form to be performed strictly by the LCS as a mandatory requirement. See General LCM, Chapter 5.2.1.4—Example of LCS Standard Checklist Form.
- Form for alterations to the Standard LLCP shall be shown in Appendix A . See General LCM, Chapter 5.2.1.5—Example of Appendix A: Alternatives to the Standard Checklist Form.
- THAI LCS's and qualifications form shall be shown in Appendix B. See General LCM, Chapter 5.2.1.6—Example of Appendix B: THAI Staff LCS Qualifications Form.
- THAI LCS name list and qualification records form shall be shown in Appendix C. See General LCM, Chapter 5.2.1.7—Example of Appendix C: THAI Staff LCS Name List and Qualification Record Form.
- THAI qualified load control: handling agent staff list form. See General LCM, Chapter 5.2.2.1—LLCP Cover Page.

Preparation

Three copies of the complete LLCP document set (totalling eight pages) shall be Issued. By signing these, the ASM (BKKKL for BKK) certifies that all of the pages in the LLCP template have been duly completed and he also confirms that that the LCSs listed in that document are in possession of the required qualifications.

Two copies shall be forwarded to BKKKG-M and one copy to BKKKS. When approved, one copy duly signed by BKKKG-M will be returned to the station.

Correction

Corrections to LLCP can be communicated to BKKKG-M in the following ways:

- new editions of some or all of the LLCP pages with effectivity dates and revision numbers shown on each page;
- a separate letter, or;
- the LLCP shall be reviewed every 24 months and any change of details corrected immediately.

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5.2.1.1 LLCP Cover Page

THAI

Local Load Control Procedures (LLCP)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

This Local Load Control Procedures for station XXX that included the following documents has been certified and approved to apply in accordance with the company load control regulations and requirements:

1. Load Control Skeleton
2. Local Responsibility
3. Standard checklist for LCS
4. Appendix A: Alterations to standard checklist
5. Appendix B: Staff and Qualifications – Load Control Supervisor(s)
6. Appendix C: Name List and LCS Qualification records
7. THAI Qualified load control : Handling agent staff list

( )
Manager, procedures and Manual Department
(BKKKG-M)

Date:

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5.2.1.2 Example of Load Control Skeleton Form

THAI ***Local Load Control Procedures (LLCP)***

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Load Control Skeleton

1. INSTRUCTIONS

   All instructions to be followed in load control are found in the LCM

2. LOAD CONTROL FUNCTIONS

THAI	Handling Agent	Function
		Load Control Supervisor (LCS)
		Loadsheet Agent (LSA)
		Load Master (LM)

Name of Handling Agent(s): **XXX Company**

3. RESPONSIBILITIES/QUALIFICATION RECORDS (see LCM 5. 2.1.3 to 5.2.1.7 and 5.2.2.1. below)

4. COORDINATION AND ACCEPTANCE
   This procedure has been coordinated with and accepted in applicable parts by our Handling Agent(s).

( )
Airport Services Manager

Date:

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5.2.1.3 Example of Local Responsibility Form

THAI **Local Load Control Procedures (LLCP)**

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Local Responsibility

Item	Description	Local Responsibility		
		LCS	LSA	LM
1.	Complete and distribute the LOADING INSTRUCTION			
2.	Check the CORRECTNESS of "T" on the INCOMING LDM. (Valid for through-going flights only)			
3.	Check the INCOMING LDM against the INCOMING LOADSHEET.(Valid for through-going flights only)			
4.	Through VISUAL CHECK, check whether the ACTUAL THROUGHLOAD in bulk compartment corresponds with the through load figures on the loading instruction. (This check is not required for through load inside ULD and on flights with technical landings only)			
5.	Report SUSPECTED DIFFERENCES in the through load to the Load Control Supervisor for action.			
6.	Check visually all compartments for possible remaining load and/or ballast. (Originating stations only)			
7.	Before loading, check the correspondence between the ACTUAL WEIGHTS OF CARGO and MAIL against the estimated weights on the loading instruction. Also check the PHYSICAL CONDTION of the load (damage, leakage, etc.)			
8.	Deviations from the load in instruction may be decided upon only by the Load Control Supervisor			
9.	Record the TARE WEIGHT OF ULD's and the ACTUAL WEIGHT of baggage, cargo, mail and equipment on the *loading report* and *weight report* .			
10.	Record the *number of baggage pieces* and the *actual weight of cargo, mail and equipment in bulk compartments* on the *loading report*. Convert the *baggage pieces into weight* by using the applicable conversion figure(s) which is (are): xx kg			
11.	Sign the loading report and deliver the signed loading report to the Load Control Supervisor			
12.	Before the compartment doors are closed, check that all SEPARATION and DOOR NETS are correctly installed			

Note 1: The LOCAL RESPONSIBILITY columns shall be marked with " ✓ "as appropriate for:
– LCS (Load Control Supervisor),
– LSA (Loadsheet Agent), or
– LM (Load Master).
At some stations, a combination of the above duty codes may be used.
Note 2 : Possible alterations to the above Standard Local Load Control Procedures shall be registered on Appendix "A"

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5.2.1.4 Example of LCS Standard Checklist Form

THAI **Local Load Control Procedures (LLCP)**

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

LCS-Standard Checklist

Load Control Check must be performed by the Load Control Supervisor as follows:

1. Ascertain that CORRECT VERSION-BOUND DOCUMENTS are used.
2. Check the ACTUAL AIRCRAFT REGISTRATION, VERSION and CREW with corresponding notations on the loadsheet.
3. Check that CORRECT DOW, DOI and MAX GROSS WEIGHTS have been inserted on the loadsheet. TICK OFF BOXES CHECKED.
4. Compare the ACTUAL NUMBER OF PASSENGERS as reported from the gate with the corresponding figures on the loadsheet. If there is any difference, inform the Pilot-in-Command and correct the loadsheet.
5. Compare the TOTAL LOAD PER COMPARTMENT on the signed loading report with the corresponding figures on the loadsheet. If the difference exceeds THE MAXIMUM TOLERANCE (ref LCM 5.9.7 para 1.6), determine the reason, adjust the figures to be within the tolerance and correct the loadsheet.
6. Check that the ACTUAL PASSENGER FIGURES on the loadsheet do not exceed the maximum amount permitted on the applicable aircraft version.
7. Check that the ACTUAL WEIGHTS IN COMPARTMENTS do not exceed the maximum compartment capacities.
8. Compare the ACTUAL DLI and LIZFW on the loadsheet with the pre-calculated indexes on the loading instruction.
9. Check and TICK OFF the TAKEOFF FUEL on the loadsheet against the RAMP FUEL LESS TAXI FUEL on the signed fueling order.
10. Check that the ACTUAL GROSS WEIGHT on the loadsheet do not exceed the maximum gross weight.
11. Check that the BALANCE CALCULATION is correct.
12. The Load Control Supervisor shall ensure that ALL ULD RESTRAINT DEVICES/ FITTINGS are raised on all loaded ULD's and report to the Pilot-in-Command that all these ULD's are properly secured.
13. Check that all the REQUIRED FORMS are inserted in the load control folder (LCF).
14. The loadsheet shall be COUNTERSIGNED by the Load Control Supervisor thereby giving the "LOAD CONTROL RELEASE" for the aircraft.
15. Obtain the SIGNATURE of the Pilot-in-Command on the loadsheet.
16. Deliver the documents to cabin attendants.
17. Check the OUT-GOING LOADMESSAGE after dispatch.

Note
Possible alterations to the above Standard Local Load Control Procedure shall be registered on the Appendix "A"

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5.2.1.5 Example of Appendix A: Alternatives to the Standard Checklist Form

THAI *Local Load Control Procedures (LLCP)*

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

APPENDIX A: Alterations to Standard Checklist

Alterations to the *Standard Local Load Control Procedures*, LCM5.2.1.3 and 5.2.1.4 above

Item No.	Alteration	Local Responsibility

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5.2.1.6 Example of Appendix B: THAI Staff LCS Qualifications Form

THAI

Local Load Control Procedures (LLCP)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Appendix B: Load Control Supervisor(s) qualifications (TG Staff)

	Name	Signature of Employee as Written on Loadsheet	Qualification Valid for THAI Aircraft Types Shown Below:			
			747/777/787/A340/ A350/A330	A380	747 BCF	737/A320
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

I certify that the above-mentioned Load Control Supervisors have successfully passed the theoretical tests and completed the practical training prescribed in LCM 4.1 to 4.1.

(Airport Service Manager)
Date:

The above-mentioned staffs have been approved to act as Load Control Supervisor on THAI aircraft

(BKKKG-M)
Date:

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5.2.1.7 Example of Appendix C: THAI Staff LCS Name List and Qualification Record Form

THAI

Local Load Control Procedures (LLCP)

Station: xxx | Effective: dd/mmm/yyyy | Issue No.: 000

Appendix C : LCS Name list and qualification records (TG Staff)

	Full Name	Pers. Number	Completed Date of									
			Basic Load control	Load Control, Passenger Aircraft	Load Control, Freighter Aircraft	Dangerous Goods Regulations	Aviation Security	Load Control Refresher	DGR Refresher	Aviation Security Refresher
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

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5.2.1.8 Example of List of Qualified Load Control Staff (Handling Agent) Form

THAI

Local Load Control Procedures (LLCP)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

List of Qualified Load Control Staff (Handling Agent)

Name of Handling Agent:

	Name	Signature	Aircraft Type
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

I certify that the above-mentioned staff are qualified for THAI Load Control Handling Standard as per LCM 5.2.2.

( )
Airport Service Manager

Date:

The above-mentioned staffs have been approved to act as Load Control Supervisor on THAI aircraft

( )
BKKKG-M

Date:

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5.2.2 Load Control Supervision by a Handling Agent

Handling Agent Staff may check and countersign the loadsheet on behalf of a THAI LCS provided that the following conditions are met:

- the LLCP issued shall be the same as that used for LCS by THAI. See General LCM, Chapter 5.2.1—Load Control Supervision by THAI.
- the Handling Agent's staff who are eligible for checking and countersigning the THAI loadsheet shall be acquainted with:
  - the THAI Load Control Procedure;
  - have handled THAI aircraft for no less than six months or 20 flights, and/or;
  - have handled aircraft with configurations similar to THAI's aircraft types, configurations, versions and systems;
  - holding the valid load control or weight and balance certificates of the similar aircraft type to THAI.
- the qualified Load Control Handling Agent Staff must be certified by the THAI ASM, and the LLCP shall be submitted to BKKKG-M for concurrence. The original LLCP shall be kept at the station and the other copies shall be kept at BKKKG-M and BKKKS respectively for record.

The list shall be reviewed every 12 months or periodically updated as appropriate and when necessary.

At stations where the loadsheet is managed by a Load Control Center (centralized handling), the loadsheet can be submitted directly to the P-i-C by the Load Master provided that Loadsheet Agent’s name and staff or license number (as applicable) appear on the loadsheet.

Note: The Qualified Load Control Handling Agent Staff List is specified using the appropriate form. See General LCM, Chapter 5.2.2.1—LLCP Cover Page.

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5.2.2.1 LLCP Cover Page

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

This Local Load Control Procedures for station XXX that included the following documents has been certified and approved to apply in accordance with the company load control regulations and requirements:

1. Load Control Skeleton
2. Local Responsibility
3. Standard checklist for LCS
4. Appendix A: Alterations to standard checklist
5. Appendix B: Staff and Qualifications – Load Control Supervisor(s)
6. Appendix C: Name List and LCS Qualification records
7. THAI Qualified load control : Handling agent staff list

( )
Manager, procedures and Manual Department
(BKKKG-M)

Date:

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5.2.2.2 Example of Load Control Skeleton Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Load Control Skeleton

1. INSTRUCTIONS

   All instructions to be followed in load control are found in the LCM

2. LOAD CONTROL FUNCTIONS

THAI	Handling Agent	Function
		Load Control Supervisor (LCS)
		Loadsheet Agent (LSA)
		Load Master (LM)

Name of Handling Agent(s): **XXX Company**

3. RESPONSIBILITIES/QUALIFICATION RECORDS (see LCM 5. 2.1.3 to 5.2.1.7 and 5.2.2.1. below)

4. COORDINATION AND ACCEPTANCE
   This procedure has been coordinated with and accepted in applicable parts by our Handling Agent(s).

( )
Ground Handling Agent Name
.....
Date:

( )
Airport Services Manager, XXX
THAI Airways intl. Pcl.

Date:

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5.2.2.3 Example of Local Responsibility Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Local Responsibility

Item	Description	Local Responsibility		
		LCS	LSA	LM
1.	Complete and distribute the LOADING INSTRUCTION			
2.	Check the CORRECTNESS of "T" on the INCOMING LDM. (Valid for through-going flights only)			
3.	Check the INCOMING LDM against the INCOMING LOADSHEET.(Valid for through-going flights only)			
4.	Through VISUAL CHECK, check whether the ACTUAL THROUGHLOAD in bulk compartment corresponds with the through load figures on the loading instruction. (This check is not required for through load inside ULD and on flights with technical landings only)			
5.	Report SUSPECTED DIFFERENCES in the through load to the Load Control Supervisor for action.			
6.	Check visually all compartments for possible remaining load and/or ballast. (Originating stations only)			
7.	Before loading, check the correspondence between the ACTUAL WEIGHTS OF CARGO and MAIL against the estimated weights on the loading instruction. Also check the PHYSICAL CONDTION of the load (damage, leakage, etc.)			
8.	Deviations from the load in instruction may be decided upon only by the Load Control Supervisor			
9.	Record the TARE WEIGHT OF ULD's and the ACTUAL WEIGHT of baggage, cargo, mail and equipment on the *loading report* and *weight report* .			
10.	Record the *number of baggage pieces* and the *actual weight of cargo, mail and equipment in bulk compartments* on the *loading report*. Convert the *baggage pieces into weight* by using the applicable conversion figure(s) which is (are): ____xx____ kg			
11.	Sign the loading report and deliver the signed loading report to the Load Control Supervisor			
12.	Before the compartment doors are closed, check that all SEPARATION and DOOR NETS are correctly installed			

Note 1: The LOCAL RESPONSIBILITY columns shall be marked with " ✓ "as appropriate for:
– LCS (Load Control Supervisor),
– LSA (Loadsheet Agent), or
– LM (Load Master).
At some stations, a combination of the above duty codes may be used.
Note 2 : Possible alterations to the above Standard Local Load Control Procedures shall be registered on Appendix "A"

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5.2.2.4 Example of LCS Standard Checklist Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

LCS-Standard Checklist

Load Control Check must be performed by the Load Control Supervisor as follows:

1. Ascertain that CORRECT VERSION-BOUND DOCUMENTS are used.
2. Check the ACTUAL AIRCRAFT REGISTRATION, VERSION and CREW with corresponding notations on the loadsheet.
3. Check that CORRECT DOW, DOI and MAX GROSS WEIGHTS have been inserted on the loadsheet. TICK OFF BOXES CHECKED.
4. Compare the ACTUAL NUMBER OF PASSENGERS as reported from the gate with the corresponding figures on the loadsheet. If there is any difference, inform the Pilot-in-Command and correct the loadsheet.
5. Compare the TOTAL LOAD PER COMPARTMENT on the signed loading report with the corresponding figures on the loadsheet. If the difference exceeds THE MAXIMUM TOLERANCE (ref LCM 5.9.7 para 1.6), determine the reason, adjust the figures to be within the tolerance and correct the loadsheet.
6. Check that the ACTUAL PASSENGER FIGURES on the loadsheet do not exceed the maximum amount permitted on the applicable aircraft version.
7. Check that the ACTUAL WEIGHTS IN COMPARTMENTS do not exceed the maximum compartment capacities.
8. Compare the ACTUAL DLI and LIZFW on the loadsheet with the pre-calculated indexes on the loading instruction.
9. Check and TICK OFF the TAKEOFF FUEL on the loadsheet against the RAMP FUEL LESS TAXI FUEL on the signed fueling order.
10. Check that the ACTUAL GROSS WEIGHT on the loadsheet do not exceed the maximum gross weight.
11. Check that the BALANCE CALCULATION is correct.
12. The Load Control Supervisor shall ensure that ALL ULD RESTRAINT DEVICES/ FITTINGS are raised on all loaded ULD's and report to the Pilot-in-Command that all these ULD's are properly secured.
13. Check that all the REQUIRED FORMS are inserted in the load control folder (LCF).
14. The loadsheet shall be COUNTERSIGNED by the Load Control Supervisor thereby giving the "LOAD CONTROL RELEASE" for the aircraft.
15. Obtain the SIGNATURE of the Pilot-in-Command on the loadsheet.
16. Deliver the documents to cabin attendants.
17. Check the OUT-GOING LOADMESSAGE after dispatch.

Note
Possible alterations to the above Standard Local Load Control Procedure shall be registered on the Appendix "A"

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5.2.2.5 Example of Appendix A: Alternatives to the Standard Checklist Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

APPENDIX A: Alterations to Standard Checklist

Alterations to the *Standard Local Load Control Procedures*, LCM 5.2.1.3 and 5.2.1.4 above

Item No.	Alteration	Local Responsibility

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5.2.2.6 Example of Appendix B: THAI Staff LCS Qualifications Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Appendix B: Load Control Supervisor(s) qualifications (TG Staff)

	Name	Signature of Employee as Written on Loadsheet	Qualification Valid for THAI Aircraft Types Shown Below:			
			747/777/787/A340/ A350/A330	A380	747 BCF	737/A320
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

I certify that the above-mentioned Load Control Supervisors have successfully passed the theoretical tests and completed the practical training prescribed in LCM 4.1 to 4.4.

( ) ( )
Ground Handling agent Name Airport Service Manager
THAI Airways Intl. pcl.
Date: Date:

The above-mentioned staffs have been approved to act as Load Control Supervisor on THAI aircraft

( ) ( )
BKKKG-M

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5.2.2.7 Example of Appendix C: THAI Staff LCS Name List and Qualification Record Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

Appendix C : LCS Name list and qualification records (TG Staff)

	Full Name	Pers. Number	Completed Date of							
			Basic Load control	Load Control, Passenger Aircraft	Load Control, Freighter Aircraft	Dangerous Goods Regulations	Aviation Security	Load Control Refresher	DGR Refresher	Aviation Security Refresher
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

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5.2.2.8 Example of List of Qualified Load Control Staff (Handling Agent) Form

THAI

Local Load Control Procedures (LLCP)

(At Station with ASM services manage and supervise by Ground Handling Agent only)

Station: xxx	Effective: dd/mmm/yyyy	Issue No.: 000

List of Qualified Load Control Staff (Handling Agent)

Name of Handling Agent:

	Name	Signature	Aircraft Type
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

I certify that the above-mentioned staffs are qualified for THAI Load Control Handling Standard as per LCM 5.2.2.

( )

Ground Handling Agent Name

.....

Date:

( )

Airport Service Manager
THAI Airways intl. pcl.

Date:

The above-mentioned staffs have been approved to act as Load Control Supervisor on THAI aircraft

( )

BKKKG-M

Date:

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5.2.3 LCS by a Handling Agent and ASM Services Managed by a Ground Handling Agent (GHA)

The GHA representative shall issue and maintain an LLCP that complies with Company Policy. See General LCM, Chapter 5.2.1—Load Control Supervision by THAI.

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By signing these, the handling agent representative and the THAI ASM from the delegated station certify that they have completed all pages of the Handling Agent LLCP template. The LLCP shall then be submitted to BKKKG-M for approval.

Note: The LLCP template for GHA's is available on the D1 intranet website: Thaisphere > Thaifamily > D1 Homepage > equick Reference > Load Control.

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5.3 Stations Without Regular THAI Traffic

Except for certain passenger charter flights where the P-i-C has agreed to be responsible for load control, a qualified THAI LCS shall be responsible for all activities concerning load control. In addition to the LCS functions, the LCS may also perform the functions of a Loadsheet Agent and a Load Master.

For the stations without regular THAI traffic, the LCS can either travel beforehand or follow the flight as a flight clerk. The handling agent shall always be informed of the arrival of the LCS.

Before the departure from home base, the LCS shall be supplied with a kit containing the following items required for the performance of the job:

- LCM Part 1: General Load Control Manual and LCM Part 2: Fleet-Specific Load Control Manual;
- loadsheet forms;
- balance tables for the applicable aircraft type and version;
- loading instruction/report forms for the applicable aircraft type and version;
- one copy of the published checklist. See General LCM, Chapter 5.2.1.2—Example of Load Control Skeleton Form, and;
- ticket and travel order covering the trip.

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6 AIRCRAFT HANDLING 1

6.1 General Procedures & Sequences 1

6.2 Load Control Process Flow 1

6.3 Aircraft Servicing 1

6.3.1 Aircraft Interior Cleaning 1

6.3.2 Potable Water Services 1

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6.3.2.2 Potable Water Units Servicing Procedure 1

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6 AIRCRAFT HANDLING

6.1 General Procedures & Sequences

To optimize our aircraft utilization, the duration of a transit or turnaround stop must be kept to a minimum. Where this involves a transit stop particularly, this is also a consideration for passenger convenience. Close coordination of all handling activities is necessary so that several of the actions can be performed simultaneously.

When an aircraft arrival is expected, its estimated time of arrival (ETA) is given by the pilot to flight operations as soon as it enters the controlled airspace of the airport, using a special radio channel when available. Otherwise the information will be extracted from the Air Traffic Control (ATC) center.

Upon receiving the ETA, all the different departments involved in the handling of this aircraft are informed accordingly, and this will mean that preparations for the reception of the aircraft will be started. An important aspect of the preparations is to ensure that all equipment and loads are ready and in their correct places. Also to dry-run motorised equipment to ensure that all motors, brakes, and systems are in working order.

The arrival of the aircraft instigates the following actions:

- for international arrivals customs/health clearance as neccessary;
- the Passenger Service Agent will meet and assist the disembarking passengers;
- Load Control Agent will attend to clear and collect aircraft documents briefcase;
- the Catering Staff will unload the used supply containers and reload the aircraft with the necessary catering for the next leg of the flight;
- the Loading Staff will unload/load the aircraft;
- the Fueling Company will supply the fuel;
- the Cleaning Staff will clean the interior of the aircraft;
- the Load Control Staff will start to complete various load control (weight and balance) documents for the outgoing flight;
- the Maintenance Staff will carry out the necessary checks on maintenance of the aircraft, and;
- special procedures and safety precautions have to be observed in opening and closing all aircraft doors.

During the groundstop, the Flight Deck Crew will obtain the information for the next leg, such as meteorological observations, flight plans, general route and alternate briefing, etc.

Simultaneously the Load Control Supervisor will complete the loadsheet based upon the information received from the passenger check-in, the cargo department, and the post office.

While the passengers board the aircraft, the loading must be completed. The last check of the loadsheet is carried out before given to the Pilot-in-Command. At this stage it will be necessary to remove all equipments from the apron area and, of course, to ensure that all doors are properly closed.

After completing the preflight checklist, the pilots will start up the engines and depart from the ramp area.

When the aircraft leaves the ramp area, the time will be logged for the departure message, together with the airborne time received from the Air Traffic Service (ATS), form the departure message, which will be sent to the stations concerned.

Immediately various departure messages are transmitted to stations concerned, such as load control messages, passenger service messages, transfer messages, seating plan message, etc.

Special messages containing information about the load carried onboard (Passenger, Mail and Cargo) will be transmitted to the next station. These messages are called Loadmessage (LDM) and Container/Pallet Message (CPM) which form the basis for the planning performed by the next station in order to ensure an efficient and smooth ground handling.

After the aircraft has departed, all documents related to the handling will be filed and apart from some paperwork, such as forwarding passenger coupons to the accounting department, completing the flight file/report (Station Log) with information about the arrival, departure and possible delay reasons of the aircraft, the handling is considered complete.

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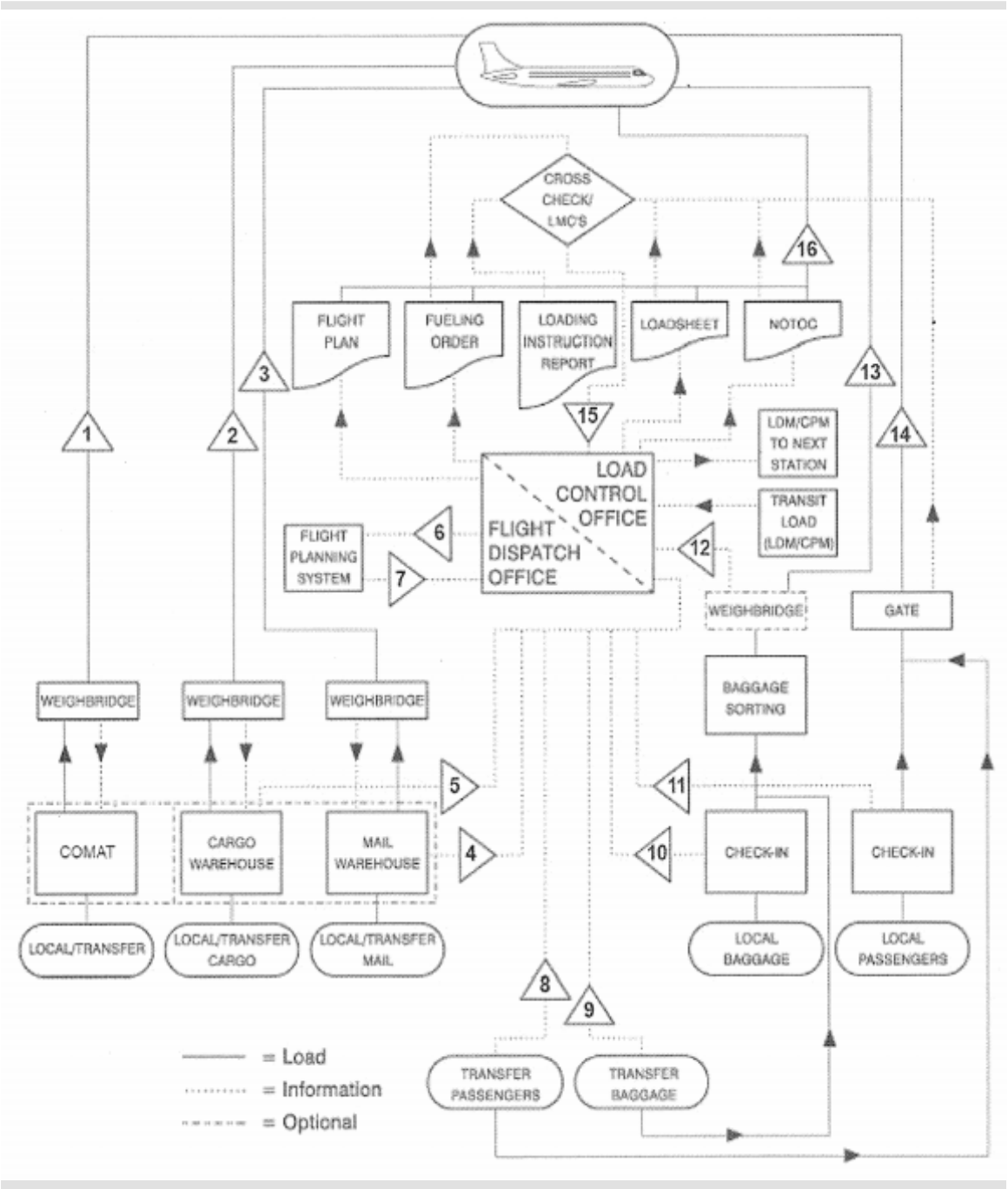
6.2 Load Control Process Flow

DELETION



1. Comat
2. Cargo to aircraft
3. Mail to aircraft
4. Mail weight/destination/category/DG/Special Load information to Load Control Office
5. Cargo weight/destination/category/DG/Special Load information to Load Control Office
6. ZFW/Aircraft registration/Route to Flight Planning System
7. Flight plan including Take-off/Trip-Fuel/Maximum Gross Weights to Flight Dispatch/Load Control Office

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8. Transfer passenger number/category/destination/class/status to load Control Office
9. Transfer baggage weight/number/category/destination/class and any special information to load Control Office
10. Local baggage weight/number/category/destination/class and any special information to load Control Office
11. Local passenger number/category/destination/class/status to load Control Office
12. Baggage weight/number/category/destination/class and any special information to load Control Office
13. Baggage to aircraft
14. Passengers to aircraft
15. Cross-check documents and LIR information to Load Control Office for final loadsheet
16. Final Loadsheet/LMC/NOTOC/Fueling Order/Flight Plan to Flight Deck (Cockpit)

Note: Actions and items not in chronological order.

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6.3 Aircraft Servicing

6.3.1 Aircraft Interior Cleaning

As the good appearance of aircraft interiors is important, the cleaning function covers the following main duties:

- exchange of headrests, pillowcases and blankets;
- cleaning of ashtrays;
- all interior cabin surfaces cleaned down, including armrests and tables on seats;
- vacuuming and shampooing of carpets;
- emptying and/or restocking of seatback pockets with safety guides, sick bags, THAI magazines and other necessary items;
- washing of all smooth floor areas;
- cleaning down of all galleys, including ovens;
- cleaning up of flight deck area;
- cleaning of toilets and replenishment of hand-towels, tissues, soap etc.;
- emptying and recharging potable water tanks on aircraft, and;
- emptying and recharging of toilet tanks, ensuring that the approved sanitary liquid additives are used to control sewage in flight.

6.3.2 Potable Water Services

Accounting on the hygienic aspect of practice, water service must not be performed by staff that has already performed toilet servicing during the same shift. Staff shall replenish the aircraft tank according to the operating instructions—any deviation must be reported to the supervisor or airline representative. In order to ensure safety and hygienic services, below procedure shall be taken into accounts.

THAI follows IATA Drinking water Quality Procedure (IDQP) to control and ensure the water quality & safety serviced to the aircrafts.

6.3.2.1 General Hygiene Precautions

To perform water servicing, supervisor must ensure the staff:

- wear clean clothing
- thoroughly wash your hands using soap before starting water servicing:
  - do not fill the potable water service unit from the same water source as the toilet service unit
  - do not park the potable water service unit and the toilet service unit in the same area
  - do not service the toilet and water on the aircraft at the same time.

6.3.2.2 Potable Water Units Servicing Procedure

Filling Aircraft Water Tanks

- Fill the aircraft water system as close to the departure time of the aircraft as possible.
- Before connecting the aircraft filling hose to the aircraft, flush the hose.
- Each aircraft type has specific requirements for filling and draining.

Note: When the filling hoses are not in use, the nozzles or connectors must be protected from contamination either by the use of appropriate covers or by immersing them in receptacles containing chlorinated water.

6.3.2.3 Water Servicing During Freezing Conditions

The following actions must be followed to prevent freezing of the water in the aircraft water tanks and lines during freezing conditions:

- drain the aircraft water tanks if instructed by the operating airline as per the operating airline procedures
- ensure the fill line is fully drained before closing the cap to prevent freezing of fluid inside.

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Caution: **Keep aircraft cargo doors closed to prevent water lines from freezing when the cargo compartments are not being loaded or offloaded. Do not attempt to remove the frozen substance in the fill lines or connections or on the service panels. Contact maintenance immediately.**

6.3.3 Lavatory Services

The complete procedure for servicing the aircraft toilet waste tank consists of the following 3 steps:

- draining of the waste tank(s)
- flushing of the waste tank(s)
- adding an amount of pre-charge and/or a concentrated deodorant precharge product -as applicable.

Caution: **Toilet fluids are corrosive.**

Prior to servicing, inspect the toilet servicing panel on the aircraft for signs of leakage. If any horizontal blue streaks are observed, the blue streak must be cleaned prior to servicing. After cleaning, look again for signs of leakage. Blue ice build-up in higher altitudes may influence airworthiness. In case of a possible leak, immediately inform the airline representative, ground engineer, or advise the flight crew.

6.3.3.1 Hygiene Precautions

- Wear heavy rubber gloves, full face protection and protective clothing against harmful wastes when performing toilet servicing.
- Do not park the toilet service unit in the same area as the water service unit nor at the water filling point.

Caution: **Once an agent has performed toilet servicing on an aircraft, the same agent cannot perform water servicing during the same shift.**

6.3.3.2 Toilet Servicing Procedure

Each aircraft type has specific requirements for toilet servicing and the amount of precharge and/or concentrated deodorant precharge product. Refer to the operating airline's GOM for aircraft type specific instructions for more details.

- Prior to opening a toilet service panel, check for stains around the panel.
- While opening the service panel, stay clear and watch for signs of leakage.
- Stay clear of the drain fitting cap while opening, and watch for signs of leakage.
- Make sure the drain hose Y-fitting coupling is connected correctly, before a drain valve handle is pulled.
- Empty the waste tank(s).
- Flush the waste tank(s) twice and empty them again.
- Precharge the tank(s) with the correct quantity of water and disinfectant as applicable.
- Fill the waste tank(s) with the correct amount of water and concentrated deodorant precharge packets or pre-mixed fluid as applicable. For aircraft equipped with a conventional toilet system, fill the waste tank(s) with the correct amount of water and precharge, or concentrated deodorant precharge.
- After servicing ensure that there are no leaks at the drain fitting cap and the end of the drain hose Y-fitting coupling.
- Close the nozzle tightly in order to prevent the accumulation of ice during flight and wipe off residual water and disinfectant.
- Check for possible leakage.
- After servicing close and latch the fitting caps and service panel door.

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Note: Inform aircraft maintenance or flight crew, if:

- *fluid leakage is observed*
- *the drain valve will not open or the waste tank cannot be drained. Report any spillage of waste to the supervisor.*

6.3.3.3 Draining

- Drain the aircraft waste system into the waste tank of a Toilet Service Unit.
- Observe the waste drain hose during draining to confirm that the waste tank is completely emptied. The hose will also vibrate for a few seconds as the contents of the waste tank pass into the waste tank of a Toilet Service Unit.

Note: Drain the waste tanks one at a time for optimal results.

6.3.3.4 Servicing During Freezing Conditions

Take the following measures to prevent freezing of the fluid in the aircraft toilet tanks and lines during freezing conditions:

- drain the waste tanks if the aircraft is parked in the open for several hours without electrical power supply and the temperature is, or is expected to be, below the freezing point, as per the operating airline procedure
- fill the aircraft toilet system only after electrical power supply has been restored, and as close to flight departure time as possible
- ensure the fill line is fully drained before closing the cap to prevent freezing of fluid in the fill line.

Caution: Do not attempt to remove the frozen substance in the fill lines or connections or on the service panels. Contact maintenance immediately.

6.3.3.5 Inoperative Toilet Systems

If defects of the toilet system prevent regular servicing, ask qualified technical staff, if available, for assistance (e.g. removal of panels, etc.).

If no technical staff is available, inform the flight crew or an airline representative.

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7 GROUND HANDLING

7.1 General Activities

It should be clearly noted that some activities have begun or have taken place before the aircraft actually is on the parking stand at the airport. Other activities take place during the time the aircraft is on the ground. The handling of these activities require manpower with specialised experience, skills, training and the use of specialized equipment.

7.1.1 Before Aircraft Arrival

Check that:

- all data concerning offload and onload of the aircraft, have been duly received and dealt with;
- all particulars concerning passengers, deadload, catering, operations, etc. have been taken into account;
- ground handling equipment is available, serviceable and in position;
- required personnel is available and correctly dispatched and briefed of their duties, and;
- marshalling is available.

7.1.2 During Turnaround/Transit

Check that the following functions are carried out in due time:

- positioning ground equipment;
- passenger disembarking;
- baggage, cargo and mail offloaded;
- cabin cleaning;
- catering;
- refueling;
- aircraft line maintenance;
- cooling/heating the cabin;
- water/toilet servicing;
- closing of passenger check-in;
- informing all parties involved in case of irregularity;
- crew briefing;
- passenger embarking;
- removing ground equipment;
- completing all traffic documen;
- closing of doors;
- removing snow/ice (if required), and;
- aircraft pushback.

7.1.3 After Aircraft Departure

Check that:

- Aircraft stand is clear;
- All messages, after checking for accuracy, are dispatched, and;
- Flight file and reports are completed, etc.

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7.2 Standard Ground Times

Standard ground time is the length of ground stop that the aircraft is allowed for ground handling and servicing, and shall be released for further traffic not later than such maximum ground time. The ground handling and services include passengers & baggage processing, loading & unloading, toilet & water services, cleaning, loading & unloading of catering, aircraft maintenance routine services and refueling, etc. At normal situation and manpower, all ground handling and services must be completed within the following limited ground time.

Aircraft type	Maximum ground time (min)	
	Turnaround	Transit
747/777/787	90	75
A330/A350	90	75
A380	100	n/a
737-400	60	50
Note: *10 minutes less on domestic operation for all aircraft types.*		

In case the aircraft is late arrival, it must be released for further traffic within the ground stop time of original schedule. If the ground time is longer than the original ground stop time, the ground handling delay code shall be specified in the MVT message in addition to the late arrival code.

If the aircraft has technical defect during scheduled ground stop when the aircraft is declared serviceable or airworthy, from the time that the aircraft is declared serviceable, the aircraft must be released for further traffic at the earliest possibility but shall not be longer than the above mentioned maximum ground time unless the crew and passengers are accommodated at the hotel during the delay. If the ground time is longer than the maximum ground time, the ground handling delay code shall be specified in the MVT message in addition to the technical delay code.

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7.3 Allotted Ground Time

The scheduled ground stop (as per published TPI) shall be considered as allotted ground time and the aircraft shall be released for traffic as per the schedule.

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7.4 Ground Time for Irregularity Flights

The ground stop as per advice in ASM (Adhoc Schedule Message) issued by BKKOP shall be adhered to.

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8 RAMP ACTIVITIES

8.1 Ramp Safety

8.1.1 Policy

The managers, as so the contracted GHA's representative at stations, have the responsibilities to ensure the interest of safety to personnel, aircraft and equipments are the priority of THAI. Henceforth, staff deployed to work in the ramp must be properly trained and fully familiar with the maximum of ramp safety, regulation and safety procedure.

8.1.2 Danger Areas

To avoid a risk of blast damage or injury from aircraft engines' exhaust or intake, vehicles and personnel must remain clear of area marked "aircraft danger area" when engines are running and/ or when the anti-collision lights are on.

8.1.2.1 Ramp Areas

8.1.2.1.1 Definition

Aircraft parking, handling and moving areas:

- generally under control of the airport authorities;
- restricted to ramp service vehicles only, and;
- prohibited area for general public and accompanying persons, except when in possession of special permission.

8.1.2.1.2 Action/Responsibility

The Airport Services Manager or a contracted GHA's representative is responsible for:

- limiting the access to employees connected with duties on the ramp, and;
- providing adequate supervision and guidance to disembarking/embarking passengers.

Employees engaged in duties on the ramp must observe the following rules:

- never allow passengers or the public to enter the ramp alone or unaccompanied;
- keep in mind that moving aircraft always have priority and never hamper their movement in any way;
- keep constant look-out in order to avoid collisions;
- never run, and;
- look out for any contamination or hazards on the ramp (ice, oil, fuel hoses, etc.).
- the use and/or wearing of PDAs, smartphones, tablets, iPads, iPods, MP3/media players and other such devices while driving is prohibited.

8.1.2.1.3 Driving Regulations

Only employees holding a THAI or local official license are authorized to drive or handle the vehicles or equipment for which the license is valid. Drivers must observe the following rules:

- approach the aircraft in such a way as to avoid collision in slippery conditions or in case of brake failure
- avoid driving backwards against an aircraft unless signalled and marshalled by competent personnel from outside the vehicle
- always park equipment at right angles to the fuselage, never diagonally
- never park vehicles or equipment in such a way that a collision with the aircraft might occur due to change in level of the aircraft or vehicle during unloading or loading operations
- after completion of work, park unused equipment well clear of aircraft working areas if possible on specially designated work stands
- comply with local traffic regulations
- keep away from wingtips and engine components.
- never drive between aircraft engines, underneath any part of the aircraft fuselage or wing(s) unless operationally approved for that specific aircraft type.

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- never use a hand-held mobile phone (for talking, texting or web surfing) or radio communication whilst driving.

8.1.2.2 Aircraft Parking Areas

8.1.2.2.1 Definition

The parking areas are the part of the ramp on which aircraft are parked and on which the aircraft servicing, handling and maintenance is carried out. These areas are:

- generally under supervision of the Load Control Supervisors and/or Ramp/Loading Supervisors, and;
- restricted to personnel, vehicles and equipment directly connected with the handling of the aircraft.

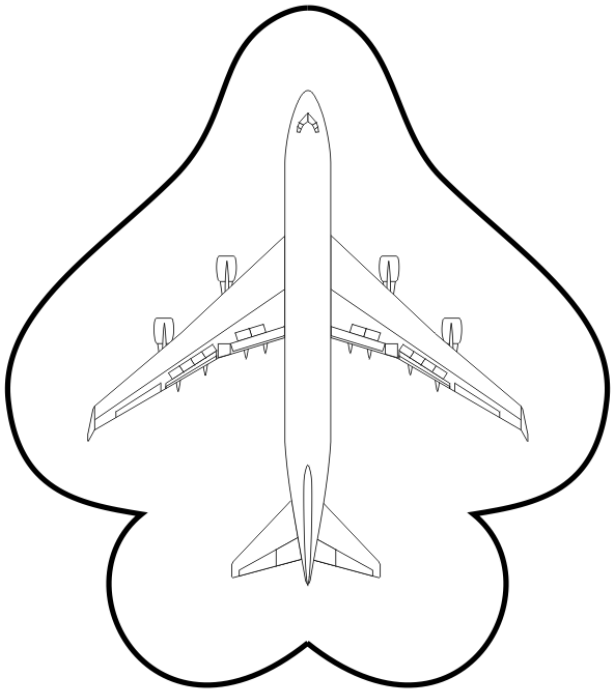
8.1.2.2.2 Circle of Safety

Personnel shall observe a virtual operational safety buffer zone when positioning motorised vehicles/ equipment to an aircraft.

The following processes shall be adhered to at all times:

- conduct a vehicle/equipment pre-operational check including a brake test prior to operating motorised vehicles/equipment, and;
- all motorized vehicles/equipment must make a minimum of one complete stop prior to entering the operational safety zone or at a distance of no less than five meters (15 feet) from the aircraft.

All equipment must be driven at a “walking pace” when operating within the operational safety buffer zone.



8.1.2.3 Venting Areas

Definition

The venting areas are spherical zones around the fuel vents of an aircraft, within which inflammable fuel vapours have to be expected during fueling. Special precautions apply to these areas which must be strictly adhered to. The extention of the venting areas are defined as follows:

- Three meter radius around the fuel vents for JET A1 or kerosene turbine fuel, and;
- Eight meter radius around the fuel vents for JET B or JP-4 turbine fuel.

See Fleet-Specific LCM, Chapter 1.9—Fuel System and Limitations for the location of venting areas.

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Restrictions

No vehicles, equipment and load shall be parked in the venting areas, during fueling, nor shall these areas be passed by any person or is vehicle unless specifically required to do so for fueling purposes.

Note: The above requirements can best be observed if the following simple rule is strictly observed by all concerned:

DO NOT PASS OR DRIVE UNDER WINGTIPS"

8.1.2.4 Intake Areas

Definition

On a stationary aircraft with engines running or a moving aircraft on the ramp, the intake areas are danger areas in front of the engines with the risk that persons or loose objects may be sucked into the engines. These areas must be kept absolutely clear of personnel or equipment.

See Fleet-Specific LCM, Chapter 5—JET ENGINE WAKE AND NOISE DATA for the location of intake areas.

8.1.2.5 Blast Areas

Definition

The blast areas are areas behind the aircraft affected by the blast of the running engines where persons or objects may be dislodged or toppled over. These areas must be kept absolutely clear of personnel or equipment.

See Fleet-Specific LCM, Chapter 5—JET ENGINE WAKE AND NOISE DATA for the location of blast areas.

Caution: Engine start and taxi operation may only be performed when the following requirements are met.

- **All equipment has been removed from the blast area or is well secured.**
- **Any loose equipment or items (for example, tools, engine covers, baggage, cargo or mail, trolleys, carts, etc.) are removed from the blast area.**

Note: Special tarmac (ramp) conditions, such as slight slope, snow, wet and slippery surfaces, etc, require greater power to move the aircraft, therefore causing an increased blast-danger area. See Fleet-Specific LCM, Chapter 5—JET ENGINE WAKE AND NOISE DATA for details of the normal blast safety distance.

8.1.3 Prevention of Damage to Jet Engines

8.1.3.1 General

Foreign objects (bolts, nails, gravel, screws, etc.) sucked into the engine(s) can cause damage.

All ramp areas where aircraft are moving, parked and handled must be cleaned regularly, and any foreign objects must be removed. This is usually done by the Airport Authorities.

8.1.3.2 Responsibilities

It is the duty of the ASM to:

- make regular inspections;
- inform the Airport Authorities if areas are not kept clean;
- ensure that at least area(s) used to park THAI aircraft are controlled and clean, and;
- instruct all personnel to remove foreign objects if found.

Caution: Personnel on the ramp must:

- **make sure that there is no risk of loose personal belongings;**
- **keep their breast pockets empty or buttoned up;**
- **wear earmuffs or earphones over the cap, if cap worn, and;**
- **never leave personal belongings near the aircraft.**

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8.1.4 Personnel Safety in Aircraft and Load Handling Operstions

8.1.4.1 General

Personnel are both a vital asset and a valuable resource, therefore specific practices must be in place to ensure their safety. As manual handling of baggage/material is the primary cause of personnel injuries, suitable and sufficient risk assessment of the manual handling task should be conducted and appropriate controls put into place. This would include both long term and short term solutions.

To protect the health and safety of personnel, identified hazards within the workplace should be managed in the following order:

1. by the elimination of the hazard;
2. by the reduction or control of the hazard, and;
3. finally through administrative control, for example, procedures, training, devices, materials, personal protective equipment.

Safe Operation procedures, training, and supervision of personnel should clearly monitor “at-risk” behavior and conditions related to baggage/material handling operations. To prevent personnel injuries, Personal Protection Equipments (PPE) should be provided to all staff who work at ramp area as follows:

Note: Line-up of station personnel on the ramp at departure is NOT permitted.

8.1.4.2 Personal Protection

8.1.4.2.1 Hearing Protection Devices

Regular exposure to noise of jet or turboprop engines will gradually weaken the hearing capacity. Ear protection is therefore a MUST for THAI employees. Furthermore it is an indispensable measure for the prevention of accidents on the ramp.

The Station Manager is responsible for ensuring that all personnel are briefed about the detriment of their health by the effect of noise and that protective appliances are used.

Personnel without ear protection shall be kept away from aircraft with running engines.

The use of hearing protection devices is as follows:

- both ear plugs and earmuffs should be worn within a radius of 50 m of running engines
- ear plugs or earmuffs should be worn within a radius of 50 to 120 m of running engines.

Ear plugs

Ear plugs to fit in each ear are made of plastic or rubber and are available in different sizes. Ear plugs are personal equipment.

Earmuffs

Earmuffs are protective devices in the form of a headset. The ears must be inserted into the muffs, resting tight against the bone around the ears. Earmuffs are not personal equipment and shall be cleaned periodically with cotton wool and alcohol (Eau de Cologne).

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8.1.4.2.2 Safety Shoes

Safety shoes with impact protection would be required for the LCS and personnel whose duties are concerned with load and unload handling by carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and, for other activities where objects might fall onto the feet.

The Ramp Safety Coordinator will normally check that the personnel is wearing the safety shoes when performing tasks that could result in a foot injury. If the employee is not wearing their safety shoes, the Ramp Safety Coordinator will ask the personnel to put the shoes on and will document this. If the personnel have an accident but the personnel were not wearing safety shoes, the claim could be denied. The department will be asked for their records, including safety shoe purchases.

8.1.4.2.3 High-visibility Jacket

High Visibility Jacket that contain reflective material and are of high visibility colors should be worn by any person whose duties require airside access should wear. The design, material and layout of the high visibility jacket should take into consideration both local regulations and specific operating conditions. Supplying jackets are depended on various suitable sizes chest (to fit).

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8.1.5 Fire Prevention and Protection

8.1.5.1 General

In the event of fire, time is a crucial factor. The sooner a fire can be fought, the greater is the chance of preventing a major disaster.

Even if the fire brigade responds quickly to an alarm, several minutes may elapse until they arrive at the scene. Therefore it is most important that ramp personnel have means at their disposal to prevent the fire from spreading.

Properly applied, a hand fire extinguisher is a very effective mean of achieving this.

8.1.5.2 Fighting of Engine Fires

Ground personnel must refrain from fighting engine fires with fire extinguishers available at the aircraft. Such fires are normally fought by the flight deck crew by means of the engine fire extinguishing system.

8.1.6 Ramp Safety Coordinator

In order to ensure the aircraft ground operational safety at each station, Airport Services Manager (ASM) shall assign the appropriated person to monitor and/or coordinate with the contracted Ground Handling Agent (GHA) personnel who shall conduct the safety supervision at that station. For stations within Thailand, Load Control Supervisors (LCS) have been delegated roles of responsibilities to oversight the ramp safety.

Authority and responsibility

- Complete work in due time with the safety competence.
- Prioritize the health & safety needs of ramp operation.
- Comply to THAI Local Emergency Accident Procedure (LEAP) and Local safety related regulations.
- Control and monitor the ramp operations on the parking bay area so as to ensure the safety precautions related to staff, ground equipment and aircraft.
- Summarize the report and/or co-ordinate to rectify Unsafe Acts or Unsafe conditions which may lead to an accident or a harmful effect to ground service.
- Fully authorized to direct and control staff as well as any staff concerned to adhere to the safety precautions & regulations or cease the actions that may cause an accident or damage.
- Report any safety problem or obstacle found during the operation activity to functions concerned and the superiors.

8.1.7 Use of Marker Cones

The purpose of “coning” aircraft is to create a safety buffer around specific areas on aircraft that are susceptible to ground damage.

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THAI's ground engineers or local contracted ground mechanics have been delegated the duty to perform coning placement corresponding to the minimum of IATA standard requirement specifying for each type of aircraft.

The design of cones:

- conical in shape
- 750 mm (28.5 in) minimum height
- 4.53 kg (10 lbs) minimum base weight
- should be orange in color with reflective stripping.

Recommended positioning of the cones:

- at each wing tip immediately after the aircraft is at its parking position
- in front of all wing-mounted engines (power plant)
- in front of other areas on an aircraft that are in conflict with the normal flow of equipment during handling operations
- at areas where the proximity of the aircraft could impact on the flow of ramp traffic, for example tail/roadway
- at other areas around the aircraft only when clearance to approach the aircraft has been given
- at a distance from the “Protected” area such that the intended purpose of the cone is not diminished.

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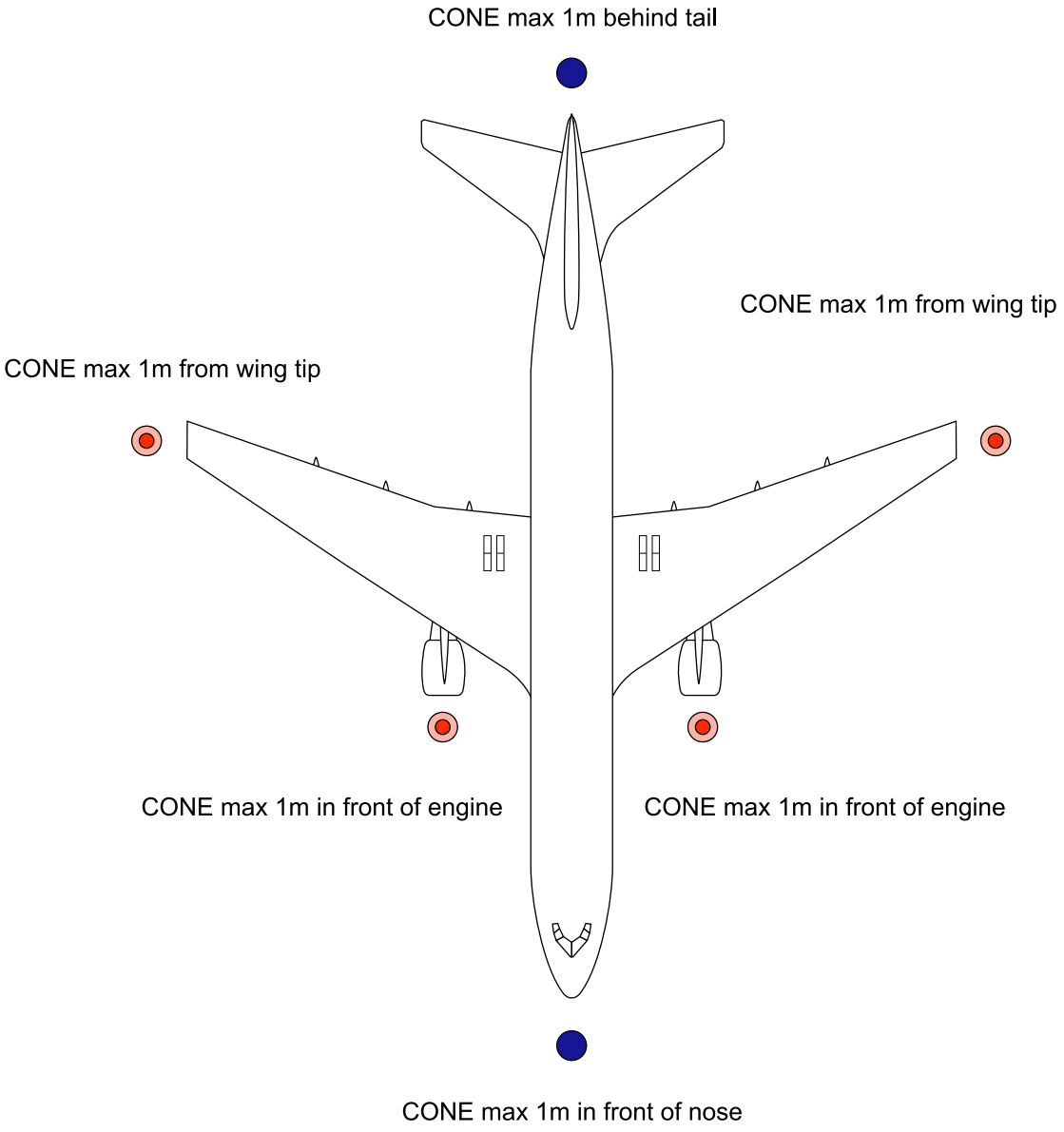
Cone Placement for Wing-Mounted Twin Engine Jet Aircraft (Minimum Requirement for 737, 777, 787, A320 and A330)



● Utilized for 737 and A320

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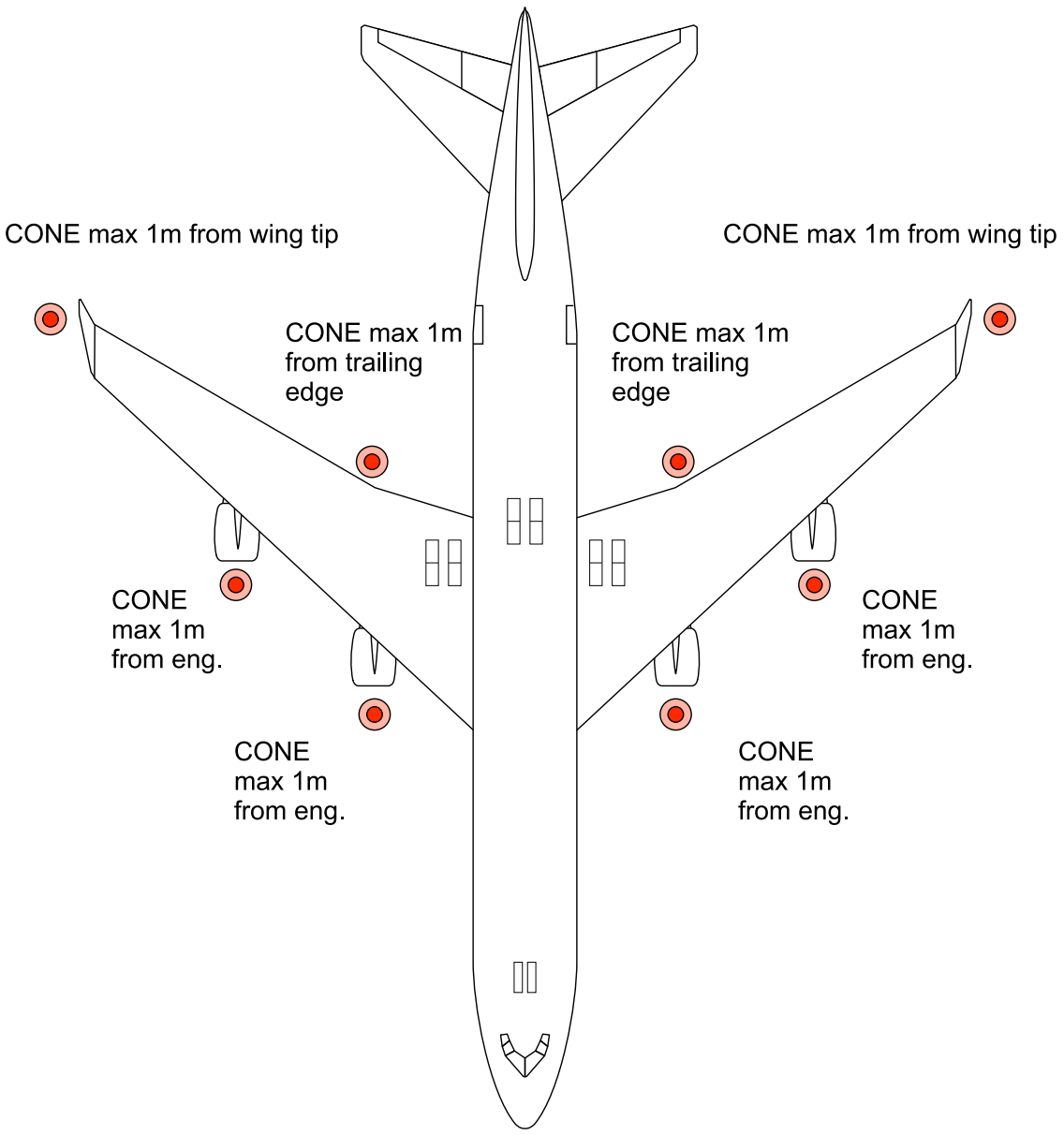
Cone Placement for Wing-Mounted Four Engine Jet Aircraft (Minimum Requirement for 747 and A380)



The cones should be removed:

- just prior to the aircraft departure to ensure maximum protection of the aircraft
- after use, to a designated storage area.

8.1.8 Aircraft Fueling/Defueling and Safety Precaution Procedure

Refer to SHB chapter 4; TTPM-LO908.

8.1.9 Aircraft De-/Anti-icing Program Procedure

Refer to SHB chapter 4: TTPM-LO390.

8.1.10 Aircraft Parking Procedure

Refer to SHB chapter 4: TTPM-LO1501.

Note: TTPM e-manual can be accessed through below intranet website as following link: http:// acm-data01.dt.thaiairways.co.th/TE_WEB/Internal%20Handbook/TTPM-LO%20Rev.26.pdf

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8.2 Marshalling

Scope

The signalman is responsible for giving clear and correct signs to the P-I-C for aircraft ground maneuvering. However it is still the P-I-C who is responsible for the safe maneuvering of the aircraft.

Responsibility

The Licensed Aircraft Engineer (LAE) and at stations, where technical assistance is performed by contracted GHA's personnel, Airport Services Manager (ASM) are comparatively responsible to ensure a trained and qualified person to perform marshalling tasks during a per-arrival, ground time and per-departure of aircraft as per the Technical Procedure specified in TTPM-LO-910, and shall not limit to below duties to:

- conduct FOD check on entire stand
- make sure the stand surface condition is sufficiently safe for aircraft movement
- conduct a wing walking during aircraft ground movement
- give a clear marshalling signals in a precise manner
- wear a high visibility vest
- use illuminated torch lights/wands in the following situations:
  - insufficient apron lighting
  - poor visibility
  - night conditions
  - when required by local authority or regulations
- ensure that wheel chocks are placed at nose landing gear wheels
- ensure that ground power unit is connected as engines are spooling down and after anti-collision lights have been switched off
- ensure that chocks are positioned to main landing gear
- ensure that safety cones are positioned as per aircraft type
- ensure that cabin door is inspected before positioning boarding devices
- ensure a walk around is performed prior to giving clearance for GSE to position at aircraft
- make sure that aircraft docking system is operating, or marshalling is present
- establish a communication between the tractor operator and the flight deck
- make sure that aircraft hydraulic brake system pressure and/or brake accumulator is within required pressure rage
- ensure that per-departure check is complete.

Qualified person: A person who is properly trained in use of signal and procedure outline in this instruction. The Airport Authorities or other operators can also perform the Ground Marshalling Service.

Signalman: A qualified person who assists the P-i-C during the arrival and departure from the parking area, or when the aircraft is passing close to obstacles.

Refer to SHB chapter 4: TTPM-LO910.

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8.3 Arrival

8.3.1 General Policy

The THAI station manager or person delegated by him/her is responsible for ensuring that no damage occurs to the aircraft or equipment and that all precautions are taken to prevent accidents to passengers and personnel.

The responsibility for communication and signalization with the arriving aircraft shall be assigned to competent personnel only.

All personnel involved in the handling must be fully aware of their duties and responsiblities.

All necessary personnel and equipment shall be ready in due time. The equipment shall be placed well clear of the path of the incoming aircraft and other traffic on the ramp.

Personnel or equipment shall only approach the aircraft after it has come to a complete stop at the final parking position.

8.3.2 Communication and Signalization

The THAI ground engineer or the ground engineer of the organization contracted by THAI is responsible for communication with the flight crew via interphone system or signals.

During thunderstorm activity over the airport, the possibility exists, although rare, that an aircraft may be directly hit by a stroke of lighting. In such a case the electric charge will be mainly discharged into the ground through the aircraft, but also through any other available conducting path. A person connected to the aircraft by headset and interphone cable provides a conducting path. Communication with the flight crew should therefore not be made through the interphone system during thunderstorm activity over the airport. When the interphone system is not used, the respective hand signals shall be used on arrival or departure. Refer to SHB Chapter 4, TTPM-LO910.

8.3.3 Positioning of Ramp Equipment

The ramp equipment shall be positioned at the aircraft in the following sequence, after the aircraft has come to a complete stop at the parking position:

1. wheel chocks according to instructions;
2. ground power unit(s), if required, after wheel chocks have been placed at the nose landing wheels, and;
3. remaining ramp equipment after engines shutdown or after ordered by the responsible supervisor.

Caution: Passenger loading bridges, passenger and service steps, catering trucks, etc. must be positioned at the aircraft with utmost care. They shall be positioned so cabin doors can be opened fully, and so that any change in the height of doorsill above ground level. does not cause any damage to doors or fuselage.

The ramp equipment shall at all times be maintained in good condition and operating staff be familiar with its proper functioning:

- not to cause damage to the aircraft, all mobile equipment must be operated only by qualified staff, authorized for the specific type of equipment. See General LCM, Chapter 8.1.1—Policy.
- as far as possible, the traffic patterns of the mobile equipment shall be planned in advance, with due consideration given to position of buildings and operational stands as well as the movement of other types of equipment around the aircraft
- it is strongly recommended to use a guiding person during positioning or docking equipment in confined area and/or to the aircraft
- great care must always be taken when mobile equipment is moving in to the aircraft for operations, especially when the ramp surface is slippery or during strong winds.

For flight safety reasons, it is utmost important that all damage discovered to the aircraft is reported immediately.

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8.3.4 Opening of Aircraft Doors

8.3.4.1 Cabin Doors

Passenger entrance and service doors shall normally be opened from inside only. In exceptional cases cabin doors may be opened from outside. In such cases, special attention shall be paid to the disarming of the door-slides evacuation.

Note: Cabin doors may only be opened by personnel who have received appropriate training.

In order to prevent injury to personnel and damage to aircraft and equipment due to misinterpretation, only the standard signals must be shown to cabin attendants responsible for the door operation that:

- ground equipment, that is, passenger steps, passenger loading bridges, and galley loading vehicles are correctly positioned
- the area required for deployment of integral stairways is free from obstruction.
- when cabin doors have been closed, passenger loading bridge must be immediately removed.

The standard signals to be used for this purpose are:

- thumb-up signal, and
- knocking on the door.

8.3.4.2 Compartment Doors

Compartment doors may only be opened after the anti-collision light has been switched off.

No special training is required for manually operated doors (737 and bulk compartment 5 door of the A320, A330, A350, A380, 787, 777 and 747). However, the opening and closing of such doors must be demonstrated to the personnel concerned before they are permitted to operate the doors themselves.

Due to the technical complexity of electrically operated doors (ULD compartments of the A320, A330, A340, A350, A380, 787, 777 and 747), no person is authorized to open or close such doors unless he/she has received proper theoretical and practical training by qualified instructor.

8.3.5 Closing of Aircraft Doors

8.3.5.1 Cabin Doors

Passenger entrance and service doors may be closed from inside or outside.

Note: Only personnel who have received appropriate training are permitted to close cabin doors.

If nobody is in the aircraft, for example, if an aircraft is parked for a long period or a night stop, cabin doors should be closed and locked only. Evacuation slides must not be armed in such cases.

After completion of galley loading/unloading operations, galley loading personnel should close and lock service doors.

Ground personnel may assist cabin attendants in the closing of manually operated doors.

8.3.5.2 Compartment Doors

Compartment doors must be closed as soon as loading operations are completed. Before closing the door, the person concerned must check that:

- the ULDs loaded in the door area is properly secured;
- the briefcase containing the air waybills and cargo documents is placed in its proper place;
- the door protection net is properly installed;
- the compartment lights are switched off, and;
- the door and door frame show no visible damage.

  Note: Any damage noticed must be reported immediately to the station or ground engineer.

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8.4 Departure

8.4.1 Embarkation of Passengers

The aircraft is ready for embarkation when:

- cabin cleaning and galley service are completed, and;
- any special check and/or line maintenance completed.

In order to gain time, embarkation shall begin before loading in the lower deck compartments is completed. However, it shall be aimed at having both operations completed simultaneously.

Close supervision of the following shall be maintained:

- prior to embarkation, the responsible supervisor must check that passenger steps or bridges and any guide fences are properly positioned;
- passenger steps or bridges are placed in such a way that the platform is one step (15 cms) lower than the cabin floor and with the front edge vertically under the cabin doorsill;
- when all passengers have embarked, ground staff is out of the aircraft and the aircraft document briefcase delivered on board, the cabin attendants must give a clear signal to the ramp staff before the passenger steps may be removed;
- at gates with nose-in parking bridges the staff must make certain that bridges are properly connected to the aircraft before embarkation, and;
- after embarkation, the cabin attendants must give a clear signal to the staff operating the bridges before removed from the aircraft.

8.4.2 Passenger Safety

For the safety of passengers, close supervision of the following shall be maintained:

- check that passenger steps are placed so that distance between platform/side panels and the aircraft fuselage does not allow a person to accidently fall down, and that the steps are free from snow, ice, oil, etc.;
- check that passenger do not enter the aircraft or the ramp area with lighted cigarettes;
- the passengers route to the aircraft shall be selected in such a way that the risk of accidents is kept to a minimum;
- engine and wing areas may be fenced or otherwise roped off to avoid any passage in the restricted areas under the wings. In darkness on tarmacs with poor lighting facilities, such fencing shall be equipped with flashing lights, and;
- regular check of the ramp surface shall be made to avoid risk of accidents caused by snow, ice, oil or other hazards.

8.4.3 Removal of Ramp Equipment

Close supervision of the following shall be maintained:

- before closing bulk compartment 5 doors on the A320, A330, A350, A380, 787, 777 and 747 aircraft, ensure that the cargo document briefcase with air waybills and required documents are on board
- remove unneeded ramp equipment as soon as possible. Make sure that such equipment is parked so that it will not obstruct the aircraft during taxi or pushback or hinder any other traffic on the ramp
- as soon as all passengers are on board, have the entrance area cleared and a cabin attendant ready to close the door. Request the cabin attendant to close the door and then remove the passenger stairs or loading bridges
- before closing cabin doors, make sure that the LCF, aircraft document briefcase, load control documents and other required documents are on board.

Note: The aircraft mechanic is responsible for the operation of ULD compartment doors on all aircraft and must ensure that they are properly latched in closed position.

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8.4.4 Departure Coordination

Close surpervision of the following shall be maintained:

- secure that all door nets and separation nets on each side of inward-moving bulk compartment doors are duly installed and doors thereafter securely locked;
- all personnel and equipment not required for the departure procedure are cleared off restricted areas;
- make sure that fire extinguishers are in place. See General LCM, Chapter 8.1.5—Fire Prevention and Protection;
- make sure that engine and blast areas are clear of persons and equipment;
- make sure that equipment and personnel required for engine starting are ready;

  Note: When APU is unserviceable, the following number of airstarter units are required for engine start (120 lb/min capacity required each).

737	*1 unit*
777/A330/A350	*2 units*
747/A380	*3 units*
787	*Incompatible with the conventional air starter unit.*

- make sure that all cabin and compartment doors are closed and secured;
- prior to departure the entire aircraft shall be inspected for any possible damage or presence of any irrelevant objects which may jeopardize the safe operation of the aircraft;

  Note: On icy or slippery tarmacs the aircraft may skid or loose equipment might be brought into motion by propeller or jet engine blast.
- the “All clear” signal is transmitted to the captain when all ramp procedures are completed and tarmac situation permits taxiing.

  Note: The anti-collision light will come on as soon as the flight deck crew is ready to start the engines.

8.4.5 Closing of Aircraft Doors

See General LCM, Chapter 8.3.5—Closing of Aircraft Doors.

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8.5 Pushback and Engine Starting

8.5.1 Pushback

8.5.1.1 General

At stations where pushback is applied, the responsibilities must be clearly defined. As a rule, the ground or station engineer assumes full responsibility for the safe maneuvering of the aircraft.

In order to ensure clear communication between the flight deck and the responsible personnel, the interphone system shall be used. If proper contact cannot be established via interphone, the captain and ground personnel shall agree on the respective signals before commencing pushback.

Notes:
1. *Pushback of 747 is only authorized with stopped aircraft engines, unless exemption granted for certain stations.*
2. *All other aircraft types may be pushed back with idling engines.*
3. *Pushback speed must not exceed 5 km/hr during the whole operation.*

8.5.2 Starting of Engines

8.5.2.1 During Pushback

Depending on local procedures and aircraft type, engines may be started before during or after pushback. The engines of an aircraft may be started during pushback at stations where local regulations allow this procedure.

Starting of engines during pushback shall be agreed upon between the captain and the person responsible on the ground prior to commencing pushback. The driver of the tractor and other personnel involved in the pushback maneuver must be informed accordingly. In adverse weather and/or tarmac conditions, the driver of the tractor may object to engines being started during pushback if he feels this could jeopardize safe maneuvering.

Clear communication between flight deck and ground is essential for carrying out the pushback and engine-starting operation safely. Starting engines during pushback is therefore not permitted if the interphone system is unserviceable or cannot be used due to thunderstorm activity.

8.5.2.2 During Towing

All forward towing shall be performed with the engines stopped. Exempted from this rule is short forward towing in connection with pushback in order to center the nosewheel(s).

Note: The standard phrases and signals apply also to towing, with the exception that the term "pushback" shall be replaced by the term "towing".

8.5.3 Communication and Signaling

Refer to SHB chapter 4: TTPM-LO910.

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8.6 Communication with Flight Deck Crew

8.6.1 General

Timely and comprehensive information to the flight deck crew is essential in the interest of:

- safety and regularity of the flight operations, and
- good customer service.

8.6.2 Special Information

Station personnel must inform the captain especially of:

- possible irregularities in the ground handling and explain the reasons. In such cases:
  - make recommendations for minimizing the negative effects of such irregularities on the flight schedule and the passengers;
  - contact the captain as early as practicable. Use the Company Utilization Channel (CUT) if the irregularity is known before arrival of the aircraft;
- unusual occurrences at the airport that may cause irregularities in the ground handling such as breakdown of airport facilities, strikes, intensified security controls, VIP movements, presence of military forces, demonstrations, etc., and;
- any unusual observations or occurrences at, and around the aircraft. In such cases the captain must be informed immediately.

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9 EQUIPMENT

9.1 Aircraft Equipment

9.1.1 Classification

9.1.1.1 Standard Equipment Included in Basic Weight (BW)

Equipment independent of aircraft version and route to be flown, but must always be carried.

Standard equipment includes, for example:

- aircraft document briefcase;
- compartment nets;
- pantry and toilet water;
- standard Airborne Maintenance Kit (AMK) loaded in bulk compartment 5, and;
- baby bassinets.

Note: The standard AMK is installed in a special rack and contains maintenance materials which are carried on board each aircraft on all flights.

All AMK boxes carry the text "AMK" followed by an identification code and the phrase, "DO NOT OFFLOAD—BELONGING TO BKKTJTG".

9.1.1.2 Version Equipment Included in BW

Equipment belonging to a certain cabin version.

Version equipment includes, for example:

- passenger seats;
- blankets and pillows;
- partition walls in cabin;
- life vests;
- oxygen masks, and;
- seat pocket supplies.

9.1.1.3 Route Equipment not Included in BW

Equipment required for a special route.

Route equipment includes, for example:

- additional Airborne Maintenance Kit (AMK) loaded in ULD Compartments 1, 2, 3 or 4.

Note: The additional AMK is loaded in a yellow/orange colored AVE/AKE and contains additional maintenance materials which are carried on board an aircraft in addition to standard AMK when operating specific routes.

All AMK boxes or ULDs carry the text "AMK" followed by an identification code and the phrase, "DO NOT OFFLOAD—BELONGING TO BKKTJTG".

9.1.1.4 ULD Equipment not Included in BW

Equipment integrated with loading system in Compartments 1, 2, 3 and 4 on 747/777/787/A380/A350/A330 aircraft.

ULD equipment includes, for example:

- pallet with net
- lower deck containers (including structural igloo).

9.1.2 Actions by Stations

9.1.2.1 Used Equipment

The following regulations are applied whenever aircraft equipment is handled at a station:

- standard version or route equipment must not be removed from aircraft. After use, such equipment shall be returned to its place on board.

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9.1.3 ULD Specifications

9.1.3.1 ULD Types and Characteristics

See General LCM, Chapter 18.2—ULD Types and Characteristics.

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9.1.3.2 List of Equipment—Pallets and Containers

Code	Description	Contour			Standard tare wt. (kg)	Maximum gross weight					Internal volume (cu.m)
		Base	Height	Top		747	777	787	A330/A350	A380[a]	
PAP PAG/ PAU/ PAW PAJ P1P KAP	Pallet with net	223.5 × 317.5 cm (88 x 125 ins)	–	–	96 117 121 126 575	4626	4676/ 5102[b]	4676/ 5102[c]	4676	-	[c]
PGA	Pallet with net	243.8 × 605.8 cm (96 × 238.5 ins)	–	–	544	N/A[d]	N/A[d]	N/A[d]	N/A[d]	N/A[d]	[c]
PLA	Pallet with net	153.4 × 317.5 cm (60.4 × 125 ins)	–	–	104	3175	3175	3175	3175	-	[c]
PMC	Pallet with net	243.8 × 317.5 cm (96 × 125 ins)	–	–	126	5034	5102/ 6350[b]	5102/ 5669[c]	5103	-	[c]
AAP	Certified full-size LD9 container (Structural igloo)	223.5 × 317.5 cm (88 × 125 ins)	162.6 cm (64 ins)	223.5 × 317.5 cm (88 × 125 ins)	201	4626	4676/ 5102[b]	4676/ 5102[c]	4626	-	10.5
ALF	Certified full-size lower deck LD6 container (Half igloo)	153.4 × 317.5 cm (60.4 × 125 ins)	162.6 cm (64 ins)	153.4 × 406.4 cm (60.4 × 160 ins)	155	3175	3175	3175	3175	-	9.2
AKE[e] AVE[f]	Certified half-size lower deck LD3 container	153.4 × 156.2 cm (60.4 × 61.5 ins)	162.6 cm (64 ins)	153.4 × 200.7 cm (60.4 × 79 ins)	86 118	1587	1587	1587	1587	-	4.3
RKN	Certified half-size lower deck insulated LD3 container	153.4 × 156.2 cm (60.4 × 61.5 ins)	162.6 cm (64 ins)	153.4 × 200.7 cm (60.4 × 79 ins)	190	1587	1587	1587	1587	-	3.7
RAP	Certified full-size insulated LD9 container	223.5 × 317.5 cm (88 × 125 ins)	162.6 cm (64 ins)	223.5 × 317.5 cm (88 × 125 ins)	355/499	4626	4626/ 5102[b]	4676/ 5102[c]	4626	-	9.7
AAF	Certified full-size lower deck LD26 container	223.5 × 317.5 cm (88 × 125 ins)	162.6 cm (64 ins)	223.5 × 406.4 cm (88 × 160 ins)	254	4626	4676/ 5102[b]	4676/ 5102[c]	4626	-	13.1
AMF	Certified full-size lower deck LD36 container	243.8 × 317.5 cm (96 × 125 ins)	162.6 cm (64 ins)	243.8 × 406.4 cm (96 ×160 ins)	290	5034	5102/ 6350[b]	5102/ 5669[c]	5103	-	14.7

Note: *Requests for pallet with net, igloos and containers shall be forwarded to BKKKF, copied to BKKF8.*

See General LCM, Chapter 9.1.3.5—Examples of Pallets, Igloos and Containers with Dimensions and Lateral Positions below for details of pallet with net and containers.

a) See the A380 LCM Chapter 3.6—Versions, ULD Layout.

b) Max. capacity for 777-200 at position 23P and 777-300 at position 25P and 31P only.

c) Actual usable volume may vary depending on unit design to specific aircraft contour.

d) Not Applicable

e) AMK Orange Container, tare weight 145 kg.

f) AMK Orange Container, tare weight 175 kg.

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9.1.3.3 Repair of Equipment

9.1.3.3.1 General

BKKF8 is the only organization authorized to repair or scrap ULD equipment. All damaged equipment shall be forwarded to BKKKF without delay.

Damaged igloos/containers shall, in principle, be carried on pallets. However, igloos/containers with the base panel serviceable may be forwarded, installed in the 747/777/787/A330/A350/A380 loading system provided that:

- such an igloo or container is empty, and;
- it can be positively secured so that damaged parts will not protrude from the container and interfere with details of the aircraft loading system or components for handling equipment.

Note: For easy identification of unserviceable ULDs, use the identification tag form THAI 1639-B. See General LCM, Chapter 14.1.2.3—Labeling of ULDs.

9.1.3.3.2 Replacement

Replacement for damaged containers may be obtained in two ways depending on the method of forwarding damaged containers, i.e. whether the damaged unit is installed in the 747/777/787/A330/A350/A380 loading system or not. See General LCM, Chapter 9.1.3.3.1—General.

Replacement for containers forwarded on pallets must be requested from BKKKFTG with copies to BKKF8TG, BKK2QTG, and BKKKYTG

Example of telex

BKKKFTG CPYXXXX BKKF8TG BKK2QTG
BKKKYTG
.HKGKKTG 200700
ONE LD3 CONTAINER U/S STP WILL FWD
TG601/20
STP FWD REPLACEMENT
=

Replacement for damaged containers installed in the 747/777/787/A330/A350/A380 loading system, which will be forwarded, may be taken from the inbound flight.

This procedure necessitates, however, the outbound flight to be operated in the same version as the inbound one.

Since the replacement procedure as outlined above will influence the operating stock of igloos/containers at BKK, it is essential that a prewarning message be sent to BKKKFTG with copies to BKKF8TG, BKK2QTG.

Example of telex

BKKKFTG CPYXXXX BKKF8TG BKK2QTG
.HKGKKTG 201530
ONE LD3 CONTAINER U/S WILL FWD 601/20
INSTALLED IN LOADING SYSTEM STP
=

9.1.3.4 Weight and Balance Control

The tare weights of ULDs shall be included in the traffic load on the Loadsheet and Loadmessage.

For loaded ULDs the tare weight shall be combined with the weight of their contents. Should a ULD contain loads for more than one destination, the tare weight shall be included in the weight of the load for the last destination of the ULD.

Any empty ULDs shall be entered on the Loadsheet and Loadmessage as traffic load for the next station.

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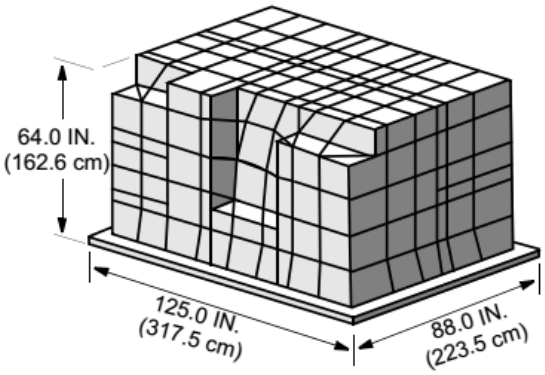
9.1.3.5 Examples of Pallets, Igloos and Containers with Dimensions and Lateral Positions

The external dimensions and lateral positions of ULDs are provided in the following illustrations.

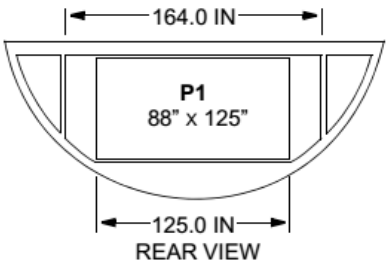
PAG/PAJ/PAP/PAU/PAW/P1P—Pallet with Net (P1)

ULD Dimensions



Size 223.5 x 317.5 cm
(88" x 125")

Lateral Position



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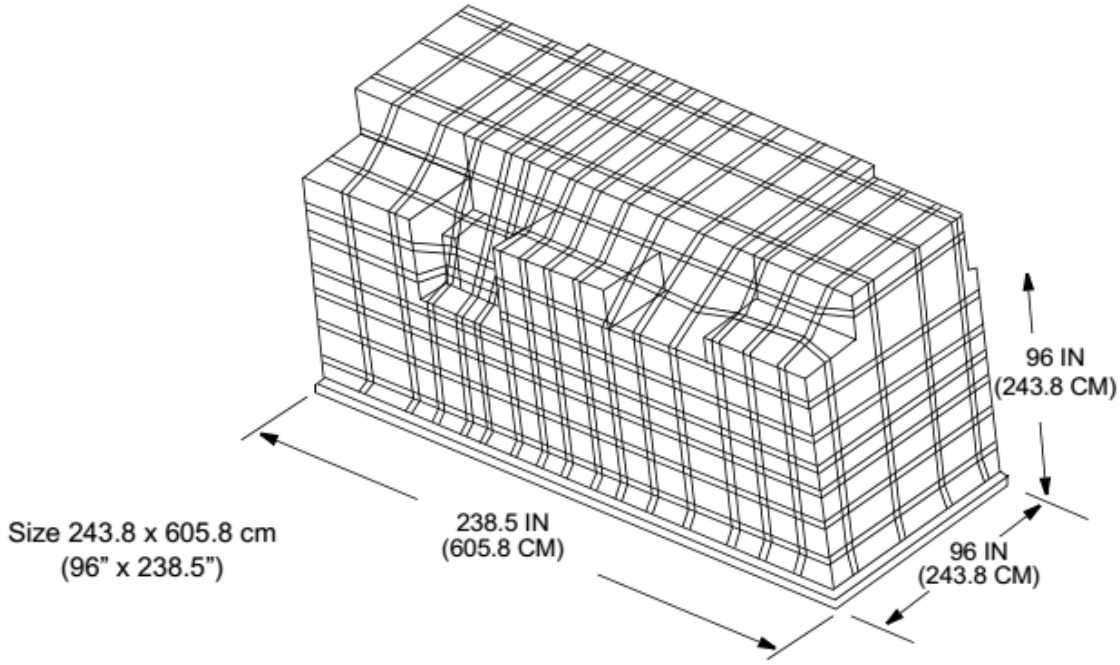
PGA—Pallet with Net (20 ft pallet)

ULD Dimensions



Note: The units are intended to be used on 747F cargo aircraft only, not applicable to passenger aircraft.

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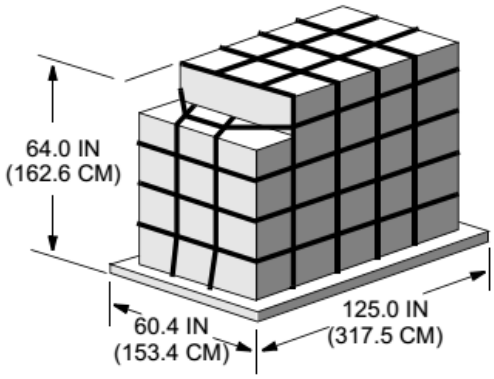
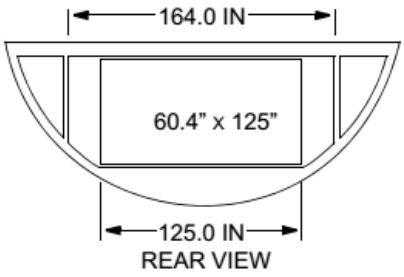
PLA—Pallet with Net

ULD Dimensions



Size 153.4 x 317.5 cm
(60.4” x 125”)

Lateral Position



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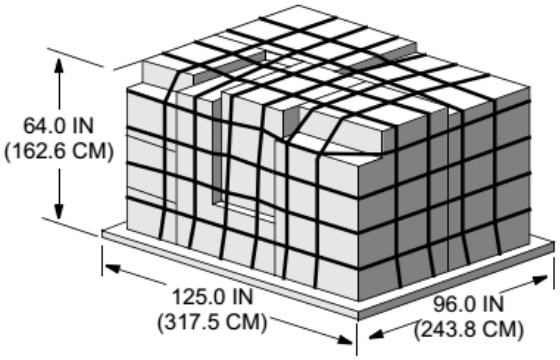
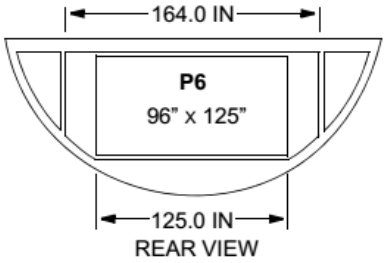
PMC—Pallet with Net (P6)

ULD Dimensions



Size 243.8 x 317.5 cm
(96" x 125")

Lateral Position



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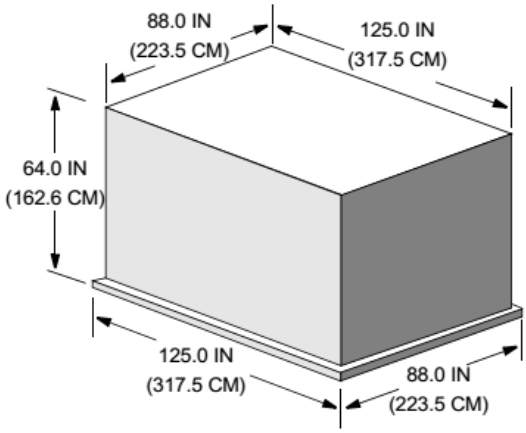
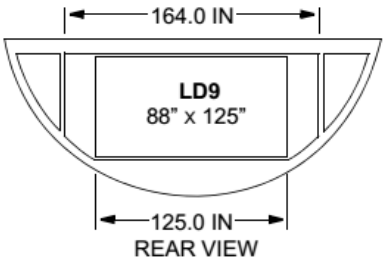
AAP Certified Full-Size Lower Deck LD9 Container (Structural Igloo LD9)

ULD Dimensions



Lateral Position



Note: APP, when loaded in cargo compartment, the canvas door with net must face out to door area for easy handling and offloading.

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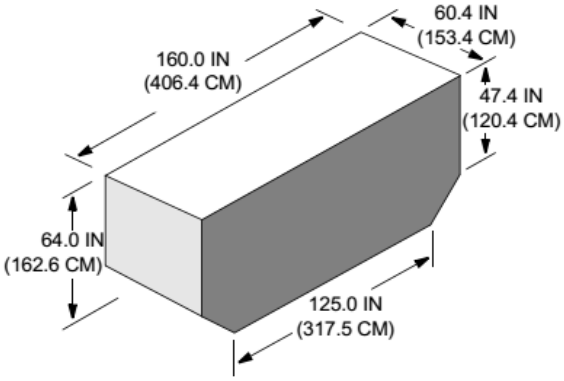
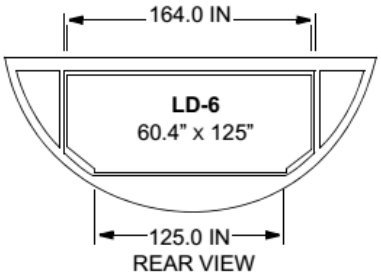
ALF Certified Full-Size Lower Deck LD6 Container (Half Igloo)

ULD Dimensions



Lateral Position



Note: ALF, when loaded in cargo compartment, the canvas door with net must face out to door area for easy handling and offloading.

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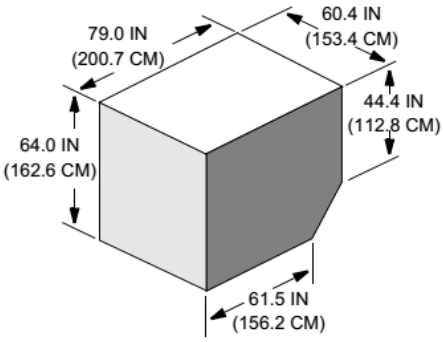
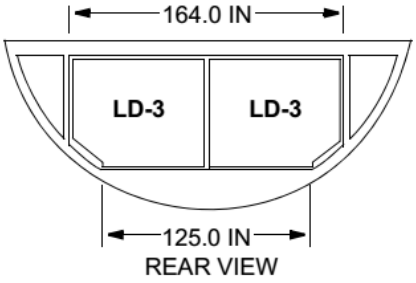
AKE/AVE Certified Half-Size Lower Deck LD3 Container

ULD Dimensions



Lateral Position



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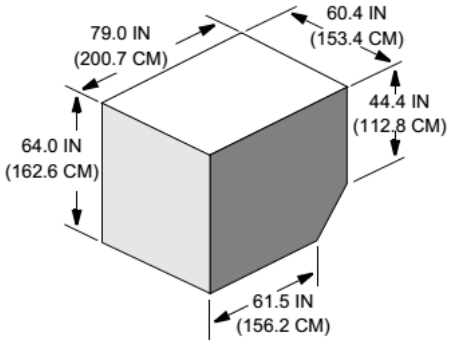
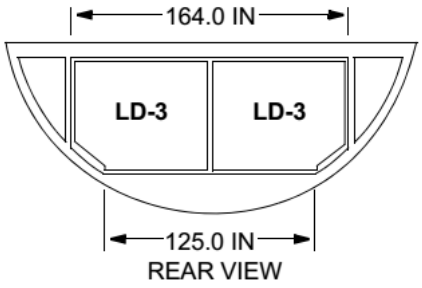
RKN Certified Half-Size Lower Deck Insulated LD3 Cooltainer

ULD Dimensions



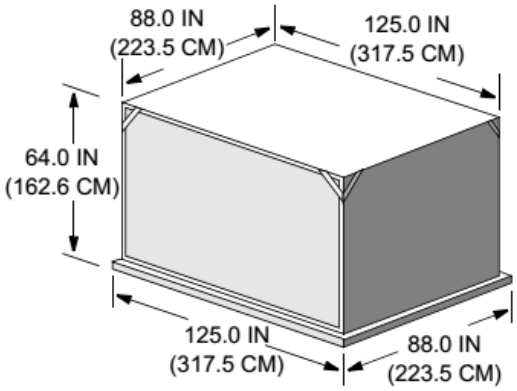
Lateral Position



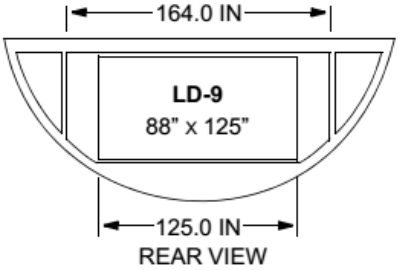
UNCONTROLLED IF DOWNLOADED OR PRINTED

RAP Certified Full-Size Lower Deck Insulated LD9 Cooltainer

ULD Dimensions



Lateral Position



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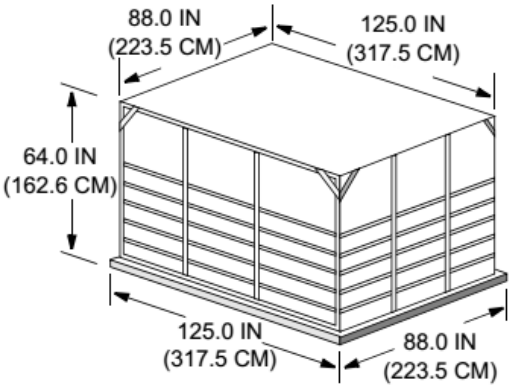
KAP Livestock Container (with two Levels) LD9 Container

ULD Dimensions



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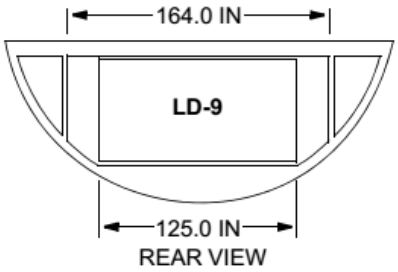

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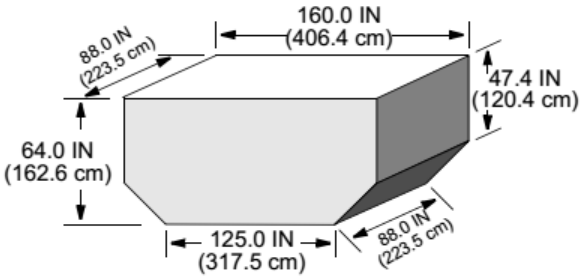
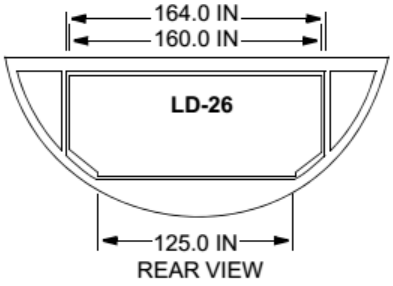
AAF Certified Full-Size Lower Deck LD26 Container (Structural Igloo LD26)

ULD Dimensions



Lateral Position



Note: AAF, when loaded in cargo compartment, the canvas door with net must face out to door area for easy handling and offloading.

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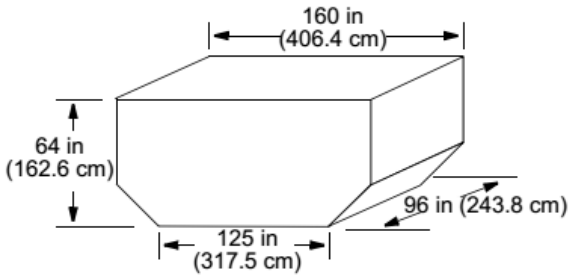
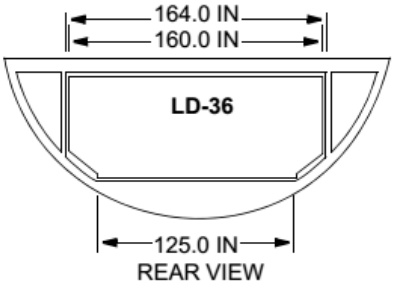
AMF Certified Full-Size Lower Deck LD36 Container (Structural Igloo LD36)

ULD Dimensions



Lateral Position



Note: AMF, when loaded in cargo compartment, the canvas door with net must face out to door area for easy handling and offloading.

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9.2 Extra Loading Equipment

9.2.1 Classification

Extra loading equipment may be placed on board individual flights by stations in addition to standard version and route equipment.

Extra loading equipment includes, for example:

- ballast bags
- stretcher kits
- supporting planks
- tiedown straps
- tiedown rings.

Extra loading equipment is not included in the DOW, so it must be shown on the loadsheet.

9.2.2 Actions by Stations

9.2.2.1 Locally-stored Extra Loading Equipment

The following regulations are applied whenever equipment is stored at a station:

- equipment stored at stations shall be protected against damage caused by weather, moisture, dirt, etc.
- damaged and worn equipment which cannot be repaired locally at reasonable costs shall be returned to BKK2M.

9.2.2.2 Movement Control of Extra Loading Equipment

The following regulation is applied whenever extra loading equipment is handled at a station.

Originating station

Send a pre-warning telex to the station of destination with a copy to BKKFA and BKKJU—telex addressed to Equipment Spare Parts Store Division (2M-W), advising number(s) and type(s) of extra loading equipment sent, including information on flight and ULD identification code, and requesting for the return of the equipment under telex advice.

Destination

The equipment shall, after being used on board, be collected, bundled, marked and returned without delay under telex advice to station of origin with a copy to BKKFA and BKKJU.

9.2.2.3 Forwarding of Extra Loading Equipment

Equipment transferred as extra equipment to a requesting station shall be bundled and marked with a special tag and forwarded to the requesting station. The forwarding shall be confirmed by telex to the requesting station.

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9.3 List of Equipment

Equipment type	Weight (kg)	Aircraft	For details	To be ordered from
Ballast bags, filled	25	All	See General LCM, Chapter 9.4.1 —Ballast Bag.	BKKF8-I
Stretcher kit, standard	40	737/747/777/787/ A330/A350/A380	See General LCM, Chapter 9.4.2 —Stretcher.	BKKTJ
Supporting plank	100 × 15 × 5.1 cm = 3 kg 150 × 15 × 5.1 cm = 7 kg 200 × 15 × 5.1 cm = 10 kg 250 × 15 × 5.1 cm = 12 kg 300 × 15 × 5.1 cm = 14 kg	All	See General LCM, Chapter 12.1.4 —Supporting Planks.	Local or BKKFF-E (by telex request)
Tiedown ring, standard	0.1	All	See General LCM, Chapter 11 —LOAD RESTRAINTS.	BKKFA
Tiedown strap, 3 m Tiedown strap, 5 m	0.6 1.0	All	See General LCM, Chapter 11 —LOAD RESTRAINTS.	BKKFA (Refer to TCM 5.3 section 2.)

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9.4 Specification of Extra Loading Equipment

9.4.1 Ballast Bag

Ballast bags shall be made of strong canvas or hessian with an inner plastic bag hermetically sealed.

Only dry shingle, coarse round gravel or pebbles of an average diameter of 12–15 mm can be used as filling material.

Ballast bags shall preferably be stored indoors. If this is not possible, they should be placed on carts and protected against weather by means of canvas covers or other suitable coverings.

There are 2 types of ballast:

- ballast bag
- ULD ballast.

Refer to the weight from KF, add loadsheet procedure from LCM 9.5.4.

9.4.2 Stretcher

A lying sick transport can only be made by means of a specially constructed stretcher. Whenever BKKHB has approved a stretcher transport, necessary stretcher equipment will be forwarded to the station at which the stretcher transport is to be performed. BKKHB will confirm the forwarding by telex to the applicable sales office and station. After use, stretcher equipment kit must be returned to BKKTJ immediately for checking and replenishing.

Installation/removed of stretcher equipment in/from an aircraft shall be carried out by the station mechanic.

9.4.3 Supporting Plank

See General LCM, Chapter 12.1—Aircraft Structural Limitations—ULD and Level Floor Bulk Compartments and see General LCM, Chapter 12.2—Aircraft Structural Limitations—Curved Floor Bulk Compartments.

9.4.4 Tiedown Ring

See General LCM, Chapter 11.7—Specifications of Lashing Equipment.

9.4.5 Tiedown Strap

See General LCM, Chapter 11.7—Specifications of Lashing Equipment.

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9.5 Equipment in Compartments (EIC) Procedure

9.5.1 Definition

EIC shipments are items of equipment which are carried on an aircraft NOT manifested and NOT included in the Dry Operating Weight—DOW and Dry Operating Index—DOI.

Equipment in Compartments includes:

- special Airborne Maintenance Kit (AMK);
- loading accessories;
- unmanifested catering equipment and food supply loaded in compartments;
- ULDs not belonging to the basic aircraft equipment, e.g. when forwarded to a station, transported on top of pallets installed in the loading system (Piggy Back).

Note: When the AMK is included in the DOW/DOI, the EIC tag shall not be used and the kit shall not be mentioned on the EIC notice.

9.5.2 Handling

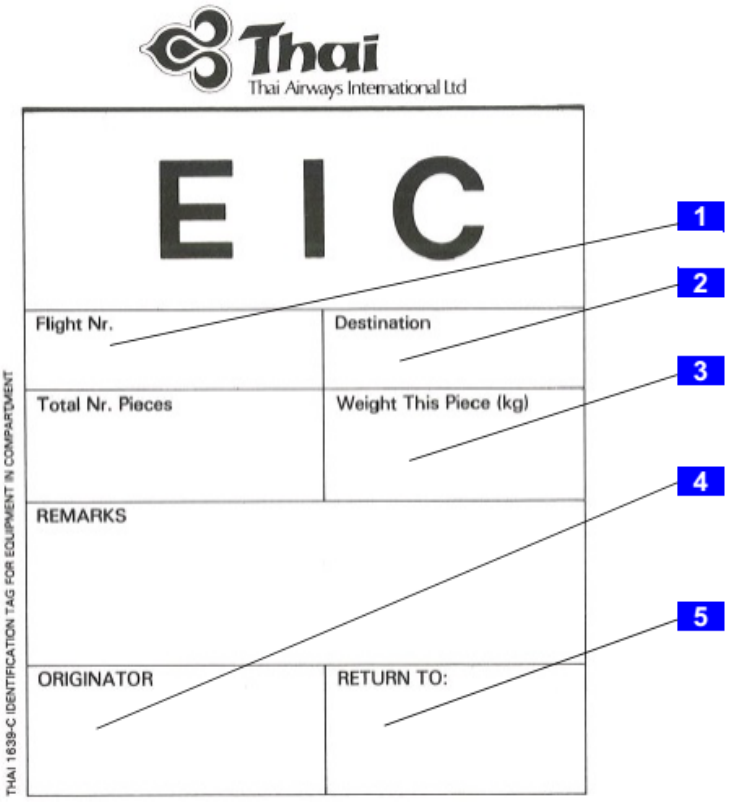
9.5.2.1 Labeling

Each EIC shipment must be labeled with a complete EIC tag as specified, except loading accessories and lashing material in use. See General LCM, Chapter 9.5.2.2—EIC Tag.

9.5.2.2 EIC Tag

All of the items in the form must be filled in.

Example of THAI 1639-C Form



1 Flight Nr.

The flight number

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2 Destination

IATA 3-letter code

3 Weight of This Piece (kg)

4 Originator

IATA 3-letter airport/town and the function code of the delivering office

5 Return to

IATA 3-letter airport/town and the function code of the office controlling the equipment

9.5.2.3 EIC Notice

The delivering office shall complete an EIC Notice and forward it together with the shipment(s) to the loading supervisor or LCS. One copy of the EIC Notice shall be filed with the flight documents.

9.5.3 Notification to Load Control

For weight calculation and load planning purposes, the load control function shall be notified in writing about EIC shipment as early as possible.

9.5.4 Loadsheet Procedure

The weight of EIC is not included in DOW/DOI and shall be included in equipment weight (E) according to the destination and shown as a remark on the load sheet and load message. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.

Note: For THAI, whenever a special Airborne Maintenance Kit (AMK) is carried on a specific aircraft and flight, LCS has to ensure that a wording "AMK" is marked in loading messages and loadsheet, superseding the term of Flight Kit (FKT).

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9.6 Loading and Ramp Equipment

9.6.1 Carts

When using carts, spread the load as evenly as possible with heavy items at the bottom.

Do not wedge light packages between heavier items.

The reasons for stability and balance are that a falling package may easily be damaged, and it creates bad impression to the public.

Do not overload and ensure that the securing equipment is used—sides up, webbing on, etc.

9.6.2 Tractors

Drive tractors at a slow, regular speed, and avoid sharp turns, jerks and sudden stops.

Limit the number of carts or dollies in a train to the maximum specified by airline or airport regulations.

9.6.3 Conveyor Belt Loaders

When using belts inside buildings or at the aircraft, maintain proper spacing between articles to avoid jamming.

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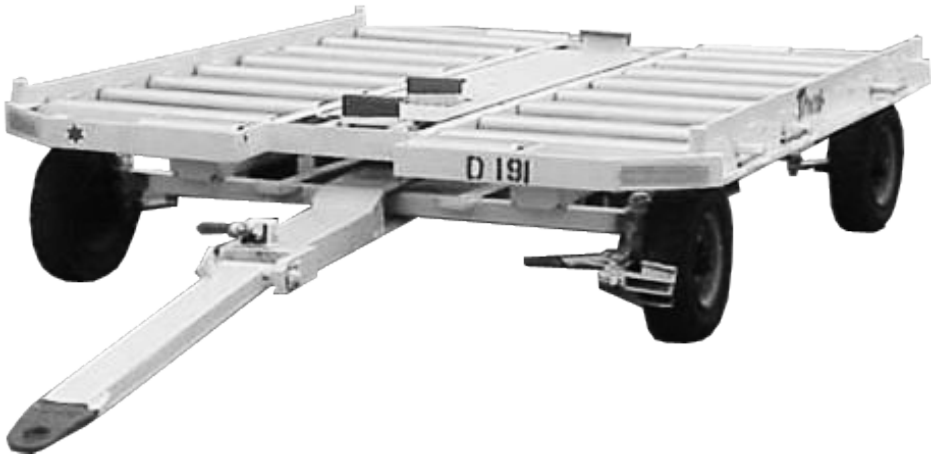
9.6.4 Container and Pallet Dollies

A Container/Pallet Dolly is a low cart for carrying containers/pallets from their loading bay to the aircraft side. Each dolly has a tow-bar and can be joined together to form a “train” which is towed by a tractor.

The center, or total upper part of the container dolly is usually a turntable fitted with rollers. This can be turned and locked to suit end or side loading. Rollers in front of and behind the turntable, or only where a turntable is fitted, assist in end loading and in transferring a container to/from a dolly. Locks/ stops must be set at a variety of positions for different types of container.

LD3 container dolly



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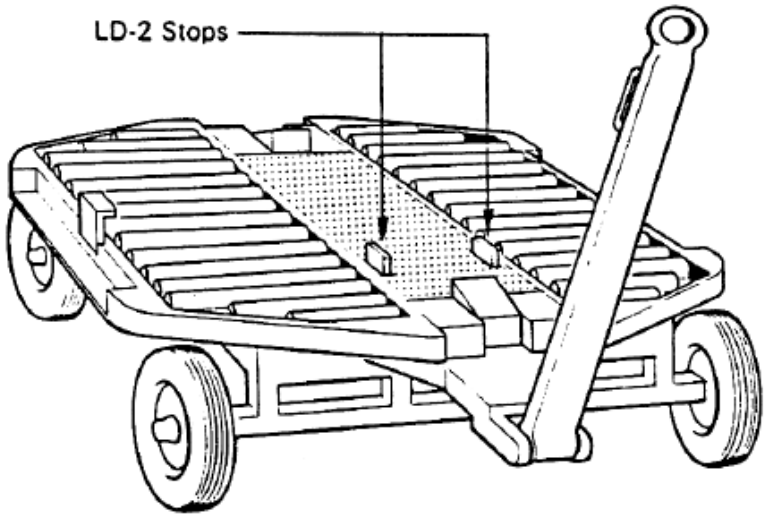
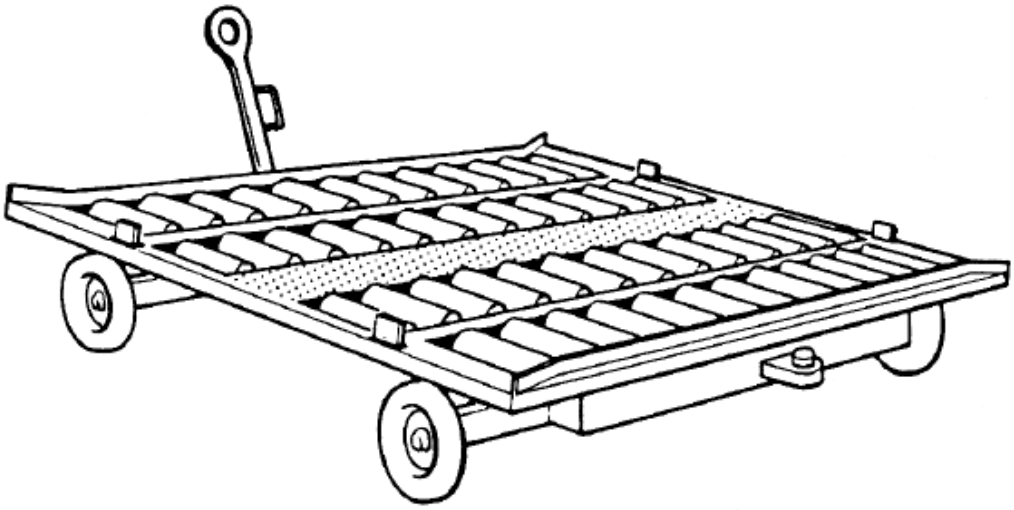
LD3 container dolly equipped with LD2 stops



Side-loading pallet dolly



End-loading pallet dolly

9.6.5 Transporters

Sometimes, at congested airports, space is insufficient to maneuver a train of pallet or container dollies on to the highloader. The train is then parked at some distance from the aircraft and a selfpropelled

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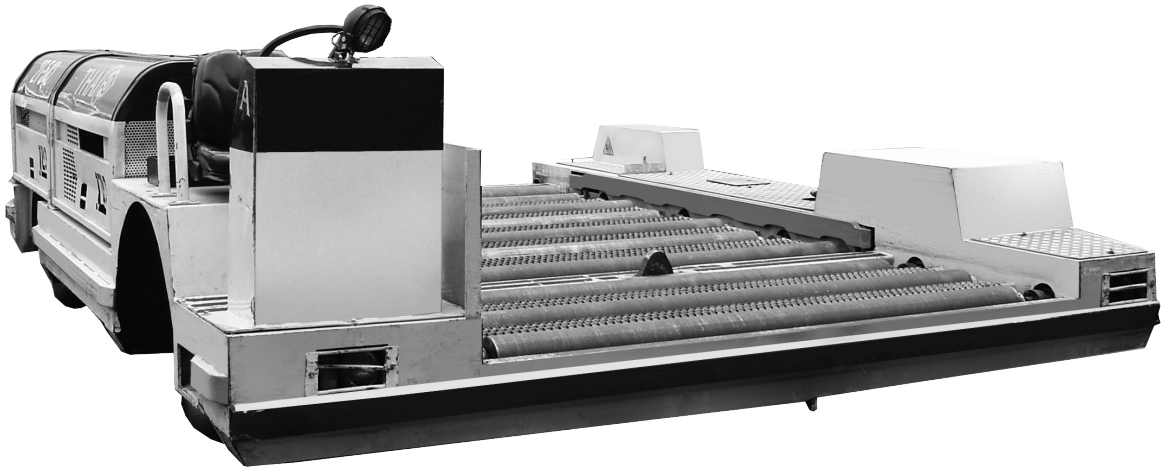
transporter is used to bridge the gap between the individual dollies and the highloader. Where the pallet or container terminal is in close proximity with the highloader the use of dollies can be avoided.

The platform is adjustable to allow it to match dolly height, rack height or loader height. Powered rollers assist in loading and offloading from front and rear end. There are 1-way, 2-way and 3-way transporters.



9.6.6 Container and Pallet Loaders (CPL)

A loader is a mobile lifting device for transferring containers and/or pallets from their dollies to the aircraft compartment and vice-versa.

There are various loaders used which allow lower deck loading, main deck loading or both. Some loaders allow pallets to be loaded lengthwise into the aircraft compartment.

The single platform loader consists of a lifting platform only.

The two-platform loader has a lifting platform and a bridging plaform. In its low position, the height of the lifting plaform matches the height of the dolly. Powered rollers on the loader assist in the transfer of the container or pallet from the dolly. The lifting platform is then raised to line up with the bridging platform. From this position powered rollers move the load into the aircraft. The bridging platform can be attached to the aircraft with the use of special fittings. The bridge will then automatically adjust to any aircraft movement during the loading or unloading operation.

The two-platform system also allows the staging of a container or pallet on the bridging platform; so that in the meantime the lifting platform can be lowered to pick up other load units, thereby substantially reducing cycle time.

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9.6.7 Forklifts with Slave Pallet

When a loader is not available a forklift in combination with a slave pallet can be used to load or unload pallets and containers. A slave pallet is a frame suitable for lifting with the tines of a forklift and with rollers and locking gear on its top surface. The forklift with the slave pallet attached is used in a normally way.

The rollers assist in the loading of the container or pallet on the slave pallet and its transfer to the aircraft but are not powered. The locks must be engaged during all lifting and maneuvering to ensure safety to equipment and personnel.

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10 LOAD INFORMATION

10.1 Operating Load

10.1.1 Crew and Crew Baggage (XCR)

10.1.1.1 Standard Weight, Crew and Baggage

Crew

For weight calculations on the loadsheet, the standard crew weights given below shall be used. The standard weight is applicable to both male and female crew members.

Scheduled flights/charter flights 75 kgs

Check and training flights 75 kgs.

Note: Weight of crew is included in DOW.

Baggage

For weight calculations on the loadsheet, the standard baggage weight given below shall be used:

- scheduled flights, 20 kg per piece.

Crew baggage shall be loaded in Compartment 5 door section on 747/777/787/A330/A350/A380 and Compartment 4 door section on 737 aircraft. The weight of crew baggage shall be shown on the loadsheet as passenger baggage.

Note: The weight of crew baggage is not included in DOW.

10.1.1.2 Additional Crew Occupying Passenger Seats (XCR)

General

The abbreviation XCR is used for additional crew members occupying passenger seats and applied to:

- enlarged flight-deck crew
- supernumerary cabin crew
- flying station engineers
- flying load control supervisors.

XCRs do not hold any flight tickets.

Consideration of XCR on the Loadsheet

- XCRs shall be included in the crew figures and consequently also in the DOW and DOI.
- XCRs shall not be included in passenger figures and also in seating condition.
- The letters XCR followed by the number of seats occupied by XCRs shall be entered in the remarks column on the loadsheet of the destination where the respective crew member(s) will disembark. See General LCM, Chapter 17.4.4.7—Recording of Additional Crew—XCR.

10.1.2 Fuel and Oil

10.1.2.1 General

All references to tankage made between station staff and crew shall be in kilograms.

10.1.2.2 Economy Fueling

Fuel prices vary considerably from one station to another and great savings can be made by taking this into consideration when deciding actual uplift of fuel.

The responsibility to comply with regulations concerning economy fueling rests solely with the station staff, since they have information of actual load on each particular flight.

Economy fueling is all fuel uplift between standard fuel and economy fuel.

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Note: Fuel uplift in excess of economy tankage will result in loss of money due to the increased fuel transport costs; it should, therefore, only be used if so required by flight plan.

10.1.2.3 Trapped Fuel

Trapped Fuel is refered to fuel trapped in any fuel tanks caused by fuel pump failure, fuel valve or fuel system failure.

The aircraft may be dispatched with trapped fuel under Minimum Equipment List (MEL) operational procedure, the amount of trapped fuel shall be considered as unusable fuel and part of zero fuel weight (ZFW) included in dry operating weight (DOW), it is should be taken into account for the index/CG determination.

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10.2 Traffic Load

10.2.1 Passengers

10.2.1.1 Standard Passenger Weight

International Flights

For weight calculation on loadsheet, the following standard weights shall apply for passengers:

- 70, 75, 78, 81, 84 kg for each male and female adult passenger
- 35 kg for each child (2–12 years)
- 10 kg for each infant (under 2 years).

These weights include a standard weight of 7 kg of handbaggage (excluding infants).

The standard passenger weight for international flight is classified into two main groups as the following table shall apply for each stations.

84 kg	81 kg	75 kg
CPH	AKL	CAN
DME	ARN	CGK
FRA	ATH	CTU
–	BLR	DPS
–	BNE	FUK
–	BOM	HAN
–	BRU	HKG
–	CCU	HND
–	CDG	ICN
–	CGP	KIX
–	CMB	KMG
–	DAC	KTM
–	DEL	KUL
–	DXB	MNL
–	FCO	NGO
–	HYD	NRT
–	IKA	PEK
–	ISB	PEN
–	JNB	PNH
–	KHI	PUS
–	KWI	PVG
–	LHE	RGN
–	LHR	SGN
–	MAA	SIN
–	MAD	TPE
–	MCT	VTE
–	MEL	XMN
–	MUC	CTS
–	MXP	

Note: *70 kg of standard passenger weight for HAJJ flight and GAY/VNS stations.*

See General LCM, Chapter 10.3—Passenger Weight Conversion Tables for the adult, child and infant weight conversion information.

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84 kg	81 kg	75 kg
–	OSL	–
–	PER	–
–	SYD	–
–	ZRH	–

Note: *70 kg of standard passenger weight for HAJJ flight and GAY/VNS stations.*

See General LCM, Chapter 10.3—Passenger Weight Conversion Tables for the adult, child and infant weight conversion information.

Domestic Flights

For weight calculation on loadsheet, the following standard weight shall apply for passengers:

- 75 kg for each male and female adult passenger
- 35 kg for each child (2–12 years)
- 10 kg for each infant (under 2 years).

These weights include a standard weight of 7 kg of handbaggage (excluding infants).

The standard passenger weight as prescribed above shall be applied in a specific international route, provided that the weight survey and official approval from BKKOU-W must be achieved.

10.2.1.2 Non-standard Passenger Weight

Where large groups (e.g. athletic teams) obviously do not conform to the standard weights mentioned, their weight shall be determined by weighing such passengers including their handbaggage. See General LCM, Chapter 10.2.1.1—Standard Passenger Weight.

- If such groups represent only part of the total passenger load, the weight applicable for the loadsheet will be:
  - the actual weight of the group, plus
  - the standard weight for the remaining passengers.
- When actual weights are used for the loadsheet, an appropriate remark must be made, stating number of persons, actual weight and identification of the group.
- ID Passengers occupying crew seats, the standard crew weight and index, shall be applied for weight calculations on the loadsheet. See Fleet-Specific LCM, Chapter 8.2.2—Crew Weight and Index.

10.2.2 Baggage

10.2.2.1 General

For weight calculation on the loadsheet, the actual weight of checked passenger baggage and of unchecked courier baggage shall be used.

10.2.2.2 Cabin Baggage

The weight of passenger cabin baggage, except, seat occupied baggage, courier baggage, large articles and service animals dogs, shall be disregarded as it is included in the passenger standard weights. See General LCM, Chapter 10.2.1.1—Standard Passenger Weight.

10.2.2.3 Service Animals (Seeing-Eye/Hearing-Aid Dog)

Service animal, (seeing-eye/hearing-aid dog) in the cabin shall be registered on the loadsheet with a standard weight of 30 kg. (See General LCM, Chapter 17.4.4.5—Recording of Seeing-Eye/Hearing-Aid Dog in Cabin—PET.)

10.2.2.4 Gate Delivery Items

The gate delivery items which are oversized/over weight or exceed the number of free allowance carry-on baggage shall be noted on the Load Message.If not applicable, LMC shall be made by using cumulative weights of 10 kg per piece (BKKOU-W).

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10.2.3 Cargo

10.2.3.1 General

For weight calculation on the loadsheet, the actual weight of the cargo, according to the Cargo Manifest or other weight sheets, shall be used (weights are stated in kilograms).

10.2.3.2 Special Load

For certain types of cargo, special regulations are applied as to location, quantity limitations, notification to captain, etc. See General LCM, Chapter 15.6.1—Special Load Quick Reference Table.

10.2.3.3 Mail

For weight calculations on the loadsheet, the actual weight of the General Post Office (GPO) mail according to the CN38, the actual weight of Company mail according to Company mail checklist shall be used.

Decimals in the total weight of all mail per station of unloading shall be rounded off to the nearest whole kilogram and the weight shall be registered on the loadsheet in whole kilograms.

10.2.3.4 Company Mail

The weight of Company mail in green sacks shall be registered as mail on the loadsheet and loaded in Compartment 5 door section on 747/777/787/A330/A350/A380 aircraft and Compartment 4 door section on 737 aircraft. See General LCM, Chapter 14.5—Company Mail (COM) for details.

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10.3 Passenger Weight Conversion Tables

10.3.1 Conversion Table for Adults

Passenger weight conversion table (70 kgs)

No.↓ →	Adult passenger weight (70 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	70	140	210	280	350	420	490	560	630
10	700	770	840	910	980	1050	1120	1190	1260	1330
20	1400	1470	1540	1610	1680	1750	1820	1890	1960	2030
30	2100	2170	2240	2310	2380	2450	2520	2590	2660	2730
40	2800	2870	2940	3010	3080	3150	3220	3290	3360	3430
50	3500	3570	3640	3710	3780	3850	3920	3990	4060	4130
60	4200	4270	4340	4410	4480	4550	4620	4690	4760	4830
70	4900	4970	5040	5110	5180	5250	5320	5390	5460	5530
80	5600	5670	5740	5810	5880	5950	6020	6090	6160	6230
90	6300	6370	6440	6510	6580	6650	6720	6790	6860	6930
100	7000	7070	7140	7210	7280	7350	7420	7490	7560	7630
110	7700	7770	7840	7910	7980	8050	8120	8190	8260	8330
120	8400	8470	8540	8610	8680	8750	8820	8890	8960	9030
130	9100	9170	9240	9310	9380	9450	9520	9590	9660	9730
140	9800	9870	9940	10010	10080	10150	10220	10290	10360	10430
150	10500	10570	10640	10710	10780	10850	10920	10990	11060	11130
160	11200	11270	11340	11410	11480	11550	11620	11690	11760	11830
170	11900	11970	12040	12110	12180	12250	12320	12390	12460	12530
180	12600	12670	12740	12810	12880	12950	13020	13090	13160	13230
190	13300	13370	13440	13510	13580	13650	13720	13790	13860	13930
200	14000	14070	14140	14210	14280	14350	14420	14490	14560	14630
210	14700	14770	14840	14910	14980	15050	15120	15190	15260	15330
220	15400	15470	15540	15610	15680	15750	15820	15890	15960	16030
230	16100	16170	16240	16310	16380	16450	16520	16590	16660	16730
240	16800	16870	16940	17010	17080	17150	17220	17290	17360	17430
250	17500	17570	17640	17710	17780	17850	17920	17990	18060	18130
260	18200	18270	18340	18410	18480	18550	18620	18690	18760	18830
270	18900	18970	19040	19110	19180	19250	19320	19390	19460	19530
280	19600	19670	19740	19810	19880	19950	20020	20090	20160	20230
290	20300	20370	20440	20510	20580	20650	20720	20790	20860	20930
300	21000	21070	21140	21210	21280	21350	21420	21490	21560	21630
310	21700	21770	21840	21910	21980	22050	22120	22190	22260	22330
320	22400	22470	22540	22610	22680	22750	22820	22890	22960	23030
330	23100	23170	23240	23310	23380	23450	23520	23590	23660	23730
340	23800	23870	23940	24010	24080	24150	24220	24290	24360	24430
350	24500	24570	24640	24710	24780	24850	24920	24990	25060	25130
360	25200	25270	25340	25410	25480	25550	25620	25690	25760	25830
370	25900	25970	26040	26110	26180	26250	26320	26390	26460	26530
380	26600	26670	26740	26810	26880	26950	27020	27090	27160	27230
390	27300	27370	27440	27510	27580	27650	27720	27790	27860	27930
400	28000	28070	28140	28210	28280	28350	28420	28490	28560	28630

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Passenger weight conversion table (75 kgs)

No.↓ →	Adult passenger welght (75 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	75	150	225	300	375	450	525	600	675
10	750	825	900	975	1050	1125	1200	1275	1350	1425
20	1500	1575	1650	1725	1800	1875	1950	2025	2100	2175
30	2250	2325	2400	2475	2550	2625	2700	2775	2850	2925
40	3000	3075	3150	3225	3300	3375	3450	3525	3600	3675
50	3750	3825	3900	3975	4050	4125	4200	4275	4350	4425
60	4500	4575	4650	4725	4800	4875	4950	5025	5100	5175
70	5250	5325	5400	5475	5550	5625	5700	5775	5850	5925
80	6000	6075	6150	6225	6300	6375	6450	6525	6600	6675
90	6750	6825	6900	6975	7050	7125	7200	7275	7350	7425
100	7500	7575	7650	7725	7800	7875	7950	8025	8100	8175
110	8250	8325	8400	8475	8550	8625	8700	8775	8850	8925
120	9000	9075	9150	9225	9300	9375	9450	9525	9600	9675
130	9750	9825	9900	9975	10050	10125	10200	10275	10350	10425
140	10500	10575	10650	10725	10800	10875	10950	11025	11100	11175
150	11250	11325	11400	11475	11550	11625	11700	11775	11850	11925
160	12000	12075	12150	12225	12300	12375	12450	12525	12600	12675
170	12750	12825	12900	12975	13050	13125	13200	13275	13350	13425
180	13500	13575	13650	13725	13800	13875	13950	14025	14100	14175
190	14250	14325	14400	14475	14550	14625	14700	14775	14850	14925
200	15000	15075	15150	15225	15300	15375	15450	15525	15600	15675
210	15750	15825	15900	15975	16050	16125	16200	16275	16350	16425
220	16500	16575	16650	16725	16800	16875	16950	17025	17100	17175
230	17250	17325	17400	17475	17550	17625	17700	17775	17850	17925
240	18000	18075	18150	18225	18300	18375	18450	18525	18600	18675
250	18750	18825	18900	18975	19050	19125	19200	19275	19350	19425
260	19500	19575	19650	19725	19800	19875	19950	20025	20100	20175
270	20250	20325	20400	20475	20550	20625	20700	20775	20850	20925
280	21000	21075	21150	21225	21300	21375	21450	21525	21600	21675
290	21750	21825	21900	21975	22050	22125	22200	22275	22350	22425
300	22500	22575	22650	22725	22800	22875	22950	23025	23100	23175
310	23250	23325	23400	23475	23550	23625	23700	23775	23850	23925
320	24000	24075	24150	24225	24300	24375	24450	24525	24600	24675
330	24750	24825	24900	24975	25050	25125	25200	25275	25350	25425
340	25500	25575	25650	25725	25800	25875	25950	26025	26100	26175
350	26250	26325	26400	26475	26550	26625	26700	26775	26850	26925
360	27000	27075	27150	27225	27300	27375	27450	27525	27600	27675
370	27750	27825	27900	27975	28050	28125	28200	28275	28350	28425
380	28500	28575	28650	28725	28800	28875	28950	29025	29100	29175
390	29250	29325	29400	29475	29550	29625	29700	29775	29850	29925
400	30000	30075	30150	30225	30300	30375	30450	30525	30600	30675

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Passenger weight conversion table (78 kgs)

No.↓ →	Adult passenger welght (78 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	78	156	234	312	390	468	546	624	702
10	780	858	936	1014	1092	1170	1248	1326	1404	1482
20	1560	1638	1716	1794	1872	1950	2028	2106	2184	2262
30	2340	2418	2496	2574	2652	2730	2808	2886	2964	3042
40	3120	3198	3276	3354	3432	3510	3588	3666	3744	3822
50	3900	3978	4056	4134	4212	4290	4368	4446	4524	4602
60	4680	4758	4836	4914	4992	5070	5148	5226	5304	5382
70	5460	5538	5616	5694	5772	5850	5928	6006	6084	6162
80	6240	6318	6396	6474	6552	6630	6708	6786	6864	6942
90	7020	7098	7176	7254	7332	7410	7488	7566	7644	7722
100	7800	7878	7956	8034	8112	8190	8268	8346	8424	8502
110	8580	8658	8736	8814	8892	8970	9048	9126	9204	9282
120	9360	9438	9516	9594	9672	9750	9828	9906	9984	10062
130	10140	10218	10296	10374	10452	10530	10608	10686	10764	10842
140	10920	10998	11076	11154	11232	11310	11388	11466	11544	11622
150	11700	11778	11856	11934	12012	12090	12168	12246	12324	12402
160	12480	12558	12636	12714	12792	12870	12948	13026	13104	13182
170	13260	13338	13416	13494	13572	13650	13728	13806	13884	13962
180	14040	14118	14196	14274	14352	14430	14508	14586	14664	14742
190	14820	14898	14976	15054	15132	15210	15288	15366	15444	15522
200	15600	15678	15756	15834	15912	15990	16068	16146	16224	16302
210	16380	16458	16536	16614	16692	16770	16848	16926	17004	17082
220	17160	17238	17316	17394	17472	17550	17628	17706	17784	17862
230	17940	18018	18096	18174	18252	18330	18408	18486	18564	18642
240	18720	18798	18876	18954	19032	19110	19188	19266	19344	19422
250	19500	19578	19656	19734	19812	19890	19968	20046	20124	20202
260	20280	20358	20436	20514	20592	20670	20748	20826	20904	20982
270	21060	21138	21216	21294	21372	21450	21528	21606	21684	21762
280	21840	21918	21996	22074	22152	22230	22308	22386	22464	22542
290	22620	22698	22776	22854	22932	23010	23088	23166	23244	23322
300	23400	23478	23556	23634	23712	23790	23868	23946	24024	24102
310	24180	24258	24336	24414	24492	24570	24648	24726	24804	24882
320	24960	25038	25116	25194	25272	25350	25428	25506	25584	25662
330	25740	25818	25896	25974	26052	26130	26208	26286	26364	26442
340	26520	26598	26676	26754	26832	26910	26988	27066	27144	27222
350	27300	27378	27456	27534	27612	27690	27768	27846	27924	28002
360	28080	28158	28236	28314	28392	28470	28548	28626	28704	28782
370	28860	28938	29016	29094	29172	29250	29328	29406	29484	29562
380	29640	29718	29796	29874	29952	30030	30108	30186	30264	30342
390	30420	30498	30576	30654	30732	30810	30888	30966	31044	31122
400	31200	31278	31356	31434	31512	31590	31668	31746	31824	31902

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Passenger weight conversion table (81 kgs)

No.↓ →	Adult passenger welght (81 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	81	162	243	342	405	486	567	648	729
10	810	891	972	1053	1134	1215	1296	1377	1458	1539
20	1620	1701	1782	1863	1944	2025	2106	2187	2268	2349
30	2430	2511	2592	2673	2754	2835	2916	2997	3078	3159
40	3240	3321	3402	3483	3564	3645	3726	3807	3888	3969
50	4050	4131	4212	4293	4374	4455	4536	4617	4698	4779
60	4860	4941	5022	5103	5184	5265	5346	5427	5508	5589
70	5670	5751	5832	5913	5994	6075	6156	6237	6318	6399
80	6480	6561	6642	6723	6804	6885	6966	7047	7128	7209
90	7290	7371	7452	7533	7614	7695	7776	7857	7938	8019
100	8100	8181	8262	8343	8424	8505	8586	8667	8748	8829
110	8910	8991	9072	9153	9234	9315	9396	9477	9558	9639
120	9720	9801	9882	9963	10044	10125	10206	10287	10368	10449
130	10530	10611	10692	10773	10854	10935	11016	11097	11178	11259
140	11340	11421	11502	11583	11664	11745	11826	11907	11988	12069
150	12150	12231	12312	12393	12474	12555	12636	12717	12798	12879
160	12960	13041	13122	13203	13284	13365	13446	13527	13608	13689
170	13770	13851	13932	14013	14094	14175	14256	14337	14418	14499
180	14580	14661	14742	14823	14904	14985	15066	15147	15228	15309
190	15390	15471	15552	15633	15714	15795	15876	15957	16038	16119
200	16200	16281	16362	16443	16524	16605	16686	16767	16848	16929
210	17010	17091	17172	17253	17334	17415	17496	17577	17658	17739
220	17820	17901	17982	18063	18144	18225	18306	18387	18468	18549
230	18630	18711	18792	18873	18954	19035	19116	19197	19278	19359
240	19440	19521	19602	19683	19764	19845	19926	20007	20088	20169
250	20250	20331	20412	20493	20574	20655	20736	20817	20898	20979
260	21060	21141	21222	21303	21384	21465	21546	21627	21708	21789
270	21870	21951	22032	22113	22194	22275	22356	22437	22518	22599
280	22680	22761	22842	22923	23004	23085	23166	23247	23328	23409
290	23490	23571	23652	23733	23814	23895	23979	24057	24138	24219
300	24300	24381	24462	24543	24624	24705	24786	24867	24948	25027
310	25110	25191	25272	25353	25434	25515	25596	25677	25758	25839
320	25920	26001	26082	26163	26244	26325	26406	26487	26568	26649
330	26730	26811	26892	26973	27054	27135	27216	27297	27378	27459
340	27540	27621	27702	27783	27864	27945	28026	28107	28188	28269
350	28350	28431	28512	28593	28674	28755	28836	28917	28998	29079
360	29160	29241	29322	29403	29484	29565	29646	29727	29808	29889
370	29970	30050	30132	30213	30294	30375	30456	30537	30618	30699
380	30780	30861	30942	31032	31104	31185	31266	31347	31428	31509
390	31590	31671	31752	31833	31914	31995	32076	32157	32238	32319
400	32400	32481	32562	32643	32724	32805	32886	32967	33048	33129

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Passenger weight conversion table (84 kgs)

No.↓ →	Adult passenger welght (84 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	84	168	252	336	420	504	588	672	756
10	840	924	1008	1092	1176	1260	1344	1428	1512	1596
20	1680	1764	1848	1932	2016	2100	2184	2268	2352	2436
30	2520	2604	2688	2772	2856	2940	3024	3108	3192	3276
40	3360	3444	3528	3612	3696	3780	3864	3948	4032	4116
50	4200	4284	4368	4452	4536	4620	4704	4788	4872	4956
60	5040	5124	5208	5292	5376	5460	5544	5628	5712	5796
70	5880	5964	6048	6132	6216	6300	6384	6468	6552	6636
80	6720	6804	6888	6972	7056	7140	7224	7308	7392	7476
90	7560	7644	7728	7812	7896	7980	8064	8148	8232	8316
100	8400	8484	8568	8652	8736	8820	8904	8988	9072	9156
110	9240	9324	9408	9492	9576	9660	9744	9828	9912	9996
120	10080	10164	10248	10332	10416	10500	10584	10668	10752	10836
130	10920	11004	11088	11172	11256	11340	11424	11508	11592	11676
140	11760	11844	11928	12012	12096	12180	12264	12348	12432	12516
150	12600	12684	12768	12852	12936	13020	13104	13188	13272	13356
160	13440	13524	13608	13692	13776	13860	13944	14028	14112	14196
170	14280	14364	14448	14532	14616	14700	14784	14868	14952	15036
180	15120	15204	15288	15372	15456	15540	15624	15708	15792	15876
190	15960	16044	16128	16212	16296	16380	16464	16548	16632	16716
200	16800	16884	16968	17052	17136	17220	17304	17388	17472	17556
210	17640	17724	17808	17892	17976	18060	18144	18226	18312	16396
220	18480	18564	18648	18732	18816	18900	18984	19068	19152	19236
230	19320	19404	19488	19572	19656	19740	19824	19908	19992	20076
240	20160	20244	20328	20412	20496	20580	20664	20748	20832	20916
250	21000	21084	21168	21252	21336	21420	21504	21588	21672	21756
260	21840	21924	22008	22092	22176	22260	22344	22428	22512	22596
270	22680	22764	22848	22932	23016	23100	23184	23268	23352	26436
280	23520	23604	23688	23772	23856	23940	24024	24108	24192	24276
290	24360	24444	24528	24612	24696	24780	24864	24948	25032	25116
300	25200	25284	25368	25452	25536	25620	25704	25788	25872	25956
310	26040	26124	26208	26292	26376	26460	26544	26628	26712	26796
320	26880	26964	27048	27132	27216	27300	27384	27468	17552	17636
330	27720	27804	27888	27972	28056	28140	28224	28308	28392	28476
340	28560	28644	28728	28812	28896	28980	29064	29148	29232	29316
350	29400	29484	29568	29652	29736	29820	29904	29988	30072	30156
360	30240	30324	30408	30492	30576	30660	30744	30828	30912	30996
370	31080	31164	31248	31332	31416	31500	31584	31668	31752	31836
380	31920	32004	32088	32172	32256	32340	32424	32508	32592	32676
390	32760	32844	32928	33012	33096	33180	33264	33348	33424	33516
400	33600	33684	33768	33852	33936	34030	34104	34188	34272	34356

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10.3.2 Conversion Table for Children and Infants

Passenger weight conversion table (35 kgs)

No.↓ →	Child (2–12 years) passenger welght (35 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	35	70	105	140	175	210	245	280	315
10	350	385	420	455	490	525	560	595	630	665
20	700	735	770	805	840	875	910	945	980	1015
30	1050	1085	1165	1245	1325	1405	1485	1565	1645	1725
40	1400	1435	1515	1595	1675	1755	1835	1915	1995	2075
50	1750	1785	1820	1855	1890	1925	1960	1995	2030	2065

Passenger weight conversion table (10 kgs)

No.↓ →	Infant (Under 2 years) passenger welght (10 kgs)									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	0	10	20	30	40	50	60	70	80	90
10	100	110	120	130	140	150	160	170	180	190
20	200	210	220	230	240	250	260	270	280	290

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11 LOAD RESTRAINTS 1

11.1 General 1

11.2 Forces Acting on the Load 1

11.3 Bulk Compartments 1

11.4 Unit Load Devices (ULDs) 1

11.4.1 Restraining of ULDs Within the Aircraft 1

11.4.2 Restraining of Load in ULDs 2

11.5 Tiedown Equipment 1

11.6 Tiedown Rules 1

11.6.1 How to Lash 1

11.6.2 Standard Lashing 2

11.6.3 Special Lashing 2

11.7 Specifications of Lashing Equipment 1

11.7.1 General 1

11.7.2 Tiedown Straps 1

11.7.3 Tiedown Rings 1

11.8 Restraint Ratings 1

11.8.1 General 1

11.8.2 Straps 1

11.8.3 Rings and Receptacles 1

11.8.4 Total Restraint Capacities 1

11.9 Calculation of Lashings 1

11.9.1 General 1

11.9.2 Lashing Formula 1

11.10 Lashing Tables 1

11.11 Special Load Lashing 1

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11 LOAD RESTRAINTS

11.1 General

All loads are resistant to any change in the velocity (speed) they possess and the direction of this velocity. Thus, stationary loads will tend to remain at rest and moving loads will tend to continue to move in the same direction and with the same velocity unless an external force is applied to alter the condition. For example, stationary objects in a moving aircraft will be traveling at the same velocity as the aircraft.

If the aircraft decelerates (stops) rapidly, the objects will tend to continue with the same velocity and in the same direction as before unless some restraint is applied. This is most noticeable when heavy braking or reverse thrust is applied after touchdown on the runway. The effect of sudden deceleration or bumpy weather conditions will also tend to make the objects in the aircraft move unless they are restrained.

Moving loads can easily damage an aircraft and jeopardize safety. In addition, the movement of load in bulk compartment may prevent the compartment door from being opened on arrival at destination. It is, therefore, necessary to adequately secure the loads to prevent any movement.

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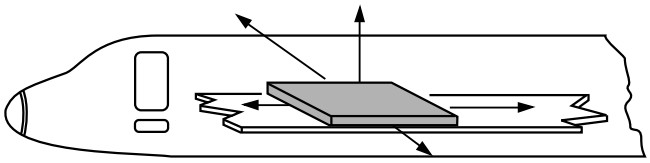
11.2 Forces Acting on the Load

The directions to which the load can be moved are shown in the following diagram.



All loads on an aircraft must be secured because of the accelerations imposed on it by the movement of the aircraft on the ground (that is, during takeoff and landing), and in the air.

There are four main reasons causing the loads shift; they are:

Acceleration on takeoff	Load tends to slip back
Yawing (sideway movement)	This normally occurs in turbulent conditions. It requires loads to be secured on both sides
Slowing-down (severe in emergencies)	Load tends to move forward
Vertical drops	Experienced in bumpy conditions, Load tends to leave the floor.

Therefore, the load must be secured to meet the above conditions. Lashing is required to restrain against:

Forward movement	AII the lashing needed must be from the point of restraint on the load to a lashing point behind this point of restraint
Backward movement	Lashing must be from the point of restraint on the load to a point forward of this
Upward movement	Lashing must be from a point as close to the loads as possible, preferably going over the loads from a lashing point on one side to a lashing point on the opposite side
Sideway movement	Lashing against sideway movement must always be on the opposite side being restrained. *Note: For a normal shape load, the sideway restraint is provided by the restraints in the other directions. Loads with irregular shape or high center of gravity requires left-right restraint.*

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11.3 Bulk Compartments

As a general rule, bulk compartments have been designed to meet all forces, see General LCM, Chapter 11.2—Forces Acting on the Load. Therefore, if a compartment is filled to capacity, tied own should not be necessary. The exception being that when a very heavy piece of cargo is contained within a compartment, the remainder of which is full of light weight cargo, baggage or mail, the heavy item should be individually secured.

Note: Compartments and net sections which are filled up to three-fourths (¾) of their heights are considered to be filled to capacity.

When a compartment is not fully loaded, however, precautions should be taken to prevent the cargo from jumping around. In a bulk compartment, it can be anticipated that even during a crash or forced landing, the load can do no harm to the passengers and crew; therefore, the load need only be tied in such a way that it will not move during a normal flight. When separation nets are provided, they must be properly fastened and tensioned.

Note: Loaders shall be alerted that attention shall be paid to any cargo requiring special handling for example, dangerous goods, wet cargos, fragile items, items of a piercing or puncturing nature.

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11.4 Unit Load Devices (ULDs)

11.4.1 Restraining of ULDs Within the Aircraft

On wide-bodied aircraft, the system employed is to secure dead load onto pallets or in containers. For this purpose, the compartments or cabin floor are fitted with suitable roller track and restraint systems. This method transfers part of the loading procedure from the aircraft side to the cargo warehouse or passenger baggage sorting area.

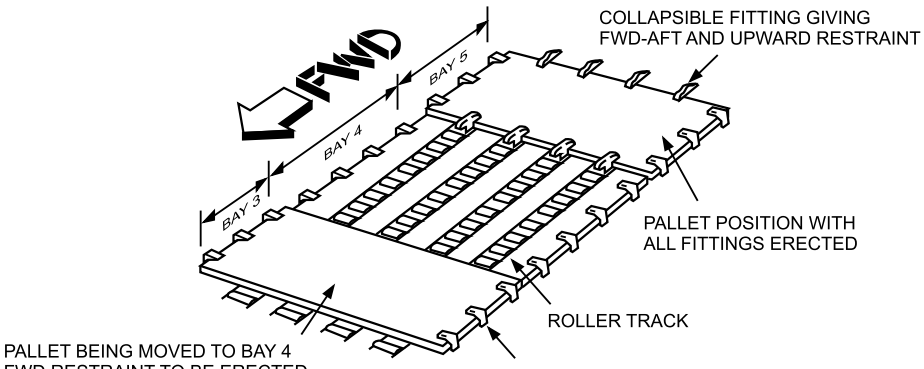
Pallet and containers are normally loaded into the aircraft by special ground equipment. Once in the aircraft they must be fixed in their allocated places and safely secured and locked in position.

CONTAINERS These can be regarded as small aircraft compartments which can be removed from the aircraft and loaded in a cargo warehouse or passenger sorting area. The container has certain structural limits which must not be exceeded.

PALLETS These can be regarded as pieces of the aircraft floor which are removed for easy loading. The loaded pallet arrives at aircraft side with a net and/or igloo already fitted. The loaders must ensure that each pallet is loaded in its correct location and the necessary floor fittings engaged.

ULD Restraint System

ULDs have standard size base dimensions. The aircraft restraint systems are designed to accommodate certain standard sizes, and only those which fit the particular aircraft floor system may be loaded. The aircraft floor systems are rollerized, so that when loaded into the aircraft, ULDs can be either driven by built-in mechanical power drives into position or manually pushed.



Note: Load on pallets omitted for clarity

Lower Deck Containers

Two basic types of containers are used by airlines worldwide at present:

Certified containers and igloos These are strong enough to restrain the load they carry and protect the aircraft from damage. Their base is secured to the aircraft floor by the restraint system in the same way as a pallet

Non-certified containers These are convenient containers used for ease of loading and protection of load. They are not strong enough to restrain their load during any violent deceleration and can only be loaded in aircraft compartments which are certified as having adequately strong walls and ceilings to permit bulk loading.

Note: Only certified containers may be accepted for loading on any THAI aircraft.

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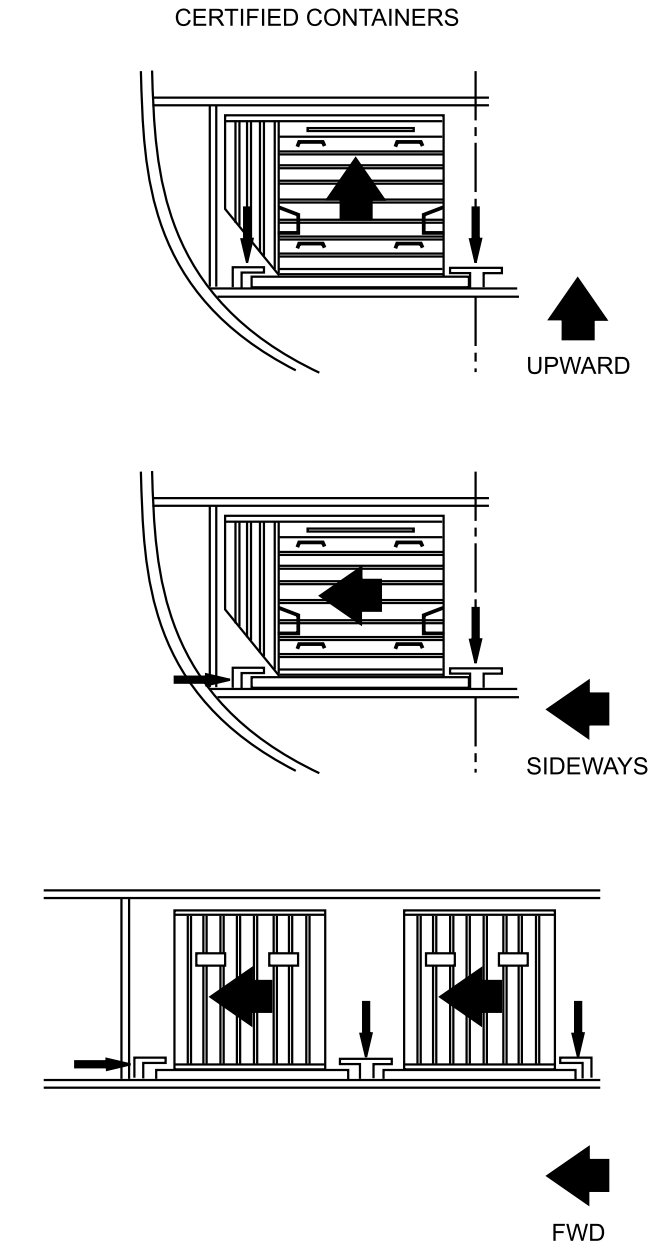
Underfloor restraint systems during violent conditions



11.4.2 Restraining of Load in ULDs

Pallets

Cargo loaded on a pallet is normally restrained by the net, the strength of which is certified for the maximum gross weight of the pallet; for example:

- 3175 kg/7000 lb gross weight for a 60" × 125" pallet
- 6800 kg/15000 lb gross weight for an 88" or 96" × 125" pallet.

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Tiedown straps must be used as a replacement of the pallet net only in the following circumstances:

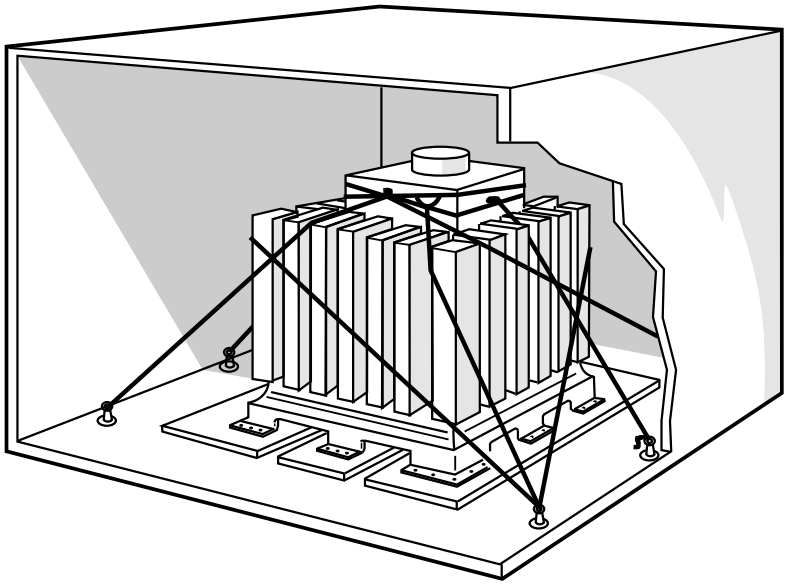
- load such that does not allow using the net without risk of damage (examples: automobiles, aircraft engines);
- load which cannot be effectively restrained by the net because of mesh size (examples: pipes, extrusions), and;
- overhang load (OHG) for which the pallet net does not provide appropriate restraint.

Certified Containers and Igloos

If a container is not fully packed, packages could move during transportation and cause damage. Always fully secure load in partly used ULDs.

There are several means which might be provided to secure loads. Where nets or straps are provided, use all the attachment points. In other cases, a few lengths of rope crisscrossing the load will do the job adequately.

Where individual items are very heavy (150 kg or more) and constitute a large part of the total weight, they shall separately be tied down irrespective of whether there appears to have other loads to sufficiently prevent them from moving. Straps or ropes fixed to the base restraint points shall be used.



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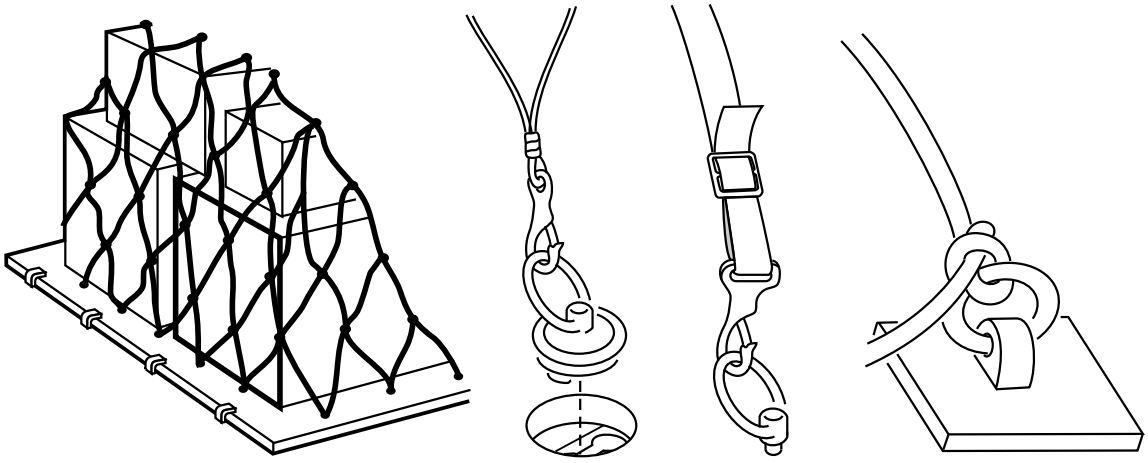
11.5 Tiedown Equipment

To secure the load, a variety of securing equipment can be employed. Examples of the most popular equipment used is nets, cables, straps, ropes, tensioners, etc.



NET CABLE STRAP ROPE

There is substantial variation in the strength of the lashing material. Lashing equipment and lashing rings (except for standard pallet restraint equipment, ropes and webbing) must be marked permanently with the breaking strength in kilograms.

Only equipment for which a definite breaking strength can be ascertained shall be used.

Note: The breaking strength quoted for a lashing or tiedown fitting is the maximum load which the item shall withstand without failure.

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11.6 Tiedown Rules

11.6.1 How to Lash

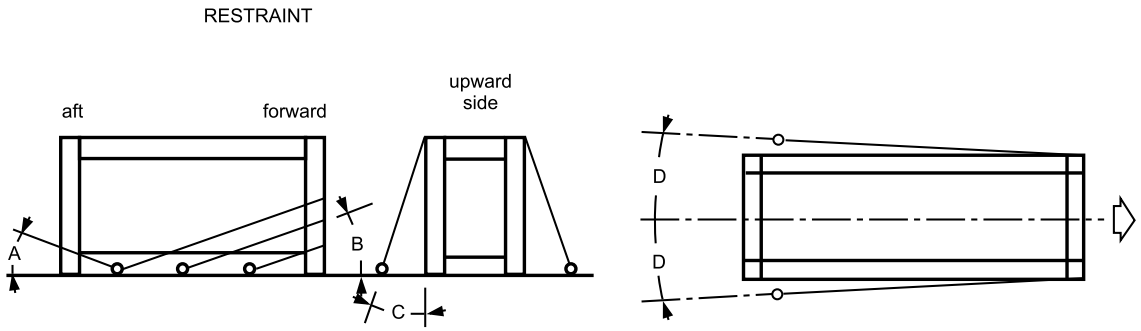
It is not allowed to tie down a load with different equipment (fittings, ropes, straps); tiedown must be performed exclusively either with straps or with ropes, without any mixing.

Except when absolutely necessary (no other equipment available), single stud fittings and ropes may be used only for tiedown in the bulk compartments or inside containers.

Minimum distance between two adjacent tiedown points shall be 50 cm/20 in.

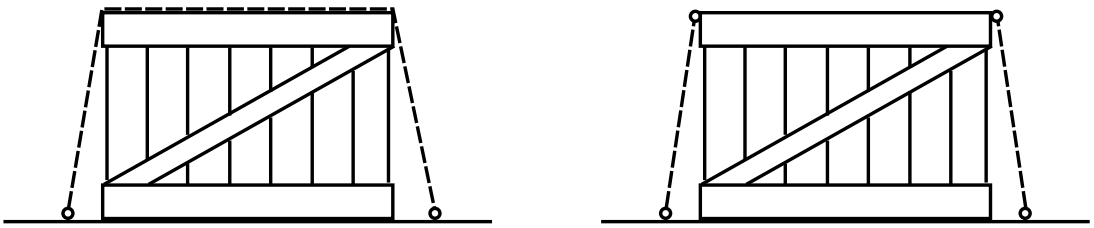
Tiedown shall ensure restraint in at least three directions: forward, aft, and upward in relation to the aircraft. Lateral tiedown may be considered covered if tiedown in the above three directions is adequately performed; it constitutes, in fact, a net sufficient to restrain the load against sideward movement.

Each strap or rope shall make a maximum angle of 30° in the direction of restraint:



Angles A, B, C, D shall always be less than 30°.

Where the straps or ropes are attached directly from the load to the ULD floor or edge rail, two of these straps or ropes make one lashing.



Both of these arrangements are of the same strength and make one lashing.

A single tiedown fitting may receive up to three straps or ropes in three different restraint directions (forward, aft, up). But it shall not receive more than one strap or rope in the same direction.

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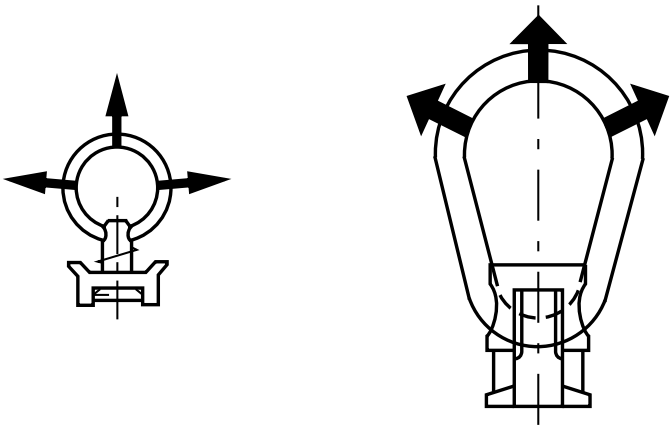


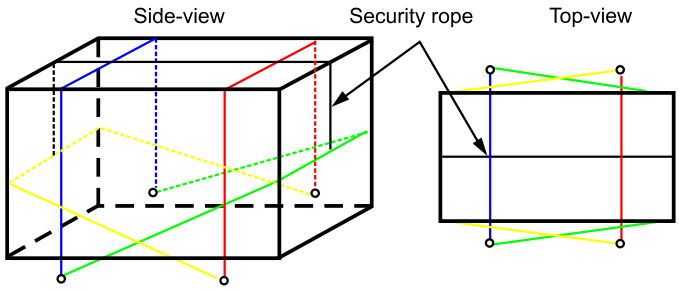
The straps or ropes in a tiedown arrangement must be tightened in an approximately equal number, but without excess; strong tightening does not increase tiedown strength. Particularly, when tying down on aluminum 88" or 96" × 125" pallets, check that straps are not tightened to the extent they raise the pallet edges.

11.6.2 Standard Lashing

Standard lashing requires four tiedown rings, four lashing straps or ropes, and one security rope. Two lashing straps or ropes will be used against upward forces, one lashing strap or rope against forward and backward forces. The security rope is necessary to prevent sliding down of the lashing straps or ropes used against forward and backward forces. As the sideward forces are already included in the standard lashing, no individual lashing against sideward forces is normally required.

However, in case a high and narrow item is loaded, the height of which is more than double of its width, an individual lashing against sideward forces is required in addition to the standard lashing. This additional lashing (to withstand 1.5 g) shall be placed between half and two-thirds of the height of the item and be secured by two security ropes in order to prevent it from sliding down. Depending on the weight of the item and the lashing material used, additional lashing may be required.

The following illustration of standard lashing shows four lashings, plus one security tie.



11.6.3 Special Lashing

Since forward, sideward, upward and backward forces are not acting simultaneously, one strap will secure an item against more than one force if arranged as shown in illustration below.

Pictures 1 and 2 below show two straps arranged to secure for forward, sideward and upward forces.

Pictures 3 and 4 show two straps arranged to secure for backward, upward and sideward forces.

Picture 5 shows the complete special lashing arrangement for all the forces using total four straps and four rings.

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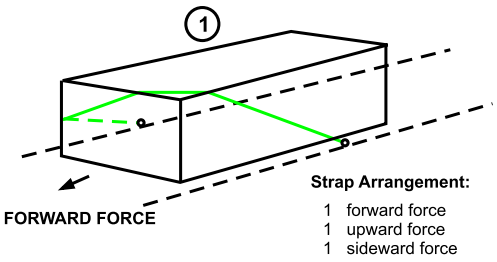
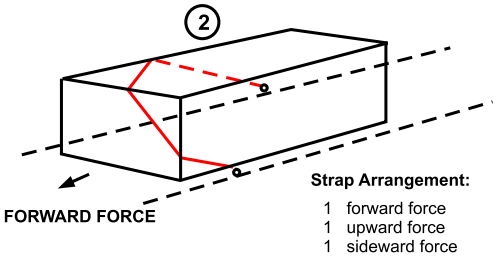
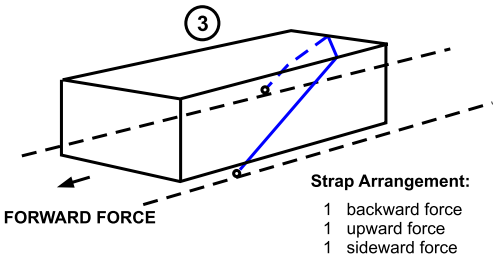
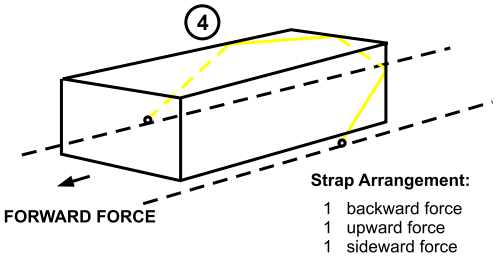
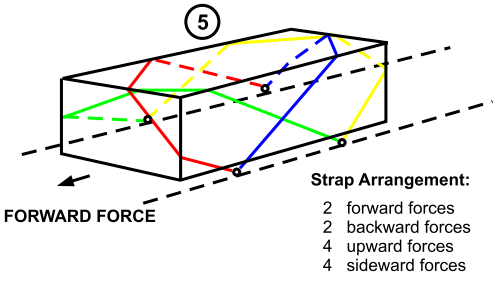
Examples of special lashing











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11.7 Specifications of Lashing Equipment

11.7.1 General

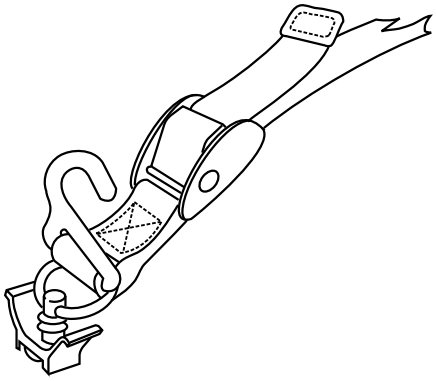
For the purpose of securing load, lashing devices of various types and capacities are available. Individual lashing of cargo items shall be carried out by means of the lashing equipment, see General LCM, Chapter 11.7.2—Tiedown Straps and see General LCM, Chapter 11.7.3—Tiedown Rings.

11.7.2 Tiedown Straps

Standard Tiedown Straps

These straps are made of nylon webbing and available in lengths of three and five meters.

As apparent from the illustration below the strap is provided with a buckle for tensioning the strap and with a hook and tie down ring in each end.



The standard type strap can, thus, be either hooked onto a pallet net ring, or be locked onto the pallet track by means of a tiedown ring attached to a strap.

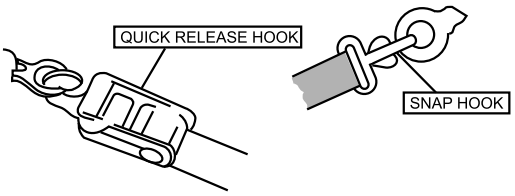
The rated capacity of a standard strap itself is 360 kg, while the ring provides a restraint capacity of 900 kg.

Heavy Duty Tiedown Straps

The heavy duty strap is made of 1¾ inch-wide webbing and is available in a length of five meters.

The rated capacity of a heavy duty strap is 1,500 kg.

The strap is provided with a buckle for tensioning the strap and with steel hooks in both ends for attachment to pallet net rings, or alternatively to a loose heavy duty ring as shown in the illustration below.



11.7.3 Tiedown Rings

The following types of tiedown rings are used by THAI:

- standard type, with a rated capacity of 900 kg, and;

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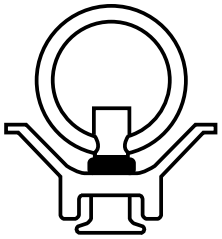
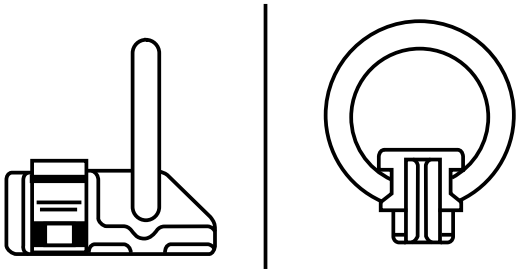
- heavy-duty type with a rated capacity of 2,270 kg.

Standard tiedown ring



Heavy-duty tiedown ring



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11.8 Restraint Ratings

11.8.1 General

When determining the number of tie down straps and rings to be used for lashing, it must be noted that the restraint capacity must always be based upon the lowest ratings applicable to the strap, ring or attached points.

11.8.2 Straps

The rated capacities maybe doubled when applying a strap over an item and attaching the strap to two rings located opposite or diagonally to each other. See General LCM, Chapter 11.7.2—Tiedown Straps.

Consequently, the following capacities may be calculated with:

Standard Strap 720 kg

Heavy Duty Strap 3,000 kg.

11.8.3 Rings and Receptacles

The restraint capacities as provided by the pallet net rings and by the ring receptacles in structural ULDs (e.g. AA2 units and LD3 containers), vary as follows:

Pallets with nets, Net rings 1,765 kg

Pallets with igloos and containers, Anchor plates 900 kg.

11.8.4 Total Restraint Capacities

When attaching a standard or heavy duty strap to two rings, the total restraint capacity as provided by the strap and the rings together is either limited by the capacity of the ring or the strap.

Consequently, the following capacities shall be used when determining the required number of lashings:

Rating for rings and receptacles	Straps	
	Standard	Heavy duty
2 × 1,765 = 3,530	720	3,000
2 × 900 = 1,800	720	1,800
Total capacity in kilograms		

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11.9 Calculation of Lashings

11.9.1 General

The required number of straps and rings to be used can be determined using either the appropriate tables or formulae. See General LCM, Chapter 11.9.2—Lashing Formula and see General LCM, Chapter 11.10—Lashing Tables.

When determining the extent of a lashing arrangement, note that one strap used for lashing against upward force will also cover sideward force and may, depending upon the size and shape of the item, also cover backward and/or forward forces.

11.9.2 Lashing Formula

The following formula shall be used when determining the number of lashings to be used.

(G-Factor × Weight of Item) ÷ Restraint Capacity = Number of Lashings

where,

- The applicable G-Factors to be used are three times the item weight for upward forces and 1.5 times the item weight for other forces.
- See General LCM, Chapter 11.8.4—Total Restraint Capacities.

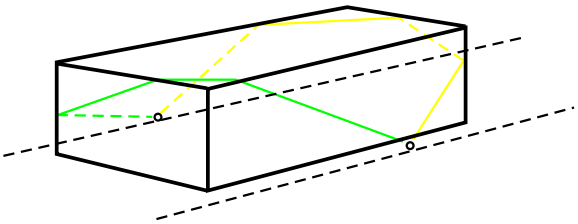
Examples

The number of lashings required for an item weighing 1,500 kg is calculated in the following ways:

- Lashing with Standard Straps on a PAP pallet:
  - Upward
    (3 × 1,500) ÷ 720 = 6.25 = 7 straps
  - Others
    6.25 ÷ 2 = 3.13 = 4 straps

  Consequently, seven Standard Straps attached to 14 rings would cover upward lashing requirements, while totally eight Standard Straps (four for forward and four for backward forces) attached to 16 rings would cover the need for lashing against other forces.
  If the straps required for backward and forward forces can be arranged so that the upward lashing requirements as well are covered, eight straps attached to eight rings would be sufficient.
- Lashing with Heavy Duty Straps on a PAP pallet
  - Upward
    (3 × 1,500) ÷ 3,000 = 1.50 = 2 straps
  - Others
    1.50 ÷ 2 = 0.75 = 1 straps

  Consequently, two Heavy Duty Straps attached to four rings would cover upward lashing requirements, while totally two Heavy Duty Straps (one for forward and one for backward forces) attached to four rings will do for other forces if Standard Lashing is performed. See General LCM, Chapter 11.6.2—Standard Lashing.
  If the straps required for backward and forward forces can be arranged so that upward lashing requirements as well are covered, two straps attached to two rings would be sufficient.



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11.10 Lashing Tables

The following lashing tables reflect the minimum number of straps and rings totally required for the tie down of cargo items onto pallets, igloos or containers. Therefore, half of the total number obtained, must secure the items against upward and forward forces, while the other half must act against upward and backward forces.

Sideward forces may be disregarded as automatically covered by the above mentioned lashing arrangement. See General LCM, Chapter 11.6.3—Special Lashing.

If the shape or size of an item makes it necessary to use separate straps for each individual load factor, the number of straps given for a specific weight group must all be used for upward forces, where after half of that number must be added for forward forces and another half for backward forces, that is, if the table value obtained is six straps, the total number of straps will be: six for upward forces plus three for forward plus three for backward.

Values for pallets with nets

Weight (kg)	Standard		Heavy duty	
	Strap no.	Ring no.	Strap no.	Ring no.
0–480	2	2	–	-
481–960	4	4	2	2
961–1440	6	6	2	2
1441–1920	8	8	2	2
1921–2400	10	10	4	8
2401–4000	-	-	4	8
4001–6000	-	-	6	12
Note: *The number of rings as shown in the table need not be increased.*				

Values for containers and bulk compartments

Weight (kg)	Standard		Heavy duty	
	Strap no.	Ring no.	Strap no.	Strap no.
0–480	2	2	–	–
481–960	4	4	2	4
961–1440	6	6	4	8
1441–1920	8	8	4	8
1921–2400	10	10	4	8
2401–3600	–	–	6	12
3601–4800	–	–	8	16
4801–6000	–	–	10	20
Note: *The number of rings as shown in the table need not be increased.*				

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11.11 Special Load Lashing

See General LCM, Chapter 15.2—Heavy and/or Bulky Items.

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12 SUPPORTING 1

12.1 Aircraft Structural Limitations—ULD and Level Floor Bulk Compartments 1

12.1.1 General 1

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12.2 Aircraft Structural Limitations—Curved Floor Bulk Compartments 1

12.2.1 General 1

12.2.2 Supporting by Planks 1

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12.2.4 Combined Use of Planks and Platforms 2

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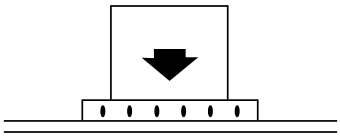
12 SUPPORTING

12.1 Aircraft Structural Limitations—ULD and Level Floor Bulk Compartments

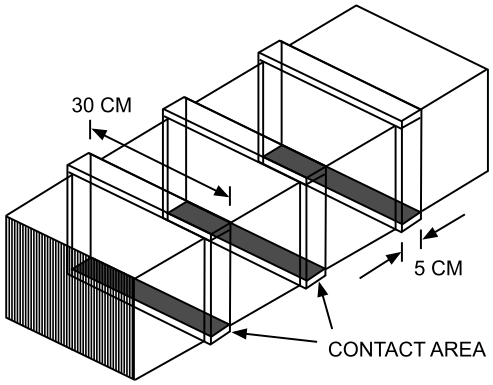
12.1.1 General

A piece of cargo loaded on ULD or in the level floor bulk compartments will contact the surface of the base panel or compartment floor either with its entire area, or by its battens or rim as can be seen from figures below.



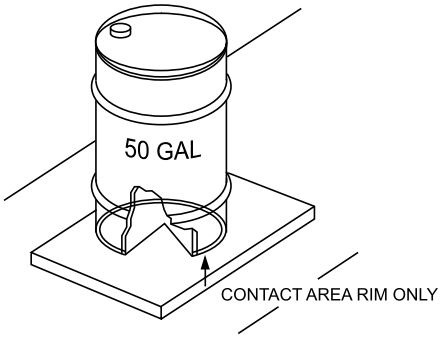
Uniformly Distributed Load

Only the battens are in contact with the floor and only that area must be taken into account when working out the floor loading.



30 cm x 5 cm x3 battens = 0.045 m^2
Actual contact area.

Drawings showing how sufficient spreaders must be used to ensure that the floor loading is not exceeded.



As apparent from the supporting tables, the maximum area load varies among different aircraft types. See General LCM, Chapter 12.1.3.1—ULD Compartments and see General LCM, Chapter 12.1.3.2—Bulk Compartments. The reason for this is the different designs of loading systems and structure underneath the floor (beams, cross beams, attachments to the aircraft body).

Whenever the applicable maximum area load is exceeded, that is, the actual weight of a piece of cargo is exceeding the minimum required contact area as obtained from the tables below, the weight of the piece must be distributed over a larger area to avoid damage to aircraft loading system and compartment floor as well as to the bottom surface of the ULD.

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Whenever it becomes necessary to distribute the weight over a larger area than the one provided by the piece of cargo, supporting planks shall be used in accordance with the ruling outlined below.

12.1.2 Area Load Limitations

12.1.2.1 General

The compartment area load limitation (expressed in kg/m²) is intended to prevent the weight of the load (expressed in kg) resting upon a certain area of the compartment floor (expressed in m²) from exceeding the capacity of aircraft structure.

12.1.2.2 Required Contact Area

The required contact area for pieces of cargo of different weights can be obtained from the tables giving minimum measurements for the length and width in different weight intervals. See General LCM, Chapter 12.1.3.1—ULD Compartments and see General LCM, Chapter 12.1.3.2—Bulk Compartments.

12.1.3 Supporting Tables

When using the tables:

- enter with the actual length and width of the contact area and read off the allowed weight at the intersection between the applicable length and width value;
- where the exact length/width is not shown, use the nearest lower length/width than the one considered, and;
- if the weight value obtained is lower than the actual weight of the item, the contact area must be enlarged by means of supporting planks.

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12.1.3.1 ULD Compartments

Large Compartment Door—747/777/787/A330/A350/A380

Length/ Width (cm)	Length/Width (cm)																				
	×	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
	20	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400
	30	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600
	40	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720	760	800
	50	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
	60	60	120	180	240	300	360	420	480	540	600	660	720	780	840	900	960	1020	1080	1140	1200
	70	70	140	210	280	350	420	490	560	630	700	770	840	910	980	1050	1120	1190	1260	1330	1400
	80	80	160	240	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600
	90	90	180	270	360	450	540	630	720	810	900	990	1080	1170	1260	1350	1440	1530	1620	1710	1800
	100	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
	110	110	220	330	440	550	660	770	880	990	1100	1210	1320	1430	1540	1650	1760	1870	1980	2090	2200
	120	120	240	360	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1800	1920	2040	2160	2280	2400
	130	130	260	390	520	650	780	910	1040	1170	1300	1430	1560	1690	1820	1950	2080	2210	2340	2470	2600
	140	140	280	420	560	700	840	980	1120	1260	1400	1540	1680	1820	1960	2100	2240	2380	2520	2660	2800
	150	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000
	160	160	320	480	640	800	960	1120	1280	1440	1600	1760	1920	2080	2240	2400	2560	2720	2880	3040	3200
	170	170	340	510	680	850	1020	1190	1360	1530	1700	1870	2040	2210	2380	2550	2720	2890	3060	3230	3400
	180	180	360	540	720	900	1080	1260	1440	1620	1800	1980	2160	2340	2520	2700	2880	3060	3240	3420	3600
	190	190	380	570	760	950	1140	1330	1520	1710	1900	2090	2280	2470	2660	2850	3040	3230	3420	3610	3800
	200	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
	210	210	420	630	840	1050	1260	1470	1680	1890	2100	2310	2520	2730	2940	3150	3360	3570	3780	3990	4200
	220	220	440	660	880	1100	1320	1540	1760	1980	2200	2420	2640	2860	3080	3300	3520	3740	3960	4180	4400
	230	230	460	690	920	1150	1380	1610	1840	2070	2300	2530	2760	2990	3220	3450	3680	3910	4140	4370	×
	240	240	480	720	960	1200	1440	1680	1920	2160	2400	2640	2880	3120	3360	3600	3840	4080	4320	×	×
	250	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000	4250	4500	×	×
	260	260	520	780	1040	1300	1560	1820	2080	2340	2600	2860	3120	3380	3640	3900	4160	4420	×	×	×
	270	270	540	810	1080	1350	1620	1890	2160	2430	2700	2970	3240	3510	3780	4050	4320	×	×	×	×
	280	280	560	840	1120	1400	1680	1960	2240	2520	2800	3080	3360	3640	3920	4200	4480	×	×	×	×
	290	290	580	870	1160	1450	1740	2030	2320	2610	2900	3190	3480	3770	4060	4350	×	×	×	×	×
	300	300	600	900	1200	1500	1800	2100	2400	2700	3000	3300	3600	3900	4200	4500	×	×	×	×	×
	Maximum Weights (kg)																				

Note: *The values above are based on an area load of 1000 kg/m².*

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12.1.3.2 Bulk Compartments

Bulk Compartment Door—737/747/777/787/A330/A350/A380

Length/Width (cm)										
×	10	20	30	40	50	60	70	80	90	100
20	14	29	43	58	73	87	102	117	131	146
30	21	43	65	87	109	131	153	175	197	209
40	29	58	87	117	146	175	204	234	263	292
50	36	73	109	146	183	219	256	292	329	366
60	43	87	131	175	219	263	307	351	395	439
70	51	102	153	204	256	307	358	409	461	×
80	58	117	175	234	292	351	409	468	×	×
90	65	131	197	263	329	395	461	×	×	×
100	73	146	219	292	365	439	×	×	×	×
110	80	161	241	322	402	483	×	×	×	×
120	87	175	263	351	439	×	×	×	×	×
130	95	190	285	380	475	×	×	×	×	×
140	102	204	307	409	×	×	×	×	×	×
150	109	219	329	439	×	×	×	×	×	×
160	117	234	351	468	×	×	×	×	×	×
170	124	248	373	497	×	×	×	×	×	×
180	131	263	395	×	×	×	×	×	×	×
190	139	278	417	×	×	×	×	×	×	×
200	146	292	439	×	×	×	×	×	×	×
210	153	307	461	×	×	×	×	×	×	×
220	161	322	483	×	×	×	×	×	×	×
230	168	336	×	×	×	×	×	×	×	×
240	175	351	×	×	×	×	×	×	×	×
250	183	366	×	×	×	×	×	×	×	×
260	190	380	×	×	×	×	×	×	×	×
270	197	395	×	×	×	×	×	×	×	×
280	204	409	×	×	×	×	×	×	×	×
290	212	424	×	×	×	×	×	×	×	×
300	219	439	×	×	×	×	×	×	×	×

Length/Width (cm)

Maximum Weights (kg)

Note: *The values above are based on an area load of 732 kg/m².*

12.1.4 Supporting Planks

12.1.4.1 General

Whenever it is determined that an enlargement of the contact area is required, supporting planks must be placed underneath the piece of cargo. See General LCM, Chapter 12.1.3.1—ULD Compartments and see General LCM, Chapter 12.1.3.2—Bulk Compartments.

Such supporting planks, conforming to the measurements given below, shall be easily available to staff preparing the loads.

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ULD Compartments—747/777/787/A330/A350/A380

Length (cm)	Width (cm)	Thickness		Weight (kg)	Supporting capacity (kg)
		(cm)	(in)		
100	15	2.5	1	3	150
150	15	5.1	2	7	225
200	15	5.1	2	10	300
250	15	5.1	2	12	375
300	15	5.1	2	14	450

Bulk Compartments—737/747/777/787/A330/A350/A380

Length (cm)	Width (cm)	Thickness		Average weight (kg)	Supporting capacity (kg)
		(cm)	(in)		
100	15	2.5	1	3	105
150	15	5.1	2	7	160
200	15	5.1	2	10	210
250	15	5.1	2	12	270
300	15	5.1	2	14	320

12.1.4.2 Examples

When determined that a certain contact area must be enlarged, the required number of planks shall be obtained from the table. See General LCM, Chapter 12.1.4.1—General; ULD Compartments—747/777/787/A330/A350/A380 and see General LCM, Chapter 12.1.4.1—General; Bulk Compartments—737/747/777/787/A330/A350/A380.

Next select a standard plank with a length equal to or slightly longer than the largest measurement of the piece of cargo and divide the applicable “supporting capacity” by the weight of the cargo piece, the result of which is the number of planks to be used.

The planks may be placed across or lengthwise underneath the piece of cargo but always in such a way that most of the planks are covered.

12.1.4.2.1 Supporting ULD Base Floor

Example 1

A piece of cargo weighing 955 kg is to be carried on a 747 aircraft.

The measurement is 130 × 80 cm, but it is provided with two battens, each measuring 10 × 80 cm (see the figure below).

To determine whether supporting is required, look up 80 cm in the table and read off the permissible weight in the intersection between 80 and 20 cm (2 × 10 cm). See General LCM, Chapter 12.1.3.1—ULD Compartments; Large Compartment Door—747/777/787/A330/A350/A380.

As can be seen from the table the permissible weight is 160 kg only, so supporting is required.

The required number of planks can be obtained from the table by selecting a standard length equal to or just above the actual total length of the cargo piece, here 150 cm. See General LCM, Chapter 12.1.4.1—General; ULD Compartments—747/777/787/A330/A350/A380.

The supporting capacity applicable for carriage (225 kg) shall be divided by the weight of the cargo:

955 kg ÷ 225 kg = 4.24 = 5 planks

The five planks shall then be placed underneath the cargo as shown in the following figure.

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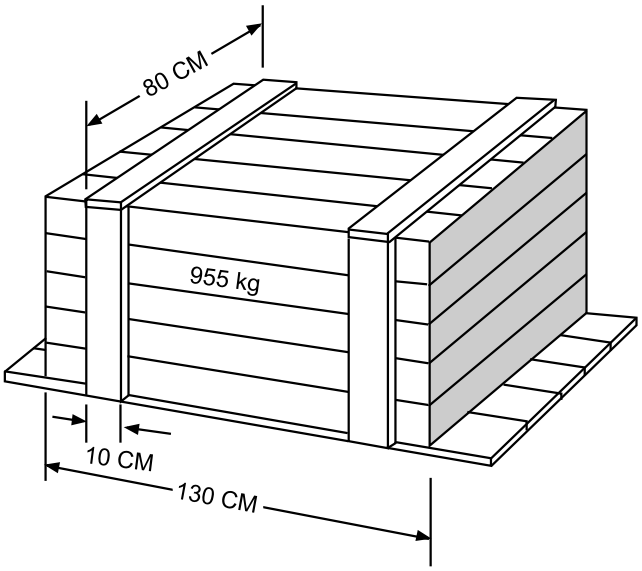

Example 2

A piece of cargo weighing 2,200 kg is to be carried on a 747 aircraft.

The measurement is 192 × 65 cm, but it is provided with three battens, each measuring 15 × 65 cm. See the figure below.

As can be seen from the table, the contact area needs enlargement by means of supporting planks. See General LCM, Chapter 12.1.4.1—General; ULD Compartments—747/777/787/A330/A350/A380.

The required number of planks can be obtained from the table by selecting 200 cm planks (that is the nearest higher value to the length of the piece of cargo, here 192 cm) and dividing the weight of the piece, here 2,200 kg, by the applicable supporting capacity, 300 kg, which gives a result of eight planks:

2200 kg ÷ 300 kg = 7.3 = 8 planks

However eight planks with a width of 15 cm each totals 120 cm, which is more than the width, here 65 cm, of the piece of cargo.

Therefore, the weight of the cargo has to be distributed over the entire support area by means of additional planks placed as evenly as possible transversely underneath the piece of cargo.

The number of such transversely placed planks shall be equal to the number of planks used for the supporting, in this case, eight, 150 × 15 cm planks.

Consequently eight planks each with a width of 200 cm placed longitudinally, together with eight planks each with a width of 150 cm placed transversely will provide the required supporting area as shown in the figure below.

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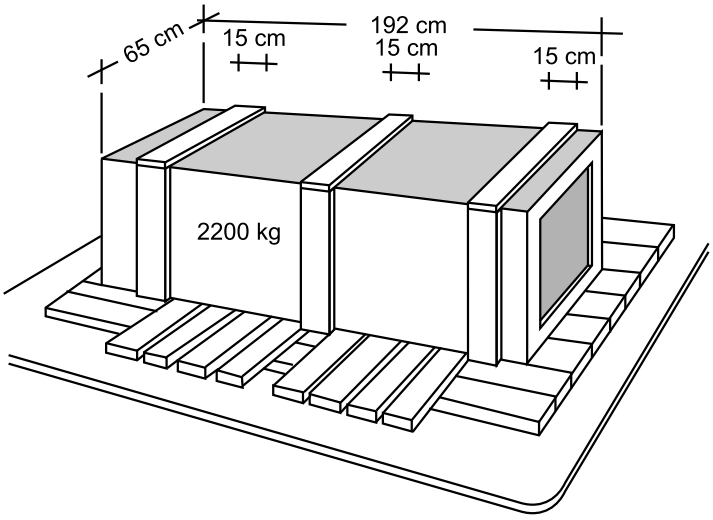


12.1.4.2.2 Supporting Bulk Compartment Floor

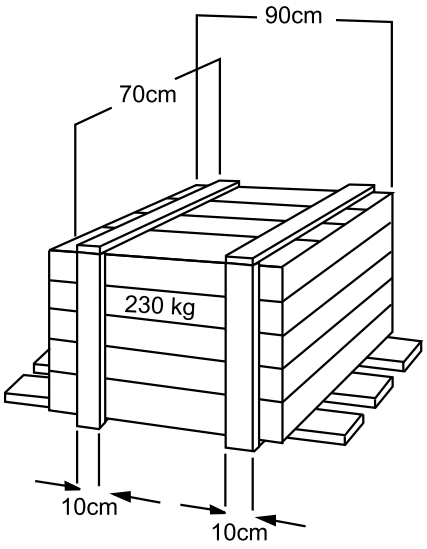
Example

A piece of cargo weighing 230 kg is to be carried on a 737 aircraft.

The measurement is 90 × 70 cm, but it is provided with two battens, each measuring 10 × 70 cm. See the figure below.

As can be seen from the table, the permissible weight is exceeded and three supporting planks each of 100 cm width must be used.

230 kg ÷ 105 kg = 2.19 = 3 planks



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12.2 Aircraft Structural Limitations—Curved Floor Bulk Compartments

12.2.1 General

In compartments with curved floor, only the items with a width of 15 cm or less will contact the floor with their total width. The items wider than 15 cm will contact the floor only with their edges.

The items wider than 15 cm and weighing more than 100 kg always exceed the maximum area load. Such items must at all times be supported by planks or supporting platforms.

12.2.2 Supporting by Planks

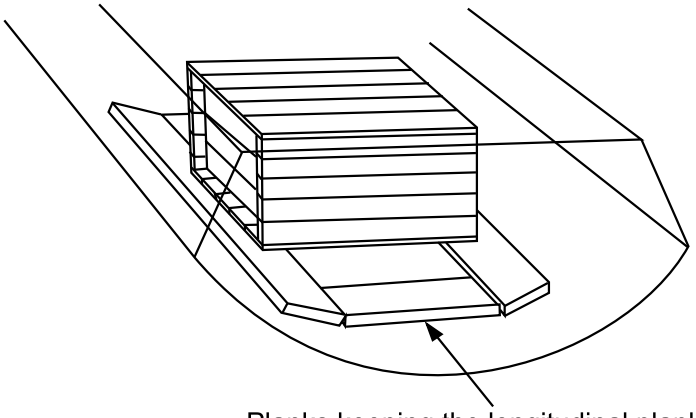
Required plank capacity may be obtained from the table below.

Note that all indications in the table are based on the use of two identical planks with widths of 15 cm. Minimum plank thickness is 2.5 cm (1 in). If the length of each plank exceeds that of the item by more than 60 cm, minimum plank thickness is 5 cm (2 in).

Plank length	Supporting capacity	Average total weight of planks
100 cm	160 kg	8 kg
150 cm	240 kg	15 kg
200 cm	320 kg	20 kg
250 cm	400 kg	24 kg
300 cm	480 kg	28 kg

For items exceeding 480 kg, use supporting platform(s).

Load contacting the floor with sharp edges only can be distributed over a larger floor area by means of two planks. One plank must be placed under each edge of the item as shown in the illustration below.



Note: The item must be placed on the middle of the planks in order to have the weight evenly distributed.

12.2.3 Supporting by Platforms

It is recommended that whenever possible, supporting platforms be used instead of planks.

See General LCM, Chapter 9.3—List of Equipment for size, weight and capacity of supporting platform. If the weight of an item exceeds the supporting capacity of one platform, two or more platforms must be used. To have the weight evenly distributed, the item must contact at least half of each ending platform.

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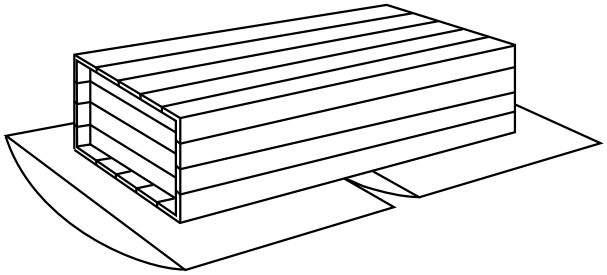
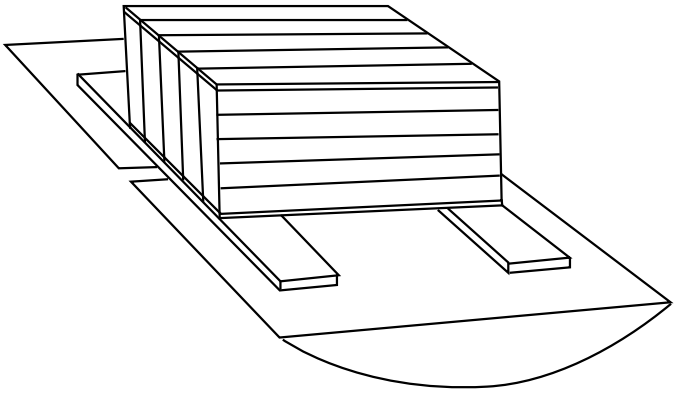


12.2.4 Combined Use of Planks and Platforms

Should the weight of a heavy item necessitate the use of two or more supporting platforms, but the item be too short to contact at least half of each ending platform, two planks shall be used in order to distribute the weight evenly over the platforms.



The required length of the planks shall be at least half of each ending platform.

The required length of the planks shall be at least half of each ending platform.

The individual width of the two planks is 15 cm.

Minimum plank thickness is 2.5 cm (1 in). If the length of each plank exceeds that of the item by more than 60 cm, minimum plank thickness is 5 cm (2 in). See General LCM, Chapter 12.2.2—Supporting by Planks for plank length versus average plank weight, .

The item shall be placed on the middle of the planks in order to get two equal protruding lengths on each side of the item.

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13 LOAD PLANNING

13.1 General

13.1.1 Purpose

The purpose of Load Planning is to achieve:

- the most economical utilization of aircraft capacity with regard to safety aspects;
- the best possible punctuality with regard to the length of planned ground stops en route, and;
- a safe and smooth handling of the aircraft and load at all stations en route.

13.1.2 Responsibilities

Load planning is generally performed for flights with one or more transit stops. The extent of the planning activities may vary according to aircraft type, number of transit stops and traffic volume.

Normally the originating station of a flight will do the planning unless specific circumstances, for example, location of a cargo space control office, make it desirable that this duty is carried out by one of the stations en route.

It is the duty of the responsible station or load planning office to inform all stations and functions concerned of the planning and to keep them informed of any changes.

To facilitate the planning, it is essential that stations en route:

- keep the responsible load planning office (or originating station) informed of all new developments in the nature of, amount and density of baggage and mail;
- timely report possible extras such as excess baggage and mail, and;
- ensure all cargo originating from their stations is reported to the load planning office (or originating station).

13.1.3 Items to be Considered when Doing Load Planning

These following items must be considered for the planning process:

- type of aircraft prepared for service
- fuel load & distribution
- aircraft equipment, catering, EIC, crew etc
- planned deadload
- expected passenger load and distribution
- aircraft limitations.

In addition, the flight plan will state the estimated fuel load which the LCS will use to ensure load is optimized without limits being exceeded. Meanwhile the load distribution shall be planned by the LCS adhering to the specific requirements & procedures.

The LIR will be released to the aircraft loading team. Finally, the Load Sheet will be released, checked, signed and provided to PIC after the confirmation of final loading.

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13.2 ULD Versions

13.2.1 Publication of ULD Versions

ULD versions are established for each timetable period (TPI) for all scheduled flights operated with wide-bodied aircraft. They are issued and published twice a year by BKKFCTG.

The objective of the published versions is to get optimum utilization of the compartment volume available with due regard to relevant commercial and operational considerations. These versions are the basis of cargo reservations and load planning.

13.2.2 ULD Version Change

A ULD version can be changed from the standard ULD version to any one which is published in the fleet-specific information without any restrictions. See Fleet-Specific LCM, Chapter 3.6—Versions, ULD Layout.

13.2.3 Empty ULD Positions (No-FIT)

In order to secure an appropriate ULD stock at each station, ULD's shall normally be installed in all positions. Exceptions from this rule can only be granted by BKKKF.

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13.3 Planning

13.3.1 Load Conversion Ratios

13.3.1.1 Application

The figures given, , are to be considered as a guideline for load planning purposes. See General LCM, Chapter 13.3.1.2—Conversions. Wherever more exact or different conversion factors are available, these shall be applied.

13.3.1.2 Conversions

Baggage

For conversion of weight into volume, 150 kg shall be considered as 1 m³.

Weight planning shall be based on an average baggage weight per passenger. For this purpose the following figures shall be used:

- 50 kg per Royal First passenger,
- 40 kg per Royal Silk passenger,
- 30 kg per Economy/Premium Economy passenger.

For load distribution, the standard baggage weight of 12–15 kg per piece may be used. Refer to LLCP.

Mail

For conversion of weight into volume, the following density figures shall be used:

Letter mail	250 kg/m³
Parcel mail	150 kg/m³
Mixed letter/parcel mail	225 kg/m³
Company mail	200 kg/m³.

Cargo

Cargo volume shall be planned according to actual dimensions. In case the actual dimensions are not known, locally established average density figures may be used. If such figures are not available, a density of 180 kg/m³ shall be applied as a rough average for cargo consisting of different commodities mixed in roughly even proportions.

Ballast

The specific weight of ballast is according to LCM 9.4.1—Extra Loading Equipments.

Passengers

Whenever possible, adults and children shall be considered separately in all weight calculations using the standard passenger published weights. See General LCM, Chapter 10—LOAD INFORMATION.

Note: See General LCM, Chapter 10.3—Passenger Weight Conversion Tables for the passenger weight conversion tables.

13.3.1.3 Stowing Loss

In order to compensate for the loss of available volume due to unavoidable gaps between individual pieces of load in the ULD's or compartments, actual volume figures must be increased by the “Broken Stowage Factor”. As an average, a 30% increase over the actual volume figure shall be planned.

For low density cargo, that is, large pieces causing big gaps, a higher broken stowage factor of up to 50% or more may be necessary. When a sufficient amount of small soft load (for example, letter mail) is available, which can be used to fill gaps between large pieces, the stowage loss may be reduced.

Stowing loss is included in the conversion ratios. See General LCM, Chapter 13.3.1.2—Conversions.

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13.4 Load Distribution

13.4.1 General Principles

When planning the distribution for one or different station(s) en route, the following points must be carefully considered:

- on all sectors, the balance conditions of the aircraft and the total load in the compartments must be within limits
- on arrival, all stations shall have direct access to their offload. Baggage must be available first, for immediate delivery. See General LCM, Chapter 14—LOADING for baggage stowing regulations.
- where load for different stations is carried in the same compartment, it must be clearly separated in order to eliminate overcarriage
- stations shall not be required to reload large amounts of transit load for balance reasons
- See General LCM, Chapter 14—LOADING and see General LCM, Chapter 15—SPECIAL LOADS, HANDLING AND LOADING for the published stowing regulations for baggage, dangerous goods, live animals and miscellaneous articles. The special load must be strictly adhered to.

If the cargo load comprises live animals and/or perishable goods, particular attention must be paid to temperature requirements, loading restrictions and maximum quantities per compartment.

Note: The position of the center of gravity (CG) of an aircraft affects its fuel consumption. An aircraft loaded in such a way that its CG is near the aft limit uses less fuel than the one where CG is further forward. Shifting the CG towards the aft limit has the effect that the negative lift required on the horizontal stabilizer to maintain proper longitudinal trim is reduced. Consequently, less additional lift must be produced by the wing to counterbalance the negative lift of the horizontal stabilizer. Therefore, the aircraft flies at a lower angle of attack, drag is reduced and hence fuel consumption. In view of escalation of fuel costs, this fuel saving possibility shall be exploited whenever possible.

Planning Limits for Fuel Economy

The shaded area in the balance graph below is a Load Planning Limit only. In the interest of fuel economy the load in the compartments should, whenever possible, be distributed in such a way that the LIZFW is within this area. When planning the load distribution, it must, however, be borne in mind that operational aspects have priority over fuel saving. See General LCM, Chapter 13.1—General.

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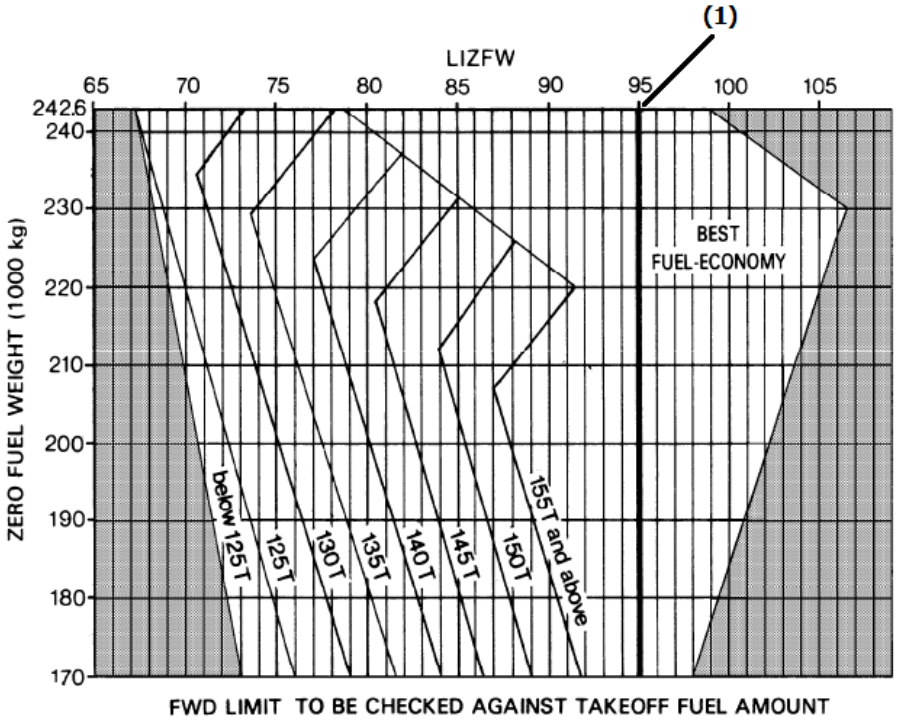

13.4.2 Unitized Load

Baggage

Baggage shall, as a rule, be carried in LD3 or LD6 containers only. Separate containers must be used for each destination and if possible also for the different categories of baggage.

See General LCM, Chapter 14—LOADING for the stowing regulations.

If agreed by the receiving station, small quantities of mail may be loaded together with the baggage in the same container.

Mail

Mail shall in principle be carried in the bulk compartment or in containers only. If demand makes loading on pallets/igloos necessary, mail shall not be mixed with cargo unless agreed by the receiving station.

Cargo

Cargo must primarily be carried on pallets/igloos. Their allocation to the various stations along the route is the responsibility of BKKKF coordinated with the respective cargo space control office.

13.4.3 Planning Means

Load planning offices shall provide themselves with the necessary means required for planning purposes, for example, statistics, weight/volume conversion tables, forms etc.

13.4.4 Analysis of Planning

To the greatest possible extent, load planning offices shall analyze their planning compared with the actual situation of the flight. In order to improve future planning, statistics shall be compiled, for example:

- mail allotments/uplift from every station,
- baggage, cargo and mail density,
- average and specific amounts of stowage loss.

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It is left to the initiative of load planning offices and stations to exchange such statistics between themselves.

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13.5 Local Load Planning

Follow the principles outlined. See General LCM, Chapter 13.3—Planning.

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13.6 Central Load Planning

In order to coordinate load planning for certain routes and legs, load planning may be performed by a Load Planning Center. Such center is located in BKK.

The Load Planning Centers shall, for the routes to be planned,:

- coordinate the booking of various load categories in accordance with valid instructions and with consideration to operational factors,
- perform detailed load planning in accordance with valid instructions—dispatch Load Planning Messages to all stations involved,
- follow up deviations in the load,
- analyze, to the greatest possible extent, the planning with regard to actual performance of the flights in order to gain experience for future planning.

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13.7 Load Priority

(This section to be subscribed from the Passenger handling Manual.)

13.7.1 General

If questions of refusal and/or off-loading of load arise, due consideration must be given to the priority list. See General LCM, Chapter 13.7.2—Priority List.

Before any load under items 6 to 10 in the priority list is rejected the possibility to use actual weights instead of standard weights should be considered. One or more of the following groups may be weighed:

- all checked crew baggage
- all crew members, including their unchecked baggage
- all children and infants, including their unchecked baggage
- all adults, children and infants, including their unchecked baggage.

Note: The information about load priority can be retrieved through AIS Pages on Altea System.

13.7.2 Priority List

FIRST PRIORITY LOAD May not be refused or offloaded under any circumstances.	1. DIPLOMATIC BAGS
	2. POST OFFICE MAIL (EMS and LC mail) See also POST OFFICE MAIL (AO and CP mail) below.
	3. PRESS PHOTOS AND TV NEWSREELS
	4. AOG – URGENT SPARE PARTS REQUIRED FOR AIRCRAFT ON GROUND See General LCM, Chapter 15.5.3—Aircraft on Ground (AOG).
	5. HUMAN TRANSPLANT ORGANS/LIFE-AND-DEATH SHIPMENTS
BOOKED LOAD Booked through-going load may, under no circumstances, be off-loaded for the benefit of on-load.	6. BOOKED PASSENGERS WITH THEIR BAGGAGE, including their excess/expedite baggage: • special categories, who shall always be accepted and never be offloaded, are Passive or Dead Head Crew (DHC), UM/YP, F & C classes, VIP/CIP & ROP, SEMN, tour groups, incapacitated/ sick, DG40G1 passengers and passengers affected by previous flight irregularities • as for revenue passengers, in overbooking situations, priority shall be given to long-haul over short-haul • as for ID1 passengers, in an overbooking situation, the following ID categories shall respectively be asked to stand back for revenue passengers according to ID priority as follows: – ID00S1 – ID00R1/DM00N1 – ID00R1D – ID00S1A/ID50S1A/ID50UA/ID50C1A/ID50C1 – ID50S1B – IDZLR1 – ID50R1A/IDZMR1A – ID50N1 – ID75N1 – ID00N1.[a)]
	7. DIPLOMATIC CARGO (Max 45 kg per shipment)
	8. POST OFFICE MAIL (AO and CP mail) *Note: In case AO and CP mail is covered by the same dispatch number as LC mail, such mail shall have the same priority as LC mail and must not be short-shipped/off-loaded.*
	9. COMPANY MAIL (COM)

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	Always be considered booked. 10. BOOKED CARGO in the following order of priority: 1. see 1, 3, 4, 5, and 7 above, 2. shipment subject to obsolescence, decay or deterioration, 3. shipment weighing 50 kg or less, 4. previously short-shipped/off-loaded cargo, 5. shipments requiring special handling or attention, 6. other shipments.
SURFACE AIRLIFTED MAIL (SAL)	11. SAL To be carried from originating station to final destination within 3–7 days, subject to space availability.
UNBOOKED LOAD Priority shall be given to such load which gives THAI the highest revenue, e.g. short-haul passengers may be refused for the benefit of long-haul cargo. Only unbooked cargo may be off-loaded for the benefit of other categories of unbooked load.	12. POST OFFICE MAIL for which space is not booked.
	13. UNBOOKED PASSENGERS • Through-going unbooked passengers with their baggage. If refusal becomes necessary, priority goes to “Booked Passengers”. • Locally boarding unbooked passengers with their baggage. 14. UNBOOKED STANDARD CARGO Order of priority as for “booked cargo”.
SERVICE 2 LOAD S2 passengers accepted at a previous station shall not be off-loaded for the benefit of S2 passengers from a later one. S2 cargo accepted at a previous station shall not be off-loaded for the benefit of S2 cargo from a later one. Above load shall be accepted in the following order: • through-going, • transferring, • boarding.	15. S2 PASSENGERS WITH THEIR BAGGAGE If refusal and/or offloading becomes necessary, the following ID categories shall respectively be refused: • ID00S2 • ID00S2A. [a)]
	16. S2 CARGO Priority must be judged individually with special attention to long-haul shipments.
ID2 PASSENGERS ID2 passengers accepted at a previous station shall not be offloaded for the benefit of ID2 passengers from a later one. Passengers shall be accepted in the following order: • through-going, • transferring, • boarding.	17. ID2 PASSENGERS In case of refusal and/or offloading, the following ID categories shall respectively be considered: • ID00R2 • IDZLR2 • IDLHR2 • IDZLR2A/IDZMR2A/ID95UA • IDZHR2A • ID75N2/IDZHR2B • ID90N2/IDZMR2B • IDZLR2B • ID00N2. [a)]
EMPTY AIRMAIL BAGS	18. EMPTY AIRMAIL BAGS To be returned to the originating post office.

a) Refer to PHM 5.7.3—Priority and Acceptance for the specification of each ID category, the order of priority group, and the judgement within each group.

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14 LOADING

14.1 General

14.1.1 Preparations

A careful planning of all activities must be made. Whatever can be done prior to arrival of an aircraft may save time which may be useful later in order to maintain scheduled operations:

- the condition of the load must be checked in order to detect leaking or otherwise damaged shipments. Special attention shall be given to live animals, dangerous goods, and other special load
- it is imperative for a correct and uninterrupted loading that the point of unloading be shown, clearly and correctly, on tags and labels. This must be checked accordingly
- in due time before departure, baggage, cargo and mail shall be ready on the tarmac, sorted and separated according to Loading Instruction Report
- load on the carts shall be protected with suitable covers against cold, heat, rain, snow, etc.
- sufficient loading staff, loading equipment shall be available for immediate action
- the hold shall be visually inspected for damage that can affect the load capacity
- when loading pallets or containers, ensure that the edges are either guided by the side rails or fit under the stops/locks/guides and that the height of the pallet allows for sufficient clearance in the door.

14.1.2 Loading of ULDs

14.1.2.1 General Instructions

- On loading or offloading may cause the Aircraft to become unstable or cause Aircraft tail tipping, respect Aircraft ground stability requirements during loading and offloading, in order to avoid discrepancy, the following off-loading/on-loading shall be comply:
  - offload of aft compartment before forward compartment
  - on-load of forward compartment before aft compartment.

  For Cargo aircraft , a Tail support station or Nose tether may be required to be fitted during loading and offloading.
- In spite of the pressure of time under which loading operations normally take place, great care must be exercised to avoid damage to the aircraft, load and equipment.
- ULDs ready for loading must be properly inspected by a loading supervisor or a load master.
- Damaged or otherwise unserviceable units must not be loaded and reported to all concerned.
- ULDs showing evidence of leakage from packages containing liquid, viscous substances or powder must not be loaded. Such units shall be returned to the cargo warehouse for inspection and removal of the leaking packages.
- Improper built-up pallets which present an obvious hazard to personnel and aircraft shall be returned to the cargo warehouse for rebuilding.
- All tiedown fittings of the pallet net must be properly attached to the tiedown track of the pallet.
- Pallet nets should be tensioned firmly but not too tautly. Excessive tension causes deflection of the pallet so it will not be properly engaged under the locks and side guides.
- The doors of all containers, whether loaded or empty, must be properly closed and secured.
- Pallets, igloos and containers covered with snow or with water on top of the load or elsewhere must be properly cleaned before loading into the aircraft. When weather condition is extremely bad, an additional plastic sheet placed on top of the load may be used to protect the unit. This shall be removed immediately prior to loading subsequent removing the snow or water.
- The ID codes of outgoing ULDs must be recorded prior to loading.

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14.1.2.2 Identification of ULDs

Every ULD must be marked with identification tags.

On each container/igloo, one tag shall be placed in the appropriate placard holder.

On pallets, two tags shall be attached to the webbing of the net at two opposite corners of the pallet load.

Prior to loading the ULD on board the aircraft, the load master/loading supervisor shall:

- check the information (destination, weight, etc.) on all tags,
- check if empty containers are marked with “EMPTY” tags,
- compare the weight and destination of the ULD entered on the tags with respective information given on the loading, instruction. The loadsheet agent/load control supervisor shall be informed immediately if they do not correspond,
- enter loading position in the appropriate space on the tags.

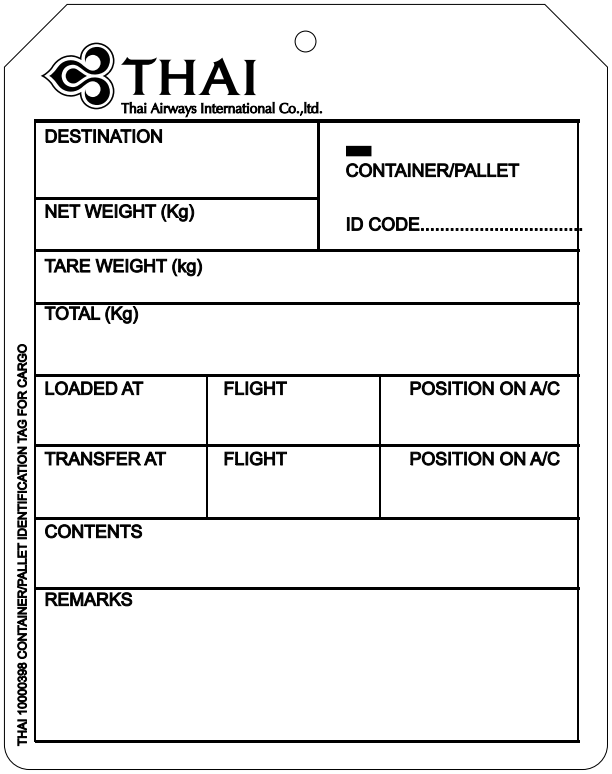
14.1.2.3 Labeling of ULDs

14.1.2.3.1 Identification Tag for Cargo ULDs

The identification tag for cargo ULD’s is completed by cargo personnel, except for the loading position which is to be inserted by the load transfer/loading supervisor.

The tag shall be completed as shown. The reference numbers refer to the numbers in the specimens below.

Specimen form THAI 10000398



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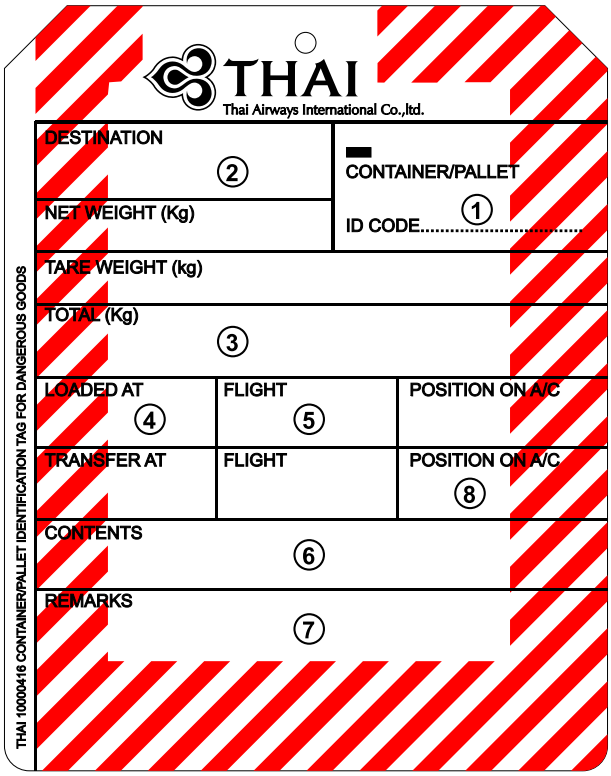
Specimen Form THAI 10000416



1 CONTAINER/PALLET ID CODE

IATA ULD identification code

2 DESTINATION

IATA ULD identification code.

3 TOTAL (kg)

Total weight of load and ULD tare weight

4 LOADED AT

IATA 3-letter airport code of station of loading

5 FLIGHT

Flight number of the flight to the final destination

6 CONTENTS

See General LCM, Chapter 17.9.1—Load Information/Volume Codes for content codes.

7 REMARKS

3-letter code for loads requiring special attention. See General LCM, Chapter 17.9.2.1—Identification Codes and see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.

8 POSITION ON A/C

Loading position according to the loading instruction

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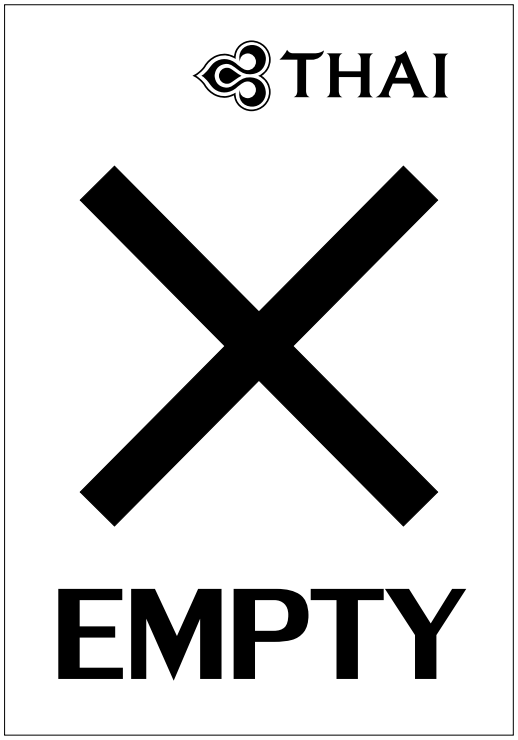
14.1.2.3.2 Identification Tag for Mail

Specimen of Form THAI 1639-A

FRONT



BACK

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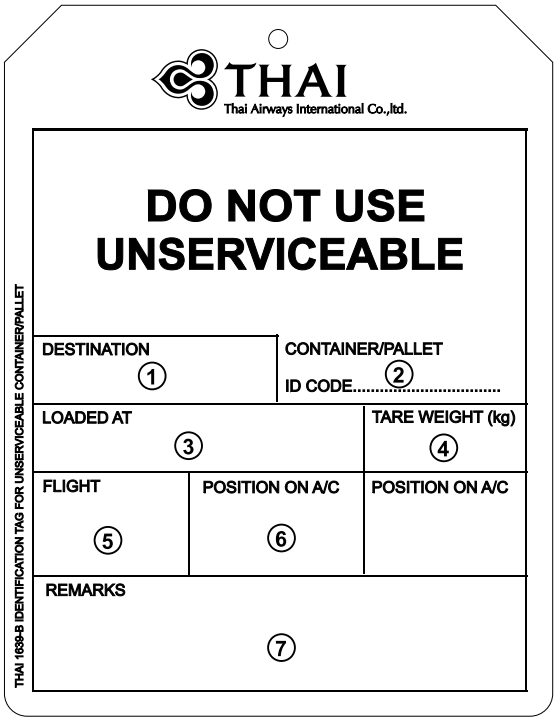
14.1.2.3.3 Identification Tag for Unserviceable Container/Pallet

Specimen of Form THAI 1639-B



1 DESTINATION

IATA ULD identification code.

2 CONTAINER/PALLET ID CODE

IATA ULD identification code

3 LOADED AT

IATA 3-letter airport code of station of loading

4 TARE WEIGHT (kg)

Tare weight of ULD

5 FLIGHT

Flight number of the flight to the final destination

6 POSITION ON A/C

Loading position according to the loading instruction

7 REMARKS

Any special handling instructions

14.1.2.3.4 Identification Tag for Baggage

The purpose of Container Identification Tag for Baggage is to provide convenience for ramp handling staff to have quick deliver of baggage container and be easily identified.

On the reverse side of the tag can be used as empty container identification.

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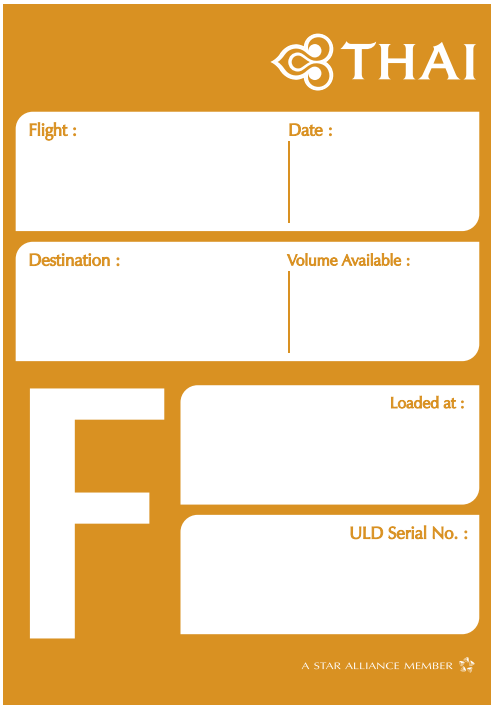
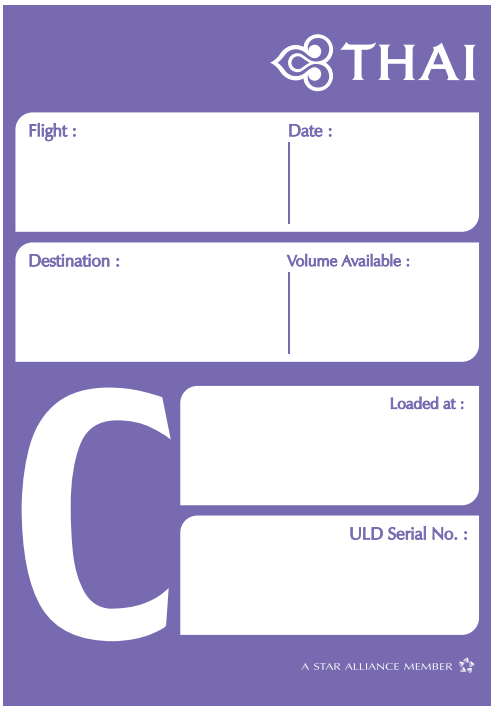
Container identification for "F" baggage (10003604) Specimen—front side



Container identification for "C" baggage (10003605) Specimen—front side



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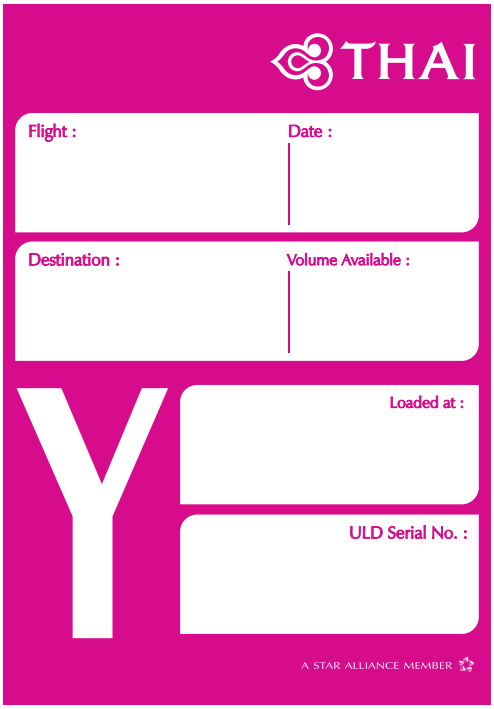
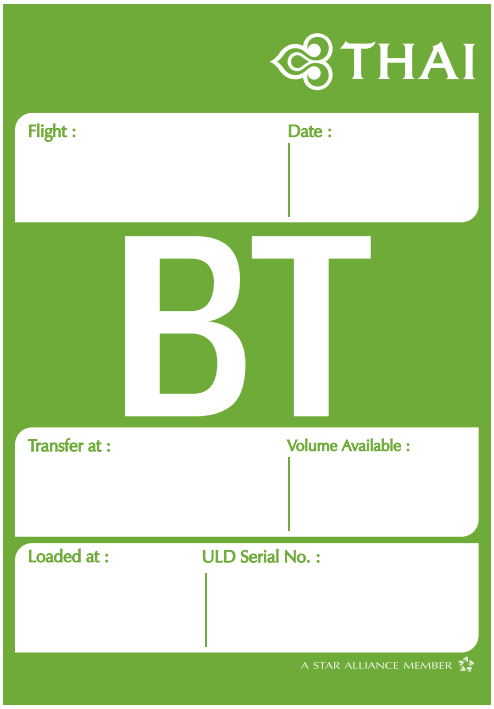
Container identification for "Y" baggage (10003606) Specimen—front side



Container identification for "BT" baggage (10003607) Specimen—front side



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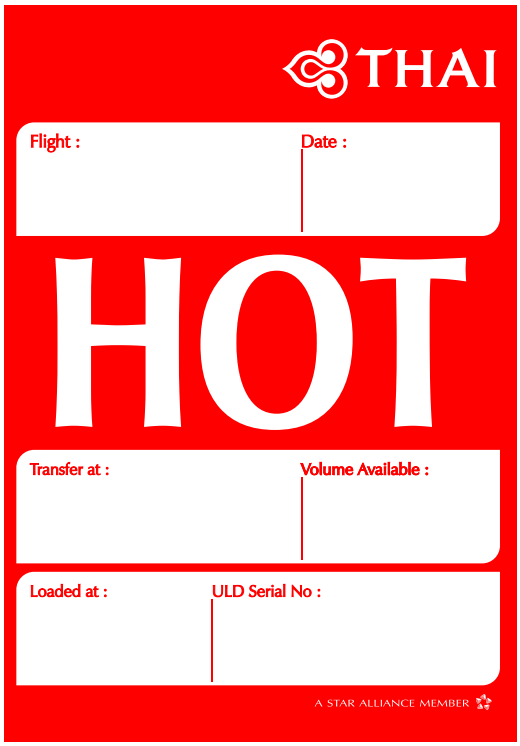
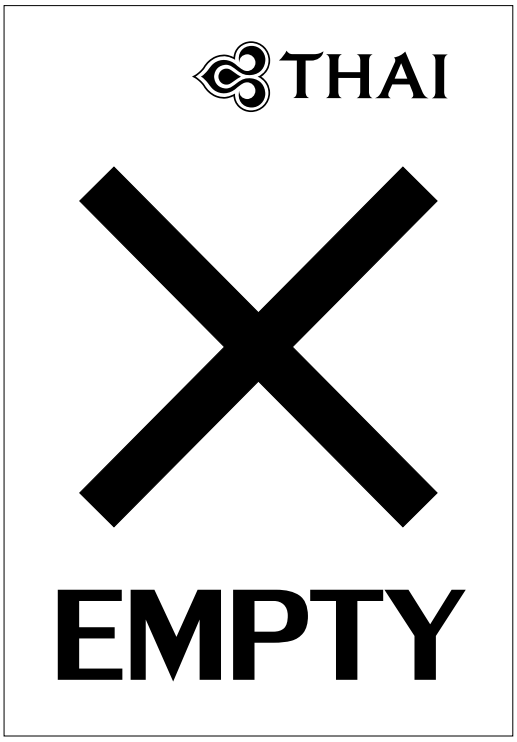
Container identification for "HOT" baggage (10003608) Specimen



FRONT



BACK

14.1.3 Loading of Bulk Load

14.1.3.1 General Instructions

- Loading of baggage, cargo and mail is permitted only in compartments designed for accommodation of such load. Carriage of deadload in the passenger cabin is subject to special regulations. See below.
- Great care must be taken to avoid damage to the aircraft and load. Special handling labels such as "THIS WAY UP", "FRAGILE", etc. must be adhered to the packages and the load shall be handled accordingly.
- Load must be properly protected against rain or snow until loaded on board the aircraft.
- Condition of the load must be checked before loading in order to detect leaking or otherwise damaged shipments. This is especially concerned with shipments of live animals, dangerous goods, all types of wet cargo (fresh fish, lobsters, crabs, meat, etc.) or any other load which might leak during transport. Packages with leaking contents must not be loaded.
- The load shall be stowed in the following sequence: Cargo/Mail/Baggage; therefore, baggage will always be the first load for offloading.
- In order to utilize the maximum available compartment volume, all load must be stowed as tight as possible.
- Heavy items shall be placed at the bottom. If necessary, such pieces must be supported in order not to exceed the maximum permissible floor load and running load limitations. For further instructions, see General LCM, Chapter 12—SUPPORTING.
- Dangerous goods and other special load such as AVI, FIL, etc. must be stowed in accordance with relevant regulations. See General LCM, Chapter 15—SPECIAL LOADS, HANDLING AND LOADING.

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- To prevent shifting of load during flight, all separation net must be properly installed. Heavy pieces must be secured and restrained individually according to instructions, see General LCM, Chapter 11—LOAD RESTRAINTS.
- Door protection nets must be properly installed before compartment doors are closed.

14.1.4 Unloading

14.1.4.1 General Instructions

DELETION

- At arrival, LIR/CPM shall be utilized by Load control prior to aircraft arrival with consideration given to ensure aircraft stability during offloading process and passenger disembarkation.
- All load must be properly protected against rain or snow. Live animals shall be transferred to cargo warehouse immediately after unloading from the aircraft.
- The IATA ID codes of incoming ULDs must be recorded after unloading from the aircraft. See General LCM, Chapter 17.10—Load Control Message for further instructions.
- Loading equipment which has been used on board in connection with the inbound load shall be collected from the compartment and returned to the owner station. See General LCM, Chapter 9.2.2—Actions by Stations for further instructions.
- Any leaking packages, bags, etc. shall be held back at the aircraft side for investigation. All compartments must be checked immediately after unloading operations completed. If a compartment floor has been soiled by leaking load, the following actions shall be taken:
  1. the station engineer and/or P-i-C shall be informed
  2. a detailed report shall be issued
  3. a telex message shall be dispatched to BKKKTTG (BKKKG-M) BKKTETG copy BKKLCTG BKKLETG with the following details:
  4. for leaking cargo packages:
     a. flight number and date
     b. AWB number
     c. description of contents (technical name of substance, if available See label on package or AWB)
     d. type of packing (cardboard–box, tin, drum, etc.)
     e. name of shipper and consignee as per AWB
  5. for leaking baggage:
     a. flight number and date
     b. baggage tag number
     c. passenger’s name and address (according to name label on bag, or inquiry at baggage delivery area)
     d. type of bag (material and description of packing)
     e. name and/or description of substance having caused the soilage
  6. for leaking mail:
     a. flight number and date
     b. dispatch number
     c. original/final destination, refer to AV7.
     d. name and/or description of substance having caused the soilage.

  Note: In case of heavy soilage/damage to the aircraft or other property, evidence must be provided including photographs.
- At transit stations, the bulk compartments shall be visually checked for a rough estimate and comparison of the volume with the weight shown on the loading instruction.
- At terminating or turnaround stations, all compartments must be checked for overcarried load.

14.1.4.2 Safety Precaution for Offload

- When handling heavy item, a proper lifting technique shall be considered.
- When placing items on belt loaders, ensure they are stable and will not fall off.

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- Check ULDs during offload for damage, leakage and load stability.
- Check for incorrectly loaded ULDs (locks not raised, locks or side rails overridden, etc). Report any discrepancy found.
- Handle with care if load has shifted during flight.
- Be aware that containers can tip during movement.

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14.2 Acceptance

14.2.1 Acceptance of Outsized and/or Heavy Items on 747, 777, 787, A330, A350 and A380 Aircraft

14.2.1.1 Definition

The regulations apply to items which, due to their weight and/or size, have to be loaded on two or more pallets. See General LCM, Chapter 14.2.1.2—Authorization for Acceptance and see General LCM, Chapter 14.2.1.3—General Rules for Acceptance.

For such pieces, the three-letter code BIG shall be used in traffic documents and messages.

Note: The regulations do not apply to pieces loaded on one pallet but overhang on one or more sides. See General LCM, Chapter 17.9.2.2—Table of Codes.

14.2.1.2 Authorization for Acceptance

Cargo reservation offices must obtain authorization for acceptance as follows:

- BIG-items weighing up to 500 kg including cars, provided they can be rolled into the compartment on their own wheels, may be accepted for carriage only with prior consent of the station manager of the loading station
- BIG-items weighing more than 500 kg are subject to prior permission from Cargo Space Control & Load Planning Department–BKKFC copy to BKKFD, and BKKKT (BKKKG-M).

14.2.1.3 General Rules for Acceptance

1. Before accepting a BIG-item for carriage on a specific flight, it must be ensured that all necessary en route arrangements have been made and due consideration shall be given to:
   - length of ground stops
   - available facilities, such as suitable handling equipment and manpower at the station of loading and unloading.
2. Information and clear statements must be requested from all stations involved to make certain of:
   - availability of the necessary equipment (to be specified)
   - availability of personnel
   - supervision by competent personnel (TG or handling agent)
   - time needed for handling of item (estimated).
3. If a delay is expected at any of the stations involved, authorization for extension of ground stop must be requested from Operations Control Center–BKKOP.
4. Prevention of accidents and damage to the aircraft has priority over the revenue that the carriage of the BIG-item may yield. The item must not be accepted if there is any doubt about the safe performance of loading and unloading operations.
5. If it is anticipated that unloading of the item will cause difficulties, a message shall be sent to the station of unloading to help the station to solve the problem. The message shall contain thorough information on the item concerned such as:
   - weight and dimensions
   - suggested method of offloading
   - equipment required, etc.

14.2.2 Acceptance of Heavy and/or Bulky (HEA) Items on 737 Aircraft

14.2.2.1 Definition

See General LCM, Chapter 14.2.2.2—Authorization for Acceptance and see General LCM, Chapter 14.2.2.3—General Rules for Acceptance. The regulations, apply to:

- heavy item(s) of approx 500 kg and more, the dimensions of the item(s) allow smooth loading and unloading through the compartment doors
- heavy item(s) of approx 250 kg and more, the dimensions of the item(s) require tilted and/or peculiar maneuvering for loading and unloading through compartment doors.

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Note: See General LCM, Chapter 17.9.2.2—Table of Codes for definition of the three-letter HEA code.

14.2.2.2 Authorization for Acceptance

Cargo reservation offices must obtain permission for carriage of item(s) which falls into one of the categories specified from Cargo Space Control & Load Planning Department–BKKFC. See General LCM, Chapter 14.2.2.1—Definition.

14.2.2.3 General Rules for Acceptance

The rules valid for the acceptance of BIG-item(s) also apply to the acceptance of HEA-items for transportation on 737. See General LCM, Chapter 14.2.1.3—General Rules for Acceptance.

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14.3 Loading in Passenger Cabin

14.3.1 Policy

Loading of checked baggage, cargo and mail in the passenger cabin of an aircraft carrying passengers (scheduled or charter flight) is not permitted.

Note: The regulations contained in this subsection do not apply to pieces of baggage accepted in accordance with the regulations laid down. Refer to PHM 12.1.

This also applies to pets and seeing-eye/hearing-aid dogs. Refer to PHM 12.5.1.

Exceptions are only permissible for item(s) which due to their nature would be best carried in the passenger cabin, for example, temperature-sensitive items, fragile items, etc.

14.3.2 Stowing Regulations

Only courier baggage (COUR) and large articles (BIS), for example musical instruments, may be loaded direct in the seat in quantities of maximum 50 kg per piece provided that the load is properly secured to eliminate the possibility of shifting under all normal flight and ground conditions.

Withstand the following forces:

- forward, upward direction: 3 G
- side at backward direction: 1.5 G.

The items must be packed or covered to avoid possible injury to passengers and cabin crew members.

Seating conditions—do not restrict access to use of any required emergency, or regular exit, or aisle in the cabin and do not obscure any passenger's view of the all sign in cabin.

14.3.3 Balance Calculation

For balance calculation purposes, the total weight of the load stowed on passenger seats shall be converted into an equivalent number of passengers using the standard passenger weight at 70/75/78/81/84 kg according to standard passenger weight classification. See General LCM, Chapter 10.2.1.1—Standard Passenger Weight.

The number obtained shall be added to the number of passenger seats to be considered in the balance calculation.

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14.4 Baggage

14.4.1 Definition of Terms

14.4.1.1 F-Class Baggage

The term “F-Class baggage” is used for baggage marked with the special “F-Class” label. Refer to PHM 12.4 para 3.3.

14.4.1.2 C-Class Baggage

The term “C-Class baggage” is used for baggage marked with the special “Priority Flag Tag” label. Refer to PHM 12.4 para 3.3.

14.4.1.3 Y- and U-Class Baggage

The term “Y- and U-Class baggage” is used for baggage which is NOT marked with the special “F- and Priority Flag Tag” label.

14.4.2 Objectives For Baggage Delivery

14.4.2.1 General

- Quick delivery of baggage on arrival is an important factor of customer service. The ultimate aim in this area is: “Baggage waits for passenger”.
- In order to speed up delivery, baggage must be:
  1. unloaded simultaneously from all compartments
  2. transferred to the baggage claim area continuously in lots.

  Note: Speedy delivery and transfer of baggage can be best achieved by a constant and steady flow of small lots rather than by an inconstant delivery of huge amounts of baggage.
- Station managers must give baggage delivery top priority in their planning, organization and control of airport facilities. Efforts shall be made to ensure that a sufficient number of loading personnel and the required transport capacity are assigned to the handling of incoming baggage.

14.4.2.2 F- and C-Class Baggage

- The “F- and C-Class” labels are synonymous with preferential baggage handling and delivery at the destination. The objective for this essence of customer service is: “Passengers whose baggage is marked with F- or C-Class label shall receive their baggage first”.
- In order to achieve the objective above, F- and C-Class baggage must be:
  1. unloaded first on arrival
  2. transferred to the baggage claim area together with the first lot
  3. put on the delivery belt first, i.e. prior to any other baggage.

14.4.2.3 Transfer Baggage

Shall be priority unloaded on arrival and immediate delivery to transfer baggage handling facility.

If the destination is a first point of entry station, first priority shall be provided to priority transfer baggage.

14.4.3 Stowing of F- and C-Class Baggage

14.4.3.1 737 and A320

1. All C-Class baggage must be stowed in the door area of Compartment 1 (standard stowing location).
2. On multi-sector flights, C-Class baggage for all destinations must be stowed in the standard stowing location. At transit stations, the baggage must be sorted on unloading from the compartment.

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3. If, in exceptional cases, C-Class baggage cannot be stowed in the standard stowing location, the destination station must be informed accordingly by means of a remark under SI in the LDM, for ezample, “C-CLASS BAGS LDD COMPT 4 DOOR”.

14.4.3.2 777, 787, A330 and A350

- All C-Class baggage for the same destination must be loaded into the same container.
- En route stations shall top up container(s) loaded with C-Class baggage primary with such baggage.
- In case of space problem and in order to minimize volume loss, any volume left may be utilized for other categories of baggage for the same destination.
- C-Class baggage container(s) for the next station must be positioned in the door section. Ensure that Container Tag is clearly marked with the letter “C”.
- C-Class baggage shall be indicated with the letter “C” on the Loading Instruction/Report and in the CPM.

Note: These rules do not apply to C-Class transfer baggage. Such baggage shall be loaded into transfer baggage container(s) for destination(s) for which separation of local and transfer baggage is required. See General LCM, Chapter 14.4.4.2—747, 777, 787, A330, A350 and A380.

14.4.3.3 747 and A380

- All F- and C-Class baggage for the same destination must be loaded into the same container(s).
- En route stations shall top up container(s) loaded with F- and C-Class baggage primary with such baggage.
- In case of space problem and in order to minimize volume loss, any volume left may be utilized for other categories of baggage for the same destination.
- F- and C-Class baggage container(s) for the next station must be positioned in the door section. Ensure that Container tag is clearly marked with the letters “F” and “C”.
- F- and C-Class baggage shall be indicated with the letters “F” and “C” on the Loading Instruction/Report and in the CPM.

Note: These rules do not apply to F- and C-Class transfer baggage. Such baggage shall be loaded into transfer baggage container(s) for destination(s) for which separation of local and transfer baggage is required. See General LCM, Chapter 14.4.4.2—747, 777, 787, A330, A350 and A380.

14.4.4 Stowing of Y- and U-Class Baggage

14.4.4.1 737

14.4.4.1.1 General Stowing Regulations

- Baggage must always be stowed so that it can be unloaded first.
- Quantities in excess of 700 kg shall preferably be stowed in two compartments, so that two loading staff groups can unload the baggage simultaneously at the destination.
- Stations may deviate from the rule stated above if required by local conditions, provided quick baggage delivery is still guaranteed. Any deviation shall be agreed upon by the stations concerned.

14.4.4.2 747, 777, 787, A330, A350 and A380

14.4.4.2.1 General Stowing Regulations

- Baggage must, as a rule, be loaded into LD3 containers. LD6 and LD9 containers may only be utilized for baggage if previously agreed upon by the stations concerned.

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Note: To facilitate the return of LD6 and LD9 containers to BKK, no previous agreement is required if such units are used for baggage. However, mixed loading of baggage and cargo in the same container is not permitted.

- Separate containers must be used for each destination. In case of space problem and in order to minimize volume loss, partly utilized container must be filled at transit stations before empty container is used.

14.4.4.2.2 Separation of baggage

- Transfer baggage

  Baggage for transfer in BKK must always be separated from local baggage, that is, local and transfer baggage must be loaded into different containers.

- Group baggage

  Baggage of groups consisting of 30 or more passengers shall preferably be loaded into separate containers.

14.4.5 Stowing of Transfer Baggage

14.4.5.1 General Stowing Regulations

- Transfer baggage must always be separated from local baggage.
- Transfer baggage must always be loaded into separate containers from local baggage.
- Transfer baggage must always be loaded at or adjacent to the door area/position to facilitate fast unloading.
- Priority shall be given to short-connection transfer baggage rather than normal transfer baggage.

14.4.6 Outsized Pieces of Baggage

14.4.6.1 Definition of Terms

Outsized pieces of baggage are those which, due to their dimensions, do not fit into LD3 containers. Typical examples of outsized pieces are windsurf boards, hang gliders, canoes, high jump poles, etc.

14.4.6.2 Stowing Regulations

14.4.6.2.1 747, 777, 787, A330, A350 and A380

Outsized pieces of baggage must be loaded into the bulk compartment (Compartment 5) only. If this is not possible due to dimensions, such pieces must be shipped as cargo loaded on pallets.

Note: It is not permitted to load outsized pieces of baggage alongside pallets in any ULD compartment of 747, 777, 787, A330, A350 and A380 aircraft.

14.4.7 Crew Baggage

14.4.7.1 Active (Working) Crew Baggage

Baggage labeled with the white “Crew” tag shall be stowed in the standard stowing position given in the table below:

Aircraft type	Standard stowing position
747, 777, 787, A330, A350, A380	Bulk compartment, door section
737	Compartment 4, door section

Unlabeled crew baggage must be stowed in the different coatrooms in the flight deck or in the cabin.

14.4.7.2 Deadhead Crew Baggage

Baggage labeled with the white “Crew” tag shall be stowed according to the table above.

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14.5 Company Mail (COM)

14.5.1 General and Definition of Terms

All THAI inter-office correspondence exchanged by air between airports shall be known as company mail (COM).

International postal authorities allow such mail to be carried on THAI's own aircraft without payment of postal charges.

Customs and excise regulations and local procedures must be followed concerning the acceptance of incoming and outgoing company mail.

Parcels, cartons or any objects other than mail are not allowed to be placed in the mail bags.

14.5.2 Conditions of Carriage

Customs and postal authorities have the right to examine company mail. International postal regulations must be observed.

Company mail should be limited to inter-office correspondence, including mail for an airline operating joint services and involved in joint operations with THAI and mail to or from a third party acting as general agent for THAI.

Note: Parcels and cartons must be shipped as service cargo.

14.5.3 Security

Company mail must be sealed whenever possible. If sealed bag is open at the request of Customs, it should be resealed.

Local security regulations may require the X-raying of company mail bags.

Company mail bags should not be left unattended.

14.5.4 Dispatch and Stowing of Company Mail

Company mail shall be packed in green sacks and labeled with THAI Co-Mail Tag Form No. 2547 and manifested on THAI Co-Mail Checklist Form No. 2642.

Company mail shall be registered as mail on the loadsheet and loaded in Compartment 5 door section on 747, 777, 787, A330, A350, A380 aircraft and in Compartment 4 door section on 737 aircraft.

Loading location and load information code COM shall be included in the LDM/CPM. See General LCM, Chapter 17.9.2.2—Table of Codes.

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15 SPECIAL LOADS, HANDLING AND LOADING

15.1 General Information

15.1.1 Definition

A special load is the load which, owing to its nature or value, requires special attention and treatment during the process of acceptance, storage, transportation, loading and unloading.

15.1.2 General Provisions

Loads transported by air are normally exposed to vibrations and changes in pressure, temperature and humidity. These facts must, therefore, be taken into consideration when handling the load.

Most special loads require a specific label in order to ensure correct handling and loading. Those labels are shown in IATA publications such as IATA Dangerous Goods Regulations (DGR) and Live Animal Regulations (LAR).

Labels must be affixed properly so as to be easily recognizable.

Additional documentation, for example Shipper's Declaration for Dangerous Goods, may also be required when transporting special loads by air.

For certain type of special loads, advance booking and arrangements should be made, for example perishables, valuables, human remains and live animals.

The quantity of special loads carried on an aircraft is limited due to such factors as aircraft type and Company, IATA or government regulations.

Before loading special loads in a compartment or a ULD, the condition of the load must be carefully checked in order to detect any damage.

DAMAGED SHIPMENTS SHALL NEVER BE LOADED

15.1.3 Special Load Notification to Captain

The presence of special loads on board may have to be reported to the flight crew, for example by means of the Special Load Notification to Captain. This procedure is mandatory when Dangerous Goods are involved. See General LCM, Chapter 17.2.1—Notification to Captain (NOTOC) and see General LCM, Chapter 15.6.1—Special Load Quick Reference Table.

The presence of special loads on board an aircraft may have to be noted on the loadsheet and load message or container/pallet message by entering the appropriate code and other necessary information. See General LCM, Chapter 17.8.2—Calculation of Trapped Fuel and see General LCM, Chapter 15.6.1—Special Load Quick Reference Table.

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15.2 Heavy and/or Bulky Items

15.2.1 General

Heavy and/or bulky items can be defined as items which, by size, shape and/or weight, requires special handling procedures, for example loose machinery, pipes, cable drums and cable reels, aircraft engines, etc.

15.2.2 Acceptance

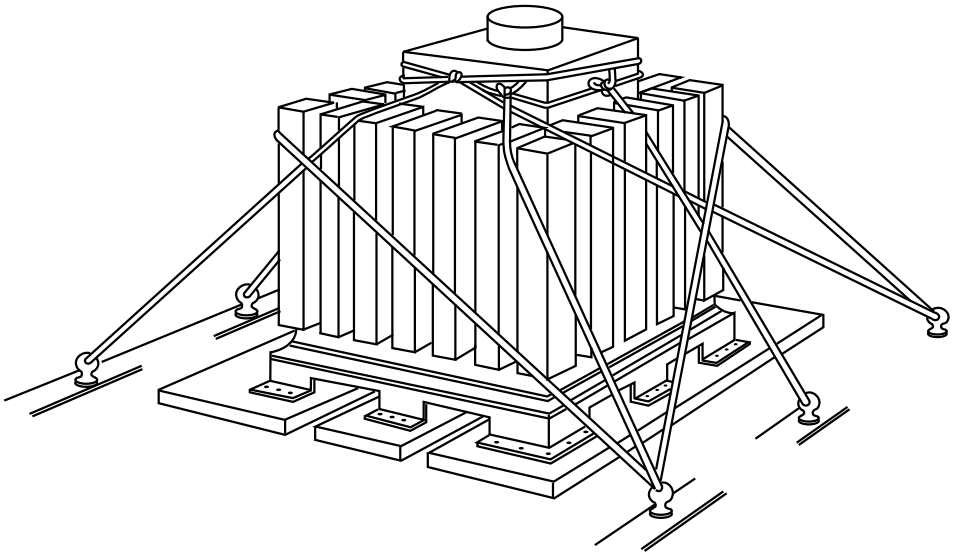
See General LCM, Chapter 14.2—Acceptance.

15.2.3 Loose Machinery

Loose machinery is frequently carried by air for economical reasons, such as rapidity, weight and crating cost saving.

15.2.3.1 Packing

- All fragile parts should be correctly protected to avoid any damage.
- All protruding parts should be protected to avoid self-damage or damage to adjacent and neighboring load or aircraft structure.
- If upright position is required, “This Way Up” labels or orientation arrows should be affixed.
- When necessary, lifting or hoisting points should be clearly indicated.
- When the contact area is not uniformly distributed e.g. motor, engines, pumps, etc., machinery should be supported on easily forkliftable stands, wooden pallets or spreaders.



- If several light parts are delivered loose, they should be affixed together or bundled, to facilitate handling (for example car parts, car doors, etc.).
- The center of gravity position should be clearly marked for any heavy load which may have to be lifted during transportation.

15.2.3.2 Loading

- All loose machinery should be correctly secured on board the aircraft or on the pallet prior to loading.
- When loading heavy machinery in bulk compartments, a support stand may be provided to increase a base area and spread the load to avoid exceeding aircraft floor limitation.

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- When tie-down is performed on board the aircraft, care must be taken not to damage any fragile parts with lashing material.
- Damage to the aircraft structure must be avoided when loading/unloading machinery with a forklift.
- When loading items with a forklift, mind that the mast height may increase when raising the forks and damage the aircraft, for instance, top hinged door.

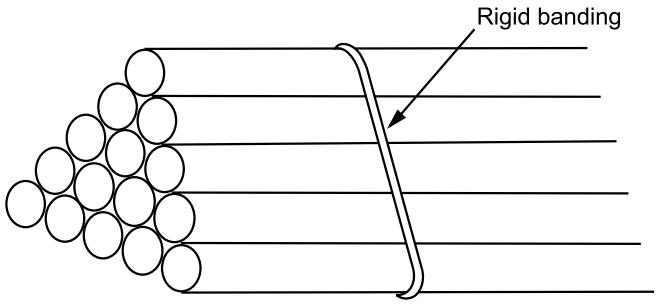
If applicable, the code BIG, the loading position and the weight of the item should be entered on the container/pallet message (CPM) for example,

.21 P/22P/C.BIG/2000.

15.2.4 Piping

In order to ensure proper handling of pipes, it is important to know the dimensions, the shape and the nature of the material.

Pipes are generally not packed. However, if they are carried in large quantities and not bulk loaded, a rigid banding will be required.



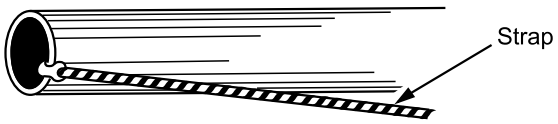
15.2.4.1 Piping in Bulk Compartments

15.2.4.1.1 Loading/UnLoading

When loading or unloading pipes or other items of similar shape in bulk compartments, care should be taken not to damage the aircraft structure with the pipes or the equipment.

15.2.4.1.2 Lashing

All pipes loaded in bulk compartments must be securely lashed to avoid any movement during flight as partition nets will not assure adequate restraint. For example, strap hooks may be attached directly to the edge of the tubes.



15.2.4.2 Piping on Pallets

15.2.4.2.1 Loading/Unloading

When pipes are loaded on aircraft pallets and overhang the pallet area, care should be taken not to damage the aircraft floor. To avoid any damage, the pipes must be raised above the pallet surface, for example by means of wooden warehouse pallets or other cargo. A minimum distance of 15 cm (6 in) shall be kept between pipes and the aircraft floor to allow erection of pallet locks.

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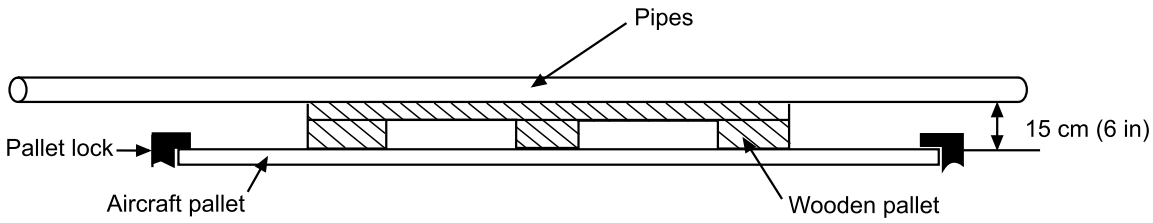
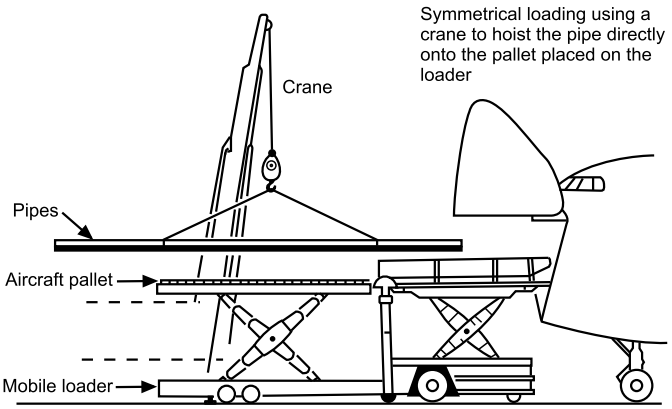


Pipes may be loaded on pallets with either a symmetrical or a non-symmetrical overhang from the pallet area. In both cases, it must be ensured that:

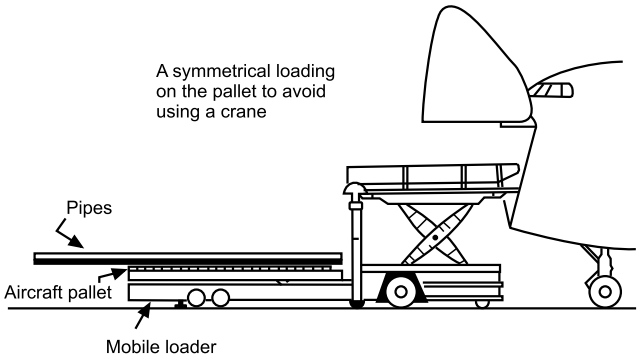
- downward deflection at the end of the pipes will not damage the aircraft systems in flight and during loading and unloading
- loading and unloading equipment, especially the loader, will accept the overhang without problems. Under certain circumstances, for example where the overhang is too long and the loader cannot accommodate the loaded pallet, it may be necessary to place an empty pallet on the loader and to use a crane to hoist the pipe onto the pallet.



When the non-symmetrical overhang loading method is used, care should be taken not to exceed the limit of the pallet's center of gravity.

The code BIG, the loading position and the weight of the shipment should be entered on the container/ pallet message (CPM) for example,

.11P/12P/13P/C.BIG/6000.



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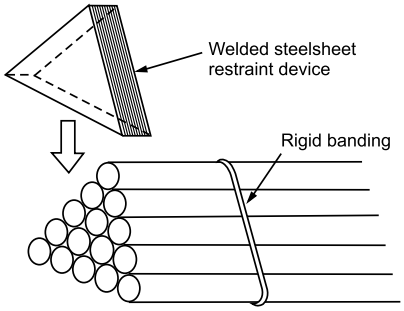
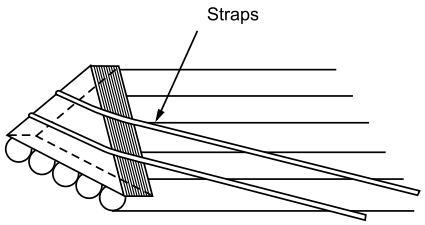
15.2.4.2.2 Lashing

When pipes are loaded on pallets, they shall be correctly secured against forward forces. When a shipment consists of several pipes, it must be secured that a strong end restraint device made of wood or steel is provided to allow tie-down.





If no special device is provided, some planks or boards must be used as a restraint device for lashing at the forward and aft ends of the load. When planks or boards are used, they must be cut to the appropriate size and placed vertically rather than horizontally, to avoid straps slipping between the planks. It is recommended that chocks be placed on the side of the pipes to avoid rolling.

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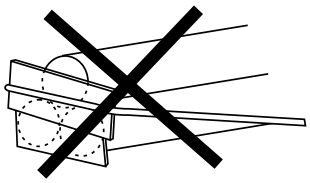

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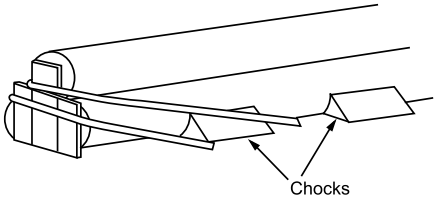

15.2.5 Cable Reels and Drums

Transportation of cable reels can be performed in two ways:

- cable reel flat on the pallet in horizontal position

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- cable reel vertical on the pallet in upright position.

The horizontal position is always preferable for loading. However, shippers sometimes prohibit the transportation of cable reels in horizontal position as the lower cable layers may collapse and be damaged by the weight of upper cable layers. Upright transportation should be accepted only if the shipper explicitly confirms that it is impossible to carry the reel horizontally without damaging the cable.

If applicable, the code BIG, the loading position and the weight of the shipment should be entered on the container/pallet message (CPM) for example

.21 P/22P/C. BIG/2500.

15.2.5.1 Transportation in Horizontal Position

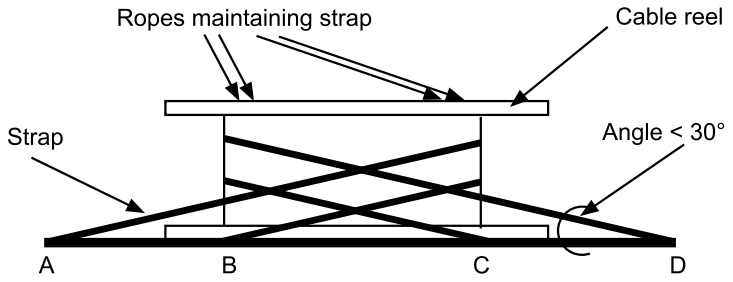
15.2.5.1.1 Loading onto the Pallet

It is recommended that cable reels or drums be delivered in the way they are intended to be carried.

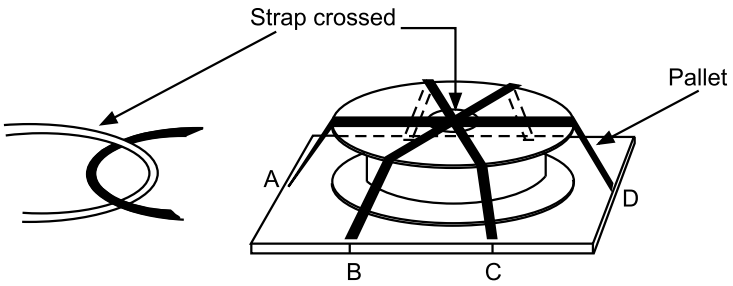
A spreader floor will be required if the reel dimensions exceed the pallet dimensions of the maximum load area of the pallet. If there are protruding parts on the reels, such as bolts and screw heads, it will be necessary to raise the reel to avoid damaging the pallet. The material used to raise the reel from the pallet must have sufficient contact area not to bend the pallet. Warehouse wooden pallets would meet requirements.

15.2.5.1.2 Lashing

Forward and aft lashing should be performed with straps, according to rules see General LCM, Chapter 11—LOAD RESTRAINTS. To avoid slipping of the straps, security ropes or straps should be used to maintain the correct angle.



Lashing against upward force must be performed by using straps crossed one into the other at the reel center like a spider's web.



15.2.5.2 Transportation in Upright Position

15.2.5.2.1 Loading onto the Pallet

When cable reels are carried in an upright position, care shall be taken to ensure correct load distribution on the pallet area in order to prevent damage to the pallet or to the aircraft loading system

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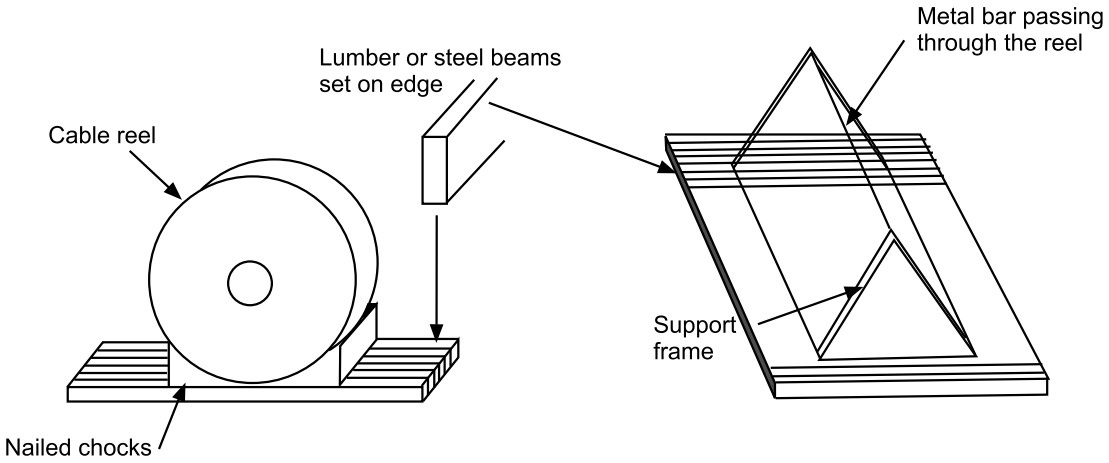
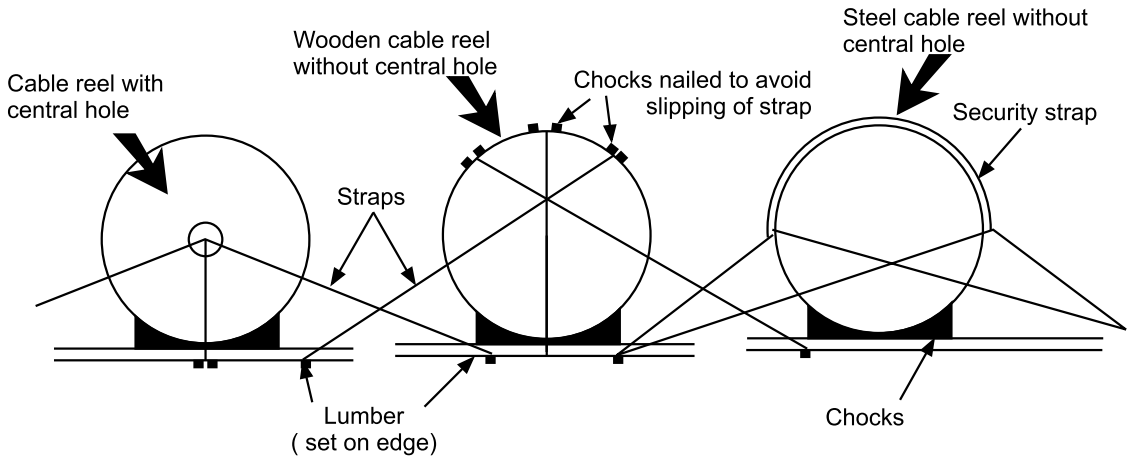
and to avoid exceeding the maximum aircraft floor limitations. A support stand is mandatory to spread the load. The cable reel must be positioned on the stand in such a manner as to avoid any contact with the pallet surface to ensure a correct weight distribution. In addition, a spreader floor may be necessary to avoid bowing of the pallet.

See example below for the support stands to be used.



15.2.5.2.2 Lashing

Lashing of cable reels in upright position should be performed with straps according to rules. See General LCM, Chapter 11—LOAD RESTRAINTS. However, depending on the reel characteristics, different methods may be used.



15.2.6 Aircraft Engines

On main deck, aircraft engines can be carried entirely. Generally, they have to be split to be transported in the lower deck of a wide-bodied aircraft.

15.2.6.1 Loading

When carried entirely, aircraft engines are generally supported by a transportation trailer or stand which is positioned on a pallet. Only stands and trailers approved for air transportation shall be used. Some engine stands may also be used as a pallet, in which case a transportation trailer should be available at destination.

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Palletization of these engines shall be done by specialists only. At field stations, skilled mechanics can carry out that task. As aircraft engines frequently overhang the pallet area, a minimum space must be provided on the neighboring pallet(s) to avoid any damage to the engine.

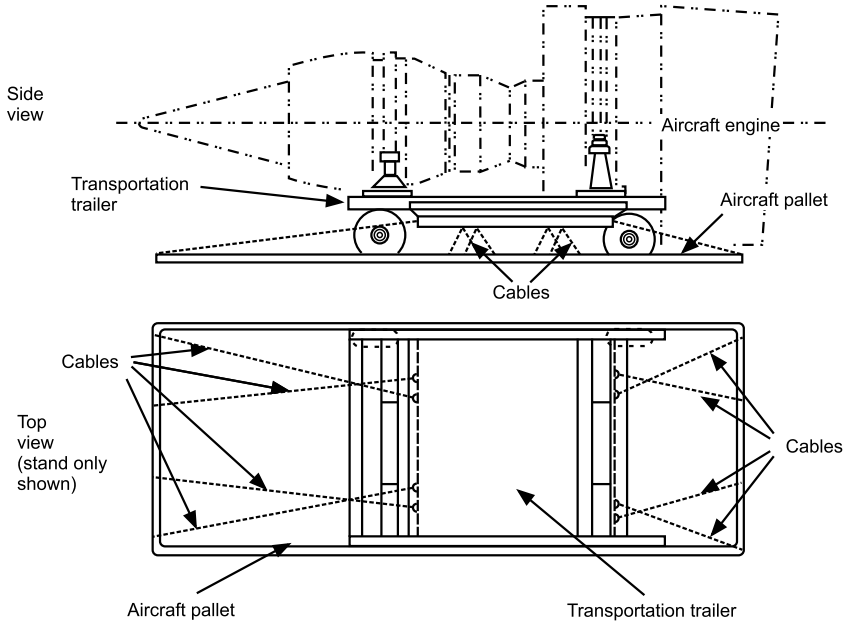
If applicable, the code BIG, the loading position and the weight of the shipment should be entered on the container/pallet message (CPM), for example,

.31P/32P/C.BIG/4125.

15.2.6.2 Lashing

Care should be taken not to damage aircraft engine parts with straps or cables. Therefore, no straps shall surround the engine. Only the support stand shall be lashed.

In order to prevent any movement of the load, the stand should be lashed to the pallet with cables rather than straps, as aircraft engines are generally heavy.



15.2.7 Automobile Loading Procedures

15.2.7.1 Responsible Functions (at BKK Suvarnabhumi)

- BKKKL
- BKK2T
- BKK2L
- BKKFA-M

15.2.7.2 Required Manpower (at BKK Suvarnabhumi)

BKKKL 1 LCS (Load Control Supervisor) or 1 LM (Load Master)

BKK2T 1 Equipment Operator and 1 Driver

BKK2L 1 Foreman

BKKFA-M 5 General Mechanics.

15.2.7.3 Required Equipment and Standard Loading Accessories Provided by FA-M

- Full size pallet (96” PMC) × 4 (Provided by KL)
- Hydraulic Floor Jack × 1

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- Heavy Duty Strap × 8
- Supporting plank or Metal/Aluminum plate
- Chock
- Knitted cotton working gloves
- Tied-down fittings.

15.2.7.4 General Preparation of Automobiles

The following procedures for loading automobiles on pallets shall be observed:

1. Fuel tanks containing gasoline should be emptied as far as practical and as required by the current IATA Dangerous Good Regulations and if any fuel remains, it must not exceed one quarter of the tank capacity (not applicable to diesel-driven vehicles which need not to drain of the fuel but sufficient space must be left in the tank to allow fuel to expand without spillage).
2. The draining of oil and water and deflation of tires are not required.
3. Batteries can remain installed provided they are securely fastened in an upright position and protected against short circuits. Refer to current IATA Dangerous Goods Regulations.
4. In order to avoid bowing and/or exceeding the maximum area load of the pallet, the automobile wheels must be placed on supporting spreaders. To limit automobile movement, wheels may be chocked.
5. The automobile shall be properly secured onto the pallet during ground transportation.
6. The handbrake shall be set during ground/air transportation.
7. The key shall remain in the automobile and must be enclosed in a dense company envelope and attached to the steering wheel. Care must be taken that the doors of the automobile are not inadvertently locked.
8. The “Dangerous Goods Checklist for a Non-Radioactive Shipment” must be performed upon acceptance of automobile and a “Shipper’s Declaration for Dangerous Goods” is required for the carriage of automobile by air.
9. After dangerous goods acceptance check, the car must be positioned on long wooden planks on the aircraft pallet to avoid a bending of the pallet and the rims must be tieddown to the pallet.
10. If an automobile is loaded on two pallets, it must be indicated in the CPM with the 3-letter code BIG. Further information such as type of automobile, dimension and weight should be given in the (SI) part of the message.
11. The loading and unloading stations must ensure all critical stages of handling to be completed under direct supervision of TG or TG’s representatives to prevent any damage which can lead to very costly claims settlements.
12. Maximum allowable vehicle wheelbase is 292 cm and maximum vehicle body width is 193 cm.

15.2.7.5 Automobile at Departure/Arrival Check Sheet

- The “Automobile at Departure/Arrival Check Sheet” (THAI 9019) must be completed at station of origin upon acceptance process. The first copy must be accompanied to a shipment with a key to a final destination and the second copy shall be kept at origin station for filing.
- The automobile shall not be accepted for air carriage in a damaged condition without notification to the shipper/agent, who should also sign the “Automobile at Departure/Arrival Check Sheet” to confirm acceptance of the automobile condition and equipment as recorded.
- The “Automobile at Departure/Arrival Check Sheet” must be used in conjunction with the form THAI1693-N “Dangerous Goods Checklist for a Non-Radioactive Shipment”.
- Upon arrival, the “Automobile at Departure/Arrival Check Sheet” inside the key envelope must be used for rechecking the automobile and signed at destination.

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Specimen

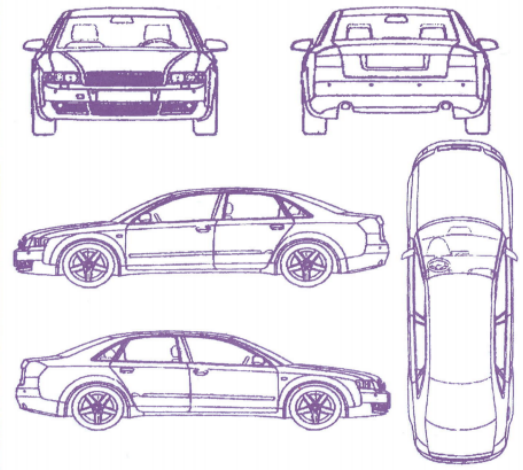
THAI CARGO

Automobile at Departure / Arrival Check Sheet

Air Waybill Number	Airport of Origin	Airport of Destination	Flight Number/Date

Circle damaged area and enter appropriate letter from legend below

A: Metal damage/scratch // B : Glass damage // C: Dents // D: Broken/loose // E: Paint scratch



Details:			
1.	Make:	2.	Color:
3.	Plate Number:	4.	Chassis Number:
5.	Key / Access Card Number:		
6.	Condition (*):		Loose - Crated - Boxed - Covered: New - Used
7.	Type of fuel / power (*):		Gasoline - Diesel - LPG/CNG - Electric

(*) circle as appropriate

If any question below is answered with "NO", do not accept the consignment and give a duplicate copy of this completed form to the shipper

The vehicle:		Yes	No	N/A
1.	Shipper's declaration attached			
2.	Fuel tank in accordance with P/I 900 (a)			
3.	For LPG/CNG, tank and lines in accordance with P/I 900 (b) [CAO]			
4.	Batteries securely protected in upright position			
5.	Spare fuel jerricans empty and secured			
6.	Fire extinguishers securely protected and fastened			
7.	Theft-protection device, radio-communication or navigational system, auxiliary heating system disabled			
8.	Vehicle inspected for unauthorized/restricted articles			

Remarks: _____

Distribution: 1st copy accompany to shipment with a key
2nd copy file at origin

Shipper / Agent:	At Departure Station / Checked By: Date / Time	At Arrival Station / Checked By: Date / Time
Name _____	Name _____ Func. _____ Signature _____	Name _____ Func. _____ Signature _____
Signature/Date _____	Witness _____ Func. _____ Signature _____	Witness _____ Func. _____ Signature _____

THAI 9019/NOV09

15.2.7.6 ULD Preparation

As the pallet with the car moves over the secured pallet inside the cargo compartment, this pallet should only be secured at the aircraft floor by using the restraint devices in cargo compartment and no net fittings should be fixed on the forward side to enable a smooth movement of the sliding on loading pallet (as well as offloading).

15.2.7.7 Lashing Method and Requirements

The instructions contained in this section ensure the safe carriage of automobiles in the cargo compartments of wide-body passenger aircraft. For obvious reasons, automobiles must also be adequately secured on pallets or trailers for transfer between cargo warehouse and aircraft.

Generally, the tie-down shall be used for structural parts of the vehicle only. Moving parts such as steering rods, wheel suspension, etc. shall not be used as attachment points for straps. Moreover, no straps shall surround the automobile, as they could damage paint work.

Automobiles may be secured for air transportation by tying their wheels to the pallet(s) using 8 (eight) heavy duty tie-down straps assembly shown in the following picture. 2 (two) tie-down straps assembly is required for each wheel. In addition, the body of the vehicle may be firmly tied to the pallet(s) in order to prevent the body from striking the compartment ceiling.

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15.2.7.8 Chocking Requirements

Additionally, the wheels of the vehicles should be chocked by at least two chocks preventing movement forward and backward. If there is any doubt about which points on the automobile to be used for tie-down, the matter should be referred to the shipper/manufacturer.

15.2.7.9 Load/Weight Spreading (Shoring)

Regardless of whether an automobile is loaded crosswise or lengthwise, the wheels must be put on platforms. These must be of sufficient length and width to distribute the weight of the automobile over and area ensuring that the floor load limitation and the running load limitation of the aircraft are not exceeded.

15.2.7.10 Safety Notes

- The engine may be started to activate the necessary system for maneuvering and moving the car.
- At least 2 (two) people are required as a guiding person at forward and aft of the car to avoid any damages.
- Driver is required in position to steer the car and applying the break.
- It is strongly recommended to use the man power to maneuvering and moving the car.
- Hydraulic Floor Jack may be used as alternate method.

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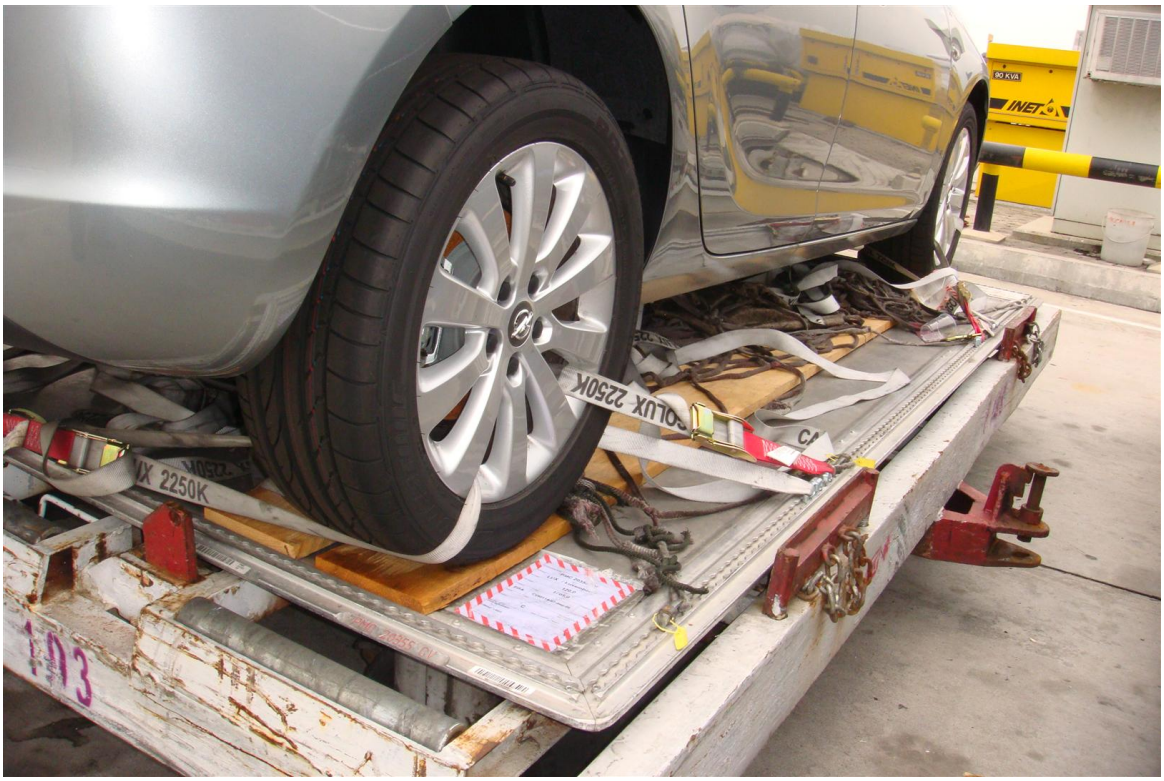

- For load spreading purposes it is recommended to use platforms consisting of top and bottom planks as shown in the drawing below. In order to facilitate loading it is advisable to nail the top planks to the bottom ones. One platform shall be used for each wheel. The size of the platform shall be calculated according to the methods given, see General LCM, Chapter 12—SUPPORTING.
- After the automobile has been properly placed on the platforms, each wheel must be chocked with 2 chocks (forward and aft) which are to be nailed to the top planks.

15.2.7.11 On-Loading

Four full size pallets (88" × 125" or 96” × 125”), secured by the relevant latches, must make the floor on which the car moves with man power push into the hold. Between the latch gaps of the pallets, wooden supporting planks must be placed, to avoid any punctual pressure from the tires to the a/c floor as the design will not withstand these forces.

The ballmat (entry) area is designed for these forces and the car may move through. Then the driver will steer to maximum left into the hold as far as possible, the pallet will be moved more inward and the procedure will be repeated until the car is straight on the centerline of the hold (facing aft). Therefore the pallet acts as an additional steering of the rear axle.

All four rims/wheels must be tied-down with 2 (two) heavy duty straps each to secures the car with the two pallets and the planks must be taken out of the gaps and tied-down separately.

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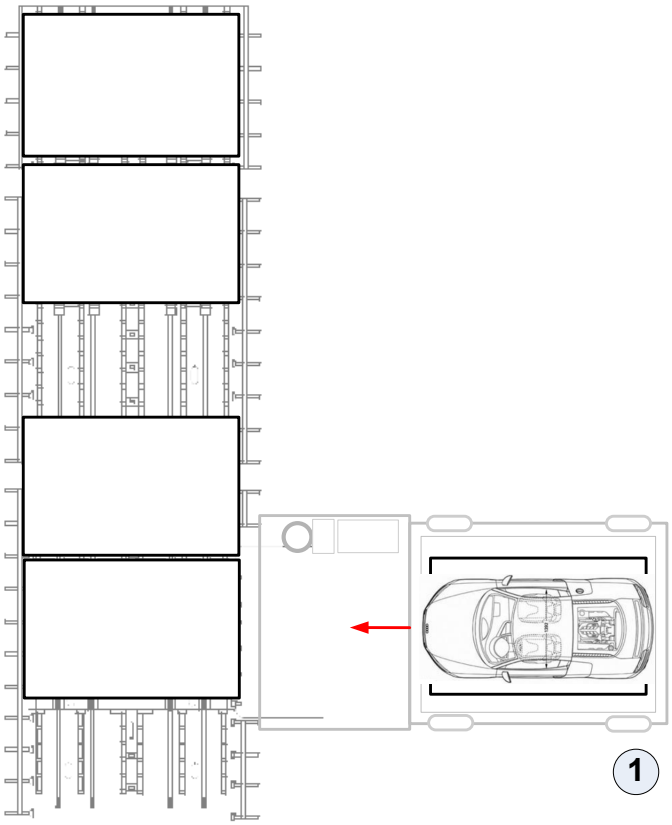

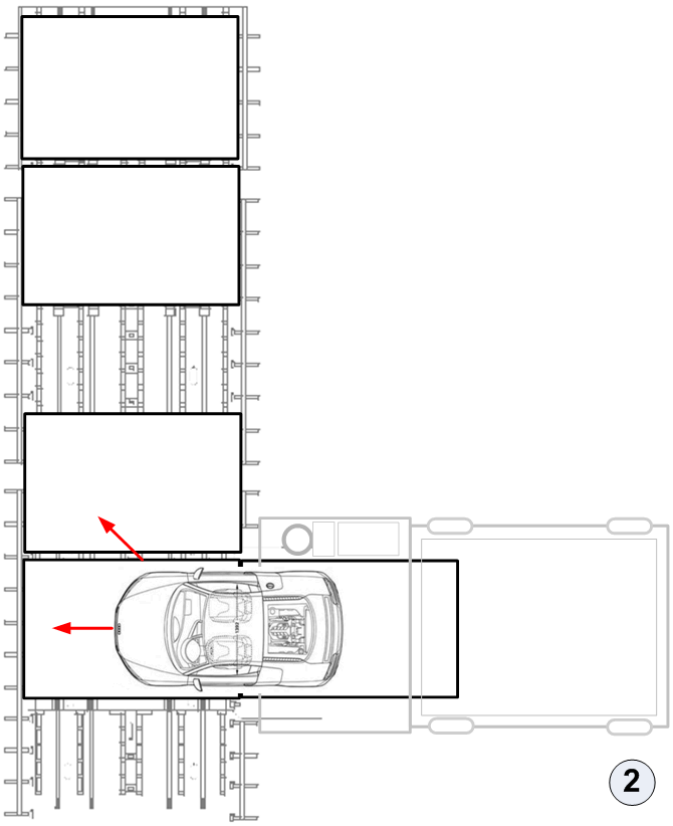

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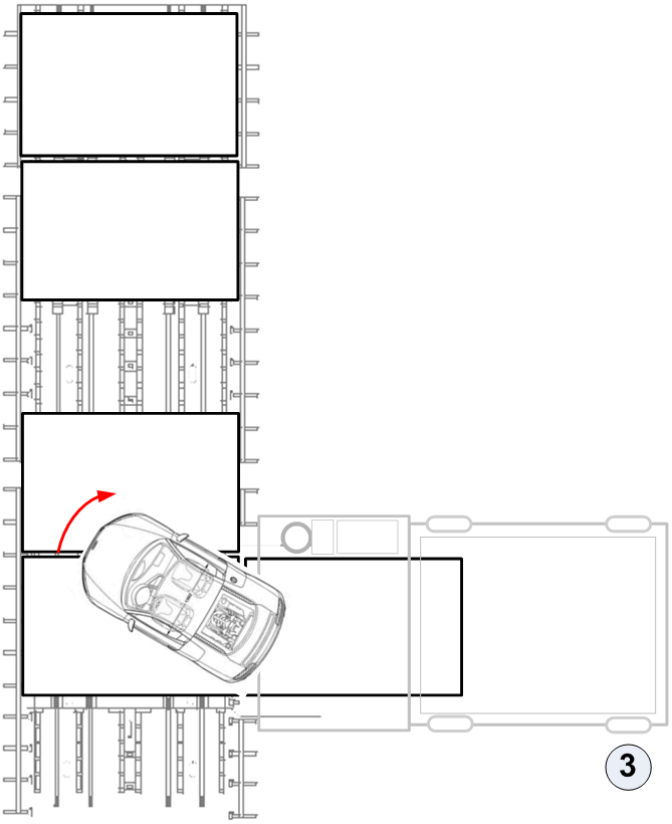

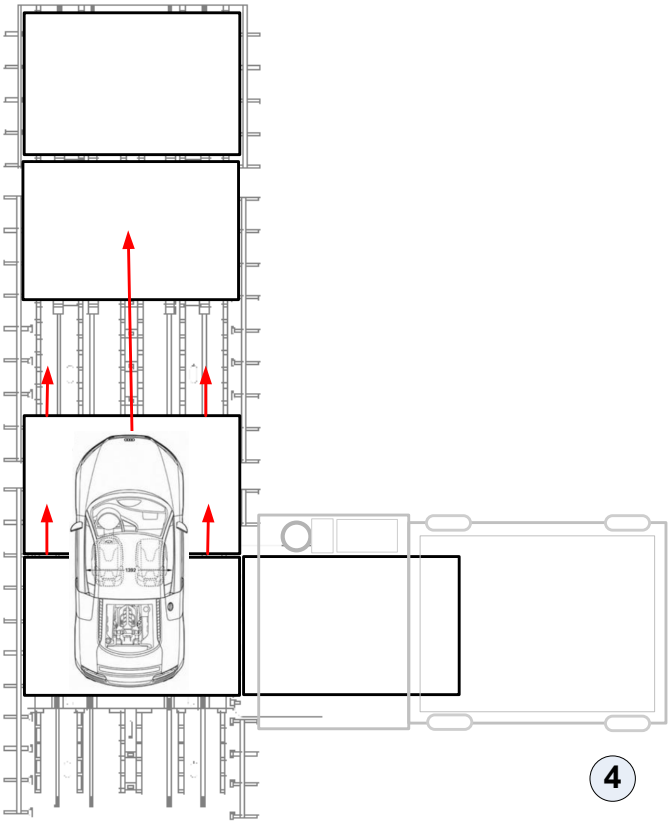

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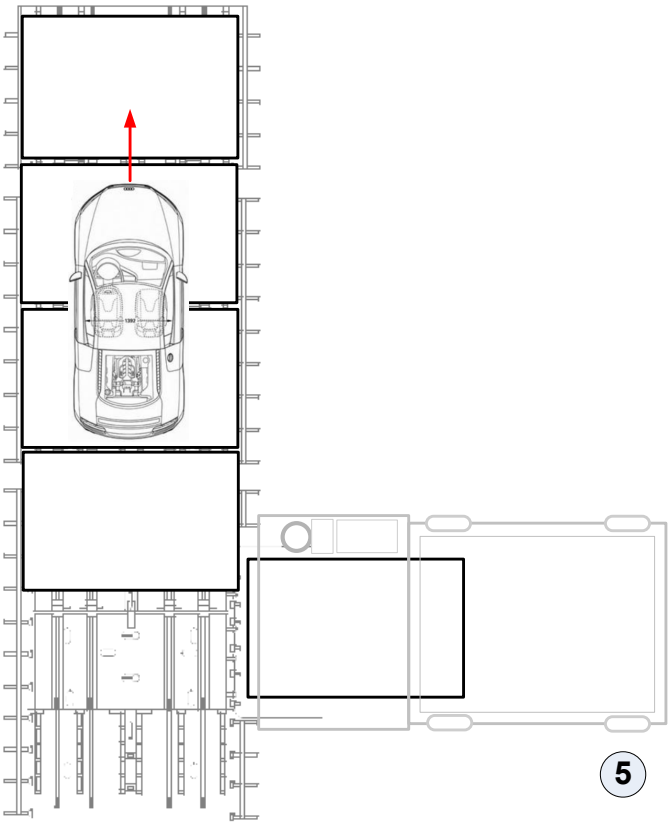

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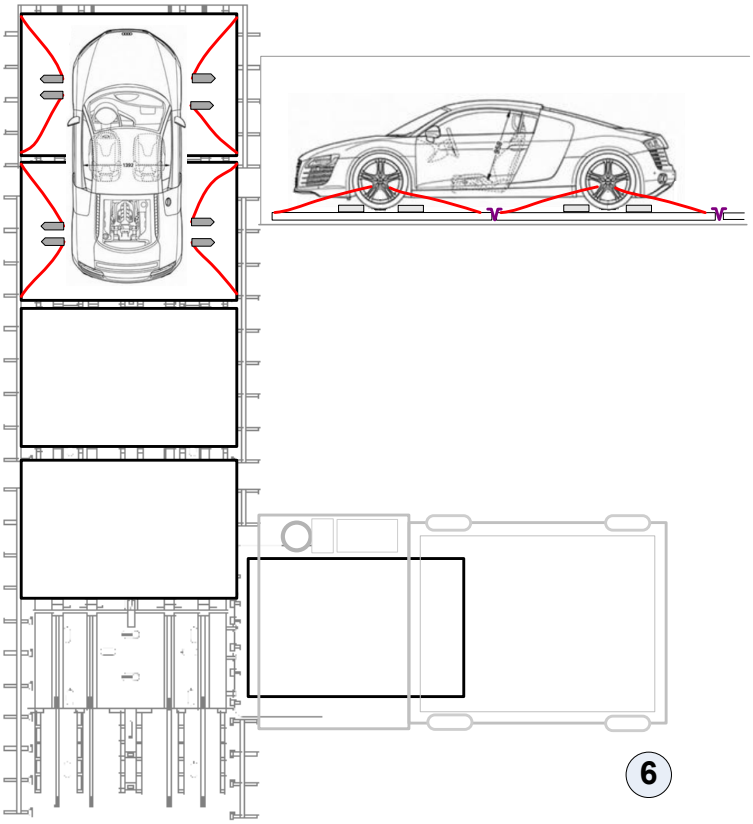

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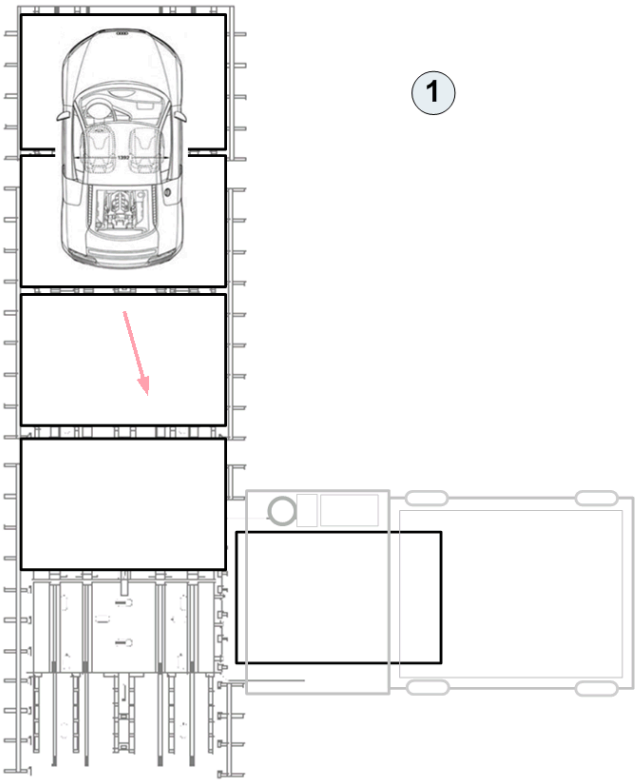
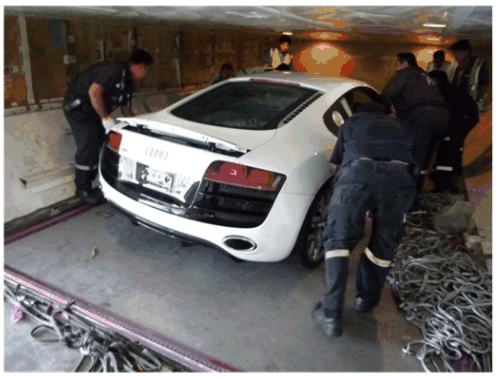
15.2.7.12 Off-Loading

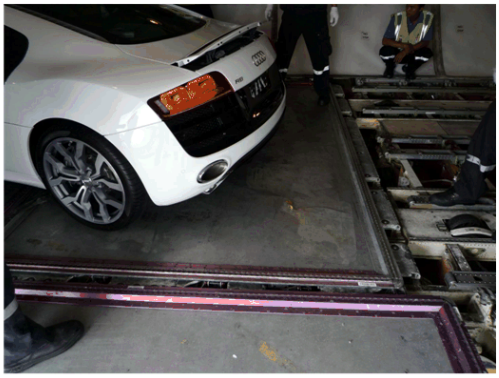
Four empty pallets will be pushed about ¾ of its length in the entry area overlaying the secured pallet. The supporting planks must be placed between the latch gaps of the pallets and the straps will be opened.

The car will be maneuvered by manpower backwards on this pallet with its rear axle. The pallet will be pulled outward a little bit and the driver maneuvers the car. This procedure will be repeated until the car is straight on the pallet.

It is required at least 2 (two) guiding persons at FWD and AFT of the car while maneuvering or moving in cargo compartment to avoid any damage of the aircraft structure and lining.







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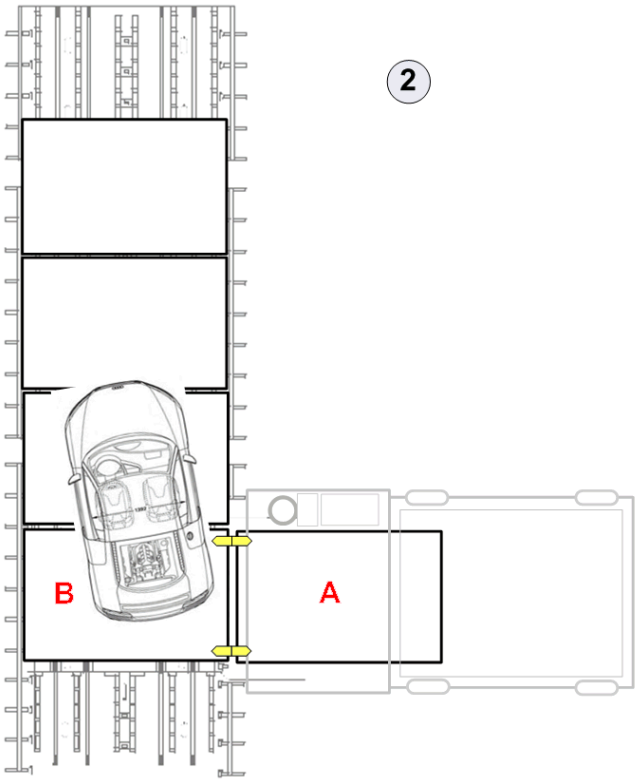

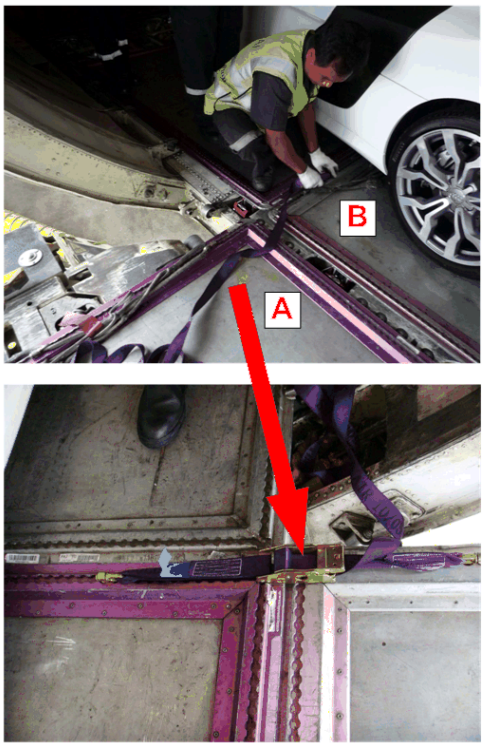

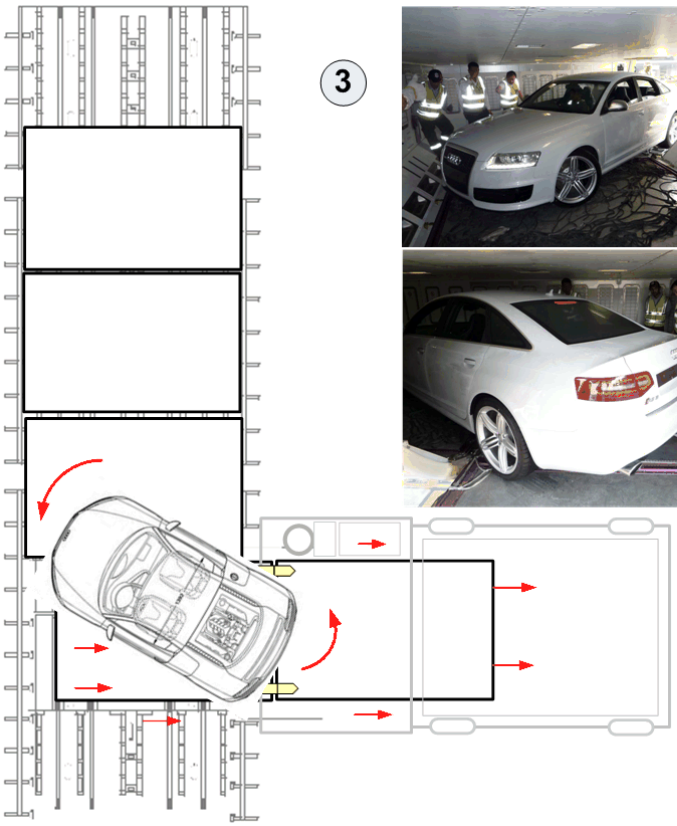

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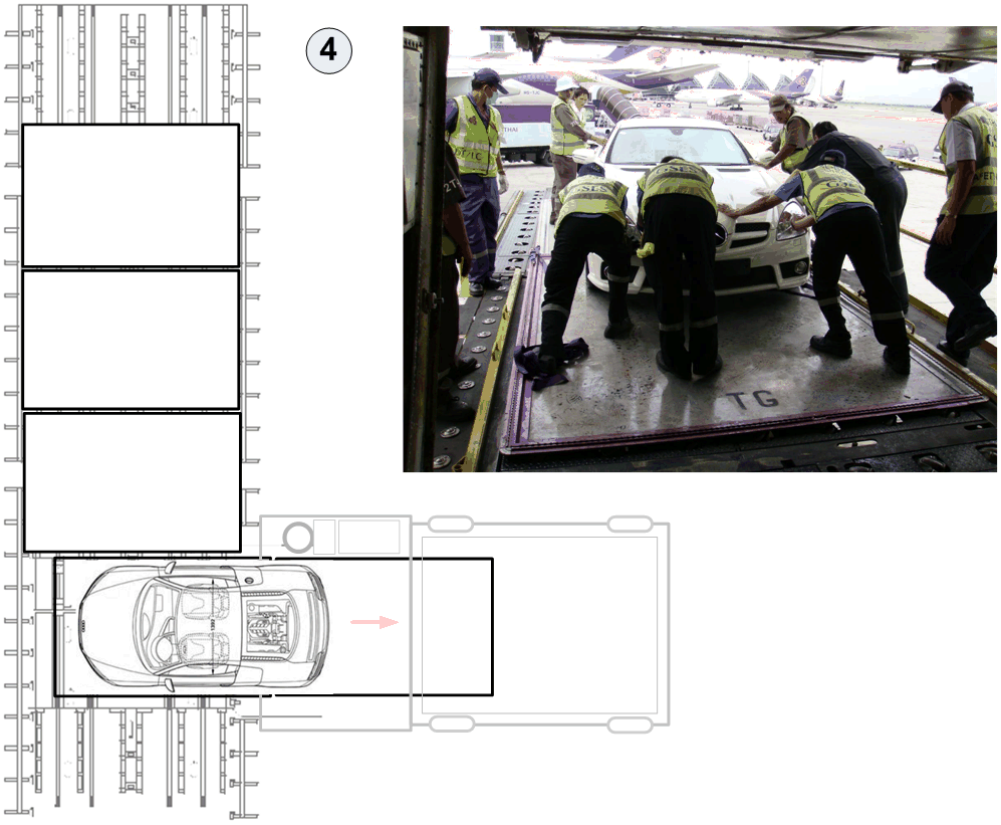

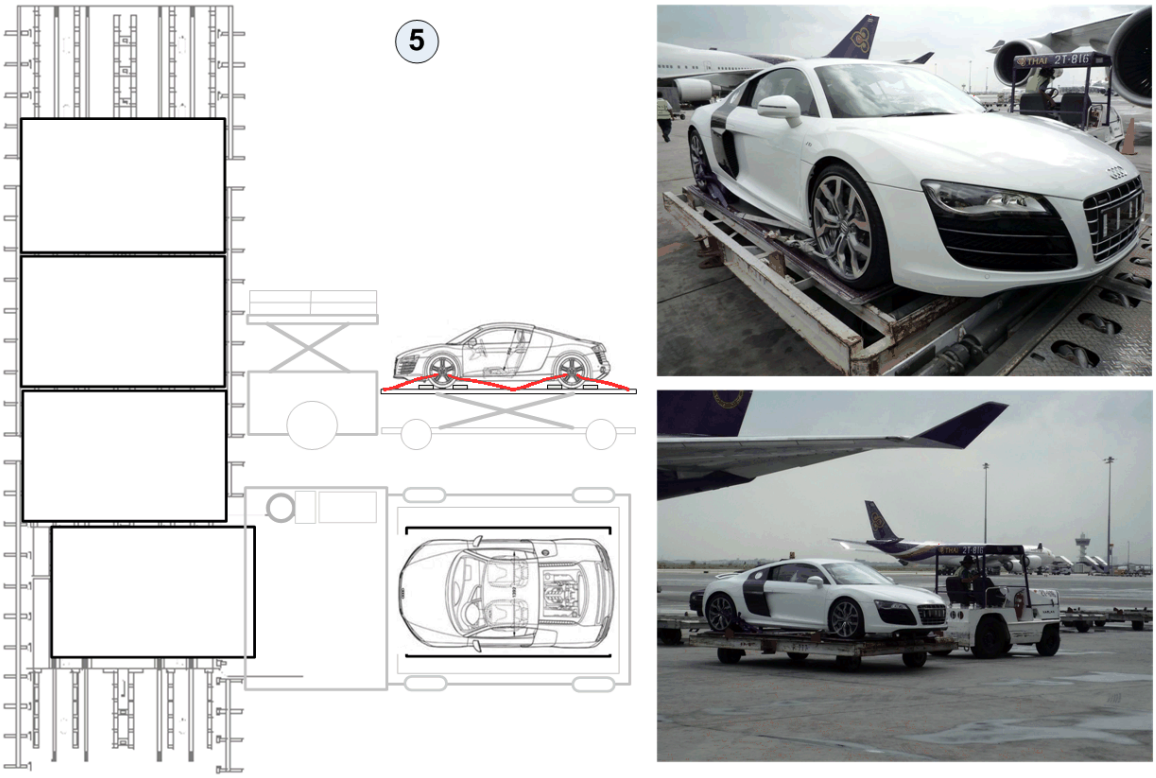

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15.3 Other Special Loads

15.3.1 Perishable Cargo

15.3.1.1 General Information

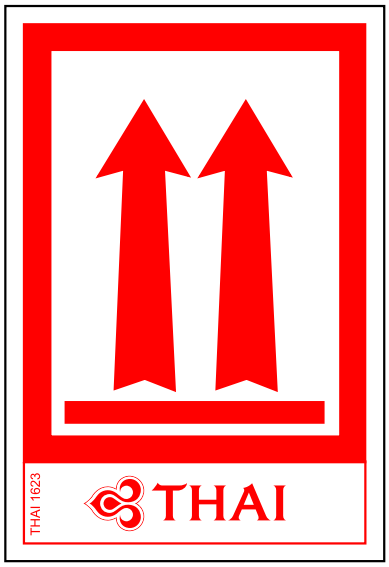
Perishable goods are those whose condition or suitability for original purpose may deteriorate if exposed to undue changes in temperature or humidity, or delay in carriage.

15.3.1.2 General Packing Requirements

Changes in temperature and humidity during transportation can affect perishable goods. To reduce the risk of deterioration, the packaging should be designed to withstand those climatic effects. The material used should be strong enough to allow stacking.

When cooling or freezing agents such as dry ice or cryogenic liquids (e.g. liquified argon or nitrogen) are used, the packing requirements published in the IATA Dangerous Goods Regulations shall apply. In the case of wet ice,.

THAI 1623 "This Way Up" label



15.3.1.3 Fruit and Vegetables

15.3.1.3.1 General Information

- Different types of packs, if properly packed, are accepted for carriage such as wooden crates, trays, cartons, bags, wicker baskets, etc.
- For most fruit and vegetables, ventilation is necessary to keep them in good condition. For this purpose, ventilation holes are generally provided on the package.
- Packing material should be strong enough to allow the stacking of packages on top of each other.
- "This Way Up" and "Perishable" labels shall be affixed on all packages.
- Package should be adapted to the type of fruit carried, e.g. a carrots gunny sack should not be used to carry tomatoes.
- It is also essential to keep transportation time to a minimum to guarantee freshness of vegetables and fruits on delivery.
- If the use of dry ice for cooling purposes is required, it should be consistent with the current edition of IATA Dangerous Goods Regulations.

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THAI 1617 "Perishable" label

15.3.1.3.2 Loading

- Maximum stacking height should be observed when building pallets with vegetable or fruit packages to avoid sloping on sides.
- Fruit and vegetables should be stacked into ULD's or bulk compartments in such a manner as to avoid crushing, which could also damage other load and the aircraft compartments.
- Heavy packages which could cause damage shall not be loaded on top of vegetable or fruit.
- Fruit and vegetables shall not be loaded in close proximity to non-cremated human remains. Foodstuff and poisonous and infectious substance shall be loaded in accordance with incompatibility chart (see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation).
- Fruit and vegetables consignments must not be stowed or loaded in close proximity to live animals at any stage of the journey because of serious risk of contamination.
- If specific temperatures in compartments are required for transportation, the NOTOC form should be used to notify the captain to ensure adequate ventilation and temperature.
- The code PER and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

  .PER/3 .31P/C.PER.

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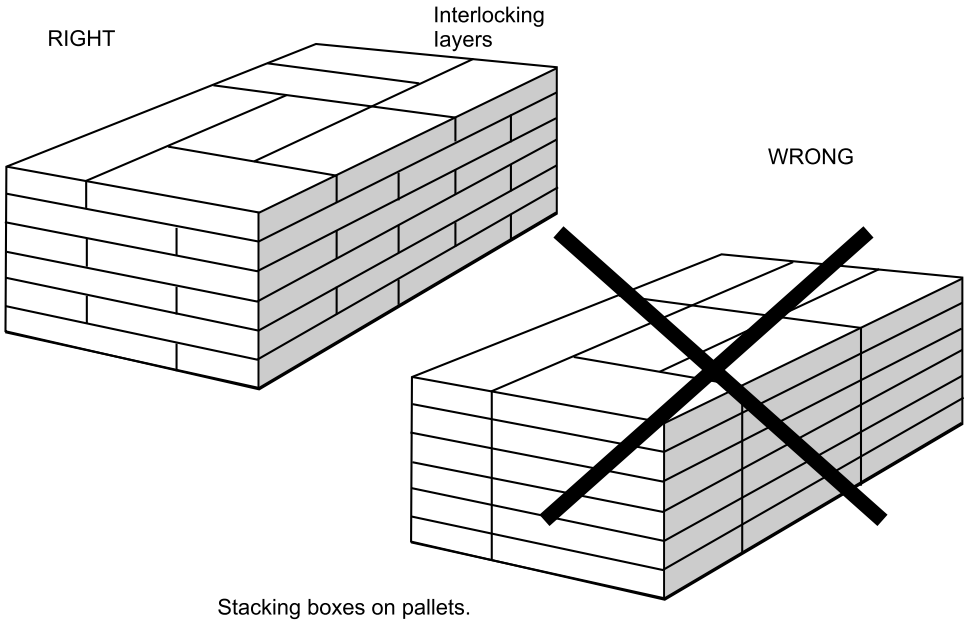

Stacking boxes on pallets.

15.3.1.4 Eggs

The shipper should specify whether the egg shipment consists of hatching eggs or eggs for human consumption. Hatching eggs are considered unincubated fertile eggs containing a living embryo in dormant form. A fertile egg is said to be incubated once the incubation process has started.

15.3.1.4.1 General Information

- Eggs should be properly packed in fiberboard or wooden boxes with honeycombed separation trays.
- Packing material should be strong enough to allow stacking of parcels on top of each other.
- “This Way Up” and “Perishable” labels should be affixed to all packages.
- It is essential to keep transportation time to a minimum to maintain the eggs in good condition for delivery.

15.3.1.4.2 Loading

- Maximum stacking height must be observed when building ULD’s to avoid crushing of lower packages.
- Eggs should be stacked into ULD’s or bulk compartments in such a manner as to avoid crushing, which could also damage other loads or aircraft compartments.
- No other load shall be positioned on top of packages containing eggs.
- Eggs for human consumption shall not be loaded in close proximity to human remains, poisonous articles and infectious substances.
- Eggs for human consumption (EAT) shall not be loaded in close proximity to non-cremated human remains.
- Specific stowage requirements for foodstuffs, poisonous toxic or infectious substances, see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.
- Eggs for human consumption shall not be loaded in close proximity to live animals.

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- When hatching eggs are loaded with consignments of radioactive materials, a minimum separation distance must be applied as published, see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.
- Hatching eggs shall not be loaded in close proximity to dry ice and cryogenic liquids.
- The code HEG for hatching eggs and EAT for consumption eggs and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

  .HEG/2.21 P/C.HEG.

15.3.1.4.3 Temperature Requirements

- As low temperatures in compartments are needed for transportation, the NOTOC form shall be used to notify the captain in order to ensure adequate ventilation and temperature.
- Hatching eggs require a temperature range from +10°C (50°F) to +15°C (60°F).
- Eggs should never be exposed to extreme temperatures.

15.3.1.5 Flowers

15.3.1.5.1 General Information

- Flowers should be properly wrapped in protective paper and then packed in cardboard boxes or wicker baskets.
- Packing material should be strong enough to allow stacking of packages on top of each other.
- “This Way Up” and “Perishable” labels should be affixed to all packages.
- It is essential to keep transportation time to a minimum to guarantee freshness on delivery.
- Flowers should not be stowed in the same compartment or OLD as fresh fruit and vegetable due to ethylene gas produced by vegetable which may deteriorate flowers.

15.3.1.5.2 Loading

- Maximum stacking height must be observed when building ULD’s with flower packages to avoid sloping on sides.
- Flowers should be stacked into ULD’s or bulk compartments in such a manner as to avoid crushing.
- Heavy packages which could cause damage shall not be loaded on top of flower parcels.
- The code PEF and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

  .PEF/3 .31P/C.PEF.

15.3.1.5.3 Temperature Requirement

- If low temperatures in compartments are needed for transportation, the NOTOC form shall be used to notify the captain in order to ensure adequate ventilation and temperature.
- Flowers should not be stowed in direct contact with the compartment floor or wall.
- The suitable or required temperature shall be notified by shipper.

15.3.2 Wet Cargo

15.3.2.1 General Information

Shipments containing liquids or shipments which, by their nature, may produce liquids and which are not subject to the IATA Dangerous Goods Regulations shall be designated as “wet cargo”.

The following types of cargo are to be considered as wet cargo:

- shipments of liquids in watertight containers
- shipments of wet materials not packed in watertight containers, e.g. fish or shellfish packed in wet ice, fresh or frozen meat, wet hides and skins etc.

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- goods which may produce liquids, e.g. live animals.

During air transportation, all items of load are influenced by several factors such as change of temperature, change of humidity, change of pressure and vibration. Additionally, during climb and descent, the aircraft in normal flying conditions can assume angles i.e. angle of aircraft floor compared to the horizontal up to approximately 30°.

Under these conditions, wet cargo may spill or leak, which could lead to corrosion or other damage to the aircraft structure or damage to other load.

To prevent spillage or leakage, special requirements for shipments containing wet cargo must be adhered to.

15.3.2.2 General Packing Requirements

Receptacles and packages must always be securely closed and be of such construction as to prevent loss of content. Bags or sacks must be water resistant and made tight against sifting of content during transportation.

Water tight containers must fulfill the requirements as stated in the IATA Dangerous Goods Regulations. These containers are commonly used to carry wine, essential oils, non-restricted paints, etc.

“Non-watertight containers” must be of good quality waterproof materials and, furthermore, be constructed to withstand stacking. The IATA Live Animals Regulations specify the types of containers in which animals shall be loaded.

15.3.2.3 General Loading Precautions

Aircraft, Unit Load Devices (ULD) and load shall be protected against spillage from wet shipments as the customers claims and the costs incurred for cleaning and repair are high. Therefore, the following precautions are applicable:

- aircraft and/or ULD floor and walls shall be protected by means of plastic sheets or tarpaulins so as to retain any spillage or leakage. Edges of plastic sheets or tarpaulins shall be turned up against the aircraft or ULD walls and other cargo so as to create a basin around the shipment
- wet shipment containers shall bestowed and secured in an upright position, i.e. the closure must be at the top. Special handling instructions (labels or imprints) attached to the container e.g. “This Way Up” labels shall be strictly observed
- if a wet cargo shipment is loaded ire containers not watertight, secondary measures must be taken to ensure that any spillage can be contained. This can be achieved by placing and securing the shipment in a bowl, or similar receptacle, the volume of which is sufficient to contain any spillage. If necessary, absorbent material, such as sawdust or similar material shall be put in the bowl
- wet cargo stacked to several levels shall receive special attention to avoid crushing of the lower containers, especially if the container strength is influenced by wetness or moisture
- damaged packages or packages where damage can be assumed to have occurred SHALL NOT BE LOADED in a ULD or on the aircraft, e.g. packages with holes, indentations, traces of leakage, defective caps or closure devices.

15.3.2.4 Meat

Strict hygiene conditions shall be maintained during all stages of meat handling.

Meat shall be enclosed in waterproof material and handled as wet cargo.

The temperature ranges to be maintained are:

- between 0°C (32°F) and 5°C (41°F) for fresh meat
- below –12°C (10°F) for frozen meat.

Loading of Meat in ULD

Loading shall be performed in the following sequence:

1. plastic sheeting shall be laid out inside the ULD. The protective material must be of sufficient size to completely surround the planned meat shipment

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2. the edges of the plastic sheeting shall be pulled up and fixed by tape to the ULD walls. Now the ULD can be loaded
3. after completion of loading, the ends of the plastic sheet shall be pulled over the meat and secured with adhesive tape
4. if cooling is necessary, boxes of dry ice shall be placed on top of shipment. In that case, the shipment shall also be treated as dry ice shipment
5. if the ULD is not structural, e.g. a pallet, the load shall be secured by a tarpaulin and a net.

Loading of Meat in Bulk Compartments

Loading shall be performed in the following sequence:

1. tie-down rings shall be fitted into the tie-down tracks on the compartment floor
2. plastic sheeting shall be laid out inside the compartment. The protective material must be of sufficient size to completely surround the planned meat shipment
3. the edges of the plastic sheeting shall be pulled up and taped to the walls of the compartment
4. a foam rubber mat or strong corrugated paper together with layer of packing wool or other absorbent and insulating material shall be laid out
5. after completion of loading, the ends of the plastic sheet shall be pulled over the meat and secured with adhesive tape
6. the load shall be tied down to secure it against shifting
7. if cooling is necessary, boxes of dry ice shall be placed on top of the shipment. In that case, the shipment shall also be treated as dry ice shipment
8. the code PEM and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

   .PEM/3 .31P/C.PEM.

15.3.2.5 Fresh Fish

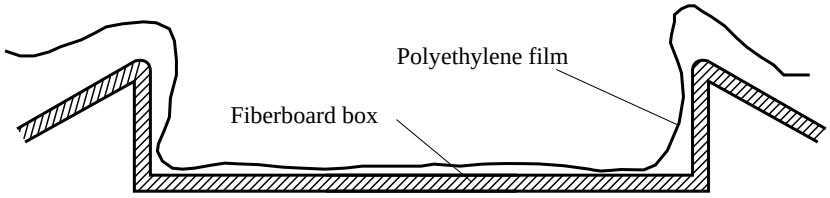
Fresh fish shall be completely enclosed in waterproof containers and handled as wet cargo. The temperature shall not exceed 5°C (41°F).

The code PES and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

.PES/2 .21 P/C. PES.

15.3.2.5.1 Packing Method Using Ice Bags

The outside container must be wooden, styrofoam or corrugated fiberboard box. A waterproof polyethylene film shall cover inside of the box.



When ice cubes are used for cooling purposes, they shall be packed in waterproof polyethylene bags, sealed with an elastic band.

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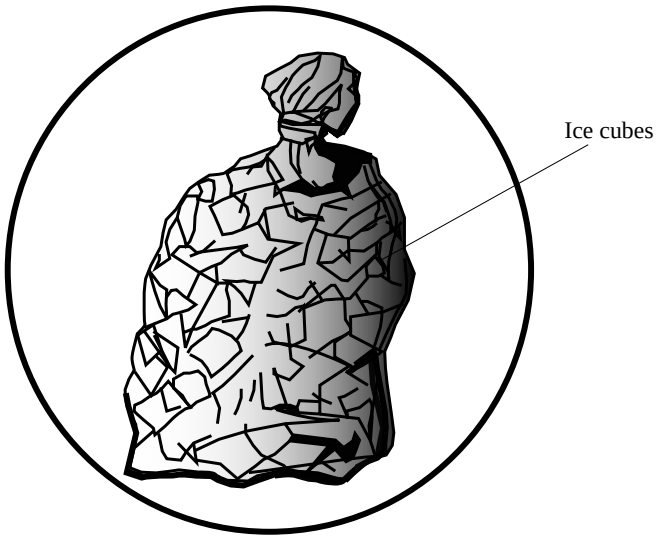
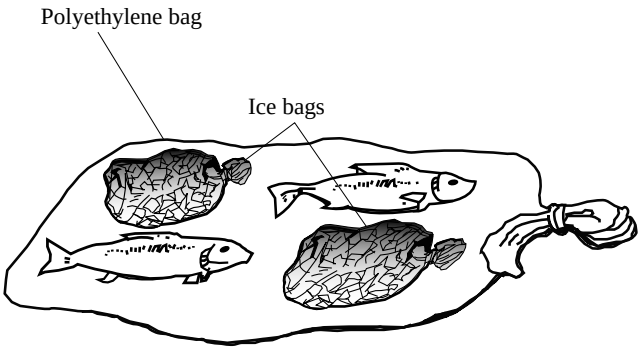
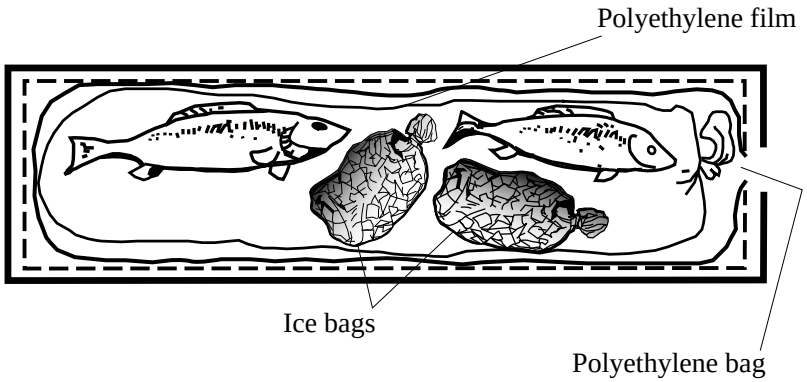


Fresh fish will be surrounded by ice bags and put into another polyethylene bag securely closed and tied with an elastic band. It is essential to let the air out of the bag before twisting the top in order to prevent the bag from being inflated and bursting when the pressure in the compartment decreases.



The shipment will then be put in the outside container and the remaining polyethylene film pulled over the bag.



The cover of the outside container shall be closed and sealed with adhesive tape and “This Way Up” labels affixed to the outside container.

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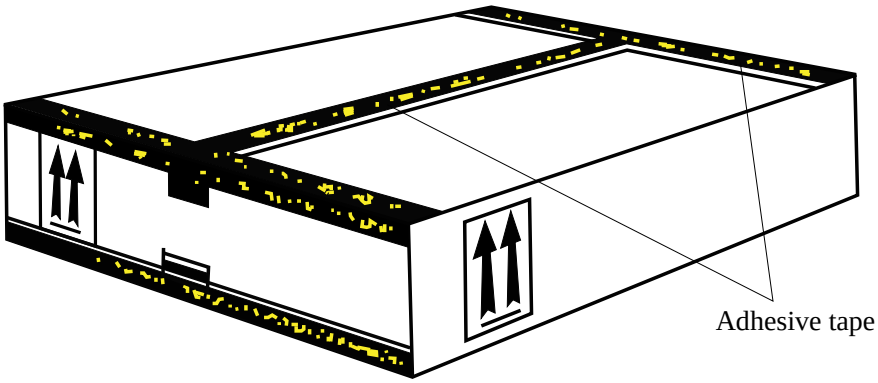
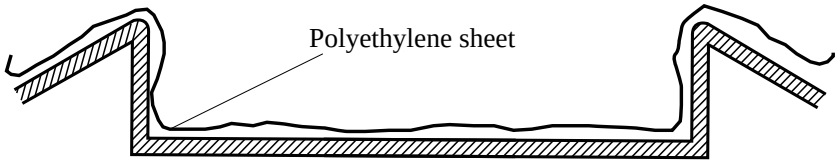
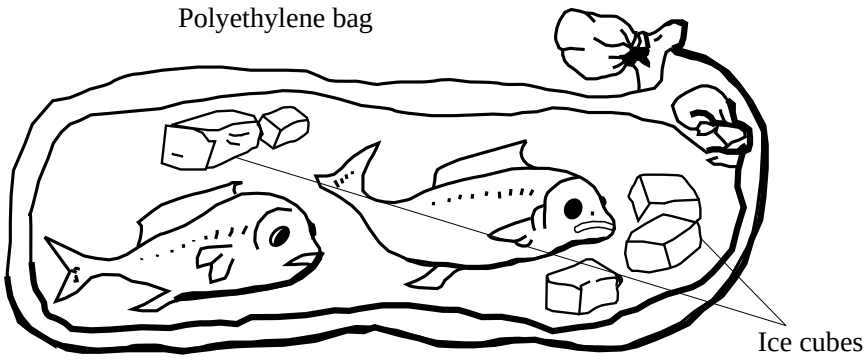


15.3.2.5.2 Packing Method Using Loose Ice Cubes

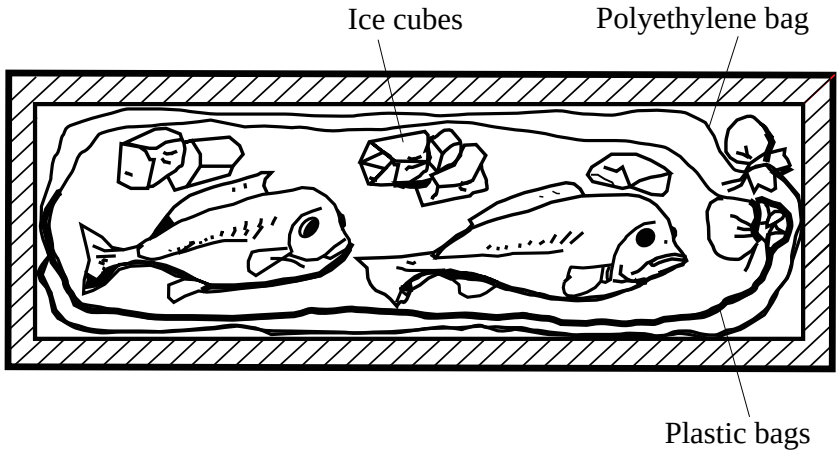
The outside container must be a wooden, Styrofoam or corrugated fiberboard box. A waterproof polyethylene film shall cover the inside of the box.



Ice cubes for cooling purposes and the fresh fish will be packed together in a waterproof polyethylene bag, sealed with an elastic band. Air remaining in the bag shall be let out before sealing the bag. This bag shall be packed in a second polyethylene bag, the top of which shall be sealed in the same way as the first one.



The two bags containing ice cubes and fresh fish shall be packed in the box. The remaining polyethylene film shall cover the shipment completely.



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The cover of the outside container shall be closed and sealed with adhesive tape with “This Way Up” labels affixed to the outside container.

15.3.2.6 Frozen Fish

Frozen fish must be packed in fiberboard with internal paraffin lining. The temperature within the boxes must not exceed –12°C (10°F). If necessary, cooling of such shipments shall be performed by means of dry ice.

The code PES and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

.PES/3. .31 P/C. PES.

15.3.3 Human Remains

15.3.3.1 General Information

Acceptance and transportation of human remains shall be in compliance with all applicable governmental regulations, e.g. death certificate must be part of the documentation. Special storage facilities are available at many international airports.

Handling and loading of human remains shall always be performed with respect.

15.3.3.2 General Packing Requirements

When not cremated, human remains must be contained in a hermetically sealed lead or zinc inner coffin placed inside a wooden coffin. The wooden coffin must be protected from damage by an outer packing and covered by canvas or tarpaulin so that the nature of its content is not apparent.

Cremated remains must be shipped in funeral urns which are efficiently cushioned by suitable packaging against breakage.

15.3.3.3 Loading

Funeral urns shall be treated as normal cargo.

For human remains in coffins, the following special rules must be applied:

- coffins must be loaded in a horizontal and NEVER in an upright position
- non-cremated human remains shall NOT be loaded in close proximity to dogs and other sensitive animals as well as food for human consumption, when such food is not packed hermetically
- generally, coffins are to be considered as heavy items (HEA)
- the captain shall be advised by means of the “Special Load Notification to Captain” form
- the code HUM, the loading position and the weight of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM), for example,

  .HUM/1/165. 13P/C.HUM/165.

15.3.4 Obnoxious Cargo

15.3.4.1 General Information

Obnoxious cargo is cargo which produces a strong offensive odor. Due to its strong smell, it shall only be accepted when packed in watertight containers which have to be sealed in such a way that NO odor of any kind can escape from the package.

The code OBX and the loading position shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM), for example,

.OBX/3. .31P/C.OBX.

15.3.4.2 Packing and Loading

Obnoxious cargo such as wet hides, essential oils and green or salted casings (intestines) are to be considered as wet cargo.

See General LCM, Chapter 15.3.2—Wet Cargo for packing requirements and loading precautions.

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15.3.4.3 Essential Oils

Essential oils are slightly oily liquids, usually with a high flash point. Therefore, with a few exceptions, they are not classified as Dangerous Goods. However, even very slight leakage could cause damage through impregnation of strong odors. To avoid that risk, essential oils must be transported in metal or plastic cans or barrels complying with the specifications listed in the current edition of the IATA Dangerous Goods Regulations.

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15.4 Live Animals

15.4.1 General Information

The IATA Live Animals Regulations (LAR) are intended for use by shippers, agents, forwarders and handling staff of airlines involved in the acceptance, handling and processing of live animals.

These regulations cover the aspects which must be considered to ensure animals are carried without harm to themselves or to the handling personnel. They detail the general handling precautions and acceptance requirements which apply for all animals and specify the principles of design of the container to be used for each animal species.

The IATA LAR are applicable to all IATA member airlines in scheduled and unscheduled operations. Moreover, they have been formally adapted by many countries as part of their legislation or through the issuance of a permit authorizing air carriers to carry live animals by air as defined in these Regulations.

Two main sets of international regulations govern carriage by air of live animals:

- the IATA LAR states general rules for transportation by air of live animals. It specifies the type of container to be used and the handling procedures to be followed for individual animal species. Special attention is given to animals' comfort, safety of handling staff and prevention of damage to and soilage of aircraft
- the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) limits the import and/or export of animal species in danger of extinction.

The IATA LAR includes the CITES information relevant to air transportation of animals.

When live animals are carried by air, several factors shall be considered, of which the most important are:

- the species of animals to be carried, their characteristics, breed, sex, age, individual body weight;
- their condition, for example, shorn or unshorn, pregnant, winter or summer coat, weaning, suckling, etc.;
- type of packaging used;
- type of aircraft used;
- the amount of required space in the compartment;
- the environment conditions in those compartments: ventilation rates and airflow direction, heating or cooling provisions;
- the environment conditions at intermediate stops and the climatic effects on ground during loading, unloading and ground transport;
- the best possible location within the deadload compartment;
- the presence of other load affecting the animals;
- the necessity of inflight attendance;
- the availability of ground storage facilities;
- the documents required, for example, Shipper's Certification for Live Animals, welfare and health certificate, import, transit and/or export permits.

For further information, refer to the current edition of the IATA Live Animals Regulations.

15.4.2 Packing/Containers Requirements

- Animals will be accepted only in suitable clean containers which must be leakproof and escape-proof.
- The containers must be constructed in accordance with the IATA LAR which will permit handling staff to give necessary attention to the animals without risk of being harmed.
- For general transport purposes, animals not be carried in closed containers.
- Carriage in open stalls must be especially arranged with the carriers concerned.
- As most animals are considered wet cargo, absorbent material is necessary.
- The use of straw as absorbent shall be avoided due to combustibility and quarantine regulations by countries.

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- If stacking is planned, the containers must be strong enough to prevent crushing of the lower layers.
- Minimum packing requirements are defined by IATA LAR which state, for each species of live animals, a specific container requirement.

Figure below illustrates the principles of design for a container to carry sloths.

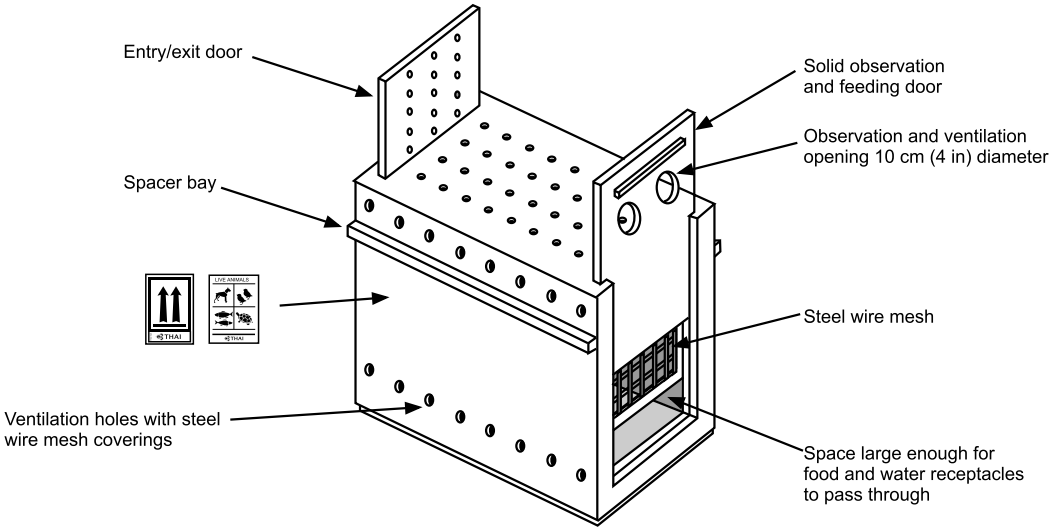
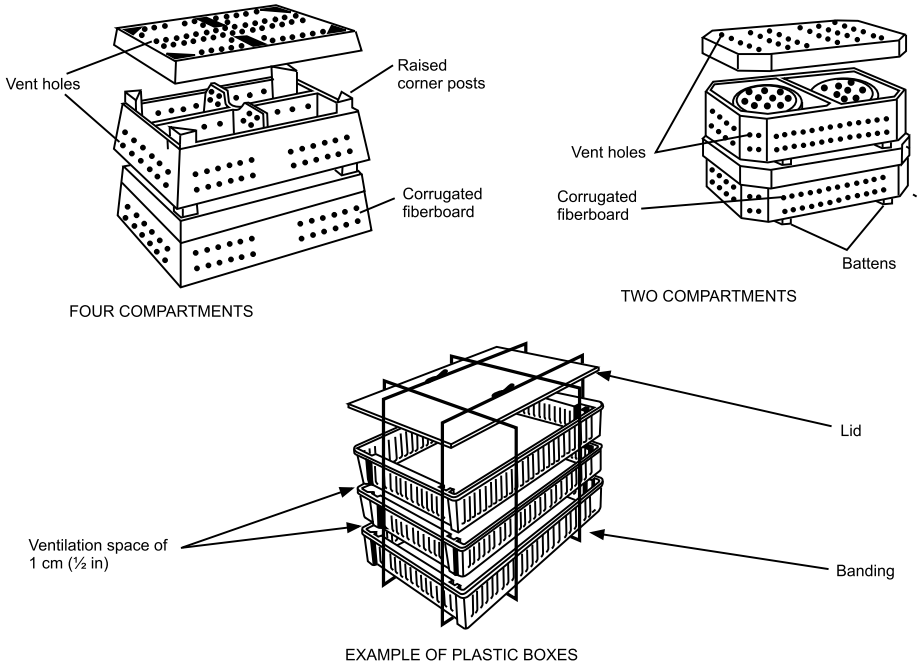


Figure below shows the design and specific requirements for the construction of a fibreboard and/or plastic boxes to carry day-old chicks, ducklings, goslings, and turkey poults.



"Live Animals" label, properly completed with the statement of contents, shall be attached to each live animal container unless otherwise specified in the individual container requirements.

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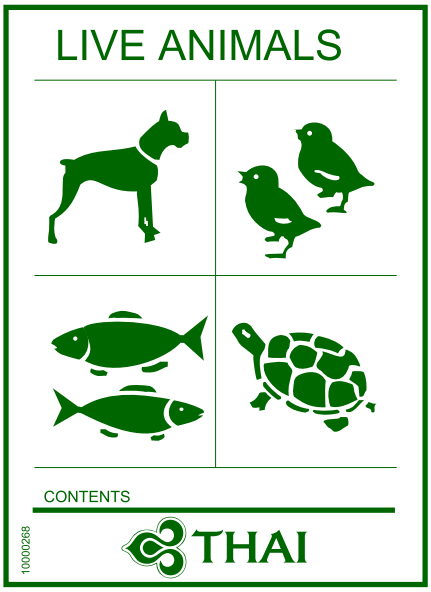
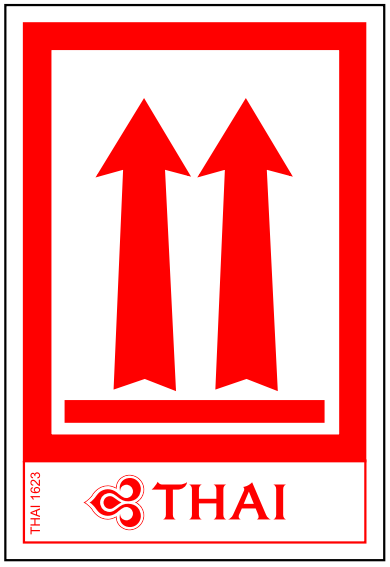
"Live Animals" label



"This Way Up" label or marking shall be placed where possible on all four sides of a container to show proper upright position.

THAI 1623 "This Way Up" label



15.4.3 Handling

- Greatest care must be taken when handling live animals to protect their welfare.
- Particular care must be taken to give the greatest possible sense of security to animals not accustomed to humans being.
- Disturbance of animal shipments must be minimal. Unauthorized persons and staff must be prohibited from approaching or disturbing animals.
- Naturally, wild animals prefer to rest in the dark while domesticated animals and most (but not all) birds prefer dim light.

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- Animals must be provided with adequate ventilation but must be protected from inclement weather conditions such as excessive sunlight, noise and drafts.
- Unnecessary tilting, tipping and movement of the shipment must be avoided.
- Food and water must only be provided in accordance with the shipper's instructions. For unforeseen situations, reference is made to the individual container requirements.
- Sedation is generally not recommended. When sedatives are administered, it should be done under veterinary supervision.
- Depending on the type and quantity of animals as well as on the outside weather conditions, compartment doors must be kept open during transit stops or, if necessary, air conditioning units be used at loading and transit stations and be connected immediately upon arrival at the destination. For aircraft with APU's (Auxiliary Power Units), the door must be kept closed providing compartment ventilation is switched on.
- For full aircraft loads of live animals, air conditioning units must be used at loading and transit and be connected immediately upon arrival at destination, in addition to all the doors being open to maximize through ventilation.
- In case of extended delays, rerouting or flight cancellations, the shipper or the consignee should be notified as soon as possible.
- Appropriate arrangement must be made for removal and disposal of sick or dead animals.
- After offloading the containers, the aircraft compartments must be inspected, cleaned and disinfected in case of leakage or spillage. Refer to LAR 10.7.3.
- Animal holding area must be cleaned in a similar manner to that prescribed for the cleaning and disinfecting of aircraft cargo compartment.

Note: In case of delay, damage/injury to AVIH should be handled as priority.

15.4.4 Loading

- Live animals shall be loaded into suitable compartments released only for the carriage of such shipments.

  Notes:
  1. *For released compartments and quantity limitations, see General LCM, Chapter 15.4.6—Released Compartments and Maximum Quantities Limitations.*
  2. *For special stowing regulations, see General LCM, Chapter 15.4.9—Special Regulations and Packing Notes.*
  3. *Max stowing density for breathing animals is 50 kg/m³.*
  4. *Most shipments shall be treated as wet cargo. Therefore, plastic sheeting or tarpaulin shall be placed under live animal containers in order to avoid soilage of compartment, ULD's and other load.*
- Live animal containers must be inspected before loading.
- Live animals shall be loaded and unloaded as close as possible to the aircraft departure or arrival time. They must never be left standing unnecessarily in the open, nor on standing aircraft when the departure is delayed.
- Live animal containers shall be loaded in an upright and level position.
- Live animals shall not be loaded directly onto the floor of ULD and compartments but shall be placed on spreader boards to stop the transfer of cold from airframe to the containers.
- Generally, livestock consignments shall be tied down to prevent movement in flight.
- Depending on the nature of animals, containers shall not be loaded on top of or underneath other load.
- When special care for the animal is requested, e.g. during transit stops or in case of inflight attention, the containers must be accessible.

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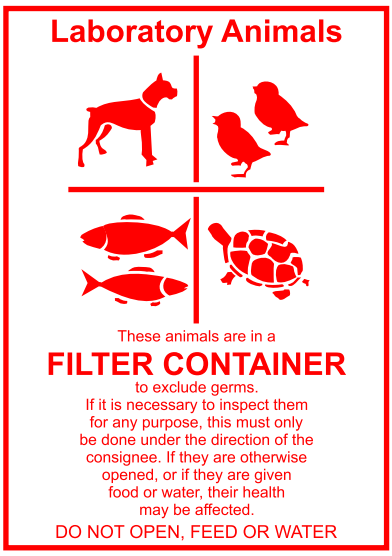
- The containers shall not be loaded directly in front of or below air ventilation outlets or other sources having an adverse effect on the environmental condition.
- The ventilation apertures of containers shall not be blocked by other load, compartments or ULD walls. Precaution shall be taken to prevent other load from shifting and falling or leaning onto the animal container. To avoid any movement of the animal container, especially for live stock containers, it may be necessary to tie it down in order to prevent shifting.
- Except tropical fish, live animals shall not be packed inside a closed ULD.
- Avoid unnecessary tilting and jolting of containers.
- For carriage of birds on long-haul flights, the compartment lights shall be left switched on to enable the birds to feed during flight (not applicable for some aircraft types).
- Animal which are natural enemies (e.g. cats and dogs), may be loaded in the same compartment providing they are not in the sight of one another.
- Dogs and other sensitive animals shall not be loaded adjacent to human remains (HUM).
- Shipments of laboratory animals labeled “Laboratory Animals” shall be loaded apart from other animals to reduce risk of cross-infection or contamination.



- Consignment of non-human primates from different continents shall be isolated from each other in aircraft compartments, cargo warehouses, animal holding facilities, and during all phases of ground transportation.
- For segregation of live animals and other loads, see General LCM, Chapter 15.6.1—Special Load Quick Reference Table or see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.
- The flight crew shall be notified on the “Special Load Notification to Captain” form of any live animals load and of the required action on compartment temperature and ventilation controls.
- The code AVI and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

  .AVI/2 .21P/C.AVI.

15.4.5 Classification of Live Animals

For loading purposes, live animals are classified into 7 groups. The group to which a species belongs is shown in the column “Group No”.

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Name		Group no.	Name		Group no.
A					
Alligators	(R)	3	Antelopes	(M)	1
Ant-eaters	(M)	1	Alpaca	(M)	1
B					
Baboons	(M)	n.a.	Bees	(I)	4
Badgers	(M)	1	Birds	(B)	5
Bats	(M)	1	+Bulls	(M)	1
Bears	(M)	1	Bush-babies	(M)	n.a.
Beavers	(M)	1			
C					
Cats	(M)	1	+Cows (domestic)	(M)	1
Chameleons	(R)	3	Coyotes	(M)	1
Cheetahs	(M)	1	Crabs	(C)	2
Chickens	(B)	5	Crayfish	(C)	2
+Chicks (day-old; baby)	(B)	6	Crocodiles	(R)	3
Chimpanzees	(M)	n.a.	Crustaceans, n.o.s.	(C)	2
Chincillas	(M*)	1			
D					
Deer	(M)	1	Donkeys	(M)	1
Dingoes	(M)	1	Ducklings	(B)	6
Dogs (domestic)	(M)	1	Ducks	(B)	5
Dogs (wild)	(M)	1			
E					
Eels	(F)	2	Elks	(M)	1
Elephants	(M)	1	Ermines	(M*)	1
F					
Ferrets	(M*)	1	Foxes	(M)	1
Fish, n.o.s.	(F)	2	Frogs	(A)	2
Flying foxes	(M)	1			

+ **See General LCM, Chapter 15.4.9—Special Regulations and Packing Notes.**

***** **Species bite**

n.a. **Not acceptable on THAI flight**

n.o.s **Not otherwise specified**

(A) **Amphibian: Class of vertebrate, large majority of which live mainly on land but breed in water**

(B) **Bird: Class of vertebrate adapted to flight**

(C) **Crustacean: Joint-legged animals often with shell cover, aquatic, breathe by gills, great size variation**

(F) **Fish: Animals that live and breathe in water and swim**

(I) **Invertebrate: Animals that do not have a spine**

(M) **Mammal: Class of vertebrate characterized by body covered with hair or fur, breathing by lungs and suckle their young**

(R) **Reptile: Class of vertebrate, air breathing with scaly body**

Note: *If the animals cannot be classified according to the list above, or in case of doubt, refer to BKKFI, submitting all available details, e.g. the scientific names.*

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Name		Group no.	Name		Group no.
G					
Gazelles	(M)	1	+Goldfish	(F)	2
Geckos	(R)	3	Gorillas	(M)	n.a.
Gibbons	(M)	n.a.	Goslings	(B)	6
Giraffes	(M)	n.a.	Guinea pigs	(M*)	1
+Goats	(M)	1			
H					
Hamsters	(M*)	1	Horses (domestic)	(M)	1
Hares	(M)	n.a.	Horses (wild)	(M)	1
Hedgehogs	(M)	1	Hyenas	(M)	1
Hippopotamus	(M)	1			
I					
Iguanas	(R)	3	Insects, n.o.s.	(I)	4
J					
Jackals	(M)	1	Jaguars	(M)	1
K					
Kangaroos (ground)	(M)	1	Kangaroos (tree)	(M)	1
L					
Lemurs	(M)	n.a.	Lobsters	(C)	2
Leopards	(M)	1	Lorises	(M)	n.a.
Lions	(M)	1	Lynxes	(M)	1
Lizards, n.o.s.	(R)	3			
M					
Marmoset	(M)	n.a.	Molluscs, n.o.s.	(C)	2
Marmots	(M*)	1	Mongooses	(M)	1
Martens	(M*)	1	Monkeys	(M)	n.a.
Minks	(M*)	1	Mouse	(M)	1
Moles	(M)	1	Mussels	(C)	2
N					

+ **See General LCM, Chapter 15.4.9—Special Regulations and Packing Notes.**

***** **Species bite**

n.a. **Not acceptable on THAI flight**

n.o.s **Not otherwise specified**

(A) **Amphibian: Class of vertebrate, large majority of which live mainly on land but breed in water**

(B) **Bird: Class of vertebrate adapted to flight**

(C) **Crustacean: Joint-legged animals often with shell cover, aquatic, breathe by gills, great size variation**

(F) **Fish: Animals that live and breathe in water and swim**

(I) **Invertebrate: Animals that do not have a spine**

(M) **Mammal: Class of vertebrate characterized by body covered with hair or fur, breathing by lungs and suckle their young**

(R) **Reptile: Class of vertebrate, air breathing with scaly body**

Note: *If the animals cannot be classified according to the list above, or in case of doubt, refer to BKKFI, submitting all available details, e.g. the scientific names.*

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Name		Group no.	Name		Group no.
Newts	(A)	2	Nutrias	(M*)	1
O					
Ocelots	(M)	1	Otters (river)	(M)	1
Opossums	(M)	1	Oysters	(C)	2
Orangutans	(M)	n.a.			
P					
Pangolins	(M)	n.a.	Polecats	(M)	1
Panthers	(M)	1	+Porcupines	(M)	1
Parrots	(B)	n.a.	Poultry (day-old)	(B)	6
Penguins	(B)	5	Primates, n.o.s	(M)	n.a.
Pigs	(M)	n.a.	Pumas	(M)	1
Polar bears	(M)	1			
R					
Rabbits	(M*)	1	Rhesus	(M)	n.a.
Raccoons	(M)	1	Rhinoceroses	(M)	1
Rats	(M)	1	Rodent, n.o.s.	(M)	1
Reptiles, n.o.s.	(R)	3			
S					
Sables	(M*)	1	Shrimps	(C)	2
Salamanders	(A)	3	Skunks, n.o.s.	(M)	n.a.
Sea lions	(M)	1	Sloths	(M)	1
Seals	(M)	1	Snakes	(R)	n.a.
+Sheep	(M)	1	Squirrels	(M*)	n.a.
T					
Tapirs	(M)	1	Tortoises	(R)	3
Terrapins	(R)	3	+Turkey poults	(B)	6
Tigers	(M)	1	Turtles	(R)	3
Toads	(A)	2			
V					

+ **See General LCM, Chapter 15.4.9—Special Regulations and Packing Notes.**

***** **Species bite**

n.a. **Not acceptable on THAI flight**

n.o.s **Not otherwise specified**

(A) **Amphibian: Class of vertebrate, large majority of which live mainly on land but breed in water**

(B) **Bird: Class of vertebrate adapted to flight**

(C) **Crustacean: Joint-legged animals often with shell cover, aquatic, breathe by gills, great size variation**

(F) **Fish: Animals that live and breathe in water and swim**

(I) **Invertebrate: Animals that do not have a spine**

(M) **Mammal: Class of vertebrate characterized by body covered with hair or fur, breathing by lungs and suckle their young**

(R) **Reptile: Class of vertebrate, air breathing with scaly body**

Note: *If the animals cannot be classified according to the list above, or in case of doubt, refer to BKKFI, submitting all available details, e.g. the scientific names.*

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Name		Group no.	Name		Group no.
Vampires	(M)	1			
W					
Walruses	(M)	1	Wolverines	(M)	1
Weasels	(M)	1	Wolves	(M)	1
Wildcats	(M)	1	Worms, n.o.s.	(I)	4
Z					
Zebras	(M)	1	Zebus	(M)	1

+ **See General LCM, Chapter 15.4.9—Special Regulations and Packing Notes.**

***** **Species bite**

n.a. **Not acceptable on THAI flight**

n.o.s **Not otherwise specified**

(A) **Amphibian: Class of vertebrate, large majority of which live mainly on land but breed in water**

(B) **Bird: Class of vertebrate adapted to flight**

(C) **Crustacean: Joint-legged animals often with shell cover, aquatic, breathe by gills, great size variation**

(F) **Fish: Animals that live and breathe in water and swim**

(I) **Invertebrate: Animals that do not have a spine**

(M) **Mammal: Class of vertebrate characterized by body covered with hair or fur, breathing by lungs and suckle their young**

(R) **Reptile: Class of vertebrate, air breathing with scaly body**

Note: *If the animals cannot be classified according to the list above, or in case of doubt, refer to BKKFI, submitting all available details, e.g. the scientific names.*

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15.4.6 Released Compartments and Maximum Quantities Limitations

Airbus Fleet

GROUP NO.		Loading limitations: • **Loading is permitted only on aircraft types and compartments mentioned below.** • **The weights given are max gross weights of animal which may be loaded into the specified compartment.** • **Max weight refers to the entire forward (1+2), the entire aft (3+4), and bulk (5) compartments and may not be added up.**						
		A330/A350			**A380**			**Remarks/Restrictions**
		1+2	**3+4**	**5**	**1+2**	**3+4**	**5**	
1 (Mammal)		1000	n.a.	200	1500	n.a.	200	* Depending on the dimensions and the weight of individual animal.
2 (Amphibians/ Crustacean/ Fish)		no limit	no limit**	no limit	no limit	no limit**	no limit	** Tropical fish shall not be loaded into these compartments.
3 (Reptile)		no limit	no limit	no limit	no limit	n.a.	no limit	
4 (Invertebrate)		800	n.a.	200	1000	n.a.	200	
5 (Birds)	Small	300	n.a.	200	400	n.a.	200	Small birds, each weighing below 30 g
	Large	600	n.a.	250	600	n.a.	250	Large birds, each weighing more than 30 g
6 (Day-old chick)		300	n.a.	250	700	n.a.	250	Day-old chickens, cannot be accepted on a multi-sector flight when ground temperature is expected to exceed 25°C (77°F).

Notes:

1. *Any deviation from the max quantities given in the table above is permitted only with the authorization from BKKFC (Cargo Space Management & Load Planning Dept.), and copy to BKKFI (Service Quality Dept.). To request authorization from BKKFC, please make advance arrangements at least 3(three) working day before departure date of shipments from origin station.*
2. *For temperature requirement, see General LCM, Chapter 15.4.8—Temperature Conditions for Live Animals.*
3. *For utilization of max quantities, see General LCM, Chapter 15.4.7—Utilization of Quantity Limitations.*
4. *n.a. : not acceptable in this compartment.*

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Boeing Fleet

GROUP NO.	Loading limitations: • **Loading is permitted only on aircraft types and compartments mentioned below.** • **The weights given are max gross weights of animal which may be loaded into the specified compartment.** • **Max weight refers to the entire forward (1+2), the entire aft (3+4), and bulk (5) compartments and may not be added up.**													
	747			**777**			**787**			**734**				**Remarks/ Restrictions**
	1+2	**3+4**	**5**	**1+2**	**3+4**	**5**	**1+2**	**3+4**	**5**	**1**	**2**	**3**	**4**	
1 (Mammal)	n.a.	1000	200*	n.a.	800	200*	800	n.a.	200*	150*	100*	50*	50*	* Depending on the dimensions and the weight of individual animal.
2 (Amphibians/ Crustacean/ Fish)	no limit**	no limit	no limit	no limit**	no limit	no limit	no limit	no limit**	no limit	no limit	no limit	no limit**	no limit**	** Tropical fish shall not be loaded into these compartments.
3 (Reptile)	n.a.	no limit	no limit	n.a.	no limit	no limit	no limit	n.a.	no limit	no limit	no limit	no limit	no limit	
4 (Invertebrate)	n.a.	800	200	n.a.	800	200	800	n.a.	200	100	100	n.a.	100	
5 (Birds) Small	n.a.	200	50	n.a.	300	200	300	n.a.	200	30	30	20	20	Small birds, each weighing below 30 g
5 (Birds) Large	n.a.	600	200	n.a.	600	250	600	n.a.	250	60	60	40	40	Large birds, each weighing more than 30 g
6 (Day-old chick)	n.a.	600	200	n.a.	600	250	600	n.a.	250	100	50	50	50	Day-old chickens, cannot be accepted on a multi-sector flight when ground temperature is expected to exceed 25°C (77°F).

Notes:

1. *Any deviation from the max quantities given in the table above is permitted only with the authorization from BKKFC (Cargo Space Management & Load Planning Dept.), and copy to BKKFI (Service Quality Dept.). To request authorization from BKKFC, please make advance arrangements at least 3(three) working day before departure date of shipments from origin station.*
2. *For temperature requirement, see General LCM, Chapter 15.4.8—Temperature Conditions for Live Animals.*
3. *For utilization of max quantities, see General LCM, Chapter 15.4.7—Utilization of Quantity Limitations.*
4. *n.a. : not acceptable in this compartment.*

15.4.7 Utilization of Quantity Limitations

The quantity limitations specified for the various groups of live animals in the table, see General LCM, Chapter 15.4.6—Released Compartments and Maximum Quantities Limitations, are no cumulative. Therefore, if the maximum permissible quantity of a specific group is carried in a compartment, no other animals can be loaded into the same compartment. However, if the maximum weight limit is not fully utilized, the portion remaining, calculated as a percentage of the maximum quantity allowed, may be filled with other species.

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Example (747, Compts 3 and 4)

If 360 kg of day-old chickens are carried in these compartments, equivalent to 60% of the maximum permissible quantity,

(360 kg x 1) ÷ 600 kg = 60%

The remaining 40% may be utilized for any other species, e.g. 240 kg of martens

(600 kg x 0.4) ÷ 1 = 240 kg

15.4.8 Temperature Conditions for Live Animals

Groups of live animals	Temperature range to be requested on NOTOC		
	787/A330/A350/A380	777	747
	Compts 1, 2 and 5	Compts 3, 4 and 5	Compts 3, 4 and 5
Group 1 Mammal	10–20°C	10–20°C	10–20°C
Group 2 Amphibian/ Crustacean/Fish Tropical fish	6–10°C 15–20°C	6–10°C 15–20°C	6–10°C 15–20°C
Group 3 Reptile	14–20°C	14–20°C	14–20°C
Group 4 Invertebrate	10–15°C	10–15°C	10–15°C
Group 5 Bird	18–20°C	18–20°C	18–20°C
Group 6 Day-old chick	21–29°C	21–29°C	21–29°C

Temperature control and heating system to be provided on each aircraft type			
Aircraft type	**FWD compt**	**AFT compt**	**Bulk compt**
747	Not available[a)]	Heating	Heating
777	Not available	Heating	Heating
787	Heating	Not available	Heating
737	Not available[a)]	Not available	–
A330/A350/A380	Temperature Control	Not available	Temperature Control

a) This compartment is heated by warm air from avionics compartment by the forward equipment ventilation system.

15.4.9 Special Regulations and Packing Notes

15.4.9.1 General

The rules detailed see General LCM, Chapter 15.4.9.2—Ornamental Fish through see General LCM, Chapter 15.4.9.4—Poultry, shall be considered as standard instructions. In case of doubt as to the applicability of these rules for specific cases, full details shall be submitted to BKKFC and copied to BKKFI for decision and subsequent instructions.

15.4.9.2 Ornamental Fish

Ornamental fish (both tropical and cold water) shall be carried in a polyethylene bag filled with water to approx 1/3 of its capacity. The remaining 2/3 of the container is to be filled with pure oxygen. Use of ice cubes or chemicals such as methylene blue, volume of water and amount of fish in the container are the shipper’s responsibility.

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The polyethylene bag shall be sealed with an elastic band. This bag shall be packed in a second polyethylene bag, the top of which is sealed in the same way as the first.

The two bags containing the fish shall then be placed in an outer container which can be constructed of fiber board, wood, wood products or any plastic material or expanded polystyrene of adequate strength. To ensure that no sharp edges or stapled closings on the outer container puncture the inner plastic bag, it is recommended to use expanded polystyrene with the outer container or to line the outer container with sheets of expanded polystyrene on all sides including the top and bottom.

For tropical fish, adequate insulation shall be provided by the shipper for each unit so that the temperature of the water will be stabilized at 20°C (68°F) for at least 48 hours.

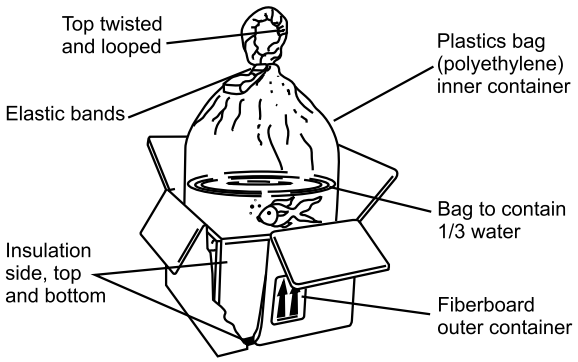
Tropical fish must be held in areas where ambient air temperature reduces the heat transfer to the absolute minimum.

Some species must be individually packed due to their sensitive reactions or aggressive tendencies.

The shipper must indicate the acceptable temperature range (in °C and °F) on the outside of the box in which the animals can be stored.

The code AVI and the loading position of the shipment shall be entered on the loadsheet and loadmessage (LDM) or container/pallet message (CPM) for example,

.AVI/2 .21P/C.AVI.



15.4.9.3 Cattle and Sheep

Special methods shall be used to carry larger quantities of domestic animals such as cattle and sheep.

Animals must be placed in a pen mounted on a regular aircraft pallet.

The pen must be absolutely leakproof. Strong polyethylene sheeting must be placed between containers and aircraft pallets and stapled to the sides of container.

Absorbent material shall be supplied in ample quantity. The use of straw shall be avoided due to quarantine restrictions and combustibility.

Sufficient ventilation must be provided. The max quantity of animals allowed per compartment must be strictly adhered to see General LCM, Chapter 15.4.6—Released Compartments and Maximum Quantities Limitations above and refer to TCM 7.1.8 item 4.

Loading and unloading of animals into or out of the container must be carried out by the shipper or the consignee.

After delivery of animals at destination, the container shall be cleaned thoroughly when intended to be reused.

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Prior to acceptance, it must be ensured that the necessary en route arrangements have been made to assure that:

- compartment limitation will not be exceeded
- any special attention and handling can be performed at transit stations.

An advanced request must be sent to BKKFC with copies to BKKFI and all stations involved requesting for agreement to handle the shipment.

The request shall contain the following minimum information in order to evaluate handling requirements:

- the weight of each animal
- total number of animals in each container or on each pallet
- estimated ambient temperature and humidity on ground at origin and all en route stations
- other useful handling information.

Before acceptance, confirmation must be received from BKKFC and stations involved that they are able to handle the shipment.

15.4.9.4 Poultry

Usually, the word “poultry” is used when referring to day-old chicks (baby chicks), pheasant or turkey poults, ducklings or goslings.

Poultry are very sensitive to climatic changes, e.g. changes in temperature and humidity. The optimum temperature range lies between 15°C (59°F) and 20°C (68°F).

As poultry are generally moved in large quantities, special care must be taken to provide for sufficient air circulation and to stack the boxes properly to avoid crushing:

- when poultry boxes are stacked, spacers must be used and chimney for air circulation as shown in example below is strongly recommended to maintain necessary separation distance between the boxes and guarantee sufficient air circulation

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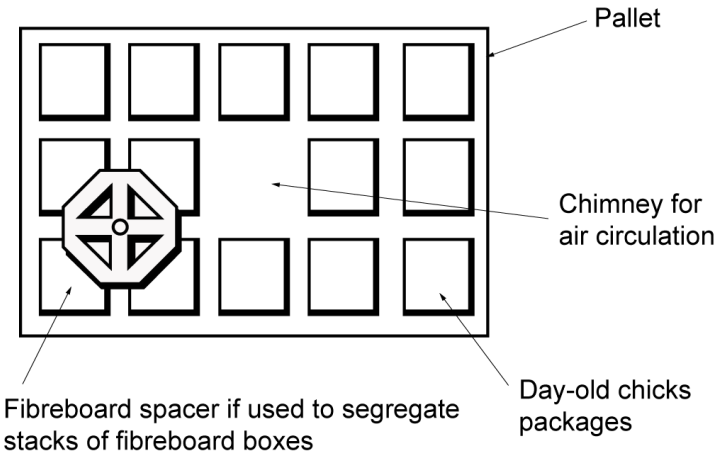
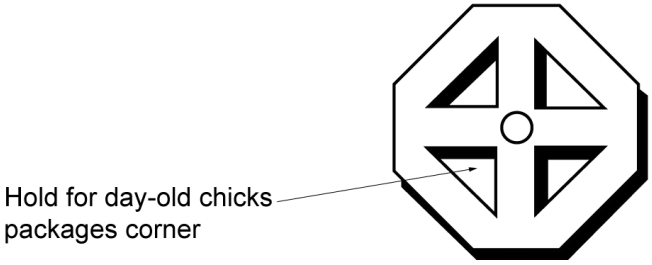
- when poultry boxes are stacked, a minimum space of approximately 40 cm (15 in) must remain between the top boxes and the compartment ceiling
- poultry boxes must not be loaded in closed ULD's
- during transportation and air transportation as well as storage, the poultry boxes must not be covered with plastic sheets or tarpaulins except for weather condition on ground, e.g. rain.

Shipment of baby chicks boxes loaded on a pallet





EXAMPLE OF FIBREBOARD SPACER

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15.5 Miscellaneous

15.5.1 Company Mail (COM)

See General LCM, Chapter 14.5—Company Mail (COM).

15.5.2 Diplomatic Bags (DIP)

Diplomatic bag or pouch contains official correspondence between a government and its accredited representatives abroad, or between the mentioned representatives. Due to the confidential character of such shipments, special attention is required. During ground handling process, they must be kept under watch or duly locked up. Diplomatic bags or pouches weighing no more than 10 kg shall be loaded in passenger cabin c/o the purser. See Fleet-Specific LCM, Chapter 2.2—Diplomatic Bag Stowage Location for Diplomatic locker location on each aircraft type.

The code DIP and the number of bags shall be entered in the appropriate box on the loadsheet and loadmessage (LDM), for example,

.DIP/2.

15.5.3 Aircraft on Ground (AOG)

Shipments labeled or marked AOG are aircraft spare parts required with highest priority to rectify a technical defect which keeps an aircraft on ground. Therefore, such shipments shall be loaded in such a way that they are accessible immediately upon arrival.

The code AOG and the loading position shall be entered on the loadsheet and loadmessage or container/pallet message, for example,

.AOG/4

15.5.4 Living Human Organs and Fresh Blood Plasma (LHO)

LHO shipments are vital to save human lives. Therefore, they must be handled with extreme urgency.

These shipments are usually cooled with dry ice or cryogenic liquids and must be handled accordingly. LHO shipments shall be loaded in such a way as to be immediately accessible upon arrival.

The code LHO and the loading position shall be entered on the loadsheet and loadmessage (LDM) or the container/pallet message (CPM), for example,

.53/C.LHO .LHO/5.

15.5.5 Newspapers and Magazines

Newspapers and magazines are very time sensitive. Speedy transportation is vital for this type of cargo as it will become worthless when longer delays occur.

15.5.6 Semen–Animals (PER)

Such shipments are generally cooled by means of liquid nitrogen which is dangerous goods and must be treated in compliance with the IATA Dangerous Goods Regulations.

The shipper must provide a thermally insulated packaging.

The code PER and the loading position shall be entered on the loadsheet and loadmessage (LDM) or the container/pallet message (CPM), for example,

.PER/2 .23R/C.PER.

15.5.7 Serum (PER)

When serum is packed with dry ice or cryogenic liquid, the IATA Dangerous Goods Regulations are applied.

The code PER and the loading position shall be entered on the loadsheet and loadmessage (LDM) or the container/pallet message (CPM), for example,

.PER/4 .53/C.PER.

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15.5.8 Undeveloped Film (FIL)

In order to prevent undeveloped films or plated from being spoiled by radiations, packages identified as containing such films or plates must be separated from packages containing radioactive materials.

The code FIL and the loading position shall be entered on the loadsheet and loadmessage (LDM) or the container/pallet message (CPM), for example,

.FIL/3 .31R/C.FIL.

15.5.9 Vaccines

Vaccines shall be classified as a restricted articles, because they may consist of either infectious substances or biological products. However, even when the vaccine itself is not classified as dangerous goods, the packages may contain cooling agents, such as dry ice or cryogenic liquids to keep the vaccine in a constant low temperature during all stages of transportation. In the eventuality again, reference is made to IATA Dangerous Goods Regulations.

The applicable code and the loading position shall be entered on the loadsheet and loadmessage (LDM) or the container/pallet message (CPM), for example,

.PER/4, .RIS/4 .41R/C/PER, .41R/C.RIS.

15.5.10 Valuables (VAL)

Valuable items are prone to pilferage, and security measures have to be applied during all phases of transportation.

The security measures to be adopted within warehouses, during aircraft loading/unloading and during customs clearance and ground transportation depend on local regulations and conditions, and shall be arranged accordingly. Refer to TCM 7.6.

During movement between terminal and aircraft and v.v., VAL must be escorted by a dedicated staff according to the local procedure. Record or receipt for valuable cargo handover between the cargo personnel or KK staff to ground handling agent at loading and unloading points shall be kept as evidence at station where applicable. Receipt for special consignment (THAI10013) must be used for this purpose. It is the responsibility of KK function to ensure safeguard of valuable cargo during loading and unloading.

15.5.10.1 Handling at Loading Station

For security reason, the VAL shipment must be loaded in LD3 (for wide-bodied aircraft). After loading is completed, all container door locks must be latched and seated with a TG cargo seals. At least two seals shall be used as for minimum requirement. Seals can be ordered from BKKFA-G.

For narrow-bodies aircraft, VAL shipment shall be handovered to the air purser, it must be kept in red net sacks for extra protection and be safeguarded while loading last into the aircraft compartment at door section of either forward or aft compartment.

After flight departure, a pre-warning message with seal number and location of VAL shall be sent by FO function to intermediate station(s) and unloading station, addressed to either FO or FK and KK functions (for messages to BKK addressed to BKKFFTG BKKFSTG BKKFOTG BKKKYTG instead).

15.5.10.2 Handling at Intermediate Station

It is a duty of KK at intermediate station to, during aircraft ground stop, arrange safeguarding of VAL loading within a compartment and whenever feasible, check the condition of LD3 and seal according to prewarning message received.

15.5.10.3 Handling at Unloading Station

At unloading station, VAL shipment must be the first items unloaded under safeguard from the aircraft and delivered to the cargo staff right away.

KK and cargo staff have to check the seal number and a condition of seal affixed to ID3 against the prewarning message received and also arrange pick-up escort for the VAL shipment from the aircraft side to the security area.

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15.5.11 Wheelchairs

When accepting Passengers with Reduced Mobility (PRM), a check-in agent must ensure that an appropriately code specific wheelchair requirements based on the passengers specific needs such as WCHC, WCHR, WCHS is correctly recorded and the message shall be dispatched to the functions concerned for proper handling and assistance.

15.5.12 Lithium Batteries

The RLM and RLI Except UN 3480 PI965 section IB (shipped as cargo) will not be accepted on THAI's flights according to policy of THAI's Company Safety Committee (CSC) on November 2011 details are as follows:

- (RLM) Fully Regulated Lithium Metal Batteries, Class 9 as per section I of Packing Instruction 968-970 on IATA DGR.

However, the ELI and RLI Except UN 3480 PI965 section IB Lithium Ion Batteries, Excepted as per section II of Packing Instruction 965-967 on IATA DGR (shipped as cargo), (ELM) Lithium Metal Batteries, exception section II of Packing Instruction 968-970 on IATA DGR and A small size Lithium Batteries installed in temperature monitoring device for pharmaceutical shipment may be accepted under special requirements as below:

- (RLI) Fully Regulated Lithium Ion Batteries, Class 9 as per Section I of Packing Instruction 965-967 on IATA DGR, RLI Except UN 3480 PI965 section IB
- the ELI/ELM shipment must be properly packed according to IATA DGR requirements
- “ELI” or “ELM” must be marked on the ULD tag
- the information must be indicated in NOTOC stating that “Lithium Ion Battery as per Section II or IB” and the loaded position on the aircraft
- all shipment must be handled with care in order to avoid any damage that could possibly caused by forklift truck.

Note: The Lithium Battery installed in portable electronic devices such as Mobile Phone, Portable media Player, Electronic Calculator, Watch, Digital Camera, Battery-powered wheelchairs or other similar mobility devices and Portable medical electronic devices (M-PED) according to the provision for dangerous goods carried by passenger or crew on IATA DGR Table 2.3.A are not classified as prohibited item.

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15.6 Quick Reference

15.6.1 Special Load Quick Reference Table

For the load categories mentioned below, special requirements are applied:

Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
"Aircraft on Ground" (AOG)	Package marked with AOG-labels may, under no circumstances, be offloaded.	747, 777, 787, A330, A350, A380: Compt 5.	CPM
		737: Compt 4 door section.	LDM
"ATTENTION" LOAD	For cargo marked with a large "Attention" label, the instructions in the Air Waybill shall be checked before loading. Packages with "This side up" labels affixed shall be secured in upright position i.e. the tips of the arrows and the text shall point upwards.	Compt 5 door section Check Air Waybill for possible special location.	LDM
BAGGAGE	F- & C-class baggage	747, 777, 787, A330, A350, A380: To be loaded in separate containers per destination. ULD's shall be loaded in door section and position specified in CPM.	CPM
		737, Compt 1 door section (Standard stowing location).	
	Crew baggage (D)	747, 777, 787, A330, A350, A380: Compt 5 door section.	CPM
		737: Compt 4 door section.	LDM
BALLAST	Not to be loaded unless requested in the Loading Instruction/Report.	To be loaded just inside Compt door.	LDM
CASINGS, salted	Special nylon bags must be used whenever kegs/barrels containing casings are loaded. Use canvas covers to protect container/pallet or Compt floor. Leaking, otherwise damaged or evidently weak kegs/barrels or tins must be refused. See General LCM, Chapter 15.3.2—Wet Cargo.	Lower Compts only.	
COMPANY MAIL (COM)	In green sacks. Shall be registered as mail on the loadsheet.	747, 777, 787, A330, A350, A380: Compt 5 door section.	CPM
		737: Compt 4 door section.	LDM
CONFISCATED ITEMS (security removed items)	Items removed at security checks points must always be carried as checked baggage, refer to PHM 12.7.1 item 3.	To be loaded with passenger baggage to the same point of unloading	
DIPLOMATIC BAGS (DIP)	To be delivered to the purser at the aircraft, see General LCM, Chapter 15.5.2—Diplomatic Bags (DIP).	Diplomatic Bag Locker. See Fleet-Specific LCM, Chapter 2.2—Diplomatic Bag Stowage Location.	LDM
FISH, salted	Special heavy plastic bags must be used whenever salted fish is loaded. Use canvas cover and sawdust or other moisture absorbent materials to protect container/ pallet or compt floor. Leaking, otherwise damaged or evidently weak packing equipment, must be refused,		NOTOC

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
	see General LCM, Chapter 15.3.2—Wet Cargo. Refer to TCM 7.1.3.		
FLOWERS (cut flowers)	Shall preferably be carried in the temperature between 5–10°C. See Fleet-Specific LCM, Chapter 3.13—Environmental Control System for Compt temperature. Flower cartons must not be turned over on their edges (see also “FRAGILE” load below).	Ventilated and temperature adjusted capability compts only.	LDM/CPM NOTOC
“FRAGILE” Load	Such load may easily be damaged if jolted, dropped, bumped, etc. For this reason, special attention shall be paid to load marked with “FRAGILE” label or, otherwise, indicated as fragile. Packages with “This Way Up” labels affixed shall be secured in upright position, i.e. the tips of the arrows shall point upwards. Look for possible instructions in the Air Waybill.		
HEAVY CARGO (HEA)	Items above 150 kg *Note: The following items made of iron or steel shall always be handled as “Magnetized Material”:* • *Items above 300 kg* • *Assemblies or single pieces weighing more than 150 kg and more than 200 cm long. See “Magnetized Material”.*	*Note: Permission shall be requested from BKKKC, if to be loaded in bulk Compts on 747, 777, 787, A330, A350, A380 aircraft.*	LDM
HATCHING EGG (HEG)	Require a temperature range from +10°C (50°F) to +15°C (60°F)	HEG and RRY loaded in the same compt must be segregated by at least 50 cm. HEG shall not be loaded in close proximity to ICE and RCL.	LDM/CPM NOTOC
HUMAN REMAINS (HUM)	Human remains in coffins. *Note: On 747, 777, 787, A330, A350, A380 permission shall be requested from BKKFC if also as HEA to be loaded in Compt 5.*	Lower Compt only. On 747, 777, 787, A330, A350, A380: Compts 1, 2, 3 and 4 only.	LDM/CPM NOTOC
LIVE ANIMALS (AVI)	For detailed description, see para 7 above and the instructions on the “Live Animal” tag. Cages containing live animals must be placed in a horizontal position and secured in the Compt to prevent shifting. Cages shall be protected against crushing or damage by other load. Sufficient airspace shall be left on the open side of the cage. Cats and dogs shall be loaded just inside the compt door easily accessible for watering and feeding at intermediate stations. As the vapors emitted by dry ice (ICE) as well as by some liquefied gases (RCL) are heavier than air, they concentrate on	Quantity and Compt limitation, see General LCM, Chapter 15.4.5—Classification of Live Animals and see General LCM, Chapter 15.4.6—Released Compartments and Maximum Quantities Limitations. *Notes: 1. AVI and RRY loaded in the same Compt must be segregated by at least 50 cm.*	LDM/CPM NOTOC

DELETION

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
	the lower level of the Compt. Therefore, live animals (AVI) shall be placed at least 12 cm (5 in) above the Compt floor.	2. *Dry ice (ICE) or cryogenic liquids (RCL) must be segregated from live animals (AVI) and poisons or infectious substances (RPB/RHF/RIS) MUST be segregated from animals (AVI) or materials marked as or known to be foodstuff or edible material for consumption by humans or animals.* *Segregation means:* • *Bulk load–not in the same Compt* • *ULD load–not on same pallet/ container.* *737-400: Compts 1+2, 3+4, shall be considered as one Compt.*	
DELETION OBNOXIOUS CARGO (OBX)	Cargo producing strong offensive odour.		LDM/CPM
DELETION PERISHABLE LOAD (PEF, PEM, PER, PES)	For cargo with perishable contents, possible instructions in the Air Waybill shall be followed. Check if the load shall be carried under special temperature conditions.	Ventilated and temperature adjusted capability compts only.	LDM/CPM NOTOC
PRESS PHOTOS/ TV NEWS FILM		Shall preferably be placed with the AWB's on the aircraft.	
DELETION VALUABLE CARGO (VAL)	Refer to TCM 7.6.		

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15.6.2 Dangerous Goods Table and Segregation

Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
BATTERY installed in wheelchair, or mobility aid—Dangerous Goods	DRY CELL, LITHIUM-ION Acceptable provided battery stowed in a lower deck container and wheelchair or other mobility aid terminals must be capped or taped to prevent short-circuit, and battery has been secured to wheelchair with non-conductive materil. *Notes:* 1. *As a mandatory procedure, the enlargement of contact area (load or mass spreading) for mobility aids must be made.* 2. *For lithium batteries, the battery must be removed and to accepted as carryon baggage.* See General LCM, Chapter 12.1.3—Supporting Tables and see General LCM, Chapter 12.1.4—Supporting Planks.	Lower Compts only.	NOTOC
	WET CELL On 747, 777, 787, A330, A350, A380: Acceptable provided stowed in a lower deck container and wheelchair with battery is securely lashed in upright position to avoid spillage from battery. Furthermore, battery terminals must be capped or taped to prevent short-circuit, and battery secured to wheelchair with non-conductive material. Battery caps must be securely tightened, or when feasible, fitted with spill-resistant vent caps. On 737: Acceptable only if battery is removed from wheelchair and forwarded as cargo after being packed, marked and labeled in accordance with the IATA Dangerous Goods Regulations. *Note:* *As a mandatory procedure, the enlargement of contact area (load or mass spreading) for mobility aids must be made. .* See General LCM, Chapter 12.1.3—Supporting Tables and see General LCM, Chapter 12.1.4—Supporting Planks.		
BATTERY, LITHIUM —Dangerous Goods	The term —lithium batteryǁ refers to a family of batteries with different chemistries, comprising many types of cathodes and electrolytes. For the purposes of the Dangerous Goods regulations, they are separated into: • Lithium metal batteries Lithium metal batteries are generally primary (non-rechargeable) batteries that have lithium metal or lithium compounds as an anode. Lithium		

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
	metal batteries are generally used to power watches, calculators, cameras, etc. • Lithium-ion batteries Lithium-ion batteries (abbreviated Li-ion batteries) are a type of secondary (rechargeable) battery. Also included within lithium-ion batteries are lithium polymer batteries. Lithium-ion batteries are generally found consumer electronics (such as mobile telephones, laptop computers, etc.). The following items must not be accepted for carriage on a THAI flight as cargo: • UN 3091 prepared in accordance with section I of Packing Instruction 969 and Packing Instruction 970 (TG-08) • UN 3480-Lithium ion cells and batteries packed in accordance with Section IA, IB and II of Packing Instruction 965 and UN 3481 prepared in accordance with Section I of Packing Instruction 966 and Packing Instruction 967 (TG-09).		
CORROSIVES—Dangerous Goods	RCM Corrosive		LDM/CPM NOTOC

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
DANGEROUS GOODS, REGULAGIONS	**WARNING: IN GENERAL, ALL LOAD CONTAINING DANGEROUS GOODS:** • **MUST BE STOWED IN AN UPRIGHT POSITION, IF APPLICABLE** • **MUST HAVE THE HAZARD LABEL(S) VISIBLE** • **MUST BE RESTRAINED TO PREVENT SHIFTING AND DAMAGE BY OTHER LOAD.** **Refer to TDGM 12.6—Loading of Incompatible Dangerous Goods.** **MUST NOT BE LOADED INTO AN ULD OR ONTO AN AIRCRAFT UNLESS AN INSPECTION IMMEDIATELY PRIOR TO THE LOADING HAS SHOWN THAT GOODS ARE FREE FROM VISIBLE LEAKS OR DAMAGE.** **SHALL BE HANDLED AS SHOWN ON THE LABEL OR PRESCRIBED IN THE AIR WAYBILL.** **ANY LEAKING, OTHERWISE DAMAGED OR IMPROPERLY MARKED OR LABELED PACKAGES SHALL BE REJECTED FOR FURTHER CARRIAGE.** **PARTICULAR ATTENTION MUST BE GIVEN TO RESTRAINT OF DANGEROUS GOODS WITH "THIS SIDE UP" (ARROW) LABELS.** *Note: All, except a very few of codes above shall be shown in LDM/CPM.* See General LCM, Chapter 17.9.2—Codes for Loads Requiring Special Attention.	**Caution: Packages carrying the label "CARGO AIRCRAFT ONLY" (CAO) must not be loaded on passenger or combi-aircraft.** *Notes:* *1. Certain Dangerous Goods must be segregated to avoid interaction.* *2. To check the Segregation Table, Refer to TDGM 12.6—Loading of Incompatible Dangerous Goods.*	LDM/CPM NOTOC
GASEOUS—Dangerous Goods	**RNG** Non-flammable gas **RFG** Flammable gas **RCL** Cryogenic liquid **RPG** Poisonous gas	Cryogenic liquids (RCL) must be segregated from live animals (AVI) or materials marked as or known to be foodstuff or edible material	LDM/CPM NOTOC

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
		for consumption by humans or animals. Segregation means: • Bulk load–not in the same Compt • ULD load–not on same pallet/ container. 737-400: Compts 1+2, 3+4, shall be considered as one Compt.	
MISCELLENEOUS —Dangerous Goods	**RSB** Polystyrene beads **ICE** Dry ice **RMD** Miscellaneous dangerous goods	*Notes:* 1. *Max 100 kg net mass of expandable polystyrene beads or granules or plastic moulding materials may be carried in any inaccessible Compt on any aircraft.* 2. *Dry ice (ICE) MUST be segregated from animals (AVI).* 3. *Segregation means:* • *Bulk load–not in the same Compt* • *ULD load–not on same pallet/ container.* 4. *737-400/A320: Compts 1+2, 3+4, shall be considered as one Compt.*	LDM/CPM NOTOC
DRY ICE (ICE)—Dangerous Goods	As the vapors emitted by dry ice (ICE) as well as by some liquefied gases (RCL) are heavier than air, they concentrate on the lower level of the Compt. Therefore, live animals (AVI) must be segregated from dry ice (ICE).	• A380 max 1600 kg • A330 max 1500 kg • A350 max 1200 kg • 747-400 max 700 kg • 777-200 max 650 kg • 777-300 max 800 kg • 787-8 max 490 kg • 737-400 max 130 kg	LDM/CPM NOTOC

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
		Notes: *1. Live animals (AVI) must be segregated from dry ice (ICE).* *2. Segregation means:* • *Bulk load– not in the same Compt* • *ULD load– not on the same pallet/ container.* *3. For maximum allowable per compartment, Refer to TDGM 12.9—Loading of Carbon Dioxide, Solid (Dry Ice)*	
EXPLOSIVES—Dangerous Goods	RCX* REX RGX* RXB RXC RXD RXE RXG RXS *Notes:* *1. * Codes RCX and RGX are assigned exclusively to those items identified in the IATA DGR, current edition, as authorized on cargo aircraft. All other explosives in Class 1.3 are forbidden for air transportation.* *2. All codes except RXS are not acceptable on any TG aircraft.*		LDM/CPM NOTOC
FILM (FIL)		Min 3 rows of ULD's must be maintained between FIL and RRY. *Notes:* *1. Undeveloped film must not be loaded in the same bulk compt as RRY.*	LDM/CPM

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<table>
<tr><th>Type of load</th><th>Specification</th><th>Location and quantity limitation</th><th>LDM/CPM
NOTOC</th></tr>
<tr><td></td><td></td><td>2. On 737-400: Compts 1+2, respective 3+4, shall be considered as one Compt.</td><td></td></tr>
<tr><td>FLAMMABLE LIQUID— Dangerous Goods</td><td>RFL Flammable liquid</td><td></td><td>LDM/CPM
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<tr><td>FLAMMABLE SOLID— Dangerous Goods</td><td>RFS Flammable solid
RSC Spontaneously combustible
RFW Dangerous when wet</td><td></td><td>LDM/CPM
NOTOC</td></tr>
<tr><td rowspan="2">MAGNETIZED MATERIAL (MAG)</td><td rowspan="2">The following items made of iron or steel shall always be handled as “Magnetized Material”:
• items above 300 kg
• Assemblies or single pieces weighing more than 150 kg and more than 200 cm long.
Note: Refer to IATA DGR 3.9.2.2; 9.3.10 and Packing Instruction 953 for requirement and limitation.</td><td>737-400: Compts 2 and 3 only.</td><td>NOTOC
LDM</td></tr>
<tr><td>747, 777, 787, A330, A350, A380: no restrictions</td><td>NOTOC
CPM</td></tr>
<tr><td>OXIDIZING SUBSTANCES (ORGANIC PEROXIDE)— Dangerous Goods</td><td>ROX Oxidizer
ROP Organic peroxide</td><td></td><td>LDM/CPM
NOTOC</td></tr>
<tr><td>RADIOACTIVE MATERIAL
Categories II and III RRY (yellow label)</td><td>The maximum TI allowed per package/ group/ULD is relative to type of aircraft. Therefore, the number of TI shown below must never be exceeded.
<table>
<tr><th rowspan="2">A/C Type</th><th rowspan="2">Max T.I. Per Group/ ULD</th><th rowspan="2">Max T.I. per a/c</th><th colspan="5">Max T.I. per Compartment</th></tr>
<tr><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr>
<tr><td>734, A320</td><td>3</td><td>6</td><td colspan="2">Total 3</td><td colspan="2">Total 3</td><td>–</td></tr>
<tr><td>747, 777, 787, A330, A350, A380</td><td>7</td><td>42</td><td colspan="4">See under “Min Distance between ULD’s”</td><td>7</td></tr>
</table>
</td><td>The package must be loaded on the floor in the ULD or bulk Compt.
RRY must not be loaded in the same bulk Compt as FIL.
RRY and AVI must be segregated by at least 50 cm.
AVI/HEG/LHO and RRY loaded in the same Compt must be segregated by at least 50 cm.
MIN DISTANCE BETWEEN ULD’S
Whenever the sum of two or more packages/ULD’s with RRY exceeds the value under “Max T.I. per Group/ULD” the minimum separation distance between the individual must be:
• for 3 T.I. : 210 cm
• for 7 T.I. : 390 cm.
Min 2 ULD positions must be maintained between ULD’s containing RRY.</td><td>LDM/CPM
NOTOC</td></tr>
</table>

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Type of load	Specification	Location and quantity limitation	LDM/CPM NOTOC
	Note: *Refer to TDGM 2.6—TG Variations; TG-04.*	Separation distance of 5.0 m or min 3 ULD positions must be maintained between FIL and RRY.	
TOXIC, INFECTIOUS SUBSTANCES—Dangerous Goods	**RPB** Poison **RHF** Harmful–stow away from foodstuff **RIS** Infectious substance (Category A) **RDS** Biological substance, Category B (UN3373)	Poisons or infectious substances (RPB/RHF/RIS) MUST be segregated from animals (AVI) or materials marked as or known to be foodstuff or edible material for consumption by humans or animals. Segregation means: • Bulk load–not in the same Compt • ULD load–not on same pallet/container. 737-400: Compts 1+2, 3+4, shall be considered as one Compt.	LDM/CPM NOTOC

Some dangerous goods and/or other special loads must be separated from one another in order to reduce the risk which might arise from dangerous goods being placed too close together and to prevent contamination and/or damage to sensitive special loads.

Cargo IMP Code	Class or Division & Compat Group	RXS	RFG	RNG	RCL	RPG	RFL	RFS	RSC	RFW	ROX	ROP	RPB	RIS	RDS	RRY	RCM	ICE	FIL	HUM	EAT	HEG	AVI*	LHO
RXS	1.4S																							
RFG	2.1																							
RNG	2.2																							
RCL	2.2																					×	1	
RPG	2.3																							
RFL	3										×													

× Shall be adequately separated from one another. Separation may be achieved either by placing normal cargo between the two incompatible loads or by separate tiedown.

1 As the vapors emitted by dry ice (ICE) as well as by some liquefied gases (RCL) are heavier than air, they concentrate on the lower level of the compartment. Therefore, live animals shall be placed above packages containing dry ice and cryogenic liquid. For special regulations concerning loading of live animals (AVI) and dry ice (ICE) in the same compartment.

2 Must be segregated from each other. Segregation means:
- **Bulkload–not in the same compt (for 737-400, compt 1+2, respective 3+4, shall be considered as one compt).**
- **ULD load–not on the same container/pallet.**

3 For separation distances, see General LCM, Chapter 15.6.1—Special Load Quick Reference Table.

4 A separation distance of 5.0 m or min 3 ULD positions must be maintained between FIL and RRY and not allowed to be loaded in the same bulk compartment.

5 Laboratory animals shall be separated from other animals.

*** AVIH and AVI/SPF (SPF = laboratory animals, pathogen-free)**

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Cargo IMP Code	Class or Division & Compat Group	RXS	RFG	RNG	RCL	RPG	RFL	RFS	RSC	RFW	ROX	ROP	RPB	RIS	RDS	RRY	RCM	ICE	FIL	HUM	EAT	HEG	AVI*	LHO
RFS	4.1																							
RSC	4.2										×													
RFW	4.3																×							
ROX	5.1						×		×															
ROP	5.2																							
RPB	6.1																				2		2	
RIS	6.2																				2		2	
RDS	6.2																				2		2	
RRY	7															3			4			3	3	3
RCM	8									×														
ICE	9																					×	1	
FIL																4								
HUM																					×		×	×
EAT													2	2	2					×			2	
HEG					×											3		×						
AVI*					1								2	2	2	3		1		×	2		5	
LHO																3				×				

× **Shall be adequately separated from one another. Separation may be achieved either by placing normal cargo between the two incompatible loads or by separate tiedown.**

1 **As the vapors emitted by dry ice (ICE) as well as by some liquefied gases (RCL) are heavier than air, they concentrate on the lower level of the compartment. Therefore, live animals shall be placed above packages containing dry ice and cryogenic liquid. For special regulations concerning loading of live animals (AVI) and dry ice (ICE) in the same compartment.**

2 **Must be segregated from each other. Segregation means:**

- **Bulkload–not in the same compt (for 737-400, compt 1+2, respective 3+4, shall be considered as one compt).**
- **ULD load–not on the same container/pallet.**

3 **For separation distances, see General LCM, Chapter 15.6.1—Special Load Quick Reference Table.**

4 **A separation distance of 5.0 m or min 3 ULD positions must be maintained between FIL and RRY and not allowed to be loaded in the same bulk compartment.**

5 **Laboratory animals shall be separated from other animals.**

***** **AVIH and AVI/SPF (SPF = laboratory animals, pathogen-free)**

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16 DANGEROUS GOODS REGULATIONS

16.1 General

Refer to TDGM—Thai Dangerous Goods Manual.

TDGM e-manual can be accessed through DJ intranet website as following link: hfttp://thaisphere.thaiairways.co.th/THADJ/Documents/Manual/TDGM.

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17 DOCUMENTATION

17.1 Aircraft Clearance Documents

17.1.1 General

At many stations, the general declaration is still the basic document for inward and outward clearance of aircraft in the international traffic. The purposes of this document are to:

- serve as inward and outward declarations
- serve as crew manifest
- report the number of disembarking, through-going and embarking passengers
- serve as Health Declaration.

17.1.2 Preparation

Stations of flight originating and/or crew change shall:

- prepare a general declaration master as a through-going document covering information on the next crew change or terminating station.
- duplicate and complete the required number of copies for clearance at own and next stations, if applicable.

At least 3 copies of completed general declaration which may be required by the authorities shall be made available on board.

Information about crew and number of copies required:

Country	Crew information in "Total Number of Crew" box	City	No. of copies
AUSTRALIA	Surnames, given names, duty on board, date of birth, gender, nationality, and passport number.	BNE	10
		PER	2
		SYD	3
		MEL	3
BANGLADESH	Crew names and duty on board.	DAC	3
BELGIUM	Crew names and initials, positions.	BRU	10
CAMBODIA	Surnames and initials, duty on board.	PNH	5
CHINA	Surnames and initials, duty on board.	PEK	10
		PVG	6
		CAN	6
		XMN	6
		CTU	10
		KMG	5
DENMARK	NOT REQUIRED		
FRANCE	Crew names and duty on board.	CDG	3
GERMANY	NOT REQUIRED except MUC		
		MUC	5
GREECE	Name of P-i-C and total number of crew.	ATH	5
HONG KONG	Surnames and initials, duty on board.	HKG	4
INDIA	Full crew names and nationality.	BLR	5
		BOM	10
		CCU	10
		DEL	6
		HYD	10
		MAA	6
INDONESIA	Full crew names and duty on board.	CGK	8

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Country	Crew information in "Total Number of Crew" box	City	No. of copies
		DPS	8
ITALY	Name of P-i-C and total number of crew.	FCO	3
		MXP	3
JAPAN	Surnames and initials, nationality, duty on board.	NRT/ HND	5
		FUK	5
		KIX	5
		NGO	5
		CTS	5
KOREA	Full crew names, duty on board, nationality, gender.	ICN	2
		PUS	5
KUWAIT	Full crew names, nationality and date of birth.	KWI	3
LAO	Crew names and initials, positions.	VTE	2
MACAU	Crew names and initials, positions.	MFM	4
MALAYSIA	Full crew names and duty on board.	KUL	5
		PEN	5
MYANMAR	Crew names and duty on board.	RGN	3
NEPAL	Full crew names and duty on board.	KTM	3
NEW ZEALAND	Crew names, duty on board, date of birth, gender.	AKL	2
NORWAY	Crew names and initials, positions.	OSL	10
OMAN	Full crew names and duty on board.	MCT	3
PAKISTAN	Crew names and initials, positions.	ISB	10
		KHI	4
		LHE	6
PHILIPPINES	Full crew names and nationality.	MNL	10
RUSSIA	Crew names and duty on board.	DME	6
SINGAPORE	Crew names and positions.	SIN	10
SOUTH AFRICA	Crew names and initials, positions.	JNB	10
SPAIN	NOT REQUIRED		
SRI LANKA	Surnames and given names, duty on board.	CMB	3
SWEDEN	Full crew names, positions and date of birth.	ARN	5
SWITZERLAND	NOT REQUIRED		
TAIWAN	Crew names and duty on board.	TPE	4
TEHRAN	Full crew names and duty on board	IKA	12
THAILAND	Surnames and initials, duty on board.	BKK	3
		CNX	10
		HDY	9
		HKT	10
		CEI	4
UNITED ARAB EMIRATES	Full crew names and duty on board.	DXB	4
UNITED KINGDOM	Surnames and initials, duty on board.	LHR	5
USA	Surnames, given names and middle initials. Crew members travelling as "deadhead" shall be stated	LAX	10

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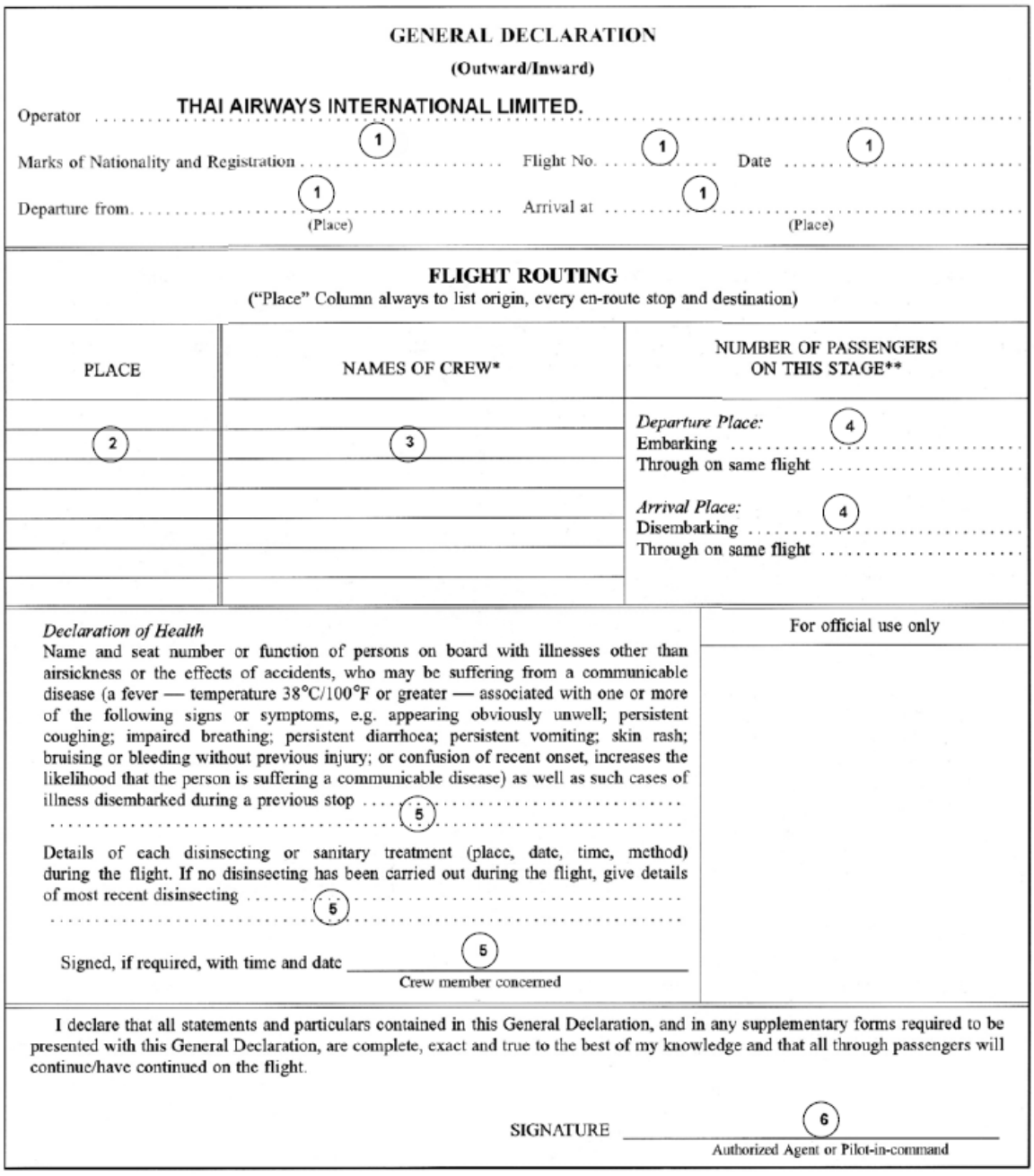
Country	Crew information in "Total Number of Crew" box	City	No. of copies
	as "CHECKED CREW" under the names of the duty crew.		
VIETNAM	Full first names and initial of surnames, duty on board and nationality.	HAN SGN	8 8

17.1.3 Specimen



GENERAL DECLARATION

(Outward/Inward)

Operator ..... THAI AIRWAYS INTERNATIONAL LIMITED.

Marks of Nationality and Registration ..... (1) Flight No. ..... (1) Date ..... (1)

Departure from ..... (1) (Place) Arrival at ..... (1) (Place)

FLIGHT ROUTING

("Place" Column always to list origin, every en-route stop and destination)

PLACE	NAMES OF CREW*	NUMBER OF PASSENGERS ON THIS STAGE**
(2)	(3)	*Departure Place:* (4) Embarking ..... Through on same flight ..... *Arrival Place:* (4) Disembarking ..... Through on same flight .....

Declaration of Health

Name and seat number or function of persons on board with illnesses other than airsickness or the effects of accidents, who may be suffering from a communicable disease (a fever — temperature 38°C/100°F or greater — associated with one or more of the following signs or symptoms, e.g. appearing obviously unwell; persistent coughing; impaired breathing; persistent diarrhoea; persistent vomiting; skin rash; bruising or bleeding without previous injury; or confusion of recent onset, increases the likelihood that the person is suffering a communicable disease) as well as such cases of illness disembarked during a previous stop ..... (5) .....

Details of each disinsecting or sanitary treatment (place, date, time, method) during the flight. If no disinsecting has been carried out during the flight, give details of most recent disinsecting ..... (5) .....

Signed, if required, with time and date ..... (5)
Crew member concerned

For official use only

I declare that all statements and particulars contained in this General Declaration, and in any supplementary forms required to be presented with this General Declaration, are complete, exact and true to the best of my knowledge and that all through passengers will continue/have continued on the flight.

SIGNATURE ..... (6)
Authorized Agent or Pilot-in-command

1 **Self-explanatory**

2 **Itinerary of The Aircraft According to Flight Schedule**

3 **See Item Information About Crew and Number of Copies Required Above**

4 **Only to Be Filled in If Required by The State**

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5 **To Be Filled in by Crew Only**

6 **To Be Signed In by the Authorized Agent or P-i-C If Required by The State**

If one general declaration master is not sufficient to cover all crew information, two masters shall be issued and marked in the lower right corner: Sheet 1 of 2, Sheet 2 of 2.

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17.2 Load Information Documents

17.2.1 Notification to Captain (NOTOC)

17.2.1.1 General

Whenever there is a dangerous goods and any other special loading, such as PER, AVI, HEG, HUM, etc. on board a flight, Loading Control Supervisor (LCS) or loading personnel have the responsibility to provide a finalized and signed a Notification to the Caption (NOTOC).

The NOTOC form shall be issued in accordance with the Shipper's Declarations for all flights on which dangerous goods and special loads are carried.

The original and copies of NOTOC shall be handed over the P-i-C for signature before departure. The original shall be kept on board in the Load Control Folder (LCF) and the copies shall be filed at departure station. In addition, the finalized NOTOC stating Dangerous Goods (DG) on board shall be sent to BKKOPTG via e-mail "dgr.bkkop@thaiairways.com" at an appropriate time after the departure of flight.

At transit station, the transit NOTOC shall be removed from LCF and presented to the outgoing P-i-C together with loadsheet. Any change or repositioning of transit dangerous goods/special loads must be properly amended on the transit NOTOC.

The description is divided into four parts:

PART 1 Heading
PART 2 Dangerous Goods
PART 3 Other Special Load
PART 4 Miscellaneous

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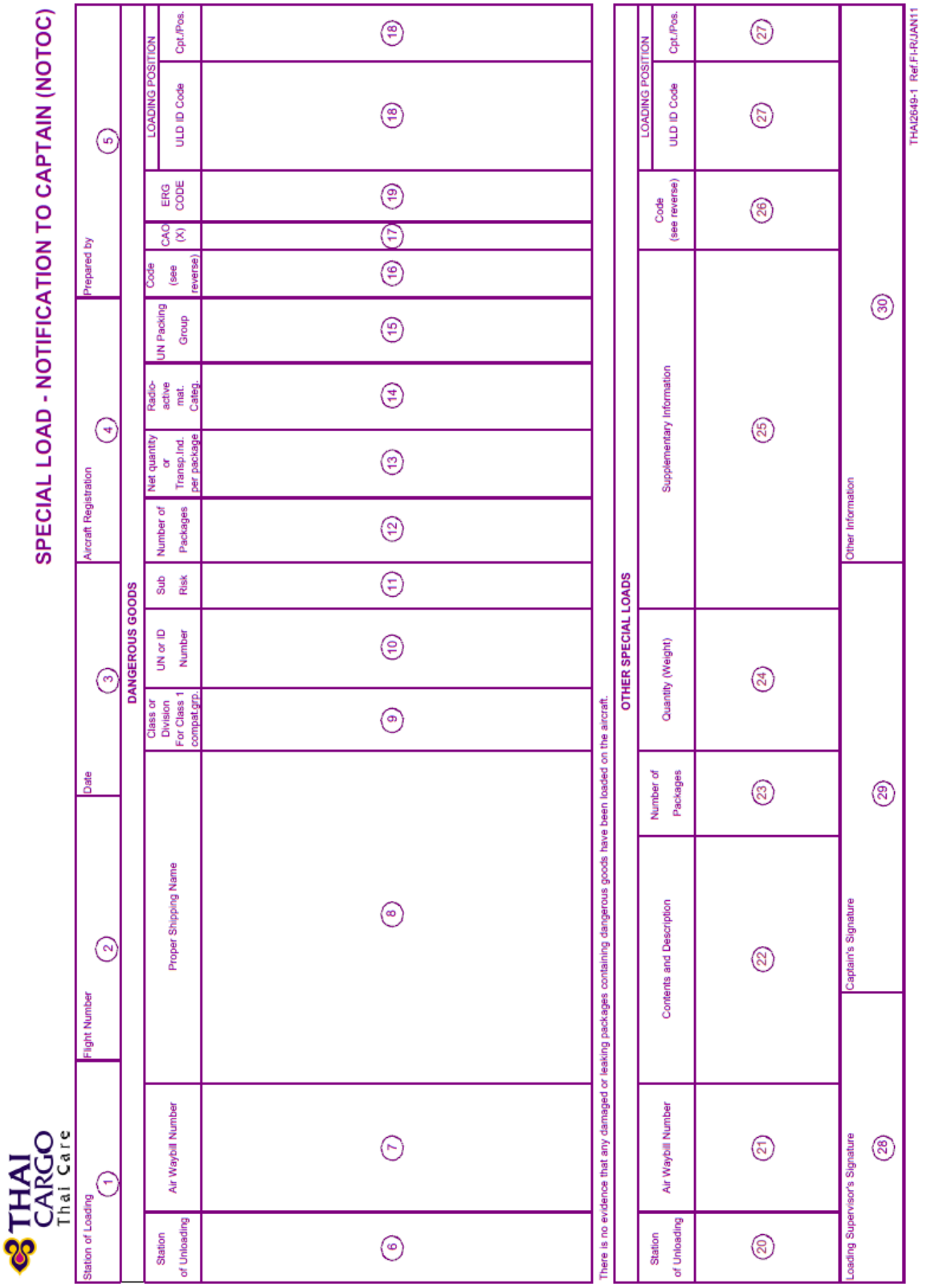
17.2.1.2 Completion

The NOTOC form shall be completed in accordance with the procedures below.

Manually Completed Form



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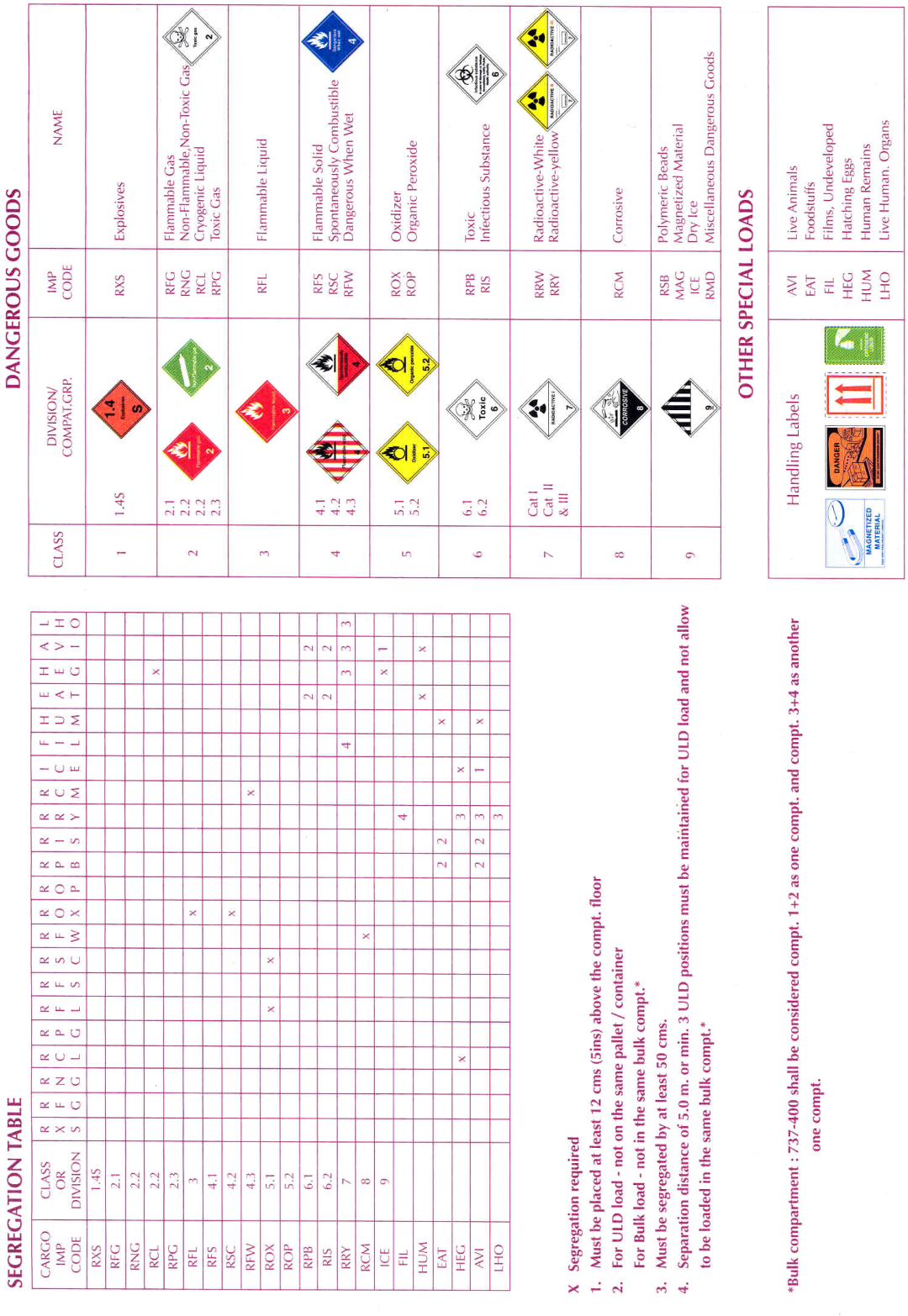

PART 1: Heading

1 Station of Loading

Self-explanatory

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2 Flight Number

Self-explanatory

3 Date

Self-explanatory

4 Aircraft Registration

Self-explanatory

5 Prepared by

Name, signature and function code of the person preparing the form prior to its release to the ramp and/or weight and balance office.

PART 2: Dangerous Goods

6 Station of Unloading

Station of unloading for this flight (IATA 3-letter airport code)

7 Air Waybill Number

Self-explanatory

8 Proper Shipping Name

Full name as per Shipper's Declaration

9 Class or Division; For Class 1 Compatibility Group

As per Shipper's Declaration

10 UN or ID Number

As per Shipper's Declaration

11 Subsidiary Risk

As per Shipper's Declaration

12 Number of Packages

Self-explanatory

13 Net Quantity (kg/l) or Transport Index Per Package

Net quantity per package in kilogram or liter; for example, 15 kg, 4L. For RRY (yellow label), enter the transport index per package; for example, TI 5.4.

14 Radioactive Material Category

Enter I, II or III according to the label on the package.

15 UN Packing Group

As per Shipper's Declaration

16 Code

Applicable codes as found on back of the form

17 CAO (X)

Cargo aircraft only, items to be marked with an "X"

18 LOADING POSITION

Enter compartment(s) and/or position(s) of unitized load. Additionally, the ULD identification code may be entered in the ULD ID Code column.

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19 ERG CODE

Enter emergency response code from cloumn N of List of DGR.

PART 3: Other Special Load

Note: Wheelchair with wet cell battery sent as baggage shall be stated as Other Special Load (No Air Waybill number).

20 Station of Unloading

Station of unloading for this flight (IATA 3-letter airport code)

21 Air Waybill Number

Self-explanatory

22 Contents and Description

Self-explanatory

23 Number of Packages and Weight

Self-explanatory

24 Quantity (Weight)

Self-explanatory

25 Supplementary Information

Self-explanatory

26 Code

Applicable codes as found on back of the form

27 LOADING POSITION

Enter compartment(s) and/or position(s) of unitized load. Additionally, the ULD identification code may be entered in the ULD ID Code column.

PART 4: Miscellaneous

28 Loading Supervisor's Signature

Name and signature of responsible agent, LCS or LM as appropriate.

29 Captain's Signature

Self-explanatory

30 Other Information

Self-explanatory

17.2.1.3 EDP NOTOC form

The Altea system issues an EDP NOTOC Form layout based on the IATA AHM 382 format.

Below is a diagram of the Altea system EDP NOTOC used by THAI.

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```
SPECIAL LOAD      NOTIFICATION TO CAPTAIN
**********************************************************************************************************************
FROM          FLIGHT                    DATE                A/C REG
BKK           TG0614                    25FEB04             HS-TEH
**********************************************************************************************************************
DANGEROUS GOODS
TO      AWB       CL/DV   UN/ID   SUB   PCS   QTY/TI  RRR  PCK   IMP    CAO    POS
                  COMP    NR     RSK                  CAT  GRP   CODE          ULD/CODE

01. ISOOCTENE
PEK     12345678  3       UN/           2     4L            II    RFL           32P
                          1216
02. RADIOACTIVE YELLOW. N.O.S
PEK     27298001  7       UN/           1     0.2T    II          RRY           24P
                          2982
03. DRY ICE
PEK     34598101  9       UN/           1     20KG                ICE           13L
                          1845

**********************************************************************************************************************
OTHER SPECIAL LOADS
          TO      AWB                 CONTENTS                  PCS   QTY    IMP    POS
                                                                                CODE   ULD/CODE
        0.4 PEK   ********************  DOG-PETC                  1     50KG   AVI    A51

**********************************************************************************************************************
SI
**********************************************************************************************************************
THERE IS NO EVIDENCE THAT ANY DAMAGED OR LEAKING PACKAGES
CONTAINING DANGEROUS GOODS HAVE BEEN LOADED ON THE AIRCRAFT

**********************************************************************************************************************
LOADED AS SHOWN
**********************************************************************************************************************
CAPTAIN SIGNATURE
```

17.2.2 Cargo Manifest

Refer to TCM 4.4.3.

17.2.3 CN 38 (OLD AV7) (Mail Documents)

Refer to TCM 9.2.

17.2.4 Fueling Order

17.2.4.1 Fueling Order Versus Loadsheet

Takeoff fuel on the loadsheet shall be equal to required ramp fuel less taxi fuel on the fueling order. It is the responsibility of the person supervising the fueling to ensure that any difference between required ramp fuel and actual ramp fuel does not exceed the given tolerance for the aircraft in question. In case this tolerance is exceeded, immediate contact must be made with the load control supervisor or the weight and balance office in order to check if de-fueling must be performed or if the loadsheet can be corrected to correspond to the actual ramp fuel instead of the required ramp fuel.

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Note: At stations where no uplift of fuel shall be made, actual fuel on board shall be written in the required ramp fuel box.

17.2.5 Unit Load Device/Bulk Load Weight Statement

The ULD/Bulk Load Weight Statement is an optional standard means of passing the loaded ULD and bulk weight information to Load Control, including any items requiring special attention. It is also a formal weight record as a basis for load planning and aircraft weight and balance calculation. This procedure is primarily intended for use with cargo and mail but may also be used for other load, e.g. baggage. In an automated environment, the ULD/Bulk Load Weight Signal (UWS) may be used for this purpose.

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17.3 Loading Instruction/Report

17.3.1 General

The Loading Instruction/Report is the most important load control document apart from the Loadsheet. A Loading Instruction/Report is therefore required for every THAI flight for which a Loadsheet is issued.

The form is divided into two parts:

- The Loading Instruction
  Shall be completed by the Load Control Supervisor (LCS) to instruct the Loadsheet Agent (LSA) and Load Master (LM) or Loading Supervisor about the distribution of the onload and, for transit flights, the weight and the location of the offload and throughload.
- The Loading Report
  Shall be completed by the Load Master (LM) or Loading Supervisor to confirm that the aircraft has been loaded in accordance with the given instructions. The Load Master is not allowed to deviate from the instructions unless confirmation has been obtained from the Load Control Supervisor. Deviations from the instructions must be clearly stated on the report.

There are two types of loading instruction report as the following details:

- EDP LIR was generated from the ALTEA system
- manual LIR as listed on LCM chapter 1.4.3—List of Supplies.

Different Loading Instruction/Report forms are available according to aircraft types and versions. See General LCM, Chapter 1.5.4—List of Supplies for a list of forms.

The loading of any THAI aircraft shall be based on the Loading Instruction/Report according to the procedure and description. See General LCM, Chapter 17.3.3—Description.

If a Handling Agent uses an Electronic Data Processing System (EDP), the standardized EDP Loading Instruction may be used together with the manually completed form. This form must correspond to the IATA AHC Standards and may be issued either on plain paper or on a preprinted form.

17.3.2 Responsibilities

The loading instructions and report must be issued and signed by qualified LCS according to LCM Chapter 4—Qualification requirements.

A qualified staff must supervise the loading of the aircraft and provide a signed confirmation for the following items:

- the aircraft has been loaded as instructed, including any special load instructions
- the condition of locks, restraints or ULDs has not affected load capacity
- the bulk load and ULDs are correctly secured and locks and nets are in use
- visible dangerous goods packages were inspected prior to loading
- special loads, including dangerous goods have been stowed and secured
- the holds are free of any foreign objects
- ensure that loaded items do not block the aircraft fire suppression systems.

17.3.3 Description

17.3.3.1 General

Separate instructions have been prepared for the completion of:

- The forms to be used for aircraft not equipped with ULD's, that is 737. See General LCM, Chapter 17.3.3.2—Aircraft not Equipped with ULD's.
- The forms to be used for aircraft equipped with ULD's, that is 747, 777, 787, A330, A350 and A380. See General LCM, Chapter 17.3.3.3—Aircraft Equipped with ULD's.

The item numbers refer to those stated in the specimens copies.

The description is divided into five parts:

PART 1 Heading

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PART 2 Offload and Transit Load Instruction

PART 3 Loading Instructions

PART 4 Loading Report

PART 5 Signatures.

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17.3.3.2 Aircraft not Equipped with ULD's

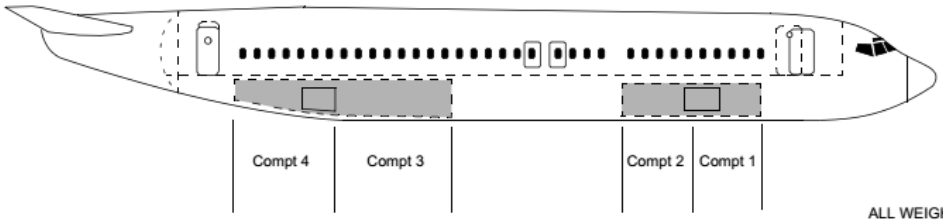
Separate forms are available for the various ULD versions of 737 aircraft.

Aircraft Not Equipped with ULD'S—Loading Instruction/Report—Reference Numbers

THAI

LOADING INSTRUCTION/REPORT **737-400**

Flight	Date	Registration	Station	C:	Y:	Precalculated DLI/LIZFW
(1)	(2)	(3)	(4)	(5)		(6)



ALL WEIGHTS IN KILO

	Compartment 4	Compartment 3	Compartment 2	Compartment 1
OFF	(8) kg	kg	kg	kg
LOADING INSTRUCTION	(10)			
	Special instructions: (11)	Special instructions:	Special instructions:	Special instructions:
LOADING REPORT	Dest (12) / Cargo/kg (13) / Mail/kg (14) / Bag/kg (15)	Dest / Cargo/kg / Mail/kg / Bag/kg	Dest / Cargo/kg / Mail/kg / Bag/kg	Dest / Cargo/kg / Mail/kg / Bag/kg
TOTALS	Onload (17) = (16) + (16) + (16)	Onload = + +	Onload = + +	Onload = + +
	+ Transit (9) = (18) ± Reload (19)	+ Transit = ± Reload	+ Transit = ± Reload	+ Transit = ± Reload
	Max weight (7) kg / Total weight (20) kg	Max weight kg / Total weight kg	Max weight kg / Total weight kg	Max weight kg / Total weight kg

Loading Instruction issued by:	This aircraft has been loaded in accordance with these instructions including the deviations shown on the report. All loads have been secured in accordance with the Company regulations. **Load Master's Signature:** (22)	Compartment totals of Loading Report compared with Loadsheet by: (23)
(21)		

| x 12 kg | | |

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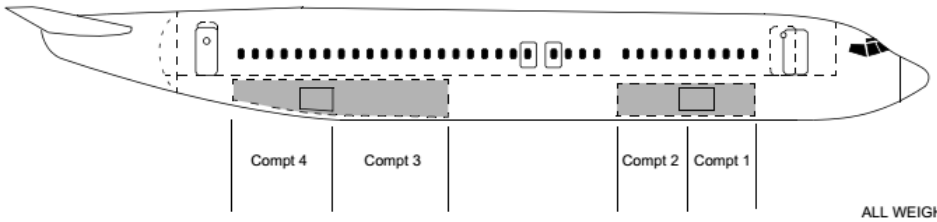
Aircraft Not Equipped with ULD'S—Loading Instruction/Report—Filled-in Form

THAI

LOADING INSTRUCTION/REPORT 737-400

Flight	Date	Registration	Station	C:	Y:	Precalculated DLI/LIZFW
TG 231	23 SEP 98	HSTDE	BKK	10	41/39/40	39/42



ALL WEIGHTS IN KILO

	Compartment 4	Compartment 3	Compartment 2	Compartment 1
OFF	kg	kg	kg	kg
LOADING INSTRUCTION	HDY M 250	HDY C 2490	HDY BY 900	HDY C 10 BJ 80
	Special instructions:	Special instructions:	Special instructions:	Special instructions: AVI 1/10 KG (LIVE DOG)

LOADING REPORT

Dest	Cargo/kg	Mail/kg	Bag/kg
HDY	–	250	–
HDY	2510	–	–
HDY	–	–	860
HDY	10	–	64

TOTALS

	Onload	Transit	Reload	Max weight	Total weight
Compartment 4	250 = – + 250 + –	– = – ± –		1245 kg	250 kg
Compartment 3	2510 = 2510 + – + –	– = – ± –		3062 kg	2510 kg
Compartment 2	860 = – + – + 860	– = – ± –		2059 kg	860 kg
Compartment 1	74 = 10 + – + 64	= ±		1125 kg	74 kg

Loading Instruction issued by:

KUNAKORN K.

This aircraft has been loaded in accordance with these instructions including the deviations shown on the report. All loads have been secured in accordance with the Company regulations.

Load Master's Signature: *Signed*

Compartment totals of Loading Report compared with Loadsheet by:

Signed

x 12 kg

| | | |

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1 Flight

Flight number/identifier of flight for which the instructions are issued.

2 Date

Local date.

3 Registration

Aircraft registration.

4 Station

3-letter IATA code of issuing station.

5 C: Y:

Total number of estimated passengers (transitand joining) in each balance zone.

6 Precalculated DLI/LIZFW

Show DLI/LIZFW based on the total passenger booking figures (Item ƒ) and the estimated weights of onload (Item …) and through load (Item »).

7 Max Weight

Maximum permissible net weight per compartment.

PART 2: Offload and Transit Load instructions

The appropriate boxes must be filled in by the Load Control Supervisor (LCS) in case of transit flight.

8 OFF

Weight of load to be unloaded from the respective compartments.

Note: To be obtained from Loadmessage (LDM).

9 Transit

Total weight of transit load per compartment.

Note: To be obtained from Loadmessage (LDM).

PART 3: Loading Instructions

These instructions shall be filled in by the qualified Load Control Supervisor (LCS), see General LCM, Chapter 4—QUALIFICATION REQUIREMENTS. After completion of these entries, the form is to be handed over to the Loadsheet Agent (LSA) and the Load Master (LM) or Loading Supervisor.

10 LOADING INSTRUCTION

Instructions on where the joining load is to be loaded.

For multisector flights, specify destination using 3-letter IATA airports codes.

Specify category of load, for example, bag, cargo, mail.

Note: Use load category codes. See General LCM, Chapter 17.9.1.1—Load Information Codes.

If rest load is planned in a compartment, state estimated weight of the rest.

Show where special load is to be stowed and if necessary give further instructions under “Special Instructions”.

Note: Use load category codes. See General LCM, Chapter 17.9.2.2—Table of Codes.

11 Special Instructions

Under this heading, give instructions for:

- Load which requires special handling or stowage, for example, live animals, dangerous goods, etc.

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Note: *See General LCM, Chapter 15.6.1—Special Load Quick Reference Table and see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.*

- Lashing and/or supporting of pieces which, if not secured, might damage the compartment because of their special size and/or weight.

  Note: *See General LCM, Chapter 11—LOAD RESTRAINTS and see General LCM, Chapter 12—SUPPORTING.*
- Relocation of transit load.

In addition to the specific instructions mentioned above, any other information which might be useful for the Load Master or Loading Supervisor may be given in this part, for example summary of planned onload, AWB No. of special load, etc.

PART 4: Loading Report

Loading Report shall be completed by the responsible Load Master (LM) or Loading Supervisor. The entries shall be made continuously while loading is in progress.

12 Destination

3-letter IATA airport code of the station(s) for which the following categories are loaded in the compartment.

13 Cargo/kg

Weight of the joining cargo and if applicable the weight of BAL and EIC.

Note: *Enter destination and weight of joining loadper cart.*

14 Mail/kg

Weight of the joining mail and if applicable the weight of COM (Company Mail).

Note: *Enter destination and weight of joining load per cart.*

15 Bags/kg

Weight of the joining baggage and if applicable the weight of Crew Baggage.

Note: *Enter destination and weight of joining loadper cart.*

16

Weight of the joining baggage and if applicable the weight of Crew Baggage.

17 Onload

Total weight of onload per compartment. Sum of all item 16 .

18

Subtotal, item 17 + item 9 if applicable.

19 Reload

Weight of transit load which has been reloaded from one compartment to another. State plus (+) or minus (–) by encircling the applicable sign, that is ⊕ or ⊖.

20 Total Weight

Total deadload per compartment at departure, item 18 ± 19, if applicable. This figure must not exceed the maximum weight permissible for the respective compartment.

PART 5: Signatures

21 Loading Instruction Issued By:

Name and signature of the agent who prepares the Loading Instruction.

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22 **Signature:**

Signature of the Load Master or Loading Supervisor.

Note: Confirming that the aircraft has been loaded according to theLoading Report and that the Load has be ensecured according to Company Regulations.

23

Signature of the Load Control Supervisor after he has compared the compartment totals on the Loading Report (item 20) with the respective totals on the Loadsheet.

Note: See General LCM, Chapter 17.7.7—Deadload Crosscheck and Tolerances in case of discrepancies.

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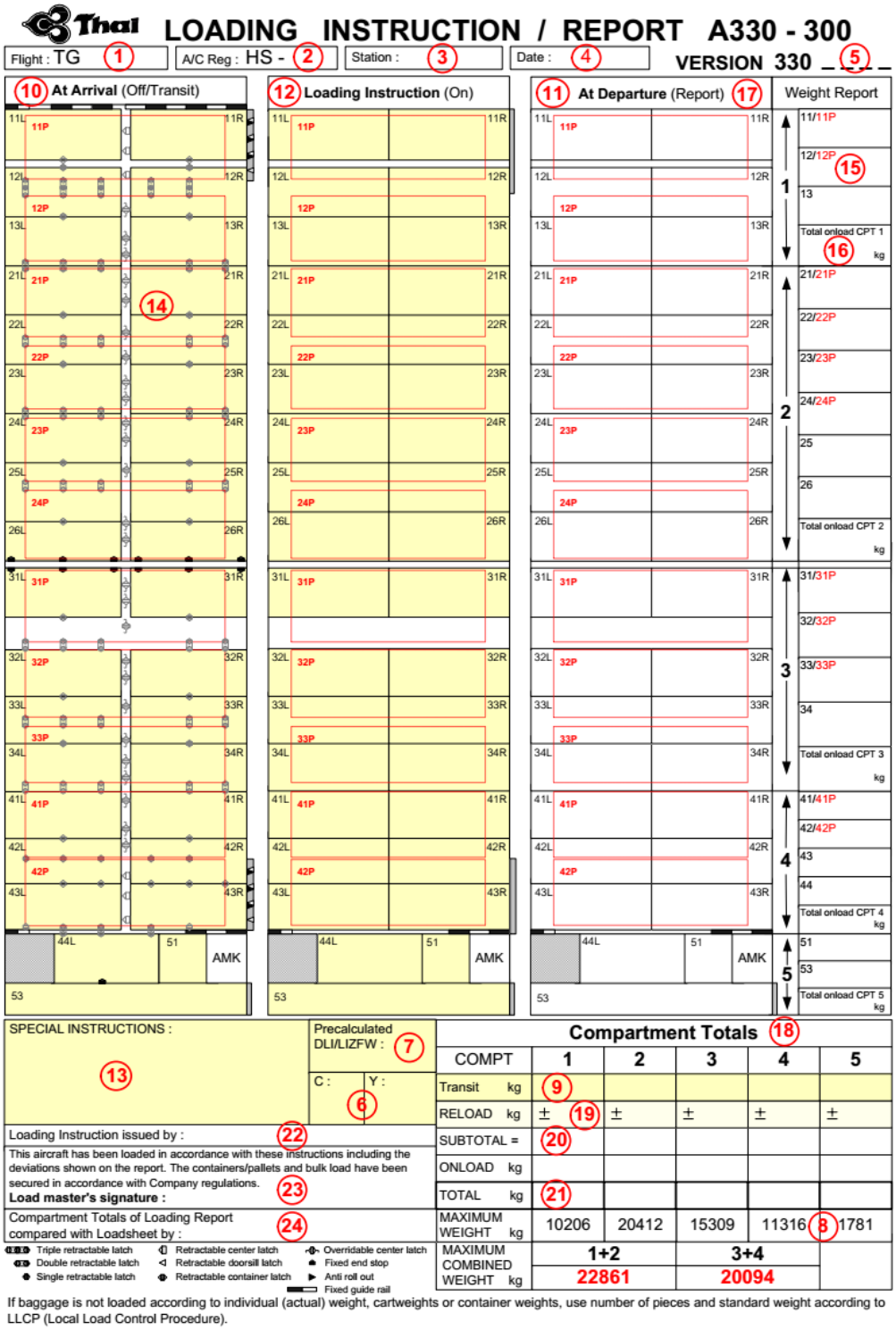
17.3.3.3 Aircraft Equipped with ULD's

Separate forms are available for the various types of aircraft 747, 777, 787, A330, A350 and A380.

Aircraft Equipped with ULD'S—Loading Instruction/Report—Reference Numbers



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Aircraft Equipped with ULD'S—Loading Instruction/Report—Filled-in Form

Thai LOADING INSTRUCTION / REPORT A330 - 300

Flight : TG 521 | A/C Reg : HS - TEA | Station : MAA | Date : 10 AUG 04 | VERSION 330 251

At Arrival (Off/Transit)	Loading Instruction (On)	At Departure (Report)
11L 11P DXB BC/440 AKE 91608TG	11L 11P X	11L 11P X AKE90125TG + 90
11R MAA BC/694 AKE90150TG	11R X	11R X AKE97721TG + 90
12L MAA BY/790 AKE91994TG	12L	12L
12R MAA BY/760 AKE90653TG	12P DXB C/1090 .PER PMC 2220TG	12P DXB C/1090 .PER PMC 2220TG
13L MAA BY/790 AKE6793TG	13L	13L
13R MAA BY/790 AKE92054TG	13R	13R
21L 21P N	21L 21P DXB C/1400 PMC 50876TG	21L 21P DXB C/1400 PMC 50876TG
21R	21R	21R
22L	22L	22L
22R 22P MAA C/1829 PMC51161TG	22R 22P DXB C/1980 .RFL PMC 51072TG	22R 22P DXB C/1980 .RFL PMC 51072TG
23L	23L	23L
23R 23P MAA C/2006 PMC51009TG	23R 23P DXB C/2400 PMC 50471TG	23R 23P DXB C/2400 PMC 50471TG
24L	24L	24L
24R 24P MAA C/2406 PMC50963TG	24R 24P DXB C/2104 PMC 50057TG	24R 24P DXB C/2104 PMC 50057TG
25L	25L	25L
25R	25R	25R
26L	26L	26L
26R	26R	26R
31L 31P MAA C/2403 PMC50041TG	31L 31P DXB C/3300 PMC 50967TG	31L 31P DXB C/3300 PMC 50967TG
31R	31R	31R
32L 32P MAA C/2513 PMC51236TG	32L 32P T/S Ex 42L	32L 32P T/S EX 42L
32R	32R DXB C/970 AKE91822TG	32R DXB C/970 AKE91822TG
33L	33L DXB C/2790	33L DXB C/2790
33R 33P MAA C/2023 PAG60615TG	33R 33P ALF80567TG	33R 33P ALF80567TG
34L	34L DXB BY/650	34L DXB BY/650 AVE 8562TG +90
34R	34R DXB BY/650	34R DXB BY/650 AKE 90640TG +90
41L 41P MAA C/2053 ALF80184TG	41L 41P DXB BY/650	41L 41P DXB BY/650 AKE 91853TG +90
41R	41R DXB BY/650	41R DXB BY/650 AKE 92006TG +90
42L DXB C/760 AKE90512TG	42L DXB BY/650	42L DXB BY/650 AKE 90394TG +90
42R MAA BY/790 AKE91158TG	42R DXB BYR	42R DXB BY/231 AKE 90586TG +90
43L MAA BY/800 AVE0628TG	43L DXB BC/BY	43L DXB BC/BY/450 AKE 90649TG +90
43R MAA BY/818 AVE0515TG	43R T/S EX 11L	43R T/S EX 11L
44L DXB E/499.AMK/324 AVE0541TG	44L T/S	44L T/S
51 X AMK	51 X AMK	51 X AMK
53 DXB/BT/250/MAA/C/M/BY	53 T/S DXB/BT/BY.AVI	53 T/S DXB/BT/BY/100 .AVI

Weight Report		
1	11/11P	180
	12/12P	1090
	13	
	Total onload CPT 1	1270 kg
2	21/21P	1400
	22/22P	1980
	23/23P	2400
	24/24P	2104
	25	
	26	
	Total onload CPT 2	7884 kg
3	31/31P	3300
	32/32P	970
	33/33P	2790
	34	1480
	Total onload CPT 3	8540 kg
4	41/41P	1480
	42/42P	1061
	43	540
	44	-
	Total onload CPT 4	3081 kg
5	51	-
	53	100
	Total onload CPT 5	100 kg

SPECIAL INSTRUCTIONS :
.PER/12P
.RFL/22P
LIVE DOG 1/20KG LOAD IN BULK

Precalculated DLI/LIZFW : 45/53
C : 35 | Y : 61/69/60/60

Loading Instruction issued by : Namkhang T.

This aircraft has been loaded in accordance with these instructions including the deviations shown on the report. The containers/pallets and bulk load have been secured in accordance with Company regulations.
Load master's signature :

Compartment Totals of Loading Report compared with Loadsheet by : Anan P.

Compartment Totals

COMPT	1	2	3	4	5
Transit kg	440			1259	250
RELOAD kg	⊖ 440	±	⊕ 760	⊖ 320	± 0
SUBTOTAL =	0		760	939	250
ONLOAD kg	1270	7884	8540	3081	100
TOTAL kg	1270	7884	9300	4020	350
MAXIMUM WEIGHT kg	10206	20412	15309	11316	1781
MAXIMUM COMBINED WEIGHT kg	1+2 22861		3+4 20094		

Triple retractable latch | Double retractable latch | Single retractable latch | Retractable center latch | Retractable doorsill latch | Retractable container latch | Overridable center latch | Fixed end stop | Anti roll out | Fixed guide rail

If baggage is not loaded according to individual (actual) weight, cartweights or container weights, use number of pieces and standard weight according to LLCP (Local Load Control Procedure).

THAI 2715M Issue No.2

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PART 1: Heading

The heading of the form shall be completed by theLoadsheet Agent (LSA) or Load Control Supervisor (LCS) issuing the instructions.

1 Flight

Flight number/identifier of flight for which the instructions are issued.

2 A/C Reg

Aircraft registration.

3 Station

3-letter IATA airport code of issuing station.

4 Date

Local date.

5 VERSION

Version/configuration code of aircraft.

6 C: Y:

Total number of estimated passengers (transitand joining) in each balance zone.

7 Precalculated DLI/LIZFW

Show DLI/LIZFW based on the total passenger booking figures (Item 6) and the estimated weights of onload (Item 12) and throughload (Item 9).

8 Max Weight

Max weight per compartment.

PART 2: Offload and Transit Load instructions

This part, if issued by Loadsheet Agents, shall be completed or supervised by Load Control Supervisor.

9 Transit

Enter total weight of transit load per compartment.

Note: To be derived from the Loadmessage (LDM).

10 At Arrival (Off/Transit)

Copy offload and transit load/ULD's entries from the incoming CPM.

Notes:
1. *Indicate the ULD's to be offloaded permanently or temporarily for topping up and/or resequencing by encircling the ULD position designator.*
2. *Indicate offload from the bulk compartment by encircling the destination code.*

11 At Departure (Report)

Complete this part of the form as much as possible, i.e. fill in the boxes for the ULD's which remain in the same position and which are not topped up.

Show new location of ULD's which must be relocated. Give necessary instructions under "Special Instructions" (Item 13).

PART 3: Loading Instructions

These instructions shall be filled in by the responsible Load Control Supervisor, or if issued by the Loadsheet Agents, all details must also be checked by the responsible Load Control Supervisor. After completion and approval, the form shall be handed over to the Load Master/Loading Supervisor.

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12 Loading Instruction (ON)

Show, in this part, the location for joining ULD's and bulkload.

For multisector flights, specify the destination (station of unloading), using 3-letter IATA airport codes.

Specify load category by using the codes, followed by specific handling codes if any special load or dangerous goods loaded (also give further instruction under item 13). See General LCM, Chapter 17.8—Fuel Weight and Index Correction for the category code listings.

If the ULD contains more than one category of load, use a combination of codes, for example, baggage and mail, state BM.

Enter the ULD identification code.

For ULD containing load, state the weight of the load planned plus standard tare weight of the ULD. See General LCM, Chapter 9.1.3.2—List of Equipment—Pallets and Containers.

For empty ULD's, write "**X**".

Write "**NIL**" or "**N**" if a ULD position is to be left empty (NOFIT).

Show transit ULD's which remain on the same position, i.e. which are not topped-up or resequenced with the text (**TRANSIT**) in brackets or "**T/S**".

For the rest baggage, write "**R**" after baggage type.

Note: See special load and IMP codes. See General LCM, Chapter 15.6.1—Special Load Quick Reference Table and see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.

13 SPECIAL INSTRUCTIONS

Give instructions for:

- Loads which require special handling or stowage, for example, live animals, dangerous goods etc.
  Note: See General LCM, Chapter 15.6.1—Special Load Quick Reference Table and see General LCM, Chapter 15.6.2—Dangerous Goods Table and Segregation.
- Relocation of transit ULDs and bulkload.
- Lashing and/or supporting of pieces which, if not secured, might damage the compartment because of their special size and/or weight.
  Note: See General LCM, Chapter 11—LOAD RESTRAINTS and see General LCM, Chapter 12—SUPPORTING.

In addition to the above mentioned, any other information which might be useful for the Load Master/ Loading Supervisor may be given in this part.

PART 4: Loading Report

Loading Report shall be completed by the responsible Load Master/Loading Supervisor. The entries shall be made continuously while loading is in progress.

14 At Arrival (Off/Transit)

ULD's to be off loaded: Tick off (✓) the respective box as soon as the unit has been unloaded.

15 Weight Report

Enter next to each position the gross weight of joining ULD taking the weight stated on the ULD identification tag.

Note: For topped-up containers, make sure that only the weight of the onload is entered.

For load in the bulk compartment, enter total weight per section.

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Caution: **ULD's ready for loading must be properly inspected by the responsible Load Master/Loading Supervisor. See General LCM, Chapter 14.1.2.1—General Instructions.**

ULD's covered with snow, ice or accumulated water on top of the load or elsewhere must not be loaded. All units shall be properly cleaned prior to loading into the aircraft.

Note: *The weight taken from the ULD identification tag must be compared with the figures on the Loading Instruction. In case of discrepancies, the Load Control Supervisor and/or Loadsheet Agent must be informed immediately.*

For baggage, use standard weight per piece according to LLCP, if actual weights are not available.

16 Total Onload Compartment

Total weight of onload per compartment. Sum of all item 15. Enter these totals under the columns "Onload" in the part "Compartment Totals" (Item 18).

17 At Departure (report)

For ULD's, fill in destination, load category code, special load code, weight, ULD ID code no. and, if required, volume identification.

For the indication of available volume, use the following codes:

1 ¼ of total volume available
2 ½ of total volume available
3 ¾ of total volume available
0 No volume available

Notes:

1. *The volume information is required only for ULD's containing baggage and/or mail. It may be omitted for single sector flights.*
2. *Destination is not required for single sector flights. For specification of the contents, use the codes published. See General LCM, Chapter 17.8.1—Calculation of Additional Fuel.*

   For bulkload, fill in destination, category of load and weight. State also the volume available in each section using the same codes as for ULD's.
3. *The volume available shall be estimated only for load to 2nd and/or 3rd destination.*
4. *Destination is not required for single sector flights.*

   For baggage, use standard weight per piece according to LLCP.

18 Compartment Totals

This part shall be used to calculate the total weight in each compartment.

19 RELOAD

Fill in weight of transit load which has been reloaded from one compartment into another. State plus or minus by encircling the applicable sign, that is ⊕ or ⊖.

20 SUBTOTAL

Items 9 ± 19 if applicable.

21 TOTAL

Total load per compartment at departure including tare weight of ULD's. Item 20 + item 16. This figure must not exceed the max permissible weight per compartment (item 8).

PART 5: Signatures

22 Loading Instruction Issued By:

Signature of the responsible Loadsheet Agent or Load Control Supervisor.

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23 Load Master's Signature

Signature of the Load Master/Loading Supervisor. He confirms that the aircraft has been loaded in accordance with the instructions, including the deviations shown on the report, and that all ULD's and bulkload have been secured in accordance with Company instructions.

24

Signature of the Load Control Supervisor (LCS) after he has compared the compartment totals on the Loading Report (item 21) with the respective total on the Loadsheet. In case of discrepancies, follow the instructions published. See General LCM, Chapter 17.7.7—Deadload Crosscheck and Tolerances.

17.3.3.4 EDP Form

There are two types of EDP Loading Instruction/Report produced from the Altea (FM) system. Both types are certified to use as references for loading.

Description of the EDP Loading Report

Form layout The Altea system issues an EDP Loading Instruction/Report based on the IATA AHM 514 format and manufacturer weight and balance manual.

Specimen See General LCM, Chapter 17.3.3.4.1—EDP Loading Report and see General LCM, Chapter 17.3.3.4.2—Graphical Type.

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17.3.3.4.1 EDP Loading Report

```
LOADING INSTRUCTION/REPORT  PREPARED BY SANTI MONGKOLDEJ EDNO
ALL WEIGHTS IN KG                                        2
FROM/TO FLIGHT  A/C REG   VERSION   GATE TARMAC   DATE    TIME
BKK CDG TG930   HS-TUB    A380-800  GTE E4       28DEC14  2308
PLANNED JOINING LOAD
CDG   F 10    C 54    Y 357   C 8461  M 482   B 9135
JOINING SPECS:   SEE SUMMARY
TRANSIT SPECS:   SEE SUMMARY
RELOADS:
                                          ACTUAL
LOADING INSTRUCTION                       WEIGHT
**********************************************************************
CPT 1    MAX 07540
:11  ALF80027TG                          :
:ONLOAD: CDG C/788                         :
:SPECS: HEA                             :
:REPORT:                                :
----------------------------------------------------------------------
:12  ALF56TG                            :
:REPORT:                    CPT 1 TOTAL:
**********************************************************************
CPT 3    MAX 03174
:                :35R  AKE26TG*         :
:                :ONLOAD: CDG BY/782      :
:                :SPECS: NONE           :
:                :REPORT:               :
----------------------------------------------------------------------
:                :36R  AKE27TG*         :
:                :ONLOAD: CDG BY/782      :
:                :SPECS: NONE           :
:                :REPORT:      CPT 3 TOTAL:
**********************************************************************
CPT 4    MAX 10500
:41L  AKE15TG*          :41R  AKE17TG*          :
:ONLOAD: CDG BY/765       :ONLOAD: CDG BY/765       :
:SPECS: NONE              :SPECS: NONE              :
:                :REPORT:      CPT 4 TOTAL:
**********************************************************************
CPT 5    MAX 02354
:51                                     :
:NO FIT                                   :
:                                       :
:                                       :
----------------------------------------------------------------------
:52                                     :
:ONLOAD: CDG D/28PCS BT R/68 BT/169               :
:SPECS: NONE                                :
:REPORT:                                  :
----------------------------------------------------------------------
:53                                     :
:NO FIT                                   :
:                                       :
:                          CPT 5 TOTAL:
**********************************************************************
LOCN  JOIN/TRAN DEST  CAT  IMP  PCS  WEIGHT  TI   AWB
**********************************************************************
11   JOIN    CDG   C   HEA  1    1          1
----------------------------------------------------------------------
13R  JOIN    CDG   C   PER  1    1          1
----------------------------------------------------------------------
21P  JOIN    CDG   C   RLI       1         1
21P  JOIN    CDG   C   DIP  1    1          1
----------------------------------------------------------------------
22P  JOIN    CDG   C   HEA  1    1          1
----------------------------------------------------------------------
23P  JOIN    CDG   C   HEA  1    1          1
----------------------------------------------------------------------
24P  JOIN    CDG   C   PER  1    1          1
SI *** PLS CONTACT LCC.SANTI M. *** 70273 ***
** CREW  4/24  TTL 28 ** FC. NUTTAWAT  T. **

This aircraft has been loaded in accordance with these
instructions and the deviations shown on this report. The
container,pallet and bulk load have been secured in a
accordance with company instructions.
```

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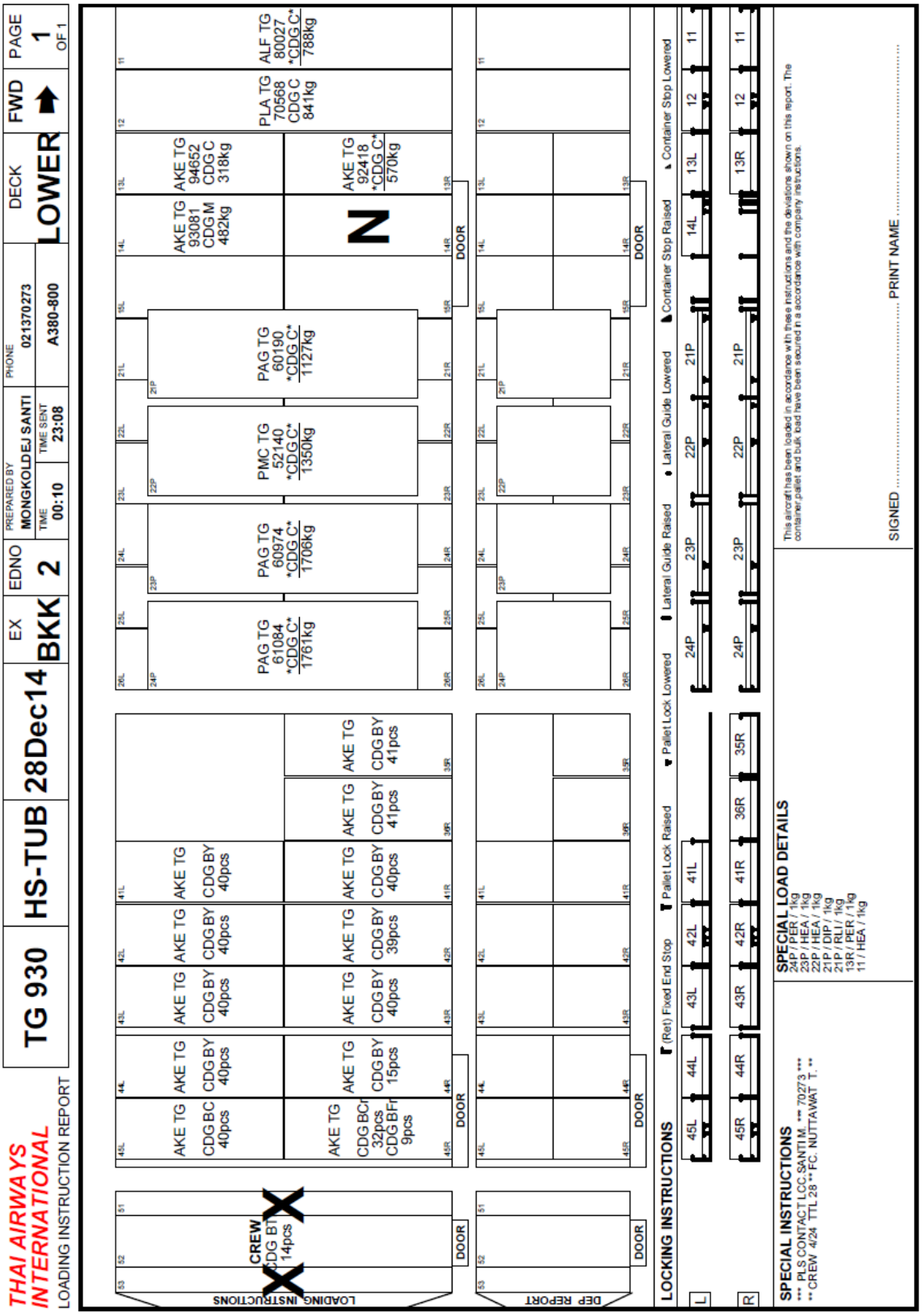
17.3.3.4.2 Graphical Type



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17.4 Loadsheet—Manual

17.4.1 General

The following THAI loadsheet shall be used:

Passenger aircraft Three destinations, format A4 (THAI 2666-2)

A handling agent's loadsheet may be used provided it conforms with IATA AHC standard (to be checked with BKKKG-M), and if applicable parts are completed according to THAI instructions.

The shaded parts constitute the loadmessage which shall be sent according to the procedures. See General LCM, Chapter 17.10—Load Control Message.

17.4.2 Responsibilities

17.4.2.1 Loadsheet Agent—LSA

The loadsheet agent's signature confirms:

- correct entry of transit load data from LDM or incoming loadsheet
- correct entry of totals from passenger manifests, cargo manifests and CN 38 (AV-7)
- correct Basic Weight and Index used according to aircraft registration
- correct Dry Operating Weight and Index calculations
- correct takeoff and trip fuel figures
- total traffic load not exceeding the allowed traffic load
- balance calculation correctly performed
- balance conditions of loaded aircraft within prescribed limits
- loading instruction issued corresponding with loadsheet information.

Note: Loadsheet performed by personnel without the necessary qualification and experience must be crosschecked and countersigned by a competent supervisor.

17.4.2.2 Load Control Supervisor—LCS

It is the duty of the load control supervisor to check and, if necessary, to amend the loadsheet in accordance with the regulations. See General LCM, Chapter 17.7—Last-Minute Changes (LMC's) on Loadsheet. The load control supervisor is responsible, in particular, for seeing that:

- the passenger figures tally with the figures established at the gate check
- the fuel figures correspond to the final quantities stated on the fueling order
- the load distribution figures match the equivalent figures of the loading report.

EDP loadsheets shall be signed by the qualified load control supervisor and handed over to P-i-C.

17.4.3 Completion

17.4.3.1 General

The instructions given for the completion of the loadsheet correspond with the IATA AHC recommendation in procedure No. 516.

17.4.3.2 Number of Copies

Prepare the loadsheet in no more than 3 folds, and distribute as follows (in 3 copies):

- 1 for aircraft Load Control Folder—LCF,
- 1 for station file,
- 1 for handling agent, if required.

17.4.3.3 Completion of Loadsheet

Prepare loadsheet according to the following instructions:

PART 1 Addresses and Heading
PART 2 Operating Weight Calculations
PART 3 Allowed Traffic Load Calculation

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PART 4 Load Information per Destination and Totals
PART 5 Actual Gross Weight Calculation
PART 6 Last Minute Changes (LMC)
PART 7 Supplementary Information and Note
PART 8 Balance and Seating Conditions.

Note: The item numbers refer to those as stated in the specimen loadsheets.

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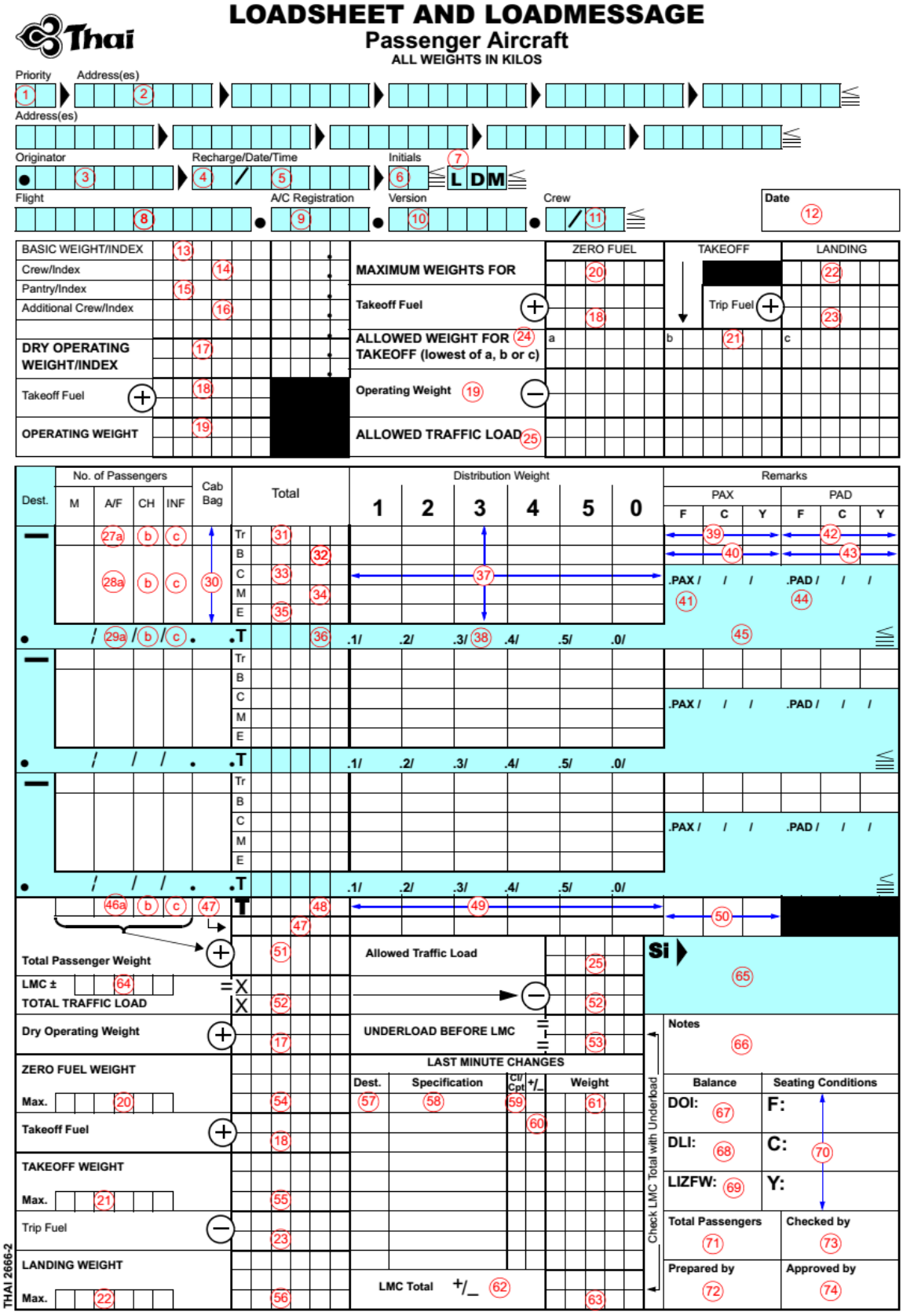
17.4.3.4 Specimens

Loadsheet & Loadmessage—Passenger Aircraft, Description with Reference Numbers



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Loadsheet & Loadmessage—Passenger Aircraft, Completed

LOADSHEET AND LOADMESSAGE

Passenger Aircraft

ALL WEIGHTS IN KILOS

Priority: QX
Address(es): DXBKKTG
Address(es):
Originator: MAAKLTG
Recharge/Date/Time:
Initials: LDM
Flight: TG521/10AUG
A/C Registration: HSTEA
Version: 330251
Crew: 3/15
Date: 10 AUG 04

	ZERO FUEL	TAKEOFF	LANDING
BASIC WEIGHT/INDEX 117950 / 45.7			
Crew/Index 3/14 — 12750 / -15			
Pantry/Index 22 — 42500 / -16			
Additional Crew/Index — 7500 / 01			
1 XCR Y/CL			
DRY OPERATING WEIGHT/INDEX 123550 / 42.7			
Takeoff Fuel (+) 33000			
OPERATING WEIGHT 156550			
MAXIMUM WEIGHTS FOR	167000	[redacted]	177000
Takeoff Fuel (+)	33000	Trip Fuel (+) 24000	
ALLOWED WEIGHT FOR TAKEOFF (lowest of a, b or c)	a 200000	b 212000	c 201000
Operating Weight (−)	156550		
ALLOWED TRAFFIC LOAD	43450		

Dest.	No. of Passengers M	A/F	CH	INF	Cab Bag	Total	Distribution Weight 1	2	3	4	5	0	Remarks PAX F	C	Y	PAD F	C	Y
DXB		10	0	0		Tr 1949			760	939	250			4	6		0	0
						B 4031			1300	2631	100			35	224		0	3
						C 15080	977	7432	6671				.PAX / 39 / 228 /			.PAD / 0 / 3 /		
						M 20					20		.AMK / 44L / 381 .AVI / 53					
		247	12	3		E 17644	293	452	569	450			.PER / 12P. RFL / 22P					
	/ 255	/ 12	/ 3	.	.T	27824	.1/1270	.2/7884	.3/9300	.4/ 3960	.5/ 370	.0/	.XCR/0/1					
						Tr												
						B												
						C							.PAX / / /			.PAD / / /		
						M												
						E												
	/ / /	.	.T				.1/	.2/	.3/	.4/	.5/	.0/						
						Tr												
						B												
						C							.PAX / / /			.PAD / / /		
						M												
						E												
	/ / /	.	.T				.1/	.2/	.3/	.4/	.5/	.0/						
	257	12	3		T	28444	1270	7884	9300	4020	370			39	230	[redacted]		

Total Passenger Weight (+)	20496	Allowed Traffic Load	43450
LMC (+)	216	(−)	43340
TOTAL TRAFFIC LOAD (=X)	43340		
Dry Operating Weight (+)	123550	UNDERLOAD BEFORE LMC (=)	110
ZERO FUEL WEIGHT Max. 167000	166890		
Takeoff Fuel (+)	33000		
TAKEOFF WEIGHT Max. 212000	199890		
Trip Fuel (−)	24000		
LANDING WEIGHT Max. 177000	175890	LMC Total +/−	216

LAST MINUTE CHANGES

Dest.	Specification	C/I/ Cpt	+/−	Weight
DXB	2 PAX	Y	−	156
DXB	BAG	4	−	60

Check LMC Total with Underload

Notes

Balance	Seating Conditions
DOI: 43	F: -
DLI: ~~45~~ 45	C: 39
LIZFW: ~~52~~ 52	Y: 62 46/68/~~64~~/52
Total Passengers ~~272~~ 270	Checked by Surin
Prepared by Namkhang	Approved by Anan

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PART 1: Addresses and Heading

1 PRIORITY

Priority indicator.

Example

QX
QU

2 ADDRESS(ES)

Teletype address(es) for load message.

Example

KIXKLTG

3 ORIGINATOR

7-letter group of originator.

Example

.LAXKLTG

4 RECHARGE

Recharge facility.

Example

.LAXKLTG AF/

5 DATE/TIME

Date and time group reference.

Example

151701

6 INITIALS

Operators' initials.

7 LDM

Standard identifier for loadmessage.

Note: Pre-printed text.

8 FLIGHT

Flight number/identifier according to Traffic Program Information (TPI).

Double designators, for example TGML are not permitted.

Notes:

1. *On through-processed flights, the offline flight number shall be shown after the online flight number separated by a forward slash (/).*
2. *2-letter airline code followed by maximum of 10 characters for flight identifier. A 2–5 character date may be included in these 10 characters. Date must be separated by a forward slash (/) from the flight number.*

Example

TG 775/19

9 A/C REG

Aircraft registration.

Note: No hyphen (-) to be shown, and/or transmitted.

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Example

HSTGZ

10 VERSION

Aircraft version code of aircraft used.

Example

74426

11 CREW

Number of crew, including working crew members occupying passenger seats. The first set of numbers indicates flight crew and the subsequent set cabin crew.

Note: Crew figures must be separated by a forward slash (/).

Example

4/18

12 DATE

Local date.

Example

19JAN01

PART 2: Operating Weight Calculations

13 BASIC WEIGHT/INDEX

Basic Weight and Index valid for the particular aircraft.

Note: See Fleet-Specific LCM, Chapter 8.2.1—Basic Weight and Index and enter weight and index.

14 CREW/INDEX

Weight and Index of crew members.

Note: See Fleet-Specific LCM, Chapter 8.2.2—Crew Weight and Index and enter weight and index.

15 PANTRY/INDEX

Weight and Index of pantry.

Note: See Fleet-Specific LCM, Chapter 8.2.3—Catering Weight and Index and enter weight and index.

16 ADDITIONAL CREW/INDEX

Weight and Index of additional or extra crew seating in crew rest area or passenger zone.

Note: See Fleet-Specific LCM, Chapter 8.2.2—Crew Weight and Index; Additional Crew Weight and Index and enter weight and index.

17 DRY OPERATINGWEIGHT/INDEX

Sum of items 13, 14, 15, 16 and index adjustment.Transfer figures to “Dry Operating Weight” box and “DOI” box under items 17 and 67.

18 TAKEOFF FUEL

The amount of fuel on board less taxi fuel.

Note: According to fuel order, takeoff fuel shall be obtained from flight crew or the dispatch office.

19 OPERATING WEIGHT

Sum of items 17 and 18.

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PART 3: Allowed Traffic Load Calculation

20 MAX WEIGHT FOR ZERO FUEL

Note: See Fleet-Specific LCM, Chapter 8.2.5—Gross Weight Limitations and enter weight.

21 MAX WEIGHT FOR TAKEOFF

Notes:
1. *The actual permissible weight for takeoff and landing may be less due to operational restrictions. Figures may be given by flight crew or dispatcher.*
2. *See Fleet-Specific LCM, Chapter 8.2.5—Gross Weight Limitations and enter weight.*

22 MAX WEIGHT FOR LANDING

Notes:
1. *The actual permissible weight for takeoff and landing may be less due to operational restrictions. Figures may be given by flight crew or dispatcher.*
2. *See Fleet-Specific LCM, Chapter 8.2.5—Gross Weight Limitations and enter weight.*

23 TRIP FUEL

The amount of fuel planned to be consumed by takeoff at the station of first intended landing.

Note: Figure shall be given by flight crew or dispatch office.

24 ALLOWED WEIGHT FORTAKEOFF

Use the lowest of 24a, b or c.

25 ALLOWED WEIGHT FORTAKEOFF

Difference between item 19 and the lowest of 24a, b or c. Transfer figure to “Allowed Traffic Load” box under item 25.

PART 4: Load Information per Destination and Totals

26 DEST

Airport of destinations. Use 3-letter IATA airport codes.

Note: Items 26 to 45 refer to an individual destination.

27 NO. OF PASSENGERS

Total number of transit passengers including PAD’s—a) Adults, b) Children, c) Infants.

28 NO. OF PASSENGERS

Total number of joining passengers including PAD’s—a) Adults, b) Children, c) Infants

29 NO. OF PASSENGERS

Total number of outgoing passengers: Sum of items 27 and 28 and LMC—a) Adults, b) Children, c) Infants

Example

.140/2/1
.229/3/1

Note: Zeros must be filled in if there is only deadload to a destination.

Example

.0/0/0

Note: If there is no traffic load to this destination, enter “NIL”. For example:

Example

.NIL

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30 CAB BAG

Weight of cabin baggage is not included instandard passenger weight. Split up in Transit, Joining and Total, including LMC.

Note: For THAI flights, weight of courier baggage, stretcher equipment, large articles and seeing-eye/hearing-aid dog in cabin are shown.

31 TOTAL TR

Weight of transit deadload.

Note: To be obtained from incoming load message or loadsheet.

32 TOTAL B

Weight of joining baggage excluding item 30.

33 TOTAL C

Weight of joining cargo.

34 TOTAL M

Weight of joining mail.

35 TOTAL E

Weight of joining equipment (Tare Weight of ULD and other extra equipment).

36 TOTAL .T

Total weight of deadload: Sum of items 31 to 35 and LMC.

37 DISTRIBUTION WEIGHT

Weight distribution of the different load categories per compartment and/or position of unitized load.

38

Total weight of deadload (transit deadload plus joining baggage, cargo, mail, equipment and LMC) per compartment and/or position of unitized load.

39 PAX FCY

Seat(s) occupied by transit passenger(s) per class, including PAD, BIS and COU (items 27a and b)

Note: To be obtained from incoming load message or loadsheet.

40

Seat(s) occupied by joining passenger(s) per class, including PAD, BIS and COU (items 28a and b)

41 .PAX/

Total number of seats occupied by outgoing passengers per class, including PAD, BIS, COU (items 39, 40) and LMC.

Example

.PAX/24/165
.PAX/10/33/260

The sequence of classes is shown in a descending order of priority, that is F-class/C-class/Y-class.

If there is no passenger in any existing classes, a zero must be transmitted.

Example

.PAX/0/23/260

No existing classes are to be omitted. This rule also applies if an aircraft having F, C and Y cabins is operated in an all Y configuration.

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42 PAX FCY

Seats occupied by transit PAD(s) per class.

Note: To be obtained from incoming Load message or Loadsheet.

43

Seats occupied by joining PAD(s) per class.

44 .PAD/

Total seats occupied by outgoing PAD(s) per class, including LMC. PAD information must always be shown when passengers are on board.

Example

.PAD/0/3
.PAD/0/1/6
.PAD/0/0/0

45

See General LCM, Chapter 15.6.1—Special Load Quick Reference Table or see General LCM, Chapter 17.9.2—Codes for Loads Requiring Special Attention for additional remarks.

Example

.COU/0/1.DIP/1

46

Total number of passengers: Sum of items 27 and 28a—Adults, b—Children, c—Infants.

Note: Items 46 to 51 refer to the total of all destinations.

47

Total weight of cabin baggage.

48

Total weight of deadload: Sum of items 31 to 35.

49

Total weight of deadload per compartment and/or position of unitised load

50

Total number of seats occupied by passenger per class: Sum of items 39 and 40.

51 TOTAL PASSENGER

Total passenger weight is calculated according to standard passenger weight. See General LCM, Chapter 10.2.1—Passengers and the figures of item 46a, b and c.

52 TOTAL TRAFFIC LOAD

Sum of items 47, 48 and 51.

53 UNDERLOAD BEFORE

Item 25 minus item 52 .

PART 5: Actual Gross Weight Calculation

54 ZERO FUEL WEIGHT

Actual Zero Fuel Weight: Sum of items 52 and 17.

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55 TAKEOFF WEIGHT

Actual Takeoff Weight: Sum of items 54 and 18.

56 LANDING WEIGHT

Actual Landing Weight: Item 55 minus item 23.

PART 6: Last Minute Changes (LMC)

See General LCM, Chapter 17.7—Last-Minute Changes (LMC's) on Loadsheet.

57 DEST

Destination of the last-minute load. Same codes must be used as stated in item 26.

58 SPECIFICATION

Kind of LMC.

Example

PAX, CARGO, MAIL, PAD, EIC

59 CL/CPT

Class, compartment and/or position of unitized load.

60 ± or PLUS/MINUS

Identification of onload or offload.

Note: On the All Cargo Aircraft Loadsheet, the identification for onload or offload must be written out in full, for example "plus" for onload, "minus" for offload.

61 WEIGHT

Weight of LMC stated in item 58.

62 LMC total ±

Identification of positive (+) or negative (–) LMC total. State plus or minus by encircling the applicable sign, that is ⊕ or ⊖.

63

Total weight of all LMC, difference between totals of positive and negative items 61.

Note: Check that underload is not exceeded. Correct balance and seating conditions (items 68 to 70). If the new figures in balance condition (DLI and LIZFW) are the same as the old figures, the latter must nevertheless be crossed out and the corrected figures reinstated. This is to show the P-i-C that balance conditions have been checked.

64 LMC ±

Standard designator and weight of last-minute changes. Item 64 equals 63.

(Also state whether plus or minus by encircling the applicable sign, that is ⊕ or ⊖.)

Note: All Passenger and AII Cargo Aircraft Loadsheets only

PART 7: Supplementary Information and Notes

65 SI

Supplementary information to be included in LDM—free format allowed.

Note: Any necessary information which may help next station(s) ahead.

66 NOTES

Information not transmitted with the LDM: Estimated flight time (optional).

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PART 8: Balance and Seating Conditions

Balance

Entry of balance conditions as calculated on the balance table.

67 DOI

Show DOI as obtained from item 17, no decimal point is required, as from 0.5 round-up, if it is less than 0.5 round-down to the nearest integer.

68 DLI

Deadload index as calculated on the balance table.

69 LIZFW

Load index zero fuel weight as calculated on the balance table.

70 SEATING CONDITIONS

Show number of seats occupied by passengers, BIS and COU in each class and section see General LCM, Chapter 17.6—Balance Table for instructions.

Note: On aircraft with more than one Y-class sections to be balanced, separated sections are shown as applicable. See General LCM, Chapter 17.6—Balance Table.

71 TOTAL PASSENGERS

Total number of passengers on board: Sum of items 46a, b, c and corrected figures, if any, for LMC.

72 PREPARED BY

Loadsheet agent's signature.

73 CHECKED BY

Load control supervisor's signature.

74 APPROVED BY

Signature of Pilot-in-Command.

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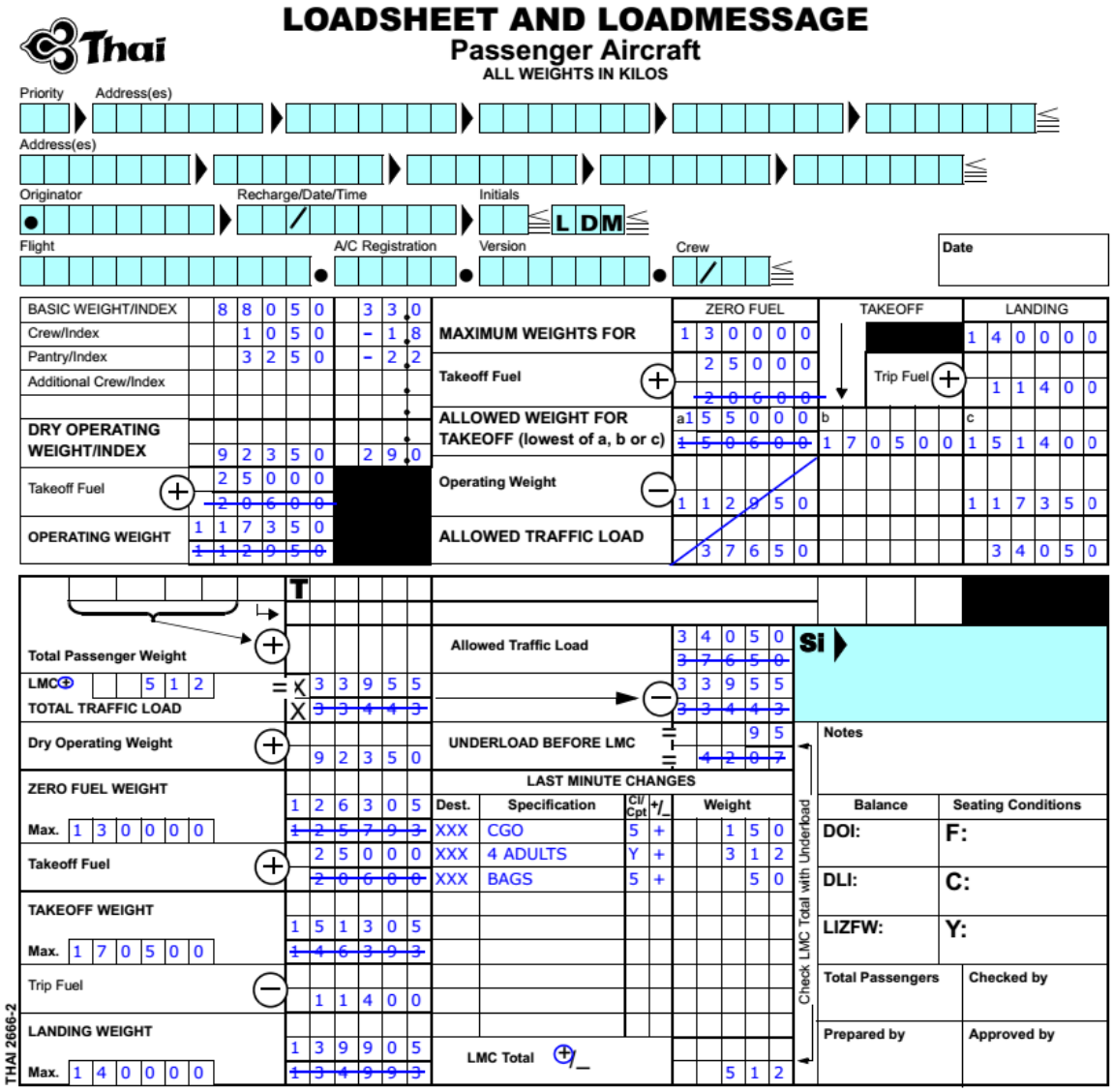
17.4.4 Completion of Special Cases

17.4.4.1 Correction to Takeoff Fuel

Cross out applicable figures and use spare lines. Insert new takeoff fuel under item 18. Calculate new items 19, 24a, 25, 53, 55 and 56.

Example



17.4.4.2 Correction to Trip Fuel

Insert new trip fuel under item 23 and calculate new items 24c, 25, 53 and 56.

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17.4.4.3 Calculation of DOW/DOI

Enter the published Basic Weight Index under item 13. Show the calculation of DOW/DOI under items 14, 15 and 16. Enter the result under item 17.

Example

BASIC WEIGHT/INDEX	1	7	3	3	0	0		9	6	.9
Crew/Index 3/18			1	5	7	5		-	1	.6
Pantry/Index WTGRP32			6	5	5	0		-	4	.6
Additional Crew/Index										.
Add 17XCR in Y-CL			1	2	7	5			1	.2
DRY OPERATING WEIGHT/INDEX										.
	1	8	2	7	0	0		9	1	.9

Notes	
Balance	**Seating Conditions**
DOI: 92	**F:**
DLI:	**C:**
LIZFW:	**Y:**

17.4.4.4 Recording of Courier Baggage—COU and Baggage in Seats—BIS

The weight of courier baggage and baggage loaded in passenger seats shall be shown under item 30 (cabin bag). The number of seats occupied by courier baggage and baggage shall be included under items 40, 41, 45, 50 and 70. Under item 45, the code COU and/or BIS shall appear as shown. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.

Example

Dest.	No. of Passengers				Cab Bag
	M	A /F	CH	INF	
MNL		167	8	1	130
		/	/		

Remarks					
PAX			PAD		
F	C	Y	F	C	Y
	26	151			

.PAX / / / .PAD / / /
.COU/1/0
.BIS/0/1

17.4.4.5 Recording of Seeing-Eye/Hearing-Aid Dog in Cabin—PET

When a seeing-eye/hearing-aid dog is carried in the cabin, a standard weight of 30 kg shall be shown under item 30 (cabin bag). Under item 45, the code PET shall appear as shown. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.

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Example

Dest.	No. of Passengers				Cab Bag
	M	(A) /F	CH	INF	
SIN		201	10	3	30

Remarks					
PAX			PAD		
F	C	Y	F	C	Y
	41	170			10

.PAX / / / .PAD / / /
.PET/1

17.4.4.6 Recording of Stretcher Case—BED

The weight of stretcher equipment shall be shown under item 30 (cabin bag). See General LCM, Chapter 9.3—List of Equipment. Balance influence shall be neglected. The number of seats occupied by the stretcher arrangement (BED) shall appear under item 45 as shown. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages, but note that the lying sick passenger must be included in PAX Y distribution.

Example

Dest.	No. of Passengers				Cab Bag
	M	(A) /F	CH	INF	
CCU		108	15	3	40

Remarks					
PAX			PAD		
F	C	Y	F	C	Y
	10	113			

.PAX / / / .PAD / / /
.BED/6/1Y

17.4.4.7 Recording of Additional Crew—XCR

The weight and index of additional crew shall be shown under item 16. The letters XCR followed by the number of seats occupied by additional crew shall be shown in the remarks column on the loadsheet of the destination where the additional crew will disembark (item 45), the code XCR shall appear as shown. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages and see General LCM, Chapter 10.1.1.2—Additional Crew Occupying Passenger Seats (XCR).

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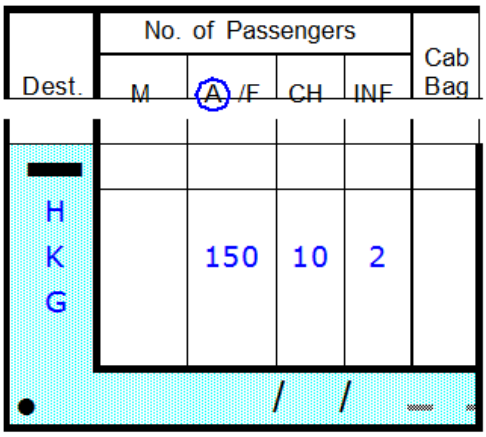
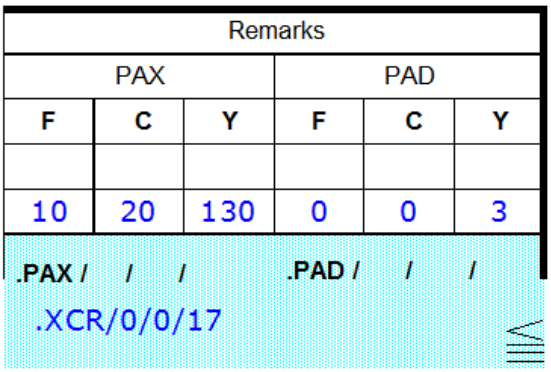
Example





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17.5 Loadsheet—EDP

17.5.1 General

17.5.1.1 Issue of EDP Loadsheets

At stations where Departure Control System (DCS) is used for check-in and weight & balance, the IATA standardized Electronic Data Processing (EDP) loadsheet may be issued instead of the manual loadsheet. See General LCM, Chapter 17.4—Loadsheet—Manual for information about the manual loadsheet.

17.5.1.2 Introduction of DCS Systems

If an airline or handling agent is introducing a DCS system for weight and balance purposes, EDP loadsheets shall not be accepted for THAI flights until approval has been given by Passenger Srvices System Support, Ground Customer Services Department. The Airport Services Manager shall advise BKKKG-I as early as possible of the intention to introduce a DCS system. BKKKG-I will furnish all basic data required to produce EDP loadsheets on the standardized data sheets recommended by the IATA Airport Handling Committee (AHC) in procedure AHM 560 or 565.

Prior to introduction of the system into service, a printout of the database and three EDP test-loadsheets per aircraft type showing different loads must be sent to BKKKG-I for checking and approval.

17.5.1.3 Basic Requirements

Before a loadsheet is printed, the system shall automatically check that:

- the max gross weights valid for the flight are not exceeded
- the appropriate weight capacity limitations for each compartment are not exceeded
- the center of gravity of the aircraft is within limits

  Note: Printout of the loadsheet should not be possible if the balance conditions (LIZFW) are outside the given limits.
- all information which is essential for the safe operation of a flight is inserted, for example, operating data, cargo and mail weights, transit load message, etc.

17.5.1.4 Updating of Database

Handling agents shall be advised through the Airport Services Manager of any changes affecting data stored in the database. Only in cases where several stations are connected to the same central DCS system, BKKKG-I will centrally update and notify the stations involved. Changes of basic weights and indices will be advised by revisions of the respective Aircraft Weight & Index. See Fleet-Specific LCM, Chapter 8.2.1—Basic Weight and Index or a temporary telex from BKKKG-M or the Altea AIS Page.

17.5.1.5 Accuracy of Balance Calculations

With DCS system, a more accurate balance calculation than manual balance tables can be achieved. Small deviations are therefore possible whenever a manual check is performed using the respective manual balance table. The following maximum deviations will be accepted when a manual check is made:

A/C types	DLI	LIZFW
747/777/787/A330/A350/A380	±3.0	±5.5
737	±2.0	±4.0

Note: BKKKG-I shall be informed if any difference exceeding these limits is discovered.

17.5.1.6 Training of DCS Systems

Airport Services Managers (ASMs) at stations where Altea system is available for check-in and weight & Balance may request training session for local staff at stations abroad or within Thailand from BKKKG-I (on demand basis).

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17.5.2 Responsibilities

17.5.2.1 General

To cover the various possibilities of Altea systems, that is decentralized input of data and loadsheet printout, the responsibility for a correct loadsheet must be shared between loadsheet agent and load control supervisor. The field of responsibility for each function. See General LCM, Chapter 17.5.2.2—Loadsheet Agent and see General LCM, Chapter 17.5.2.3—Load Control Supervisor below.

17.5.2.2 Loadsheet Agent

By initiating printout of the loadsheet or by releasing the loadsheet for printout, the loadsheet agent confirms that the following items are correct:

- flight number
- aircraft registration and version number
- number of crew
- DOW/DOI
- max gross weights.

Note: Corrections to the above listed items which may become necessary afterwards, must be carried out by either the loadsheet agent or the load control supervisor. In case the corrections are made by the load control supervisor, he/she will assume the responsibility for the items affected.

17.5.2.3 Load Control Supervisor

It is the duty of the load control supervisor to check and, if necessary, to amend the loadsheet in accordance with the regulations. See General LCM, Chapter 17.7—Last-Minute Changes (LMC's) on Loadsheet. Last-minute changes are to be conveyed to the flight crew either verbally or in writing.

The load control supervisor is responsible in particular for seeing that:

- the passenger figures tally with the figures established at the gate check
- the fuel figures correspond to the final quantities stated on the fueling order
- the load distribution figures match the equivalent figures on the loading report.

17.5.2.4 Signature

EDP loadsheets shall be signed by qualified load control supervisor and handed over to P-i-C. The signature does, however, not extend his/her field of responsibility beyond the items shown. See General LCM, Chapter 17.5.2.3—Load Control Supervisor above.

At some stations, EDP loadsheets shall be released by Loadsheet Agent/Load Control Supervisor whose name appears on Loadsheet and will be granted as his/her "Electronic Signature".

17.5.3 Stations Producing EDP Loadsheets

17.5.3.1 ALTEA System

The list of approved stations for computerized check-in and EDP loadsheet production on the ALTEA system shall be referred to BKKKG-I.

17.5.4 Completion

17.5.4.1 General

The EDP loadsheet shall correspond to IATA AHC standards for EDP loadsheet (Procedure AHM 517). It contains all information included in the manually completed loadsheet except the weight of deadload per category. Breakdown of load per destination is shown on the lower portion of the loadsheet.

17.5.4.2 Number of Copies

Prepare the loadsheet in no more than three folds. Distributions are as follows:

- Original for aircraft
- 1st copy for station file

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- 2nd copy for handling agent, if required.

17.5.4.3 Description of Loadsheet

The description is divided as follows:

PART 1 Heading

PART 2 Load and Distribution

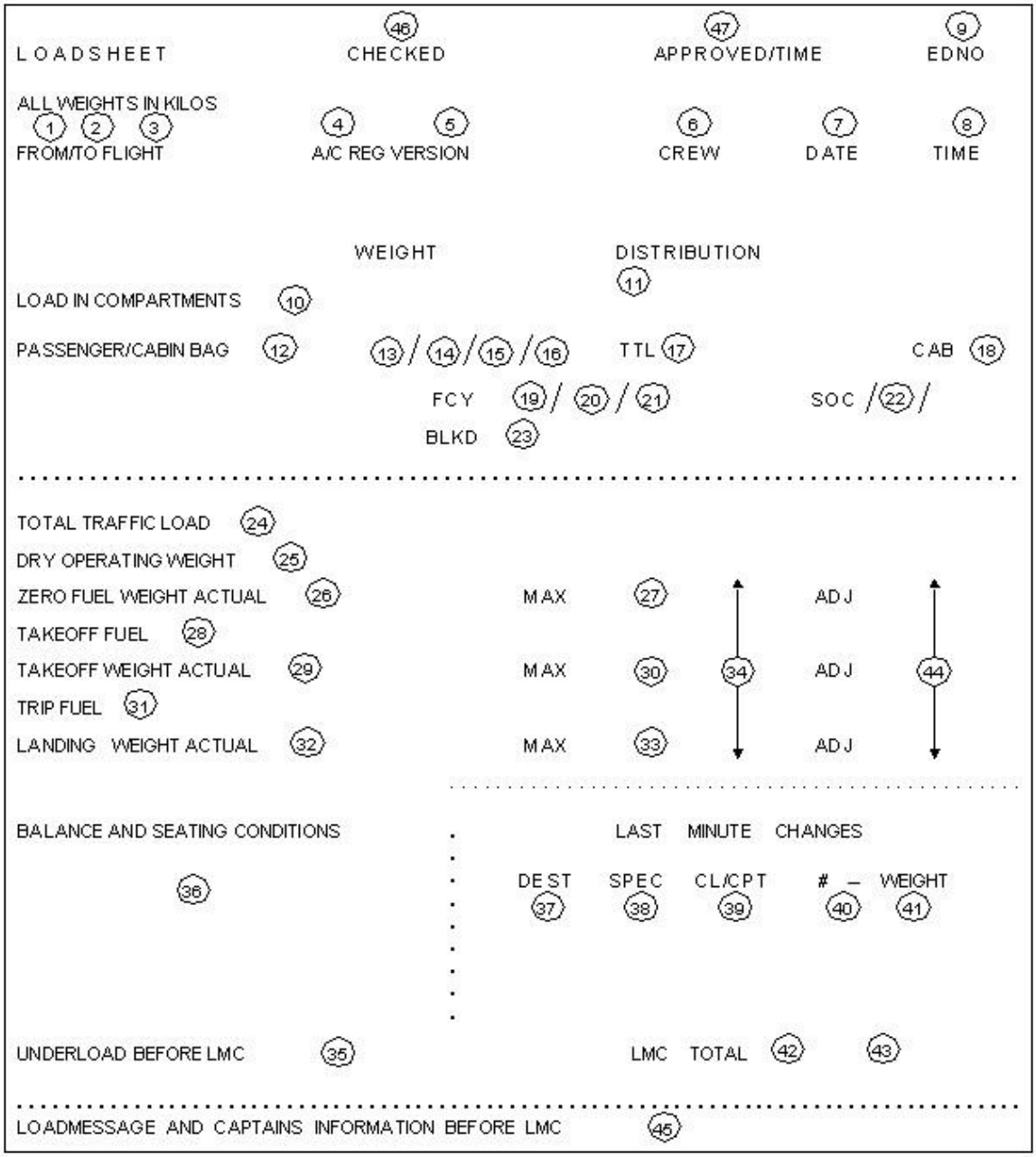
PART 3 Actual Gross Weight Calculation

PART 4 Balance and Seating Conditions

PART 5 Last Minute Changes (LMC)

PART 6 Load Message and Captain's Information Before LMC.

Description with Reference Numbers



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PART 1: Heading

1 FROM

3-letter IATA Airport Code of airport of movement.

Example

CGK LHR

2 TO

3-letter IATA Airport Code of station of first intended landing.

3 FLIGHT

Flight number/identifier according to Traffic Program Information (TPI) or Traffic Bulletin.

Example

TG910 TG8770

No space between Company designator and flight number.

4 A/C REG

Aircraft registration

Note: No hyphen (–) to be shown and/or transmitted.

5 VERSION

Aircraft version number according to fleet-specific LCM or incoming loadmessage/loadsheet.

Example

36R14 744196

6 CREW

Number of crew, including working crew members occupying passenger seats. First figure(s) indicates flight crew and subsequent figure(s) cabin crew.

Note: Crew numbers must be separated by a forward slash (/).

Example

2/7 4/18

7 DATE

Local date.

Example

15AUG94

8 TIME

4-figure value of local time that this edition was produced.

Example

0920
1215

9 EDNO

Edition number.

PART 2: Load and Distribution

10 LOAD IN

Total weight of all load in compartment(s) (sum of item 11).

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11 DISTRIBUTION

Total weight of load per compartment.

Note: The compartment number shall be separated from the weight by a forward slash (/) on plain paper loadsheet.

12 PASSENGER/CABIN BAG

Total weight of all passengers on board, based on figures of items 13, 15 and 16.

13

Total number of adult passengers, including PAD.

14

(Intentionally blank)

15

Total number of children

16

Total number of infants

17 TTL

Total number of passengers on board. Sum of items 13, 15 and 16.

18 CAB

Weight of cabin baggage.

Note: For THAI flights,weights of courier baggage (COU), stretcher equipment (BED), large articles (BIS) and seeing-eye/hearing-aid dog in cabin are shown.

19 PAX

Total number of seats occupied in F-Class including PAD COU and BIS.

20

Total number of seats occupied in C-Class including PAD COU and BIS.

21

Total number of seats occupied in Y-Class including PAD COU and BIS.

22 SOC

Seats occupied by cargo, baggage and/or mail per class.

Note: Not applicable to THAI.

23 BLKD

Fitted seats not available for passengers or SOC per class (for example, stretcher case, additional crew etc.)

24 TOTAL TRAFFIC LOAD

Sum of items 10 and 12.

PART 3: Actual Gross Weight Calculation

25 DRY OPERATING WEIGHT

Dry Operating Weight (DOW) valid for the particular aircraft and total number of crew.

Note: Enter weight as obtained from A/C Weight & Index. See Fleet-Specific LCM, Chapter 8.2.4 —Last Minute Corrections.

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26 TOTAL TRAFFIC LOAD

Sum of items 10 and 12.

27 MAX

Max zero fuel weight.

Note: Enter weight as obtained from applicable aircraft. See Fleet-Specific LCM, Chapter 8.2.6—Max Fuel Capacity.

28 TAKEOFF FUEL

According to fueling order.

29 TAKEOFF WEIGHT ACTUAL

Sum of items 26 and 28.

30 MAX

Max takeoff weight valid for the flight.

Note: This maximum weight is given by P-i-C or dispatcher.

31 TRIP FUEL

According to fueling order.

32 LANDING WEIGHT ACTUAL

Item 29 minus item 31.

33 MAX

Max landing weight valid for the flight.

Note: This maximum weight is given by P-i-C or dispatcher.

34

Indicator “L” showing which of the max gross weights is limiting the allowed traffic load.

35 UNDERLOAD BEFORE LMC

Difference between max and actual gross weight indicated by “L”.

PART 4: Balance and Seating Conditions

36 BALANCE AND SEATING CONDITIONS

Balance and seating conditions shall be printed in this space. See General LCM, Chapter 17.6—Balance Table for instructions.

The number of seats occupied in the different cabin sections shall be given as additional information. See General LCM, Chapter 17.6—Balance Table for instructions.

PART 5: Last Minute Changes (LMC)

37 DEST

Destination of the last-minute load. Same codes must be used as stated in loadmessage.

38 SPEC

Kind of LMC.

Example

PAX, CARGO MAIL

39 CL/CPT

Class, compartment and/or ULD position.

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40 ±

Identification of onload or offload.

Note: On the All Cargo Aircraft Loadsheet, the identification for onload or offload must be written out in full, for example "plus" for onload, "minus" for offload.

41 WEIGHT

Weight of LMC stated in item 38.

42 LMC TOTAL

Identification of positive (+) or negative (–) LMC total. State plus or minus by encircling the applicable sign, that is ⊕ or ⊖.

43 LMC TOTAL

Total weight of LMC, difference between the totals of positive and negative item 41.

44 ADJ

Space for gross weight calculations. See General LCM, Chapter 17.7—Last-Minute Changes (LMC's) on Loadsheet for instructions.

PART 6: Loadmessage and Captain's Information Before LMC

45 LOAD MESSAGE AND CAPTAIN'S INFORMATION BEFORE LMC

Text of load message without address part and any other information shall be printed in this space. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages for the format of the load message.

46 CHECKED

Loadsheet Agent and Load Control Supervisor's signature.

47 APPROVED

P-i-C's signature.

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17.5.5 Specimen

EDP Loadsheet—Completed

```
L O A D S H E E T        CHECKED       APPROVED       EDNO
ALL WEIGHTS IN KILOGRAMS   S MONGKOLDEJ                02

        CAPTAINS NAME   FC  NUTTAWAT  T.
FROM/TO FLIGHT     A/C REG  VERSION     CREW    DATE   TIME
BKK CDG TG930/27   HS-TUB   12F/60C/435Y 4/24    28DEC14 0040

                 WEIGHT         DISTRIBUTION
LOAD IN COMPARTMENTS     18633     1/  2999 2/  5944 3/  1560
                         4/  7309 5/   821 0/    0

PASSENGER/CABIN BAG      33246 401/ 21/  3    TTL 425 CAB 0
                      PAX  10/ 55/357 SOC   0/  0/  0
                      BLKD  0
TOTAL TRAFFIC LOAD       51879
DRY OPERATING WEIGHT     293450
ZERO FUEL WEIGHT ACTUAL 345329 MAX 361000  L   ADJ
TAKE OFF FUEL          163700
TAKE OFF WEIGHT  ACTUAL 509029 MAX 560000     ADJ
TRIP FUEL              151100
LANDING WEIGHT   ACTUAL 357929 MAX 386000     ADJ

BALANCE AND SEATING CONDITIONS .     LAST MINUTE CHANGES
BI     107.1   DOI     103.5 .DEST  SPEC    CL/CPT | - WEIGHT
DLI     94.2   LIZFW    97.2 .
MACZFW   34.7             .
A49.E10.B108.F55.C92.G41.D67  .
SEATROW TRIM              .
                        .
UNDERLOAD BEFORE LMC      15671.         LMC TOTAL
LOADMESSAGE AND CAPTAINS INFORMATION BEFORE LMC

TAXI FUEL  1000 TAXI WGT  510029 MAX   562000

-CDG.401/21/3.0.T18633.1/2999.2/5944.3/1560.4/7309.5/821
.PAX/10/55/357.PAD/0/0/1.HEA/22P/1.PER/24P.HEA/23P/1.RLI/21P.
DIP/21P/1.HEA/11/1.PER/13R

SI BW  284800  BI  107.1
SERVICE WEIGHT ADJUSTMENT WEIGHT/INDEX
ADD
NIL
DEDUCTIONS
NIL
CHECKED BAGGAGE PIECES CDG 3/Y/82 4/F/6/C/72/Y/297 5/F/3/T/14
PREPARED BY SANTI/MONGKOLDEJ  02 1370273
*** CRB 26 PCS. LDD BLK ***

AUTHORISED WEIGHTS USED FOR PASSENGERS CREW AND BAGGAGE


CDG   FRE   7553   POS    396   BAG   8658   TRA      0
```

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17.5.6 ACARS Loadsheet

17.5.6.1 Purpose

ACARS (Aircraft Communications Addressing and Reporting System) is the system connected to the avionics on the aircraft for the purpose of sending and receiving the message from ground to the aircraft and from the aircraft to ground.

For DCS, it is to instruct the system to transmit some essential information specified in computerized Loadsheet to be printed in cockpit, in place of printing it in back office and manual delivery to the aircraft as doing in these days. By using teletype network with type B, the message shall be dispatched to the aircraft via ACARS system.

The benefits in introducing ACARS Loadsheet to ground operation obviously adhere to:

- support the company policy for “On-Time Performance” as the Loadsheet could be automatically printed in the cockpit as soon as flight closed
- instantly inform the Pilot-in-Command of new Loadsheet if required, in the event of alterations for passenger or cargo’s figures incurred.

17.5.6.2 Issue of ACARS Loadsheet

At stations where TG Departure Control System (DCS) is issued for check-in and weight & balance, (TG online stations), ACARS loadsheet is produced for Load Control purpose. ACARS loadsheet consists of all necessary Load Control information as same as EDP loadsheet and issued by Load Control at each departing online stations. ACARS loadsheet is transmitted to aircraft via ACARS system.

17.5.6.3 TG/DCS Online Stations

See General LCM, Chapter 17.5.3—Stations Producing EDP Loadsheets for list of THAI/DCS online stations both International and Domestic stations.

Note: Altea online stations shall get approval from BKKKG-I before ACARS loadsheet implementation.

17.5.6.4 Aircraft with ACARS Facility

Following aircraft type and registration are equipped with ACARS facility:

Type	Registration
747-400	ALL
777-200/-200ER	ALL
777-300/-300ER	ALL
787	ALL
A380	ALL
A350-900	ALL
A330-300	ALL
737-400	Not available

17.5.6.5 Handling Procedures

ACARS loadsheet shall be transmitted to aircraft within 15 minutes prior to STD for International flight and within 10 minutes for Domestic flight.

Once ACARS loadsheet is transmitted, it will be automatically printed out except 777 that pilot needs to retrieve manually. P-i-C shall retrieve an extra copy and sign for approval on both copies.

17.5.6.6 Basic Requirements

See General LCM, Chapter 17.5.1.3—Basic Requirements.

17.5.6.7 Accuracy of Balance Calculations

See General LCM, Chapter 17.5.1.5—Accuracy of Balance Calculations.

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17.5.6.8 Responsibilities

17.5.6.8.1 General

ACARS loadsheet is responsible by Loadsheet agent/Load Control Supervisor. See General LCM, Chapter 17.5.2.1—General, see General LCM, Chapter 17.5.2.2—Loadsheet Agent and see General LCM, Chapter 17.5.2.3—Load Control Supervisor.

17.5.6.8.2 Signature

ACARS loadsheet is released by Loadsheet agent/Load Control Supervisor whose name appears on loadsheet and will be granted as his/her signature or so called “Electronic Signature”.

Once ACARS loadsheet needs to be corrected as LMC, responsible person with qualifications as stated is permitted to perform this duty with signature for the approval of correction. See General LCM, Chapter 4—QUALIFICATION REQUIREMENTS.

17.5.6.9 Aspect of ACARS Loadsheet and Message Transmission

17.5.6.9.1 ACARS Loadsheet

In order to establish ACARS Loadsheet, the stations must be TG/DCS online and flight must be weight & balance. See General LCM, Chapter 17.5.3—Stations Producing EDP Loadsheets.

The information shown on ACARS Loadsheet are extracted from the EDP Loadsheet and its description constitutes four parts as follows:

PART 1 Heading

PART 2 Weight and Balance Calculation

PART 3 Load and Distribution

PART 4 Name of P-i-C and the responsible Load Controller

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Description of ACARS Loadsheet

1	LOADSHEET FINAL 2343 EDNO1
2	TG930/27 28DEC14
3	BKK CDG HS-TUB 4/24
4	ZFW 345329 MAX 361000 L
5	TOF 163700
6	TOW 509029 MAX 560000
7	TIF 151100
8	LAW 357929 MAX 386000
9	UNDLD 15671
10	PAX/10/55/357 TTL 425
11	PAX 422 PLUS 3
12	BI 107.1
13	DOI 103.5
14	DLI 94.4
15	LIZFW 97.5
16	MACZFW 34.7
17	A49 E10 B108 F55 C92 G41 D67
18	SEATROW TRIM
19	CDG FRE 7553 POS 396 BAG 8658 TRA 0
20	SI BW 284800 BI 107.1
21	DOW 293450 DOI 103.5
22	SERVICE WEIGHT ADJUSTMENT WEIGHT/INDEX
23	ADD
24	NIL
25	DEDUCTIONS
26	NIL
27	LOAD IN CPTS 0/0 1/2999 2/5944 3/1560 4
28	/7373 5/757
29	FC NUTTAWAT T.
30	CHECKED BAGGAGE PIECES CDG 3/Y/82
31	CDG 4/F/9/C/72/Y/297 5/T/14
32	PREPARED BY SANTI/MONGKOLDEJ 02
33	1370273

PART 1: Heading

1

LOADSHEET Document type

FINAL Final loadsheet

2343 Time of printing

EDNO1 Edition number 1

2

TG930/27 Flight number/date of departure

28DEC14 Date of printing

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3

BKK Port of embarkation

CDG Station of first intended landing

HS-TUB Aircraft registration

4/24 Number of flight deck and cabin crew

PART 2: Weight and Balance Calculation

4

ZFW 345329 Actual Zero Fuel Weight

MAX 361000 L Maximum Zero Fuel Weight

Note: "L" is limited by allowed traffic load.

5

TOF 163700 Takeoff fuel

6

TOW 509029 Actual Takeoff Weight

MAX 560000 Maximum Takeoff Weight

7

TIF 151100 Trip Fuel

8

LAW 357929 Actual Landing Weight

MAX 386000 Maximum Landing Weight

9

UNDLD 15671 Underload before LMC

10

PAX/10/55/357 Passenger per class to destination

TTL 425 Total passenger to destination

11

PAX 422 Total seated passenger (adults and children)

PLUS 3 Total unseated passenger (infants)

12

BI 107.1 Basic Index

13

DOI 103.5 Dry Operating Index

14

DLI 94.4 Dead Load Index

15

LIZFW 97.5 Loaded Index at Zero Fuel Weight

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16

MACZFW 34.7 % MAC at Zero Fuel Weight

PART 3: Load and Distribution

17

A49 E10 B108 F55 C92 G41 D67 Seating Condition

18

SEATROW TRIM Balance calculation methodology

19

CDG Destination CDG

FRE 7553 Weight of cargo to destination

POS 396 Weight of postal mail to destination

BAG 8658 Weight of passenger baggage to destination

TRA 0 Weight of transit load to destination

20

SI Supplementary Information

BW 284800 Basic Weight of the aircraft

BI 107.1 Basic index of the aircraft

21

DOW 293450 Dry Operating Weight valid for the particular aircraft and total number of crew

DOI 103.5 Dry Operating Index

22

SERVICE WEIGHT ADJUSTMENT WEIGHT/INDEX Weight and index adjustment records

23

ADD Additional Items

24

NIL No items to add in this category

25

DEDUCTIONS Deduction Items

26

NIL No items to deduct in this category

27

LOAD IN CPTS 0/0 1/2999 2/5944 3/1560 4 Total weight of deadload and weight broken down per compartment

28

/7373 5/757 Total weight of deadload and weight broken down per compartment (continued)

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PART 4: Name of P-i-C and Responsible Load Controller

29

FC NUTTAWAT T. Name of P-i-C

30

CHECKED BAGGAGE PIECES CDG 3/Y/82 Number of checked baggage broken down per compartment

31

CDG 4/F/9/C/72/Y/297 5/T/14 Number of checked baggage broken down per compartment (continued)

32

PREPARED BY SANTI/ MONGKOLDEJ Name of Load Controller and LCS

02 Contact telephone number

33

1370273 Contact telephone number (continued)

17.5.6.9.2 Message Transmission

ACARS loadsheet is transmitted as a teletype message to a specific address provider (such as SITA, ARINC, AROTHAI, AVICOM) which will re-transmit this message to the aircraft.

Service provider

Service provider and its address for each area:

Area	Service provider	Address
Thailand	AROTHAI	BKKXCXA
Japan	AVICOM	TYOJZXH
Europe/Asia	SITA	QXSXMXS
Australia	SITA	QXSXMXS
USA	ARINC	DDLXCXA

Those addresses will be set in Telegraphic Address display of the departing station. The identifier is “ACA”, category “X”.

To display the address for a flight departs from BKK in UC mode:

Entry
TC/D/BKK/TG/X
Response
TELEGRAPHIC ADDRESS DISPLAY SIGNAL ADDRESSES BKK TG *TERMINAL 1* ACA (X) BKKXCXA

17.5.6.10 Number of Copies

Two ACARS loadsheets with P-i-C signature will be filed as follows:

- 1st copy in Load Control Folder (LCF).
- 2nd copy for station file.

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17.6 Balance Table

17.6.1 General

- See Fleet-Specific LCM, Chapter 8.2.7—Balance Table to be Used for balance calculation tables.
- Balance tables are printed on paper in pads of 100 sheets available at BKKWR-S or D1 intranet website under Load Control section for digital copy. Some versions of balance tables are available in digital format only.

17.6.2 Direction for Use

17.6.2.1 All Aircraft Types Except A380

Note: Balance tables are based on the principle that passengers are seated evenly throughout the cabin.

1. Enter the applicable Dry Operating Index in the DOI column.
2. Read off index corrections for actual amount of load in all compartments. Show these corrections in the applicable columns under DOI and calculate Dead Load Index (DLI) which shall be shown on loadsheets.
3. Read off the index corrections for actual number of seats occupied by passengers, BIS and COU in all classes and cabins respectively. Show these corrections in the applicable columns under DLI and calculate the Load Index Zero Fuel Weight (LIZFW), which shall be shown on loadsheets.
4. The LIZFW must be within the limits applicable for actual zero fuel weight.
5. If LIZFW intersects with the zero fuel weight within the shaded area, aircraft is out of balance limits and shift of load or use of ballast must take place.
6. Balance influence of stretcher transport. The patient shall be regarded as occupying one seat in the applicable section. One or two persons accompanying a sick passenger shall be regarded as occupying one or two seats in the applicable section respectively.
7. Read off the fuel index correction for the actual of take-off fuel.
8. Enter the fuel index value in balance calculation table to determine the LITOW.
9. Draw two horizontal lines according to the the actual zero fuel weight and actual take-off weight.
10. Draw two vertical lines according to the calculated LIZFW and LITOW.
11. Seating condition to be shown on the loadsheet shall be in the following ways:

A330

Balance	Seating Condition
DOI:	F: –
DLI:	C: 36
LIZFW:	Y: 60/48/56/58

A350

Balance	Seating Condition
DOI:	F: –
DLI:	C: 32
LIZFW:	Y: 159/130

787-8, 787-9

Balance	Seating Condition
DOI:	F: –
DLI:	C: 24, 30
LIZFW:	Y: 144/96, 144/124

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777

Balance	Seating Condition
DOI:	F: –
DLI:	C: 42
LIZFW:	Y: 60/48/56/58

737, A320

Balance	Seating Condition
DOI:	F: –
DLI:	C: 10
LIZFW:	Y: 41/39/40

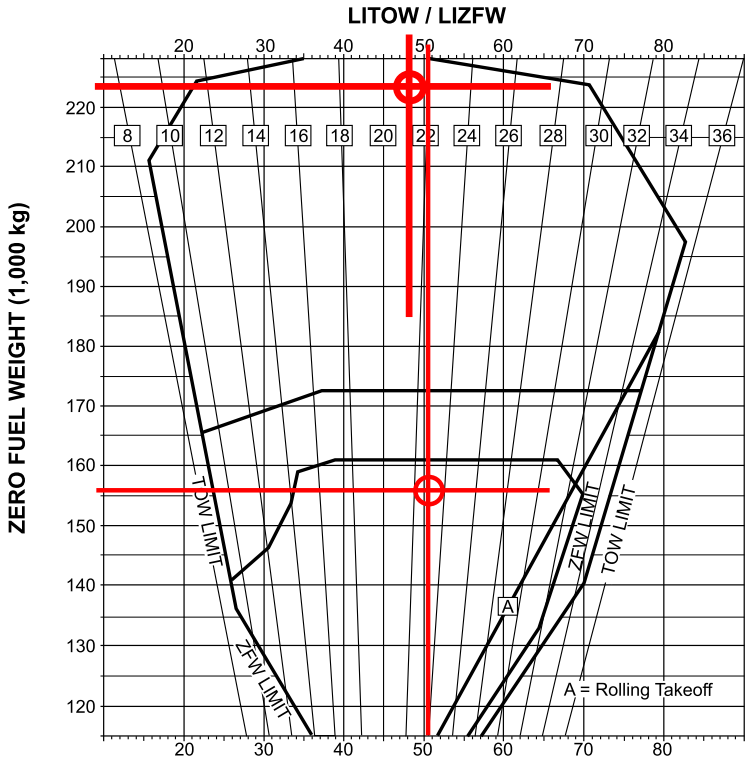
747

Balance	Seating Condition
DOI:	F: 5
DLI:	C: 28/32
LIZFW:	Y: 55/48

Balance Table Completion Example

BALANCE CALCULATION

	-	+	-	+
DOI		51		
COMPT 1	23			
COMPT 2	9			
COMPT 3		7		
COMPT 4		14		
COMPT 5		3		
TOTAL	32	75		
		32		
DLI		43		
CABIN A	4			
CABIN B	3			
CABIN C		15		
TOTAL	7	58		
		7		
LIZFW		51		
FUEL +(-)		3	+/-	
LITOW		48		



DOI = 51.0

Compt 1 = 7425 kg Cabin A = 18

Compt 2 = 5026 kg Cabin B = 101

Compt 3 = 4665 kg Cabin C = 86

Compt 4 = 5669 kg ZFW = 156970 kg.

Compt 5 = 725 kg Fuel = 65700

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17.6.2.2 A380

Note: Balance Tables are based on the principle that passengers are seated evenly throughout the cabin.

17.6.2.2.1 Version 3801 Page 1

1. Enter the applicable Dry Operating Index in the DOI column.
2. Read off the index corrections for the actual amount of load in Compartments 1, 2, 3 and 4. Show these corrections in the applicable columns under the DOI and calculate the Dead Load Index (DLI), which shall be shown on the loadsheet.
3. Read off the index corrections for the actual number of seats occupied by passengers, XCR and COU in C- and Y-cabins respectively. Show these corrections in the applicable columns under the DLI and calculate the Load Index Zero Fuel Weight (LIZFW), which shall be shown on the loadsheet.
4. The LIZFW must be within the limits applicable for the actual Zero Fuel Weight and the actual Takeoff Fuel.
5. If LIZFW intersects with Zero Fuel Weight within shaded areas or within the areas restricted by Takeoff Fuel limits, the aircraft is out of balance limits and shift of load must take place.
6. Balance influence of stretcher transport. The patient shall be considered as occupying one seat in the applicable section. One or two persons accompanying the sick passenger shall be considered as occupying one or two seats in the applicable section respectively.
7. Seating condition to be shown on the loadsheet shall be shown as follows:

Balance	Seating Condition
DOI: 101	F: 10
DLI: 80	C: 48
LIZFW: 79	Y: 64/96/81/61/46

17.6.2.2.2 Version 3801 Page 2

1. CG Targeting and Trim Adjustment

   If possible, aircraft shall be refueled to obtain 39.5%MAC take-off CG (TOCG).

   A380 has standard fuel algorithm for automatic refueling. Aircraft required ZFW CG and of total fuel onboard as input. Then aircraft will automatically distribute fuel between wing tanks and trim tank to obtain targeting TOCG.

   In case of refuel aircraft before loadsheet completed, which ZFW CG is the estimated value, recommend using default ZFW CG 33% for normal flight and 35% for ferry flight.
2. 39.5% CG Targeting Trim Adjustment (Table D)

   Table D provides amount of fuel in trim tank for various range of ZFW CG (%MAC) to obtain CG targeting at 39.5% TOCG.
3. Fuel Distribution Calculation (Table E)

   Read out amount of Trim Tank Fuel from table D, then subtract from total fuel onboard (FOB) to obtain amount of fuel in wing tanks.
4. Fuel Index Correction (Table F)

   Table F provides index correction for trim tank and total fuel in wing tanks based on standard fuel algorithm.

   However, fuel in wing tanks may be manually distributed differently from standard fuel algorithm. In this case, table G provides fuel index correction for each wing tank.
5. Non-Standard Fuel Distribution (Table G)

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The fuel index for each tank is provided in table G and also used for the trapped fuel index calculation.

6. LITOW Calculation (Table H)

   Use table H to calculate Loaded Index at Takeoff Weight (LITOW) upon standard or Non-standard fuel distribution.

7. TOCG and Stabilizer Setting (Table B and I)

   Plot the result of LITOW and TOW from table H on diagram B to obtain TOCG in %MAC. Then read out stabilizer setting from table I.

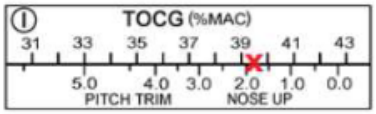
17.6.2.2.3 Calculation Example

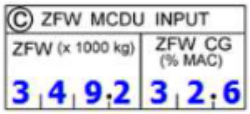
Version 3801 page 1: LIZFW Calculation

DOI 36

Compt 1 = 5,700 kg	CABIN A = 64
Compt 2 = 6,000 kg	CABIN B = 96
Compt 3 = 1,440 kg	CABIN C = 81
Compt 4 = 7,200 kg	CABIN D = 61
Compt 5 = 1,360 kg	CABIN E = 10
	CABIN F = 48
	CABIN G = 46

ZFW = 349,180 kg

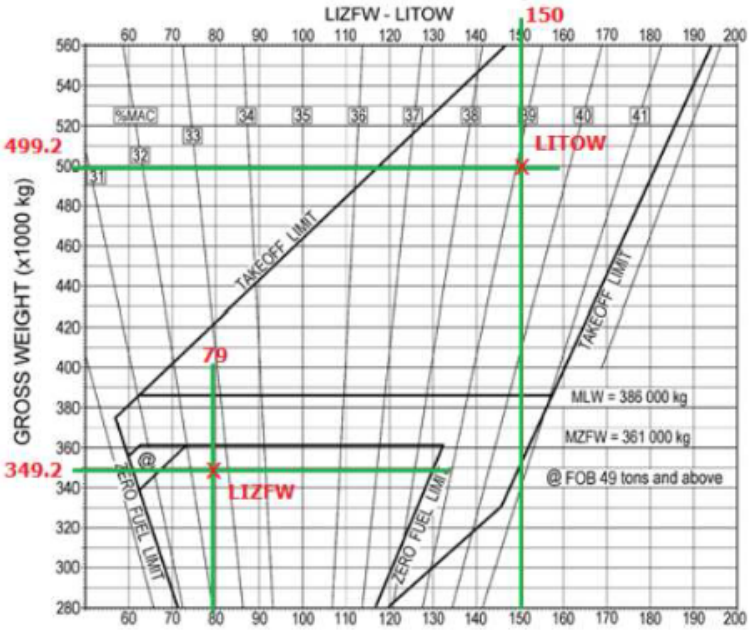




LIZFW CALCULATION Ⓐ

	−	+	−	+
DOI		101		
COMPT 1	27			
COMPT 2	18			
COMPT 3		2		
COMPT 4		17		
COMPT 5		5		
TOTAL	45	125		
		45		
DLI		80		
CABIN A	21			
CABIN B	11			
CABIN C		6		
CABIN D		15		
CABIN E	3			
CABIN F		1		
CABIN G		12		
TOTAL	35	114		
		35		
LIZFW		79		

CG ENVELOPMENT Ⓑ



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Version 3801 page 2: LITOW Calculation—Standard fuel distribution

NON-STANDARD FUEL DISTRIBUTION Ⓖ

FEED 1 or 4	
WEIGHT	INDEX
1 - 560	0
561 - 1 700	1
1 701 - 2 840	2
2 841 - 3 980	3
3 981 - 5 120	4
5 121 - 6 260	5
6 261 - 7 400	6
7 401 - 8 540	7
8 541 - 9 680	8
9 681 - 10 800	9
10 801 - 11 940	10
11 941 - 13 080	11
13 081 - 14 220	12
14 221 - 15 360	13
15 361 - 16 500	14
16 501 - 17 640	15
17 641 - 18 780	16
18 781 - 19 920	17
19 921 - 21 060	18
21 061 - 22 200	19
22 201 - FULL	20

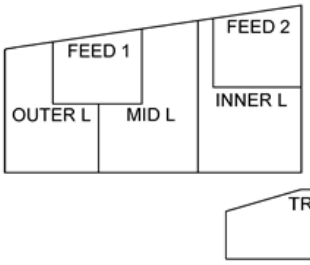
FEED 2 or 3	
WEIGHT	INDEX
1 - 400	- 0
401 - 1 200	- 1
1 201 - 2 020	- 2
2 021 - 2 820	- 3
2 821 - 3 620	- 4
3 621 - 4 420	- 5
4 421 - 5 240	- 6
5 241 - 6 040	- 7
6 041 - 6 840	- 8
6 841 - 7 660	- 9
7 661 - 8 460	-10
8 461 - 9 260	-11
9 261 - 10 060	-12
10 061 - 10 880	-13
10 881 - 11 680	-14
11 681 - 12 480	-15
12 481 - 13 280	-16
13 281 - 14 100	-17
14 101 - 14 900	-18
14 901 - 15 700	-19
15 701 - 16 500	-20
16 501 - 17 320	-21
17 321 - 18 120	-22
18 121 - 18 920	-23
18 921 - 19 740	-24
19 741 - 20 540	-25
20 541 - 21 340	-26
21 341 - 22 140	-27
22 141 - 22 960	-28
22 961 - FULL	-29

INNER L or R	
WEIGHT	INDEX
1 - 860	- 0
861 - 2 580	- 1
2 581 - 4 300	- 2
4 301 - 6 020	- 3
6 021 - 7 740	- 4
7 741 - 9 460	- 5
9 461 - 11 180	- 6
11 181 - 12 900	- 7
12 901 - 14 620	- 8
14 621 - 16 340	- 9
16 341 - 18 060	-10
18 061 - 19 780	-11
19 781 - 21 500	-12
21 501 - 23 220	-13
23 221 - 24 940	-14
24 941 - 26 660	-15
26 661 - 28 380	-16
28 381 - 30 100	-17
30 101 - 31 820	-18
31 821 - 33 540	-19
33 541 - 35 260	-20
35 261 - FULL	-21

MID L or R	
WEIGHT	INDEX
1 - 10 000	- 0
10 001 - FULL	- 1

OUTER L or R	
WEIGHT	INDEX
1 - 260	0
261 - 780	1
781 - 1 280	2
1 281 - 1 800	3
1 801 - 2 300	4
2 301 - 2 820	5
2 821 - 3 340	6
3 341 - 3 840	7
3 841 - 4 360	8
4 361 - 4 880	9
4 881 - 5 380	10
5 381 - 5 900	11
5 901 - 6 420	12
6 421 - 6 920	13
6 921 - 7 440	14
7 441 - 7 960	15
7 961 - FULL	16

- *Fuel Index for Individual Tank*
- *For Trim Tank, use standard table Ⓕ*
- *Do not use Ⓓ Ⓔ and wing tanks Ⓕ for non-standrad calculation*



⟸OR⟹

Ⓕ STANDARD DISTRIBUTION

WING TANKS	
WEIGHT	INDEX
5 000 - 10 000	- 3
10 001 - 15 000	- 4
15 001 - 20 000	- 6
20 001 - 25 000	2
25 001 - 35 000	8
35 001 - 40 000	6
40 001 - 45 000	3
45 001 - 50 000	- 0
50 001 - 55 000	- 1
55 001 - 60 000	- 2
60 001 - 65 000	- 3
65 001 - 70 000	- 4
70 001 - 75 000	- 5
75 001 - 80 000	- 6
80 001 - 85 000	- 7
85 001 - 90 000	- 8
90 001 - 95 000	- 9
95 001 -100 000	-10
100 001-110 000	-11
110 001-160 000	-12
160 001-162 000	-13
162 001-164 000	-14
164 001-166 000	-15
166 001-168 000	-16
168 001-169 500	-17
169 501-171 500	-18
171 501-173 500	-19
173 501-175 500	-20
175 501-177 500	-21
177 501-179 000	-22
179 001-181 000	-23
181 001-183 000	-24
183 001-184 500	-25
184 501-186 500	-26
186 500-188 000	-27
188 001-190 000	-28
190 001-191 500	-29
191 501-193 500	-30
193 501-195 000	-31
195 001-197 000	-32
197 001-198 500	-33
198 501-200 500	-34
200 501-202 000	-35
202 001-204 000	-36
204 001-205 500	-37
205 501-207 500	-38
207 501-201 000	-39
201 001-214 000	-41
214 001-216 500	-43
216 501-218 000	-41
218 001-219 000	-39
219 001-220 000	-37
220 001-221 000	-35
221 001-222 000	-33
222 001-223 000	-31
223 001- MAX	-30

TRIM TANK	
WEIGHT	INDEX
1 - 400	1
401 - 750	3
751 - 1 100	5
1 151 - 1 500	7
1 501 - 1 850	9
1 851 - 2 200	11
2 201 - 2 550	13
2 551 - 2 900	15
2 901 - 3 300	17
3 301 - 3 650	19
3 651 - 4 000	21
4 001 - 4 400	23
4 401 - 4 750	25
4 751 - 5 100	27
5 101 - 5 450	29
5 451 - 5 800	31
5 801 - 6 150	33
6 151 - 6 500	35
6 501 - 6 850	37
6 851 - 7 200	39
7 201 - 7 550	41
7 551 - 7 900	43
7 901 - 8 200	45
8 201 - 8 550	47
8 551 - 8 900	49
8 901 - 9 200	51
9 201 - 9 550	53
9 551 - 9 900	55
9 901 - 10 250	57
10 251 - 10 600	59
10 601 - 10 900	61
10 901 - 11 250	63
11 251 - 11 600	65
11 601 - 11 950	67
11 951 - 12 300	69
12 301 - 12 600	71
12 601 - 12 950	73
12 951 - 13 300	75
13 301 - 13 650	77
13 651 - 14 000	79
14 001 - 14 300	81
14 301 - 14 650	83
14 651 - 15 000	85
15 001 - 15 350	87
15 351 - 15 700	89
15 701 - 16 000	91
16 001 - 16 350	93
16 351 - 16 700	95
16 701 - 17 050	97
17 051 - 17 400	99
17 401 - 17 700	101
17 701 - 18 050	103
18 051 - 18 400	105
18 401 - 18 750	107
18 751 - 19 100	109
19 001 - MAX	111

39.5% TARGETING TRIM ADJUSTMENT Ⓓ

FOB	ZFW CG (%MAC) 31%	32%	33%	34%	35%	≥ 36%
	TRIM TANK FUEL					
47 000 - 60 000	* (13000)	* (12200)	* (10800)	* (9400)	* (7900)	* (6400)
60 001 - 65 000	13 800	12 400	11 100	9 600	8 200	6 800
65 001 - 70 000	14 000	12 600	11 400	9 800	8 400	7 000
70 001 - 75 000	14 300	12 900	11 600	10 100	8 700	7 300
75 001 - 80 000	14 500	13 100	11 900	10 300	8 900	7 500
80 001 - 85 000	14 800	13 400	12 100	10 600	9 200	7 800
85 001 - 90 000	15 000	13 600	12 400	10 800	9 400	8 000
90 001 - 95 000	15 300	13 900	12 600	11 100	9 700	8 300
95 001 - 100 000	15 600	14 100	12 900	11 300	9 900	8 500
100 001 - 105 000	15 800	14 400	13 100	11 600	10 200	8 800
105 001 - 110 000	16 100	14 700	13 400	11 900	10 400	9 000
110 001 - 115 000	16 300	14 900	13 600	12 100	10 700	9 300
115 001 - 120 000	16 500	15 200	13 800	12 300	10 900	9 400
120 001 - 125 000	16 700	15 300	14 000	12 500	11 000	9 600
125 001 - 130 000	16 900	15 500	14 100	12 600	11 200	9 800
130 001 - 140 000	17 200	15 700	14 300	12 800	11 400	10 000
140 001 - 150 000	17 400	16 000	14 500	13 000	11 600	10 100
150 001 - 160 000	17 600	16 100	14 700	13 200	11 800	10 300
160 001 - 170 000	17 700	16 300	14 900	13 400	11 900	10 500
170 001 - 175 000	17 900	16 400	15 200	13 600	12 400	11 000
175 001 - 180 000	18 100	16 800	15 700	14 100	12 900	11 500
180 001 - 185 000	18 600	17 300	16 300	14 700	13 400	12 000
185 001 - 190 000	18 900	17 800	16 800	15 200	13 900	12 500
190 001 - 195 000	MAX	18 400	17 300	15 700	14 400	13 100
195 001 - 200 000		18 900	17 800	16 200	14 900	13 600
200 001 - 205 000		MAX	18 300	16 700	15 400	14 100
205 000 - 210 000			18 800	17 200	15 900	14 600
210 001 - 215 000			MAX	17 700	16 400	15 100
215 001 - 220 000				18 200	16 900	15 600
220 001 - 225 000				18 800	17 300	16 000
225 001 - 230 000				MAX	17 800	16 500
230 001 - 235 000					18 300	15 500
235 001 - 240 000					16 600	14 500
240 001 - 245 000					16 000	14 500
245 001 - MAX	↓	↓	↓	↓	** (16100)	** (14700)

* TRIM TANK = FOB - 47000, but not more than (xxxx).
** TRIM TANK = FOB - MAX WING FUEL but not less than (xxxx).

MAX WING TANKS
- 0.78 = 233 881 kg
- 0.79 = 236 880 kg
- ρ 0.80 = 239 878 kg
- 0.81 = 242 877 kg
- 0.82 = 245 875 kg

FUEL DISTRIBUTION Ⓔ Ⓓ

FOB	150000
TRIM TANK −	145000
WING TANKS =	135500

MAX TRIM TANK
- 0.78 = 18 480 kg
- 0.79 = 18 720 kg
- ρ 0.80 = 18 940 kg
- 0.81 = 19 180 kg
- 0.82 = 19 430 kg

TOW-LITOW CALCULATION Ⓗ

TANK	WEIGHT (kg)	−	+
FEED 1		■	
FEED 2			■
FEED 3			
FEED 4		■	
OUTER L			
MID L			■
INNER L			
INNER R			
MID R			
OUTER R		■	

WING TANK	135500	+/−	12
TRIM TANK	145000		83
TAXI FUEL	-10000		■
T/O FUEL	149000	+ −	71
ZFW LIZFW	349180	+	79
TOW LITOW	498180		150

STANDARD — NON STANDARD FUEL DISTRIBUTION

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Version 3801 page 2: LTIOW Calculation—Non-standard fuel distribution

NON-STANDARD FUEL DISTRIBUTION Ⓖ

FEED 1 or 4	
WEIGHT	INDEX
1 - 560	0
561 - 1 700	1
1 701 - 2 840	2
2 841 - 3 980	3
3 981 - 5 120	4
5 121 - 6 260	5
6 261 - 7 400	6
7 401 - 8 540	7
8 541 - 9 680	8
9 681 - 10 800	9
10 801 - 11 940	10
11 941 - 13 080	11
13 081 - 14 220	12
14 221 - 15 360	13
15 361 - 16 500	14
16 501 - 17 640	15
17 641 - 18 780	16
18 781 - 19 920	17
19 921 - 21 060	18
21 061 - 22 200	19
22 201 - FULL	20

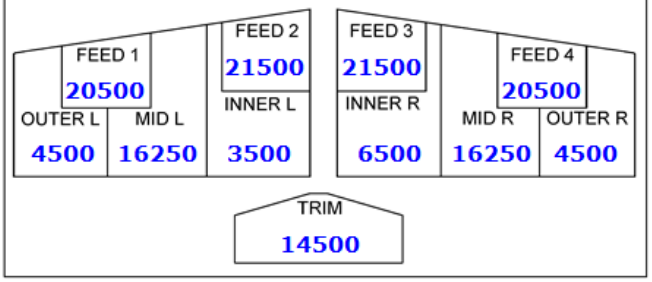
FEED 2 or 3	
WEIGHT	INDEX
1 - 400	- 0
401 - 1 200	- 1
1 201 - 2 020	- 2
2 021 - 2 820	- 3
2 821 - 3 620	- 4
3 621 - 4 420	- 5
4 421 - 5 240	- 6
5 241 - 6 040	- 7
6 041 - 6 840	- 8
6 841 - 7 660	- 9
7 661 - 8 460	-10
8 461 - 9 260	-11
9 261 - 10 060	-12
10 061 - 10 880	-13
10 881 - 11 680	-14
11 681 - 12 480	-15
12 481 - 13 280	-16
13 281 - 14 100	-17
14 101 - 14 900	-18
14 901 - 15 700	-19
15 701 - 16 500	-20
16 501 - 17 320	-21
17 321 - 18 120	-22
18 121 - 18 920	-23
18 921 - 19 740	-24
19 741 - 20 540	-25
20 541 - 21 340	-26
21 341 - 22 140	-27
22 141 - 22 960	-28
22 961 - FULL	-29

INNER L or R	
WEIGHT	INDEX
1 - 860	- 0
861 - 2 580	- 1
2 581 - 4 300	- 2
4 301 - 6 020	- 3
6 021 - 7 740	- 4
7 741 - 9 460	- 5
9 461 - 11 180	- 6
11 181 - 12 900	- 7
12 901 - 14 620	- 8
14 621 - 16 340	- 9
16 341 - 18 060	-10
18 061 - 19 780	-11
19 781 - 21 500	-12
21 501 - 23 220	-13
23 221 - 24 940	-14
24 941 - 26 660	-15
26 661 - 28 380	-16
28 381 - 30 100	-17
30 101 - 31 820	-18
31 821 - 33 540	-19
33 541 - 35 260	-20
35 261 - FULL	-21

MID L or R	
WEIGHT	INDEX
1 - 10 000	- 0
10 001 - FULL	- 1

OUTER L or R	
WEIGHT	INDEX
1 - 260	0
261 - 780	1
781 - 1 280	2
1 281 - 1 800	3
1 801 - 2 300	4
2 301 - 2 820	5
2 821 - 3 340	6
3 341 - 3 840	7
3 841 - 4 360	8
4 361 - 4 880	9
4 881 - 5 380	10
5 381 - 5 900	11
5 901 - 6 420	12
6 421 - 6 920	13
6 921 - 7 440	14
7 441 - 7 960	15
7 961 - FULL	16

- *Fuel Index for Individual Tank*
- *For Trim Tank, use standard table Ⓕ*
- *Do not use Ⓓ Ⓔ and wing tanks Ⓕ for non-standrad calculation*



⟸ OR ⟹

Ⓕ STANDARD DISTRIBUTION

WING TANKS	
WEIGHT	INDEX
5 000 - 10 000	- 3
10 001 - 15 000	- 4
15 001 - 20 000	- 6
20 001 - 25 000	2
25 001 - 35 000	8
35 001 - 40 000	6
40 001 - 45 000	3
45 001 - 50 000	- 0
50 001 - 55 000	- 1
55 001 - 60 000	- 2
60 001 - 65 000	- 3
65 001 - 70 000	- 4
70 001 - 75 000	- 5
75 001 - 80 000	- 6
80 001 - 85 000	- 7
85 001 - 90 000	- 8
90 001 - 95 000	- 9
95 001 -100 000	-10
100 001-110 000	-11
110 001-160 000	-12
160 001-162 000	-13
162 001-164 000	-14
164 001-166 000	-15
166 001-168 000	-16
168 001-169 500	-17
169 501-171 500	-18
171 501-173 500	-19
173 501-175 500	-20
175 501-177 500	-21
177 501-179 000	-22
179 001-181 000	-23
181 001-183 000	-24
183 001-184 500	-25
184 501-186 500	-26
186 500-188 000	-27
188 001-190 000	-28
190 001-191 500	-29
191 501-193 500	-30
193 501-195 000	-31
195 001-197 000	-32
197 001-198 500	-33
198 501-200 500	-34
200 501-202 000	-35
202 001-204 000	-36
204 001-205 500	-37
205 501-207 500	-38
207 501-201 000	-39
201 001-214 000	-41
214 001-216 500	-43
216 501-218 000	-41
218 001-219 000	-39
219 001-220 000	-37
220 001-221 000	-35
221 001-222 000	-33
222 001-223 000	-31
223 001- MAX	-30

TRIM TANK	
WEIGHT	INDEX
1 - 400	1
401 - 750	3
751 - 1 100	5
1 151 - 1 500	7
1 501 - 1 850	9
1 851 - 2 200	11
2 201 - 2 550	13
2 551 - 2 900	15
2 901 - 3 300	17
3 301 - 3 650	19
3 651 - 4 000	21
4 001 - 4 400	23
4 401 - 4 750	25
4 751 - 5 100	27
5 101 - 5 450	29
5 451 - 5 800	31
5 801 - 6 150	33
6 151 - 6 500	35
6 501 - 6 850	37
6 851 - 7 200	39
7 201 - 7 550	41
7 551 - 7 900	43
7 901 - 8 200	45
8 201 - 8 550	47
8 551 - 8 900	49
8 901 - 9 200	51
9 201 - 9 550	53
9 551 - 9 900	55
9 901 - 10 250	57
10 251 - 10 600	59
10 601 - 10 900	61
10 901 - 11 250	63
11 251 - 11 600	65
11 601 - 11 950	67
11 951 - 12 300	69
12 301 - 12 600	71
12 601 - 12 950	73
12 951 - 13 300	75
13 301 - 13 650	77
13 651 - 14 000	79
14 001 - 14 300	81
14 301 - 14 650	83
14 651 - 15 000	85
15 001 - 15 350	87
15 351 - 15 700	89
15 701 - 16 000	91
16 001 - 16 350	93
16 351 - 16 700	95
16 701 - 17 050	97
17 051 - 17 400	99
17 401 - 17 700	101
17 701 - 18 050	103
18 051 - 18 400	105
18 401 - 18 750	107
18 751 - 19 100	109
19 001 - MAX	111

MAX WING TANKS →
- 0.78 = 233 881 kg
- 0.79 = 236 880 kg
- ρ 0.80 = 239 878 kg
- 0.81 = 242 877 kg
- 0.82 = 245 875 kg

39.5% TARGETING TRIM ADJUSTMENT Ⓓ

FOB	ZFW CG (%MAC) 31%	32%	33%	34%	35%	≥ 36%
	TRIM TANK FUEL					
47 000 - 60 000	* (13000)	* (12200)	* (10800)	* (9400)	* (7900)	* (6400)
60 001 - 65 000	13 800	12 400	11 100	9 600	8 200	6 800
65 001 - 70 000	14 000	12 600	11 400	9 800	8 400	7 000
70 001 - 75 000	14 300	12 900	11 600	10 100	8 700	7 300
75 001 - 80 000	14 500	13 100	11 900	10 300	8 900	7 500
80 001 - 85 000	14 800	13 400	12 100	10 600	9 200	7 800
85 001 - 90 000	15 000	13 600	12 400	10 800	9 400	8 000
90 001 - 95 000	15 300	13 900	12 600	11 100	9 700	8 300
95 001 - 100 000	15 600	14 100	12 900	11 300	9 900	8 500
100 001 - 105 000	15 800	14 400	13 100	11 600	10 200	8 800
105 001 - 110 000	16 100	14 700	13 400	11 900	10 400	9 000
110 001 - 115 000	16 300	14 900	13 600	12 100	10 700	9 300
115 001 - 120 000	16 500	15 200	13 800	12 300	10 900	9 400
120 001 - 125 000	16 700	15 300	14 000	12 500	11 000	9 600
125 001 - 130 000	16 900	15 500	14 100	12 600	11 200	9 800
130 001 - 140 000	17 200	15 700	14 300	12 800	11 400	10 000
140 001 - 150 000	17 400	16 000	14 500	13 000	11 600	10 100
150 001 - 160 000	17 600	16 100	14 700	13 200	11 800	10 300
160 001 - 170 000	17 700	16 300	14 900	13 400	11 900	10 500
170 001 - 175 000	17 900	16 400	15 200	13 600	12 400	11 000
175 001 - 180 000	18 100	16 800	15 700	14 100	12 900	11 500
180 001 - 185 000	18 600	17 300	16 300	14 700	13 400	12 000
185 001 - 190 000	18 800	17 800	16 800	15 200	13 900	12 500
190 001 - 195 000	MAX	18 400	17 300	15 700	14 400	13 100
195 001 - 200 000		18 900	17 800	16 200	14 900	13 600
200 001 - 205 000		MAX	18 300	16 700	15 400	14 100
205 000 - 210 000			18 800	17 200	15 900	14 600
210 001 - 215 000			MAX	17 700	16 400	15 100
215 001 - 220 000				18 200	16 900	15 600
220 001 - 225 000				18 800	17 300	16 000
225 001 - 230 000				MAX	17 800	16 500
230 001 - 235 000					18 300	15 500
235 001 - 240 000					16 600	14 500
240 001 - 245 000					16 000	14 500
245 001 - MAX	↓	↓	↓	↓	* * (16100)	* * (14700)

* TRIM TANK = FOB - 47000, but not more than (xxxx).
* * TRIM TANK = FOB - MAX WING FUEL but not less than (xxxx).

TOW-LITOW CALCULATION Ⓗ

TANK	WEIGHT (kg)	−	+
FEED 1	20500		18
FEED 2	21500	27	
FEED 3	21500	27	
FEED 4	20500		18
OUTER L	4500		9
MID L	16250	1	
INNER L	3500	2	
INNER R	6500	4	
MID R	16250	1	
OUTER R	4500		9
		62	54
		↳-	62
WING TANK	135500	+/-	8
TRIM TANK	14500		83
TAXI FUEL	-10000		
T/O FUEL	149000	+/-	75
ZFW LIZFW	349180	+	79
TOW LITOW	498180		154

STANDARD ↑ NON STANDARD FUEL DISTRIBUTION ↓

FUEL DISTRIBUTION Ⓔ Ⓓ

FOB	
TRIM TANK	
WING TANKS =	

MAX TRIM TANK
- 0.78 = 18 480 kg
- 0.79 = 18 720 kg
- ρ 0.80 = 18 940 kg
- 0.81 = 19 180 kg
- 0.82 = 19 430 kg

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17.7 Last-Minute Changes (LMC's) on Loadsheet

17.7.1 General

As last minute changes (LMC) involves in weight and/or index adjustments to either load and/or fuel necessary to adjust the loadsheet after completion, hence a loadsheet must reflect the actual loading condition of an aircraft prior to takeoff. In order to comply with this, it is often necessary for LCS to correct loadsheet after completion. Such corrections are called Last-Minute Changes (LMC's), and are usually done at the aircraft side under the pressure of time. Thus a great care and attention are demanded from staff carrying out the corrections. Therefore, only personnel with the required qualifications as stated are permitted to perform this duty. See General LCM, Chapter 4—QUALIFICATION REQUIREMENTS.

17.7.2 Documents Required by Load Control Supervisor (LCS)

In order to carry out proper load control check and release, the Load Control Supervisor requires, in addition to loadsheet, the following documents:

- the completed and signed Loading Instruction Report
- Fueling Order showing the final amount of fuel uplifted.

17.7.3 Load Control Check and Release

The load control check shall be performed by Load Control Supervisor in accordance with Local Load Control Procedure (LLCP). See General LCM, Chapter 5—LOAD CONTROL PROCEDURES.

The load control is completed and the aircraft is released for departure (Load Control Release) when:

- the loadsheet issued for the flight concerned has been checked and, if necessary, corrected by the Load Control Supervisor in accordance with the instructions in item 4 below.
- the P-i-C has checked and signed the loadsheet for the flight concerned, and has been informed of any Last-Minute Changes, either verbally or in writing.

17.7.4 Deadline for Handing Over Loadsheet to Flight Deck Crew

The loadsheet shall be presented to the P-i-C, at the latest, five minutes prior to STD or ETD of the flight concerned. Last-Minute Changes need not be entered on the loadsheet before it is handed over to the crew, however, Load Control Supervisor shall check any mistakes on the loadsheet and ensure whether fuel figures correspond to those shown on the Fueling Order before presenting the loadsheet to the P-i-C.

Any discrepancies associated with the accuracy of the final weight and balance figures for a flight must be provided the information to flight crew and station manager without delay.

17.7.5 Principles

When entering LMC's on a loadsheet, it must be ensured that:

- the maximum gross weights applicable for the flight are not exceeded
- the weight limitations per compartment and, if applicable, the combined load limitations, or ULD position are not exceeded
- the total weight of a positive (+) LMC total must not exceed the available underload before LMC
- the center of gravity remains within allowed limits.

17.7.6 Procedures

Entries and corrections on a loadsheet shall be made as follows:

Traffic load

Last-Minute Changes in traffic load shall be entered in the LMC box on loadsheet. The entries shall be made according to the instructions. See General LCM, Chapter 17.4.3.3—Completion of Loadsheet (PART 6). See General LCM, Chapter 17.5.4.3—Description of Loadsheet (PART 5). Subsequent corrections to the previously calculated zero fuel, takeoff and landing weights may be made, if time permits.

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Fuel

Last-Minute Changes in takeoff fuel and trip fuel must not be entered in the LMC box on loadsheet. In order to ensure that the maximum gross weights are not exceeded, the previously calculated takeoff and/or landing weights must be adjusted by the amount of fuel LMC. These adjustments must be carried out irrespective of whether the new takeoff or trip fuel figures are higher or lower than the previous figures.

Traffic load and fuel

If the LMC consists of fuel and traffic load changes, the zero fuel weight must be adjusted by the total weight of the traffic load LMC, and the takeoff and landing weights shall be recalculated with the new fuel figures. See General LCM, Chapter 17.4.4.1—Correction to Takeoff Fuel for example.

Note: Changes in the fuel figures may affect the previously calculated underload. This figure can, therefore, no longer be taken as the applicable limitation for LMC in fuel and/or traffic load. Consequently, the actual gross weights must be recalculated and checked against their corresponding maxima.

Balance Corrections

The balance table shall be adjusted by the total weight of the traffic load LMC, and the balance and/or seating condition boxes on the loadsheet must be adjusted.

Note: If the new figures in balance condition (DLI and LIZFW) are the same as the old ones, the old figures on loadsheets must nevertheless be crossed out and the corrected figures reinstated. This is to show flight deck crew that balance conditions have been checked.

17.7.7 Deadload Crosscheck and Tolerances

As standard weights for baggage are used on loading report, the Load Control Supervisor may use the following tolerances when performing deadload cross-check:

747/777/787/A330/A350/ A380:	1,000 kg
737:	250 kg

1. Load Control Supervisor has to compare the compartment totals shown on loadsheet with those of loading report. The differences between these are to be added up irrespective of the plus (+) or minus (–) sign. The sum should not exceed the tolerance for each aircraft type as shown above.
2. If the sum is below the tolerance given for the respective aircraft type, loadsheet is to be adjusted by entering the differences in LMC box.
3. In case the sum exceeds the tolerance, the reason for deviations must be clearly established before any entries are made in LMC box. The following checks may be applied to establish the cause:
   - check the actual onload according to loading report against loading instruction
   - check the accuracy of calculations on loading report against loadsheet
   - compare the weights of various load categories, and/or the total load per destination in the respective compartments shown on loadsheet with those on loading report.

Example: 787

Compartment	1	2	3	4	5	
Loadsheet	5099	5149	3200	3111	1140	
Loading Report	5049	5149	3300	3350	938	
Difference	50	0	100	239	202	= 591 kg

The sum of the difference is below the tolerance for 787, so release aircraft and, if time permits, correct loadsheet in LMC box Compt 4+200 kg and Compt 5–200 kg deadload.

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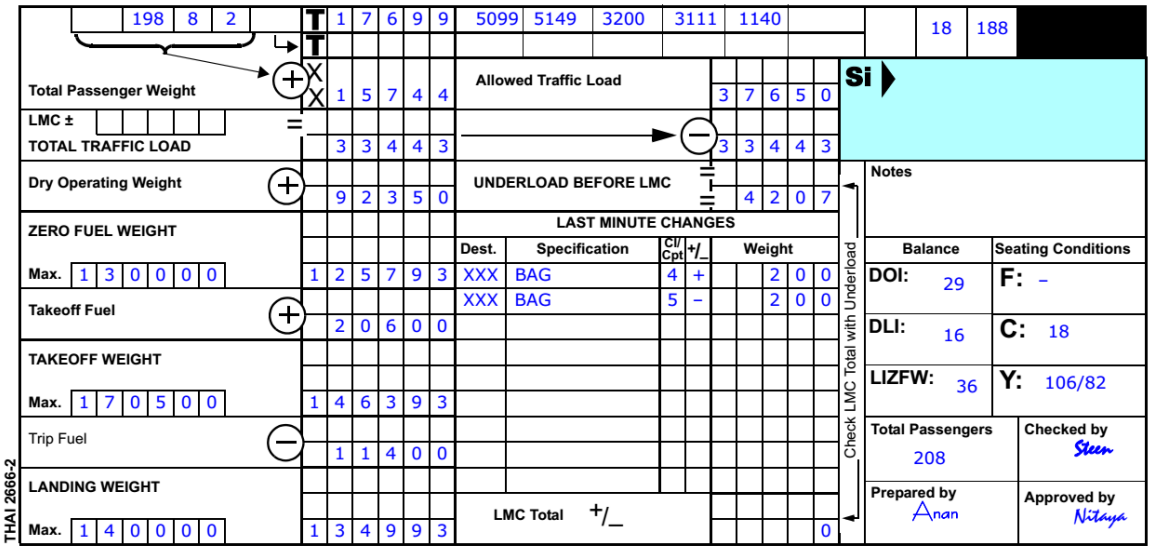
Example



17.7.8 Procedure After the Completion of LMC's

The corrected loadsheet copy(ies) as well as the signed loading report and fueling order must be returned to the Traffic or Load Control office for filing.

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17.8 Fuel Weight and Index Correction

17.8.1 Calculation of Additional Fuel

To calculate additional fuel, the following rule shall be used:

If takeoff or landing weight is a limiting factor, only the actual underload ±LMC shall be used for additional fuel. If zero fuel weight is limited, the lowest of takeoff or landing weight minus actual takeoff weight shall be used.

Note: Calculation of additional fuel must be done with due consideration to LMC.

Example

See General LCM, Chapter 17.4.4.1—Correction to Takeoff Fuel.

In this example, zero fuel weight is the limiting factor. As landing weightis lower than takeoff weight, the following calculations can be made:

24(c)		151400
Actual Takeoff Weight	146393	
LMC	+ 512	
	146905	–146905
Additional Fuel		4495
Previous Takeoff Fuel		+ 20600
Max Takeoff Fuel		25095

Note: For practical reason, Max Takeoff Fuel will be 25,000 kg.

17.8.2 Calculation of Trapped Fuel

17.8.2.1 General

When dispatch the aircraft with trapped fuel in any tank(s) under MEL (Minimum Equipment List) operational procedure, the amount of trapped fuel shall be considered as unusable fuel and part of Zero Fuel Weight (ZFW) included in Dry Operating Weight (DOW), it is should be taken into account for the index/CG determination.

17.8.2.2 Definition

“Trapped Fuel” refers to trapped fuel in any fuel tank(s) of aircraft caused by fuel pump failure or fuel valve failure or fuel system failure.

17.8.2.3 Procedure

To calculate trapped fuel weight and index on loadsheet the following method shall be applied.

1. New loadsheet shall be issued.
2. The amount of trapped fuel in each tank(s) shall be included in aircraft Dry Operating Weight (DOW).
3. The index correction of trapped fuel in any tank(s) shall be calculated according to table of trapped fuel index correction for aircraft Dry Operation Index (DOI) calculation. See General LCM, Chapter 17.8.2.4—Table of Trapped Fuel Index Correction.

17.8.2.4 Table of Trapped Fuel Index Correction

See Fleet-Specific LCM, Chapter 8.2.8—Trapped Fuel Index Correction for the fleet-specific tables of trapped fuel index correction.

Example

Fuel trapped in	Index correction per 100 kg
Center tank	–0.073 I.U.

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Fuel trapped in	Index correction per 100 kg
Tail tank	+0.410 I.U.

Note: The amount of trapped fuel shall be considered as unusable fuel and included in DOW and DOI.

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17.9 Handling/Load Information Codes To Be Used in Traffic Documents and Messages

17.9.1 Load Information/Volume Codes

The codes listed below shall be used to identify load categories and give information in connection with compartment and ULD handling and loading.

Note: Some codes, being standard IATA codes, are not currently used by THAI. These codes are shown within brackets ( ).

17.9.1.1 Load Information Codes

B Baggage not otherwise specified

C Cargo

D Crew baggage

E Equipment, for example, unmanifested flight spares, in compartment

(F) First class baggage and/or priority handled baggage

C Royal Silk class baggage

H ULD and/or its load to be transshipped to a connecting flight (onward destination and/or flight to be shown in SI element on CPM)

L Local load. This code shall be used in conjunction with other appropriate load code, for example, BL: Baggage Local.

M Mail

N No ULD at position (No Fit)

F Royal first class baggage

Q Courier baggage

S Sort on arrival. Ddescribes a rummage container, that is contents of different categories and online destinations.

T Load for transfer to various connecting flights, This code shall be used in conjunction with another appropriate load code, for example, BT: Baggage Transfer.

U Unserviceable ULD

(W) Cargo in security controlled ULD

X Empty ULD

(Z) Load deliberately mixed by destinations when these destinations are known to be beyond a planned reloading station.

17.9.1.2 ULD Load Volume Codes

0 No volume available

1 Quarter (¼) volume available

2 Half (½) volume available

3 Three-quarters (¾) volume available

To be used in CPM message for container load and bulk load on multisector flights.

Example

12L/AKE/NRT/850/C In Compt 1, lateral row two, left hand side; there is for Tokyo (Narita Airport) a full container of cargo

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22R/AKE/LAX/380/BT2 In Compt 2, lateral row two, right hand side; there is, for Los Angeles, a container with transfer baggage and more than half of the volume is available.

17.9.2 Codes for Loads Requiring Special Attention

17.9.2.1 Identification Codes

The codes shown below shall be entered on the loadsheet and loadmessage (LDM) on 737 aircraft and container/pallet message (CPM) on 747/777/787/A330/A350/A380 aircraft.

When used on loadsheet/loadmessage (LDM) on 737 aircraft, the codes (and the details) are entered as follows:

- in the “Remarks” box of the respective destination
- each code must be preceded by a full stop. The code is followed by an forward slash (/) if further loading details are to be shown.

  Example

  .FIL/3 .RRY/1/4
- for dangerous goods, if restrictions based on total quantity apply, quantity shall be shown in the “SI” box together with the Cargo IMP code, when necessary.

Note: Some codes, while being standard IATA codes, are not currently used by THAI. These are shown within brackets ( ).

17.9.2.2 Table of Codes

Code	Description	Example	
		LDM	CPM
AMK	Additional Airborne Maintenance Kit	.AMK/31L/213	–31L/ E.AMK/ 213
AOG	Spare Parts required for Aircraft on Ground	.AOG/53	–53/C.AOG
AVI	Live Animals	.AVI/21P	–21P/C.AVI
BAL	Ballast Compt Loaded (unmanifested) The loading position shall be followed by an oblique and the weight.	.BAL/1/500	N/A [a)]
BED	Stretcher Cabin Loaded (unmanifested) 1 numeric to indicate the total number of seats blocked by the stretcher arrangement followed by an oblique and one numeric plus the alpha character “Y” to indicate the number of lying sick passenger traveling on the seats. The lying sick passenger must be included in the PAX Y distribution.	.BED/6/1Y	N/A [a)]
(BEH)	Stretcher Compt Loaded (unmanifested)	.BEH/53/40	–53/ E.BEH/40
BIG	An item loaded on two or more pallets or which, due to its size or weight, requires special handling/equipment for loading and offloading. The code shall be followed by an oblique and the weight. *Notes: 1. The code BIG is applicable only to loads on pallets.* *2. Floating pallets are to be treated as BIG.*	N/A [a)]	–21P/22P/ C .BIG/3500
BIS	Baggage in Seats The code shall be followed by an oblique and a numeric to indicate the number of seats occupied in each class separated by obliques. These seats must be included in the PAX distribution.	.BIS/0/1 .BIS/0/1/0	N/A [a)]
(CAO)	Dangerous Goods Cargo Aircraft Only (labeled)	N/A [a)]	N/A [a)]
COM	Company mail (unmanifested)	.COM/42R/10	–42R/ M.COM/10

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Code	Description	Example	
		LDM	CPM
	The loading position or code shall be followed by an oblique and the weight.		
COU	Courier Baggage The code shall be followed by an oblique and a numeric to indicate the number of seats occupied in each class separated by obliques. These seats must be included in the PAX distribution.	.COU/0/2 .COU/0/1/0	N/A [a)]
(DHC)	Crew positioning to/from duty not directly involved in the operation of the flight, who are occupying passenger seats.	N/A [a)]	N/A [a)]
DIP	Diplomatic Mail The code shall be followed by an oblique and the number of bags.	.DIP/2	N/A [a)]
EAT	Foodstuffs for human consumption other than meat and fish/seafood, as specific handling codes are designated for such codes.	.EAT/13P	–13P/C.EAT
EIC	Equipment in Compartment (unmanifested) Miscellaneous equipment not included in Dry Operating Weight/ Index. The loading position shall be followed by an oblique and the net weight.	.EIC/43R/100	–43R/ C.EIC/100
(ELD)	Extra Load Devices	N/A [a)]	N/A [a)]
FIL	Undeveloped Film/Unexposed Film	.FIL/53	–53/C.FIL
(FKT)	Flight Kit (unmanifested) e.g. additional AMK.	N/A [a)]	N/A [a)]
HEA	Heavy Cargo (above 150 kg per piece) The loading position or code shall be followed by an oblique and the weight. *Notes:* 1. *For Heavy cargo above 150 kg per piece loaded on pallets or in containers, the code HEA is not required.* 2. *Two or more heavy pieces in the same compartment (bulk load only) need to be shown individually.*	.HEA/51/160	–51/ C.HEA/160
HEG	Hatching Egg	.HEG/1	–11L/C.HEG
HUM	Human Remains in Coffin The loading position or code shall be followed by an oblique and the weight. *Note: The code HUM is not required for funeral urns.*	.HUM/33/160	–33/ C.HUM/160
ICE	Dry Ice/Carbon dioxide, solid	.ICE/1	–11R/C.ICE
LHO	Live Human Organ/Blood	.LHO/53	–53/C.LHO
(MOS)	Miscellaneous Operational Staff other than crew, who perform functions relating to the flight and occupy passenger seat e.g. Ground Engineer or Flight Clerk. *Note: MOS are included in the passenger figures.*	N/A [a)]	N/A [a)]
OBX	Obnoxious deadload producing strong offensive odour.	.OBX/21P	–21P/C.OBX
OHG	An item loaded on one or more pallets that overhangs position(s) other than those on which it is loaded. The code shall be followed by an oblique and the position and length of overhang in cm.	N/A [a)]	–21P/ C.OHG/22P48
PAD	Passengers not entitled to a firm booking, who may be offloaded at a station en route to their ticketed destination in order to accommodate joining passengers who have higher priority. The code shall be followed by an oblique and a numeric to indicate the number of seats occupied in each class separated by obliques.	.PAD/0/2 .PAD/0/0/2	N/A [a)]

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Code	Description	Example	
		LDM	CPM
PEF	Flower	.PEF/11L	–11L/C.PEF
PEM	Meat	.PEM/21P	–21P/C.PEM
PER	All perishable cargoes other than flowers, meat and fish/seafood as individual handling codes are designated for such codes.	.PER/31P	–31P/C.PER
PES	Seafood/fish for human consumption.	.PES/21P	–21P/C.PES
PET	Seeing-Eye/Hearing-Aid Dog in cabin. The code shall be followed by an oblique and the number of dogs.	.PET/1	N/A [a)]
RCL	Cryogenic Liquids (refrigerated liquified gases)	.RCL/53	–53/C.RCL
RCM	Corrosive (labeled)	.RCM/21P	–21P/ C.RCM
RDS	Biological substance, category B (VN3373) (labeled)	N/A [a)]	N/A [a)]
(REX)	Normally forbidden explosive (1.1, 1.2, 1.3, 1.4F, 1.5 and 1.6) (labeled)	N/A [a)]	N/A [a)]
RFG	Flammable Compressed Gas (labeled)	.RFG/21P	–21P/C.RFG
RFL	Flammable Liquid (labeled)	.RFL/21P	–21P/C.RFL
RFS	Flammable Solid (labeled)	.RFS/21P	–21P/C.RFS
RFW	Dangerous When Wet (labeled)	.RFW/31P	–31P/ C.RFW
RIS	Infectious Substance, Category A (labeled)	.RIS/21P	–21P/C.RIS
RMD	Miscellaneous Dangerous Goods	N/A [a)]	N/A [a)]
RNG	Non-Flammable Compressed Gas (labeled)	.RNG/31R	–31R/ C.RNG
ROP	Organic Peroxide (labeled)	.ROP/31R	–31R/ C.ROP
ROX	Oxidizer (labeled)	.ROX/21P	–21P/C.ROX
RPB	Poison (labeled)	.RPB/21P	–21P/C.RPB
RPG	Toxic Gas (labeled)	.RPG/31P	–31P/C.RPG
RRY	Radioactive Categories II and III–yellow (labeled) The loading position or code shall be followed by an oblique and numeric to indicate the sum of transport indexes.	.RRY/2/3 or .RRY/21P/3	–21P/ C.RRY/6
RSB	Polymeric Beads (labeled) The loading position or code shall be followed by an oblique and the weight.	.RSB/51/100	–51/ C.RSB/100
RSC	Spontaneously Combustible (labeled)	.RSC/21P	–21P/C.RSC
(RXB)	Explosive 1.4B (labeled)	N/A [a)]	N/A [a)]
(RXC)	Explosive 1.4C (labeled)	N/A [a)]	N/A [a)]
(RXD)	Explosive 1.4D (labeled)	N/A [a)]	N/A [a)]
(RXE)	Explosive 1.4E (labeled)	N/A [a)]	N/A [a)]
(RXG)	Explosive 1.4G (labeled)	N/A [a)]	N/A [a)]
RXS	Explosive 1.4S (labeled)	.RXS/53	–53/C.RSX
WET	Shipments of wet materials not packed in watertight containers, e.g. fish packed in wet ice.	.WET/21P	–21P/ C.WET
XCR	Additional Crew Requiring Passenger Seat(s) See General LCM, Chapter 10.1.1.2—Additional Crew Occupying Passenger Seats (XCR).	.XCR/1/1/2	N/A [a)]

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Code	Description	Example	
		LDM	CPM
(XPS)	Priority Small Package	N/A [a)]	N/A [a)]

a) N/A = Not applicable

17.9.3 Pallet Contour Codes

See General LCM, Chapter 18.2.4—Maximum Allowable ULD Contours.

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17.10 Load Control Message

17.10.1 Standards for Message Formats

17.10.1.1 Use of Symbols

The following symbols and general rules are used for the description and interpretation of the formats of traffic handling Standard Message Text (SMT). The SMT symbols and their meaning are as follows:

a A single alphabetic character

f A single numeric character

m Mixed alphabets (characters A through Z) and digits (numerals Ø through 9); excluding graphics, spaces, and other special characters

t A character in free form text (alphabetic, numeric, graphic or space)

( ) Brackets framing the symbols "a", "f" or "t" indicating the optical status of the character

→ A space character

< A carriage return

≡ A line feeding onto the next line.

Information separators must follow any data element of variable length. The separators used are:

. (full stop)	Basic separator indicating the commencement of a new element
/ (forward slash/slant/ oblique)	A separation within an element
- (hyphen)	At the beginning of a line of machine-readable text to show destinations, and within a line of machine-readable text to indicate the start of a new element.

Capital letters are used for describing fixed text in message layouts. To differentiate between the letter "O" and the number "0"; the number 0 will be slashed as Ø.

17.10.2 Load Planning Message (LPM)

17.10.2.1 General

Load planning is generally performed for flight with one or several transit stops. Normally, the originating station of a flight will do the planning unless specific circumstances, for examle location of cargo space control office, make it desirable that it is carried out by one of the stations en route.

It is the duty of the responsible station or load planning office to inform all stations and functions concerned, for the flights planned, by sending a Load Planning Message (LPM) to each station of the flight. All information may be included in one message ad dressed to every station.

The purpose of the LPM is to permit all stations to make a realistic planning of joining load. Upon receipt of the LPM, stations shall check the information about on load and compare this with their own estimates. If differences are observed, these shall be reported to the applicable station or load planning office for evaluation.

Regulations for acceptance of load in excess of the planned figures in the LPM are as follows:

- baggage and mail shall be accepted with due consideration to the priority list. See General LCM, Chapter 13.7—Load Priority.
- cargo may be loaded provided weight and volume are available without any deviation from the planned load distribution
- load to the next station may always be accepted.

17.10.2.2 Description

The LPM is composed of four parts:

PART 1 Address and Communication References

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PART 2 Standard Message Identifier and Flight Record

PART 3 Load Planning Information and Remarks Per Station

PART 4 Supplementary Information.

PART 1: Address and Communication References

To be addressed to KL function at the originating station and station(s) ahead, and teletype address of the originating stations or load planning office.

PART 2: Standard Message Identifier and Flight Record

Ref No.	Status	Element	Character Format	Example of Element
1	M	Standard Message Identification		
1.1	M	Standard message identifier	aaa	LPM
1.2	M	Separator	CRLF	<≡
2	M	Flight Identification		
2.1	M	Carrier code	mm(a)	TG
2.2	M	Flight number	fff (f)(a)	930
2.3	C	Separator (only if 2.4 entered)	Oblique	/
2.4	O	Date of month (of scheduled GMT departure originating station)	ff	12
2.5	C	Aircraft registration (if known)		
2.5.1	M	Separator	Full stop	.
2.5.2	M	Aircraft registration	mm(m)(m) (m)(m)(m)(m) (m)(m)	HSTGG
2.6	M	Aircraft version		
2.6.1	M	Separator	Full stop	.
2.6.2	M	Aircraft version	t [..12]	74276
2.6.3	M	Separator	CRLF	<≡

PART 3: Distribution and Load Information

Ref No.	Status	Element	Character Format	Example of Element
3	M	Standard Message Identification		
3.1	M	Separator	Hyphen	-
3.2	M	Airport code	aaa	CPH
4	C	Planned On-load Information per load Category		
4.1	C	No Traffic Load from this station (if 4.2–4.5 not entered)		
4.1.1	M	Separator	Full stop	.
4.1.2	M	No traffic load	aaa	NIL
4.2	C	Expected joining passenger per class		
4.2.1	M	Separator	Full stop	.
4.2.2	M	Identifier	aaa	PAX
4.2.3	M	Separator	Oblique	/
4.2.4	M	Expected passengers by class[a)]	f(f)(f)	5/31/206
	Note:	*Ref Nos. 4.2.3 and 4.2.4 can be repeated twice.*		

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Ref No.	Status	Element	Character Format	Example of Element
4.3	C	Weight/volume of joining baggage		
4.3.1	M	Separator	Full stop	.
4.3.2	M	Identifier	a	B
4.3.3	M	Weight in kilogram	t(f)(f)(f)(f)	3708
4.3.4	C	Separator (if 4.3.5 entered)	Oblique	/
4.3.5	O	Volume of 0. 1 m³ units	f(f)(f)	247
4.4	C	Weight/volume of joining cargo		
4.4.1	M	Separator	Full stop	.
4.4.2	M	Identifier	a	C
4.4.3	M	Weight in kilogram	f(f)(f)(f)(f)(f)	12680
4.4.4	C	Separator (if 4.4.5 entered)	Oblique	/
4.4.5	O	Volume of 0.1 m³ units	f(f)(f)(f)	587
4.5	M	Weight/volume of joining mail		
4.5.1	M	Separator	Full stop	.
4.5.2	M	Identifier	a	M
4.5.3	M	Weight in kilogram	f(f)(f)(f)(f)	500
4.5.4	C	Separator (if 4.5.5 entered)	Oblique	/
4.5.5	O	Volume of 0.1 m³ units	f(f)(f)	23
	Note:	*Ref Nos. 4.2–4.5 only must be shown if there is load for the respective category.*		
4.6	M	Separator	CRLF	<≡
5	O	Weight and Balance Information		
5.1	O	Estimated Zero Fuel Weight ex this station including transit load		
5.1.1	M	Separator	Full stop	.
5.1.2	M	Identifier	aaa	ZFW
5.1.3	M	Estimated weight in kilogram	ffff(f)(f)	218500
5.2	O	Estimated Load Index ZFW ex this station		
5.2.1	M	Separator	Full stop	.
5.2.2	M	Identifier	aaaaa	LIZFW
5.2.3	M	Estimated index	f(f)(f)(f)	93
5.3	C	Separator (if 5.1 and 5.2 entered)	CRLF	<≡
5.4	C	Estimated total traffic load ex this station (Not to be used if 5.1 and 5.2 are shown.)		
5.4.1	M	Separator	Full stop	.
5.4.2	M	Identifier	aa	TW
5.4.3	M	Weight in kilogram	f(f)(f)(f)(f)(f)	37512
5.4.4	M	Separator	CRLF	<≡
6	M	Load Distribution Information		
6.1	M	Separator	Full stop	.
6.2	M	Loading position	m(m)(m)	11L
6.3	M	Separator	Oblique	/
6.4	M	Destination airport code	aaa	CDG
6.5	O	Category of load[b)]		

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Ref No.	Status	Element	Character Format	Example of Element
6.5.1	C	Separator (if 6.5.2–6.5.4 entered)	Oblique	/
6.5.2	O	Load information code	a	B
6.5.3	O	Weight of load in kilogram	f(f)(f)(f)(f)	700
6.5.4	O	Remaining load	a	R
	Notes:	*1. Ref No. 6.5 must not be used if total load to be loaded on a loading position is for the same destination.* *2. Ref Nos. 6.5.2–6.5.4 can be repeated.* *3. Ref Nos. 6.1–6.5 can be repeated as necessary.*		
6.6	C	Available volume information (for bulk load compartments only)		
6.6.1	M	Separator	Full stop	.
6.6.2	M	Identifier	aa	AV
6.6.3	M	Available volume in 0 1 m³ units	f(f)(f)	20
6.7	M	Separator	CRLF	<≡
7	C	Special Information (if 7.3 entered)		
7.1	M	Identifier	aaaa	SPCL
7.2	M	Separator	CRLF	<≡
7.3	C	Special information per destination		
7.3.1	M	Separator	Full stop	.
7.3.2	M	Destination airport code	aaa	CPH
7.3.3	M	Separator	Full stop	.
7.3.4	M	Special load handling code. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.	aaa	AVI
7.3.5	M	Separator	Oblique	/
7.3.6	M	Loading position	m(m)(m)(m)(m)(m)	51
7.3.7	C	Separator (if 7.3.8 entered)	Oblique	/
7.3.8	O	Weight of load in kilogram	f(m)(m)(m)(m)	20
7.3.9	M	Separator	CRLF	<≡
	Note:	*Ref Nos. 3–7 can be repeated.*		

a) When there is no passenger in any one class, a zero must be entered.

b) Crew baggage if loaded differently from standard allocation must be shown under SPCL.

PART 4: Supplementary Information

Ref No.	Status	Element	Character Format	Example of Element
8	C	Supplementary Information (if 8.3 entered)		
8.1	M	Identifier	aa	SI
8.2	M	Separator	Space	
8.3	M	SI details (first line)		
8.3.1	M	Another information/instruction	T [... 61]	TEXT
8.3.2	M	Separator	CRLF	<≡
8.4	O	SI details (second line)		
8.4.1	M	Another information/instruction	t [... 64]	TEXT

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Ref No.	Status	Element	Character Format	Example of Element
8.4.2	M	Separator	CRLF	<≡
	Note:	*Ref No. 8.4 can be repeated.*		

17.10.2.3 Example

LPM
TG93Ø/Ø1.HSTGG.74276
- BKK.PAX/9/33/3Ø7.B645Ø/43Ø.C84ØØ/445.M35Ø/17
ZFW218221.LIZFW93
.11L/CDG/B65Ø.11R/CDG/B65Ø.12L/CPH/B65Ø.12R/CPH/B65Ø.13L/CPH/B65Ø.13R/CPH/B65Ø
.21L/CDG/B65Ø.21R/CDG/B65Ø.22L/CDG/B65Ø.22R/CDG/B65Ø.23P/CDG/C16ØØ.24P/CDG/C12ØØ
.31P/CDG/C18ØØ.32P/CPH/CPH/C6ØØ
.41P/CPH/C2ØØØ.42P/CPH/C2ØØØ.43L/CDG/PJ65Ø.43R/CPH/PJ5ØØ
.51/CPH/MBR.52/CPH/D.53/CDG/BR.54/X.AV138
SPCL
.CDG/AV1/23P.ICE/32P
SI CDG TROPFISH STP EST CPHCDG PAX/Ø/1Ø/1Ø1 B2ØØØ/133/4AKE C5ØØØ/263/2PIP
ZFW215281 LIZFW99

17.10.3 Loadmessage (LDM)

17.10.3.1 General

17.10.3.1.1 To be Originated

The load message shall be originated at the station of departure as soon as the load control documents have been completed, but no later than 10 min after aircraft departure. It shall be transmitted to the next station by TG personnel w here own handling exists or by the company handling TG aircraft.

17.10.3.1.2 To be Sent to

Station of first intended landing. The load message shall be addressed to TG load control KL function where TG performs the handling. At stations where other airlines act as TG handling agent, the load message shall be addressed to the handling agent and to the TG station manager.

Refer to GCSM 3.5.1—Teletype Address Codes, Aircraft Operation/Handling for lists of standard addressing for messages.

For all scheduled flights, the load message shall be copied to 8KKRCTG 8KKKCTG.

17.10.3.1.3 Composition of Message

The text of manually and automatically composed load messages must contain the standardized elements. See General LCM, Chapter 17.10.3.2—Description.

Manual Loadsheet

The text of the message shall be composed in conjunction with the load sheet only. The shaded parts on the load sheet form constitute the load message which must be transmitted.

If there is no load in certain compartment, the figure designating the compartment in the shaded column of the load sheet must not be transmitted in the load message.

Last Minute Change

The load message must include all LMC's for all passenger flights or mixed passenger/cargo flights. Care must be taken to include any LMC in the shaded parts of the load sheet before it is transmitted.

17.10.3.2 Description

The load message as described below corresponds with the standard format recommended by IATA Airport Handling Manual (AHM) in Procedure AHM 583.

This standardized format allows automatic transmission and automatic reading and is compatible with both manually and automatically produced load sheets.

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The "Ref No." in the "Table of Format" below refers to the picture of specimen of manual loadsheet shown. See General LCM, Chapter 17.4.3.4—Specimens.

The load message is composed of four parts:

PART 1 Address and Communication References

PART 2 Standard Message Identifier and Flight Record

PART 3A Load Information and Remarks Per Destination (Passenger and Passenger/Cargo Flights)

PART 3B Load Information Per Destination (Cargo Flights Only)

PART 4 Supplementary Information.

Part 1: Address and Communication References

Ref no.	Element	Format
1	Priority Code	For example; OX or QU
2	Teletype Address(es) for Load message	See General LCM, Chapter 17.10.3.1.2—To be Sent to.
3	7-Letter Group of Originator	
4	Recharge	
5	Date and Time Group	
6	Operator Initials	

Part 2: Standard Message Identifier and Flight Record

Ref No.	Status	Element	Format
7	M	Standard Message Identifier	LDM <≡
8	M	Flight Identifier Maximum 11 characters.	mm(a) fff(f)(a)(/ff)
8.1	M	Airline designator, 2–3 characters. The third character included for possible extension of the airline designator.	
8.2	M	Flight number.	
8.3	O	Scheduled GMT date of departure out of its originating station, oblique followed by two numerics which are included in the 1 characters of the flight identifier. **Example** TG 931 TG 931/12	
9	M	Registration of Aircraft 2–10 printable characters preceded by a full stop. No hyphen to be transmitted. **Example** .HSTGG	.mm(m)(m)(m)(m)(m)(m)(m)(m)
10	M	Version of Aircraft 1–12 printable characters preceded by a full stop. **Example** .74276	. t [.. 12]
11	M	Number of Crew One digit for flight deck crew, oblique, 1–2 digits for cabin crew, preceded by a full stop.	. f/f(f) (/f(f)) <≡

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Ref No.	Status	Element	Format
		Example .3/18	
Note:	*Ref Nos. 2–5 will be on one line.*		

Part 3A: Load Information and Remarks Per Destination (Passenger and Passenger/Cargo Flights)

Ref no.	Status	Element	Format
26	M	Destination Airport of disembarkation of passenger and/or unloading of deadload. Use new line, preceded by hyphen. **Example** -CDG-	-aaa
29	O	NIL If there is no traffic load to this destination. NIL is printed and preceded by a full stop.	.NIL< ≡
29 b/c/d	M	Number of Passengers Per Weight Category Adults/children/infants, preceded by a full stop. **Example** .120/11/3 *Note: If there is deadload to this destination but no passengers, zeros must be filled in.*	.f(f)(f)/f(f)(f)/f(f)(f)(/f(f)(f))
30	O	Cabin Baggage Weight 1-4 digits for cabin baggage weight, preceded by a full stop. **Example** .75	.f(f)(f)(f)
36	M	Total Deadload 1-6 digits, preceded by a full stop and letter T. **Example** .T4156	. Tf(f) (f)(f) (f) (f)
38	M	load in Compartments and/or Positions of Unitized Load 1-3 digits compartment/unitized load designator, oblique, 1-5 digits weight of deadload, preceded by a full stop. This element repeated for each compartment containing deadload for this destination. **Example** .1/615.3/500.4/350.A/2150	.m(m)(m)/f(f)(f)(f)(f)
41	O	Seat Occupying Passengers Per Class Including PAD's Element identifier PAX, preceded by a full stop and followed by an oblique and class information. The class information is composed of 1-3 numerics for the number of seat occupying passengers. Class information is repeated for each class and this is separated by obliques. The sequence of the classes is shown in descending order of priority.	.PAX/f(f)(f)/f(f)(f)(/f(f)(f))

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Ref no.	Status	Element	Format
		Example .PAX/11/82 .PAX/6/42/305	
44	O	PAD Seats occupied by PAD's per class including LMC. Identifier PAD preceded by a full stop, followed by an oblique and class information. The class information is composed of 1-3 numerics for the number of PAD's. Class information is repeated for each class and this is separated by obliques. The sequence of the classes is shown in descending order of priority. All PAD's are included in PAX distribution. **Example** .PAD/3/2 .PAD/0/12/6 *Note: If there are no passengers to this destination, Ref Nos. 43 and 44 will not be transmitted.*	. PAD/f(f)(f)/f(f)(f)(/f(f)(f))
45	O	Remarks for This Destination See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.	.aaa/m[1-6](/m[1-5])R[.. N] < ≡
Note:	*Refs Nos. 26-45 are repeated per destination.*		

Part 3b: Load Information Per Destination (Cargo Flights Only)

Ref no.	Status	Element	Format
26	M	Destination Airport of unloading of deadload. Use new line, preceded by hyphen. **Example** .CDG	-aaa
38	C	NIL If there is no traffic load to this destination. NIL is printed and preceded by a full stop.	.NIL < ≡
38	M	Load in Position of Unitized Load and/or in Compartment 1-3 digits unitized load and/or compartment designator, oblique, 1-5 digits weight of deadload, preceded by a full stop. This element repeated for each unitized load position and compartment containing deadload for this destination. **Example** .A/2150.B/2100E/300.3/500	.m(m)(m)/f(f)(f)(f)(f)
38a	M	Total Weight of Load 1-6 digits preceded by a full stop and TW. **Example** .TW28337	.TWf(f)(f)(f)(f)(f) < ≡

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Part 4: Supplementary Information

Ref no.	Status	Element	Format
65	O	Supplementary Information (passenger and passenger/ cargo flights). Any other information pertaining to the whole flight may be printed at the bottom of the load message. It must begin a new line with the letters SI followed by a space.	SI→t[..N]
57-61	C	Supplementary Information and LMC (cargo flights only). Enter remarks and any other information pertaining to the whole flight. It must begin a new line with the letters SI followed by a space.	SI→t[..N]

17.10.3.3 Example

LDM
TG93Ø/12.HSTGG.74276.3/18
- CPH.25Ø/2/3/.25.T11663.1/19Ø2.2/4522.3/195Ø.4/2654.5/635
.PAX/6/18/229.PAD/Ø/Ø/4.XCR/Ø/1/Ø.BED/6/2Y
- CDG.75/1/1.T7Ø19.1/14ØØ.2/56Ø.3/1875.4/1469.5/1715
.PAX/7/17/52.PAD/Ø/1/2.DIP/2
SI NIL

LDM
TG696/6SEP.HSTDA.7341Ø.3/Ø7
- PNH.124/2/Ø.T2623.1/275.2/719.3/1629.PAX/7/119.PAD/Ø/Ø
EIC/1/1Ø.AVI/3.ICE/2
SI EIC 1ØK IN COMP1 AS CATERING

17.10.4 Container/Pallet Distribution Message (CPM)

17.10.4.1 General

17.10.4.1.1 To be Originated

The Container/Pallet (distribution) Message (CPM) must be originated for every flight, including single sector flights, operated by 747, 777, 787, A330, A350 and A380 aircraft. It shall be transmitted to the next station by TG personnel where own handling exists or by the company handling TG aircraft.

17.10.4.1.2 To be Sent to

Station of first intended landing. The CPM shall be addressed to TG load control KL function where TG performs the handling. At stations where other airlines act as handling agent for TG, the CPM shall be addressed to the handling agent and to the TG station manager.

Refer to GCSM 3.5.1 for lists of standard addressing for messages.

For all scheduled flights, the CPM shall be copied to BKKKCTG and BKKKFTG.

17.10.4.1.3 Composition of Message

The text of manually and automatically composed CPM's must contain the standardized elements. See General LCM, Chapter 17.10.4.2—Description.

The CPM serves two purposes:

- as a basis for the load planning at transit stations,
- as information for disposition of adequate equipment and manpower for off-loading.

Note: For planning purposes, a provisional CPM may be sent to the next station. After departure of the flight, the actual CPM must be sent.

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The necessary information for the CPM shall be taken from the Loading Instruction/Report and codes shall be used. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.

17.10.4.2 Description

The CPM described below corresponds to the standard format recommended by IATA Airport Handling Manual (AHM) in Procedure AHM 587.

The standardized format shall be used for manual as well as machine issued CPM's and allows automatic transmission and reading.

The CPM must show all ULD positions including those not occupied by a ULD(N). To facilitate manual reading of the CPM, the ULD positions shall be shown in the sequence corresponding to the actual arrangement of the ULD's in the aircraft.

The CPM is composed of four parts:

PART 1 Address and Communication References

PART 2 Standard Message Identifier and Flight Record

PART 3 Distribution and Load Information

PART 4 Supplementary Information.

Part 1: Address and Communication References

Ref no.	Element	Format
1	Priority Code	For example; OX or QU
2	Teletype Address(es)	See General LCM, Chapter 17.10.4.1.2—To be Sent to.
3	Originator	
4	Date and Time Group	

Part 2: Standard Message Identifier and Flight Record

Ref no.	Status	Element	Format
5	M	Standard Message Identifier CPM	CPM < ≡
6	M	Flight Identifier Maximum 11 characters.	mm(a)fff(f)(a) /ff
6.1	M	Airline designator, consisting of two alpha—numeric characters and one alpha character. The third character included for possible extension of the airline designator.	mm(a)
6.2	M	Flight number	fff(f)(a)
6.3	O	Scheduled GMT date of departure out of originating station. The 2-digit date is preceded by an oblique and is included in the 11 characters of the flight identifier. **Example** TG930/12	/ff
7	M	Registration of Aircraft 2-10 printable characters, preceded by a full stop. No hyphen to be transmitted. **Example** .HSTGG	.mm(m)(m)(m)(m)(m)(m)(m)(m)
8	O	ULD Configuration Code	.t[.. 12]

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Ref no.	Status	Element	Format
		1-12 printable characters, preceded by a full stop. **Example** .74276	
Note:	*Ref Nos. 6-8 will be on one line.*		
9	M	Carriage Return and Line Feed	<≡

Part 3: Distribution and Load Information

Table

Ref no.	Status	Element	Format
10	C	ULD Information	
10.1	M	ULD bay designation consisting of 1–3 alphanumeric characters. The element is preceded by a hyphen. **Example** -11R -A -21P -8	m(m)(m)
10.2	O	ULD-type code preceded by an oblique. See General LCM, Chapter 9.1.3—ULD Specifications for codes to be used. *Note: The ULD-type is required for all ULD's, except for LD3 containers(AVE/AKE) and 88" x 125" pallets (P1P/PAP/PAJ).* **Example** /PAW /RKN /PMC /AAP /PLA /ALP	/amm
10.3	C	Station of unloading of ULD preceded by an oblique. Use the 3-letter IATA airport codes. **Example** /CDG *Note: Station of unloading is not necessary for empty ULD positions(N) and in messages sent for single-sector flights.*	/aaa
10.4	C	Weight of ULD preceded by an oblique. *Notes:* *1. If the ULD contains load for more than one destination, the weight of the load per destination must be shown. The ULD tare weight, shall be included in the weight of the load for the last destination of this ULD.* *2. See General LCM, Chapter 9.1.3—ULD Specifications for net and gross weight requirements.*	/f(f)(f)(f)(f)
10.5	M	Load category codes. Each code or group of codes is preceded by a forward slash. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages. **Example** /B /H /Q /C /M /HB /TF/TB	/a(a)[R]

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Ref no.	Status	Element	Format
		/X /N	
10.6	O	Volume code. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.	f
10.7	C	Special load remarks omitting the loading position and weight. (See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.) Each remark is preceded by a full stop. *Note: Special load remarks shall either be included in the CPM or LDM.* **Example** .RRY/5 .FIL *Notes:* *1. Complete information regarding BIG and OHG shall be given under SI.* *2. If the ULD contains load for more than one destination, Ref Nos. 10.3–10. 7 must be repeated for each destination.*	.aaa(/f(f))
11.	O	Bulk load Information	
11.1		Designation of compartment or compartment section. The 2-digit code is preceded by a hyphen. *Note: Empty compartments or sections shall be omitted.*	- f(f)
11.2		Destination of the load carried in this compartment or compartment section. The 3-letter IATA airport code is preceded by an oblique.	/aaa
11.3		Weight of load for this destination, preceded by an oblique.	/f(f)(f)(f)
11.4		Load category codes. Each code or group of codes is preceded by a forward slash. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages. **Example** /B /H /Q /C /M /TF/TB	/a(a)[R]
11.5		Special load remarks. Use the remarks omitting the loading position. (See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages.) Each remark is preceded by a full stop. **Example** .RRY/5 .FIL .HEA/350	. aaa(/f(f)(f))
11.6		Available volume information. Identifier VR preceded by a full stop and followed by one numeric to indicate the available volume in quarters of the total capacity. See General LCM, Chapter 17.9—Handling/Load Information Codes To Be Used in Traffic Documents and Messages for volume codes to be used.	. VRf

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Ref no.	Status	Element	Format
		Example .VR2 Available volume represents the overall unavailed space of the compartment or compartment section, regardless of the number of destinations of load contained therein. For empty compartment or compartment section, the code “NIL” is used preceded by a full stop. **Example** - 51.NIL *Note: If load for more than one destination is carried in the same compartment or compartment section, Ref Nos. 11.2–11.5 must be repeated for each destination.*	

Part 4: Supplementary Information

Ref no.	Status	Element	Format
12	C	Supplementary Information Use a new line beginning with the letters "SI" followed by a space. *Note: Any other information/instruction may be printed at the bottom of the message.*	SI→t(... N)

17.10.4.3 Example

QX HDQKFTG BKKKCTG BKKKYTG BKKFFTG HDQK8TG BKKJXTG BKKLLTG BKK2TTG BKK2QTG FRAKOTG FRAFOTG BKKFOTG FRAIGXH FRAFIXH .FRAKOTG 271401
CPM
TG921/27.HS TGX.10F40C325Y.744324
- 11L/AKE94064TG/BKK/335/M-11R/AKE91515TG/BKK/740/BY0
- 12L/AKE92363TG/BKK/740/BY0-12R/AKE93175TG/BKK/770/BC/BY0
- 13L/AKE93541TG/BKK/690/BY0-13R/N
- 21L/AKE93704TG/BKK/790/BY0-21R/AKE92497TG/BKK/720/BY0
- 22L/AKE92324TG/BKK/760/BY0-22R/AKE90989TG/BKK/690/BY0
- 23P/AAF47037TG/BKK/1404/C
- 24P/PAG60332TG/BKK/1455/C.RMD.RFL.RPB.RCM.ROX
- 31P/PAG60427TG/BKK/1720/C.AOG
- 32P/AAF47002TG/BKK/1725/C
- 41P/AAF47057TG/BKK/1845/C
- 42P/N
- 44L/AKE90732TG/BKK/462/M-44R/AKE92889TG/BKK/502/BF/BC1
- 45L/AKE93520TG/BKK/530/C.XPS-45R/AKE90189TG/BKK/585/C.XPS
- 51/BKK/182/BC/B/150/O.CRB.VR124
- 52/BKK/3/C3186/M.XPS.VR124
SI
BKK HOT BGS LDD POS 12R
BKK XFER BGS LDD POS 12L/13L
BLK LDD MIX BGS
BLK INCL 10PCS CRW-BGS
END

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17.11 ULD CONTROL MESSAGE (UCM)

17.11.1 Purpose and Responsibility

ULD Control Message (UCM) is used to allow and process computerized control of all ULD movements, reflecting by THAI aircraft movements, within THAI network.

It is the responsibility of all THAI station managers to establish a sufficient and effective control procedure for internal control of ULD utilization at each station.

17.11.2 General Instruction

- UCMs shall be sent to BKKFMTG with a copy to BKKKFTG immediately after each arrival or departure of a THAI flight.

  UCMs shall be sent by KL function.
- For turn-around stations, where ground times exceed 90 minutes, the messages IN and OUT shall be sent in two separate messages. See General LCM, Chapter 17.11.4—Examples of UCM; Example 1: UCM Originating From a Turnaround Station.
- For turn-around stations, where ground times do not exceed 90 minutes, the messages IN and OUT shall be combined in one message with additional format. See General LCM, Chapter 17.11.4—Examples of UCM; Example 1: UCM Originating From a Turnaround Station.
- For transit stations, the messages IN and OUT shall be combined in one message. See General LCM, Chapter 17.11.4—Examples of UCM; Example 2: UCM Originating From a Transit Station.
- UCM shall be sent after each arrival or departure of a flight operated by non-TG aircraft where THAI has joint operation agreement or has purchased some ULD position(s). See General LCM, Chapter 17.11.4—Examples of UCM; Example 3: UCM Originating From a Station Where Flight Operated by Non-TG Aircraft.
- UCMs shall be sent even no ULDs are exchanged. See General LCM, Chapter 17.11.4—Examples of UCM; Example 4: UMC Originating From a Station Where No ULDs are exchanged.
- UCMs shall be sent for all THAI flights if operated out of THAI route net.

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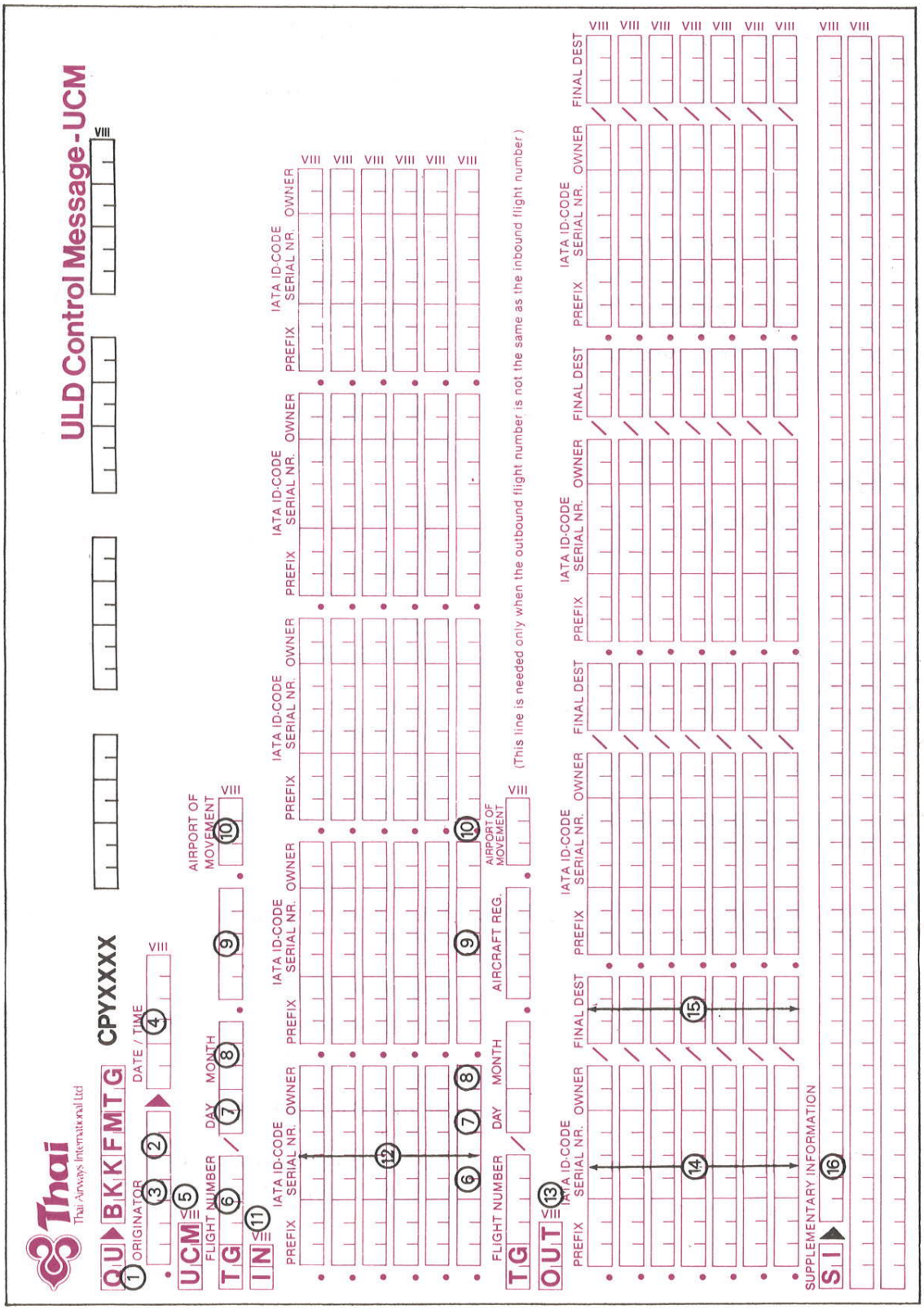
17.11.3 Completion



1 QU

Message priority code.

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2 BKKFMTG

Teletype address of ORCHIDS Computer Center with a copy to BKKKFTG.

3 ORIGINATOR

Enter the standard SITA 7-letter code.

4 DATE/TIME

Enter date and time group.

5 UCM

Standard message identifier, on a separate line.

6 FLIGHT NUMBER TG

Use original assigned flight number only. For flights operated by non-TG aircraft, the foreign carrier's identifier shall be stated, for example, MH081, QF077, etc.

7 DAY

Enter local calendar day of the current month.

8 MONTH

State 3-letter abbreviation of month in English for example, JAN, FEB, MAR, etc.

9 AIRCRAFT REGISTRATION

Enter registration of the aircraft in operation, 5 digits with no hyphen or space.

10 AIRPORT OF MOVEMENT

Enter 3-letter airport code.

11 IN

Header to precede details of ULDs added to the station inventory and ULDs transferred to another flight. Use a separate line.

12 IATA ID CODE

Complete IATA ID Code, it consists of unit type code (prefix), serial number and owner's code, of each ULD IN. The ID codes of additional ULDs stacked on top of other units must also be listed. Each ULD is to be preceded by a full stop.

Note: Max 5 ULDs per line.

13 OUT

Header to precede details of ULD removed from the station inventory.

Use a separate line.

14 IATA ID CODE

Complete IATA ID Code of each ULD OUT, including additional ULDs stacked on top of other units.

15 FINAL DEST

Enter (final) on line destination of ULDs, preceded by an oblique. State XXX for empty ULDs.

16 SI

Supplementary Information Additional information such as:

- forwarding details of damaged/unserviceable ULDs,
- number of ULDs and ID Codes of ULDs returned to reduce stock,
- version changes,

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- position(s) without ULD (NO-FIT),
- position(s) with more than one ULD, etc.

May be stated at the end of the message in free text. Item must begin with the letters SI followed by a space.

Notes: 1. *Items 6-10 shall be on one line.*

Items 6 and 7 shall be separated by an oblique.

No space between items 7 and 8.

Items 9 and 10 shall be preceded by a full stop.

2. *For turn-around stations, where ground time does not exceed 90 minutes, the messages IN and OUT shall be combined into one. Before the OUT line, the additional line indicating the outbound flight number, i.e., numbers 6-10 shall be entered again, see General LCM, Chapter 17.11.4—Examples of UCM; Example 1: UCM Originating From a Turnaround Station.*

3. *Item 14 and 15 shall be separated by an oblique.*

Each ULD is to be preceded by a full stop.

Max 4 ULDs per line.

17.11.4 Examples of UCM

Example 1: UCM Originating From a Turnaround Station

- Ground Time Exceeds 90 Minutes
  - Inbound flight

```
QU BKKFMTG CPYXXXX BKKKFTG
.OSAKLTG 021100
UCM
TG620/02FEB.HSTGL.OSA
IN
.PIP9001TG.P1P9002TG.P1P9003TG.AVE8001TG
.AVE8 002TG.AVE8003TG.AVE800 TG.AVE8005TG
.AVE8006TG.AVE8007TG.AVE8008TG.AVE8009TG
.AVE8010TG.AVE8011 TG.AVE8012TG
SI AVE8011TG and AVE8012TG RCVD XTRA TOPUP
ON P1P9001TG WL KEEP AS OSA STATION STOCK
=
```

  - Outbound flight

```
QU BKKFMTG CPYXXXX BKKKFTG
.OSAKLTG 030245
UCM
TG621/03FEB.HSTGL.OSA
OUT
.P1P9006TG/BKK.P1 P1P9007TG/MNL.AA25052TG/BKK
.AVE8023TG/BKK.AVE8024TG/BKK.AVE8025TG/BKK
.AVE8026TG/BKK.AVE8027TG/MNL.AVE8028TG/MNL
.AVE8029TG/BKK.AVE8030TG/BKKAVE8031TG/MNL
.AVE8032TG/MNL.AVE8033TG/MNL.AVE8034TG/XXX
SI AVE8023/8024TG LOADED TOPUP ON P1P9006TG RETURNED BKK DUE OVERSTOCK
```

- Ground Time Not Exceeds 90 Minutes

```
QU BKKFMTG CPYXXXX BKKKFTG
.HKGKLTG 051000
UCM
TG606/05SEP.HSTGW.HKG
IN
.AA250054TG.P1P90011TG.P1P9011TG.AVE8045TG
```

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.AVE8046TG.AVE8046TG.AVE8047TG.AVE8048TG.AVE8049TG
.AVE8050TG.AVE8051TG.AVE8052TG.AVE8053TG
.AVE8054TG
TG607/05SEP.HSTGW.HKG
OUT
.AA25055TG/BKK.P1P9012TG/BKK.P1P9013TG/XXX
.AVE8055TG/XXX.AVE8056TG/XXX.AVE8057TG/XXX
.AVE8058TG/BKK.AVE8059TG/BKK.AVE8060TG/BKK
.AVE8064TG/BKK
SI IN AA25054TG FOUND DAMAGED AT FRONT NET AND CANVAS
OUT P1P9013TG FWD WITHOUT NET STP SAME RCVD EX TG602/04SEP
=

Example 2: UCM Originating From a Transit Station

QU BKKFMTG CPYXXXX BKKKFTG
.SINKLTG 090740
UCM
TG413/09SEP.HSTGH.SIN
IN
.P1P9017TG.AA25058TG.AVE8097TG.AVE8098TG
.AVE8099TG.AVE8100TG
OUT
.P1P9018TG/CGKP1P9019TG/XXX.AVE8101TG/CGK
.AVE8102TG/CGKAVE8013TG/CGKAVE8104TG/XXX
SI NIL
=

Example 3: UCM Originating From a Station Where Flight Operated by Non-TG Aircraft

QU BKKFMTG CPYXXXX BKKKFTG
.PENKLTG 60600
UCM
MH741/06JUN.9MABC.PEN
OUT
.AVE8124TG/BKKAVE8125TG/BKK
SI BOTH RCVD EX TG741/05JUN
=

Example 4: UMC Originating From a Station Where No ULDs are exchanged

QU BKKFMTG CPYXXXX BKKKFTG
.PENKLTG 101000
UCM
MH740/100CT.9MABC.PEN
IN
.NIL
=

17.11.5 Correction to Wrongly Transmitted UCM

The following instruction shall be applied if the information in the header line and/or in the ULD movement information of UCM has been wrongly transmitted.

Note: Do not retransmit the original UCM with corrections unless requested by BKKKFTG.

Example:

QU BKKKFTG
.MNLKL TG 060645
RE UCM TG620/06JUN CORR AS FLW
IN AA25095TG TO READ AS AA25059TG RPT
AA25059TG
OUT P1P9330TG TO READ AS P1P9033TG RPT
P1P9033TG
=

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18.1.1 General 1

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18 ULD HANDLING CONTROL

18.1 General

18.1.1 General

This chapter is intended to assist THAI personnel. shippers, cargo agents & forwarders engaged in the handling and control of unit load devices (commonly referred to as ULDs) to make the best use of ULDs and to learn how to handle and control them properly and in the most efficient manner.

Essentially ULDs exist to perform the function of unitizing dead load and to take this from one point to a destination in unitized form, i.e. in a container.

All aircraft have limitations on weight capacity so the weight of all equipment they carry must be trimmed down to the possible minimum. Because of this, it is not possible to make ULD of unlimited strength to withstand rough treatment on the ground. Therefore. we must recognize the limited strength of some aspects of ULDs and ensure that units are handled in a reasonable manner to avoid unnecessary damage. Damaged units are a nuisance to everyone using them; they give less protection to the load they contain and may also affect flight safety and basic logistics.

18.1.2 Introduction to ULDs

Unlike other means of transport, for example, ships, railroads and trucks, the aeroplane has a special access problem. The structure of its fuselage is such that the doors have to be very limited in size in order to maintain structural integrity of the whole fuselage.

The basic unit of the "convential" type freighters is the pallet with net. This is later supplemented by the igloo shell to obtain maximum use of the interior cross section of the aircraft, and this pallet/igloo assembly is further developed into a full structural container.

The advent of wide-bodied (height capacity) aircraft brings a new shape of ULD onto the scene, that is the full-size and half-size lower deck container.

18.1.3 Containerization

18.1.3.1 Benefits of Containerized Aircraft

The benefits of “containerized” aircraft are:

- minimum turnaround times, giving maximum aircraft utilization
- reduced labor requirements, giving a more economical operation
- less handling and damage to load
- easier handling inside cargo terminals
- more marketing potential for air-freight, that is. door-to-door container consignments
- better cube utilization of aircraft space.

18.1.3.2 Benefits of Containerization

The advantages of containerization in addition to the points mentioned above are:

- cheaper tariffs may be applied
- individual packages are less handled, thereby reducing the risk of damage to load. ULDs may be packed and unpakced in the shipper's and consignee's premises on a door-to-door basis
- greater protection for load from weather, handling, transportation hazards and pilferage
- less risk of individual packages or parts of the load being mislaid or lost
- a single unit may be more easily and rapidly processed without the load itself being handled
- door-to-door transportation under Customs Seal
- reduction in the total transit time of load
- reduction in the costs of loading, handling, processing and documentation by consolidating individual packages into larger units
- reduction in packaging costs
- load can be consigned from shippers' premises to those of consignees without the need for intermediate handling.

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18.1.4 Airworthiness and Certification

When developing standard specification, due note shall be taken to the airworthiness certification applicable to the aircraft unit load device (ULD).

See General LCM, Chapter 18.2.1—Types of Units for the definition of an aircraft unit load device. This device interfaces directly with the aircraft loading and restraint systems and meets all restraint requirements without the use of supplementary equipment. As such, it becomes a component part of the aircraft.

In addition, aircraft ULDs are classified into two categories—certified and non-certified.

Certified ULD—NAS 3610

Certified ULD is a unit for which airworthiness certification has been granted to the ULD manufacturer by the appropriate national airworthiness regulatory authorities.

Certification of the ULD as applicable shall be clearly marked on the ULD. In addition the first three characters of the ULD Identification Code confirm certification status and ULD configuration.

Non-certified ULD

Non-certified ULD is a unit that has not received airworthiness certification by appropriate authorities.

Note: Carriage of non-certified ULDs is prohibited on any THAI aircraft.

Aircraft Loading and Restraint Requirements

Units interface directly with the aircraft loading and restraint system. There is an elaborate system of locking devices installed in all THAI aircraft which secure units to the floor during flight. All net fittings, nets and straps, pallet edges, container door fittings etc. must be in good condition and properly fitted.

Certification and Airworthiness

ULDs must fit into the restraint system in all THAI aircraft and must meet the minimum performance requirements established by the regulatory authorities. To meet these requirements for carriage on THAI aircraft, a ULD must be designed, manufactured and repaired to the very standards. These standards cover not only component parts but also the complete unit.

All units carried by THAI aircraft must be maintained in a fully airworthy condition throughout their service lives.

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18.2 ULD Types and Characteristics

18.2.1 Types of Units

18.2.1.1 Introduction

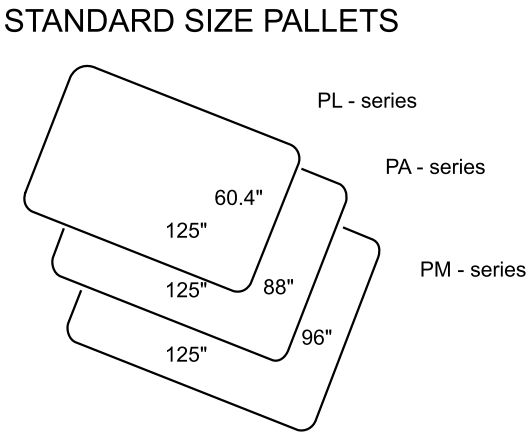
This section describes some of the most usual types of ULDs and the main physical characteristics of various unit types owned and used by THAI. The capacity, weight and volume of individual units may be obtained. See General LCM, Chapter 9.1.3.2—List of Equipment—Pallets and Containers.

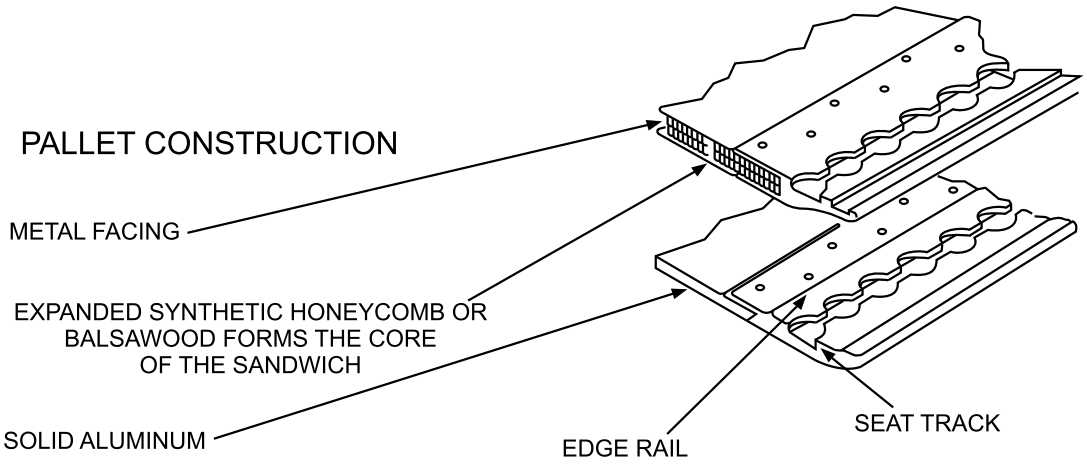
18.2.1.1.1 Pallets

The most commonly used pallets are of standard sizes:

- 1534 × 3175 mm (60.4 × 125 in), (ID Code PL-series)
- 2235 × 3175 mm (88 × 125 in), (ID Code PA-series)
- 2438 × 3175 mm (96 × 125 in), (ID Code PM-series).

Pallets of these sizes are usually 1 inch-thick or less and have “seat track” around their edges or net attachment points to secure the net or tiedown straps. Pallet type construction is also used as the base for other types of units. For a description of seat track. See General LCM, Chapter 18.2.1.2.3—Seat Track.





18.2.1.1.2 Nets

Nets are designed to restrain cargo onto pallets. Both pallet and net are subject to certification and form a single unit. Nets may be made of either straps or ropes, with square or diamond mesh designs.

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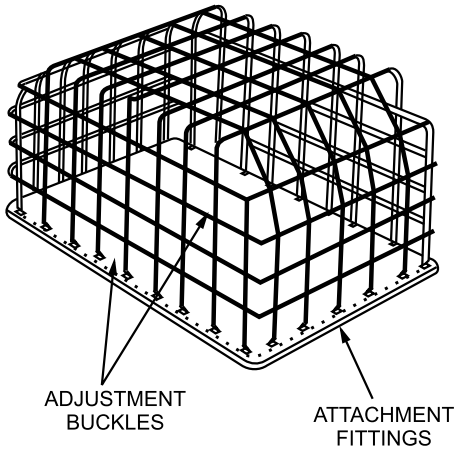
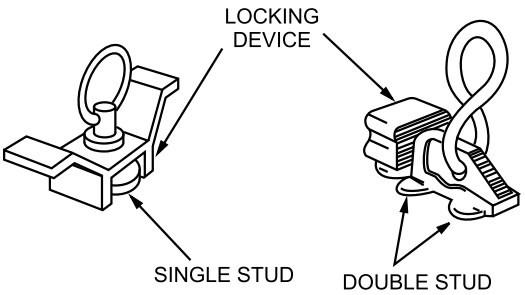
The attachments will be stud fittings, either single or double, to fit into the seat track. See General LCM, Chapter 18.2.1.2.3—Seat Track below. Nets have adjustments to suit varying heights of load.

Nets are normally separate components from pallets but many airlines, including THAI, permanently attach them to one or more sides of the pallet. Placards are used to indicate when a net is permanently attached to a pallet.

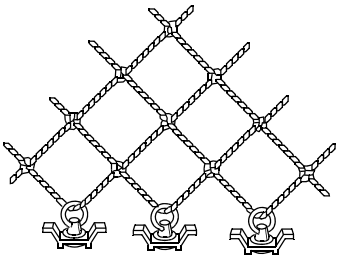


ATTACHMENT FITTINGS

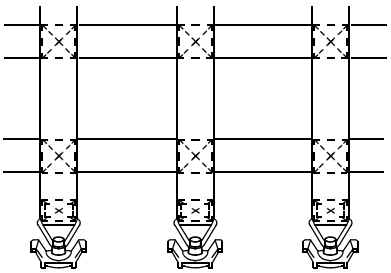


NET CONSTRUCTION

ROPE NET WITH DIAMOND MESH



STRAP NET WITH SQUARE MESH



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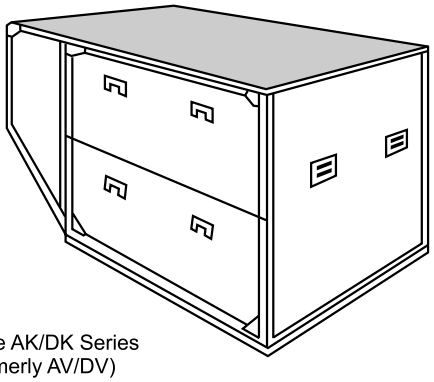
18.2.1.1.3 Lower Deck Containers

It is made of metal or fiberglass. The doors may be solid or fabric. It may have shelves for internal storage. These units can be certified or non-certified type.



ID Code AK/DK Series
(Formerly AV/DV)

18.2.1.2 General Characteristics and Fittings of ULDs

18.2.1.2.1 Materials and Design

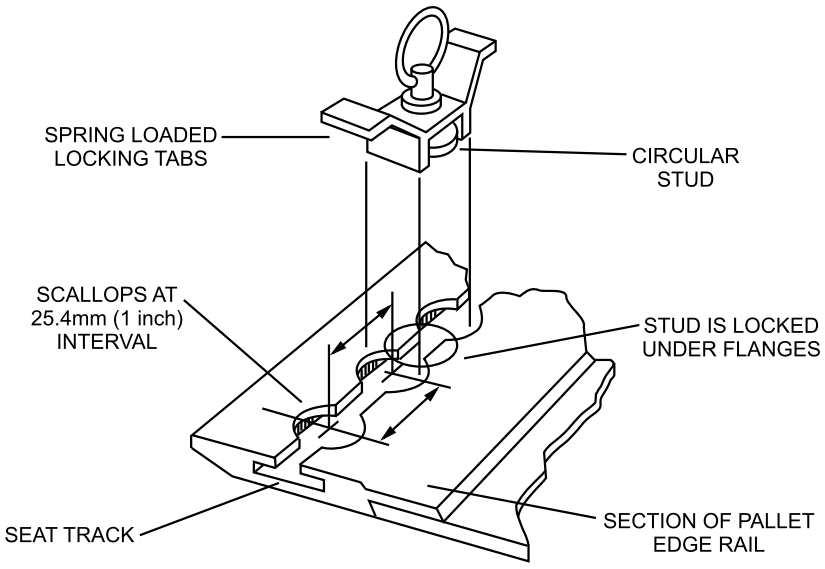
ULDs are designed to be as light as possible, consistent with strength requirements and an economic life. Materials are generally lightweight and will not withstand rough handling, thus, must be treated with care.

18.2.1.2.2 Base Under-Surface

Aircraft floor loading systems or rollerized ground equipment use various types of rollers and transfer castors or balls. So as to move freely over these, system units have smooth under-surfaces. It is important to protect these surfaces from damage so that the units move easily when being loaded into the aircraft or transferred over various pieces of equipment.

18.2.1.2.3 Seat Track

A widely used method of securing nets and straps (tiedowns) onto otherwise flat surfaces is to have seat track. This is a hollow out track with scallops cut at 25.4 mm (1 inch) interval. A matching stud attachment fits into the scallop, moves sideways under the lips and is locked into position. When locked, this attachment allows tension to be applied in any direction.



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18.2.2 IATA Identification Codes and ULD Markings

18.2.2.1 Identification Code for ULDs

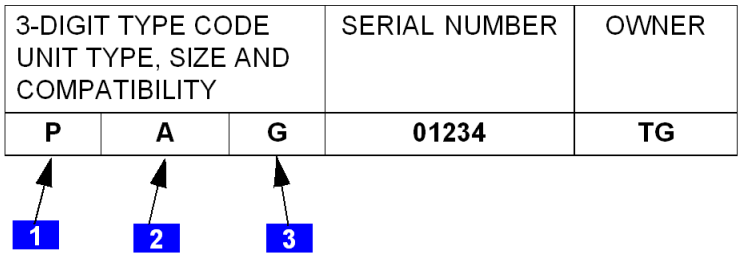
18.2.2.1.1 General

Most ULDs are designed to fit, by shape and restraint systems, into a limited number of aircraft types. Matching units to aircraft types can be difficult when interlining shipments are performed. Communication concerning ULDs is also difficult if using normal language descriptions. For these reasons, an IATA Identification Code has been developed, which is mandatory marking requirement of units, and is also used for communication purposes.

The marking of ULDs permits easy exchange of information by manual machine methods in the following activities:

- aircraft loading
- ground operations
- interchange communication
- logistical and financial control
- marketing, sales, including advance arrangements, ratings and statistics.

Full Identification Codes comprise nine or ten characters, for example;



1 ULD TYPE CODE

See General LCM, Chapter 18.2.2.1.2—Three-Digit Type Code Unit Type, Size and Compatibility below.

2 BASE SIZE CODE

Indicates the base dimensions (same code for pallets and containers). See General LCM, Chapter 18.2.2.1.2—Three-Digit Type Code Unit Type, Size and Compatibility below.

3 COMPATIBILITY CODE

For pallets, indicates airworthiness certification status.
For containers, indicates standard IATA contour and therefore determines which aircraft/ compartments the container(s) can be loaded in.

18.2.2.1.2 Three-Digit Type Code Unit Type, Size and Compatibility

The first three digits which are used to determine the unit type, base size and compatibility of a specific unit mean the following:

The First (Alpha) Digit

Indicates general category or type of the unit, for example;

- Position 1-Code List

Code Letter	ULD
A [a)]	Certified aircraft container
B [b)]	Certified winged aircraft pallet
D [a)]	Non-certified aircraft container
F	Non-certified aircraft pallet
G	Non-certified aircraft pallet net

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Code Letter	ULD
J	Thermal non-structural container
L [c)]	Certified multi-contour aircraft container
M	Thermal non-certified aircraft container
N	Certified aircraft pallet net
P	Certified aircraft pallet
Q	Certified hardened aircraft container
R	Thermal certified aircraft container
S	Certified multi-modal air/surface container
U [a)]	Non-structural igloo

a) These categories do not include Thermal units.
b) All certified winged pallets manufactured after May 1,003 must be assigned Type Code “B”.
c) This Type Code is to be assigned to certified containers designed for use (rotated) alternately on narrow body and wide bodied aircraft.

The following previously used codes are not to be used for new registrations:

(B)	Certified main deck aircraft container
(C)	Non-aircraft container
(E)	Non-certified main deack aircraft container
(S)	Structural igloo-solid doors
(T)	Structural igloo-other closures (other than solid doors)

- Specific Use ULD and Related Equipment

Code Letter	ULD
H	Certified Horse stalls
K	Certified Cattle stalls
V	Automobile transport equipment
W	Certified ULD for aircraft engine transport
X	Reserved for airline internal use
Y	Reserved for airline internal use
Z	Reserved for airline internal use

The Second (Alpha or Numeral) Digit

Indicates the base size of the unit, for example;

Series	Base dimensions
A	2,235 × 3,175 mm (88 × 125 in)
B	2,235 × 2,743 mm (88 × 108 in)
E	1,346 × 2,235 mm (53 × 88 in)
F	2,438 × 2,991 mm (96 × 117 ¾ in)
G	2,438 × 6,058 mm (96 × 238 ½ in) (20 ft)
H	2,438 × 9,125 mm (96 × 359 ¼ in)
J	2,438 × 12,192 mm (96 × 480 in)
K	1,534 × 1,562 mm (60.4 × 61.5 in)
L	1,534 × 3,175 mm (60.4 × 125 in)
M	2,438 × 3,175 mm (96 × 125 in)
N [a)]	1,562 × 2,438 mm (61.5 × 96 in)

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Series	Base dimensions
P[a)]	1,198 × 1,534 mm (47 × 60.4 in)
Q[a)]	1,534 × 2,438 mm (60.4 × 96 in)
R[a)]	2,438 × 4,938 mm (96 × 196 in)
X[a), b)]	Largest dimension between 2,438 mm and 3,175 mm (between 96 in and 125 in)
Y[a), b)]	Largest dimension ≤ 2,438 mm (≤ 96 in)
Z[a), b)]	Largest dimension >3,175 mm (>125 in)

a) Not presently included in NAS 3610.
b) Not otherwise specified.

The Third (Alpha or Numeral) Digit

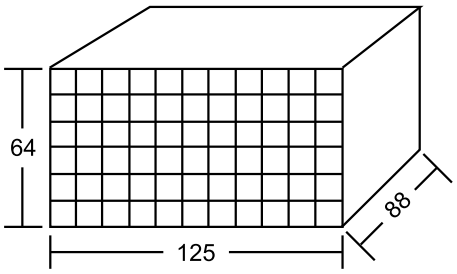
Indicates the compatibility, and hence determines which aircraft compartment the unit can fit. See General LCM, Chapter 18.2.2.1.3—Examples of ID Codes for Commonly Used ULDs below.

18.2.2.1.3 Examples of ID Codes for Commonly Used ULDs

Examples of correctly interpreting the ID Code are shown below for the most commonly used types and sizes of containers that may be carried on THAI aircraft:

- Full-Size Rectangular Contour Lower Deck Container

  AAP (formerly = AA2)
  A certified container
  A base size 88 × 125 in
  P rectangular 64 in high contour.



- Full-Size Contour Lower Deck/707/DC-8 Main Deck Container

  AAK (formerly = AA4)
  A certified container
  A base size 88 × 125 in
  K contoured 64 in high.

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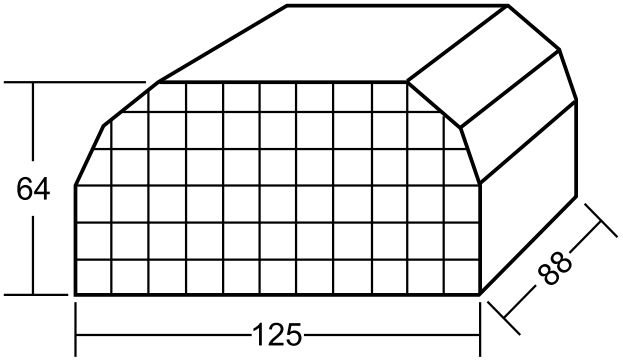
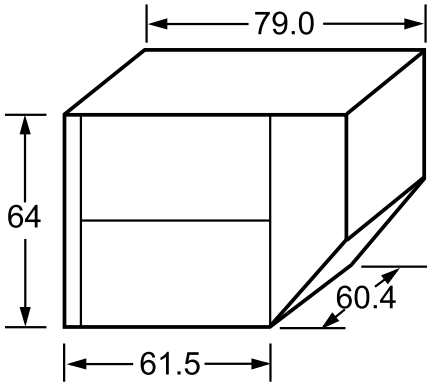


AKE, AKN if forkliftable (formerly = AVE, AVN)

A certified container (or D if non-certified)
K base size 60.4 × 61.5 in
E “LD3” contour (all wide-bodied) (or N if forkliftable).



- Half-Size “LD1” Lower Deck Container

  AKC (formerly = AVC)

  A certified container
  K base size 60.4 × 61.5 in
  C “LD1” contour (B747 only).

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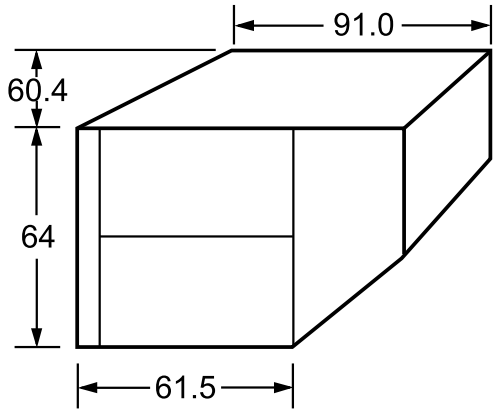
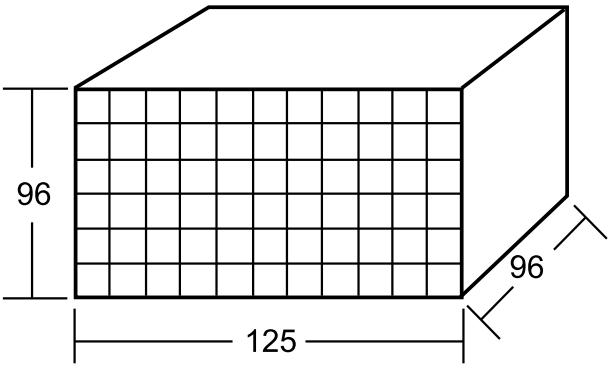


- Main Deck Rectangular Contour 96 × 125 in Container

  AMA (formerly = AQ6)
  - **A** certified container
  - **M** base size 96 × 125 in
  - **A** rectangular 96 in high contour.



- Main Deck Contour 10 ft High Container

  AMD (formerly = AQ7)
  - **A** certified container
  - **M** base size 96 × 125 in
  - **D** 10 ft high contour (B747 only).

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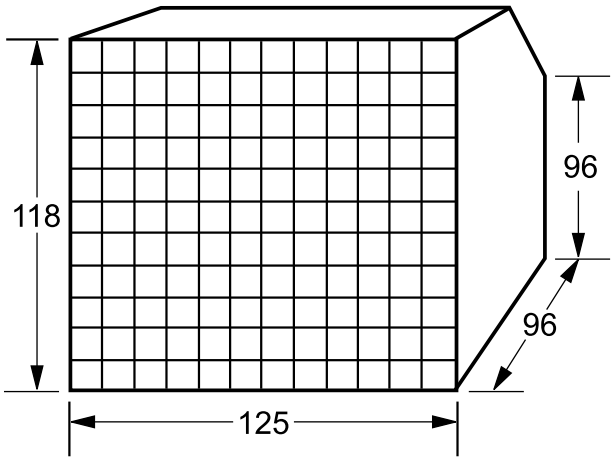
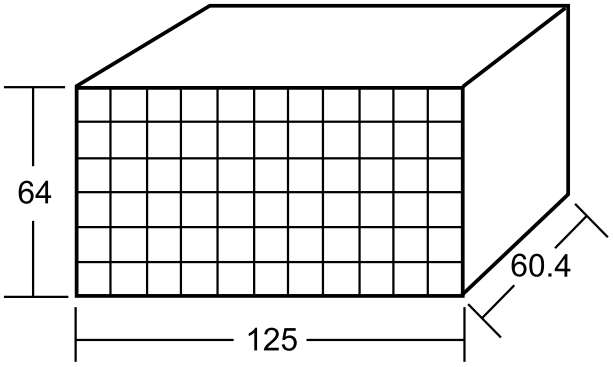


- Full-Size 60.4 × 125 in Rectangular Lower Deck Container

  ALP (formerly = AW2)

  A certified container (or D if non-certified)
  L base size 60.4 × 125 in
  P rectangular 64 in high contour.



- Full-Size 60.4 × 125 in Lower Deck Container

  ALF

  A certified container
  L base size 60.4 × 125 in
  F Contour No. F.

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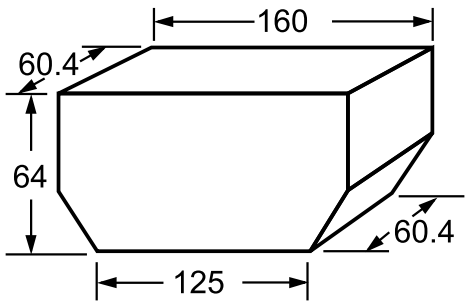
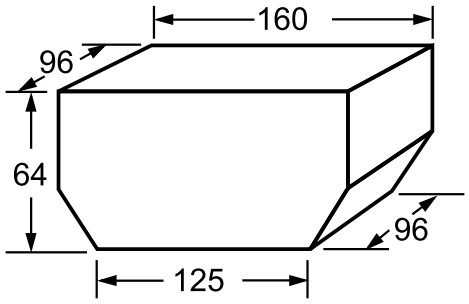


- Full-Size 96 × 125 in Lower Deck Container

  AMF
  - **A** certified container
  - **M** base size 96 × 125 in
  - **F** Contour No. F.



18.2.2.2 Marking of Lower Deck Containers

18.2.2.2.1 Marking Requirement

Each container shall carry at least the following markings:

- ULD Identification code as per IATA Specification 40/1
- the Maximum Gross Weight (MGW) in kilograms
- the actual Tare Weight (TARE) in kilograms.

Example

AA2 1234 TG

MGW 6033 KG

TARE 205 KG

18.2.2.2.2 Marking Size

All markings shall be in characters:

- not less than 100 mm (4 in) high
- not less than 25 mm (1 in) high for the Maximum Gross Weight and Tare Weight.

All characters shall have width in proportion to thickness, shall be durable and in color contrasting with that of the container. For clarity in reading the Identification Code, a full space separation shall be maintained between Type Code and Serial Number and between Serial Number and Owner Code.

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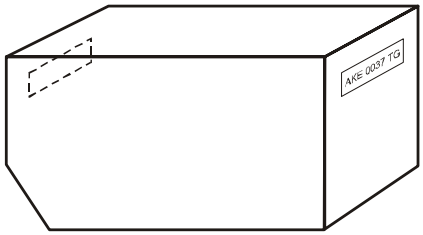
18.2.2.2.3 Marking Location

The marking shall be shown in such a manner that good readability is ensured under all phases of handling.

Markings shall be shown at the top on the outboard and inboard panels at a height of not less than 1150 mm (45 in), and optionally on both sides of the container.

Example of Marking on AK (AV)-Series Container



18.2.2.3 Marking of Aircraft Pallets

18.2.2.3.1 Marking Requirement

Each pallet shall carry at least the following markings:

- ULD Identification code as per IATA Specification 40/1
- the Maximum Gross Weight (MGW) in kilograms
- the actual Tare Weight (TARE) in kilograms.

Example

PAP 1234 TG

MGW 6033 KG

TARE 95 KG

18.2.2.3.2 Marking Size

All markings shall be in characters as permitted by space availability but shall ensure good readability under all phases of handling.

Units require a mandatory full space between Type Code and Serial Number and also between Serial Number and Owner Code for clarity of reading the Identification Code.

18.2.2.3.3 Marking Location

This marking shall be permanently engraved on to the top surface not more than 25 mm (1 in) from the outer edge of the aircraft pallet, preferably at the extreme outer edge. The engraving shall be positioned on the two longer sides diagonally opposite to one another within 300 mm (12 in) from the respective corner to ensure good readability under all phases of handling. Additionally a carrier has the option to further engrave the marking on the shorter sides in similar size and proximity to the relevant corner. This marking may additionally be engraved on the edge adjacent to the surface markings (see Figure below).

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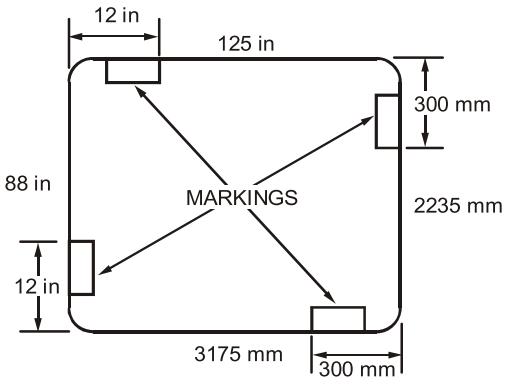
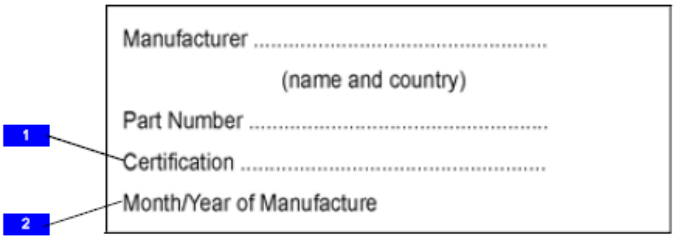
Illustration of location of pallet markings



18.2.2.4 Manufacturer Data Plate

18.2.2.4.1 Marking Requirement

Each ULD shall carry a Manufacturer Data Plate containing the following information:



1 Certification

Either TSO C90–NAS 3610 xxxx (designator) or STC (number, date, applicability).

2 Month/Year of Manufacture

Mandatory for nets and optional for other units.

18.2.2.4.2 Marking Size

The manufacturer Data Plate shall be 60 × 125 mm (2.5 x 5 in) and contain a letter of 10 mm (0.4 in) high except for aircraft pallets and nets where dimensions are optional but shall ensure good readability.

18.2.2.4.3 Marking Location

The positioning is optional but preferable at the bottom right-hand corner on one side of an igloo or container, close to the registration markings of a pallet, and close to the handling markings for a pallet net.

18.2.3 ULD Pictograms

The following pictograms are recommended for use on ULDs where applicable.

18.2.3.1 Applicable to General Purpose ULDs

Symbol	Meaning	Function
	KEEP DRY	To indicate that ULDs should not be unnecessarily exposed to wet conditions.

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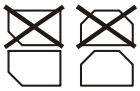
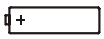
Symbol	Meaning	Function
	CENTER OF GRAVITY	To indicate the center of gravity of a ULD.
	STACKING LIMITATIONS	To indicate stacking limitations of a ULD.
	FORKLIFT DANGER SIGN	To indicate that no ULDs are to be forklifted unless they are equipped with forklift entries.

18.2.3.2 Applicable to Insulated ULDs

Symbol	Meaning	Function
	KEEP AWAY FROM HEAT	To indicate that temperature controlled ULDs should not be exposed to direct sunlight or kept in heated area.
	AIR CONDITIONING SYSTEM	To indicate the cooling system of a temperature controlled ULD.
	TEMPERATURE LIMITATIONS	To indicate the temperature limitations of a temperature controlled ULD.
	BATTERY	To indicate the required position of the battery. For use on a temperature controlled ULD equipped with an electric power supply by batteries to operate a fan, as an example.

18.2.4 Maximum Allowable ULD Contours

Contour code (position 3)		Former contour codes	Base size (position 2)	
A	NON-FORKLIFTABLE	(Q6)	M	2438 x 3175 mm (96 x 125 in)
B	FORKLIFTABLE	(R6)	F	2438 x 2991 mm (96 x 117.75 in)
		(S6)	G	2438 x 6058 mm (96 x 238.5 in)
		(A6)	A	2235 x 3175 mm (88 x 125 in)
		(D1)	B	2235 x 2743 mm (88 x 108 in)
C		(V1)	K	1534 x 1562 mm (60.4 x 61.5 in)
D		(A7)	A	2235 x 3175 mm (88 x 125 in)
		(Q7)	M	2438 x 3175 mm (96 x 125 in)
			B	2235 x 2743 mm (88 x 108 in)
E	NON-FORKLIFTABLE	(V3)	K	1534 x 1562 mm (60.4 x 61.5 in)

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Contour code (position 3)		Former contour codes	Base size (position 2)	
N	FORKLIFTABLE		N	1562 x 2438 mm (61.5 x 96 in)
			P	1194 x 1534 mm (47 x 60.4 in)
F		(W3)	L	1534 x 3175 mm (60.4x125 in)
			A	2235 x 3175 mm (88 x 125 in)
			M	2438 x 3175 mm (96 x 125 in)
			Q	2438 x 1534 mm (96 x 60.4 in)
G			K	1534 x 1562 mm (60.4 x 61.5 in)
H			K	1534 x 1562 mm (60.4 x 61.5 in)
K		(A4)	A	2235 x 3175 mm (88 x 125 in)
			M	2438 x 3175 mm (96 x 125 in)
L			M	2438 x 3175 mm (96 x 125 in)
M		(D9)	A	2235 x 3175 mm (88 x 125 in)
			B	2235 x 2743 mm (88 x 108 in)
			M	2438 x 3175 mm (96 x 125 in)
P		(A2)	A	2235 x 3175 mm (88 x 125 in)
		(Q2)	M	2438 x 3175 mm (96 x 125 in)
		(W2)	L	1534 x 3175 mm (60.4 x 125 in)
			K	1534 x 1562 mm (60.4 x 61.5 in)
			N	1562 x 2438 mm (61.5 x 96 in)
			P	1194 x 1534 mm (47 x 60.4 in)
			Q	2438 x 1534 mm (96 x 60.4 in)
U	(FULL-WIDTH CONTAINER)	(W1)	A	2235 x 3175 mm (88 x 125 in)
			L	1534 x 3175 mm (60.4 x 125 in)
			M	2438 x 3175 mm (96 x 125 in)
V	(HALF-WIDTH CONTAINER)		M	2438 x 3175 mm (96 x 125 in)
X	(HALF-WIDTH CONTAINER)		M	2438 x 3175 mm (96 x 125 in)
Y	(NARROW BODY CONTAINER)	(A1)	A	2235 x 3175 mm (88 x 125 in)
			B	2235 x 2743 mm (88 x 108 in)
Z	(NARROW BODY CONTAINER)	(A3)	A	2235 x 3175 mm (88 x 125 in)
		(D3)	B	2235 x 2743 mm (88 x 108 in)

Note: See General LCM, Chapter 18.2.5—Compatibility of Standard Container Contours with Aircraft Loading Envelopes for contour compatibility with aircraft type.

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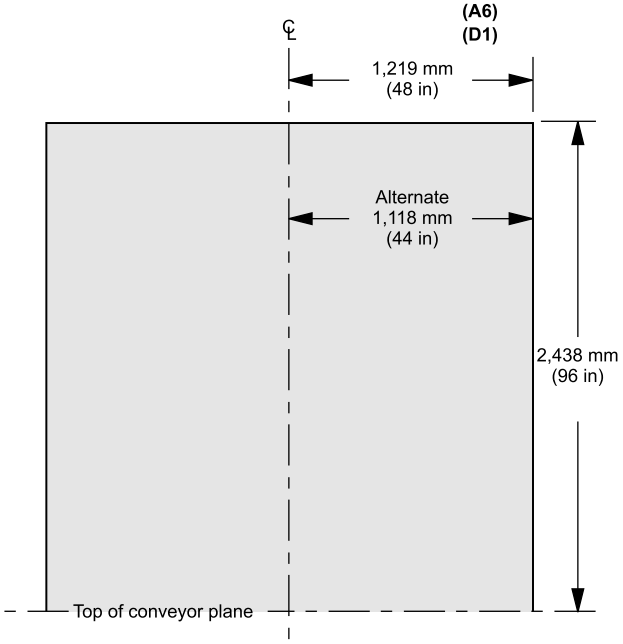
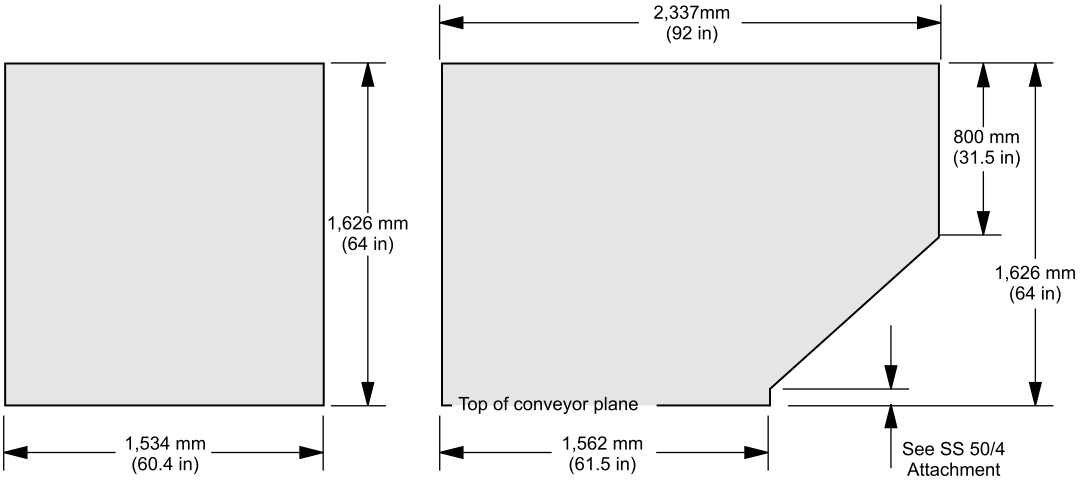
Maximum allowable ULD contour **A-NON-FORKLIFTABLE (Q6) (R6)**
B-FORKLIFTABLE (S6) (A6) (D1)



MAXIMUM ALLOWABLE ULD CONTOUR C (V1)



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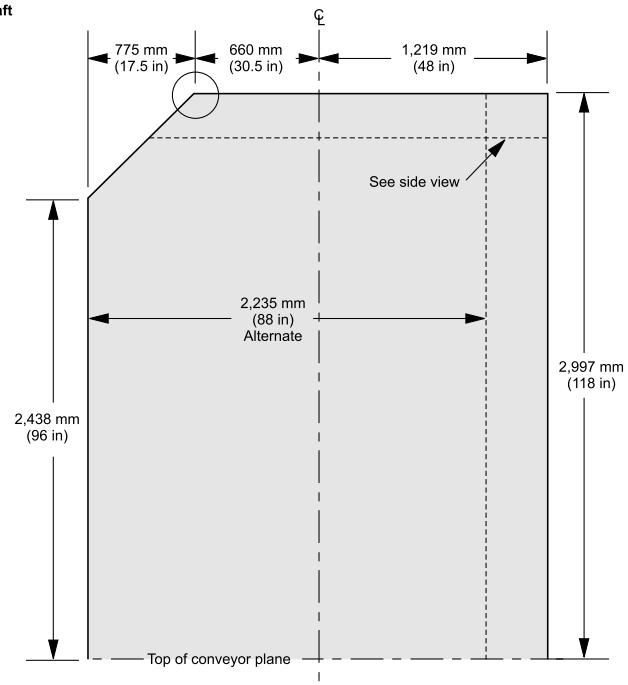
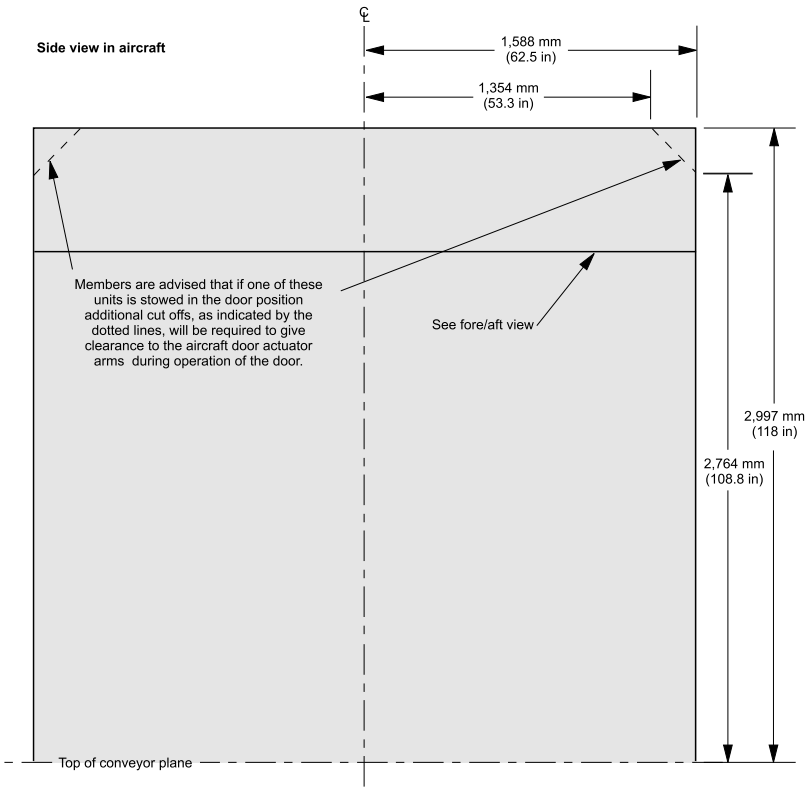
MAXIMUM ALLOWABLE ULD CONTOUR D (Q7) (A7)

Fore/Aft view in aircraft



MAXIMUM ALLOWABLE ULD CONTOUR D (Q7)

Side view in aircraft



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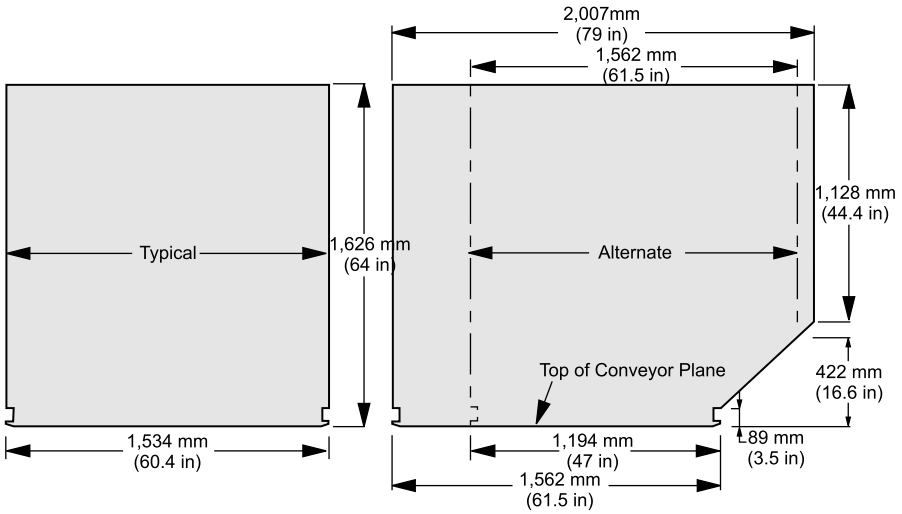
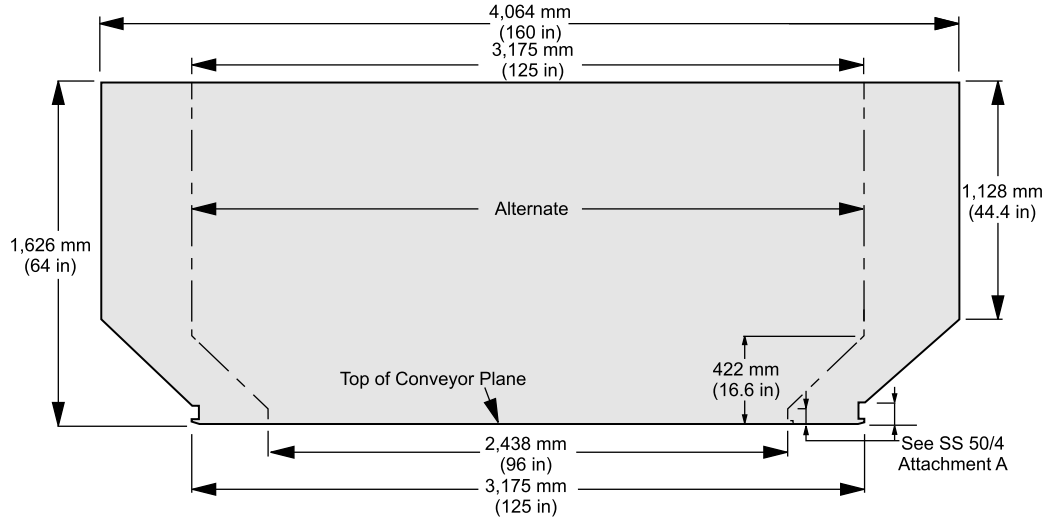
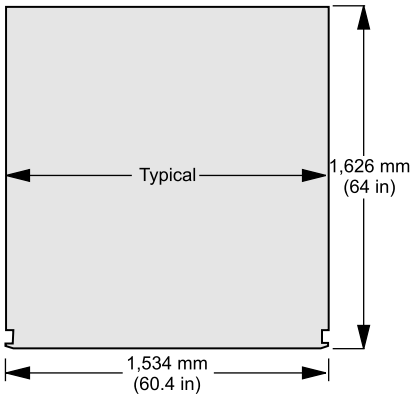
MAXIMUM ALLOWABLE ULD CONTOUR E-NON-FORKLIFTABLE N-FORKLIFTABLE (V3)



MAXIMUM ALLOWABLE ULD CONTOUR F (W3)





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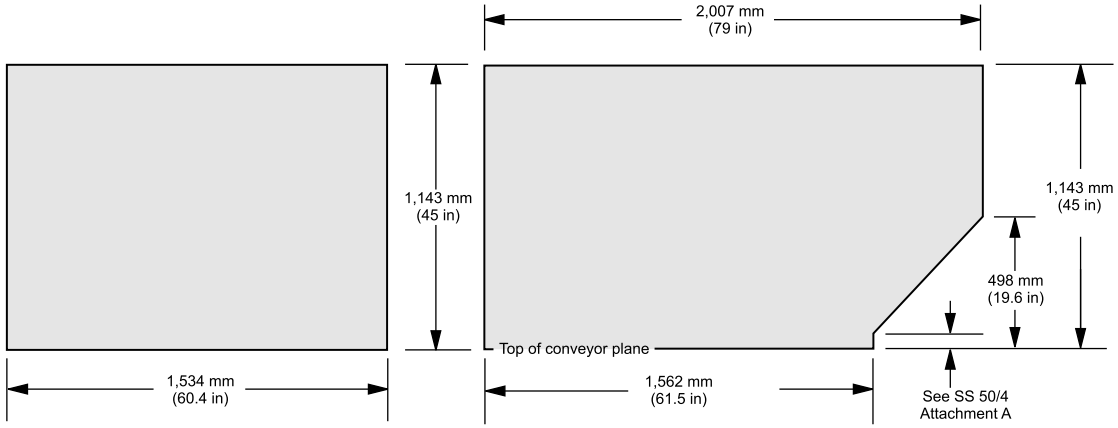
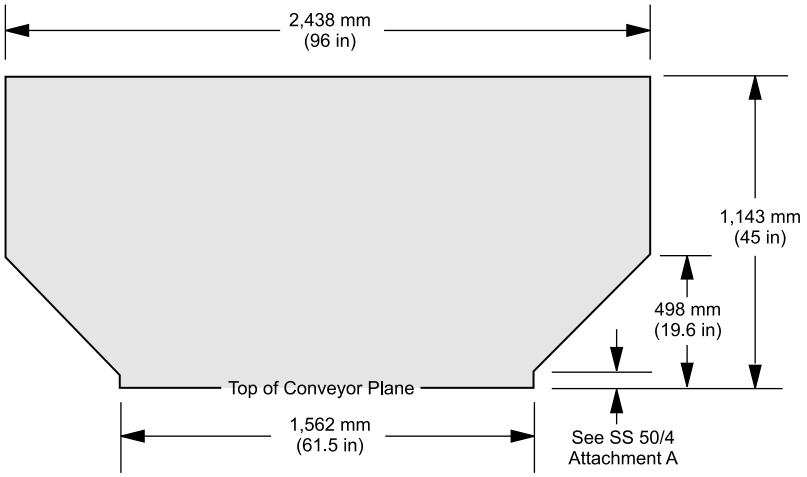
MAXIMUM ALLOWABLE ULD CONTOUR G



MAXIMUM ALLOWABLE ULD CONTOUR H



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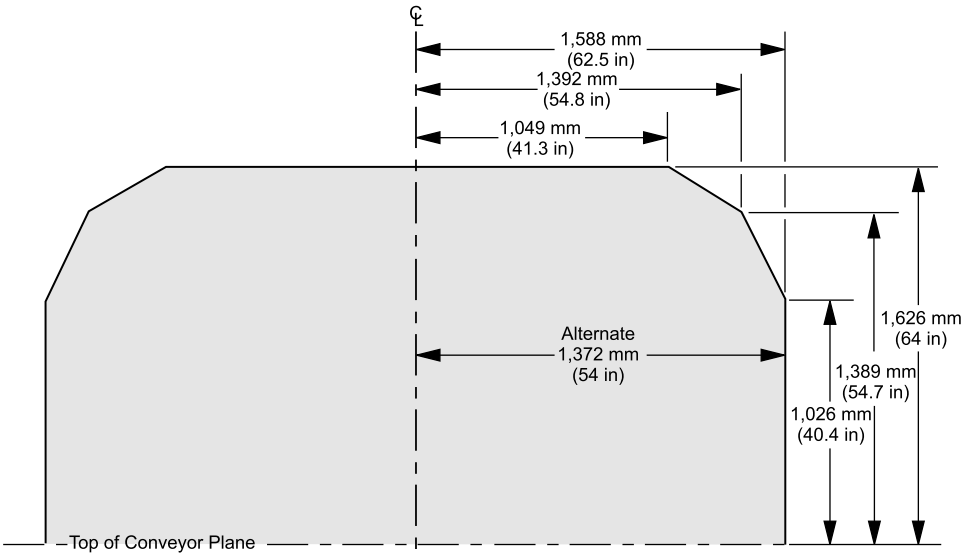
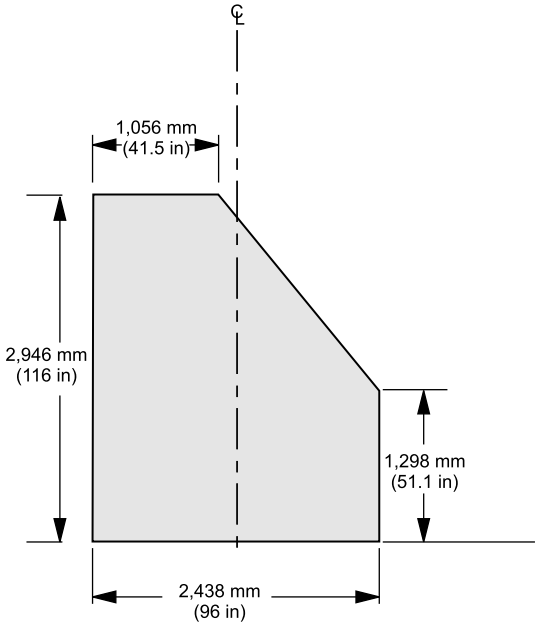
MAXIMUM ALLOWABLE ULD CONTOUR K (A4)



MAXIMUM ALLOWABLE ULD CONTOUR L



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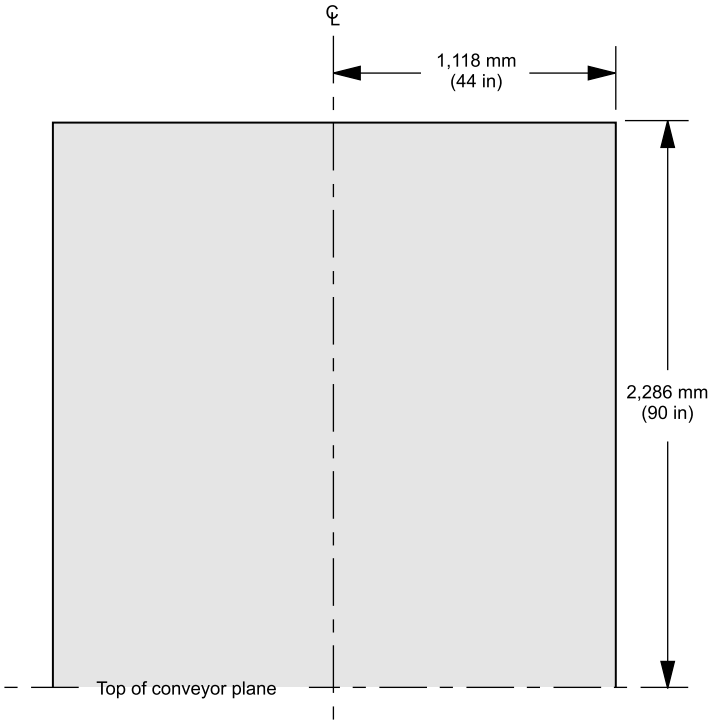
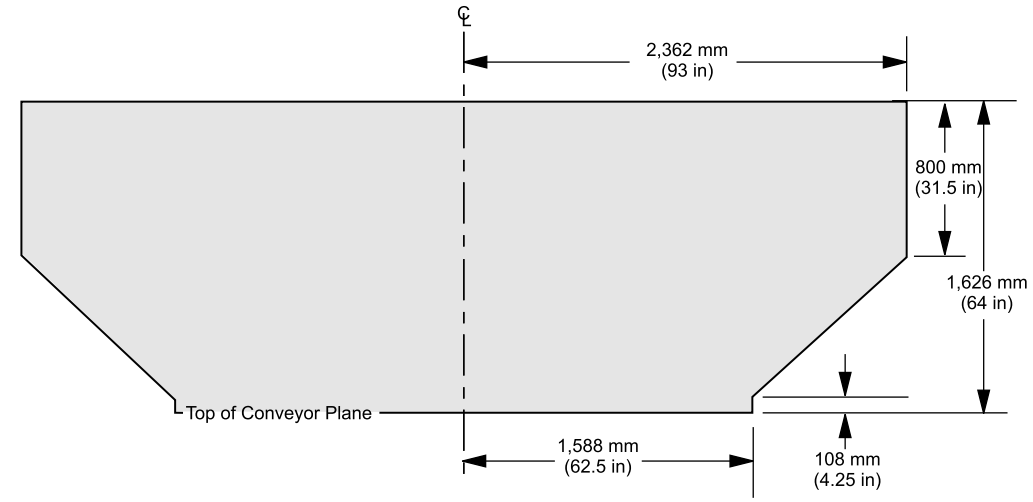
MAXIMUM ALLOWABLE ULD CONTOUR M (D9)



MAXIMUM ALLOWABLE ULD CONTOUR U (W1)



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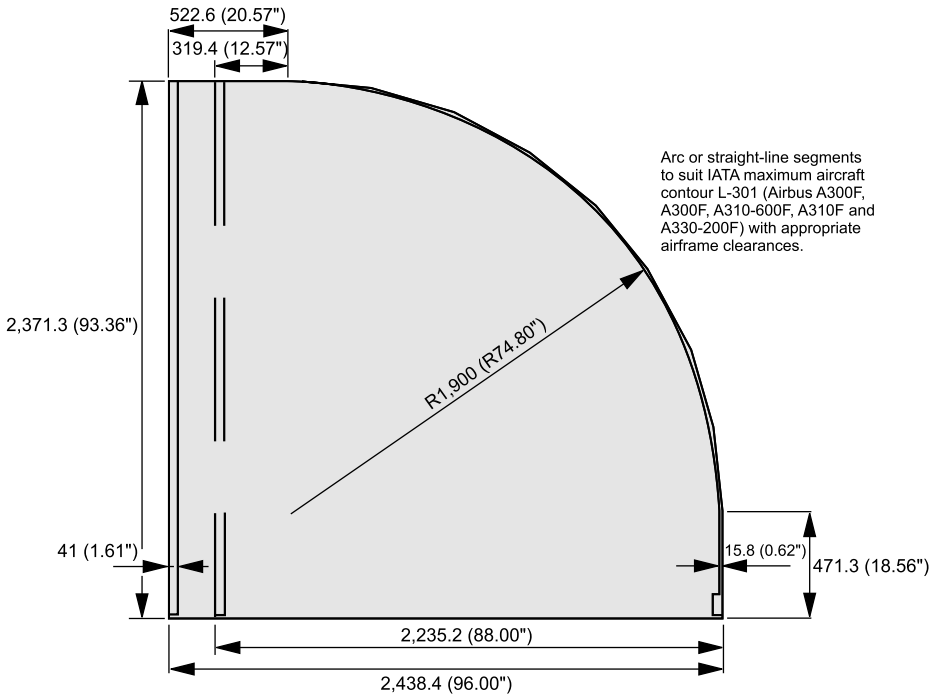
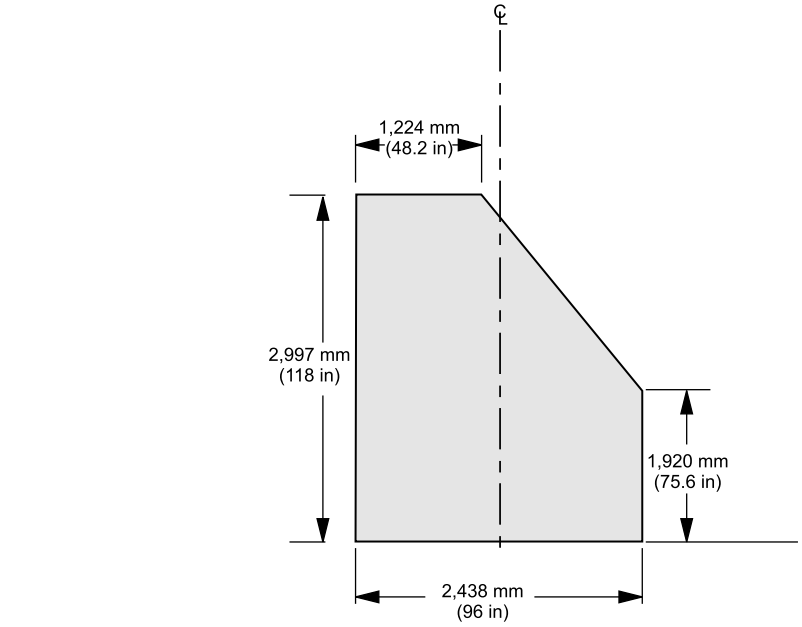
MAXIMUM ALLOWABLE ULD CONTOUR V



MAXIMUM ALLOWABLE ULD CONTOUR X



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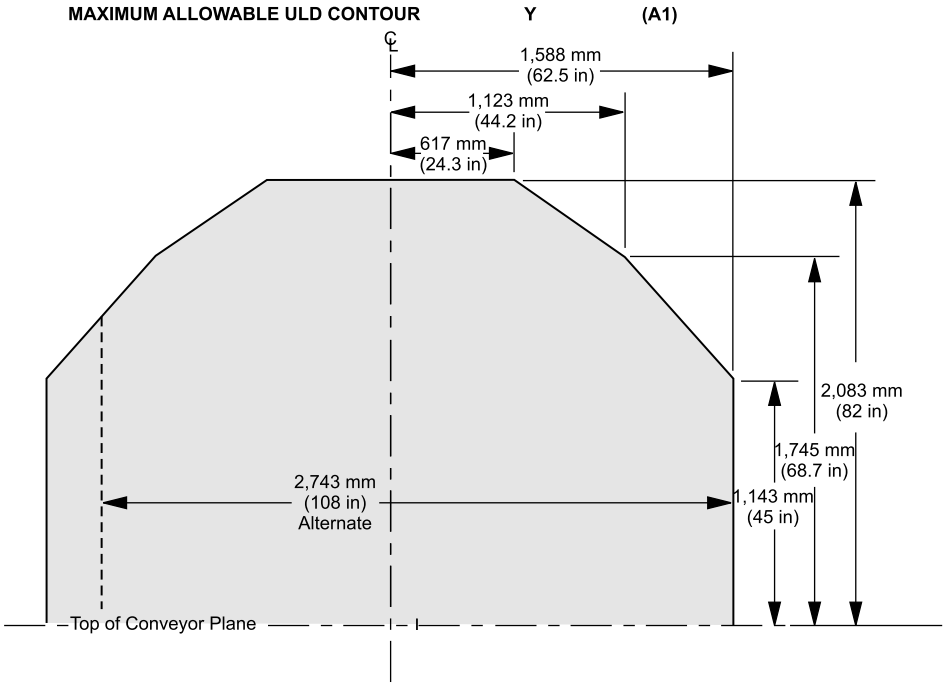

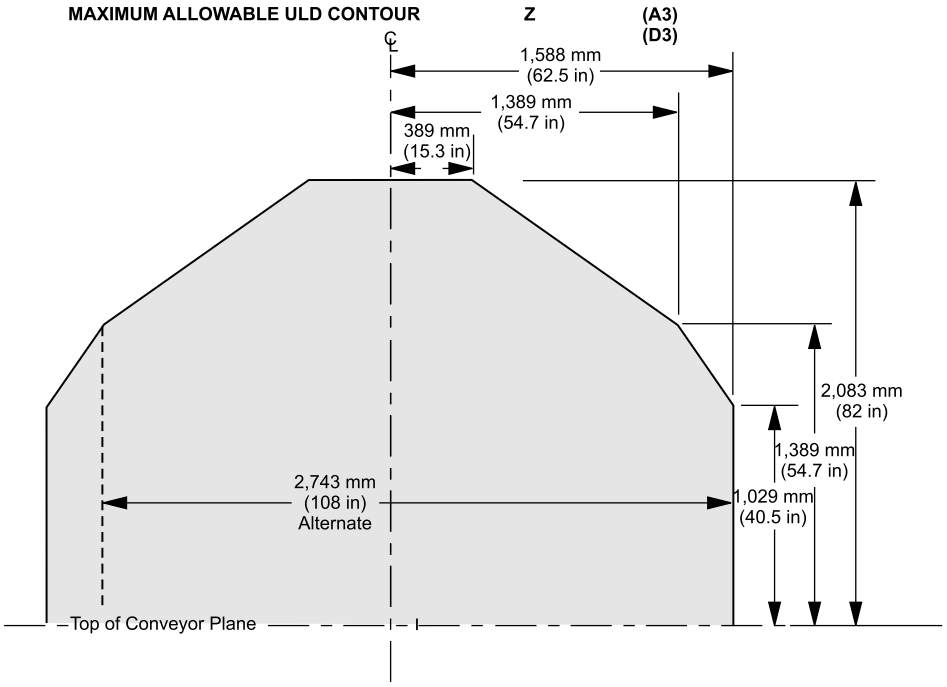

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18.2.5 Compatibility of Standard Container Contours with Aircraft Loading Envelopes

Aircraft Type/ Configuration[a)]	IATA standard container contours[b)]														
	AB	C	D	EN	F	GH	K	L	M	P	U	V	X	Y	Z
B707C							●							●	●
B727C							●								●
B737C							●								●
B747F main deck	●		●				●	●	●	●		●	●	●	●
B747 lower deck		●		●	●		●			●	●				
B767F main deck	●						●		●	●				●	●
B767 lower deck				●	●		○			●					
B777F main deck	●						●	●	●	●		●	●	●	●
B777 lower deck		●		●	●		●			●					
B787 lower deck		●		●	●		●			●					
L100	●						●		●	●				●	●
L1011 lower deck				●	●		●			●					
DC8F							●							●	
DC10F/MD11F main deck	●						●		●	●		● Not all DC10		●	●
DC10/MD11 lower deck		●		●	●		●			●					
A300C/F main deck	●								●			●		●	●
A300 lower deck		●		●	●	●	●			●					
A310C/F main deck	●								●			●		●	●
A310 lower deck		●		●	●	●	●			●					
A300-600C/F main deck	●								●					●	●
A300-600 lower deck		●		●	●	●	●			●					
A319/320/321 lower deck						●									
A330F main deck	●								●			●		●	●
A330/A340/A350 lower deck		●		●	●	●	●			●					
A340-500/-600		●		●	●	●	●			●					
AN12	●						●		●	●				●	●
IL76	●						●		●	●				●	●
IL86 main deck				●	●		●			●					

● **Contour compatible with all aircraft (see Note).**

○ **Contour compatible with large optional door only (check with carrier).**

a) Refer to ULD Technical Manual, Chapter 2 for loading envelope

b) Refer to ULD Technical Manual Specification 50/0, Appendix E

Note: Certain aircraft types or equipment may not include the restraint hardware necessary to properly restrain some of the container base sizes applicable to the indicated contour. It is necessary to check with the carrier if the equipment of the aircraft considered allows carriage of the container size.

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18.3 NOMAD

(TBD)

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18.4 IATA Interline ULD Transfer Control

(TBD)

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Part 2: A380 Fleet Load Control Manual

Thai Airways International Public Company Limited

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1 AIRCRAFT GENERAL DESCRIPTION 1
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1.2 Aircraft Fleet 1
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1.13.2 Cabin Version 1
1.13.3 Compartment Version 1

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1 AIRCRAFT GENERAL DESCRIPTION

1.1 General

The Airbus Industrie A380 passenger-aircraft is a long-range, subsonic commercial transport aircraft. Powered by four Rolls Royce TRENT 970-84 turbofan engines with 31,751 kg (70,000 lb) thrust rating each.

The aircraft is capable of operating at:

- a normal cruising speed of M 0.85 (1,041 km/hr),
- an approximate range with maximum payload up to 12,223 km,
- a maximum operating altitude of 13,136 m (43,100 ft).

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1.2 Aircraft Fleet

The aircraft in the fleet are listed in the following table.

No.	Model	Registration	Name	Line No.	Factory/ Fuselage No.	Engine Model	Delivery	
							From	Date
1	-800	HS-TUA	SI RATTANA	087	–	TRENT 970-84	Airbus	29SEP12
2	-800	HS-TUB	MANCHA KHIRI	093	–	TRENT 970-84	Airbus	29NOV12
3	-800	HS-TUC	CHAIYA	100	–	TRENT 970-84	Airbus	21DEC12
4	-800	HS-TUD	PHAYUHA KHIRI	122	–	TRENT 970-84	Airbus	21MAR13
5	-800	HS-TUE	SI RACHA	125	–	TRENT 970-84	Airbus	29OCT13
6	-800	HS-TUF	KAMALASAI	131	–	TRENT 970-84	Airbus	29NOV13

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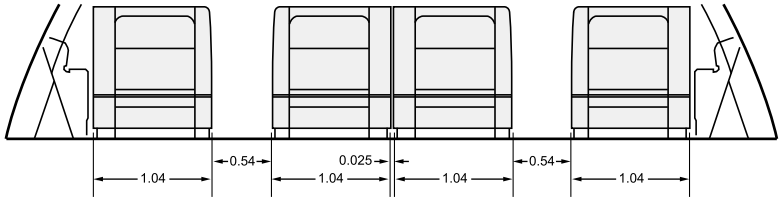
1.3 Cabin Cross Section

All dimensions are in meters.

Royal First Class

Upper Deck

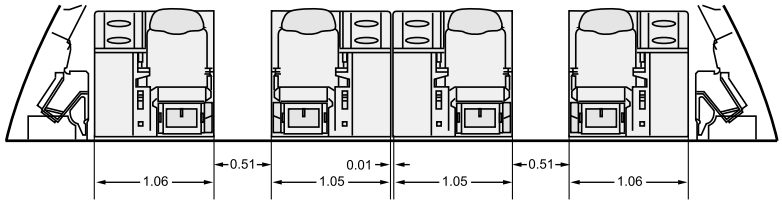
4-abreast



Royal Silk Class

Upper Deck

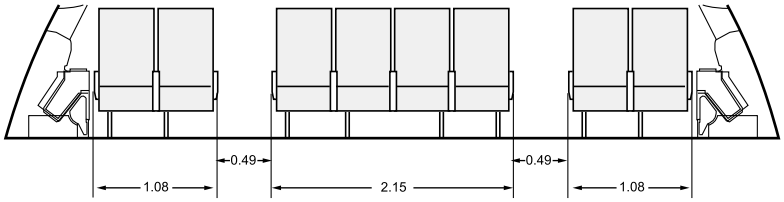
4-abreast



Economy Class

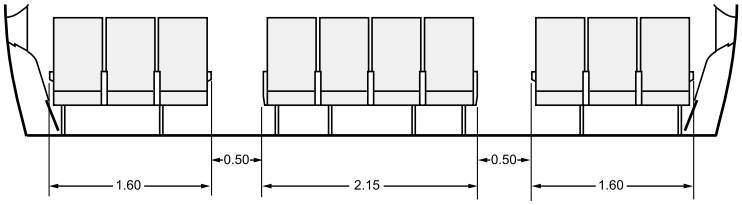
Upper Deck

8-abreast



Main Deck

10-abreast



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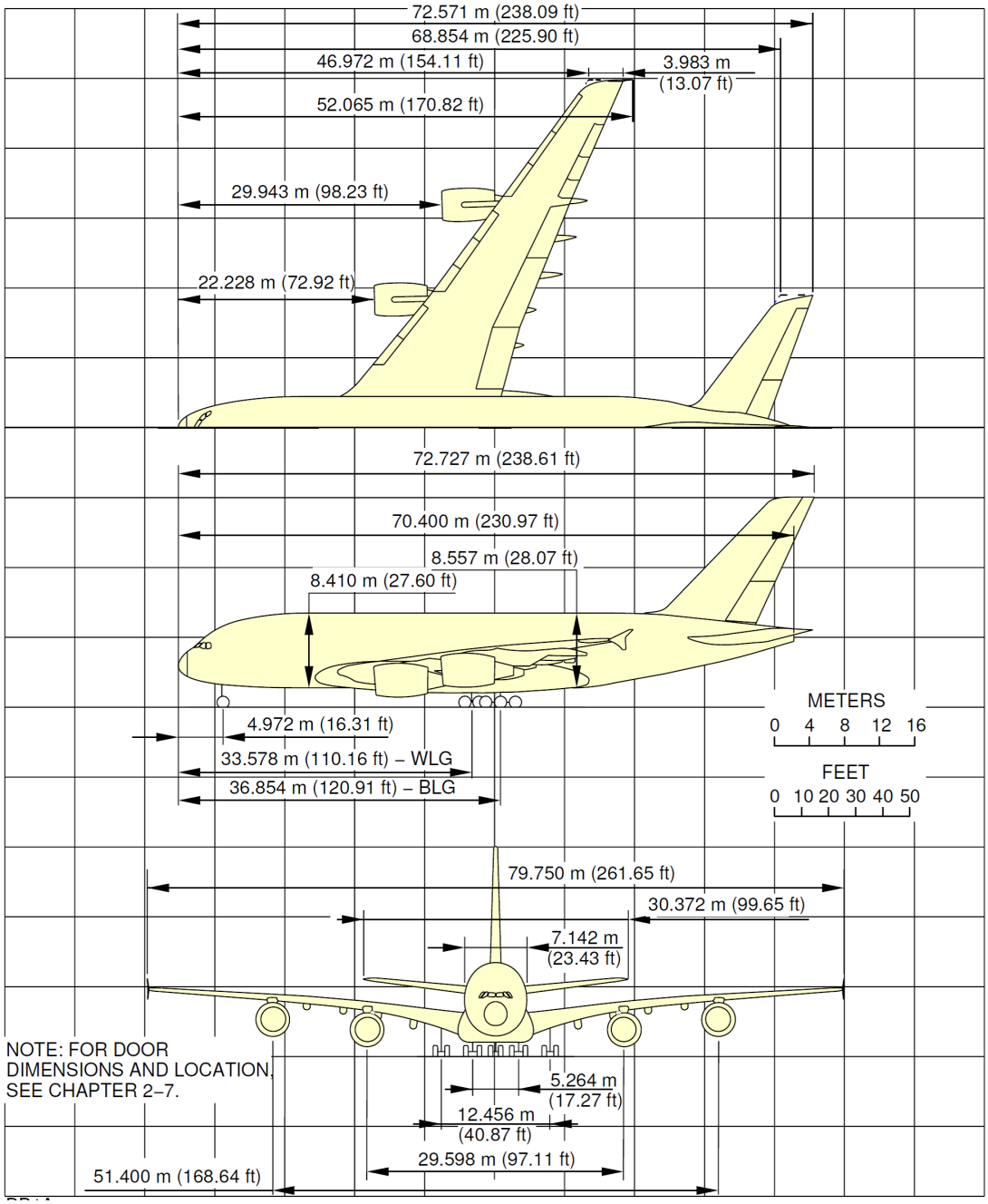
1.4 Three-View Drawing

All dimensions are in meters.



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1.5 Fuselage

The fuselage has a circular cross section and is pressurized in all areas except:

- nose radome,
- air-conditioning compartments,
- tailcone,
- wheel wells.

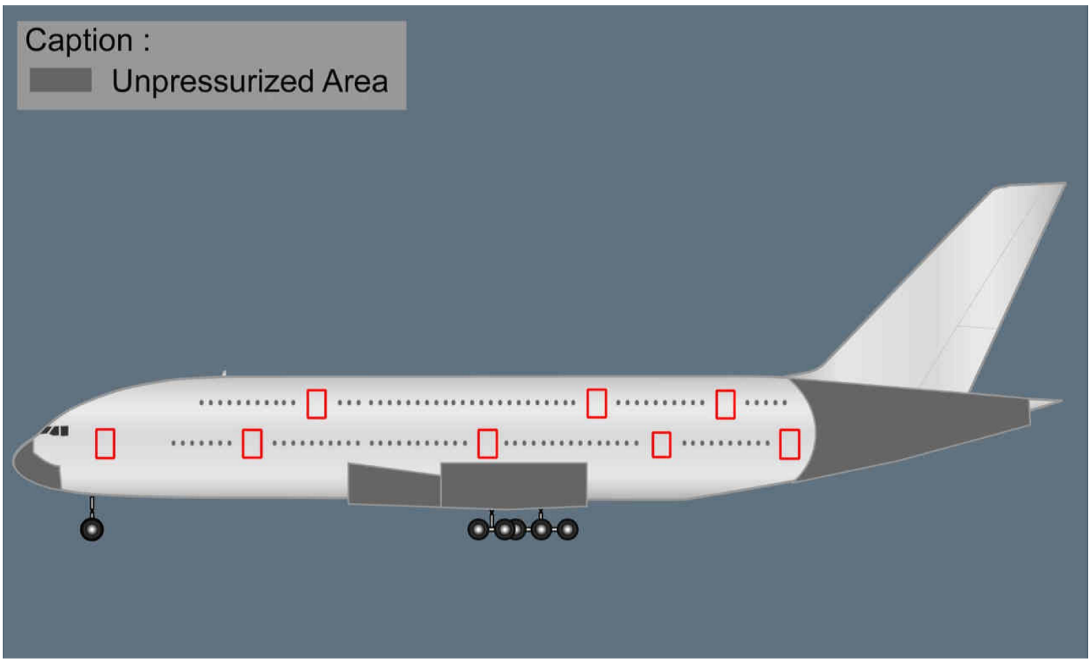
The fuselage is divided lengthwise into an upper deck, main deck and a lower-floor level (lower deck).

Flight deck, passenger cabin, galleys and lavatories are on the upper deck and main deck; deadload and accessory compartments are on the lower- floor level.

A floor vent system is installed in the sidewalls of the cabin floors. In case of rapid under-floor decompression, it provides cabin pressure equalization between the upper- and lower-floor level.

A tail skid is provided to prevent limit structural damage if the tail contacts the runway in case of takeoff or landing with excessive nose-up attitude.

Fuselage General



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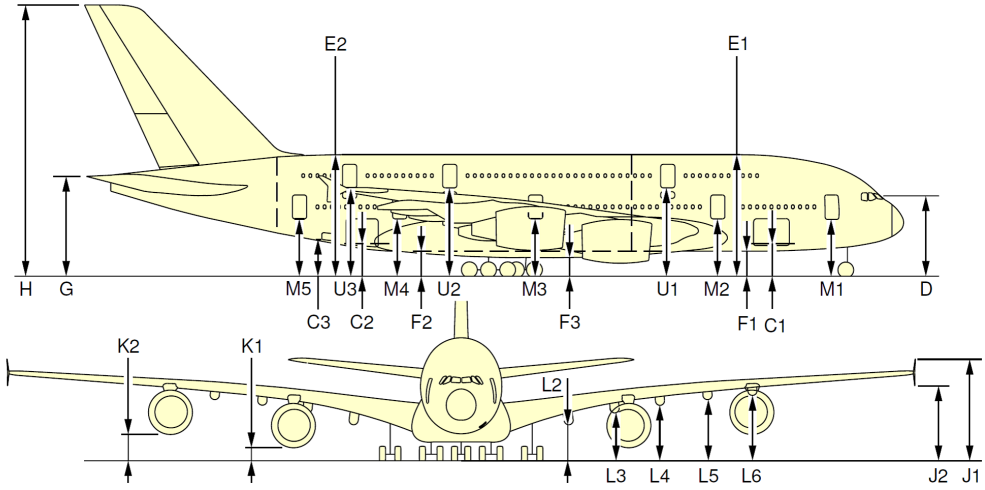
1.6 Ground Clearances

Minimum and maximum clearances of individual locations are given for combinations of aircraft loading/unloading activities that produce the greatest variation at each location. Zero roll angle and level ground are assumed for analysis.

It is recommended that approximately ±8 cm be allowed for vertical excursions due to varying strut and tire inflations, pavement unevenness, etc.

During routine servicing, the aircraft remains relatively stable with pitch and elevation changes occurring slowly.

Measurement Locations



Ground Clearance Table

Side View																			
Vertical Clearances (cm)																			
	C1	**C2**	**C3**	**D**	**E1**	**E2**	**F1**	**F2**	**F3**	**G**	**H**	**M1**	**M2**	**M3**	**M4**	**M5**	**U1**	**U2**	**U3**
Min	305	310	322	713	1076	1080	235	224	166	911	2408	507	509	513	513	512	785	788	788
Max	330	332	343	742	1100	1103	259	246	182	943	2440	534	532	529	534	537	806	807	811
• **Min is applied at Maximum Taxi Weight.** • **Max is applied at average Dry Operating Weight.**																			

Front View									
Vertical Clearances (cm)									
	J1	**J2**	**K1**	**K2**	**L2**	**L3**	**L4**	**L5**	**L6**
Min	750	522	105	190	307	408	465	499	518
Max	833	605	130	227	327	434	498	540	567
• **Min is applied at Maximum Taxi Weight.** • **Max is applied at average Dry Operating Weight.**									

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1.7 Numbering of Doors

The passenger entrance and service doors are numbered according to IATA recommended practice. The doors are numbered 1 to 5 on the main deck and 1 to 3 on the upper-deck.

There are 10 doors available on main deck starting from M1L, M1R and M2L, M2R, etc (L = left, R = right and M= main deck) and 6 doors available on upper deck from U1L, U1R and U2L, U2R, etc. (L = left, R = right and U= upper-deck).

Note: Only doors M1L, M2L, U1L and M4L may be used in connection with passenger's embarkation and disembarkation.

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1.8 Gross Weight Limitations

The gross weight limitations are listed in the following table.

Gross Weight Limitations Table

Max Taxi Weight, kg	Max Takeoff Weight[a], kg (MTOW)	Max Landing Weight[a], kg (MLDW)	Max Zero Fuel Weight, kg (MZFW)
562,000	560,000	386,000	361,000

a) The dispatcher or the flight deck crew gives these max weights, after consideration of fuel density, runway and/or operational restrictions.

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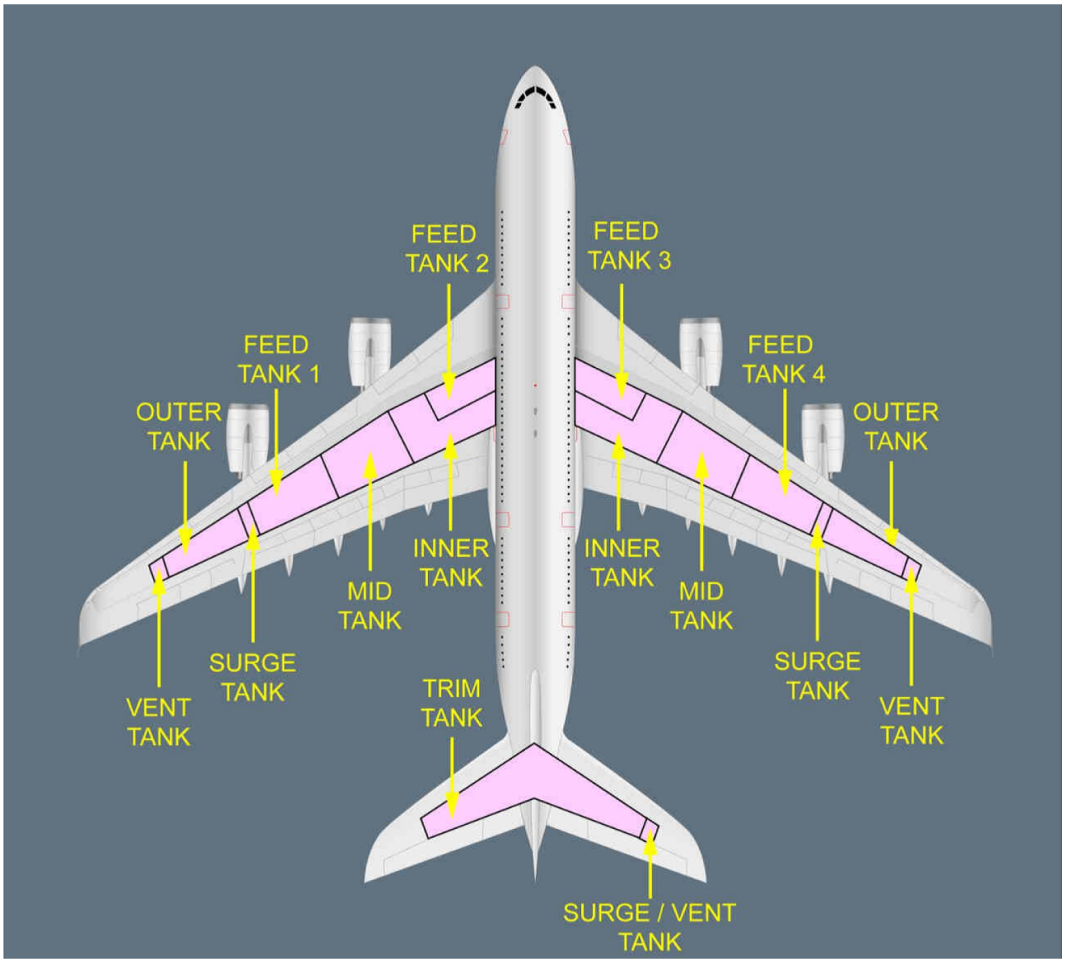
1.9 Fuel System and Limitations

The fuel is contained in the wings and Trimmable Horizontal Stabilizer (THS), the wing tanks and their components are symmetrical.

There are 11 tanks that store fuel, 5 tanks in each wing and 1 trim tank in trimmable horizontal stabilizer (THS). The details on tank location on each wing are as follows:

- 1 outer tank (OUTR TK),
- 1 mid tank (MID TK),
- 1 inner tank (INR TK), and
- 2 feed tanks (FEED TK).



Max Fuel Capacity						
Location	**Volume (L)**	**Weght (kg)**				
		0.77	**0.78**	**0.79**	**0.80**	**0.81**
Left outer tank	10,340kg.	7,962	8,065	8,169	8,272	8,375
Feed tank 1	27,632	21,277	21,553	21,829	22,106	22,382
Left mid tank left	36,461	28,075	28,440	28,804	29,169	29,533
Left inner tank	46,142	35,529	35,991	36,452	36,914	37,375
Feed tank 2	29,349	22,599	22,892	23,186	23,479	23,773
• **The max weight capacity depends on the fuel density.** • **Standard Taxi Fuel: 1000 kg.**						

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Max Fuel Capacity						
Location	**Volume (L)**	**Weght (kg)**				
		0.77	**0.78**	**0.79**	**0.80**	**0.81**
Feed tank 3	29,349	22,599	22,892	23,186	23,479	23,773
Right inner tank	46,142	35,529	35,991	36,452	36,914	37,375
Right mid tank	36,461	28,075	28,440	28,804	29,169	29,533
Feed tank 4	27,632	21,277	21,553	21,829	22,106	22,382
Right outer tank	10,340	7,962	8,065	8,169	8,272	8,375
Trim tank	23,698	18,247	18,484	18,721	18,958	19,195
TOTAL	323,546	249,130	252,366	255,601	258,837	262,072

- **The max weight capacity depends on the fuel density.**
- **Standard Taxi Fuel: 1000 kg.**

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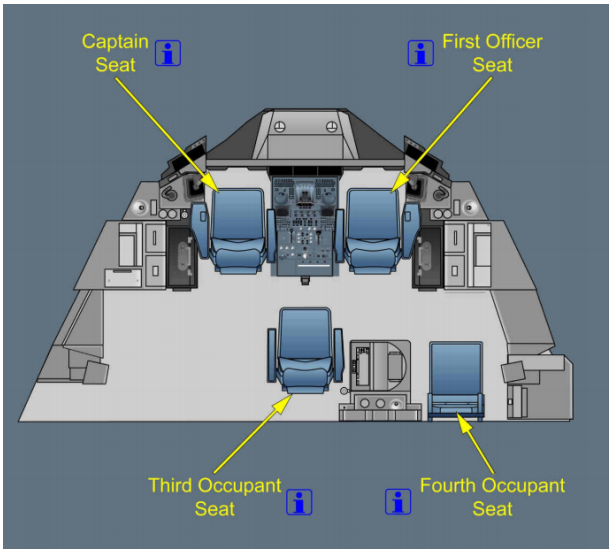
1.10 Flight Deck

The flight deck is accessible through an entrance door in the forward part of the front pantry/galley. The flight deck is equipped with 4 seats provided with seat belts.

Flight Deck



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1.11 Flight Controls

The flight controls provide maneuvering control about the lateral, longitudinal and vertical axes. They also provide increased lift for takeoff and landing as well as increased aerodynamic drag both in flight and on the ground.

Pitch control is provided by:

- elevators,
- a movable horizontal stabilizer.

Roll control is provided by:

- flaps,
- ailerons,
- spoilers.

Yaw control is provided by:

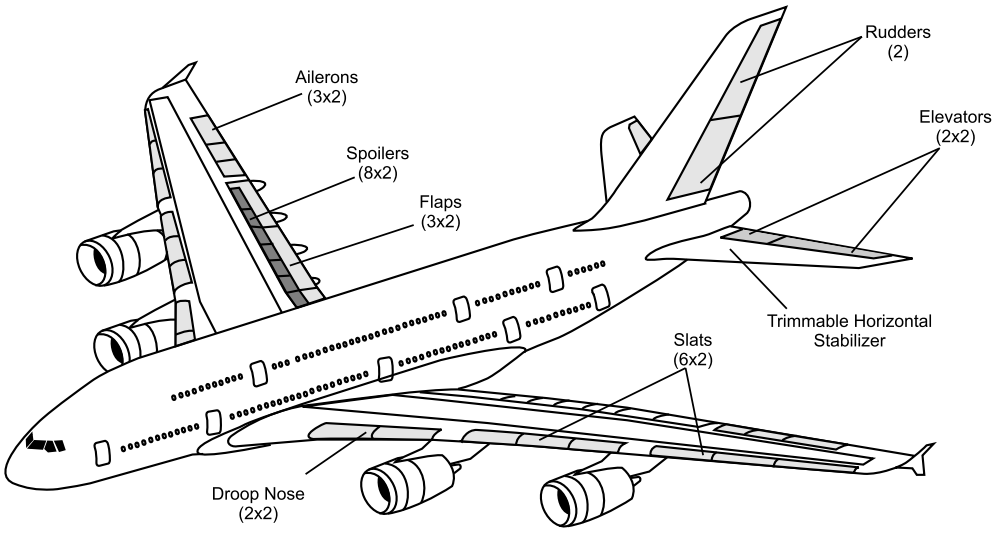
- a rudder,

Leading edge flaps and slats and trailing edge flaps are used during takeoff and landing to provide increased lift. On the ground, spoilers are used to destroy lift and make braking more efficient.

The side sticks are used to fly the aircraft in pitch and roll (and indirectly through turn coordination in yaw).
The computers process the pilot inputs and move the surfaces as necessary to achieve the desired flight path.
The computers will ignore the pilot inputs and prevent:

- excessive maneuvers, and/or
- exceeding of the safe flight-envelope.

Flight Controls



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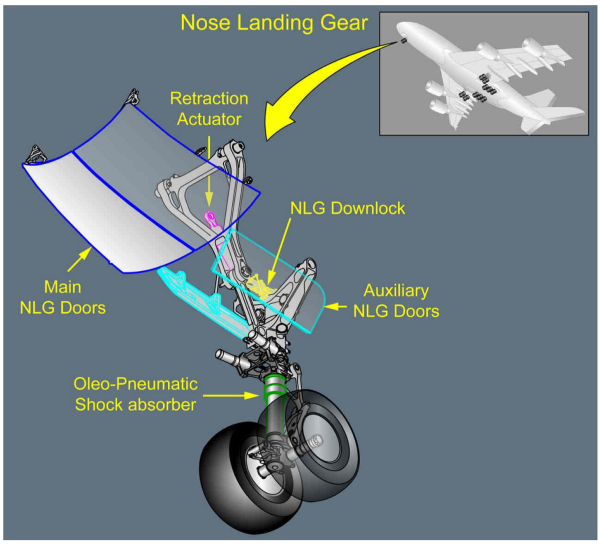
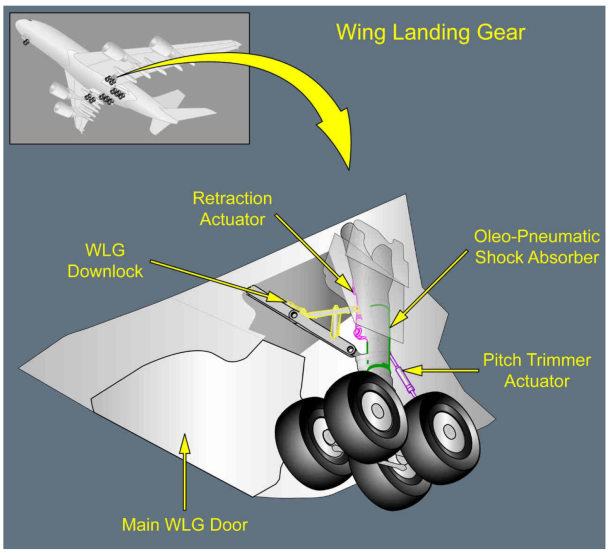
1.12 Landing Gears

The landing gears consist of:

- 4 main gears,
- a nose gear.

Landing Gears





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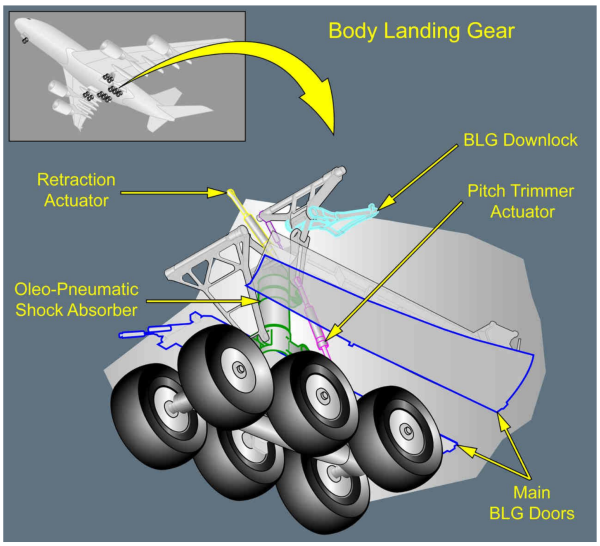

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1.13 Interior Versions

1.13.1 Version Numbering System

The interior version is identified by a 7 alphanumeric characters. The first three characters denote the aircraft type, the 4th denotes cabin version, the 5th denotes number of pallets in the forward compartment, the 6th denotes number of pallets in the aft compartment and the last character (optional) denotes an alternative version. See A380 LCM, Chapter 3.6—Versions, ULD Layout.

Version Numbering System Breakdown

Version 380173A				
Aircraft Type	**Cabin Version**	**Number of Pallets in the Forward Compartment**	**Numer of Pallets in the AFT Compartment**	**Alternative Version**
380	1	7	3	A
When identifying interior version on balance tables and cabin version plans etc., the compartment version number is usually omitted.				

1.13.2 Cabin Version

See A380 LCM, Chapter 2.5—Cabin Versions.

1.13.3 Compartment Version

See A380 LCM, Chapter 3.6—Versions, ULD Layout for details on compartment versions.

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2 CABIN DESCRIPTION 1

2.1 Doors 1

2.1.1 General 1

2.1.2 Operation of Cabin Access Doors 1

2.1.3 Clearances and Dimensions 2

2.2 Diplomatic Bag Stowage Location 1

2.3 Pressurization and Air-conditioning 1

2.4 Tie-down Facilities 1

2.5 Cabin Versions 1

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2.5.2 Cabin Layout 1

2.5.3 Seating Limitations 1

2.5.4 Priority Seats for Passengers with Disabilities 1

2.5.5 Seats Released for Stretcher Installation 2

2.5.6 Windowless Seats 2

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2 CABIN DESCRIPTION

2.1 Doors

2.1.1 General

Sixteen type A outward and forward opening plug-type cabin doors are installed, three on each side of the upper deck fuselage and five on each side of the main deck fuselage. Emergency slide/rafts are installed inside each door.

See A380 LCM, Chapter 1.7—Numbering of Doors for information on door numbering.

2.1.2 Operation of Cabin Access Doors

2.1.2.1 General

The doors are manually operated and can be opened either from inside or outside of the aircraft. Handles to open or close the door are on the inside and outside of the door. A door hold-open mechanism locks the door in the forward open position. When closing the door, an open unlock button is provided for unlocking the hold-open mechanism.

2.1.2.2 Responsibility

The cabin access doors, i.e. passenger entrance and service doors, shall be operated from inside by the cabin crew, or from outside by specially trained and qualified staff. The doors must not be operated by ground staff.

2.1.2.3 Signal

In order to prevent personal injury and damage to the aircraft or equipment, a signal, e.g. thumb-up shall be exchanged between crew and ground personnel. The signal indicates that the doors can be opened or closed safely. The signal must also be used to indicate that ground equipment is either correctly positioned or can be safely removed.

The doors may be operated or latched open in wind speed up to 60 knots.

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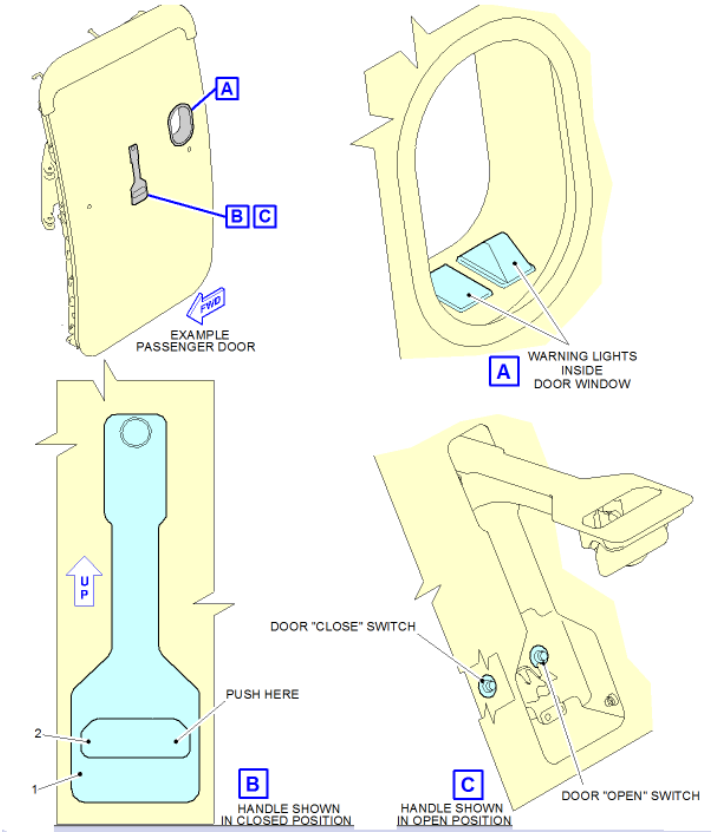
Passenger Entry Door



2.1.3 Clearances and Dimensions

2.1.3.1 Locations

See A380 LCM, Chapter 1.6—Ground Clearances for the location of the doors and their elevations over ground level.

2.1.3.2 Dimensions

Detailed information of the doors and their dimensions can be found in the following graphics.

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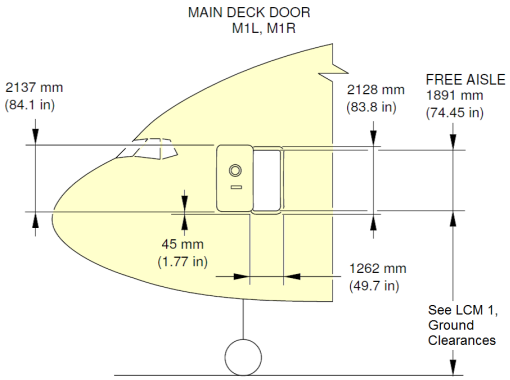
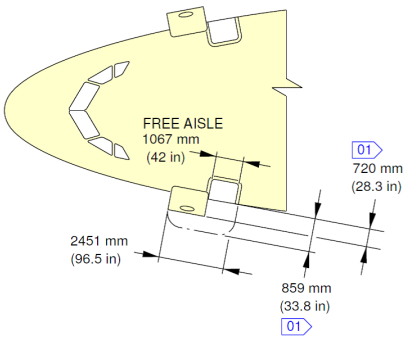
Forward Passenger and Service Doors

M1 L/R





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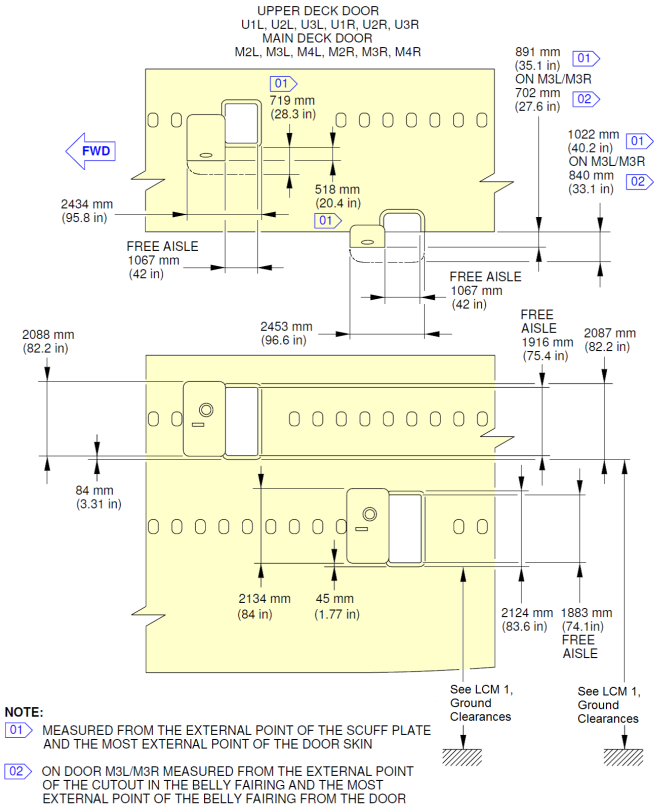
Mid Passenger and Service Doors

U1 L/R, U2 L/R, U3 L/R, and M2 L/R, M4 L/R



NOTE:

01 MEASURED FROM THE EXTERNAL POINT OF THE SCUFF PLATE AND THE MOST EXTERNAL POINT OF THE DOOR SKIN

02 ON DOOR M3L/M3R MEASURED FROM THE EXTERNAL POINT OF THE CUTOUT IN THE BELLY FAIRING AND THE MOST EXTERNAL POINT OF THE BELLY FAIRING FROM THE DOOR

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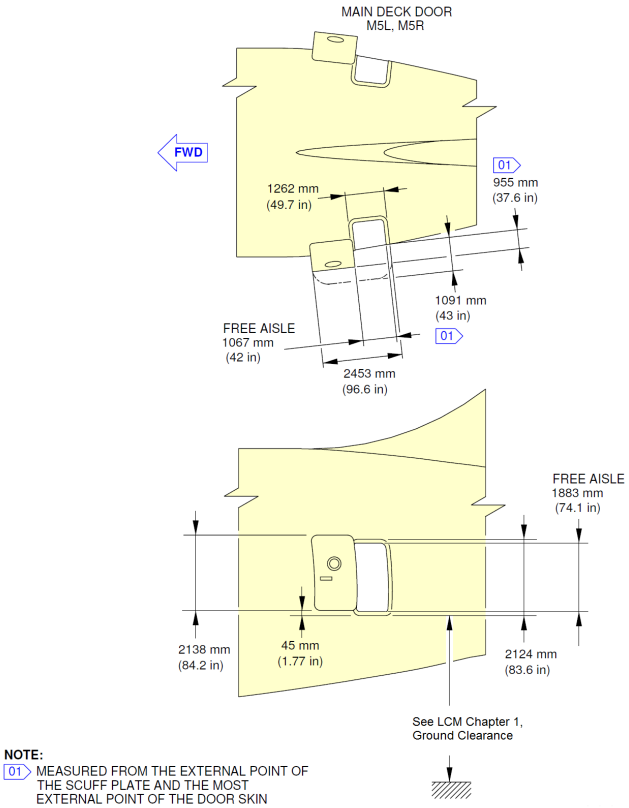
Aft Passenger and Service Doors

M5 L/R



NOTE:

01 MEASURED FROM THE EXTERNAL POINT OF THE SCUFF PLATE AND THE MOST EXTERNAL POINT OF THE DOOR SKIN

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2.2 Diplomatic Bag Stowage Location

The diplomatic bag stowage is located in cabin section A, in the care of the IM/Purser. The maximum weight of the bag is 10 kg, and the dimensions shall not exceed the size of carry-on baggage as governed by regulation. Refer to PHM 12.2. Load in the stowage shall be registered under compartment 1 on the load-sheet.

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2.3 Pressurization and Air-conditioning

The flight deck and cabin, including galleys and toilets, are incorporated in the pressurization and air-conditioning systems.

The purposes of the air-conditioning and pressurization systems is to maintain the cabin air at the desired pressure, temperature, and freshness to provide passengers and crew with maximum comfort on the ground and during flight.

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2.4 Tie-down Facilities

No tie-down facilities are available in the cabin.

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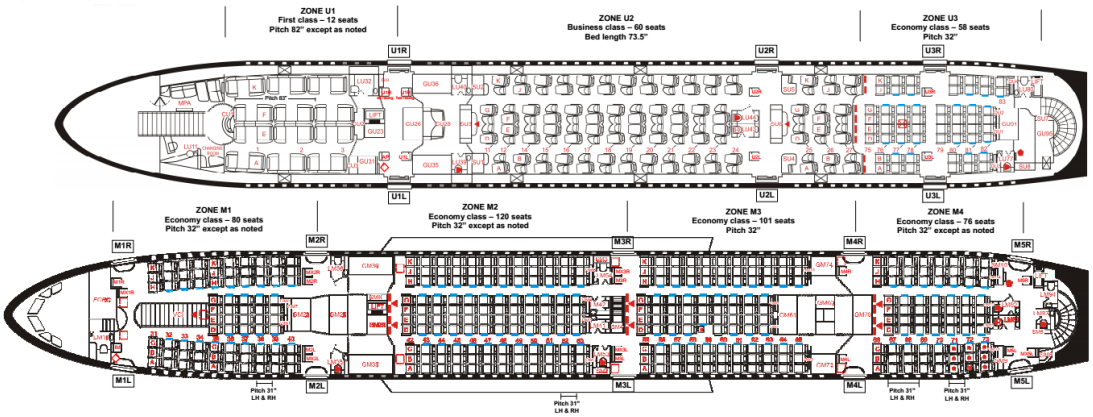
2.5 Cabin Versions

2.5.1 General

The number of passengers is limited by the number of seats provided with seat belts, the number of emergency exits, life vests, and oxygen masks.

2.5.2 Cabin Layout

Version 3801 HS-TUA/B/C/D/E/F



Capacity

Version Number[a]	Number of Crew Seats		Number of Passenger Seats[b] (Infants Excluded)								Number of Persons Allowed in Passenger Seats (Infants Included)	
	Flight Deck	Cabin Attendants	F-Class	C-Class	Y-Class					Total	Limited by Number of	
			Cabin E	Cabin F	Cabin A	Cabin B	Cabin C	Cabin D	Cabin G		Life Vests[c]	Oxygen Masks[d]
3801	4	24	12	60	80	120	101	76	58	507[e]	To be confirmed	795

a) See A380 LCM, Chapter 3.6—Versions, ULD Layout.
b) The number of passengers allowed on board is limited by the number of seats provided with seat belts.
c) The number of life vests can be increased. Refer to FCOM A380 (Ship Library).
d) Never exceed.
e) On some flights, certain seats are blocked as crew rest area (see valid TPI from BKKYYTG).

2.5.3 Seating Limitations

(Open)

2.5.4 Priority Seats for Passengers with Disabilities

In general, passenger with disability shall be seated as close as possible to service/exit doors (provided with slides) and may not obstruct emergency exits.

The following seats shall be released to such passengers.

Version 3801

F-Class 2F, 3F

C-Class 12EF, 14BJ

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Y-Class 32CH, 33CH, 38DG, 39DG

2.5.5 Seats Released for Stretcher Installation

The following seats shall be released for stretcher installation.

Version 3801

Y-Class 71-73ABC

2.5.6 Windowless Seats

Version 3801

Y-Class 55AK, 66AK, 78AK

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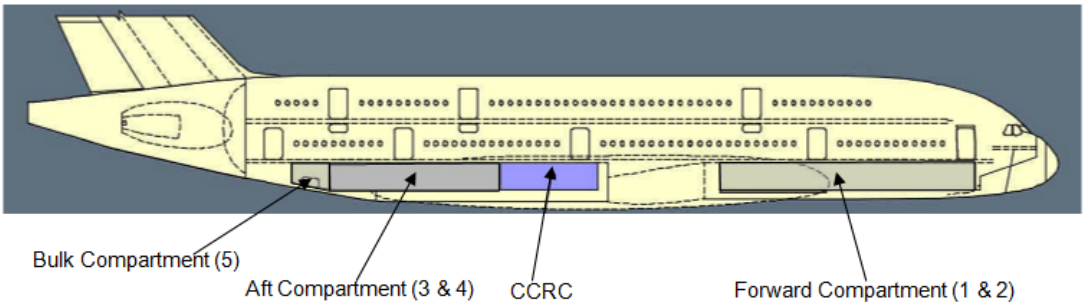
3 CARGO COMPARTMENTS

3.1 General

The Baggage/cargo/mail and other dead load are carried in three lower deck compartment. They are referred to as the forward (Compt 1 and 2), the aft (Compt 3 and 4) and the bulk (Compt 5) compartments.

The Cabin Crew Rest Compartment (CCRC) module is installed in the compartment 3 and separated with the cargo compartment area by a partition with decompression panels.

The forward and the aft cargo compartments are equipped with independent electrically ULD handling/ loading systems. Each system is similar and is operated by one person. A control panel is located near the forward part of the door openings. The general arrangements of the compartments is shown in the illustration below.



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3.2 Door Location

The compartments are loaded/unloaded through three doors located on the lower right-hand side of the fuselage.

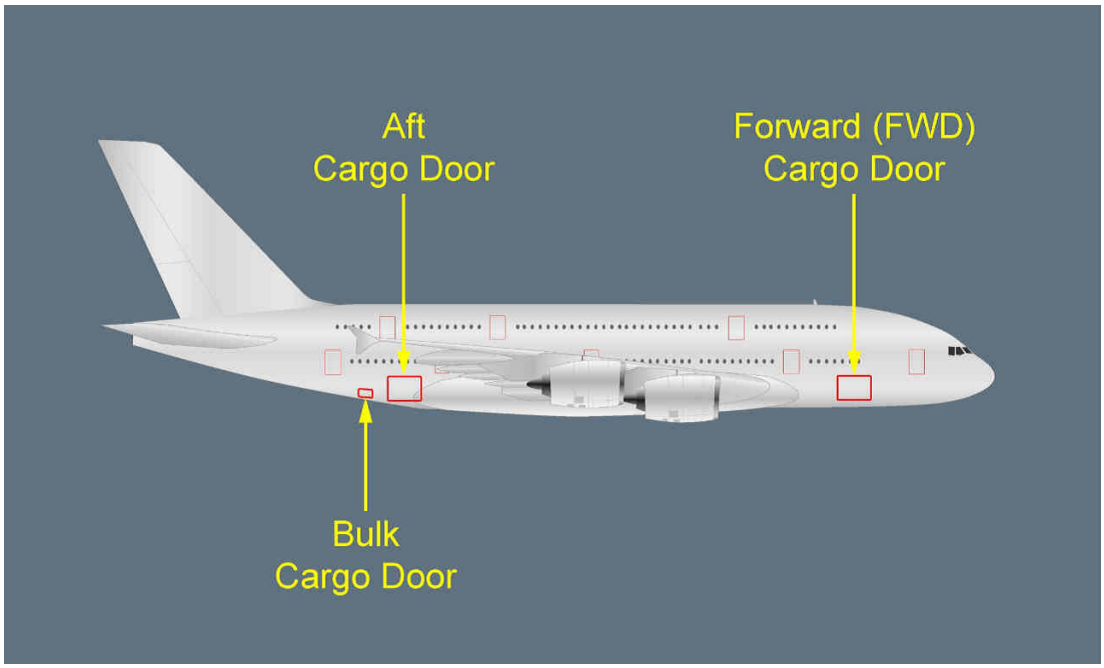
The forward (FWD) and Aft cargo doors provide access to the FWD and Aft cargo compartments, respectively. Both the FWD and Aft cargo doors open outward and upward. They are mechanically locked and hydraulically operated.

The cargo doors can be manually locked and unlocked by using the door handle, located on the door from outside the aircraft.

The bulk cargo door opens inward and upward by manually open or close the bulk cargo door by using one of the door handles that are in the interior and on the exterior of the aircraft.

See A380 LCM, Chapter 1.6—Ground Clearances for door locations and elevations over ground level.

Cargo Door Locations



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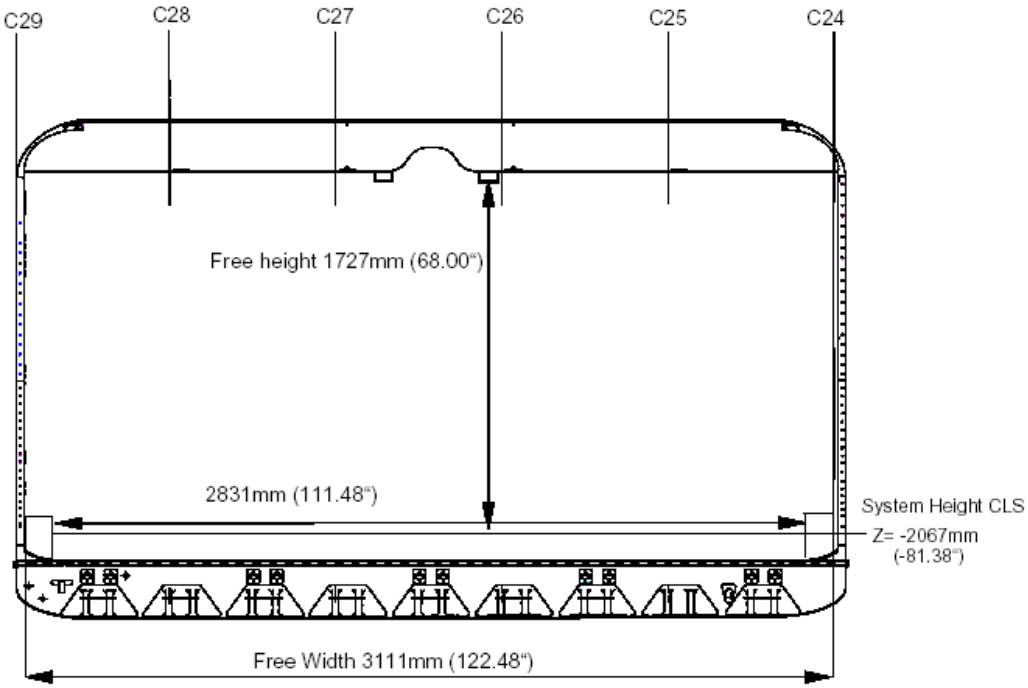
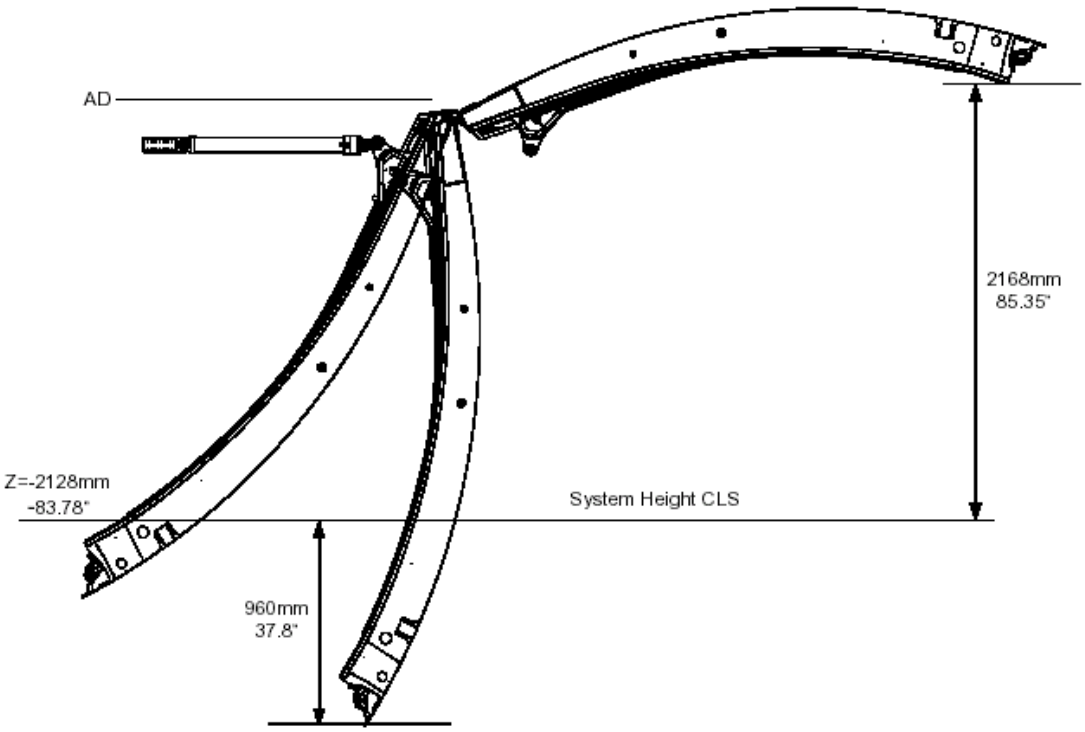
3.3 Door Dimensions

The figures below show the compartment door opening clearance and door stations.

3.3.1 Forward Cargo Door





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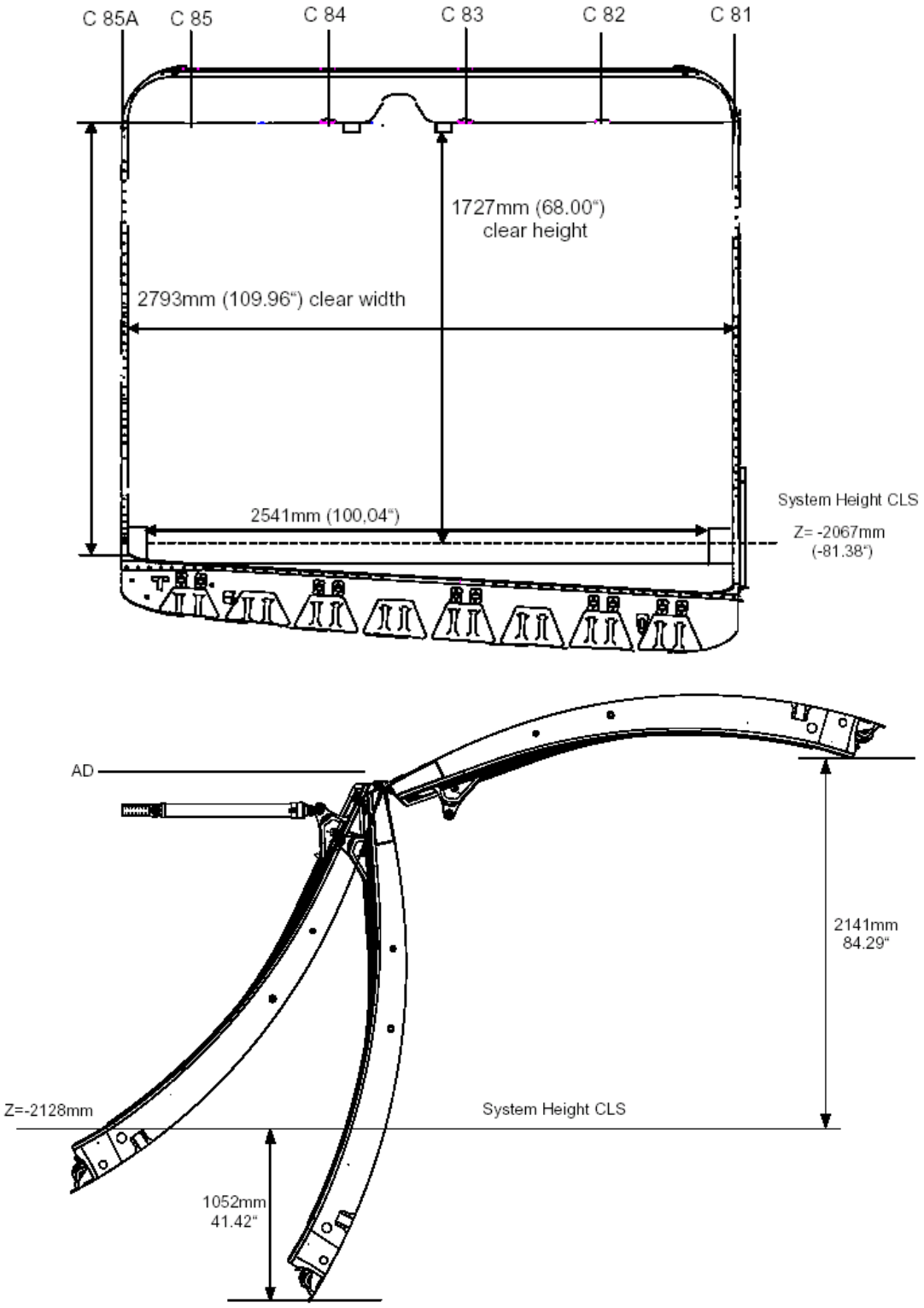
3.3.2 Aft Cargo Door



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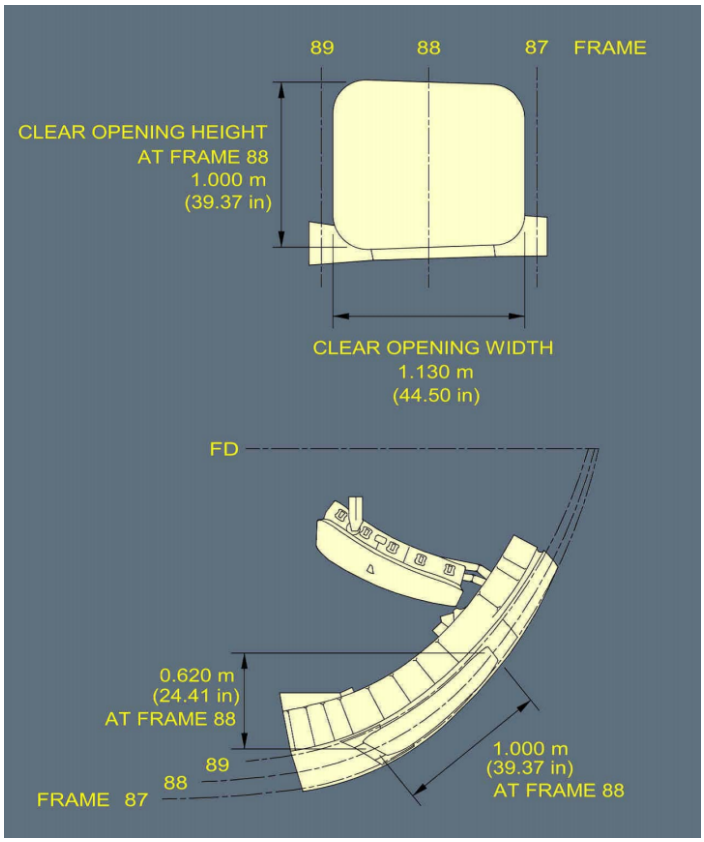
3.3.3 Bulk Cargo Door



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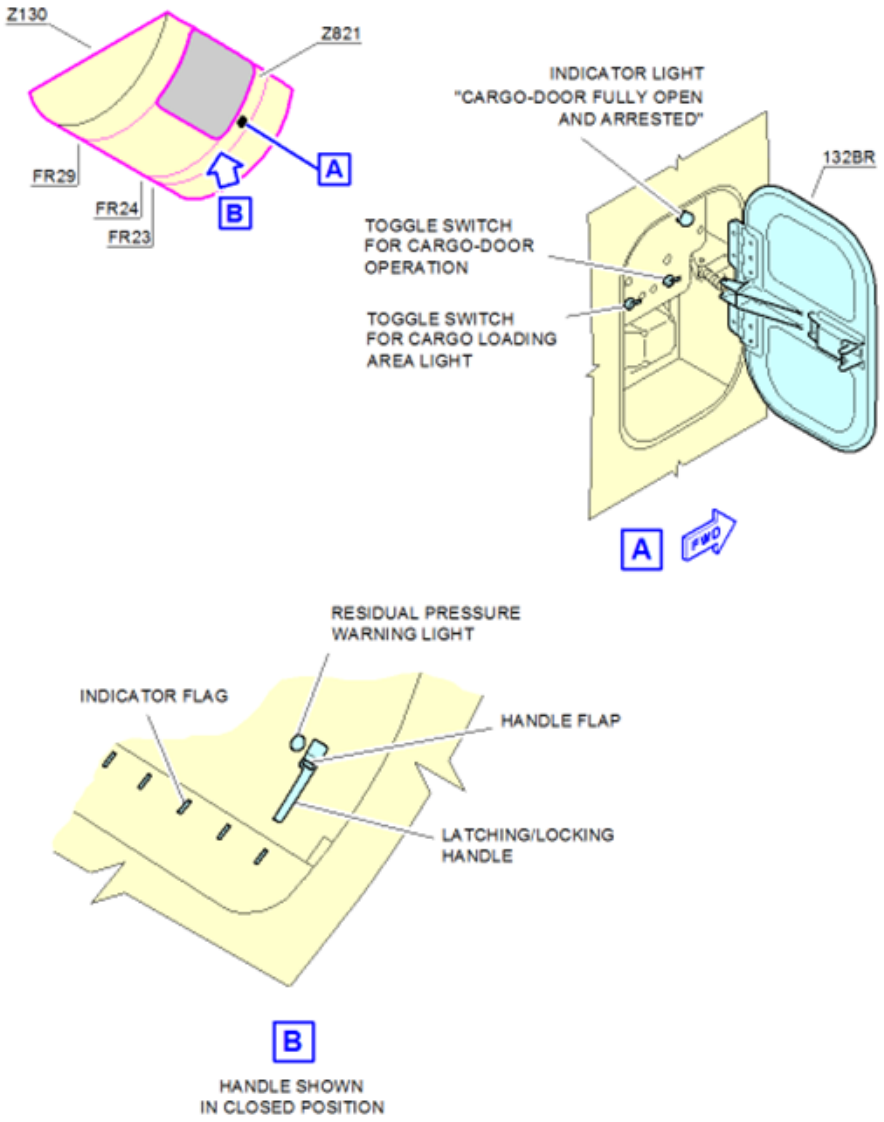
3.4 Door Operating Mechanism

3.4.1 Forward and Aft Cargo Door

Normal Operation



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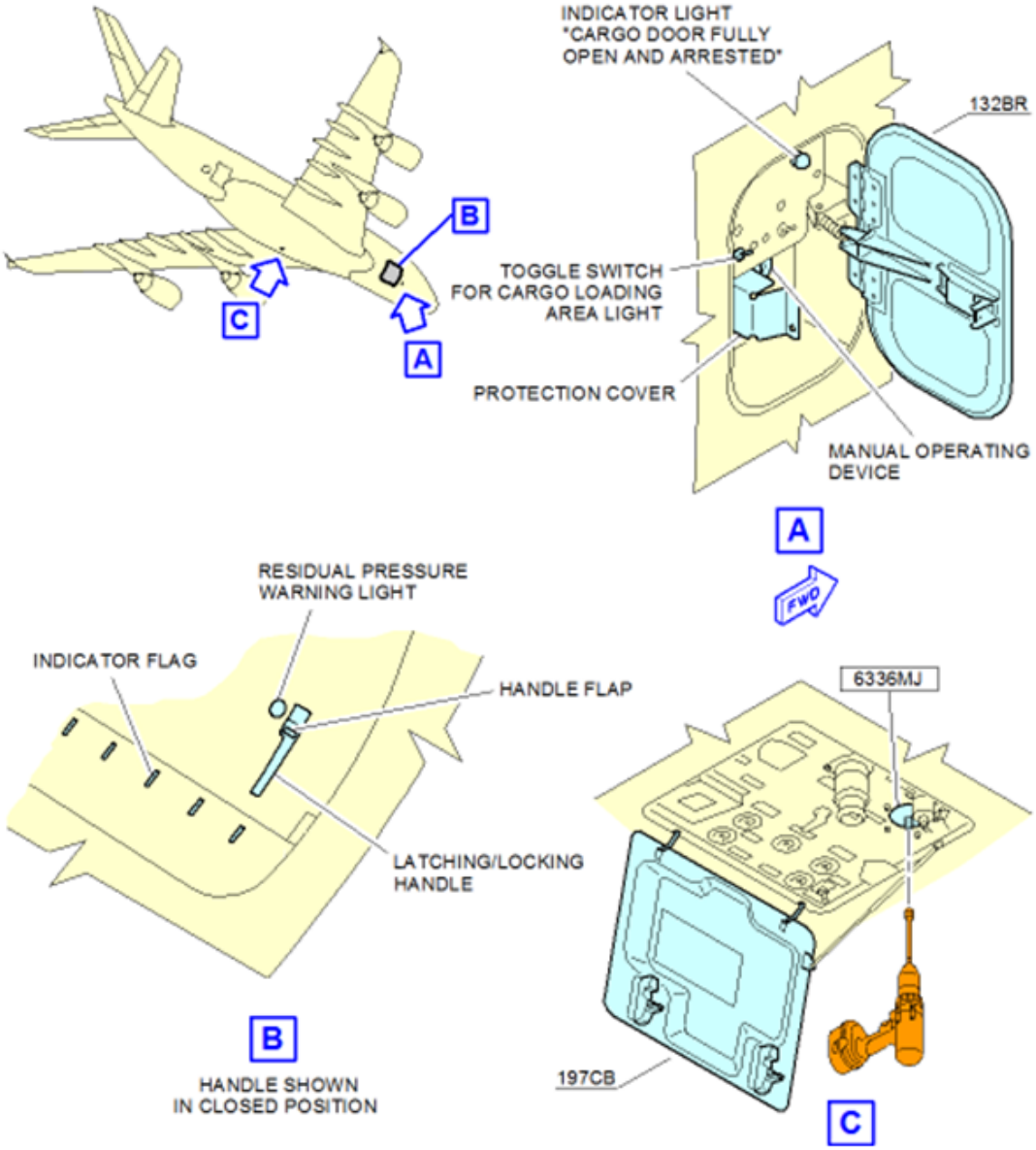
Manual Operation



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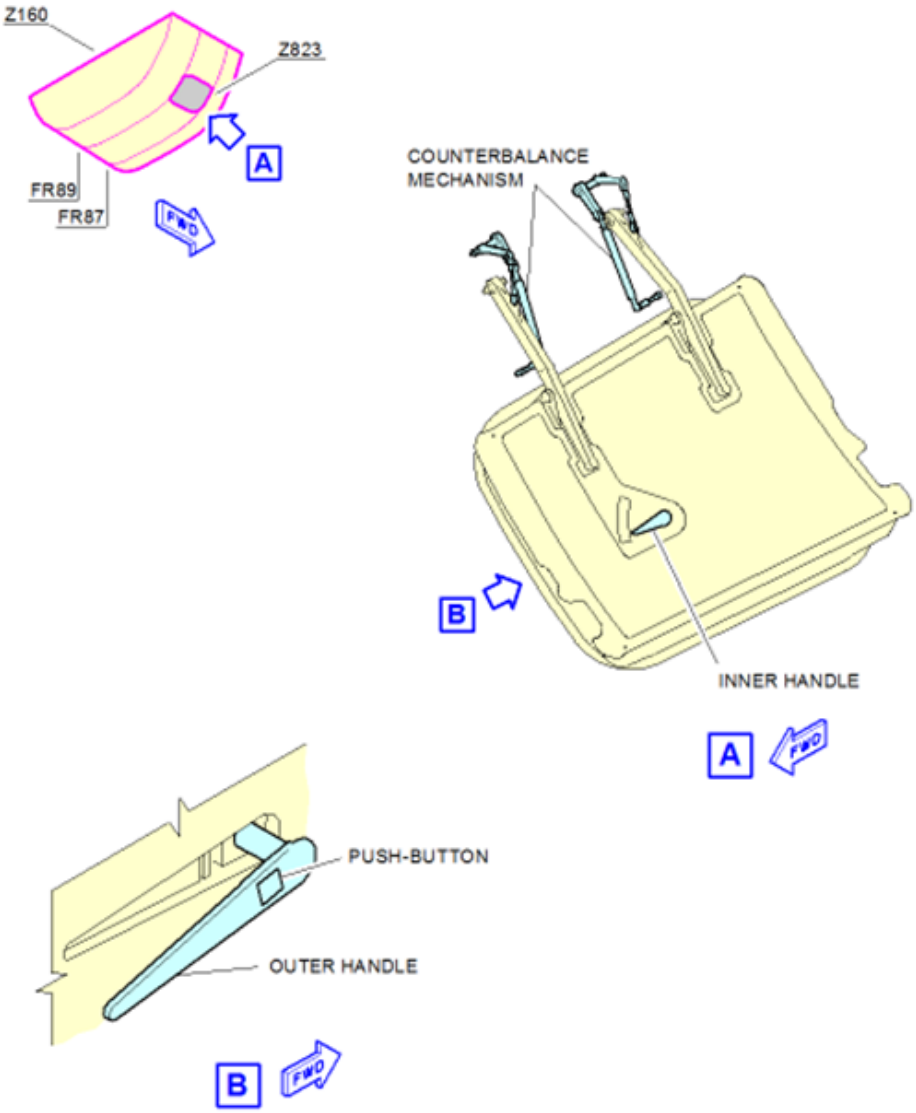
3.4.2 Bulk Cargo Door



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3.5 Door Operation

3.5.1 General

The forward and the aft compartment doors are electrically operated with outward and upward opening directions.. The doors may also be operated manually in case of power failure.

The bulk compartment door is manually operated from inside or outside the compartment with inward and upward opening directions. Nets and a door protectors are installed to keep the door area clear.

See A380 LCM, Chapter 3.5.4—Forward and Aft Cargo Doors for step-by-step instructions for door operation. The procedures include operation under normal electrical power and manual operation when power is not available.

The Cargo Door Control Panel is the interface to operate the cargo door and provides:

- toggle switch for door operation (open or close the cargo door,
  Note: Cargo door can only be closed when CLS entrance Y/Z latches are raised).
- toggle switch to illuminate the entrance area light.
- turn switch for the cargo door operation backup system (in case the hydraulic pressure is not available),
- an indicator light to show that door is fully open and arrested.
- door control panel illumination through LED light.

3.5.2 Responsibility

Lower deck compartment doors shall normally be operated by ground staff. The station or ground mechanic is responsible for the operation of the doors and must ensure they are properly latched in closed position by visual inspection of door latch indexes which must be aligned.

3.5.3 Training Requirements

Normal Operation

Due to the technical complexity of these doors, no person shall be authorized to operate the doors without receiving proper theoretical and practical training by qualified staff.

Manual Operation

The operation of this type of door requires no special training but shall be demonstrated to the personnel concerned before they are permitted to do so.

3.5.4 Forward and Aft Cargo Doors

3.5.4.1 Normal Operation

WARNINGS:

1. **Ensure that there are no obstacles in the range of the cargo door compartment and the opening area must be clear of persons, access plat forms and tools/ equipment.**
2. **Work on the hydraulic systems can be dangerous.**
3. **Do not open the cargo compartment doors while the red warning light flashes. The red warning light flash, remaining pressure can cause the door to open suddenly and can kill or cause injury to persons or cause damage to the aircraft.**

Cautions:

1. **Do not open the door if the wind speed is over 40 knots, with at is over 40 knots can cause damage to the door and also the aircraft structure. If the aircraft is put into the nose-into-wind position, if the aircraft is into the nose-into-wind position, the maximum wind speed can be 50 knots.**
2. **Close the door before the wind speed increase to 60 knots. If the wind speed is more than 60 knots, damage to the door and the aircraft structure can occur.**

3.5.4.1.1 Opening Procedure

1. On the latching/locking handle:
   a. push the handle flap in,
   b. quickly and fully pull the latching/locking handle down with a continuous movement,

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c. make sure that the latching/locking handle is in the UNLATCHED/UNLOCKED position.
Note: The door actuator has no power, if the latching/locking handle is not fully open.

2. On the cargo door:
   a. ensure that you see all the indicator flags out and the applicable cargo door can open freely, If the applicable cargo door does not open freely do a check of the cargo door drift pins.
3. On the control panel, the toggle switch:
   a. push the toggle switch on the door operating panel to the OPEN position and hold it.
4. The Green Hydraulic System supplies hydraulic power to the cargo doors.

   Note: Full hydraulic power is available after approximately 2.5 sec.
5. The door actuator extends and opens the cargo door.
6. On the control panel, door actuator

   When the cargo door is fully open:
   a. the internal lock of the door actuator engages,
   b. the green indicator light CARGO-DOOR FULLY OPEN AND ARRESTED on the door operation panel comes on.
7. On the control panel

   When the green indicator light CARGO-DOOR FULLY OPEN AND ARRESTED comes on:
   a. release the toggle switch,
   b. the toggle switch goes automatically back to the NEUTRAL position.
8. On the control panel in NEUTRAL position

   When the toggle switch is released before the green indicator light CARGO-DOOR FULLY OPEN AND ARRESTED comes on:
   a. the toggle switch goes automatically back to the NEUTRAL position,
   b. the door movement stops immediately.

3.5.4.1.2 Closing Procedure

Note: Remove the safety lock if installed.

1. On the control panel:
   a. push the toggle switch on the door operating panel to the OPEN position and hold it for a minimum of one minute (60 sec)
      Note: This will make sure the door does not fall closed suddenly when the toggle switch is moved to the CLOSE position,
   b. push the toggle switch on the do or operating panel to the CLOSE position and hold it.
2. The Green Hydraulic System supplies hydraulic power to the cargo doors. NOTE: Full hydraulic power is available a fter approximately 2.5 sec.
3. The internal lock of the door actuator disengages.
4. The green indicator light CARGO-DOOR FULLY OPEN AND ARRESTED on the door operating panel goes off.
5. The door actuator retracts and closes the cargo door.
6. On the control panel:
   a. release the toggle switch when the cargo door reaches the fully closed position. The toggle switch goes automatically back to the NEUTRAL position.
7. On the latching/locking handle:
   a. push the latching/locking handle up to the LATCHED/LOCKED position until it is flush with the outer surface.
      Note: This operation must be completed in 30 sec after the toggle switch is released. The full hydraulic power is available for approximately 30 sec after you release the toggle switch.

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8. On the cargo door:
   a. make sure that all the indicator flags are flush with the surface.

3.5.4.2 Manual Operation

WARNINGS:
1. **Ensure that there are no obstacles in the range of the cargo door compartment and the opening area must be clear of persons, access platforms and tools/ equipment.**
2. **Work on the hydraulic systems can be dangerous.**
3. **Do not open the cargo compartment doors while the red warning light flashes. The red warning light flash, remaining pressure can cause the door to open suddenly and can kill or cause injury to persons or cause damage to the aircraft.**

Cautions:
1. **Do not open the door if the wind speed is over 40 knots, with at is over 40 knots can cause damage to the door and also the aircraft structure. If the aircraft is put into the nose-into-wind position, if the aircraft is into the nose-into-wind position, the maximum wind speed can be 50 knots.**
2. **Close the door before the wind speed increase to 60 knots. If the wind speed is more than 60 knots, damage to the door and the aircraft structure can occur.**

Note: Two persons are necessary for this procedure.

3.5.4.2.1 Opening Procedure

1. Latching/locking handle:
   a. push the handle flap in,
   b. quickly and fully pull the latching/locking handle down with a continuous movement,
   c. make sure that the latching/locking handle is in the UNLATCHED/UNLOCKED position.

   Note: The door actuator has no power, if the latching/locking handle is not fully open.
2. On the cargo door:
   a. ensure that you see all the indicator flags out and the applicable cargo door can open freely.
3. Operating Panel:
   a. open the protection cover on the operating panel to get access to the manual operating device.
4. Manual operating device:
   a. turn the manual operating device clockwise to the OPEN position a nd hold it.
5. Hydraulic auxiliary pump:
   a. install a socket 1/2 in-hexagonal on the hydraulic auxiliary pump and connect the TOOL POWER-ELECTRICAL OR PNEUMATIC, MIN. 600 RPM,
      Note: The tool power-electrical or pneumatic should have a minimum power of 700 Watts and a rotational speed between 600 rpm and 1,200 rpm.
   b. operate the hydraulic auxiliary pump with the TOOL POWER-ELECTRICAL OR PNEUMATIC, MIN. 600 RPM.
6. The hydraulic auxiliary pump supplies hydraulic power to the cargo-doors.
7. The door-actuator extends and opens the cargo-door.
8. Manual operating device

   When the manual operating device is released during the opening procedure:
   a. the manual operating device goes back automatically to the NEUTRAL position,
   b. the door movement stops immediately.

   When the cargo-door is fully open:
   a. the internal lock of the door-actuator engages,
   b. the green indicator light CARGO DOOR FULLY OPEN AND ARRESTED comes on,
   c. release the manual operating device,
   d. the manual operating device goes back automatically to the NEUTRAL position.

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9. Hydraulic auxiliary pump:
   a. stop the operation of the hydraulic auxiliary pump and disconnect the TOOL POWER-ELECTRICAL OR PNEUMATIC, MIN. 600 RPM and remove the socket 1/2 in-hexagonal.
10. Operating Panel:
   a. close the protection cover on the operating panel.

3.5.4.2.2 Closing Procedure

Note: Remove the safety lock if installed.

1. Operation panel:
   a. open the protection cover on the operation panel to get access to the manual operating device.
2. Hydraulic reservoir service-panel:
   a. on the hydraulic reservoir service-panel: Install a socket 1/2 in-hexagonal on the hydraulic auxiliary pump and connect a TOOL POWER-ELECTRICAL OR PNEUMATIC, MIN. 600 RPM.
      Note: The tool power-electrical or pneumatic should have a minimum power of 700 Watts and a rotational speed between 600 rpm and 1200 rpm.
3. Hydraulic auxiliary pump:
   a. operate the hydraulic auxiliary pump with the TOOL POWER-ELECTRICAL OR PNEUMATIC, MIN. 600 RPM. The hydraulic auxiliary pump supplies hydraulic power to the cargo-doors.
4. Manual operating device:
   a. push the manual operating device on the door operating panel to the OPEN position, and hold it for a minimum of one minute (60 sec).
      Note: This will make sure the door does not fall closed suddenly, when the manual operating device is moved to the CLOSE position.

   Turn the manual operating device counterclockwise to the CLOSE position and hold it:
   a. the internal lock of the door-actuator disengages,
   b. the door-actuator retracts and closes the cargo-door,
   c. the green indicator light CARGO DOOR FULLY OPEN AND ARRESTED goes off.

   When the manual operating device is released during the closing procedure:
   a. the manual operating device goes back automatically to the NEUTRAL position,
   b. the cargo-door movement stops immediately.

   When the cargo-door reaches the fully closed position:
   a. release the manual operating device,
   b. the manual operating device goes back automatically to the NEUTRAL position.
5. Hydraulic auxiliary pump:
   a. stop the operation of the hydraulic auxiliary pump and disconnect the TOOL POWER-ELECTRICAL OR PNEUMATIC, MIN. 600 RPM and remove the socket 1/2 in-hexagonal.
6. Latching/locking handle:
   a. push the latching/locking handle up to the LATCHED/LOCKED position until it is flush with the outer surface.
7. On the cargo-door:
   a. ensure that all the indicator flags are flush with the surface.
8. Close the protection cover on the operating panel.

3.5.5 Bulk Cargo Door

3.5.5.1 Opening Procedure

1. To open externally

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a. Push the push-button to release the outer handle.

b. Move the outer handle to the UNLATCHED position and hold it.

c. Open the door until it is clear of the latch fittings.

d. Release the outer handle.

Note: The handle moves automatically back to the LATCHED position.

e. Push the outer handle into the recess until it is flush with the outer surface.

f. Move the door inboard to open it.

Note: Only a small force is necessary to operate the door, because of the counterbalance mechanism.

g. Release the door near the open position. It will move to the fully open position automatically. A catch mechanism holds the door in this position.

2. To open internally

a. Move the inner handle to the UNLATCHED position and hold it.

b. Open the door until it is clear of the latch fittings.

c. Release the inner handle.

Note: The handle moves automatically back to the LATCHED position.

d. Move the door inboard to open it.

Note: Only a small force is necessary to operate the door, because of the counterbalance mechanism.

e. Release the door near the open position. It will move to the fully open position automatically. A catch mechanism holds the door in this position.

3.5.5.2 Closing Procedure

1. To close etxernally

a. Push the push-button to release the outer handle.

b. Move the outer handle to the UNLATCHED position and hold it.

c. Move the door outboard until the catch mechanism disengages.

d. Release the outer handle.

Note: The handle moves automatically back to the LATCHED position.

e. Move the door outboard.

f. Close the door.

Notes:

1. Only a small force is necessary to operate the door, because of the counterbalance mechanism.

2. The door moves automatically to the fully closed position when you release it immediately before the closed position. Immediately before the door fully closes, the handle first moves back to the UNLATCHED position and then moves to the LATCHED position.

3. Push the outer handle into the recess until it is flush with the outer surface.

2. To close internally

a. Push the push-button to release the outer handle.

b. Move the outer handle to the UNLATCHED position and hold it.

c. Move the door outboard until the catch mechanism disengages.

d. Release the outer handle.

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Note: The handle moves automatically back to the LATCHED position.

e. Push the outer handle into the recess until it is flush with the outer surface.

f. Move the door outboard.

Notes: 1. Only a small force is necessary to operate the door, because of the counterbalance mechanism:

a. ensure that the inner handle is in the LATCHED position,

b. close the door.

2. The door moves automatically to the fully closed position when you release it immediately before the closed position. Immediately before the door fully closes, the handle first moves back to the UNLATCHED position and then moves to the LATCHED position.

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3.6 Versions, ULD Layout

3.6.1 Symbols

	(XZ-Latch) Triple retractable latch		Fixed guide rail
	(XZ-Latch) Double retractable latch		Fixed end stop with vertical restraint lip
	(YZ-Latch) Retractable center latch		Side/Vertical restraint with tie down Point
	Retractable doorsill latch	N	"No Fit" possible (Empty position)
	Anti roll out	AVI	Live Animal
	(XZ-Latch) Double retractable latch	*AVI	Live Animal (To be accepted on PLA pallets only)
	(YZ-Latch) Overridable center latch		

Cautions:
1. **It is prohibited to load loose bulk cargo/mail and baggage in compartments 1, 2, 3 and 4.**
2. **In case of malfunction of any part of the ULD loading system, restrictions may be imposed on ULD's gross weight or their position in the compartment. See A380 LCM, Chapter 3.15—ULD Loading System Operating Restrictions.**

Notes:
1. *x in the 4th digit indicates any cabin configuration.*
2. *x in the 5th digit indicates number of pallets in FWD compartment.*
3. *x in the 6th digit indicates number of pallets in Aft compartment.*
4. *The last alphabet indicates alternative version of FWD and/or Aft compartment.*

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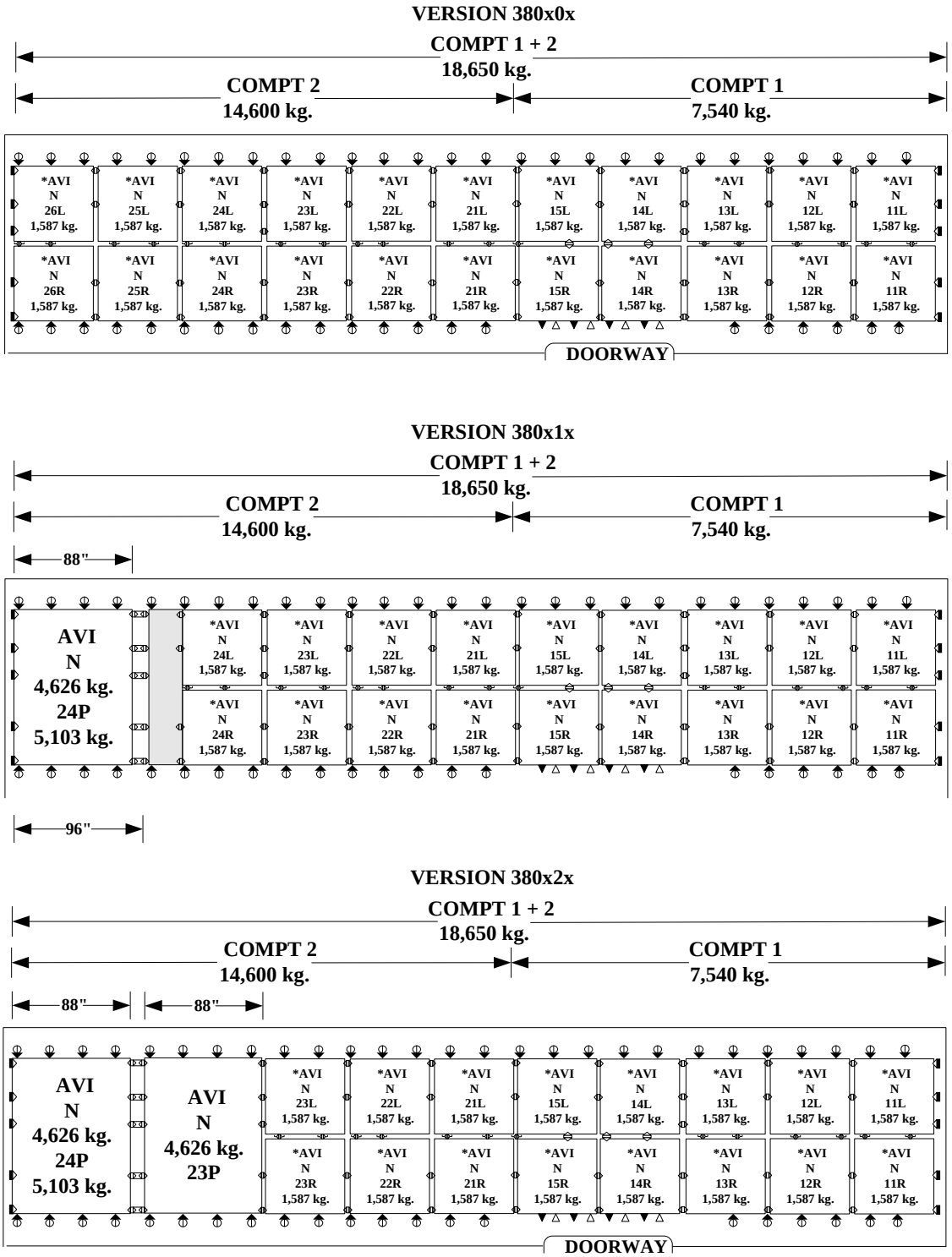
3.6.2 Forward Compartment



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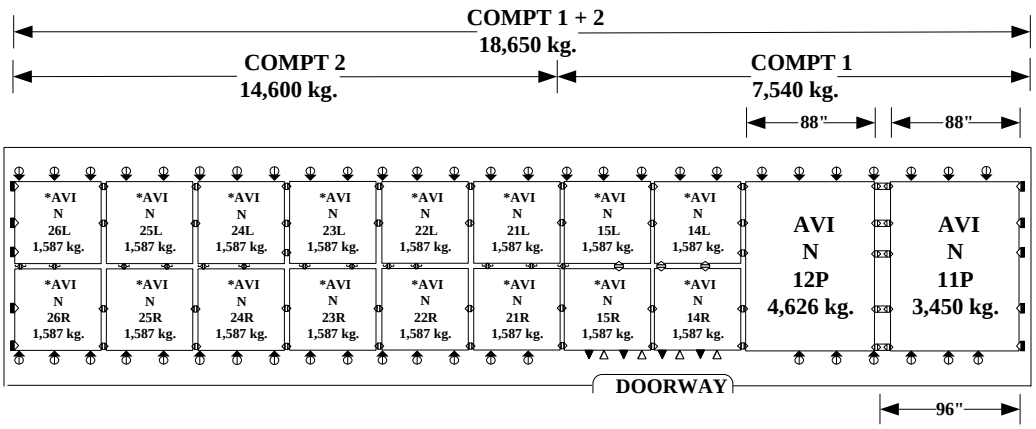
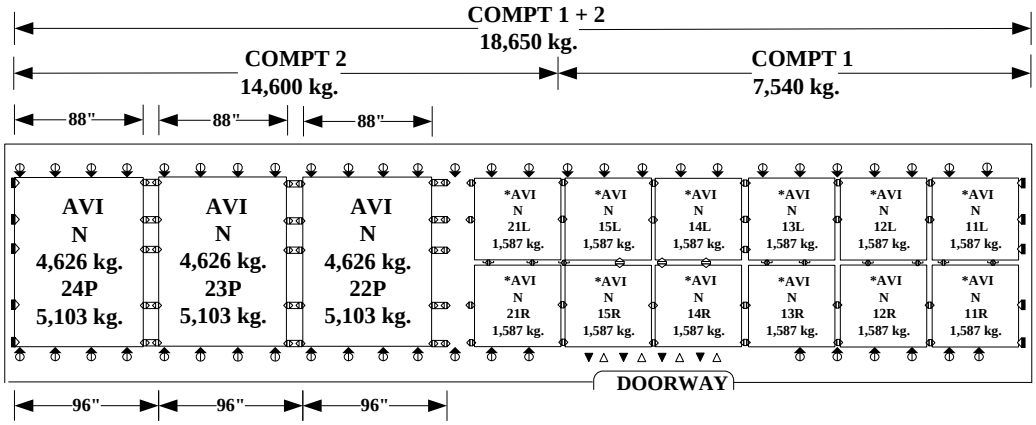
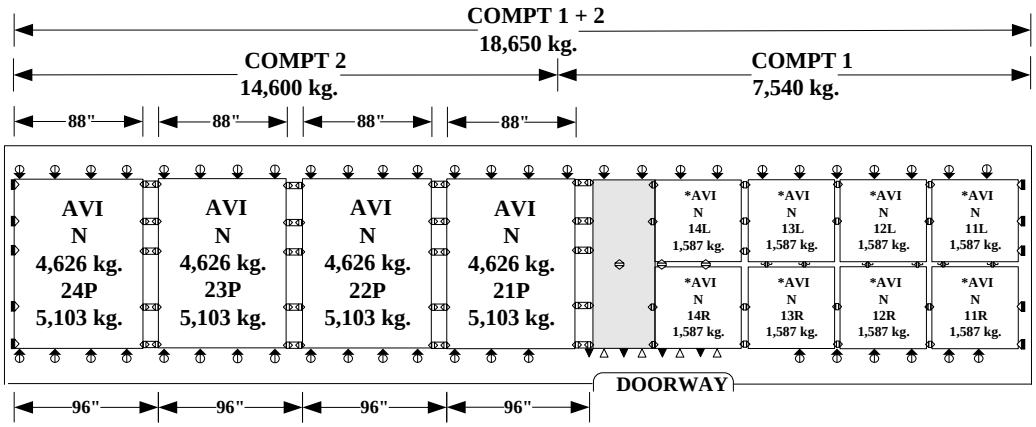
VERSION 380x2xA



VERSION 380x3x



VERSION 380x4x



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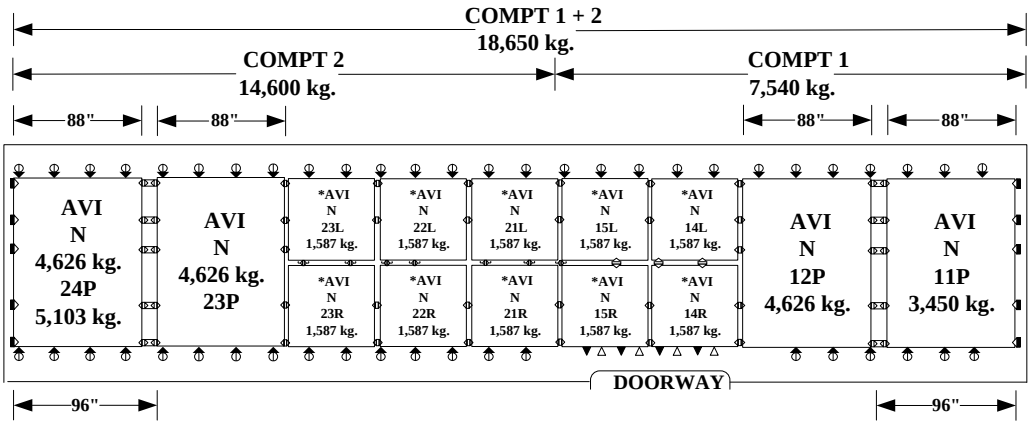
VERSION 380x4xA



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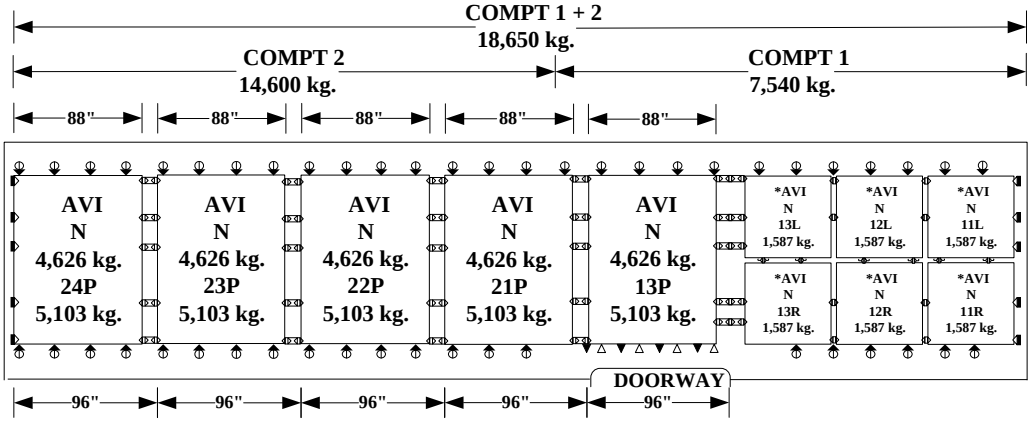

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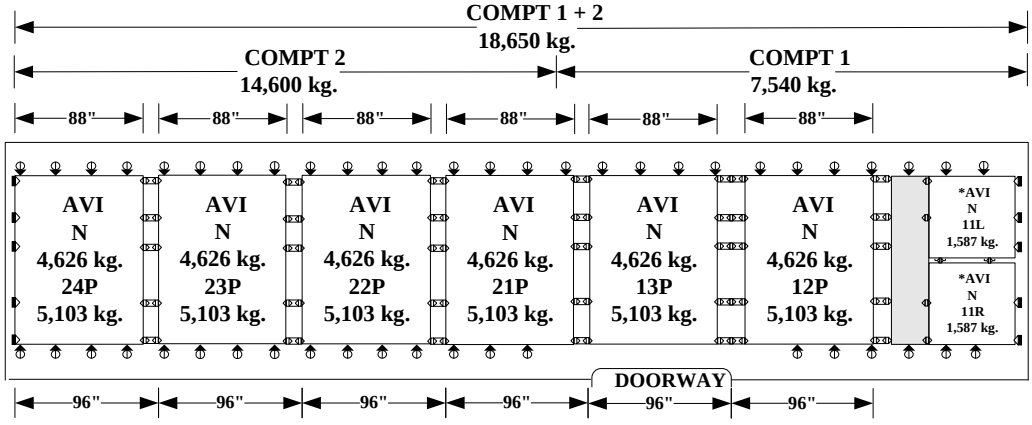

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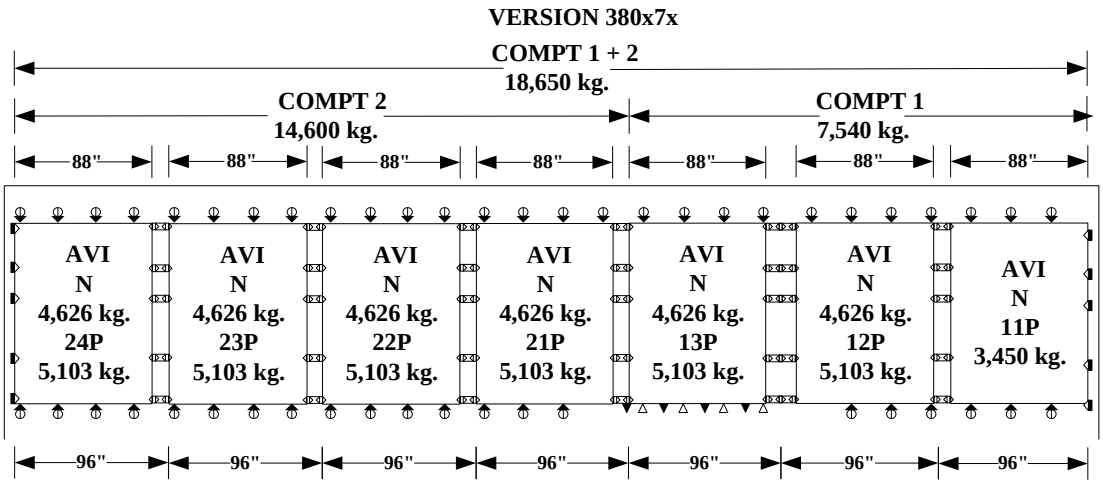
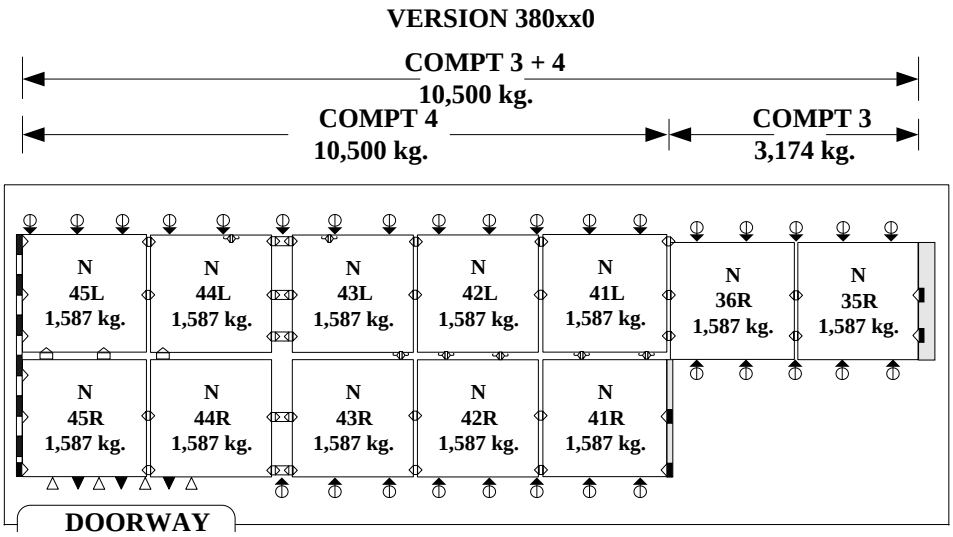


3.6.3 Aft Compartment



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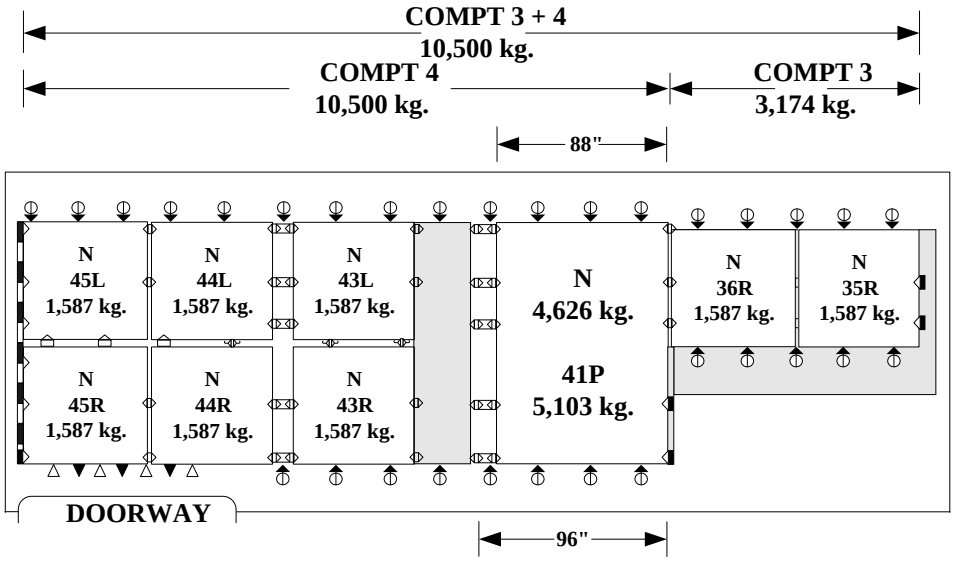
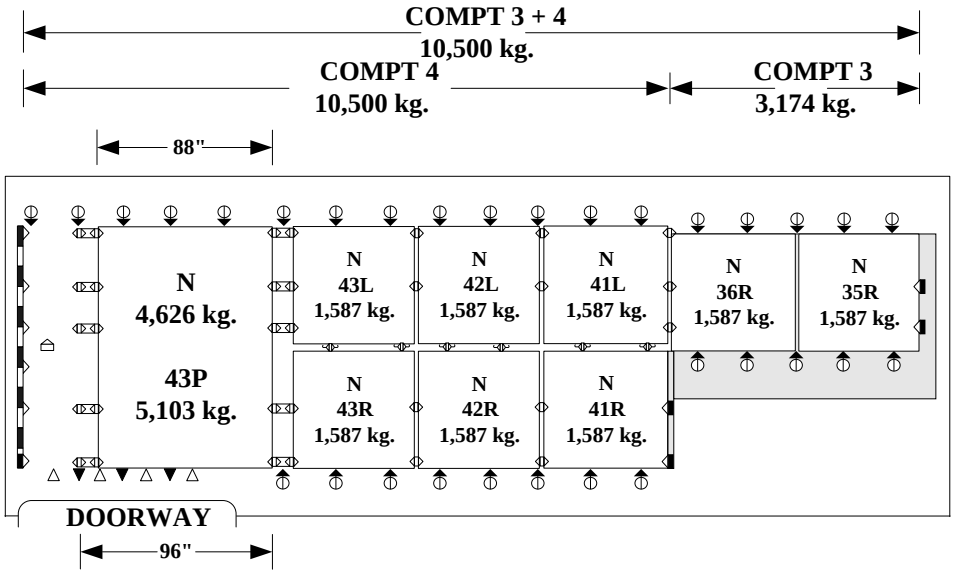
VERSION 380xx1



VERSION 380xx1K



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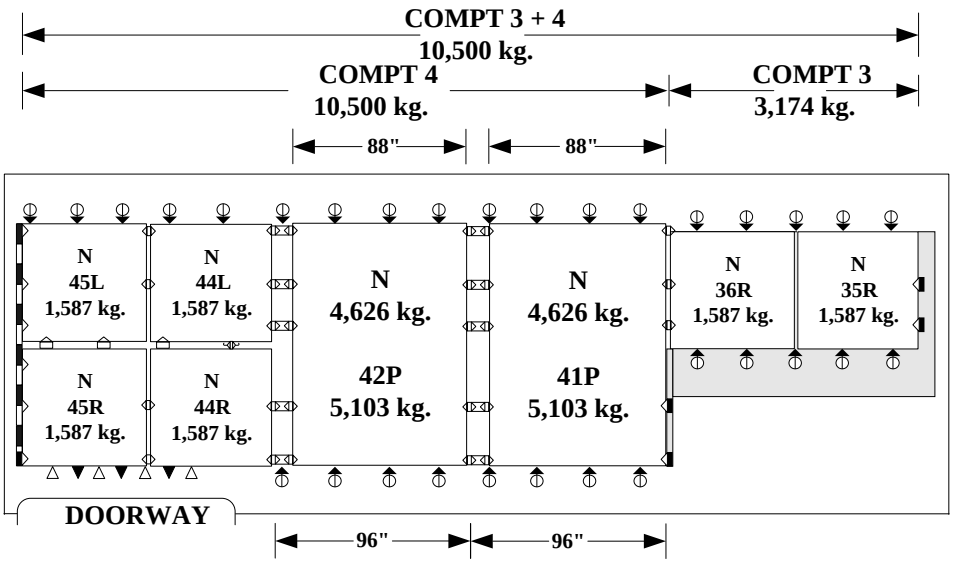
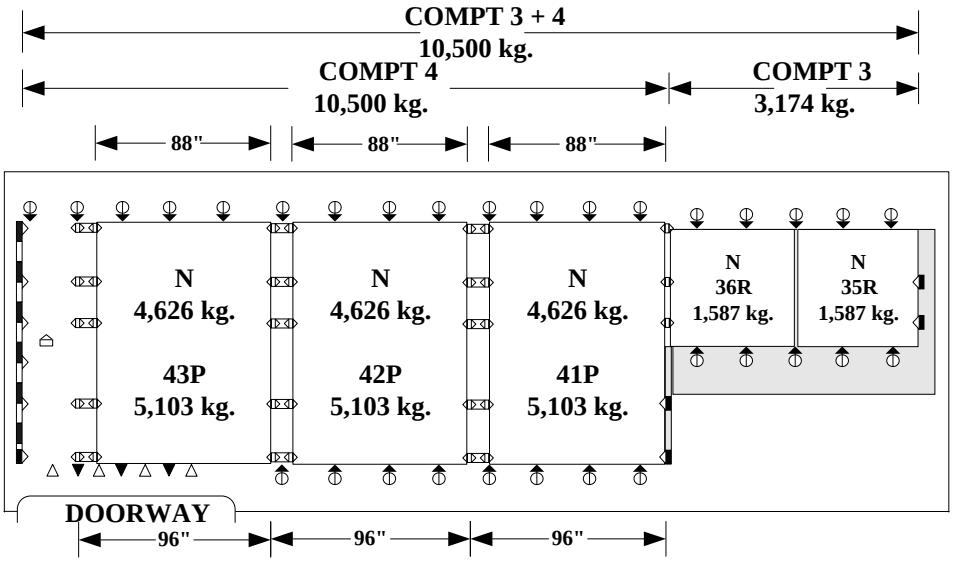
VERSION 380xx2



VERSION 380xx3



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3.7 Forward and Aft Version Combinations

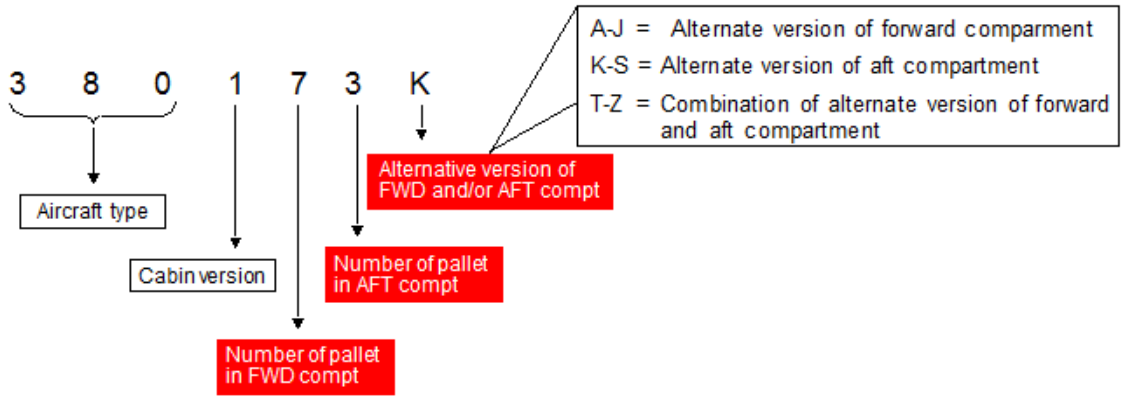
3.7.1 General

See A380 LCM, Chapter 3.6—Versions, ULD Layout for information on how to maximize the aircraft compartment utilization, using combinations of forward & aft compartment versions. To combine FWD & Aft versions, select the desired versions by pairing each version from FWD & Aft compartments in order to fit the best weight/volume required and/or load planning purposes.

Coding system of compartment version consists of numeric digits and alphabets, which represent the aircraft type, cabin version, number of pallets in FWD compartment and alternative version of FWD and/or Aft compartment respectively.

3.7.2 Version Coding System

Example



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3.8 Cargo Compartment Version EDP Loadsheet List

Version	Version
380X00	380X33
380X01	380X40
380X02	380X41
380X03	380X42
380X10	380X43
380X11	380X40A
380X11K	380X41A
380X12	380X41T
380X13	380X42A
380X20	380X43A
380X21	380X50
380X22	380X51
380X23	380X52
380X20A	380X53
380X21A	380X60
380X22A	380X61
380X23A	380X62
380X30	380X70
380X31	380X71
380X32	380X72

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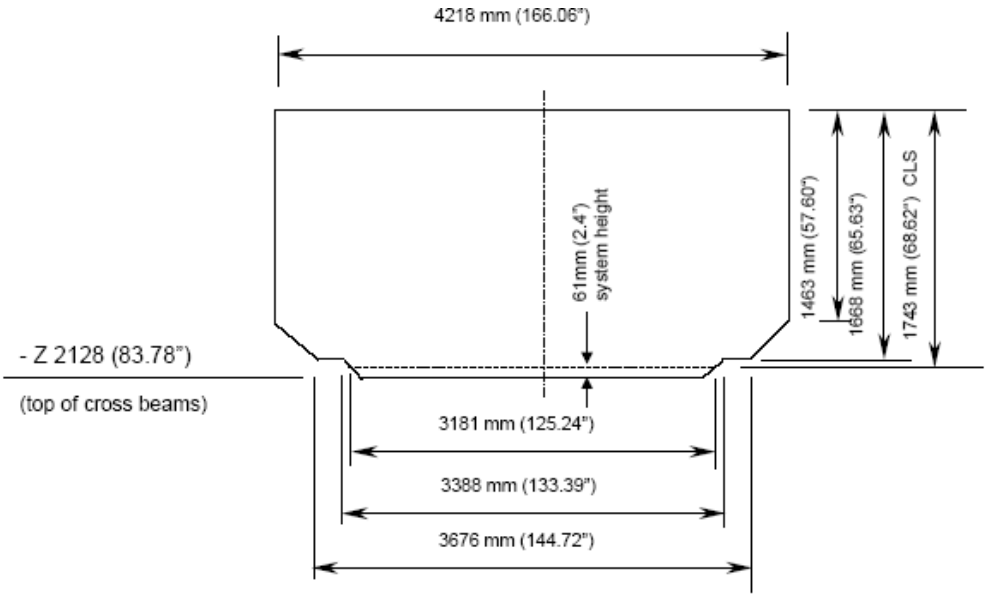
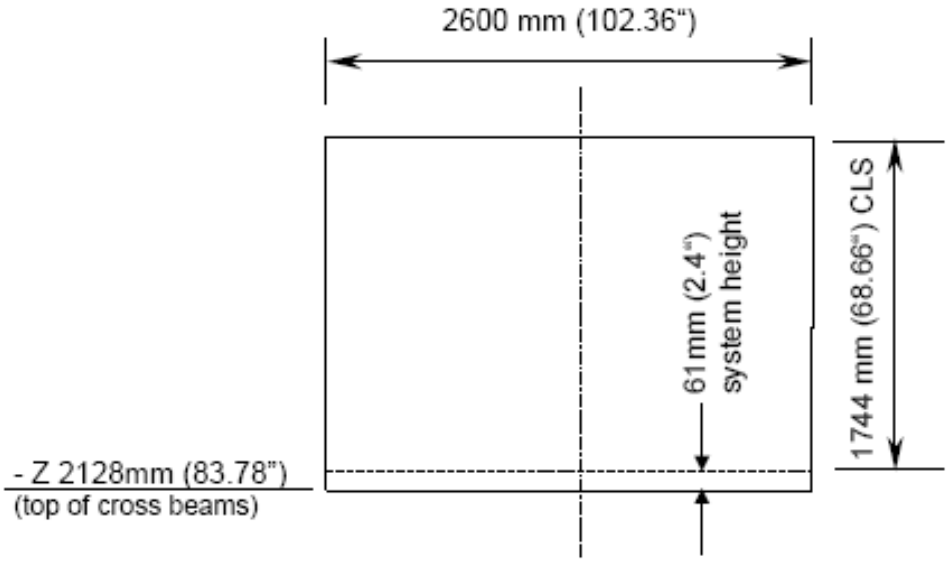
3.9 Weight, Volume, and Dimensions

3.9.1 Cargo Compartment Contour

Forward Compartment



Aft Compartment



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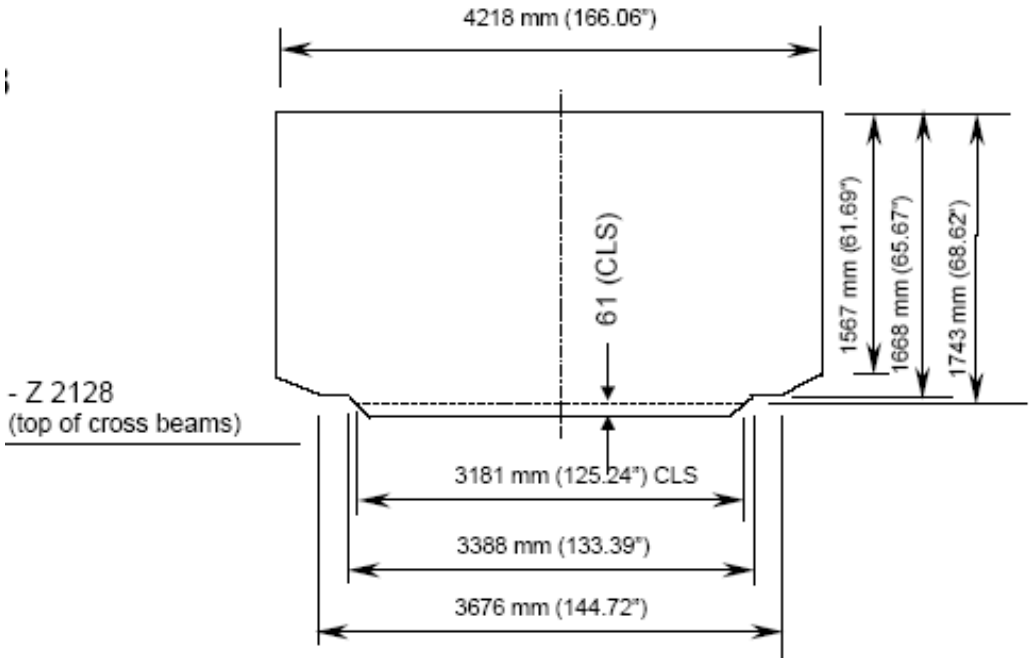

3.9.2 Container and Pallet Compartments

All loads shall be placed in containers or on pallets. See A380 LCM, Chapter 6—UNLOADING AND LOADING for details.

Compartments 1 and 2

Version Number	Maximum Weight	Number of ULDs		Volume (m³)
380x0x	Compt 1: 7,540 kg	10 ea 60.4" × 61.5" or 5 ea 60.4" × 125"		43.0–46.0
	Compt 2: 14,600 kg	12 ea 60.4" × 61.5" or 6 ea 60.4" × 125"		51.6–55.2
	MAX 1 + 2: 18,650 kg		Total	94.6–101.2
380x1x	Compt 1: 7,540 kg	10 ea 60.4" × 61.5" or 5 ea 60.4" × 125"		43.0–46.0
	Compt 2: 14,600 kg	8 ea 60.4" × 61.5" + 1 ea 88" × 125" (or 1 ea 96" 125") or 4 ea 60.4" × 125" + 1 ea 88" × 125" (or 1 ea 96" 125")		45.9–48.3
	MAX 1 + 2: 18,650 kg		Total	88.9–94.3
380x2x	Compt 1: 7,540 kg	10 ea 60.4" × 61.5" or 5 ea 60.4" × 125"		43.0–46.0
	Compt 2: 14,600 kg	6 ea 60.4" × 61.5" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125") or 3 ea 60.4" × 125" + 2 ea 88" × 125" (or 1 ea 96" × 125" + 1 ea 88" × 125")		46.8–49.6
	MAX 1 + 2: 18,650 kg		Total	89.8–95.6

The maximum combined weight of compartments 1 and 2 is 18,650 kg.

"x" in the 4th position of the version number indicates any cabin configuration.

"x" in the 5th position of the version number indicates the number of pallets in the forward compartment.

"x" in the 6th position of the version number indicates the number of pallets in the AFT compartment.

The letter in the last position indicates an alternative version of the forward and/or AFT compartment.

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Version Number	Maximum Weight	Number of ULDs		Volume (m³)
380x2xA	Compt 1: 7,540 kg	4 ea 60.4" × 61.5" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125")		38.2–40.4
		or 2 ea 60.4" × 125" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125")		
	Compt 2: 14,600 kg	4 ea 60.4" × 61.5" + 2 ea 88" × 125" (or 2 ea 96" 125")		38.2–40.4
		or 2 ea 60.4" × 125" + 2 ea 88" × 125" (or 2 ea 96" × 125")		
	MAX 1 + 2: 18,650 kg		Total	76.4–80.8
380x3x	Compt 1: 7,540 kg	10 ea 60.4” × 61.5” or 5 ea 60.4” × 125”		43.0–46.0
	Compt 2: 14,600 kg	2 ea 60.4” × 61.5” + 3 ea 88” × 125” (or 3 ea 96” 125”)		40.1–43.7
		or 1 ea 60.4” × 125” + 3 ea 88” × 125” (or 3 ea 96” × 125”)		
	MAX 1 + 2: 18,650 kg		Total	83.1–89.7
380x4x	Compt 1: 7,540 kg	8 ea 60.4” × 61.5” or 4 ea 60.4” × 125”		34.4–36.8
	Compt 2: 14,600 kg	4 ea 88” × 125” or 4 ea 96” 125”		42.0–46.0
	MAX 1 + 2: 18,650 kg		Total	76.7–82.8
380x4xA	Compt 1: 7,540 kg	4 ea 60.4" × 61.5" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125")		38.2–40.4
		or 2 ea 60.4" × 125" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125")		
	Compt 2: 14,600 kg	6 ea 60.4" × 61.5" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125")		46.8–49.6
		or 3 ea 60.4" × 125" + 2 ea 88" × 125" (or 1 ea 96" 125" + 1 ea 88" × 125")		
	MAX 1 + 2: 18,650 kg		Total	85.0–90.0
380x5x	Compt 1: 7,540 kg	6 ea 60.4” × 61.5” + 1 ea 88” × 125” (or 1 ea 96” 125”)		36.3–39.1
		or 1 ea 60.4” × 125” + 2 ea 88” × 125” (or 2 ea 96” 125”)		
	Compt 2: 14,600 kg	4 ea 88” × 125” or 4 ea 96” 125”		42.0–46.0
	MAX 1 + 2: 18,650 kg		Total	78.3–85.1
380x6x	Compt 1: 7,540 kg	2 ea 60.4” × 61.5” + 2 ea 88” × 125” (or 2 ea 96” 125”)		29.6–32.2
		or 1 ea 60.4” × 125” + 2 ea 88” × 125” (or 2 ea 96” 125”)		
	Compt 2: 14,600 kg	4 ea 88” × 125” or 4 ea 96” 125”		42.0–46.0
	MAX 1 + 2: 18,650 kg		Total	71.6–78.2
380x7x	Compt 1: 7,540 kg	3 ea 88” × 125” or 3 ea 96” 125”		31.5–34.5
	Compt 2: 14,600 kg	4 ea 88” × 125” or 4 ea 96” 125”		42.0–46.0

The maximum combined weight of compartments 1 and 2 is 18,650 kg.

"x" in the 4th position of the version number indicates any cabin configuration.

"x" in the 5th position of the version number indicates the number of pallets in the forward compartment.

"x" in the 6th position of the version number indicates the number of pallets in the AFT compartment.

The letter in the last position indicates an alternative version of the forward and/or AFT compartment.

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Version Number	Maximum Weight	Number of ULDs		Volume (m³)
	MAX 1 + 2: 18,650 kg		Total	76.5–80.5
The maximum combined weight of compartments 1 and 2 is 18,650 kg. **"x" in the 4th position of the version number indicates any cabin configuration.** **"x" in the 5th position of the version number indicates the number of pallets in the forward compartment.** **"x" in the 6th position of the version number indicates the number of pallets in the AFT compartment.** **The letter in the last position indicates an alternative version of the forward and/or AFT compartment.**				

Compartments 3 and 4

Version Number	Maximum Weight	Number of ULDs		Volume (m³)
380x0	Compt 3: 3,174 kg	2 ea 60.4" × 61.5		8.6
	Compt 4: 10,500 kg	10 ea 60.4" × 61.5" or 5 ea 60.4" × 125"		43.0–46.0
	MAX 3 + 4: 10,500 kg		Total	51.6–54.6
380xx1/ 380xx1K	Compt 3: 3,174 kg	2 ea 60.4" × 61.5		8.6
	Compt 4: 10,500 kg	6 ea 60.4" × 61.5" + 1 ea 88" × 125" (or 1 ea 96" 125") or 3 ea 60.4" × 125" + 1 ea 88" × 125" (or 1 ea 96" 125")		36.3–39.1
	MAX 3 + 4: 10,500 kg		Total	44.9–47.7
380xx2	Compt 3: 3,174 kg	2 ea 60.4" × 61.5		8.6
	Compt 4: 10,500 kg	4 ea 60.4" × 61.5" + 2 ea 88" × 125" (or 2 ea 96" 125") 2 ea 60.4" × 125" + 2 ea 88" × 125" (or 2 ea 96" 125")		38.2–40.4
	MAX 3 + 4: 10,500 kg		Total	46.8–49.0
380xx3	Compt 3: 3,174 kg	2 ea 60.4" × 61.5		8.6
	Compt 4: 10,500 kg	3 ea 88" × 125" or 3 ea 96" 125"		31.5–34.5
	MAX 3 + 4: 10,500 kg		Total	40.1–43.1
The maximum combined weight of compartments 3 and 4 is 10,500 kg. **"x" in the 4th position of the version number indicates any cabin configuration.** **"x" in the 5th position of the version number indicates the number of pallets in the forward compartment.** **"x" in the 6th position of the version number indicates the number of pallets in the AFT compartment.** **The letter in the last position indicates an alternative version of the forward and/or AFT compartment.**				

3.9.3 Bulk Load Compartment

General

This compartment is designed to carry baggage and loose individually loaded and stacked cargo and mail. Due to different structural loading limitations, the compartment is divided into Areas 51, 52, and 53. No dividing or barrier net is installed between the areas.

Loading of compartment 5 is accomplished through an inward opening and push-up door on the right-hand side of the aircraft.

It is also possible to load compartment 5 through the Aft compartment door.

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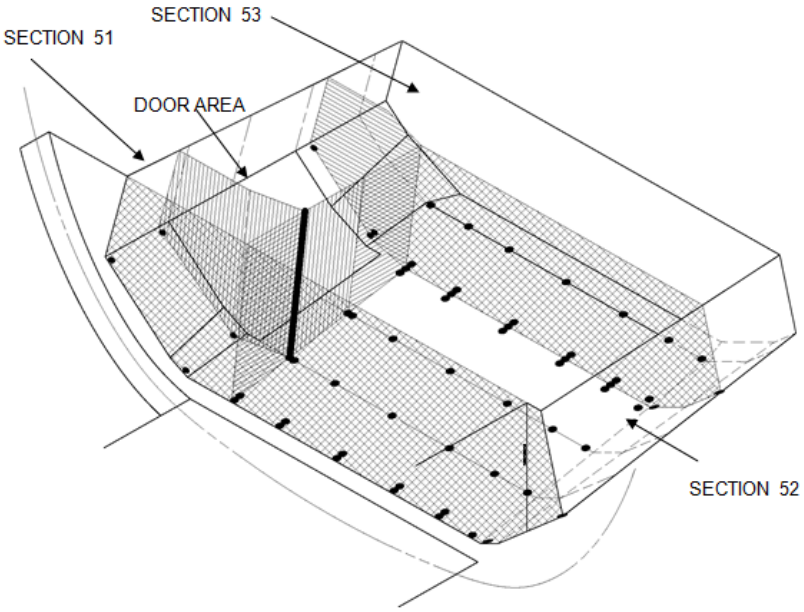
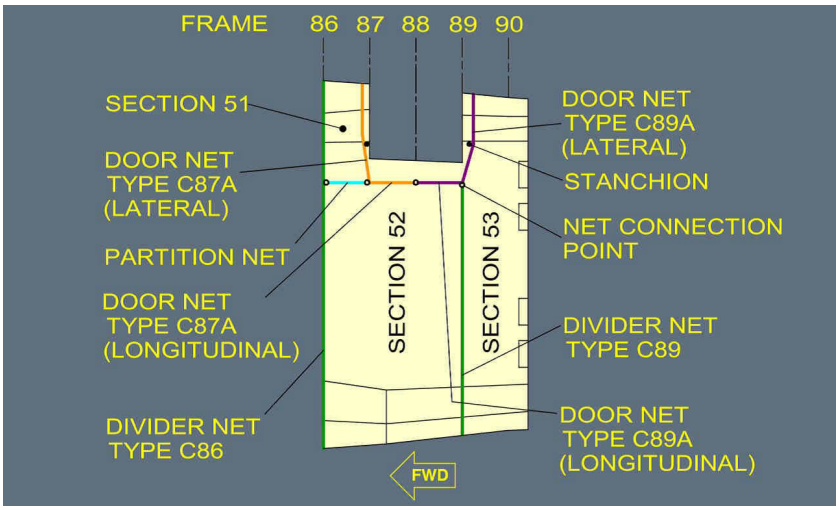


Nets

An insulated fabric covered nylon divider net is installed between compartment 5 and compartment 4. This net prevents bulk load from moving into compartment 4.

This net also acts as a thermal divider for temperature control when animals are carried in compartment 5.

A net system is installed across the door opening of compartment 5 to prevent load moving onto the door during flight. The nets are removed during loading/unloading process.



Tie-down Fittings

The bulk cargo compartment (Compt 5) is provided with the tie-down point is designed to withstand an ultimate load of 906 kg (2,000 lb) is any direction. These tie-down points are not required for net fastening may be used for the restraint of packages and the attachment tie-down points are provided for bulk net attachment only.

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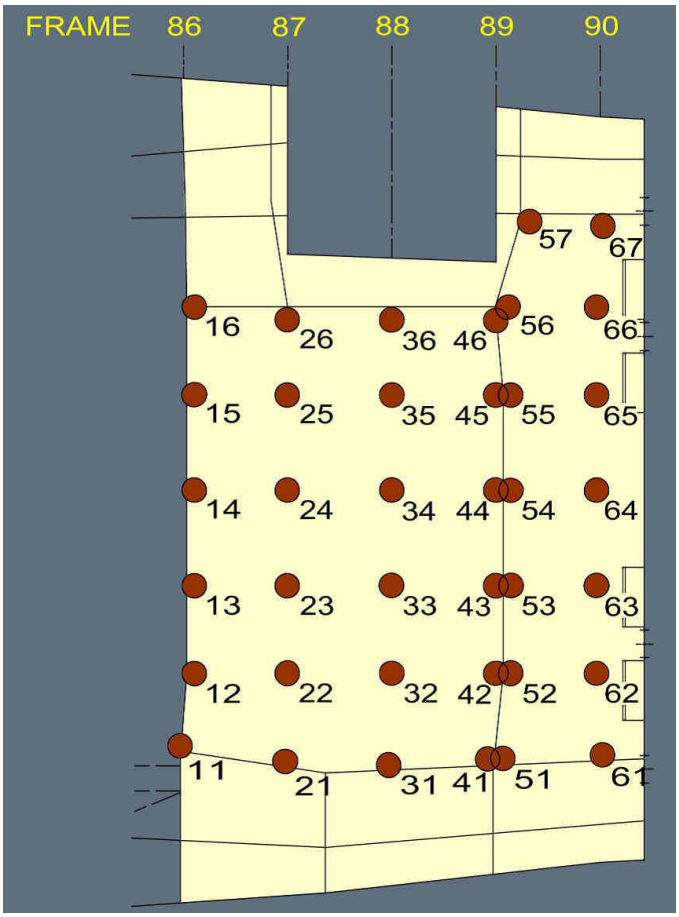

Limits

Limits Table

Section	Approx Usable Volume (m³)	Max Weight (kg)
51	1.076	190
52	8.919	1572
53	4.270	552
Total	14.265	2,314 a)

a) Flyable towbar with protective case is loaded in section 53, the weight has already been deducted from this figure.

Notes:

1. *The bulk compartment floor structure is capable of supporting via floor panels in the flat and sloping floor areas, a maximum distribution load off 732 kg/m² (150 lb/ft²).*
2. *Each floor panel in bulk compartment is capable to withstand a local load of 906 kg (2,000 lb) on any 0.305 × 0.305 m square area (1 ft²) without permanent deformation.*
3. *The local loads must be separated from each other in such a way that the floor structure load limitations are not exceeded, as well as the maximum compartment loads.*
4. *Item exceeding 150 kg per piece is not recommended to load in Bulk compartment (compartment 5).*

Restraint Conditions

When the certified net restraint system is used, additional tie-down is normally not required except as shown in the following.

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All individual items of load which by their nature, shape or density may constitute a hazard shall be restrained. Restrain can be achieved by filling the compartment or net section volumetrically, or by tie-down.

When filled up to three quarters of height of the compartment or net section is considered to be volumetrically full.

Any packages weighing more than 150 kg and any loads of single packages must be restrained or individually tied down.

Tie-down Requirements

Tie-down of loads to the aircraft structure is achieved via tie-down straps and nets connected to the tie-down points located on the bulk compartment floor.

Each tie-down point is designed to an ultimate load of 906 kg (2,000 lb) in any direction. See A380 LCM, Chapter 3.9.3—Bulk Load Compartment; Tie-down Fittings for tie-down point locations.

Tie-down arrangement via tie-down straps and nets or equivalent restraint hardware shall provide evenly distributed loads to the bulk compartment floor. See General LCM, Chapter 11—LOAD RESTRAINTS for tie-down methods.

3.9.4 Cumulative Load Limitations

3.9.4.1 General

The cumulative load limitation is the maximum cumulative weight that can be carried forward or aft of a given location. This limitation will protect the fuselage from any damages caused by exceeding the internal shear forces and bending moments of the fuselage.

3.9.4.2 Cumulative Load Limitation Table

Instruction

It is a mandatory to check the maximum weight of each loading zones or position and must not be exceeded the given weight are shown in the following tables. The weight on each position must be check from left side accumulate to the right side of the tables for each load type.

Forward Compartments (1 and 2)

Maximum Compartment Combined Weight (kg)	18,650										
Maximum Compartment Weight (kg)	Compartment 1					Compartment 2					
	7,540					14,600					
Cumulative for Pallet Positions	11P	12P	13P			21P	22P	23P	24P		
Max Cumulative Weight (kg)	3,450	5,200	7,540			9,700	12,100	15,000	18,600		
Cumulative for Container Positions	11L 11R	12L 12R	13L 13R	14L 14R	15L 15R	21L 21R	22L 22R	23L 23R	24L 24R	25L 25R	26L 25R
Max Cumulative Weight (kg)	2,000	3,200	4,600	6,000	7,540	9,000	10,500	12,100	14,200	16,300	18,600

Aft and Bulk Compartments (3, 4 and 5)

Maximum Compartment Combined Weight (kg)	10,500

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Maximum Compartment Weight (kg)	Compartment 5	Compartment 4					Compartment 3	
	2,514	10,500					3,174	
Cumulative for Pallet Positions	Bulk	43P	42P	41P				
Max Cumulative Weight (kg)	2,514	7,500	9,750	10,500				
Cumulative for Container Positions	Bulk	45L 45R	44L 44R	43L 43R	42L 42R	41L 41R	36R	35R
Max Cumulative Weight (kg)	2,514	4,500	6,000	7,500	9,000	10,500	10,500	10,500

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3.10 Facilities

3.10.1 General

The cargo compartments contain the aircraft cargo and hold it in a safe condition during flight. The cargo can be Unit Load Devices (ULDs) (pallets and/or containers), passenger luggage and items of bulk cargo.

The forward and aft (lower-deck) cargo compartments are in the lower deck. A semi-automatic Baggage and Cargo Loading System moves the ULDs and secure them in their proper positions.

The cargo compartment doors give access to the cargo compartment. It is installed on the RH side of the lower fuselage.

Both compartments are classified as class C cargo compartment.

The approximate volumes of the cargo that can be installed in the aft cargo compartment for the cargo types are:

- for containers 53.64 m³ (1,894.3 ft³) (based on IATA-E contour),
- for 88 x 125 inch pallet loaded to height of 64 inches 31.6 m³ (1,115.9 ft³) (based on IATA–P contour),
- for 96 x 125 inch pallet loaded to height of 64 inches 34.5 m³ (1,218.4 ft³) (based on IATA–P contour).

The aircraft has three cargo compartments in the lower deck. They are:

- the forward cargo-compartment,
- the aft cargo-compartment,
- the bulk cargo-compartment.

Included in the cargo compartments are:

- the drainage systems of the lower-deck cargo compartments,
- the tie-down fittings and the nets.

3.10.2 Components

The lower-deck cargo compartment has these items of equipment:

- linings,
- placards,
- nets,
- net tie-down attachment-points (part of the structure),
- drainage system,
- baggage and cargo loading system.

3.10.2.1 Linings

The lower-deck cargo compartment has these linings:

- ceiling panels,
- sidewall panels,
- partition walls.

All the lining panels are sealed to give a fully sealed compartment.

Ceiling Panels

The ceiling panels have a composite structure and are heat resistant. They have cutouts for the lamps and the smoke detectors.

An actuator lining is installed in the area of the forward cargo door actuator. The ceiling panels and the floor panels are the limits for the vertical dimension of the lower-deck cargo compartment.

Sidewall Panels

The sidewall panels have a composite structure and are heat resistant. Inlet ducts and outlet ducts for the ventilation system are installed in some of the panels.

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The sidewall panels are the limits for the lateral dimension of the lower-deck cargo compartment.

The panels give access for maintenance of the components that are installed behind the sidewalls. They are attached to the aircraft structure.

Each sidewall panel has one or more decompression panels. They prevent damage to the aircraft structure if there is a sudden pressure difference.

Protection angles are installed at the corners of the sidewall panels in the door area. They prevent damage to the edges of the sidewall panels.

A horizontal walkway is installed between the outboard roller track and the inclined sidewall panels on each side of the lower-deck cargo compartment.

Partition Walls

The lower-deck cargo-compartment has partition walls installed. The partition walls are the limits for the longitudinal dimension of the compartment.

The partition walls have a composite structure and are heat resistant. They are attached to the aircraft structure.

Decompression panels are installed in the partition walls. They prevent damage to the aircraft structure if there is a sudden pressure difference.

A pressure equalization valve is installed in the aft partition wall. It makes sure that the pressure of the cabin and the cargo compartment are equal during changes in the aircraft altitude.

3.10.2.2 Placards

Placards are bonded to the sidewall panels and the ceiling panels. A placard on a sidewall panel shows the location of the divided lower-deck cargo compartment and the load positions for the ULDs, (containers and/or pallets).

The placards on the ceiling panels at each load position give the dimensions of the remaining clearance between the loaded cargo and the ceiling.

Components that are installed in the lower-deck cargo compartment have labels to identify them. These labels are at locations where they can be clearly seen.

Placards are bonded to the sidewall panels, the ceiling panels and the partition wall of the aft cargo compartment. The placards give information for:

- ULD/pallet load positions,
- blow-out panels,
- Cargo Loading System (CLS),
- access to components installed behind the panels,
- operation of the Inside Control Panel (ICP).

3.10.2.3 Nets

The nets are installed to:

- divide the bulk cargo compartment into sections,
- keep the bulk cargo in the bulk cargo compartment,
- make sure that the bulk cargo-compartment door cannot be blocked with bulk cargo, because the bulk cargo-compartment door opens into the bulk cargo compartment.

The nets are:

Divider nets: One divider net is installed at FR89 and divides the bulk cargo compartment into sections. A second divider net is installed at FR86 to divide the remaining bulk cargo compartment from the aft cargo compartment. This divider net has a screen.

Door nets: Two door nets are installed to keep the cargo door area clear of cargo. The door nets are classified as Type 87A and 89A nets.

- The door net Type 87A is installed in the lateral direction at FR87A and extends in the longitudinal direction to FR88. The net has a stanchion installed at FR87.

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- The door net Type 89A is installed in the lateral direction at FR89A and extends in the longitudinal direction to FR88. The net has a stanchion installed at FR89A.

Partition net: The partition net is installed in the longitudinal direction between FR86 and FR87.

3.10.2.4 Tie-down and Net Attachment Points

Fittings attach the nets to the attachment points that are installed in the cargo compartment. The nets can be removed or installed easily and without tools. Each net can support the loads from the loaded cargo.

3.10.2.5 Drainage System

Drainage systems are installed in the forward and the aft/bulk cargo compartments. The drainage systems collect unwanted fluids from the cargo compartment floors and the Cargo Loading System (CLS) components and drain them into the bottom of the fuselage.

The drainage systems of the forward and aft/bulk cargo compartments have:

Drainage pans: The drainage pans are installed under the power drive units and the splitter. They collect the fluids into a central drainage system.

Filter: The drainage pans have filters installed to keep the pipe system clean and to make sure that the pipe system is not blocked.

Filter Housing: The filter housing is installed in the drainage pan to hold the filter.

Drain funnels: Connects the drainage pans to the pipe system.

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3.11 Cargo Loading System

3.11.1 General

The forward and the aft lower-deck cargo-compartments have semi-automatic Cargo Loading Systems (CLSs) which operate independently. The semi-automatic CLS moves the Unit Load Devices (ULDs) safely. The CLS also has components that align, control and safety the ULDs.

The components of the Cargo Loading Systems (CL S) lower deck for ward and aft cargo compartments are divided into three types:

- components that align and/or lock the ULDs,
- components that move the ULDs, or let the ULDs move,
- components that control the movement of the ULDs.

The mechanical and electrical components of the CLS are installed in the forward and aft cargo-compartments of the lower deck at the locations shown. Each XZ-, YZ-, X-, Y- and Z-latch which is given in the text that follows, is installed and/or operated as a single latch.

The CLS has fixed an d moveable guides. The guides align the ULD during movement to and from their load position. The CLS has manually operated latches to lock the ULDs in their load position. The guides and latches are identified to show in which direction they have an effect:

X Longitudinal
Y Transversal
Z Vertical.

3.11.2 Un-powered Components

Doorway Entrance Guides

The door entrance guides provide proper guidance in Y direction to the ball mat during loading/off-loading from or to the loader and prevent impact to the door frame.

The guides are installed at each side of the entrance area of the cargo-compartment door. They make sure that the ULD is correctly aligned with the door entrance during the loading or unloading procedures. They also protect the cargo-compartment door frame. The guides have a front plate to help position the ULDs.

The entrance guide also has a backup lever installed to release the anti roll-out actuator.

A secondary transverse entrance guide is installed between the entrance guide in the aft compartment and the end stop which is installed in the roller track; the aft entrance-guides PT are installed between the end stops at FR85.

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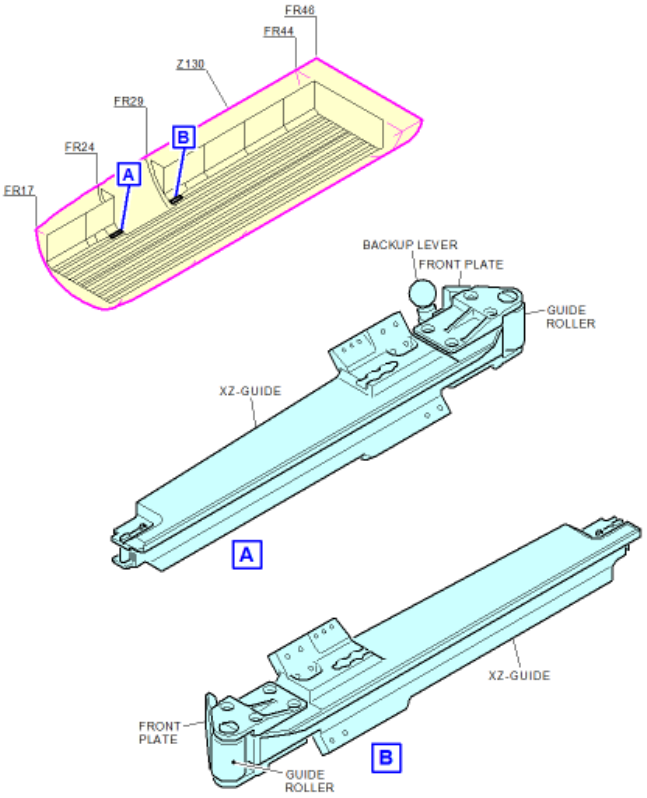
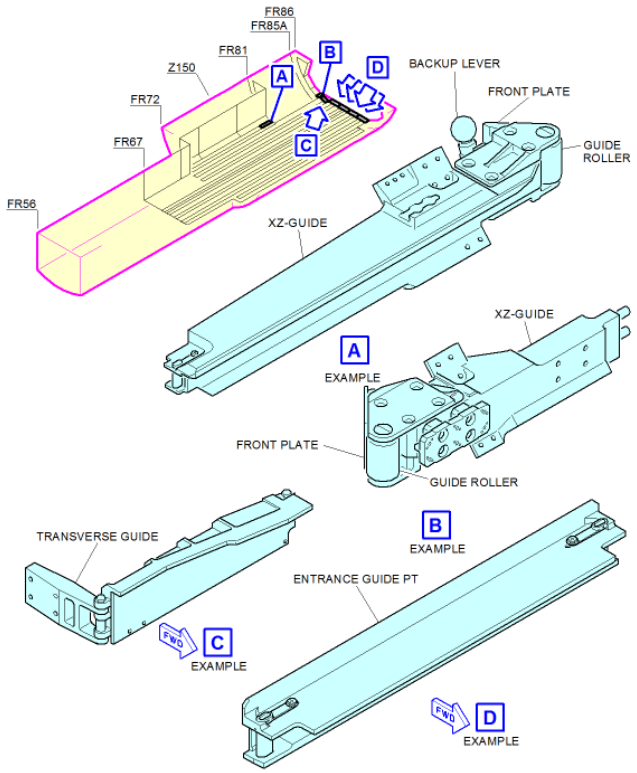
Forward Compartment



Aft Compartment



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3.11.2.1 Door Sill Latches and Anti Roll-out Latches

Door Sill Latches

Door sill latches are installed on the forward cargo compartment door sill. The door sill latches lock the ULDs in the ball mat area in the YZ-direction.

Each door sill latch has an anti-roll-out latch installed to prevent an accidental roll-out of an ULD during the loading or unloading procedures. The anti-roll-out latches are overrideable when the UL D moves into the cargo compartment. When the ULD moves out of the cargo compartment the anti-roll-out latches must be lowered with a hand lever mechanism.

A doorsill extension-device is installed on the door sill latches to prevent structural damage of the cargo compartment entrance area.

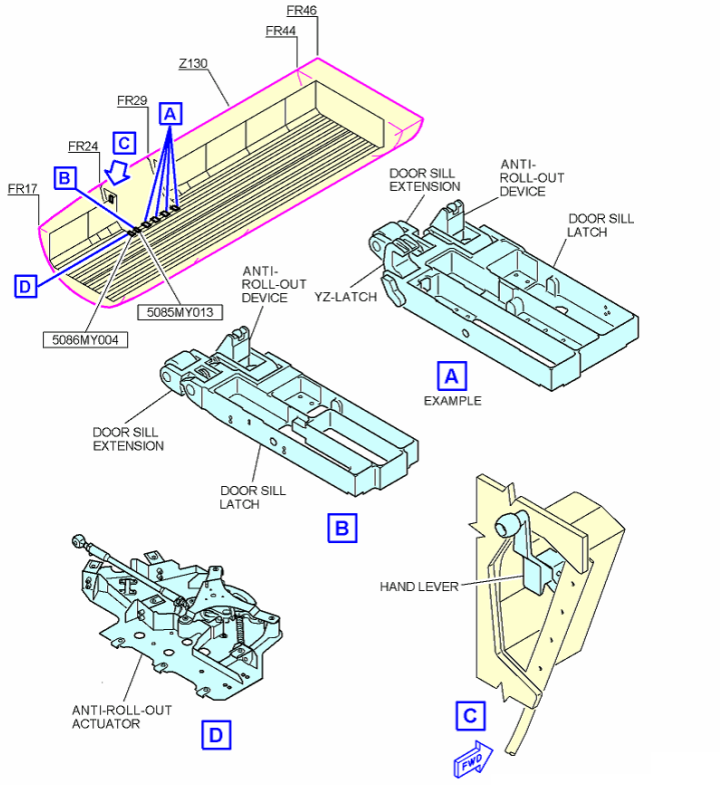
Each door sill latch has one proximity switch and related target that monitor the position of the latch pawl. If the latch pawls are not fully raised and locked, the proximity switches prevent the close procedure of the forward cargo door.

Four YZ door sill latches are installed in the forward cargo compartment door area which allows latching the ULD's positioned in the door entrance area.

Five overrideable roll out Y-safety-latches are distributed in the door sill area to prevent inadvertent roll out of ULD's during loading and off-loading.

Five door sill guide rollers as guiding interface to the the loader platform.

Forward Compartment



Anti Roll-out latches

Anti-roll-out latches are part of the door sill latches. The anti-roll-out latch is overrideable in the load direction, the base plate of the ULD push the anti-roll-out latch down when they move over it.

The anti-roll-out latch comes up when the ULD has fully moved over them. They make sure that ULDs cannot roll out of the forward cargo compartment when the YZ-latches are lowered.

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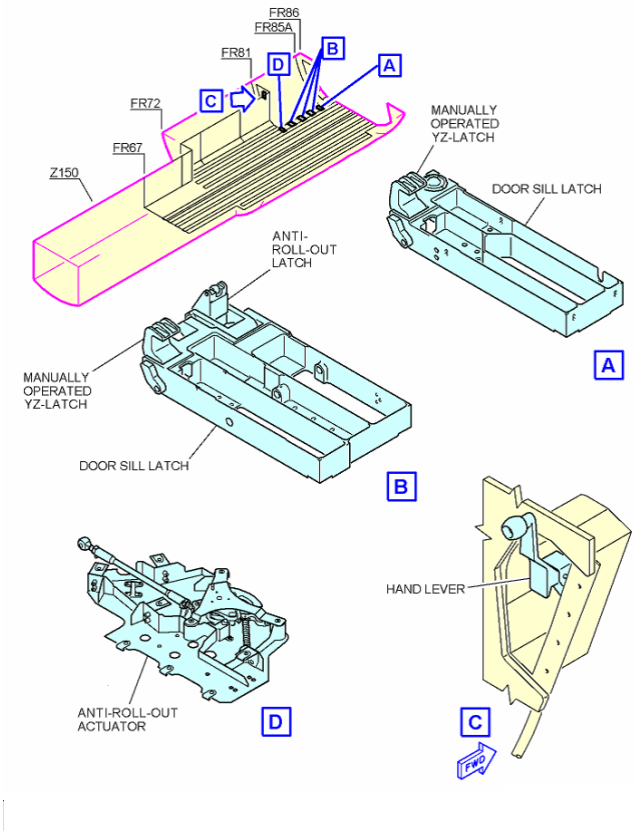
The anti-roll-out latches are connected with adjustable draw bars. They are operated by a hand lever mechanism which is installed on the RH side of the entrance to the forward cargo compartment.

Aft Compartment



The aft door sill equipment is consisting of three components as follows:

- door sill loading bridge in three pieces retractable including 30 guide roller,
- 4 units consisting of a YZ-latch,
- 3 single overrideable anti roll out Y-latches (ARO).

The functions of YZ-latches, the guide rollers and the overrideable Y-latches are identical to the functions of the units in the forward door sill.

Four door sill latches are installed on the aft cargo compartment door sill. The door sill latches lock the ULDs in the ball mat area in the YZ-direction.

Each door sill latch has an anti-roll-out latch installed to prevent an accidental roll-out of an ULD duringthe loading or unloading procedures. The anti-roll-out latches are overrideable when the ULD moves into the cargo compartment. When the ULD moves out of the cargo compartment the anti-roll-out latches must be lowered with a hand lever mechanism.

Door sill latches have one or two proximity switch(es) and related target(s) that monitor the position(s) of the latch pawl(s). If the latch pawls are not fully raised and locked, the proximity switches prevent the close procedure of the aft cargo door.

A loading bridge is attached to the door sill latches to prevent structural damage to the cargo-compartment entrance area. The loading bridge also helps to make the ULD loading procedure easier.

3.11.2.2 Roller Tracks

The forward cargo compartment has longitudinal roller tracks installed onto the aircraft structure.

The roller tracks have additional components installed, these include:

- transport rollers,

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- latches,
- proximity switches,
- ball strips,
- cover plates,
- drain funnels.

The transport rollers are installed in the roller tracks (but not in the ball mat area). These rollers help to support and move the ULDs in the longitudinal direction.

A layer of foam insulation is also installed on the bottom of the roller tracks. The transport rollers in the roller tracks help to support and move the ULDs easily to and from their load positions.

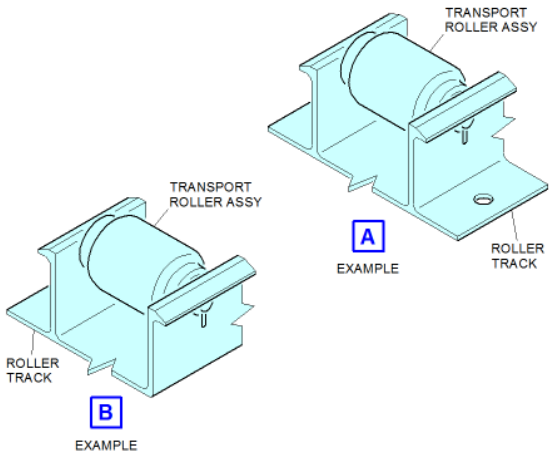
The roller tracks also function as drainage channels for any fluid that collects in the cargo compartment. The fluid goes into the roller tracks where it then flows to the ends of the roller tracks into the drain funnels.

The eight roller tracks are installed on the forward and aft cargo compartment floor structure in longitudinal direction, carrying cargo components (Exemption: 4 roller tracks in aft CC tunnel area and 7 roller tracks between frame 72 and 81).

The roller tracks are extruded profiles, equipped with transport rollers, braking rollers, end stops and XZ-latches.

Between the roller tracks pan mounted, sensorized three inches Power Drive Units allow powered conveyance of ULDs.

Roller packs are installed on the RH side of the aft cargo compartment between FR68 and FR80.



3.11.2.3 Fixed Latches and End Stops

The YZ-Latch Rails, Continuous Side Guides and fixed YZ-Latches.

The YZ-latch rails and Continuous Side Guides are installed at the LH side and the RH side of the cargo compartment. They are not installed in the tunnel (Compartment 3) area.

The fixed YZ-latches help to guide the ULDs into the longitudinal areas of the forward cargo compartment and restrain the ULDs in Y- and Z-direction. These latches are located at each frame on both sides of the cargo compartments; each fixed YZ-latch is equipped with a tie-down point.

In between these YZ-latches continuous side guides are installed opposite the cargo door. A vertical guide roller is installed in the YZ-latch to assist the guidance of the ULDs in X-direction.

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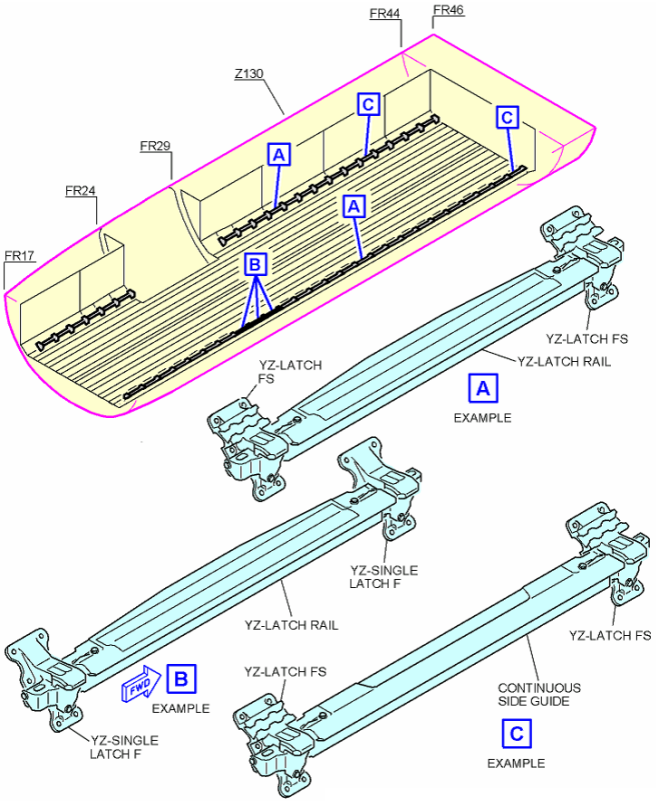
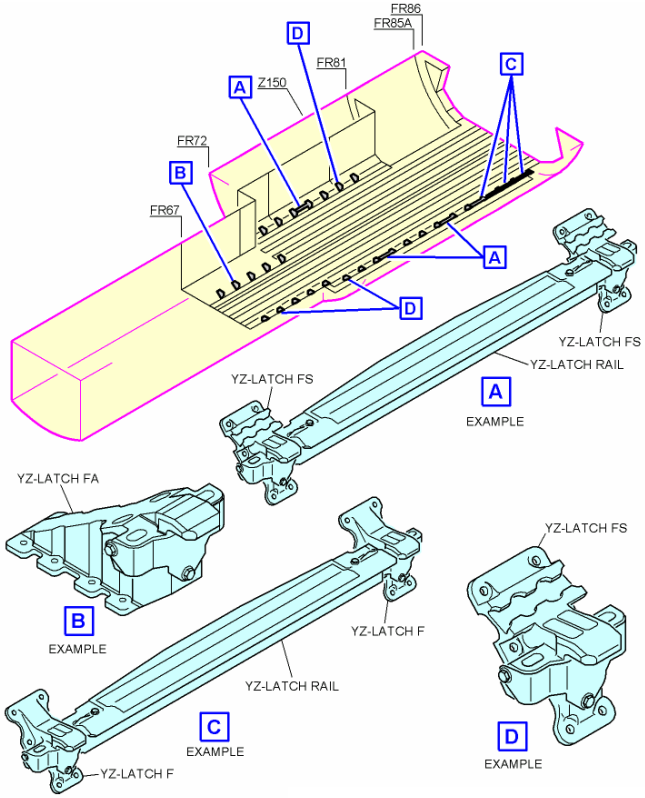
Forward Compartment



Aft Compartment



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3.11.2.4 XZ-end Stops and Overrideable YZ-latch

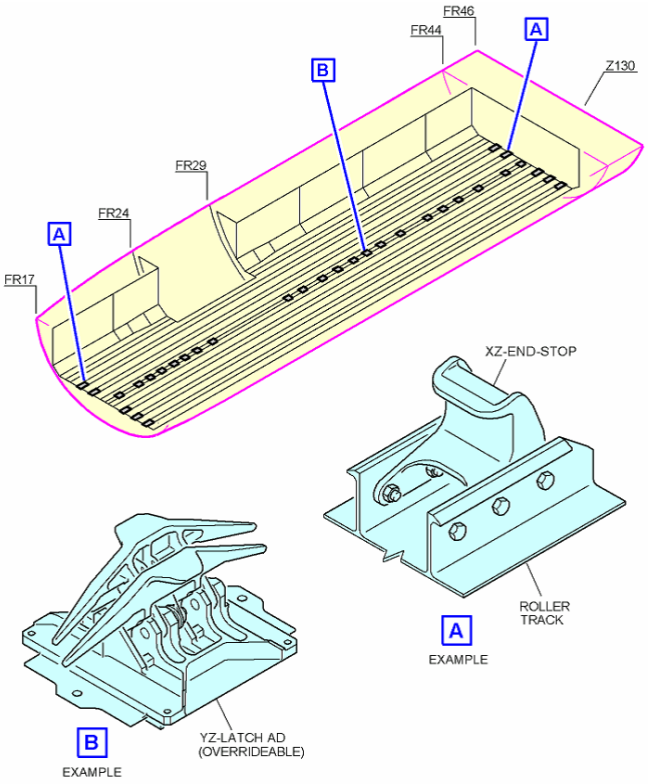
The XZ-end stops are installed in the roller tracks at the two ends of the cargo compartment to restraint the ULD in XZ direction.

The end stops hold the ULD in the X- and Z-direction. They are installed in the roller tracks at the two ends of the cargo compartment. Their function is to stop the ULDs and to prevent damage to the partition walls of the cargo compartment.

The fixed latches hold and guide the ULDs in the Y- and Z-directions and they are installed on the aircraft structure on all frames other than the door sill.

The overrideable YZ-latches are installed on the aircraft centerline; the overrideable latches have insulation installed on their bottom surface. Overrideable YZ-latches serve to lock half-size containers in Y- and Z-direction. These latches are attached to the structure at A/C centreline in fwd and aft cargo compartment. When a full-size ULD moves over the latch, the base plate of the ULD overrides the latch against spring pressure. When the ULD is removed, the spring automatically lifts the latch.

Forward Compartment



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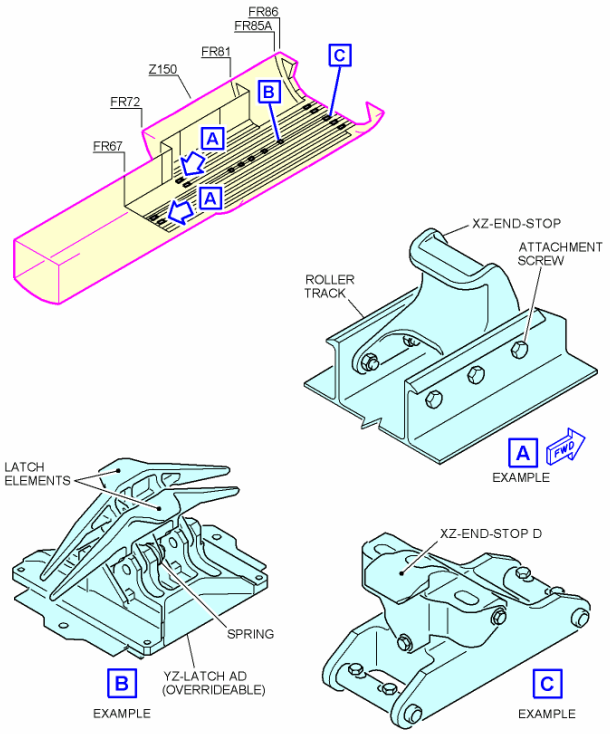
Aft Compartment



3.11.2.5 Retractable XZ-latches

The XZ-latches 19 and 42 are installed in all areas of the aft cargo compartment. They are installed in the roller tracks and hold the ULDs in the X- and Z-directions.

XZ-latches are available in different pawl widths (19 & 42 mm) to allow latching of different ULD configurations where more or less clearances between ULDs are requested.

The latches are spring loaded and operated manually. They are unlocked by pressing the pawl marked “Press to unlock”. To unlock the latches, foot pressure may be used . The latches are locked again by pulling the pawl upwards with the hand.

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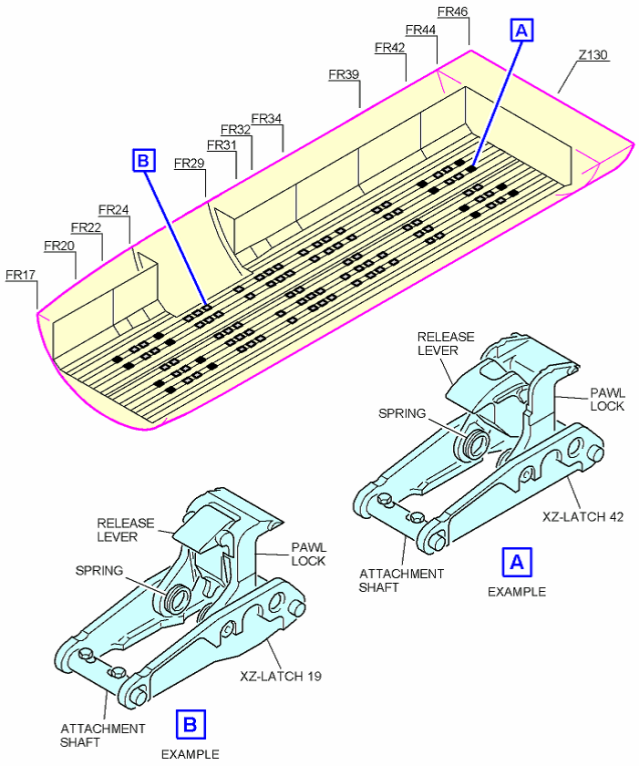
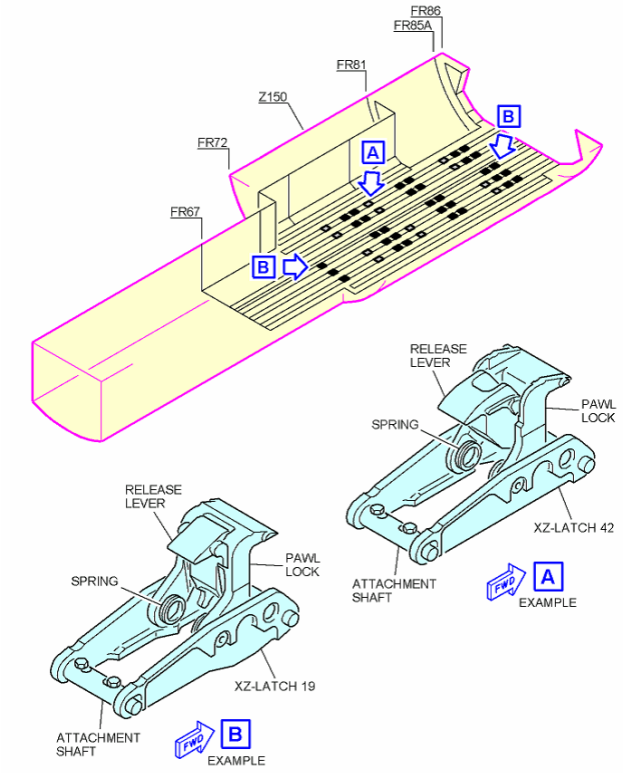
Forward Compartment



Aft Compartment



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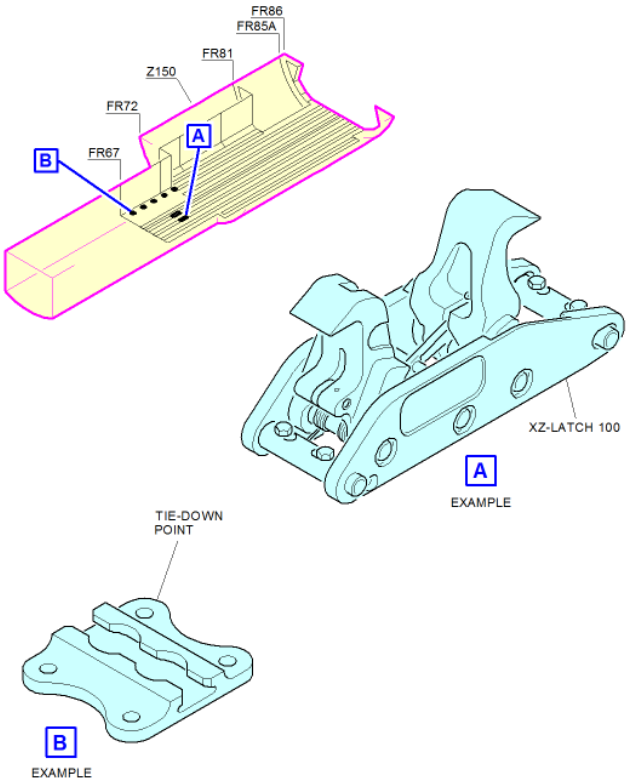
The XZ-latches 100 are installed in the tunnel area of the aft cargo compartment. They are installed in the roller tracks and hold the ULDs in the X- and Z-directions. They are raised by foot or hand operation and lowered by foot operation.

The XZ-latches 100



3.11.2.6 YZ-latches

The YZ-Latch 47 is installed in the ball mat area on the aircraft centerline; these latches are served to restraint the ULDs in Y- and Z-direction. They are fixed in between the roller tracks.

YZ-latches are similar to the XZ latches and fulfill the same functions, the latches are spring loaded and operated manually. They are unlocked by pressing the pawl marked “Press to unlock”. To unlock the latches, foot pressure may be used. The latches are locked again by pulling the pawl upwards with the hand.

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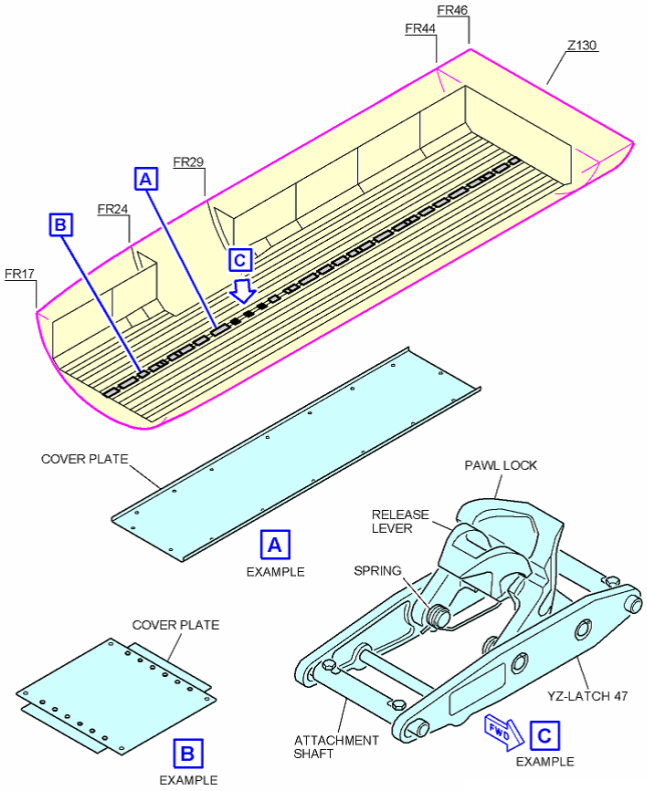
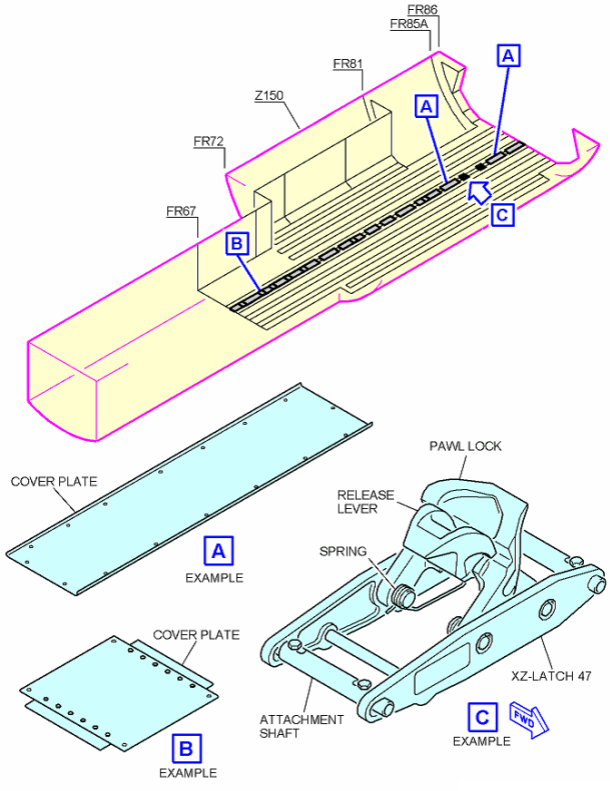
Forward Compartment



Aft Compartment



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3.11.2.7 Ball Mats, Ball Strips, and Cover Plates

Ball mats are installed in the forward and aft cargo door across the full width of the entrance area, equipped with Ball Transfer Units (BTU) in a grid pattern. Ball mats and ball strips have light-alloy plates which contain a number of ball units.

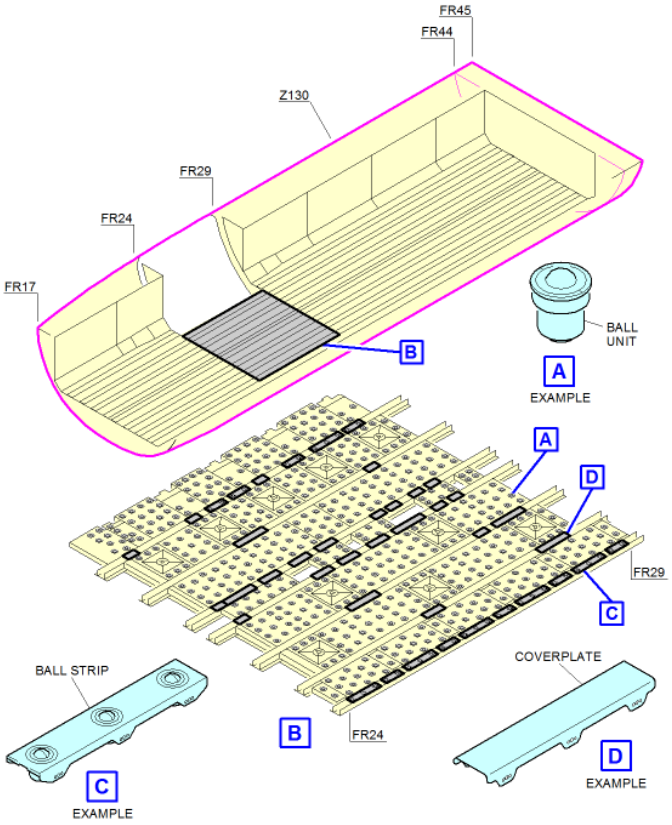
The ball strips are installed in the roller tracks. The cover plates are installed in the forward cargo-compartment to fill out areas between the splitters, the retractable latches and the overrideable latches.

The Ball Transfer Units allow multi-directional, low friction movements of ULD's on the cargo door entrance area during loading and off-loading.

The cover plates are installed on centerline between other CLS components, the cover plates have insulation installed on their bottom surface. Cover plates are also installed in the roller tracks.

Each ball unit has a ball installed in a bearing shell. The shell is contained in a circular housing. A top cover holds the ball and bearing shell in the housing. The top cover also makes sure that dirt does not go into the unit. The top cover has two spring struts for installation.

Forward Compartment



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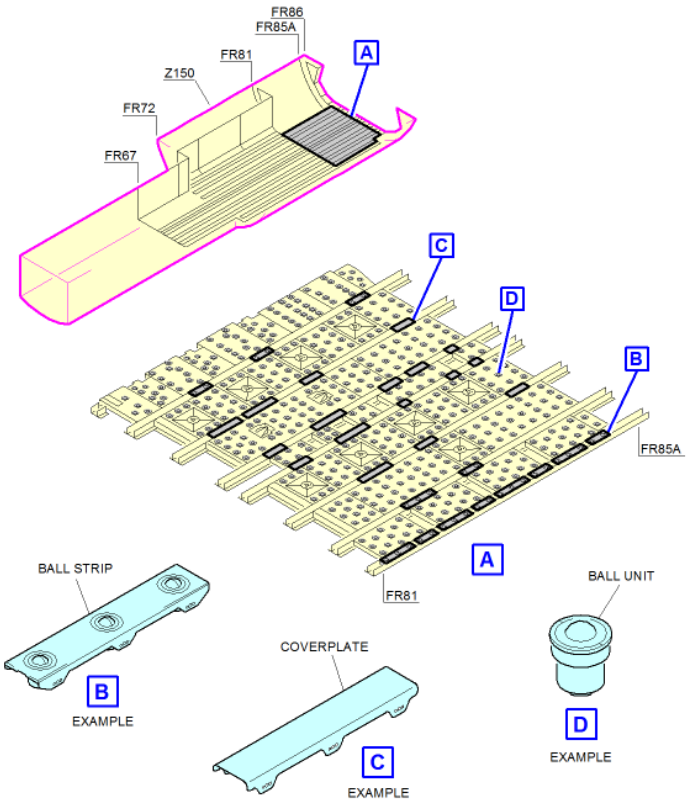
Aft Compartment



3.11.2.8 Splitters

The splitters are installed in the ball mat area on the aircraft centerline some of these splitters have insulation installed on their bottom surface, the splitters help to align half size ULDs in the longitudinal direction.

- The splitter RO has an overrideable function and is used in relation to the outside control panel split-function.
- The splitter R is manually operated and is only overrideable during the unload procedures.

Both types of splitter are retractable.

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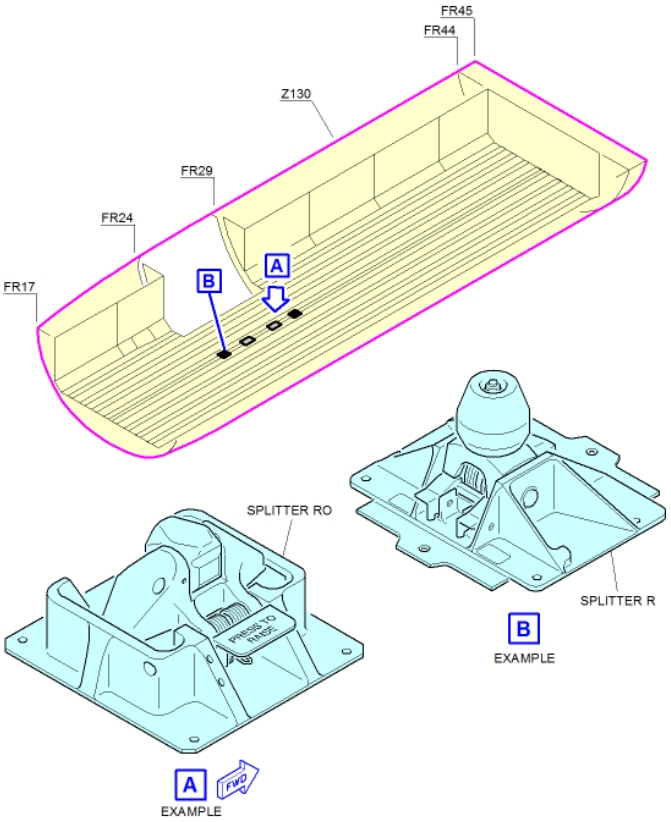
Forward Compartment



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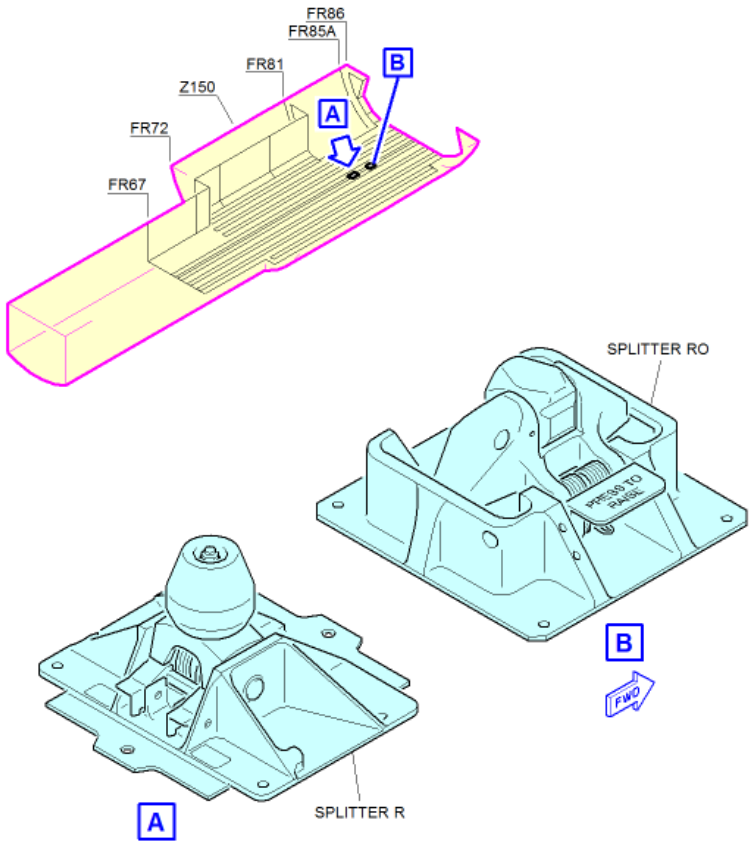
Aft Compartment



3.11.2.9 Transport Rollers and Roller Tracks

Transport Rollers

The transport rollers are installed in the roller tracks (but not in the ball mat area). These rollers help to support and move the ULDs easily in the longitudinal direction.

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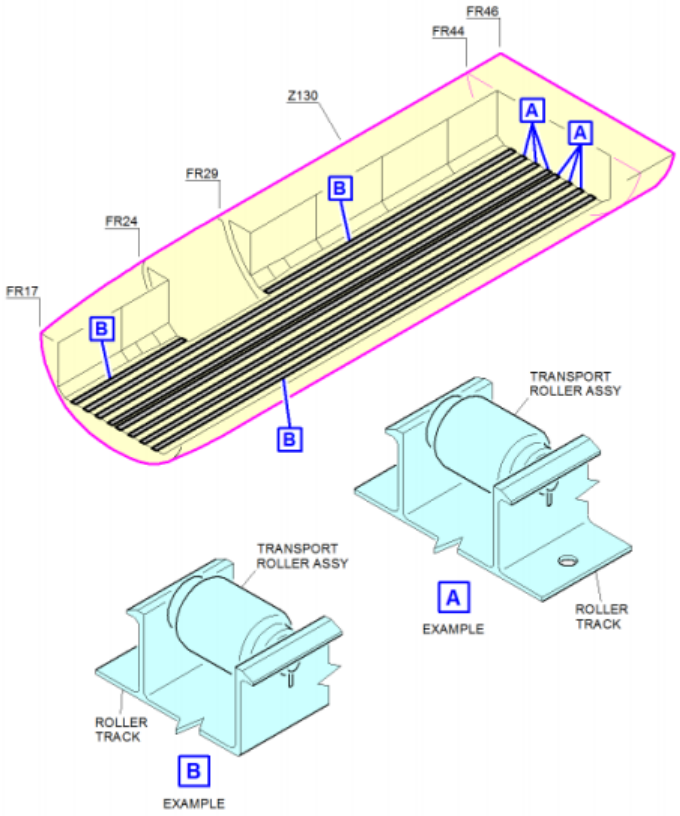
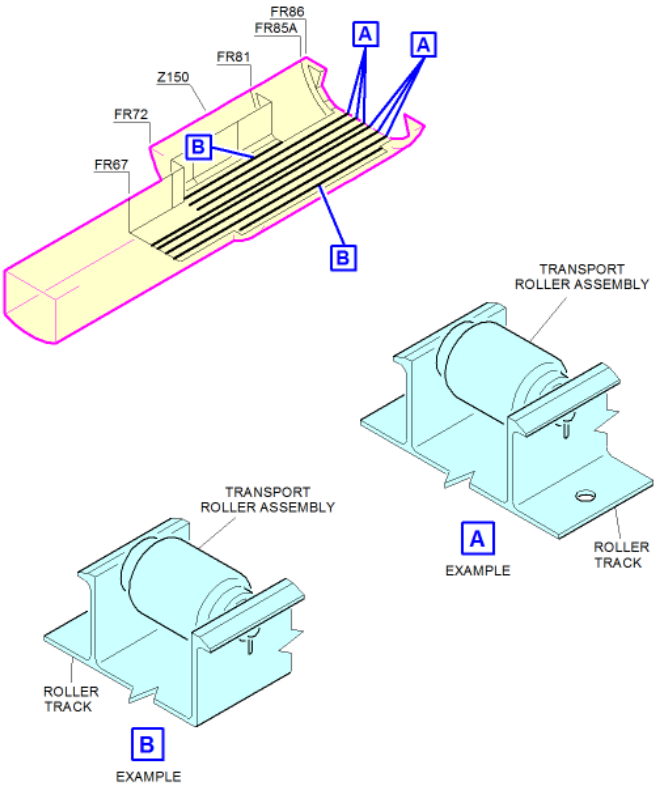
Forward Compartment



Aft Compartment



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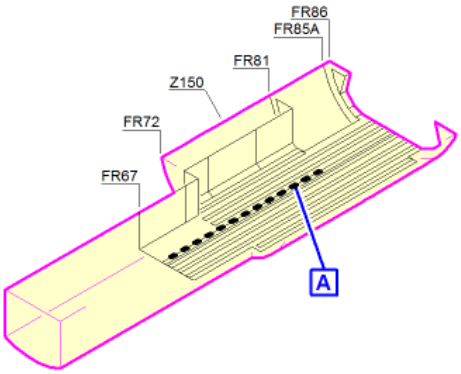
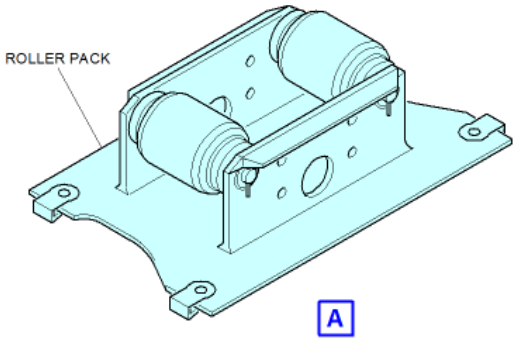
Aft Compartment Roller Tracks

The roller tracks are installed in the aft compartment They are installed between the fixed YZ-latches and the roler track on the RH side of the tunnel area. Each roller pack has two transport rollers installed.





3.11.2.10 Fixed Guide Unit

The fixed guide units are installed on the LH and RH side of the tunnel area of the aft cargo compartment, insulation is installed on the bottom surface of the guide units.

Two fixed guide units make sure that the ULD is correctly aligned with the entrance to the tunnel area. They prevent damage to the ULDs and to the structure during the movement of the ULDs into the tunnel area.

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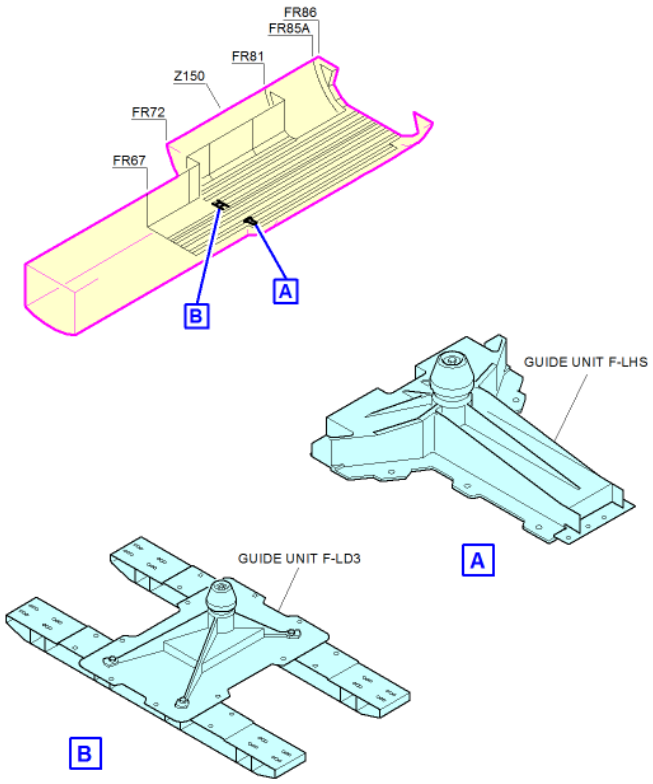

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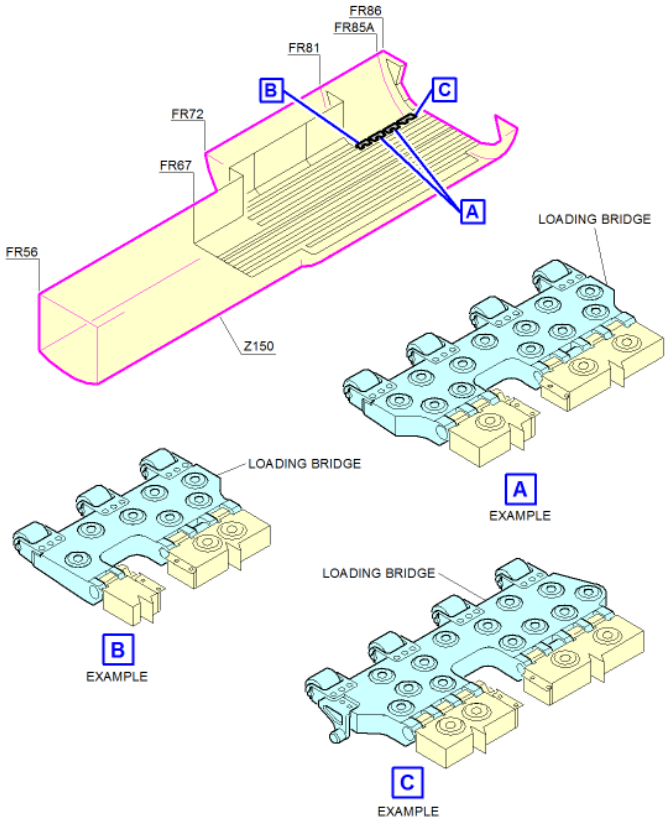
3.11.2.11 Loading Bridge

An extendable loading bridge is attached at the doorsill latches of the aft cargo compartment. The bridge has four assemblies, which are held by gravity and spring force in the horizontal position for loading or unloading procedures.



3.11.2.12 Overrideable and Retractable X-guide

The four overrideable X-guides are installed in the ball mat are on the primary structure between two roller tracks adjacent to the LH side of the aft cargo compartment (Compt 4), on their bottom surface the overrideable X-guides have insulation installed.

The overrideable and retractable X-guides are installed on the primary structure between the two adjacent outboard installed roller tracks. They are installed on the LH side of the aft cargo compartment in the ball mat area.

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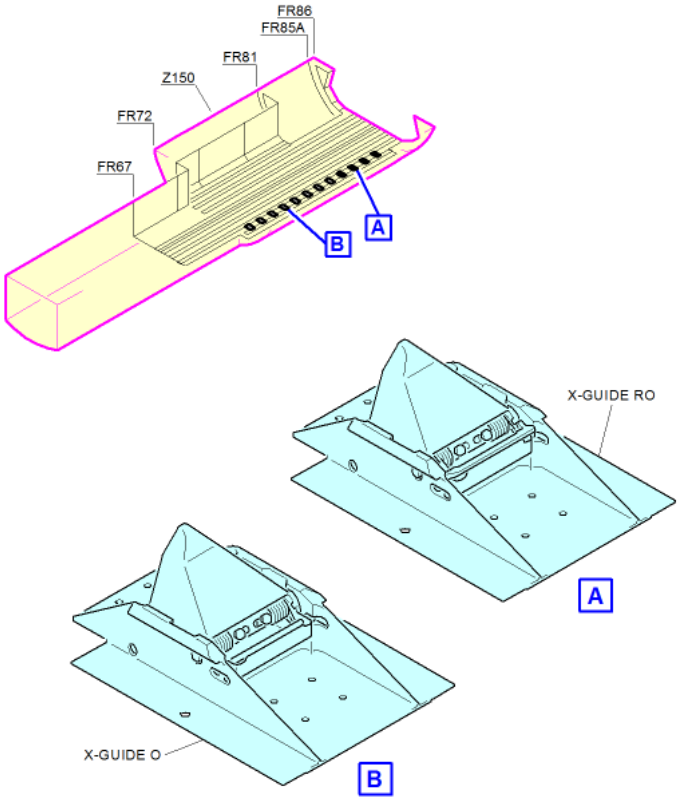

3.11.2.13 Tie-down Points

Tie-down points are part of the fixed YZ-latches of the forward cargo compartment. They are installed at the LH and RH sides, but not in the ball mat area.

Tie-down points are also installed in the tunnel area of the aft cargo compartment. On the LH side they are installed on the fixed latches. On the RH side they have structural provisions on the frames.

These tie-down points are installed to hold bulk cargo and/or to in stall pallet nets or straps for a non-standard ULD.

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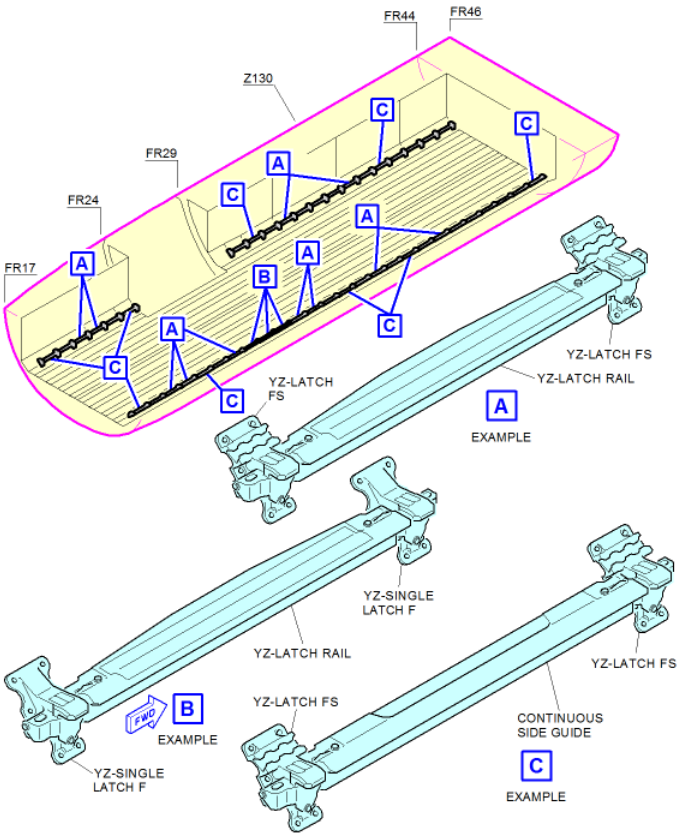
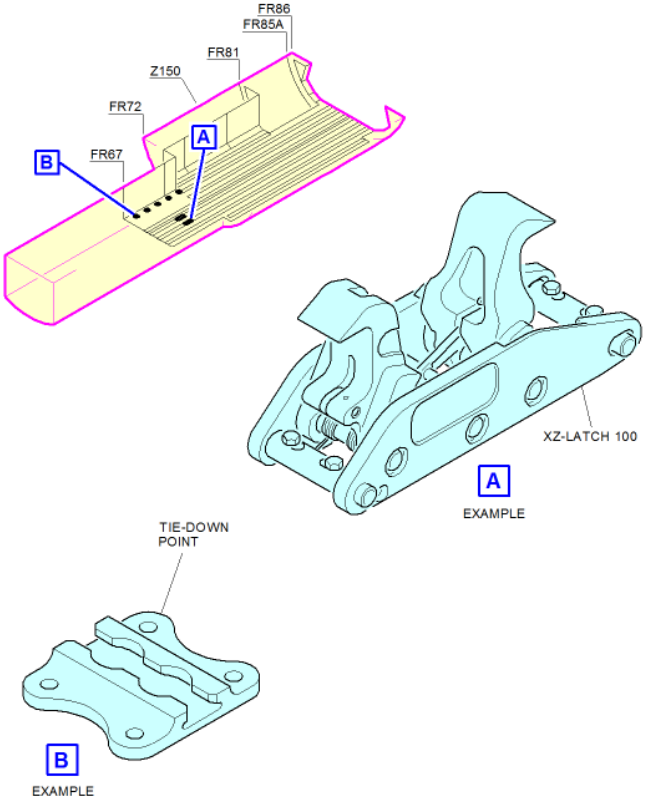
Forward Compartment



Aft Compartment



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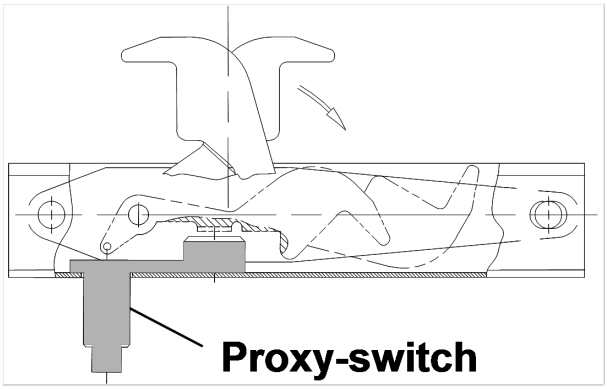
3.11.3 Powered Components

Proximity Switches

Proximity switches are installed underneath specific XZ-latches fitted to the roller track to monitor the lifted and lowered position of the latches. When these XZ-latches are lifted, the related PDUs are electrically isolated. This prevents operation of a PDU when a ULD is latched in position.



Power Drive Units

PDUs are installed in the ball mat area and between the roller tracks in the cargo compartment. They move the ULDs in the transverse and the longitudinal directions. Electrical power supplies the drive rollers of the PDUs.

There are two types of Power Drive Units are installed in the cargo compartment:

- the self-lifted PDUs for transverse and self-lifted PDUs for longitudinal, both for the movement over the ball mat area,
- the spring-lift PDUs for longitudinal movement in the remaining areas of the cargo compartment.

The Power drive units (PDU) are electrical motors equipped with a gear drive and a rubber coated roller, PDUs serve to convey ULDs in lateral and longitudinal directions depending on their location (door area or in longitudinal area).

In A380 the PDUs provide a transport speed of 60 ft/min. PDUs are controlled from the cargo control system, the control system consists of a cargo control box, a door control box, sector control boxes, control panels with joystick (inside, outside) and proximity switches underneath specific latches.

Both PDUs have a control device which functions as an optical ULD sensor. The sensor is part of the PDU and its internal circuitry. When the ULD moves over the PDUs, the sensor will sense the movement and causes the drive roller to operate and move the ULD. When the ULD moves off the PDU, the optical sensor goes into standby mode and the PDU roller stops.

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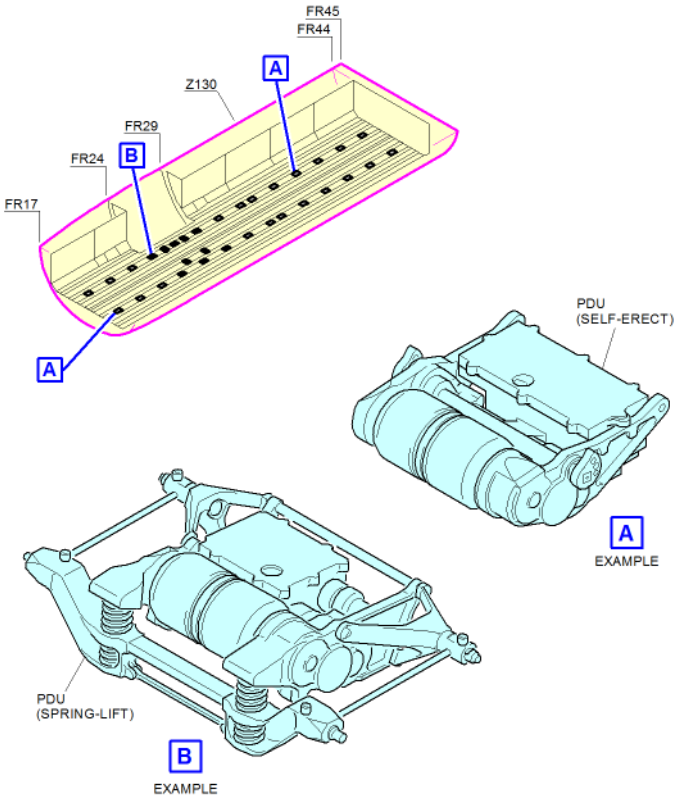
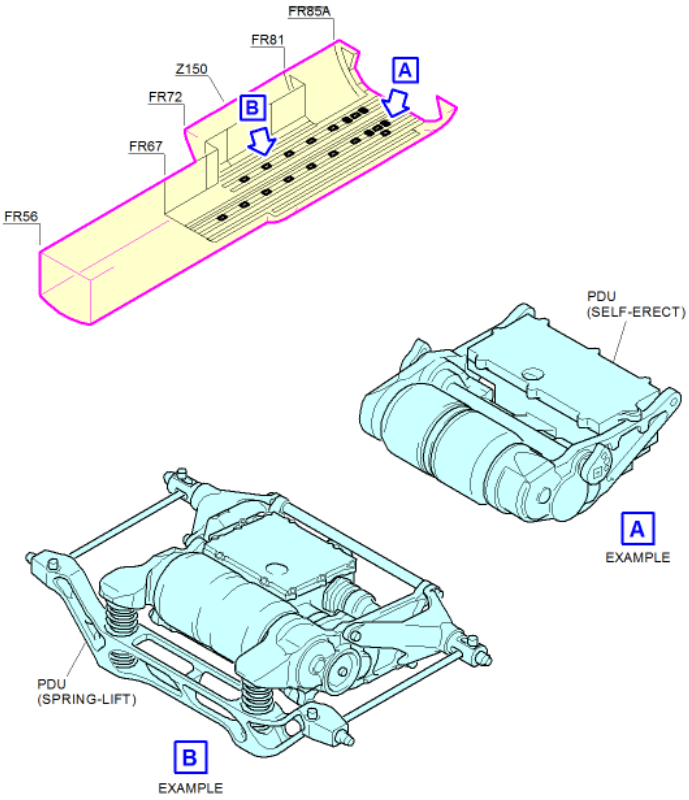
Forward Compartment



Aft Compartment



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3.11.3.1 Control Panels

The CLS of the forward cargo compartment has two control panels:

Outside Control Panel

The OCP is installed adjacent to the cargo door, in the fuselage outer skin.

The CLS control panel is the human system interface to operate the CLS, The panel provides the CLS power on/ off switch, a power control indicator lamp and the joystick to operate the PDUs means conveyance direction of the ULDs.

Access to the outside control panel is given by the access door, the outside control panel has:

- power switch,
- joystick,
- system ON indicator light.
  - Power Switch, to energize CLS, set the power switch to ON.
  - Joystick, the joystick contro ls the movements of th e ULD in th e forward cargo compartment. It has five positions, but you can make a selection of only one position at one time.

The available positions of the joystick are:

Action	Result
IN	Transverse PDUs operate in the “IN” direction.
OUT	Transverse PDUs operate in the “OUT” direction.
FWD	Longitudinal PDUs operate in the forward direction.
AFT	Longitudinal PDUs operate in the aft direction.
SPLIT	Left transverse PDUs operate in the “IN” direction and right transverse PDUs operate in the “OUT” direction.

Note: When you push the joystick down to the neutral position, you set the SPLIT position. This position is necessary when half-width ULDs are moved in pairs.

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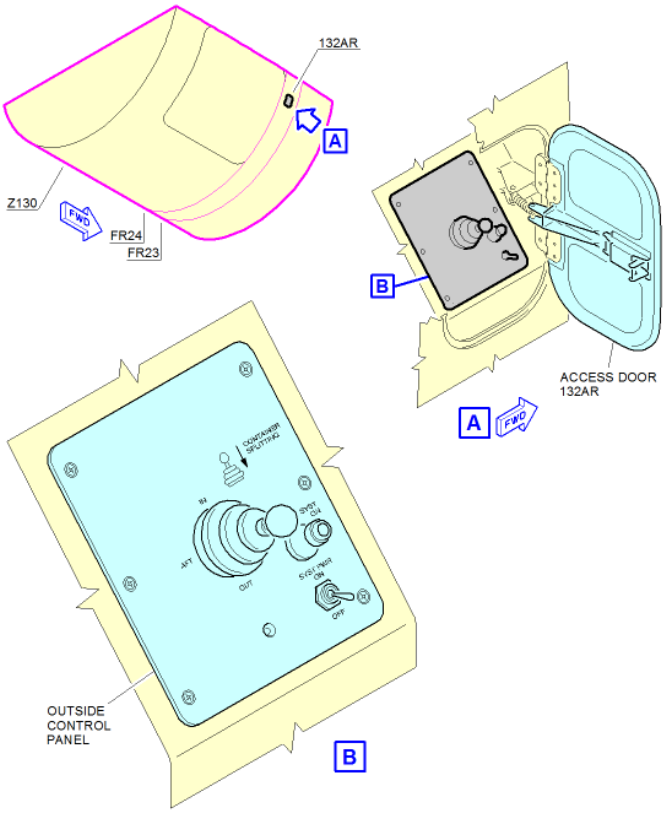

Inside Control Panel

The ICP is installed in the ceiling panels of the forward cargo compartment adjacent to the cargo door; this panel is a single joystick for longitudinal ULD conveyance only. The two-way joystick controls the movements of the ULDs which are off the ball mat area. It has two positions, FWD and AFT.

The ICP does not allow an ULD operation inside the cargo entrance area (on the ball mat) to prevent from potential ULD interference with personnel.

Once an ULD is inside the compartment means in the longitudinal area, the loader employee may use the ICP to convey the ULD into the cargo bay or to “pull” it out.

Note: In case of two persons operate simultaneously the ICP and OCP the CLS stops operating.

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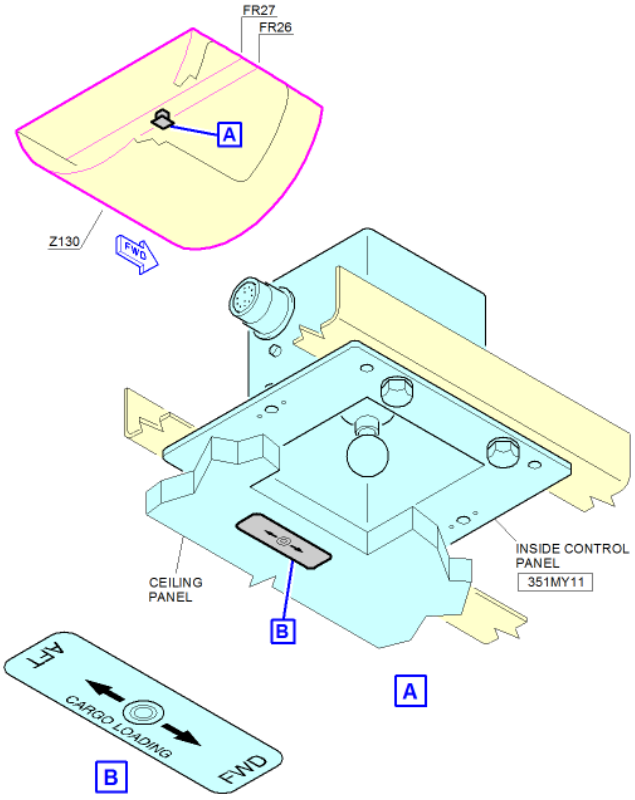

Power Supply

The CLS is supplied from the AC and DC electrical systems of the aircraft.

The ground service bus supplies 115VAC to the compartment control box through:

- the System Power Distribution Box,
- the circuit breakers,
- the service bus supplies 28VDC through the circuit breakers to power switch, compartment control box, selector control box and door-area control box.

The compartment control box supplies AC or DC power to:

- the joystick of the outside control panel,
- the joystick of the inside control panel,
- the PDUs,
- the proximity switches.

When one of the door sill latches is in the up position, the CLS is isolated from the electrical power. This prevents accidental operation of the system during flight.

3.11.3.2 Indicator and Cargo Control Interface

The CLS and its related components have interfaces with:

- the AC and DC electrical power supply of the aircraft,
- the Door Slides Management Control Unit (DSMCU),
- the Onboard Maintenance System/Central Maintenance System (OMS/CMS).

Different electrical components and systems are installed to control and/or indicate the condition of the system.

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Forward Cargo Compartment

1. The Joystick of the outside control panel controls the movement of the ULDs into and out of the ball mat area. It does this in the transverse or the longitudinal directions of the forward cargo compartment.
2. The Joystick of the inside control panel controls the movement of the ULDs inside the cargo compartment. It controls the ULDs in the forward or the aft direction outside of the ball mat area.
3. The compartment control box operates signals from the proximity switches.
4. The sector control boxes monitor the signals of the proximity switches in their related areas and controls these inputs to the compartment control box.
5. The door-area control box has an interface with the On board Maintenance System (OMS). The DCB also monitors the signals of the proximity switches in the door area and controls these inputs to the compartment control box.
6. The outside control panel has a PWR switch and a SYST PWR ON light. When the PWR switch is set to ON the SYST PWR ON light comes on (green).

Aft Cargo Compartment

1. The Joystick of the outside control panel controls the movement of the ULDs into and out of the cargo compartment. It does this in the transverse or the longitudinal directions. The joystick also controls the ULDs in the forward and aft direction outside of the ball mat area.

   The joystick has a split function which is used if two half-width ULDs are in the ball mat area at the same time. It gives an increased clearance between the two ULDs when unloading from the aircraft.
2. The Joystick of the inside control panel controls the movement of the ULDs inside the cargo compartment. It controls the ULDs in the forward or the aft direction outside of the ball mat area.
3. The compartment control box controls signals from the proximity switches.
4. The sector control boxes monitor the signals of the proximity switches in their related areas and control these inputs to the compartment control box.

   One sector control box has also the function of a pallet turning unit. These sector control box monitors and controls signals for the pallet turning and controls these inputs to the compartment control box.
5. The door-area control box interfaces with the Onboard Maintenance System (OMS). The DCB also monitors the signals of the proximity switches in the door area and controls these inputs to the CCB.
6. The outside control panel has a PWR switch and a SYST PWR ON light. When the PWR switch is set to ON the SYST PWR ON light comes on (green).

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3.12 Cargo Loading System Operation

3.12.1 General

The cargo loading system has functions to move the unit load devices (ULDs) into and out of the cargo compartments and to retain the ULDs when the airplane moves. This system is designed for one person operates at the control panels that are on the forward side of the cargo compartment door area.

The power drive units (PDUs) on the cargo compartment floor transport the ULDs in the direction of the joystick controlled. When a ULD moves, it is guided by the cargo handling equipment.

The restraint devices consisted of locks, stops, and guides are functional to secure the ULDs in their positions during the flight.

WARNINGS:

1. **BEFORE START THE LOADING ACTIVITY. A VISUAL CHECK OF THE CARGO COMPARTMENT TO ENSURE THAT THE CARGO LININGS ARE SERVICEABLE IS MANDATORY.**
2. **USE SUFFICIENT LOADING PERSONNEL TO DO THE PROCEDURE SAFELY. THE ACCIDENTAL MOVEMENT OF AN ULD(S) MAY CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO AIRCRAFT.**

Cautions:

1. **If the compartment is note fully loaded, all latches at all empty position are required to rise. This to prevent the unintended movement of ULD(s) may cause damage to aircraft.**
2. **It is prohibited to turn the ULD(s) inside the cargo compartment.**
3. **Ensure that:**
   - **the access door to the main avionics compartment located under the flight deck is properly closed,**
   - **the dimensions of the cargo are not larger than the size of pallet base or height if the cargo compartment door,**
   - **all restraint devices (Locks), nets or net components are in serviceable condition. See A380 LCM, Chapter 3.15—ULD Loading System Operating Restrictions below for weight restrictions, if any missing or unserviceable were found,**
   - **the platform of container and pallet loader (CPL) is properly aligned and level with the aircraft door sill before start loading or unloading activities to prevent any damages to the aircraft.**

3.12.2 Mechanical Component Operation

(Open)

3.12.3 Electrical Component Operation

(Open)

3.12.4 ULD Load Preperation

(Open)

3.12.5 Powered Loading Operation Procedure

3.12.5.1 Preparation

1. Open the cargo compartment door(s). See A380 LCM, Chapter 3.5—Door Operation.
2. Position the Container and Pallet Loader (CPL) level with the door sill.
3. Lower all door sill restraints.
4. Lower all restraint devices (locks) in the cargo compartment.
5. Switch “ON” the cargo loading system at the CLS outside control panel.

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3.12.5.2 Pallets and LD6

1. Lower the retractable container guides.
2. Control the joystick to “IN” position until the ULD(s) is positioned in the cargo compartment.
3. Control the joystick to desirable directions (“AFT” or “FWD”).
4. Move the ULD to proper position.
5. Raise the restraint devices (locks) to secure the ULD.

3.12.5.3 LD3

1. Control the joystick to “IN” position until the ULD(s) is positioned in the cargo compartment.
2. Pushing the joystick towards the panel to Split the pair of container.
3. Control the joystick to desirable directions (“AFT” or “FWD”).
4. Move the ULD to proper position.
5. Move the LD3 container pair to its position.

   Note: Ensure that the overridable center latches are properly raised.
6. Raise the restraint devices (locks) to secure the ULD.

Note: Ensure that the retractable container guides are properly raised.

3.12.5.4 LD3 Loading Sequence for Cargo Compartment Door Area Positions

Forward Compartment

1. Load positions 15L and 14L.
2. Raise the retractable center (YZ) latch to secure the ULD.
3. Load position 15R and 14R.

Aft Compartment

1. Load positions 44L and 45L.
2. Raise the retractable center (YZ) latch to secure the ULD.
3. Load position 44R and 45R.

3.12.5.5 Complete Loading

1. Raise all door sill restraints.
2. Switch “OFF” the cargo loading system at the CLS outside control panel.
3. Close the cargo compartment door(s). See A380 LCM, Chapter 3.5—Door Operation.

3.12.6 Powered Unloading Operation Procedure

3.12.6.1 Preparation

1. Open the cargo compartment door(s). See A380 LCM, Chapter 3.5—Door Operation.
2. Position the Container and Pallet Loader (CPL) level with the door sill.
3. Lower all door sill restraints.
4. Lower all restraint devices (locks) in the cargo compartment.
5. Switch “ON” the cargo loading system at the CLS outside control panel.

3.12.6.2 Unloading

1. Lower all latches.

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2. Control the joystick to desirable directions (“AFT” or “FWD”) to move the inner positioned ULD(s) to cargo compartment door area and hold it until the ULD(s) arrived the cargo compartment door area.
3. Control the joystick to “OUT” position and hold it until the ULD is on the CPL platform.
4. Repeat the steps 1-3 until all ULDs are unloaded.

3.12.6.3 Cargo Comartment Door Area LD3 Unloading Sequence

Forward Compartment

1. UnLoad positions 14R and 15R.
2. Lower the retractable center (YZ) latch.
3. Unload position 14L and 15L.

Aft Compartment

1. Unload positions 45R and 44R.
2. Lower the retractable center (YZ) latch.
3. Load position 45L and 44L.

3.12.6.4 Complete Unloading

1. Start loading activity if needed, or raise all door sill restraints.
2. Switch “OFF” the cargo loading system at the CLS outside control panel.
3. Remove the Container and Pallet Loader (CPL).
4. Close the cargo compartment door(s). See A380 LCM, Chapter 3.5—Door Operation.

3.12.7 Manual Loading Operation Procedure

(Open)

3.12.8 Manual Unloading Operation Procedure

(Open)

3.12.9 Bulk Cargo Handling—Standard Practices

(Open)

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3.13 Environmental Control System

3.13.1 General

The system gives ventilation and heating to the lower deck compartments. The cargo compartment ventilation system is based on a suction system powered by an extraction fan. Cabin air is extracted and supplied through an inlet duct into the cargo compartment.

The air is extracted through air vents and discharged via extraction ducting and an extraction fan and then fed into the cargo bilge area which leaves through the aft outflow valve.

Isolation valves are fitted in the supply and extraction ducting to isolate the compartment in case of a smoke warning.

The ventilation system is activated by ventilation push-button on the overhead panel in th e flight deck. The isolation valves open and the extraction fan starts running and run continuously as long as the isolation valves are fully open.

Ventilating and heating systems are installed in compartments 1, 2, and 5. Compartments 3 and 4 is installed with ventilation system only.

3.13.2 Forward Cargo Compartment

Ventilation

The extract fan draws air from the passenger cabin through two inlet valves into Compartments 1 and 2 through the sidewall and ceiling inlets. Air is extracted through outlets on the opposite sidewall and is ducted through the extract fan and the outlet isolation valve to the area of the forward outflow valve.

Temperature Control

Temperature control of the ventilation air is done by mixing the inlet ventilation air with hot air from the pneumatic system. The trim-air valve controls the quantity of hot air which is added. Temperature can be selected from the flight deck or, is preselected on the ULD–compartment service panel.

On ground, the trim-air valve is closed when the compartment door opens. Compartment heating is not available as long as the door stays open.

Temperature Range

Temperature control is provided and permits a selection of temperature between 5°C and 25°C.

3.13.3 Aft Cargo Compartment

Ventilation

The extract fan draws air from the passenger cabin by two inlet valves through the sidewall and ceiling inlets into Compartment 3 and 4. Air is extracted through outlets on the opposite sidewall and is ducted through extract fan and outlet isolation valve to aft outflow valve.

Temperature Control

No heating system installed for this compartment.

Temperature Range

No temperature control available in this compartment.

3.13.4 Bulk Cargo Compartment

Ventilation

Air from the passenger cabin is ducted through the inlet valve to this compartment. Air extracted by the fan is directed through the outlet isolation valve to the aft outflow valve. In addition a ventilation of the forward part of the Compartment 3 is provided.

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Temperature Control

Compartment heating is done by an electrical fan heater. Inlet air is drawn by a fan and flows through a heating element into the compartment. The necessary temperature can be set from the overhead panel in flight deck.

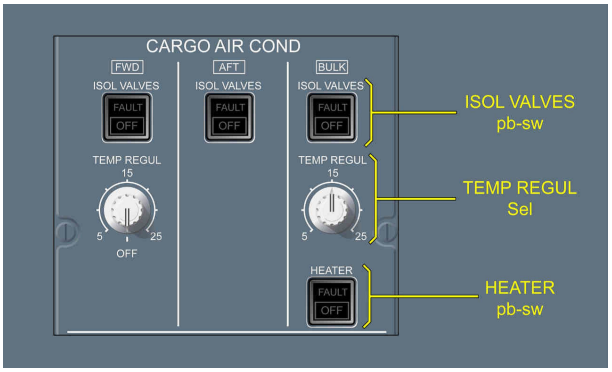
The system consists of three isolation valves, one extraction fan, two temperature sensors and one duct heater. As long as the comp artment door is clo sed, the heate r operates when temperature sensors detect that the compartment air temperature is less than selected.

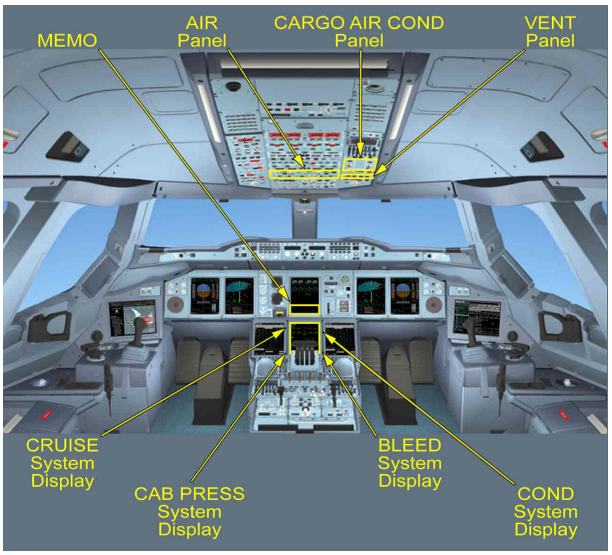
On ground, the power supply to the heating element of the electric fan is turned off when the compartment door opens. Compartment heating is not available as long as the door stays open.

Temperature Range

The System allows mean temperature selection in a range from 5°C to 25°C. If activated, the heating system will start running in case the compartment temperature is lower than the selected one.

3.13.5 Control Panel Location





3.13.6 Environmental Control System Summary

(Open)

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3.14 Maximum Package Size Specifications

3.14.1 General

The loadability of bulky nature or unusual shape can be determined by the aid of maximum dimension tables below.

The maximum height stated in the table must be reduced by the height of supporting material. This table shows maximum package size dimensions which will pass through the door opening.

Cautions:
1. **It is prohibited to carry loose bulk item in the compartments 1, 2, 3 and 4.**
2. **For the loading of single packages in the compartments 1, 2, 3 and 4 all requirements for non0unitized load must be strictly respected.**

The maximum dimensions of packages which will pass through the cargo compartment doors to be stowed in the cargo compartment are given for upright and tilted loading methods.

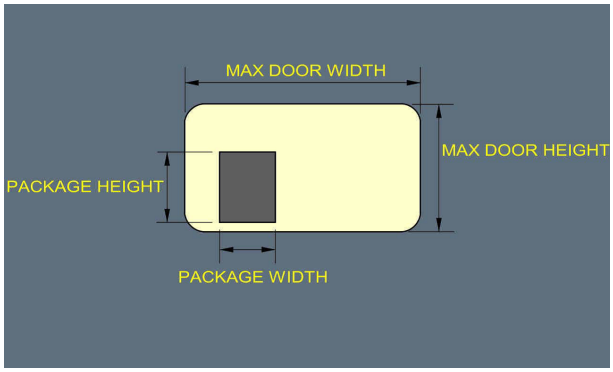
Where the exact height/width is not shown, use the nearest height/width greater than the one being considered.

The item is loadable only if the actual length of the item is equal to or less than the maximum length obtained from the table.

3.14.2 Definitions

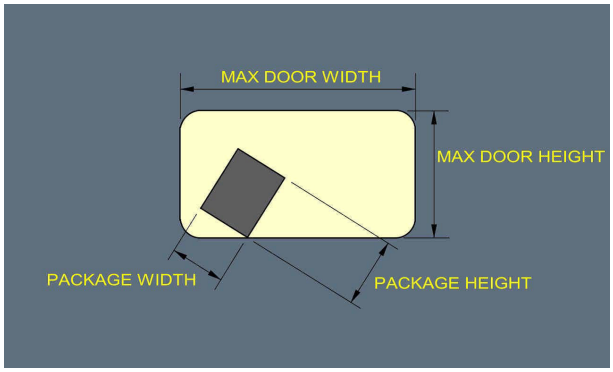
Upright Loading

Upright loading refers to large or heavy packages loaded with the assistance of mechanical ground support equipment and maneuvered through door in an upright position.



Tilted Loading

Tilted loading refers to low density packages which may require hand maneuvering through the door in a tilted position to avoid obstructions.



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3.14.3 Forward and Aft Compartment

Forward and Aft Compartment Allowable Package Sizes

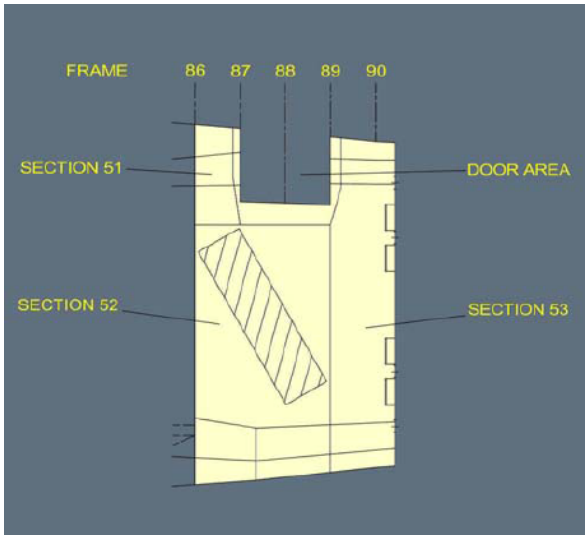
Compartment	Upright Loading			Tilted Loading		
	Width	Height	Length	Width	Height	Length
Compartments 1 & 2	290	162.5	302.3	10	162.5	826
				110	162.5	669
				250	162.5	388.9
Compartment 3	150	162.5	308	230	162.5	308
Compartment 4	250	162.5	302.3	10	162.5	780.4
				110	162.5	580.1
				250	162.5	302.3

- **All measurements are in cm.**
- **These dimensions are approximate values and refer to rectangular packages.**

3.14.4 Bulk Compartment

3.14.4.1 Upright Loading

The packages must be positioned on the horizontal part of the bulk cargo compartment floor under consideration of the floor loading limits. The following table gives the maximum dimension of heavy packages, which can be loaded in each section.



Section 51

Trial loading is recommended.

Sections 52 and 53

Upright Loading Dimensions Table

Section	Hight Up to 60	
	Width	Length
52	10	294
	15	289.4
All measurements are in cm.		

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Section	Hight Up to 60	
	Width	Length
	20	284.7
	25	280.2
	30	275.7
	35	271.2
	40	266.9
	45	262.6
	50	258.5
	55	254.4
	60	250.4
	65	247.6
53	10	302.5
	15	319.2
	20	318.1
	25	318.1
	30	318.1
	35	318.1
	40	318.1
	45	318.1
	50	318.1
	55	318.1
	60	318.1
All measurements are in cm.		

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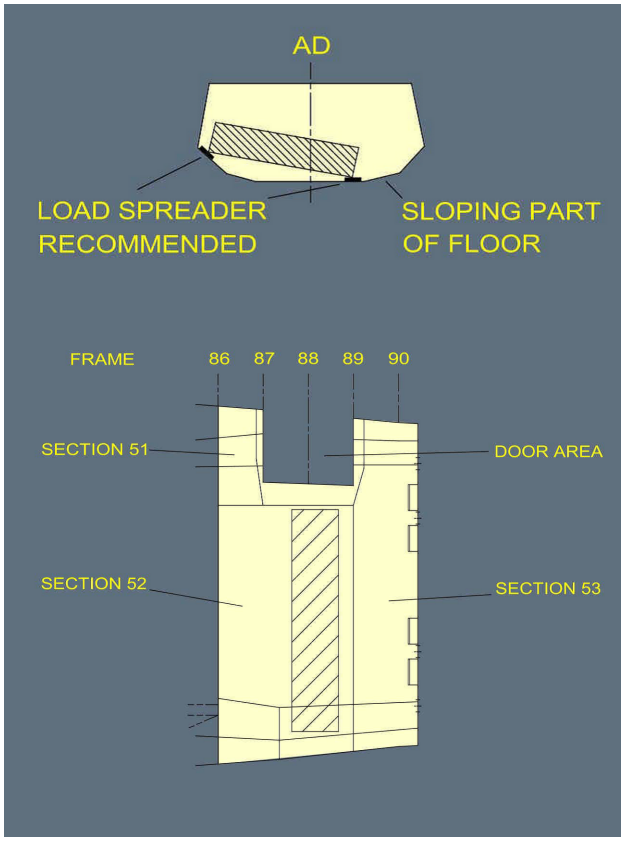
3.14.4.2 Tilted Loading

The maximum length dimensions are reachable by positioning one end on the sloping part of the floor and the other end on the horizontal part of the floor. Floor loading limits must be respected.



Section 51

Trial loading is recommended.

Sections 52 and 53

Tilted Loading Dimensions Table

Section	Hight Up to 60	
	Width	Length
52	10	328.7
	15	324.4
	20	320.2
	25	316.0
	30	311.9
	35	307.9
	40	304.1
	45	300.3
	50	296.6
	55	293.1
	60	289.8
All measurements are in cm.		

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Section	Hight Up to 60	
	Width	Length
	65	288.4
53	10	391.5
	15	390.4
	20	389.5
	25	389.5
	30	389.5
	35	389.5
	40	389.5
	45	389.5
	50	389.5
	55	389.5
	60	389.5
All measurements are in cm.		

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3.15 ULD Loading System Operating Restrictions

3.15.1 General

This section contains the malfunction limitations for all latches which secure ULDs to the cargo compartment floor structure.

A malfunction of such equipment is defined as damaged/inoperative or filed/missing equipment. Additional equipment which serves only for the guidance or transport of ULDs is not covered. The cargo compartments need not necessarily be loaded with the maximum number of ULDs, any position may remain unoccupied.

To prevent damage to operative equipment or aircraft structure in case of missing or inoperative equipment, loading/unloading should be carried out carefully. The restraint schemes are shown in this section show only the latches which are provided to lock the different concerned ULD types, so that these relevant latches can be identified easily and clearly. Latches that are less than 15.2 cm (6.00 in) from the corner of the concerned ULD must, due to their position, not be considered for latching and shall not count as a failed or missing latch are shown as “not considered for latching” in the malfunction limitation tables.

Cautions:

1. **Maximum loads for the ULD positions in this section assume all latches are installed and used as intended.**
2. **If there are two or more know latch failures for and individual ULD position, that position must remain empty (no-fit) until the failed latches can be replaced. Loading of an empty ULD at that position is prohibited.**
3. **Repair allowable damage at the earliest possible opportunity to avoid increase of damage and/or malfunction.**

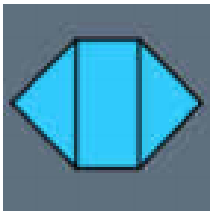
3.15.2 Restraint Layouts

(Open)

3.15.3 Symbols

The latch type symbols are shown in this section, the relevant latch types with effectivity to the malfunction limitations, the additional equipment with no effect to the malfunction limitations.

XZ Latch, double side, Retractable (Container/Pallet Locks)



YZ Latch, double side, Retractable

XZ Latch, Fix (Fixed End Stops)

YZ Latch, Rall

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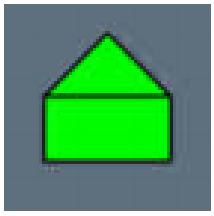
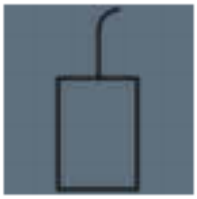
YZ Latch, Fixed

Entrance Guide

YZ Latch, Retractable



Anti-roll-out Device

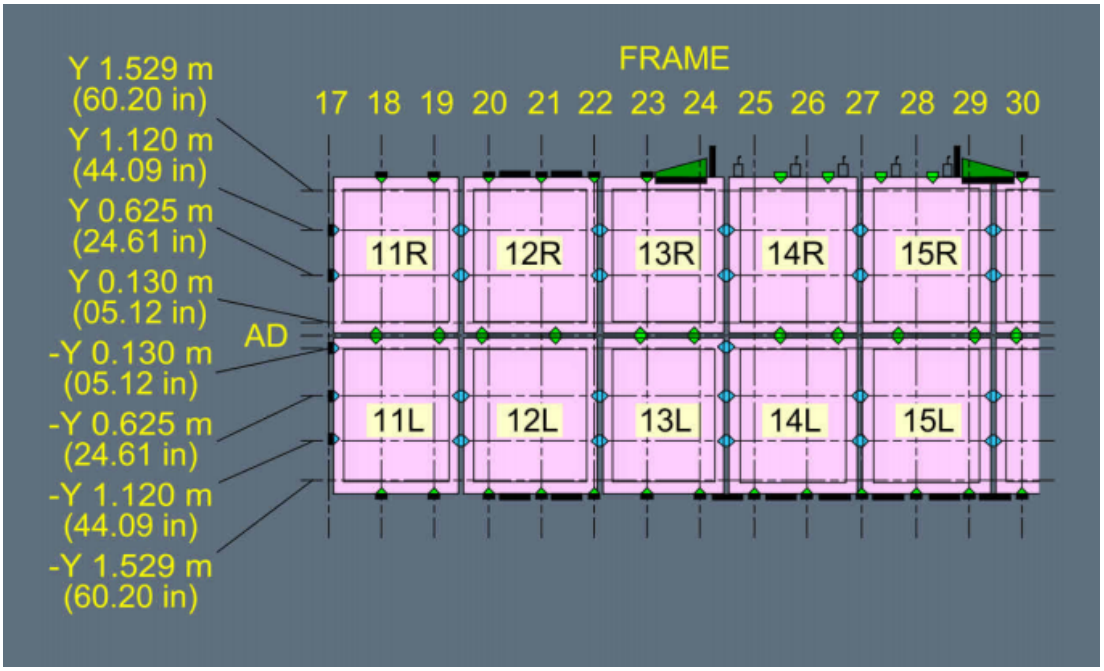


3.15.4 Malfunction Limitations

3.15.4.1 Forward Compartments

3.15.4.1.1 Compartment 1

60.4 x 61.5 inch ULD Latching



Table

Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
	19/20	LH	11L and 12L	1 unit	0	0
		RH	11R and 12R			
	22	LH	12L and 13L			

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Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
XZ-Latch double side retractable		RH	12R and 13R			
	24/25	LH	13L and 14L	1 unit at Y=–0.130 m (–5.12 in)	Not considered for latching. [a]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	13R and 14R	1 unit		
	27	LH	14L and 15L	1 unit	0	0
		RH	14R and 15R			
	29/30	LH	15L and 21L			
		RH	15R and 21R			
XZ-Latch fixed (Endstop)	17	LH	11L	1 unit at Y=–0.130 m (–5.12 in)	Not considered for latching. [a]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	11R	1 unit		
YZ-Latch fixed	18, 19	LH	11L	1 unit	0	0
		RH	11R			
	20, 21	LH	12L			
		RH	12R			
	22	LH	12L	both units	Not considered for latching. [a]	
		RH	12R			
	23, 24	LH	13L	1 unit	0	0
	23	RH	13R			
	25, 26	LH	14L	1 unit		
	27	LH	14L	1 unit	Not considered for latching. [a]	
			15L			
	28, 29	LH	15L	1 unit	0	0
YZ-Latch retractable	25/26, 26/27	RH	14R	1 unit	0	0
	27/28, 28/29	RH	15R			
YZ-Latch double side retractable	18, 19	AD	11L and 11R	1 unit	0	0
	20, 21	AD	12L and 12R			
	23, 24	AD	13L and 13R			
	25/26, 26/27	AD	14L and 14R			
	27/28, 29	AD	15L and 15R			

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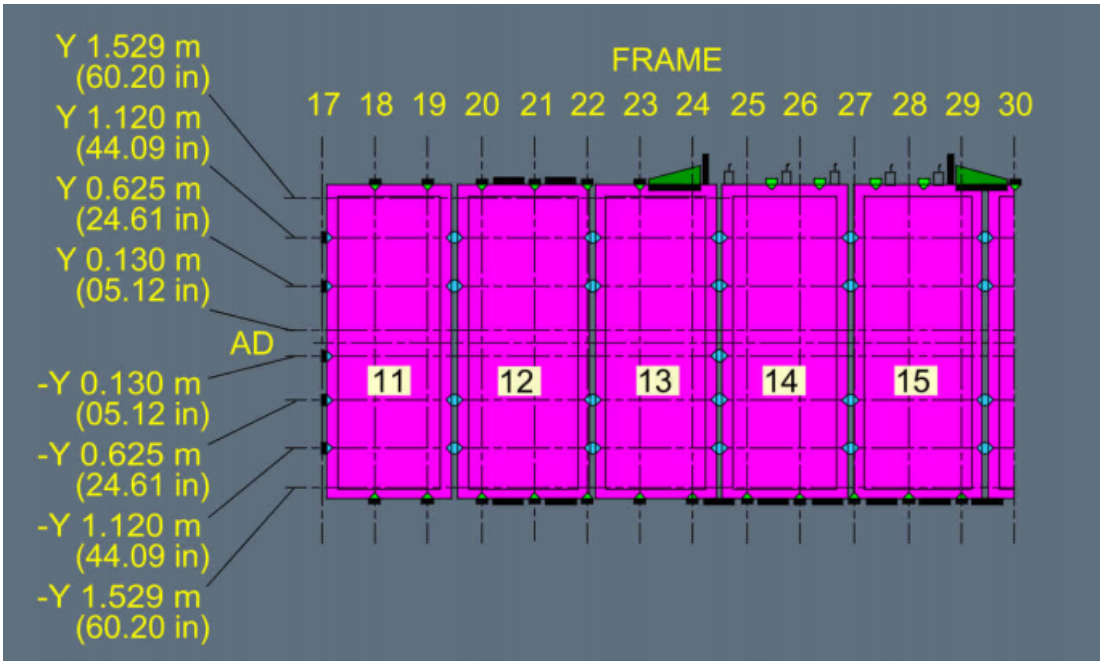
Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
YZ-Latch rail	21/22	LH RH	12L 12R	1 unit	No reduction	
	26/27	LH	14L			
	27/28	LH	15L			
Entrance Guide	24	RH	13R	1 unit	0	0
	29	RH	15R			

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

60.4 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	19/20	11 and 12	1 unit	11: 2 917	11: 6 431
				12: 2 900	12: 6 393
	22	12 and 13	1 unit	12: 2 900	12: 6 393
				13: 2 581	13: 5 690
	24/25	13 and 14	1 unit	13: 3 070	13: 6 768
				14: 3 102	14: 6 839
	27	14 and 15	1 unit	14: 3 102	14: 6 839
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
				15: no reduction	
	29/30	15 and 21	1 unit	15: no reduction	
				21: 2 844	21: 6 270
XZ-Latch fixed (Endstop)	17	11	1 unit	no reduction	
YZ-Latch fixed	18, 19	11	1 unit	0	0
	20, 21	12			
	22	12	both units	not considered for latching [a)]	
	23, 24	13	1 unit	0	0
	25, 26	14	1 unit		
	27	15	1 unit	not considered for latching [a)]	
	28, 29	15	1 unit	0	0
YZ-Latch retractable	25/26, 26/27	14	1 unit	0	0
	27/28, 28/29	15	1 unit	no reduction	
YZ-Latch rail	21/22	12	1 unit	no reduction	
	26/27	14			
	27/28	15			
Entrance Guide	24	13	1 unit	0	0
	29/30	15	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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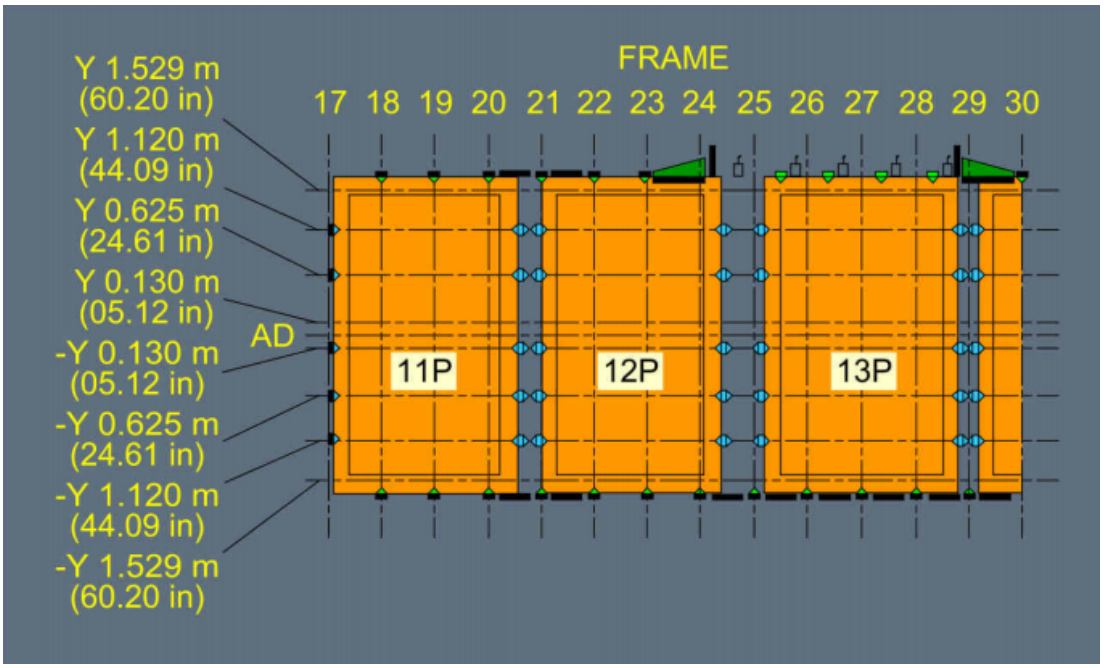
88 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	20/21	11P	1 unit	no reduction	
	21	12P	1 unit	4,282	9,440
	24/25	12P			
	25	13P	1 unit	no reduction	
	28/29	13P			
XZ-Latch fixed	17	11P	1 unit	no reduction	
YZ-Latch fixed	18, 19, 20	11P	1 unit	no reduction	
	21	12P	both units	not considered for latching[a)]	
	22, 23, 24	12P	1 unit	4,511	9,945
	26, 27, 28	13P	1 unit	no reduction	
YZ-Latch retractable	25/26, 26/27, 27/28, 28/29	13P	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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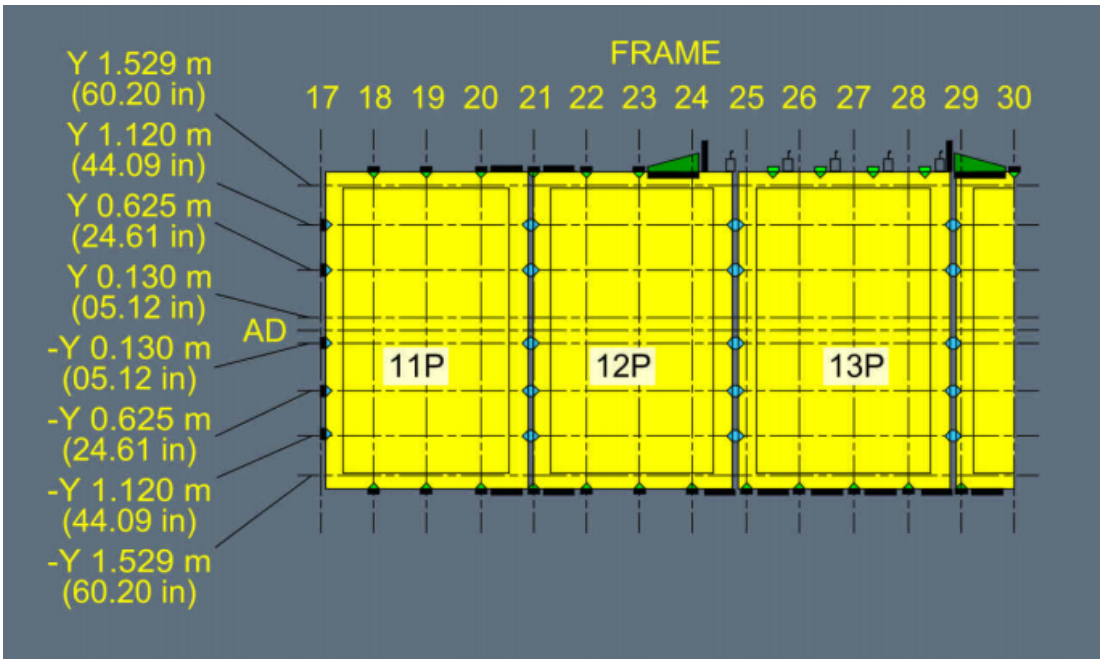
Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
YZ-Latch rail	20/21	11P	1 unit	no reduction	
	21/22	12P			
	25/26, 28/29	13P			
Entrance Guide	24	12P	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

96 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	21	11P and 12P	1 unit	11P: 4,783	11P: 10,545
				12P: 4,326	12P: 9,537
	24/25	12P and 13P	1 unit	12P: 4,326	12P: 9,537
				13P: 4,879	13P: 10,756
	28/29	13P and 21P	1 unit	13P: 4,879	13P: 10,756
				21P: 4,511	21P: 9,945
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch fixed (Endstop)	17	11P	1 unit	4,879	10,756
YZ-Latch fixed	18, 19, 20	11P	1 unit	4,794	10,569
	21	12P	both units	not considered for latching[a)]	
	22, 23, 24	12P	1 unit	4,554	10,040
	25	13P	1 unit	not considered for latching[a)]	
	26, 27, 28	13P	1 unit	no reduction	
YZ-Latch retractable	25/26, 26/27, 27/28, 28/29	13P	1 unit	4,854	10,701
YZ-Latch rail	20/21	11P	1 unit	no reduction	
	21/22, 24/25	12P	1 unit	4,831	10,650
	25/26, 28/29	13P	1 unit	no reduction	
Entrance Guide	24	12P	1 unit	4,739	10,448
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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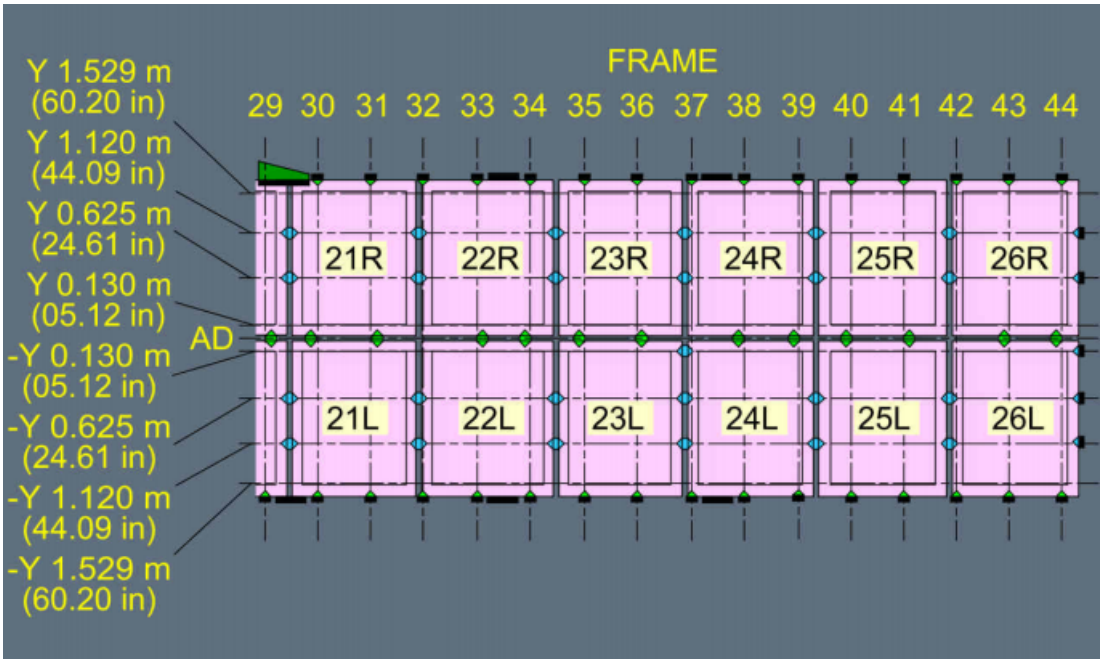
3.15.4.1.2 Compartment 2

60.4 x 61.5 inch ULD Latching



Table

Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
XZ-Latch double side retractable	29/30	LH	21L and 15L	1 unit	0	0
		RH	21R and 15R			
	32	LH	21L and 22L			
		RH	21R and 22R			
	34/35	LH	22L and 23L			
		RH	22R and 23R			
	37	LH	23L and 24L	1 unit at Y=–0.130 m (–5.12 in)	not considered for latching [a)]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	23R and 24R	1 unit		
	39/40	LH	24L and 25L	1 unit	0	0
		RH	24R and 25R			
	42	LH	25L and 26L			
		RH	25R and 26R			
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**						

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Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
XZ-Latch fixed (Endstop)	44	LH	26L	1 unit at Y=–0.130 m (–5.12 in)	not considered for latching [a)]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	26R	1 unit		
YZ-Latch fixed	30, 31	LH RH	21L 21R	1 unit	0	0
	32	LH RH	21L and 22L 21R and 22R	both units	not considered for latching [a)]	
	33, 34	LH RH	22L 22R	1 unit	0	0
	35, 36	LH RH	23L 23R			
	37	LH RH	24L 24R	both units	not considered for latching [a)]	
	38, 39	LH RH	24L 24R	1 unit	0	0
	40, 41	LH RH	25L 25R			
	42	LH RH	26L 26R	both units	not considered for latching [a)]	
	43, 44	LH RH	26L 26R	1 unit	0	0
YZ-Latch double side retractable	30, 31	AD	21L and 21R	1 unit	0	0
	33, 34	AD	22L and 22R			
	35, 36	AD	23L and 23R			
	38, 39	AD	24L and 24R			
	40, 41	AD	25L and 25R			
	43, 44	AD	26L and 26R			
YZ-Latch rail	37/38	LH RH	24L 24R	1 unit	no reduction	
	29/30	RH	21R	1 unit	no reduction	

No combination of the above failures per concerned ULD position are allowed.

ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.

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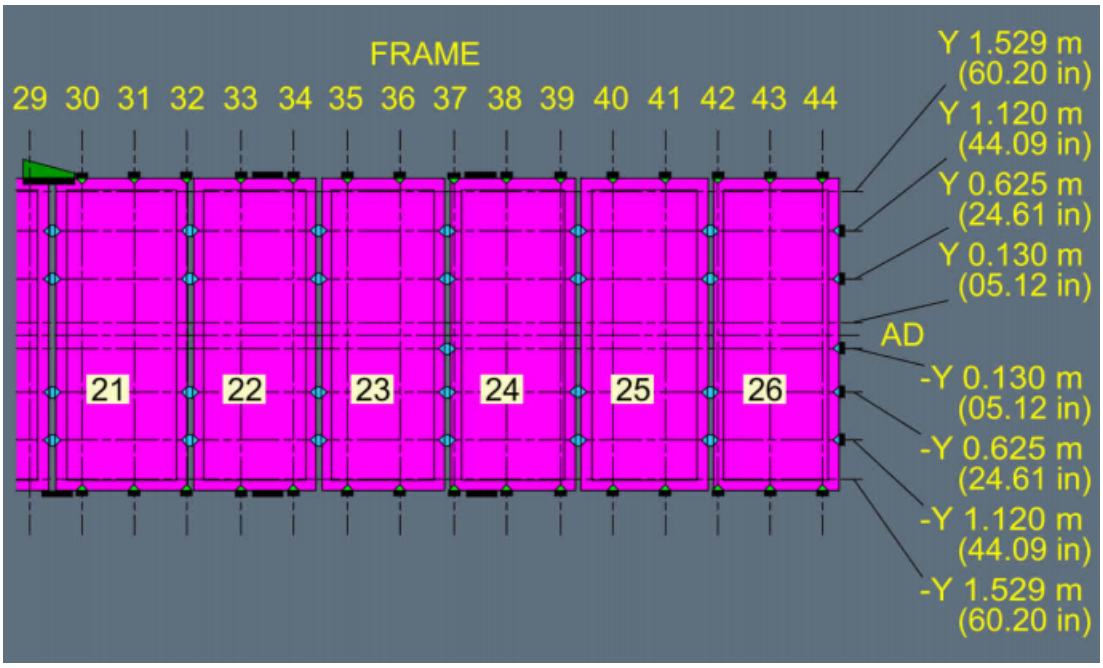
Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
Entrance Guide						
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**						

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

60.4 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	29/30	15 and 21	1 unit	15: no reduction	
				21: 2 844	21: 6 270
	32	21 and 22	1 unit	21: 2 844	21: 6 270
				22: 2 679	22: 5 906
	34/35	22 and 23	1 unit	22: 2 679	22: 5 906
				23: 3 113	23: 6 863
	37	23 and 24	1 unit	23: 3 113	23: 6 863
				24: no reduction	
	39/40	24 and 25	1 unit	24: no reduction	
				25: 2 745	25: 6 052
	42	25 and 26	1 unit	25: 2 745	25: 6 052
				26: 2 359	26: 5 201
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch fixed (Endstop)	44	26	1 unit	3,019	6,656
YZ-Latch fixed	30, 31	21	1 unit	0	0
	32	21 and 22	both units	not considered for latching[a)]	
	33, 34	22	1 unit	0	0
	35, 36	23			
	37	24	both units	not considered for latching[a)]	
	38, 39	24	1 unit	0	0
	40, 41	25			
	42	26	both units	not considered for latching[a)]	
	43, 44	26	1 unit	0	0
YZ-Latch rail	37/38	24	1 unit	no reduction	
Entrance Guide	29/30	21	1 unit	not considered for latching[a)]	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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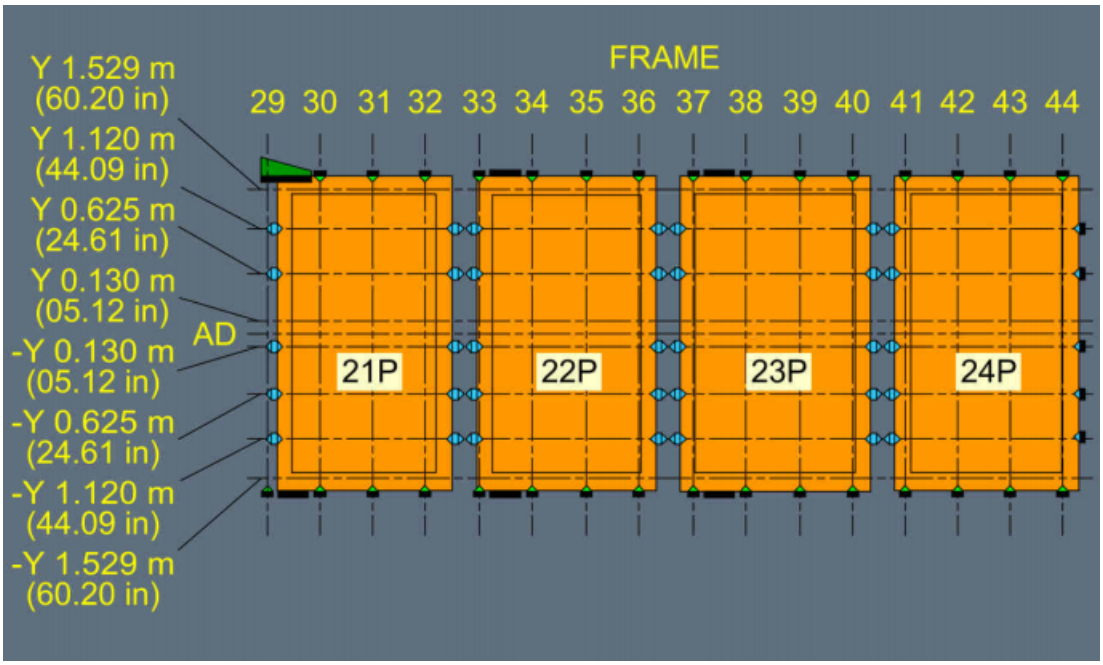
88 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	29	21P	1 unit	no reduction	
	32/33	21P			
	33	22P	1 unit	4,601	10,143
	36/37	22P			
	37	23P	1 unit	4,519	9,963
	40/41	23P			
	40/41	24P	1 unit	no reduction	
XZ-Latch fixed (Endstop)	44	24P	1 unit	no reduction	
YZ-Latch fixed	30, 31, 32	21P	1 unit	no reduction	
	33	22P	both units	not considered for latching[a)]	
	34, 35, 36	22P	1 unit	no reduction	
	37	23P	both units	not considered for latching[a)]	
	38, 39, 40	23P	1 unit	4,625	10,196
	41, 42, 43, 44	24P	1 unit	no reduction	
	29/30	21P	1 unit	no reduction	
	33/34	22P			
	37/38	23P			
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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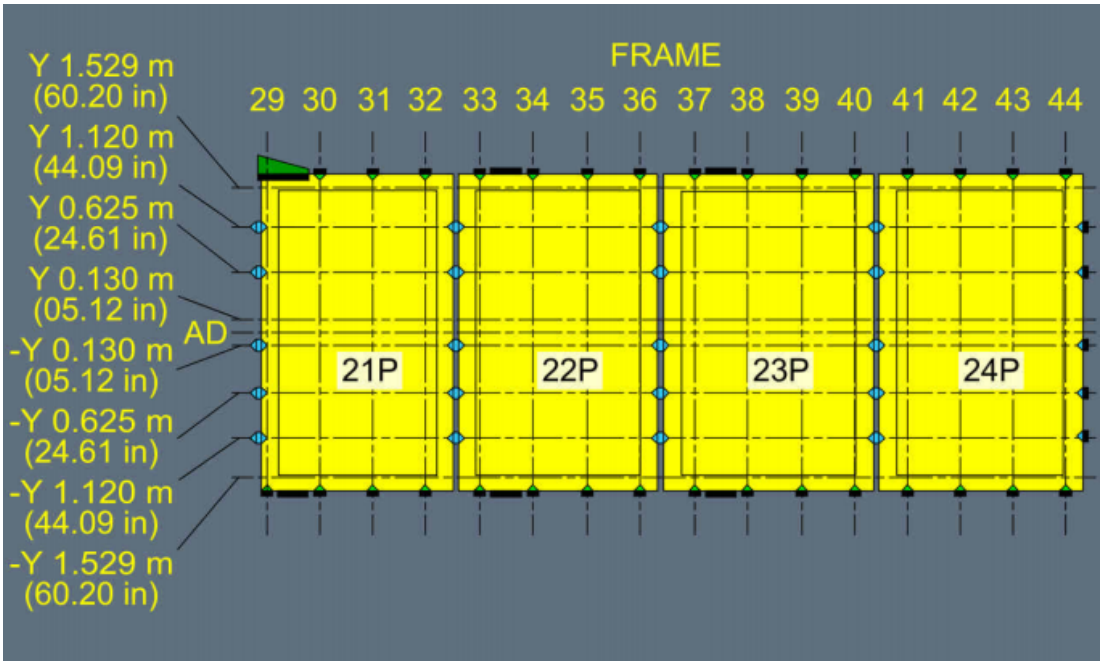
Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
YZ-Latch rail					
Entrance Guide	29/30	21P	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

96 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	28/29	13P and 21P	1 unit	13P: 4,879	13P: 10,756
				21P: 4,511	21P: 9,945
	32/33	21P and 22P	1 unit	21P: 4,511	21P: 9,945
				22P: no reduction	
	36/37	22P and 23P	1 unit	no reduction 23P: no reduction	
	40/41	23P and 24P	1 unit	24P: 4,938	24P: 10,886
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch fixed (Endstop)	44	24P	1 unit	no reduction	
YZ-Latch fixed	29	21P	1 unit	not considered for latching[a)]	
	30, 31, 32	21P	1 unit	4,623	10,192
	33, 34, 35, 36	22P	1 unit	4,875	10,748
	37, 38, 39, 40	23P	1 unit	4,884	10,767
	41, 42, 43, 44	24P	1 unit	4,764	10,503
YZ-Latch rail	29/30	21P	1 unit	no reduction	
Entrance Guide	29/30	21P	1 unit	5,095	11,232
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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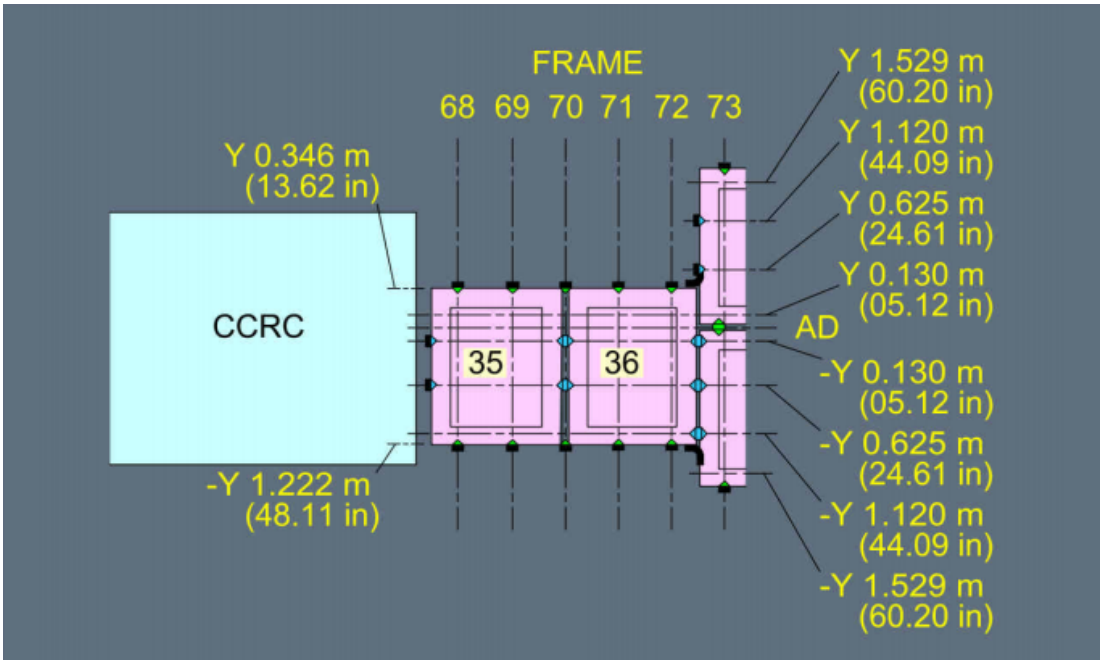
3.15.4.2 Aft Compartments

3.15.4.2.1 Compartment 3

60.4 x 61.5 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
	70	35 and 36	1 unit	0	0
XZ-Latch double side retractable	72/73	36	1 unit at Y=–1.120 m (–44.09 in)	not considered for latching[a)]	
			1 unit at Y=–0.130 m (–5.12 in)	0	0
		36 and 41L	1 unit at Y=–0.625 m (–24.61 in)		
		41L	1 unit at Y=–1.120 m (–44.09 in)		
XZ-Latch fixed (Endstop)	67/68	35	1 unit	0	0
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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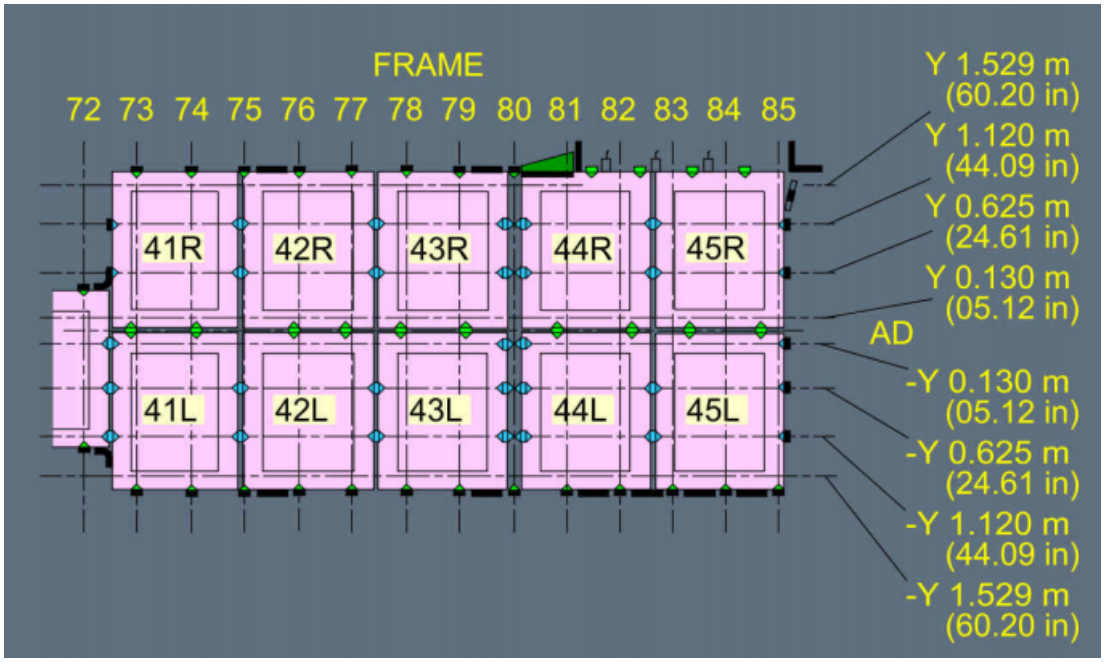
Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
YZ-Latch fixed	68, 69	35	1 unit	0	0
	70	35	both units	not considered for latching[a)]	
	71, 72	36	1 unit	0	0
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

3.15.4.2.2 Compartment 4

60.4 x 61.5 inch ULD Latching



Table

Affected LatchType	Frame Position of Latch	Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
				kg	lb
XZ-Latch double side retractable	72/73	36	1 unit at Y=–1.120 m (–44.09 in)	not considered for latching[a)]	
			1 unit at Y=–0.130 m (–5.12 in)	0	0
		36 and 41L	1 unit at Y=–0.625 m (–24.61 in)		
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
			41L	1 unit at Y=–1.120 m (–44.09 in)		
				1 unit at Y=–0.130 m (–5.12 in)	not considered for latching [a)]	
	75	LH	41L and 42L	1 unit	0	0
		RH	41R and 42R			
	77/78	LH	42L and 43L			
		RH	42R and 43R			
	80	LH	43L	1 unit at Y=–0.130 m (–5.12 in)	not considered for latching [a)]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	43R	1 unit		
	80	LH	44L	1 unit at Y=–0.130 m (–5.12 in)	not considered for latching [a)]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	44R	1 unit		
	82/83	LH	44L and 45L	1 unit		
		RH	44R and 45R			
XZ-Latch fixed (Endstop)	72/73	RH	41R	1 unit	0	0
	85	LH	45L	1 unit at Y=–0.130 m (–5.12 in)	not considered for latching [a)]	
				1 unit at Y=–0.625 m (–24.61 in) or Y=–1.120 m (–44.09 in)	0	0
		RH	45R	1 unit		
YZ-Latch fixed	73, 74	LH	41L	1 unit	0	0
		RH	41R			
	75	LH	42L	both units	not considered for latching [a)]	
		RH	42R			
	76, 77	LH	42L	1 unit	0	0
		RH	42R			
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**						

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Affected LatchType	Frame Position of Latch		Concerned ULD Posistions	Latch Failure	ULD Weight Reduced to:	
					kg	lb
	78, 79	LH RH	43L 43R			
	80	LH RH	- -	both units	not considered for latching [a]	
	81, 82	LH	44L	1 unit	0	0
	83, 84	LH	45L			
	85	LH	45L	1 unit	not considered for latching [a]	
 YZ-Latch retractable	81/82, 82/83	RH	44R	1 unit	no reduction	
	83/84, 84/85	RH	45R	1 unit	0	0
 YZ-Latch double side retractable	73, 74	AD	41L and 41R	1 unit	0	0
	76, 77	AD	42L and 42R			
	78, 79	AD	43L and 43R			
	81, 82	AD	44L and 44R			
	83/84, 84/85	AD	45L and 45R			
 YZ-Latch rail	75/76	LH RH	42L 42R	1 unit	no reduction	
	79/80	LH RH	43L 43R			
	82/83	LH	44L			
	84/85	LH	45L			
 Entrance Guide	81	RH	44R	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**						

a) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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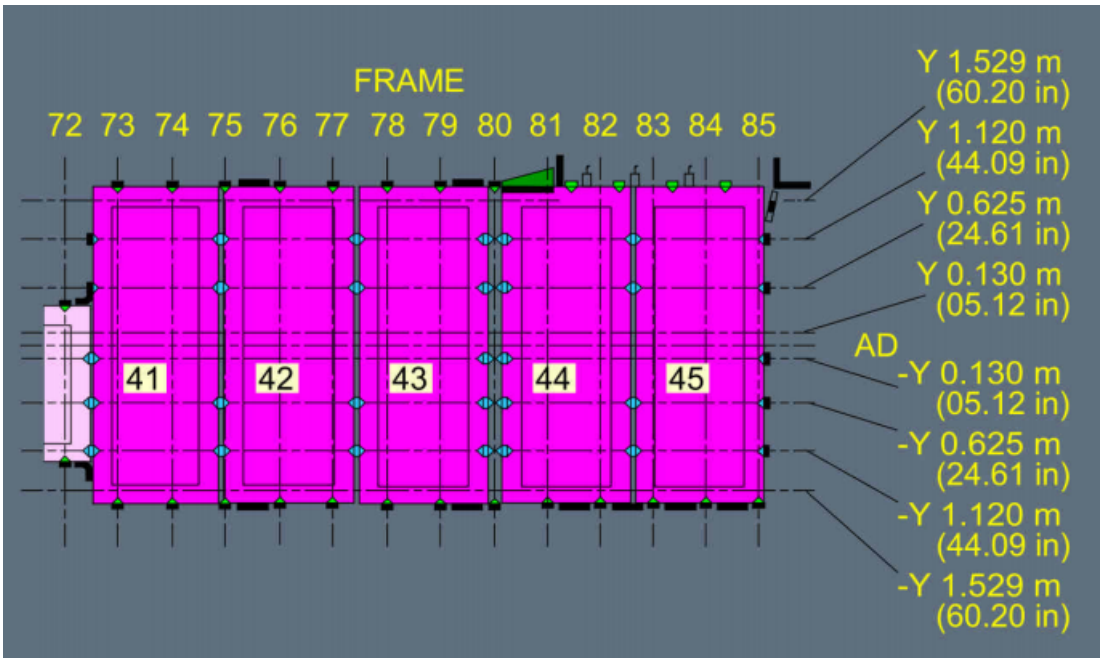
60.4 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	72/73 [a)]	41	1 unit	no reduction	
	75	41 and 42	1 unit	41: 2,562 42: 2,912	41: 5,648 42: 6,420
	77/78	42 and 43	1 unit	42: 2,912 43: 3,121	42: 6,420 43: 6,881
	79/80	43	1 unit	no reduction	
	80/81	44			
	82/83	44 and 45	1 unit	44: 3,051 45: 2,834	44: 6,726 45: 6,248
XZ-Latch fixed	72/73	41	1 unit	no reduction	
	85	45			
YZ-Latch fixed	73, 74	41	1 unit	0	0
	75	42	both units	not considered for latching [b)]	
	76, 77	42	1 unit	0	0
	78, 79	43			
	80	-	both units	not considered for latching [a)]	
	81, 82	44	1 unit	0	0
	83, 84	45			
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
	85	45	1 unit	not considered for latching[a)]	
YZ-Latch retractable	81/82, 82/83	44	1 unit	no reduction	
	83/84, 84/85	45		0	0
YZ-Latch rail	75/76	42	1 unit	no reduction	
	79/80	43			
	82/83	44			
	84/85	45			
Entrance Guide	81	44	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) A malfunction of double side retractable XZ-latch at frame 72/73 may also restrict loading of an 60.4 x 61.5 inches ULD on position 36 in compartment 3 of aft lower cargo hold. Refer to 1-10-60-50-10 Compartment 3.

b) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

88 x 125 inch ULD Latching

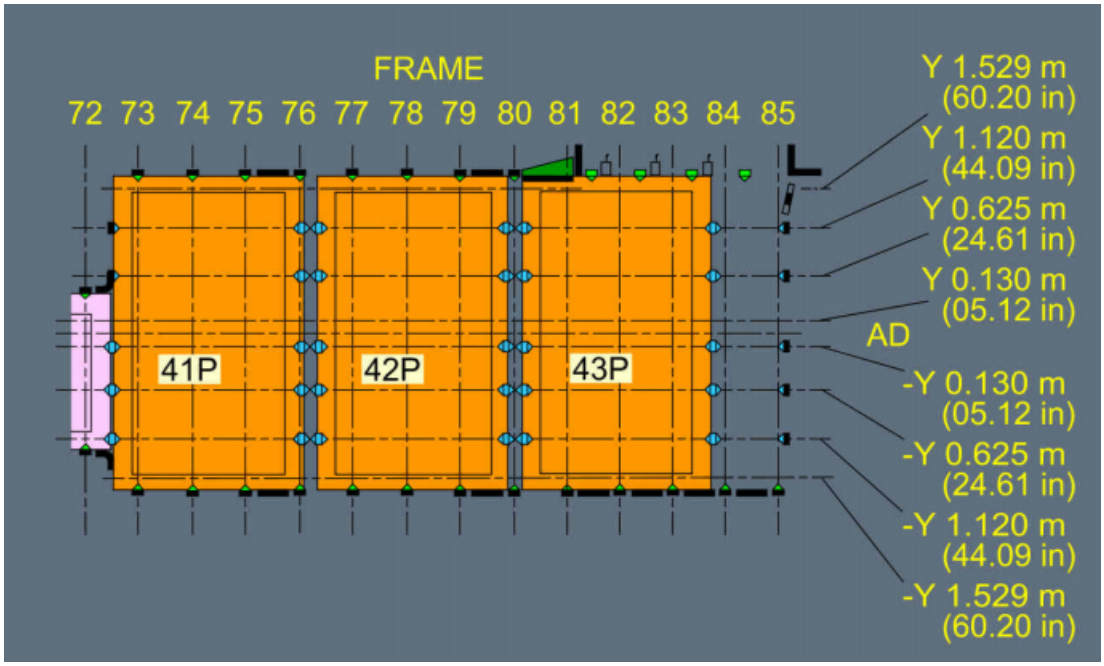

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Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	72/73 [a], 76	41P	1 unit	4,615	10,174
	76/77, 79/80	42P	1 unit	no reduction	
	80/81, 83/84	43P	1 unit	4,504	9,930
XZ-Latch fixed	72/73	41P	1 unit	no reduction	
YZ-Latch fixed	73, 74, 75	41P	1 unit	no reduction	
	76	41P	both units	not considered for latching [b]	
	77, 78, 79	42P	1 unit	4,620	10,185
	80	-	both units	not considered for latching [b]	
	81, 82, 83	43P	1 unit	no reduction	
YZ-Latch retractable	81/82, 82/83, 83/84	43P	1 unit	no reduction	
YZ-Latch rail	75/76	41P	1 unit	no reduction	
	79/80	42P			
	83/84	43P			
Entrance Guide	81	43P	1 unit	no reduction	
No combination of the above failures per concerned ULD position are allowed.					
ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.					

a) A malfunction of double side retractable XZ-latch at frame 72/73 may also restrict loading of an 60.4 x 61.5 inches ULD on position 36 in compartment 3 of aft lower cargo hold. Refer to 1-10-60-50-10 Compartment 3.

b) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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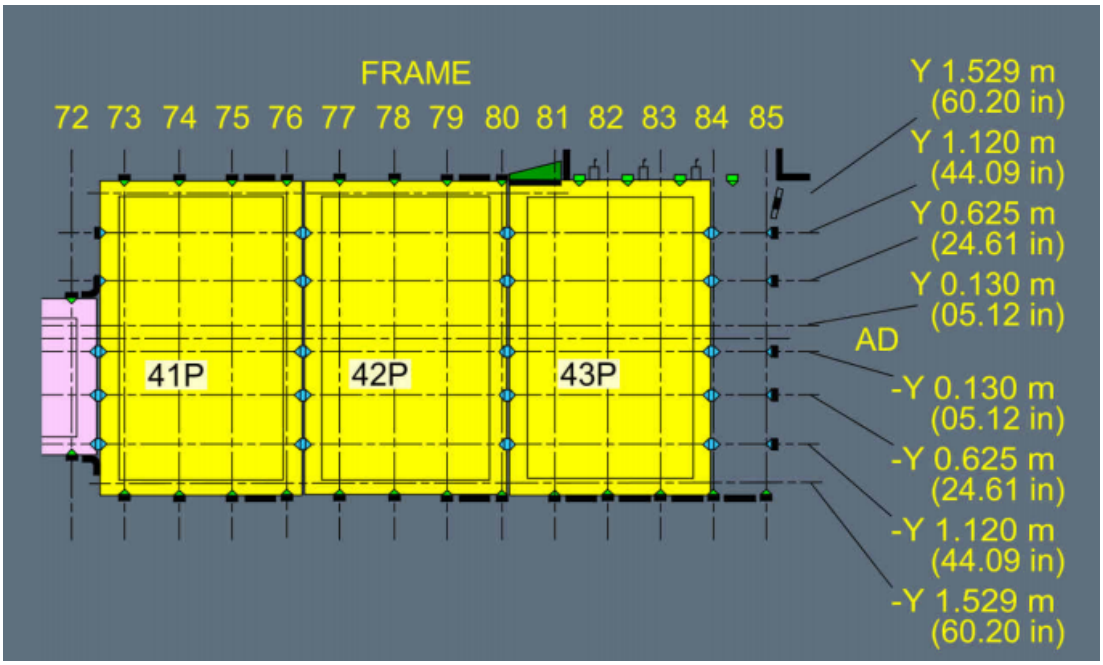
96 x 125 inch ULD Latching



Table

Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
XZ-Latch double side retractable	72/73 [a)]	41P	1 unit	no reduction	
	76/77	41P and 42P	1 unit	41P: no reduction	
				42P: 4,607	42P: 10,157
	80	42P and 43P	1 unit	42P: 4,607 43P: 4,612	42P: 10,157 43P: 10,168
	84	43P	1 unit	4,612	10,168
XZ-Latch fixed	72/73	41P	1 unit	no reduction	
YZ-Latch fixed	73, 74, 75, 76	41P	1 unit	4,971	10,959
	77, 78, 79	42P	1 unit	4,695	10,351
	80	42P	both units	not considered for latching [b)]	
	81	43P	1 unit	4,853	10,699
	82, 83	43P	1 unit	4,816	10,617
	84	43P	1 unit	not considered for latching [b)]	
	81/82, 82/83, 83/84	43P	1 unit	4,703	10,368
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

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Affected Latch Type	Frame Position of Latch	Concerned ULD Position(s)	Latch Failure	ULD Weight Reduced to	
				(kg)	(lb)
YZ-Latch retractable					
YZ-Latch rail	79/80	42P	1 unit	no reduction	
	83/84	43P			
Entrance Guide	81	43P	1 unit	5,052	11,138
No combination of the above failures per concerned ULD position are allowed. **ULD weight reduced to "0" means the concerned ULD position(s) must be unoccupied.**					

a) A malfunction of double side retractable XZ-latch at frame 72/73 may also restrict loading of an 60.4 x 61.5 inches ULD on position 36 in compartment 3 of aft lower cargo hold.

b) Latch is located less than 0.152 m (6.00 in) from the corner of the concerned ULD and so not considered for latching. A malfunction will not count as a failed or missing latch.

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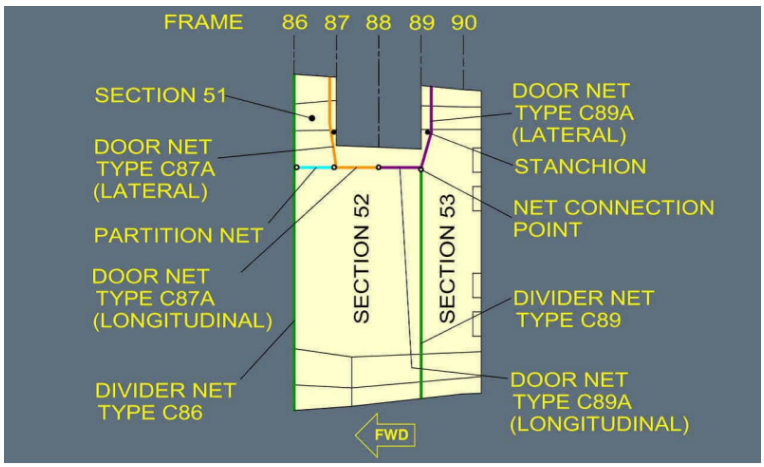
3.16 Bulk Compartment Net Malfunction Limitations

3.16.1 General

The bulk compartment is separated by a removable divider net. Additional bulk nets are provided to separate the compartment into sections and door nets are installed to keep the door area free of loose cargo items.

The net arrangement is shown in the illustration below.

Net Arrangement



Note: Stanchions are integral parts of the door nets.

3.16.2 Definition of Terms

Description of net parts which could effect secure function of the net and on which damages cause malfunction limitations as described in the malfunction limitation tables for every net types.

Webbing (Intersection)

The straps the nets are made of are called webbing. There are defined two types of webbing components:

Primary components: A webbing strap which runs directly between two aircraft attachments.

Secondary components: All other webbing straps which are not primary components.

A webbing intersection is any point where two webbing members are joined with a stitch pattern.

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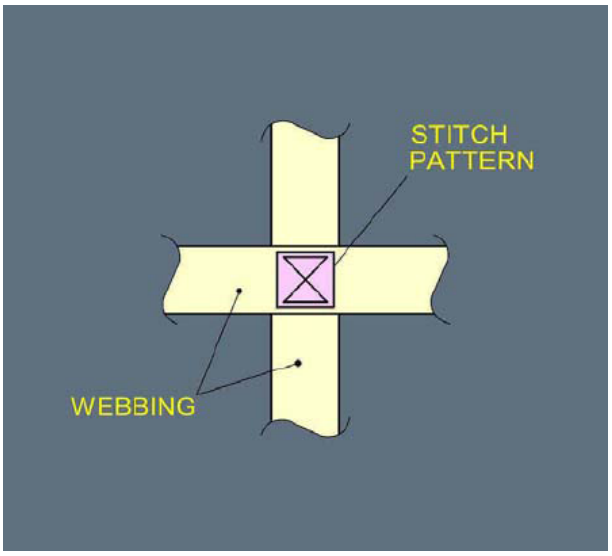
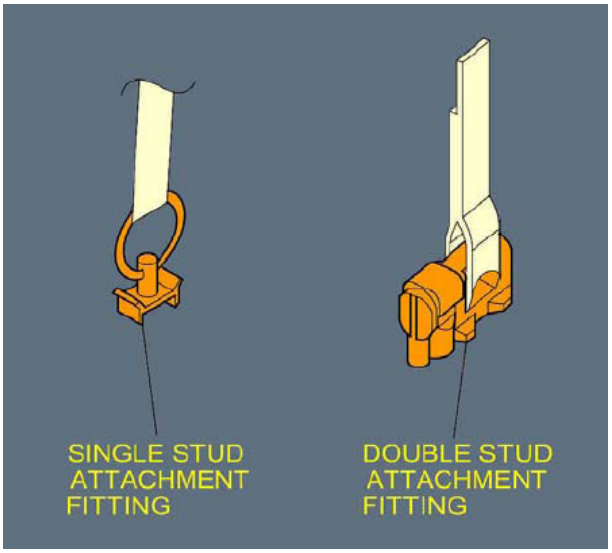


Net Attachment Fitting

Nets are fasten to the aircraft structure by single or double stud attachment fitting connected to tie-down points at the aircraft structure.



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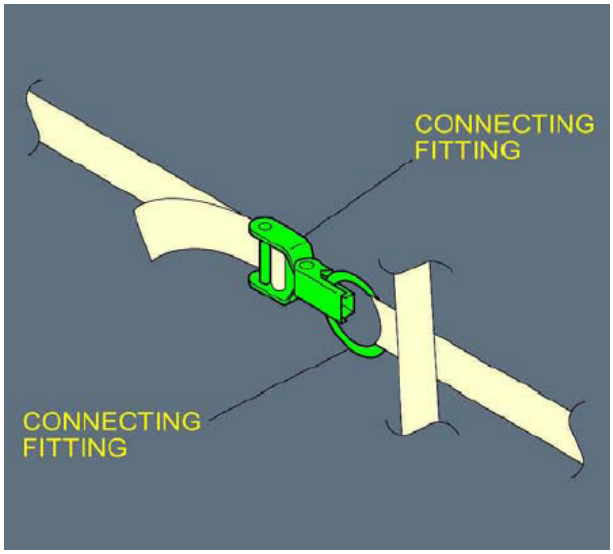
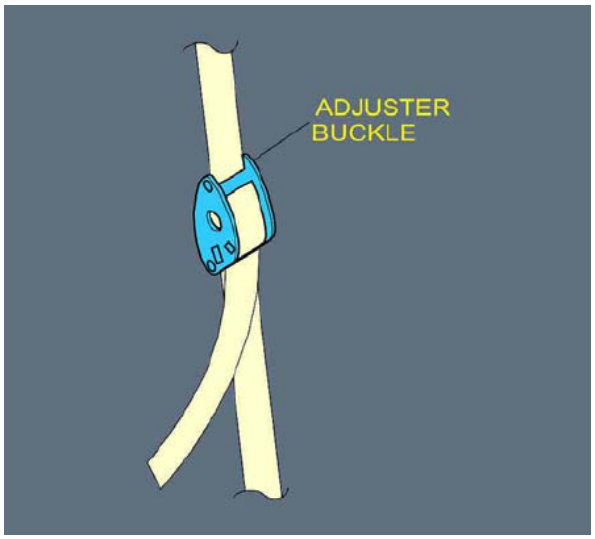
Net Connection Fitting

Nets are fastening one to another by connecting fittings.



Net Adjuster Buckle

Net adjuster buckle are used for correct tensioning of the nets.



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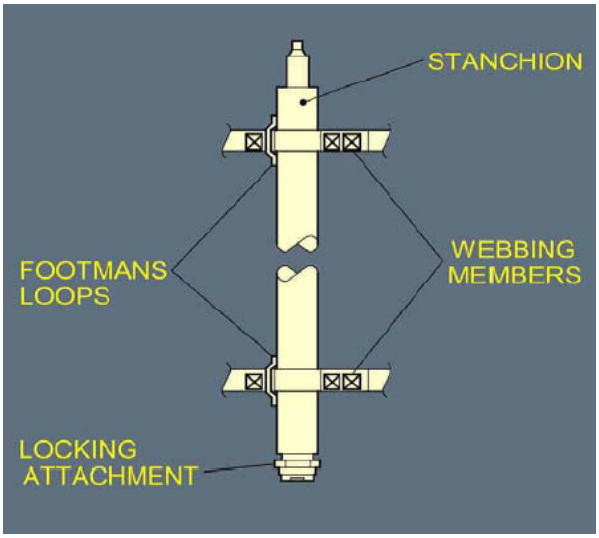
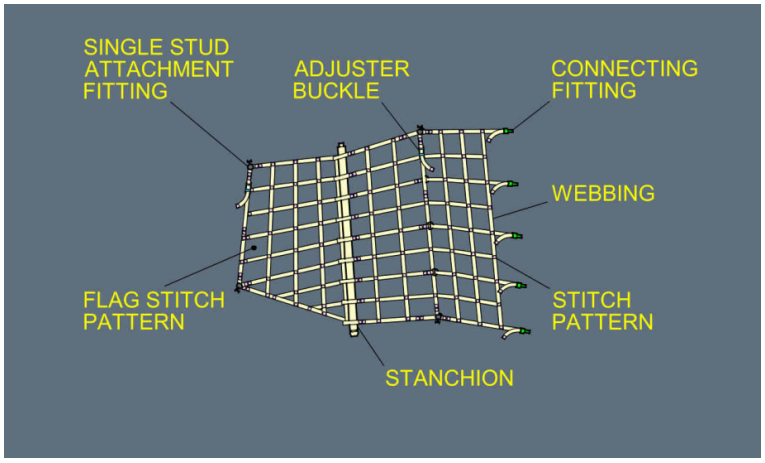
Stanchion

Stanchions are integral parts of the door nets. Stanchions give an additional stability to the nets as they take effect as additional connections to the aircraft structure.



3.16.3 Door Net Type C87A



Item	Damage		Restriction
Net webbing	One webbing strap cut (Secondary components[a])	In lateral part of the net.	Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
		In longitudinal part of the net.	Gross weight of section 51 must be reduced to 142 kg (313 lb.). Section 52 without reduction.
	Broken stitching or severely abraded	In lateral part of the net.	Section 51 without reduction.
Example of allowable damages with restrictions.			
Webbing:	**Discoloration, soiling, fluffing or slight abrasion.**		
Net hardware:	**Soiling or light surface corrosion not affecting function.**		
Stanchion:	**Light surface corrosion on tube or minor damage to locking attachment not affecting function.**		

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Item	Damage		Restriction
	stitching at web intersections. Not more than two flag stitch pattern affected per net.		Gross eight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually.
		In longitudinal part of the net.	Gross weight of section 51 must be reduced to 142 kg (313 lb). Section 52 without reduction.
	Broken stitching or severely abraded stitching at stitch pattern to secure attachment fitting.		Section 51 without reduction. Gross eight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually.
Net hardware	On damaged adjuster buckle preventing correct tensioning of the net.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
	One missing or damaged attachment fitting preventing connection to aircraft structure.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
	One missing or damaged connecting fitting joined nets to one another.	In lateral part of the net.	Gross weight of section 51 must be reduced to 142 kg (313 lb.). Section 52 without reduction.
		In longitudinal part of the net.	Section 51 without reduction. Gross eight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually.
Net structure	Net shrinkage preventing correct attachment or tensioning.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
Stanchion	Failure of stanchion.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
	One missing footman's loop.		
	Dents in tube exceeding 2 mm (0.08 in) but less than 3 mm (0.12 in.) in depth.		Gross weight of section 51 must be reduced to 142 kg (313 lb.). Section 52 without reduction.
	Dents in tube exceeding 3 mm (0.12 in.) in depth.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
All damages exceeding the failures above or any combination of different damages.			Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
Example of allowable damages with restrictions. **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.** **Stanchion:** **Light surface corrosion on tube or minor damage to locking attachment not affecting function.**			

a) **Secondary component:** All other webbing straps which are not primary components.

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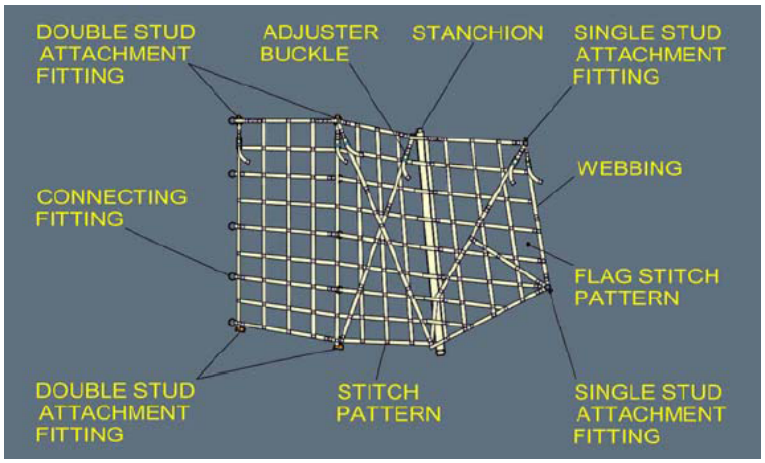
3.16.4 Door Net Type C89A



Caution: For consideration of malfunction limitations the lateral part of the adjacent door net type C89A and the divider net type C89 must be handled as one part.

Item	Damage		Restriction
Net webbing	One webbing strap cut (Primary component[a)])		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
	One webbing strap cut (Secondary components[b)])	In lateral part of the net.	Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 564 kg (1,243 lb.) or bulk load must be restrained individually.
		In longitudinal part of the net.	Gross eight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually. Section 53 without reduction.
	Broken stitching or severely abraded stitching at web intersections. Not more than two flag stitch pattern affected per net.	In lateral part of the net.	Gross weight of section 52 must be reduced to 1179 kg (2,599 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 564 kg (1,243 lb.) or bulk load must be restrained individually.
		In longitudinal part of the net.	Gross eight of section 52 must be reduced to 1179 kg (2,599 lb.) or bulk load must be restrained individually. Section 53 without reduction.
	Broken stitching or severely abraded stitching at stitch pattern to secure attachment fitting.		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
Net hardware	On damaged adjuster buckle preventing correct tensioning of the net.		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
Example of allowable damages with restrictions. **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.** **Stanchion:** **Light surface corrosion on tube or minor damage to locking attachment not affecting function.**			

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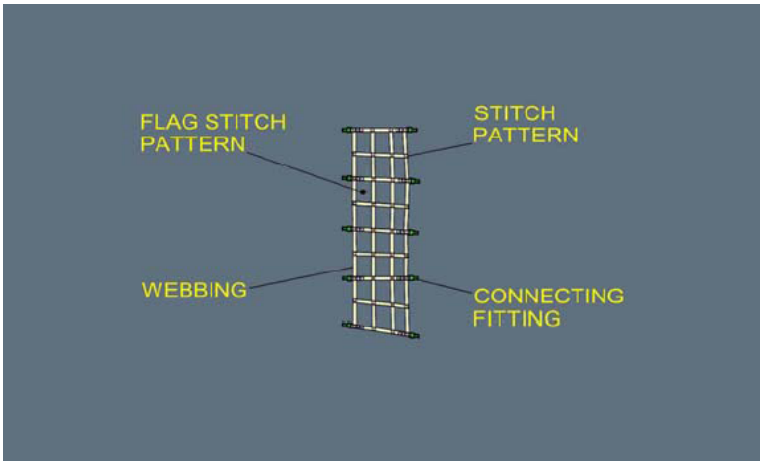
Item	Damage		Restriction
	One missing or damaged attachment fitting preventing connection to aircraft structure.		
	One missing or damaged connecting fitting joined nets to one another.	In lateral part of the net.	Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 564 kg (1,243 lb) or bulk load must be restrained individually.
		In longitudinal part of the net.	Gross eight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually. Section 53 without reduction.
Net structure	Net shrinkage preventing correct attachment or tensioning.		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
Stanchion	Failure of stanchion.		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
	One missing footman's loop.		
	Dents in tube exceeding 2 mm (0.08 in) but less than 3 mm (0.12 in.) in depth.		Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 564 kg (1,243 lb.) or bulk load must be restrained individually.
	Dents in tube exceeding 3 mm (0.12 in.) in depth.		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
All damages exceeding the failures above or any combination of different damages.			Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
Example of allowable damages with restrictions. **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.** **Stanchion:** **Light surface corrosion on tube or minor damage to locking attachment not affecting function.**			

a) **Primary components:** A webbing strap which runs directly between two aircraft attachments.

b) **Secondary component:** All other webbing straps which are not primary components.

3.16.5 Partition Net



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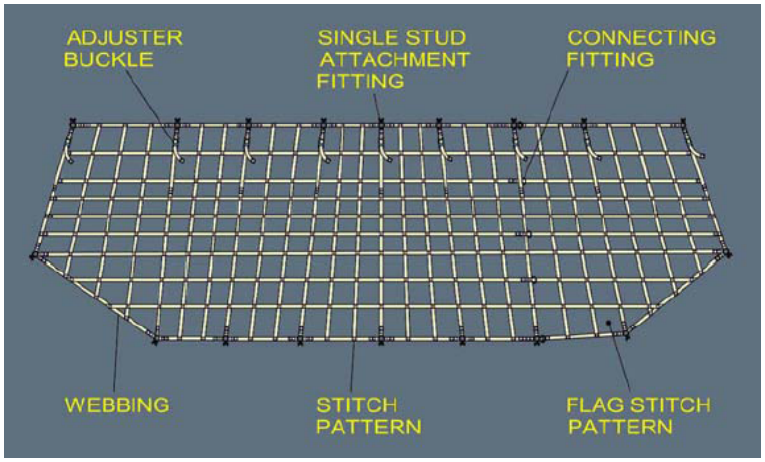
Item	Damage	Restriction
Net structure	One webbing strap cut.	Section 51 without reduction.
	Broken stitching or severely abraded stitching at web intersections. Not more than two flag stitch pattern affected per net.	Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually.
Net hardware	One missing or damaged connecting fitting joining nets to one another.	Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
Net structure	Net shrinkage preventing correct connecting fitting.	Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
All damages exceeding the failures above or any combination of different damages.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
Example of allowable damages with restrictions: **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.**		

3.16.6 Divider Net Type C86



Item	Damage	Restriction
Net webbing	One webbing strap cut (Primary component[a])	Section 51 must be reduced to 91 kg (201 lb.). Gross weight of section 52 must be reduced to 754 kg (1,662 lb.) or bulk load must be restrained individually.
	One webbing strap cut (Secondary component[b])	Section 51 must be reduced to 142 kg (313 lb.). Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually.
	Broken stitching or seve rely abraded stitching at web intersections. Not more than two flag stitch pattern affected per net.	
	Broken stitching or seve rely abraded stitching at stitch pattern to secure attachment fittings.	Section 51 must be reduced to 91 kg (201 lb.). Gross weight of section 52 must be reduced to 754 kg (1,662 lb.) or bulk load must be restrained individually.
Example of allowable damages with restrictions: **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.**		

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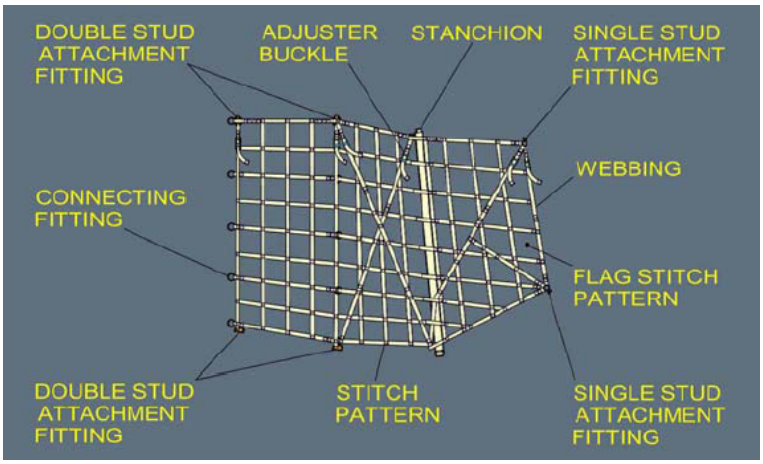
Item	Damage	Restriction
Net hardware	One damaged adjuster buckle preventing correct tensioning of the net.	Section 51 must be reduced to 91 kg (201 lb.).
	One missing or damaged connecting fitting preventing connection to aircraft structure.	Gross weight of section 52 must be reduced to 754 kg (1,662 lb.) or bulk load must be restrained individually.
Net Structure	Set shrinkage preventing correct attachment or tensioning.	Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
All damages exceeding the failures above or any combination of different damages.		Section 51 and 52 remain unoccupied. Bulk load in section 52 is allowed if restrained individually.
Example of allowable damages with restrictions: **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.**		

a) **Primary components:** A webbing strap which runs directly between two aircraft attachments.

b) **Secondary component:** All other webbing straps which are not primary components.

3.16.7 Divider Net Type C89



Item	Damage	Restriction
Net webbing	One webbing strap cut (Primary component[a)])	Gross weight of section 52 must be reduced to 833 kg (1,836 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 503 kg (1,109 lb.) or bulk load must be restrained individually.
	One webbing strap cut (Secondary component[b)])	Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually.
	Broken stitching or seve rely abraded stitching at web intersections. Not more than two flag stitch pattern affected per net.	Gross weight of section 53 must be reduced to 564 kg (1,243 lb.) or bulk load must be restrained individually.
Example of allowable damages with restrictions: **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.**		

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Item	Damage	Restriction
	Broken stitching or severely abraded stitching at stitch pattern to secure attachment fittings.	Gross weight of section 52 must be reduced to 833 kg (1,836 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 503 kg (1,109 lb.) or bulk load must be restrained individually.
Net hardware	One damaged adjuster buckle preventing correct tensioning of the net.	Gross weight of section 52 must be reduced to 833 kg (1,836 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 503 kg (1,109 lb.) or bulk load must be restrained individually.
	One missing or damaged connecting fitting preventing connection to aircraft structure.	
	One missing or damaged connecting fitting joined nets to one another.	Gross weight of section 52 must be reduced to 1,179 kg (2,599 lb.) or bulk load must be restrained individually. Gross weight of section 53 must be reduced to 564 kg (1,243 lb.) or bulk load must be restrained individually.
Net Structure	Set shrinkage preventing correct attachment or tensioning.	Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
All damages exceeding the failures above or any combination of different damages.		Section 52 and 53 remain unoccupied. Bulk load is allowed if restrained individually.
Example of allowable damages with restrictions: **Webbing:** **Discoloration, soiling, fluffing or slight abrasion.** **Net hardware:** **Soiling or light surface corrosion not affecting function.**		

a) **Primary components:** A webbing strap which runs directly between two aircraft attachments.

b) **Secondary component:** All other webbing straps which are not primary components.

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4 TERMINAL SERVICING

4.1 General

During turnaround of en route stops at the terminal, certain services must be performed on the aircraft, usually within a given time to meet flight schedules. This chapter shows service vehicle arrangements, schedules, locations of service points, and typical service requirements. The data presented herein reflect ideal conditions for a single aircraft.

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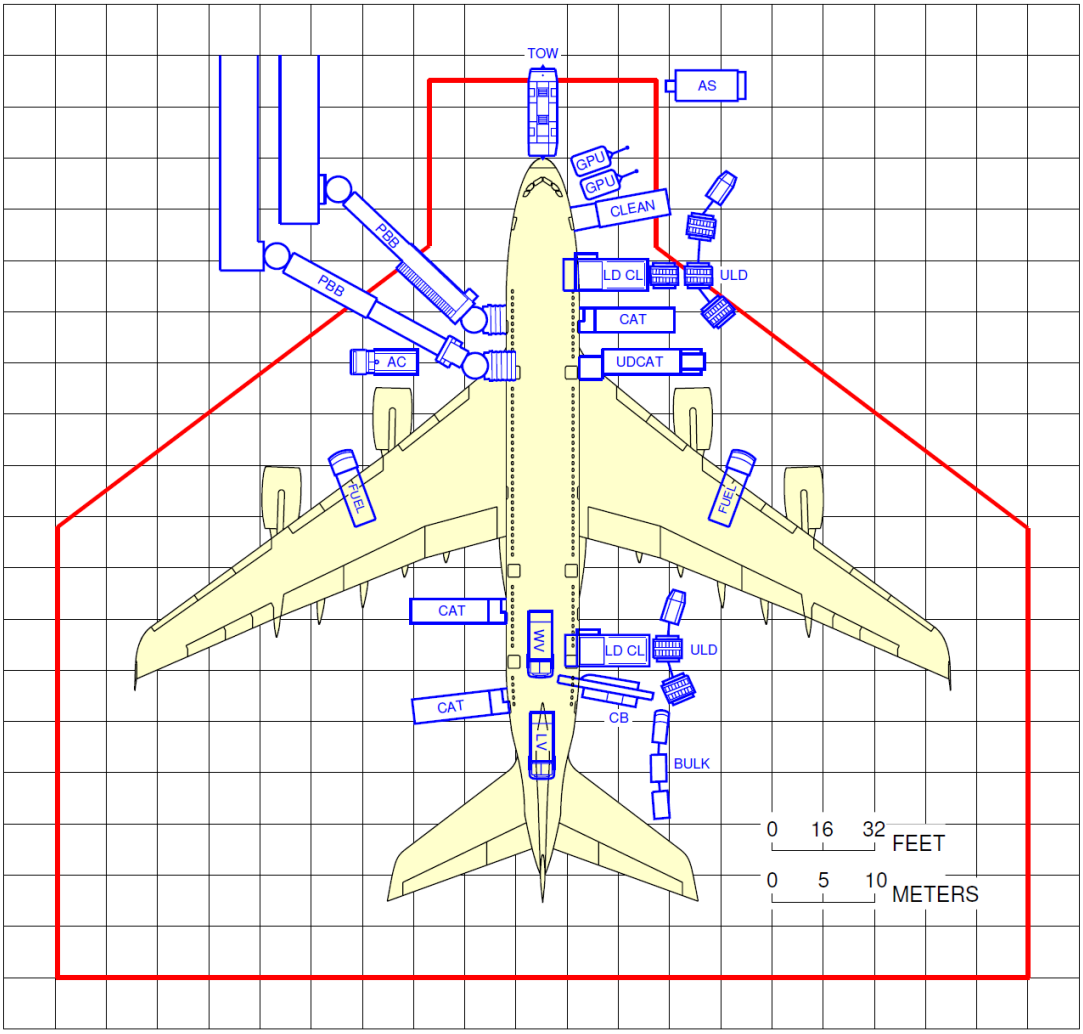
4.2 Aircraft Servicing Arrangements

The illustration below shows a typical arrangement of ground support equipments during turnaround. As noted, if the Auxiliary Power Unit (APU) is used, the electrical, air-start and air-conditioning service vehicles would not be required. Passenger loading bridges or portable passenger steps could be used to embark or disembark passengers.



Legend

AC	Air Conditioning Unit
AS	Air Start Unit
Bulk	Bulk Train
CAT	Catering Truck
CB	Conveyor Belt
CLEAN	Cleaning Truck
LD CL	Lower Deck Cargo Loader
FUEL	Fuel Hydrant Dispenser or Tanker
GPU	Ground Power Unit
LV	Lavatory Vehicle

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PBB	Passenger Boarding Bridge
PS	Passenger Stairs
TOW	Tow Tractor
ULD	ULD Train
WV	Potable Water Vehicle

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4.3 Terminal Servicing Operations

4.3.1 General

The following charts show typical service times at the terminal. These charts give typical schedules to perform service on the aircraft within a given time. Service times could be rearranged to suit availability of personnel, aircraft load, and degree of service required.

The data are provided to illustrate the general scope and types of tasks involved in terminal operations, variations of handling agent practices and operating circumstances may result in different sequences and time intervals to accomplish the tasks shown.

Ground operations requirements should be coordinated with the airline or handling agent prior to ramp planning.

4.3.2 Turnaround Station

Passenger

Passenger Boarding/Deboarding (PB/D) is based on the following assumptions;

- 100% (555 PAX.) passenger exchange,
- doors (type A - 42” wide) used are M1L and M2L (main deck) and U1L (upper deck),
- PB/D rate;
  - boarding = 15 PAX/min,
  - deboarding = 25 PAX/min.
- Last Pax. Seating Allowance (LPS) = +4 min,
- 60” stair flow rate;
  - up-flow = 14 PAX/min,
  - down-flow = 18 PAX/min.

Cargo

Based on full LD-3 exchange (22 + 16) LD-3 and bulk exchange of 2,000 kg:

- LD-3 off-loading/loading times: off-loading = 1.4 min/LD-3 loading = 1.7 min/LD-3,
- pallet loading times: off-loading = 2.5 min/pallet loading = 2.9 min/pallet,
- Bulk off-loading/loading times: off-loading = 9.2 min/t loading = 10.5 min/t.

Refueling

Block fuel for Nominal Range through 4 nozzles:

- 261,200 liters (67,364 US gallons) at 40 psi (48 min),
- Dispenser positioning or removal = 3 min (fuel truck change)/if any = 5 min.

Cleaning

Full cleaning. Crew adapted to match catering time.

Catering

For full catering:

- Average truck capacity is 30 Full Size Trolley Equivalent (FSTE).
- Simultaneous catering and PB/D is not represented.
- Inbound/outbound FSTE is mixed in the same truck FSTE exchange time;
  - dedicated door-galley = 1.5 min/FSTE,
  - cart circulation (1 seat zone) = + 0.5 min/FSTE,
  - cart circulation (> 1 seat zone) = + 1.0 min/FSTE,
  - via lift: dedicated door to single lift = 2.0 min/FSTE.

Ground Handling and Servicing

At the start of operations:

- Bridges at t 0 = 0 min.

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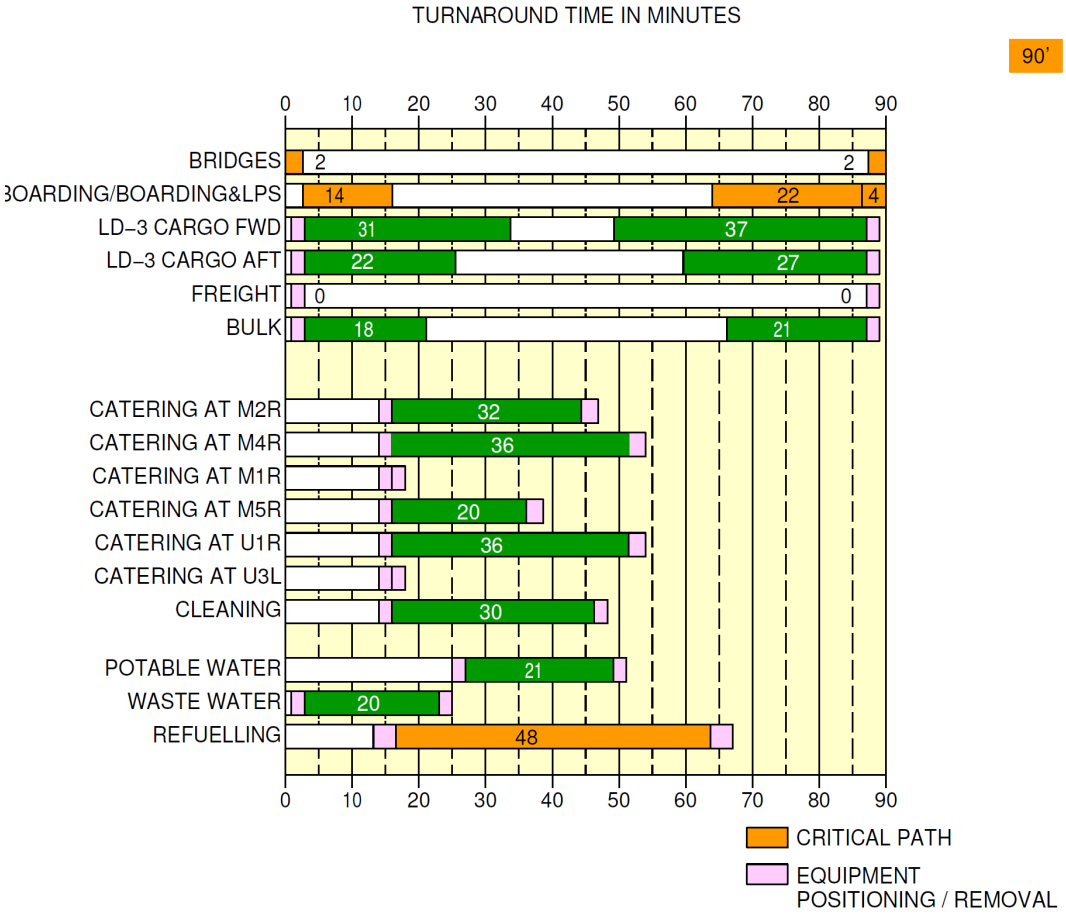
- Others at t 0 + 1 min;
  - vehicle positioning/removal = 2 min (fuel truck excluded),
  - upper-deck vehicle positioning/removal = 3 min,
  - clearance between GSE = 0.5 m (20 in),
  - Ground Power Unit (GPU) = up to 4 × 90 kVA,
  - air conditioning = two carts,
  - potable water (standard/option) = 1,700/2,500 liters (495/660 US gal) at 60 l/min (23 US gal/min),
  - waste water = discharge and rinsing,
  - dollies per tractor = 4 to 6.

4.3.2.1 Two Bridges Servicing Via Main and Upper-deck

Note: TG standard ground time for the A380 is 100 minutes.

90 Minute Ground Stop



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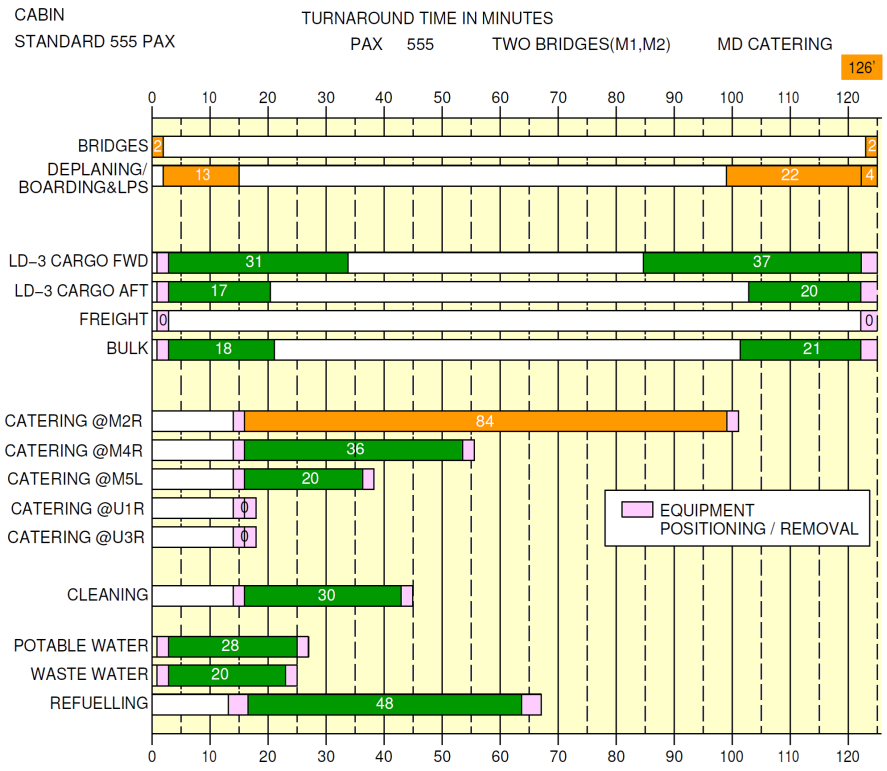
4.3.2.2 Two Bridges Servicing Via Main Deck

126 Minute Ground Stop



4.3.3 En Route Station

(Open)

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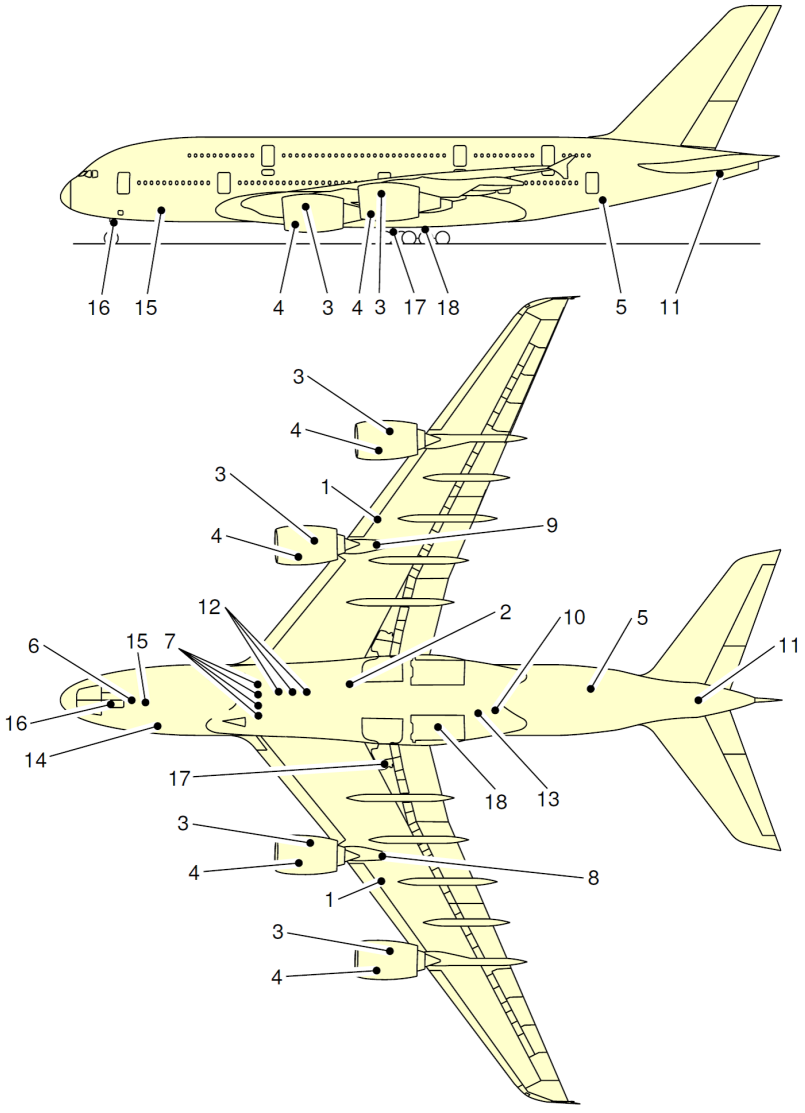
4.4 Ground Service Connections

4.4.1 General

This section shows the locations of the ground service connections and provides information on their capacities.

4.4.2 Locations and Capacities

The following chart shows the ground service connection locations of the various service systems. Use this chart for proper terminal servicing planning and preparation.



The following list matches the numbers in the graphic with the object to which it points.

1. Pressure refuel connectors.
2. Hydraulic reservoir servicing panel (Reservoir filling and reservoir pressurization).
3. Engine oil filling.
4. VF generator oil filling.
5. Toilet and Waste service panel.
6. Ground electrical power.
7. Low pressure preconditioned air.
8. Yellow hydraulic ground connector.

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9. Green hydraulic ground connector.
10. Potable water service panel.
11. APU oil filling.
12. High pressure air engine start.
13. Refuel/Defuel control panel.
14. Oxygen system.
15. Potable water drain panel.
16. Grounding point nose landing gear (NLG).
17. Grounding point body landing gear (BLG).
18. Grounding point win landing gear (WLG).

4.4.2.1 Grounding Points

The grounding stud on each landing gear leg is designed for use with a clip-on connector (such as Appleton TGR).

The grounding studs are used to connect the aircraft to an approved ground connection on the ramp or in the hangar for;

- refuel/defuel operations,
- maintenance operations,
- bad weather conditions.

Grounding Point Locations

	Distance: Meters (ft)		
	Aft of Nose	**From Airplance Centerline**	**Mean Height From Ground**
On Nose Landing Gear	5.713 (18.7)	0.182 (0.6) On the RH side	1.385 (4.5)
On left Wing Gear leg	34.207 (112.2)	5.949 (19.5)	1.237 (4.0)
On right Wing Gear leg	34.207 (112.2)	5.949 (19.5)	1.237 (4.0)
On left Body Gear leg (Outboard)	37.158 (121.9)	2.852 (9.4)	1.379 (4.5)
On left Body Gear leg (Inboard)	37.158 (121.9)	2.412 (7.9)	1.379 (4.5)
On right Body Gear leg (Outboard)	37.158 (121.9)	2.852 (9.4)	1.379 (4.5)
On right Body Gear leg (Inboard)	37.158 (121.9)	2.412 (7.9)	1.379 (4.5)

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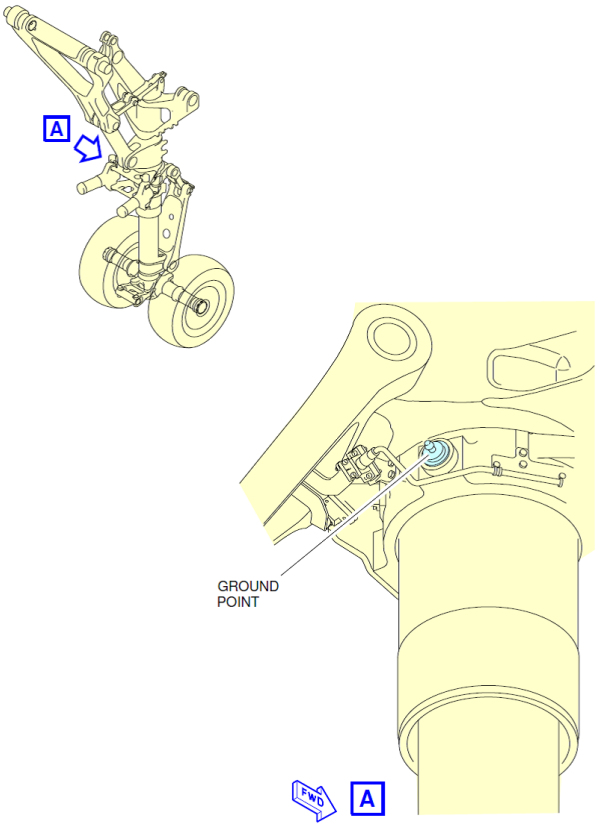
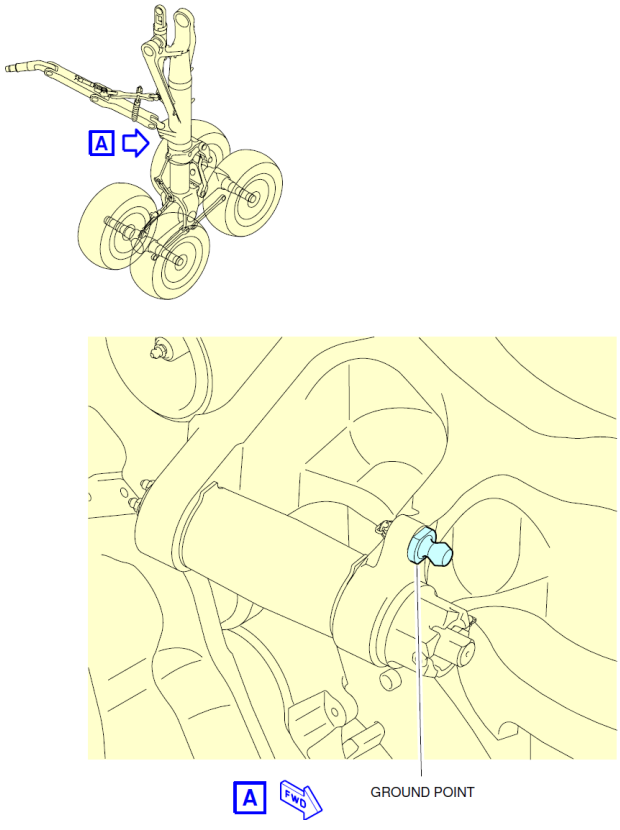
Ground Point NLG



Ground Point WLG



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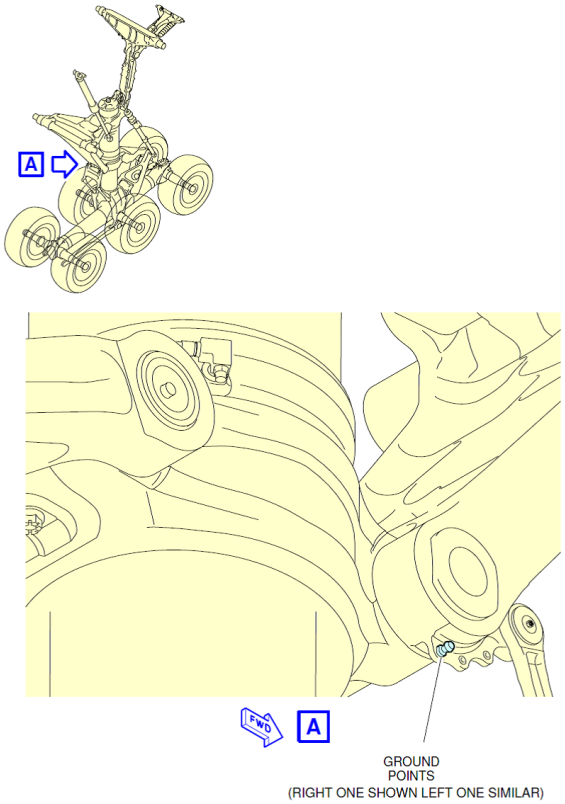
Ground Point BLG



4.4.2.2 Hydraulic System

Door Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Green hydraulic ground connector: (access door 469FL)	34.67 (113.7)		14.90 (48.88)	5.08 (16.66)
Yellow hydraulic ground connector: (access door 479FL)	34.67 (113.7)	14.90 (48.88)		14.90 (48.88)
Hydraulic Reservoir Servicing Panel : (access door 197CB)	31.89 (104.63)		2.34 (7.67)	1.71 (5.61)

Reservoir Pressurization One connector, ETRTO V0.09.6, ¼ inches.

Reservoir Filling One connector, AE96993E, ¼ inches.

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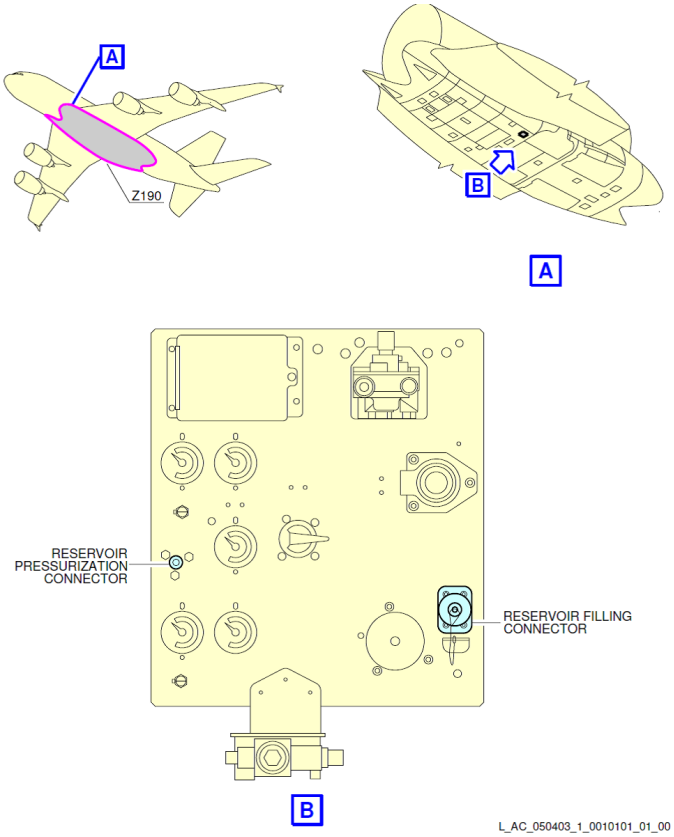
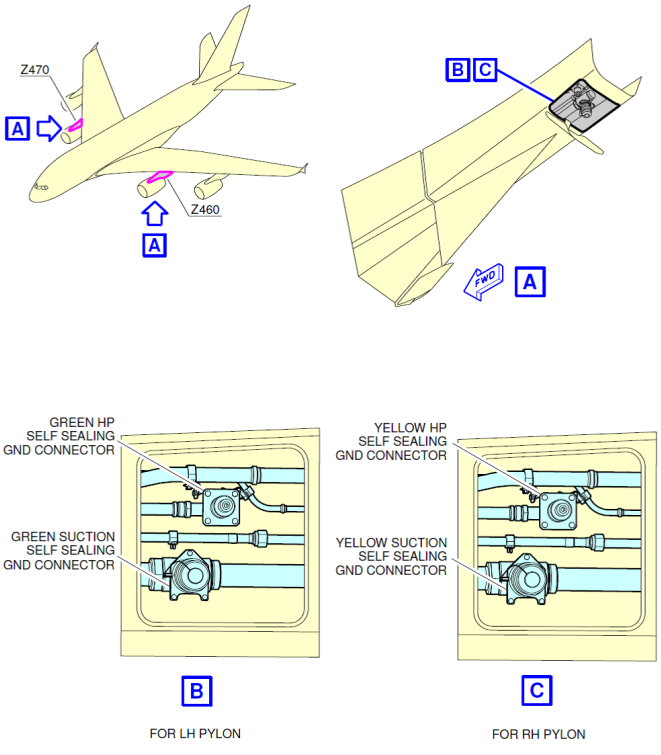
Hydraulic Resevoir Servicing Panel



Hydraulic Ground Connections



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4.4.2.3 Electrical System

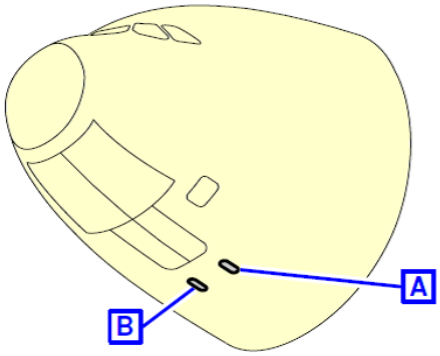
External Power Receptacles consist of four units of standard ISO 461 Style 3 – 90 KVA each and the power is supplied by a Three-phase, 115V, 400 Hz. power supply with these electrical connectors:

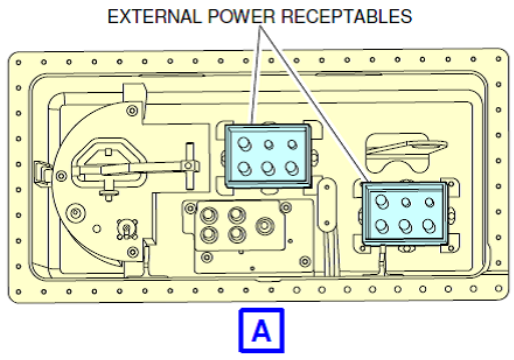
AC outlets Hubbell 5258
DC outlets Hubbell 7472

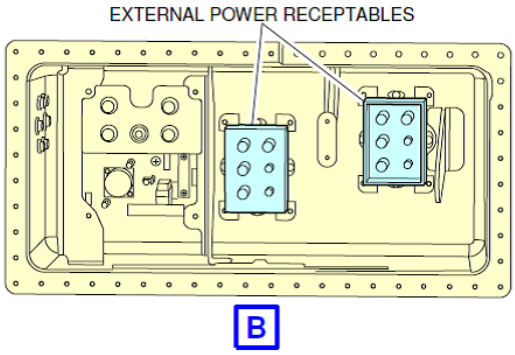
Electrical System Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Right side access door: 134AR	5.99 (19.65)	0.45 (1.47)		2.59 (8.49)
Left side access door: 133AL	5.99 (19.65)		0.45 (1.47)	2.59 (8.49)

Electrical Service Panel







4.4.2.4 Oxygen System

The oxygen system requires zero, one, or two service connections (external charging in the FWD Cargo compartment), of type MS22066 for filling.

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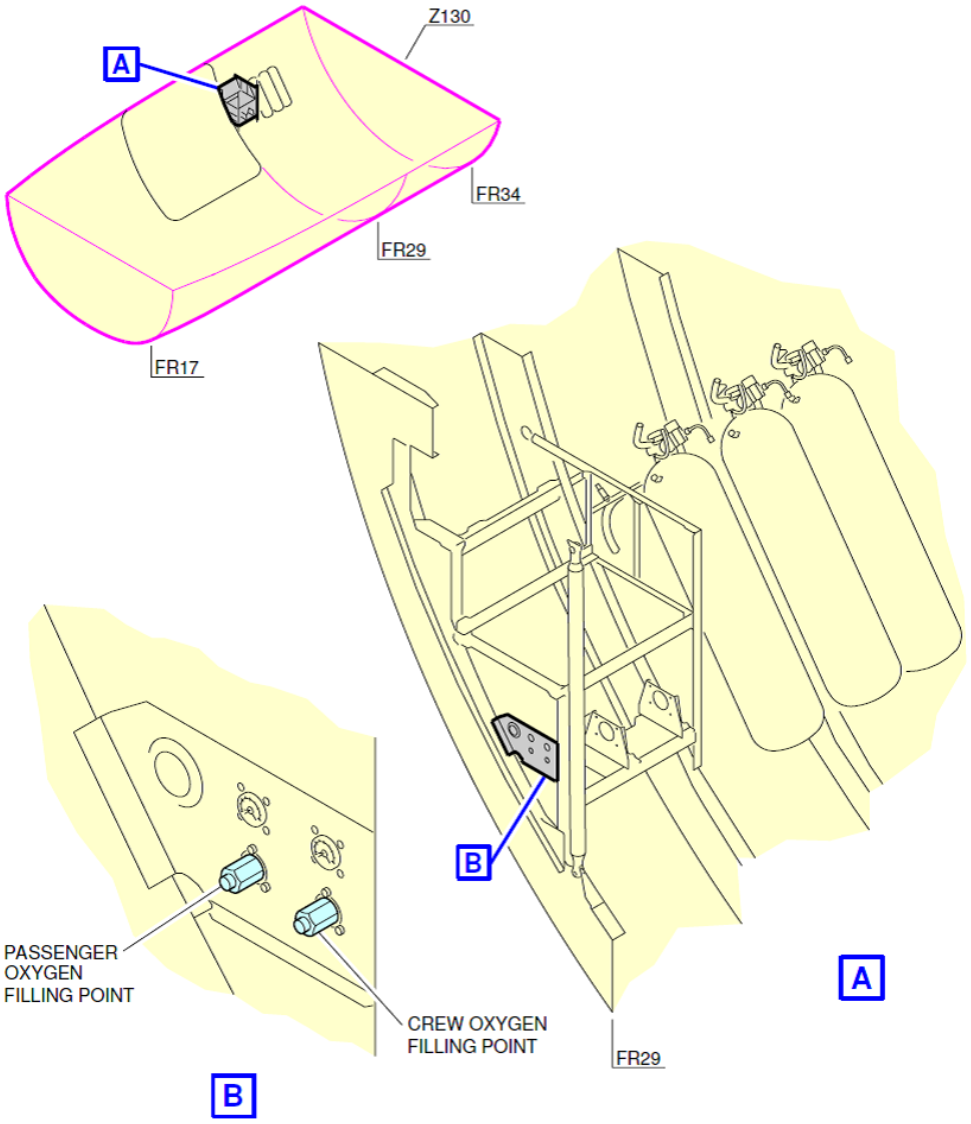
Oxygen System Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Access panel : 132EJW	7.45 m (24.44)		2.23 m (7.32)	3.25 m (10.66)

Oxygen System



4.4.2.5 Fuel System

Refuel and Defuel Control Panel

Refuel and Defuel Control Panel Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Refuel/Defuel control panel : (access door 199KB)	48 (159.48)	0.68 (2.23)		1.98 (6.50)

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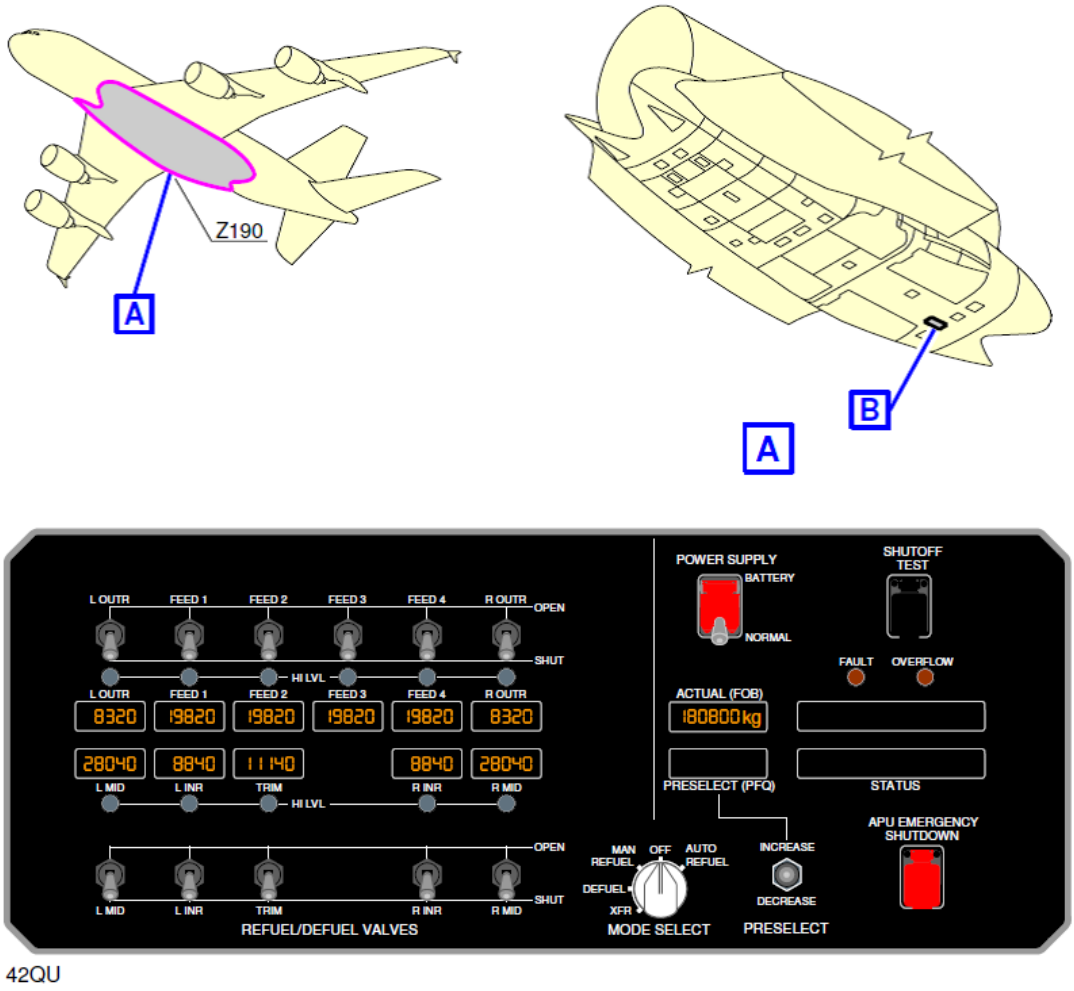
Refuel and Defuel Control Panel Location



Refuel and Defuel Connectors

Refuel/Defuel couplings Standard ISO 45, 2.5 in., two per wing.

Refuel pressure Max. Pressure: 3.45 bar (50 psi).

Refuel and De-fuel Connector Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Refuel/De-fuel coupling, left: (access door 522GB)	31.89 (104.63)		17.97 (58.96)	5.94 (19.49)
Refuel/De-fuel coupling, right: (access door 622GB)	31.89 (104.63)	17.97 (58.96)		5.94 (19.49)

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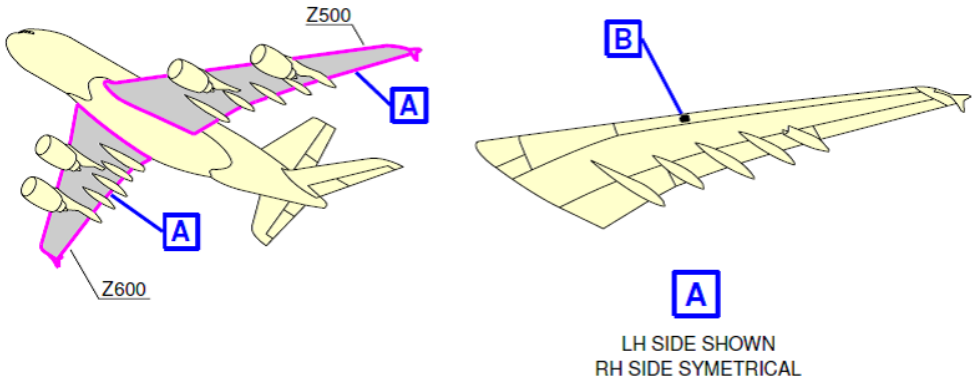

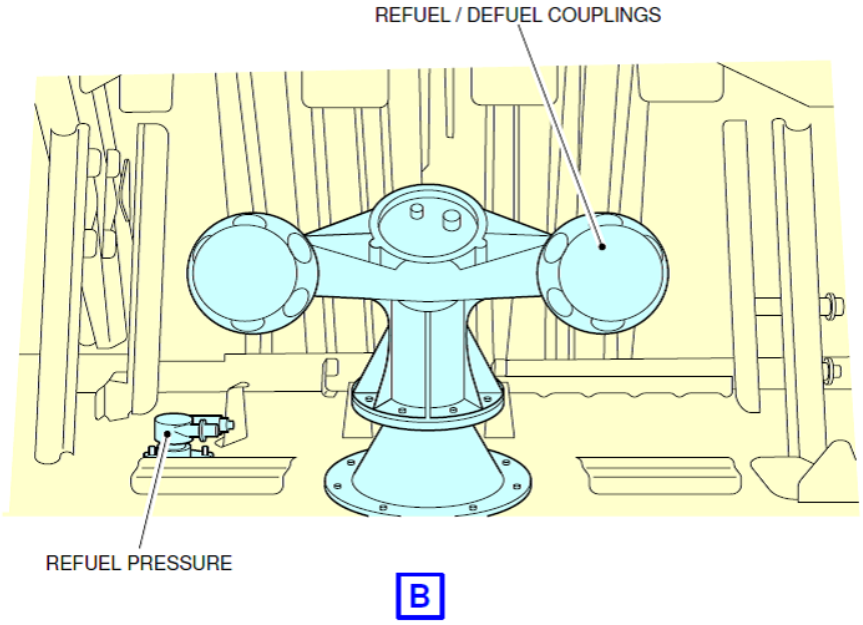

Overpressure Protector and NACA Flame Arrestor

Overpressure Protector and NACA Flame Arrestor Locations

	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Overpressure Protector	61.33 (201.23)	36.75 (120.57)	36.75 (120.57)	7.51 (24.65)
NACA Flame Arrestor	60.82 (199.55)	35.98 (118.05)	35.98 (118.05)	7.44 (24.41)

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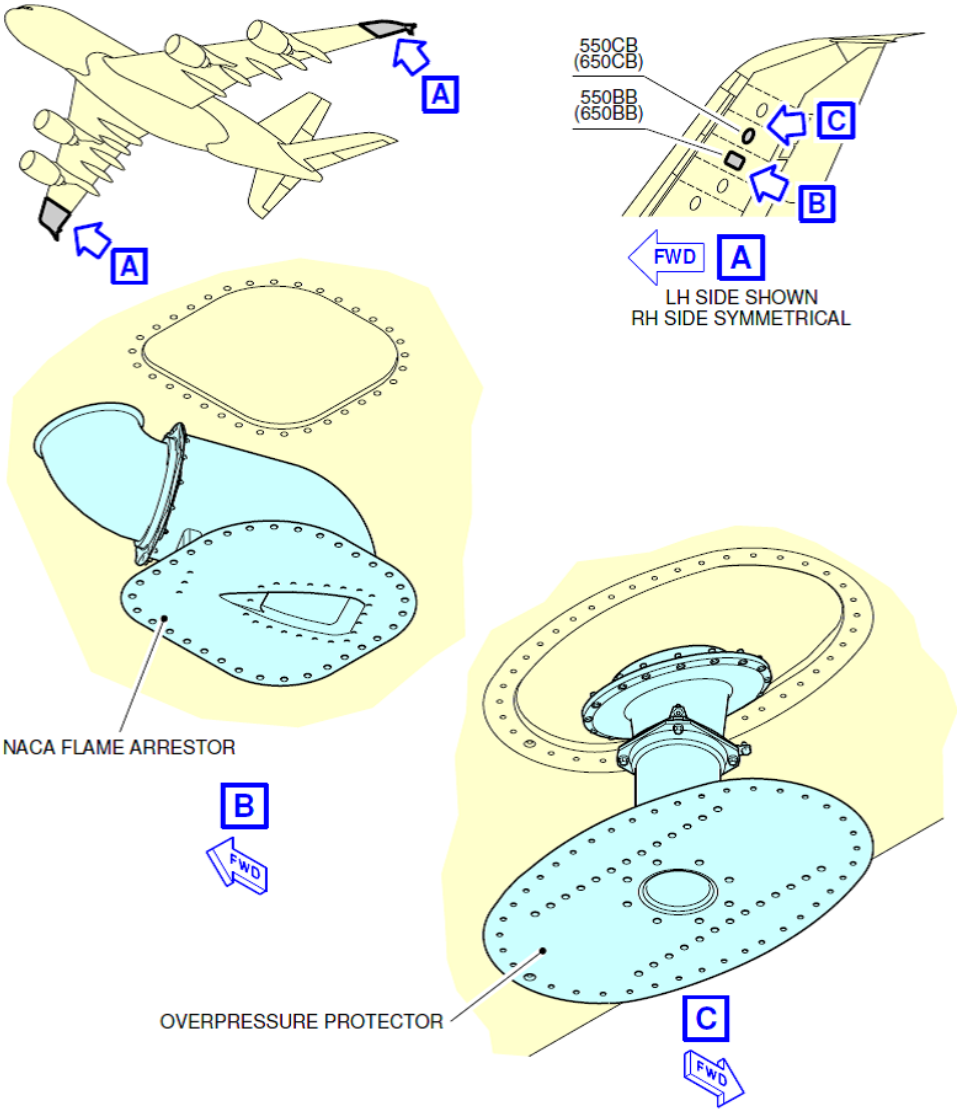

4.4.2.6 Pneumatic System

High Pressure Air Connectors

Three, 3 inch ISO 2026 connectors are provided.

High Pressure Air Connector Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Access doors 193BB	25.37 (83.23)		0.2 (0.66)	1.78 (5.84)

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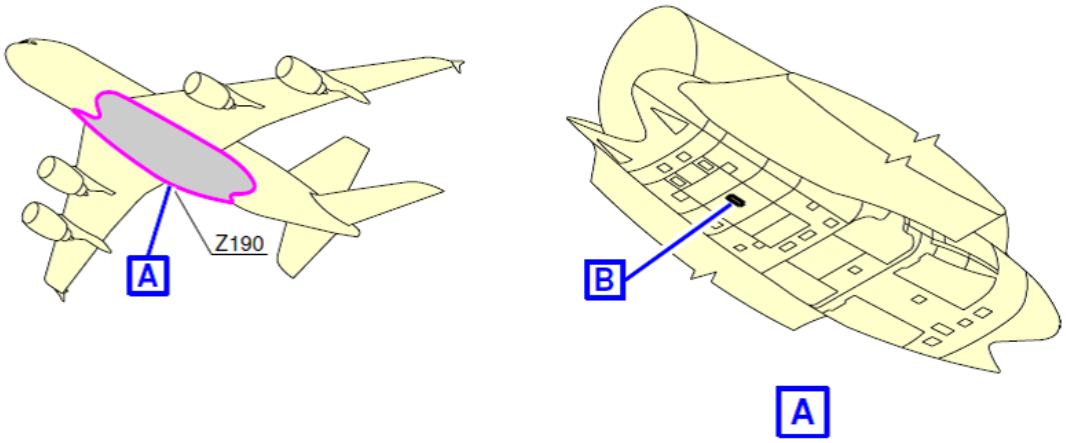

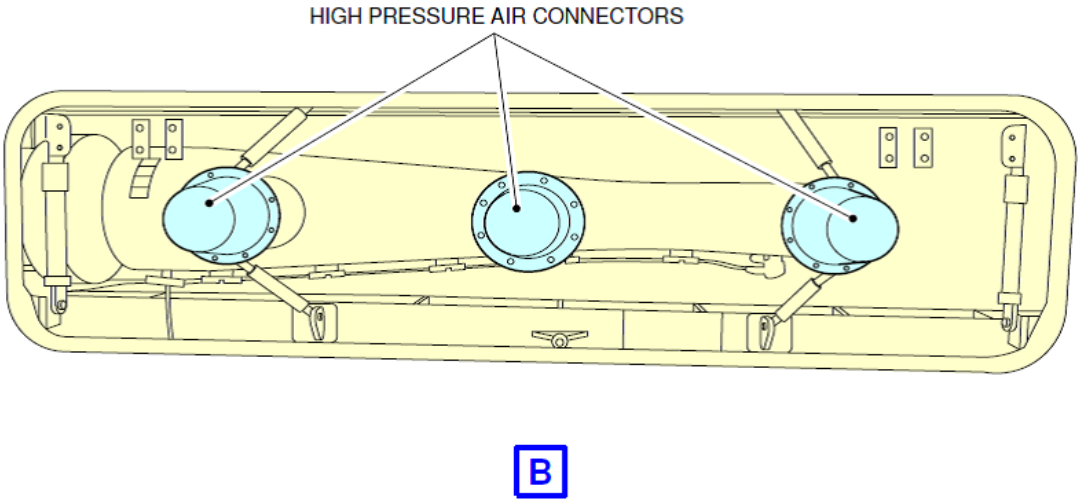

Low Pressure Air Connectors

Four, 8 inch ISO 1034 connectors are provided.

Low Pressure Air Connector Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Access doors 191GB	21.85 (71.69)		1.24 (4.07)	2.08 (6.82)
Access doors 191JB	22.36 (73.36)		1.76 (5.77)	2.08 (6.82)
Access doors 191HB	21.85 (71.69)	1.24 (4.07)	1.24 (4.07)	2.08 (6.82)
Access doors 191JB	22.36 (73.36)	1.76 (5.77)	1.24 (4.07)	2.08 (6.82)

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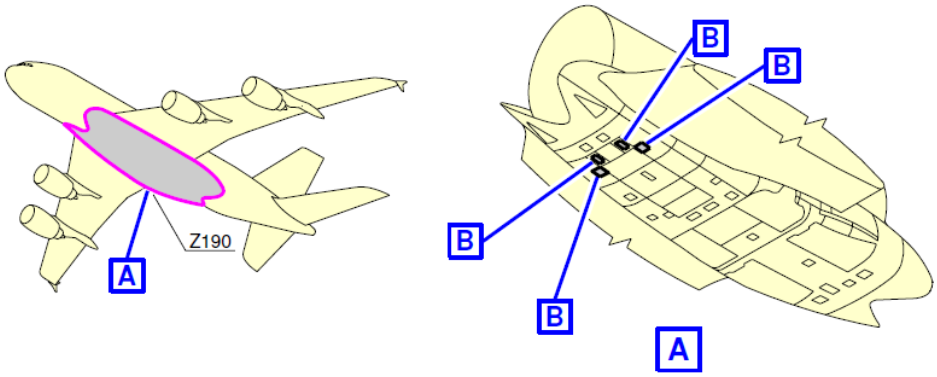

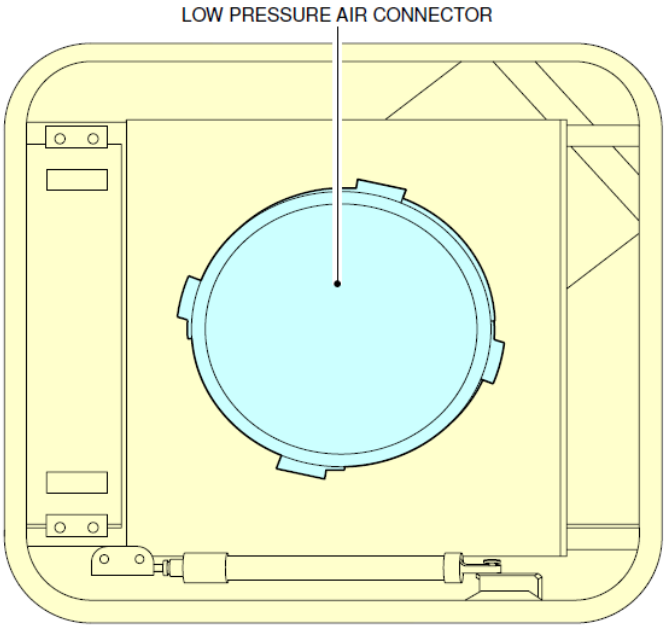

4.4.2.7 Potable Water System

The potable water systems specifications include:

- total capacity;
  - Standard configuration (six tanks): 1700L (449 US gal),
  - Optional configuration (seven tanks): 1998L (528 US gal),
  - Optional configuration (eight tanks): 2267L (599 US gal).
- maximum filling pressure of 8.6 bar (125 psi).

The connectors used in the system include:

- Fill and drain port connections are ISO 17775, ¾ inch.

Potable Water System Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Potable water ground service panel: access door 199NB	43.67 (143.27)		0.37 (1.21)	2.13 (6.99)
Distances are approximate.				

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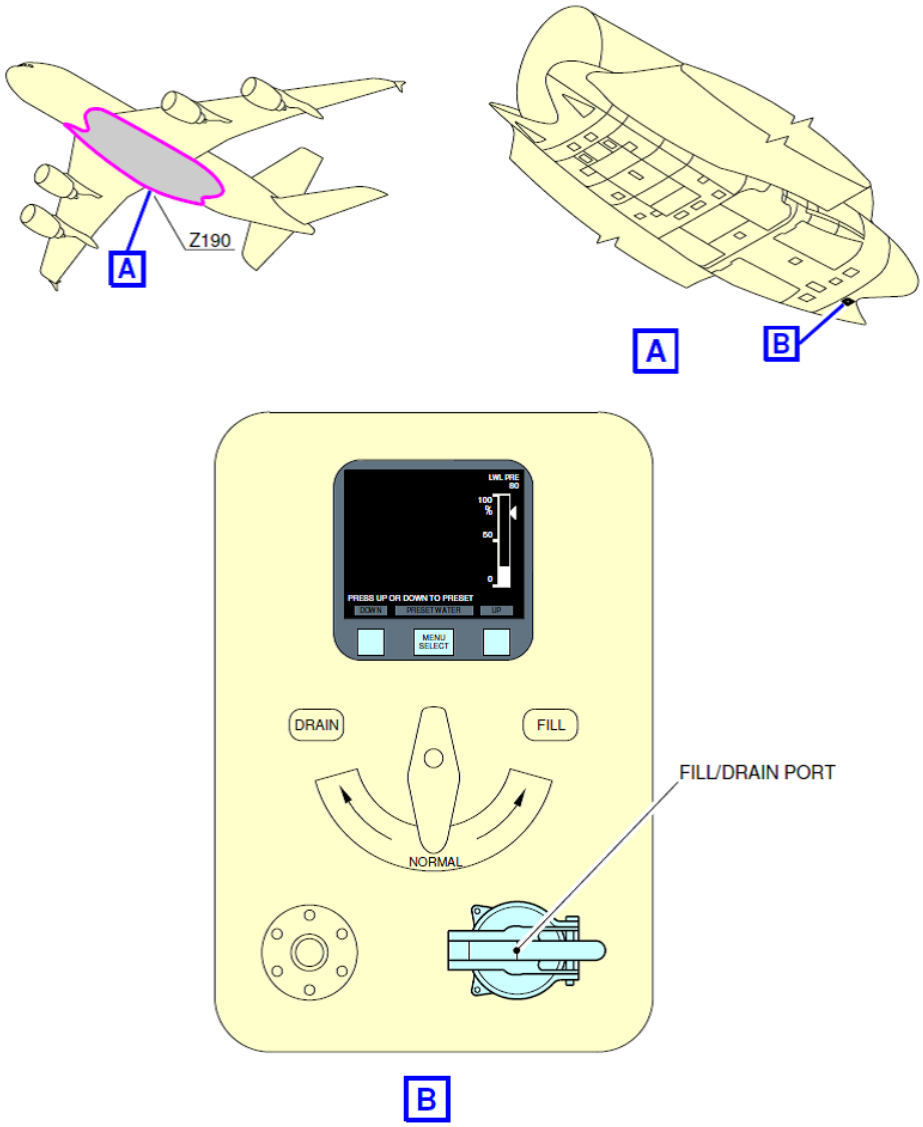
Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Potable water drain panel: access door 133BL	9.83 (32.25)		0.3 (0.98)	2.74 (8.99)
Distances are approximate.				

Potable Water Location



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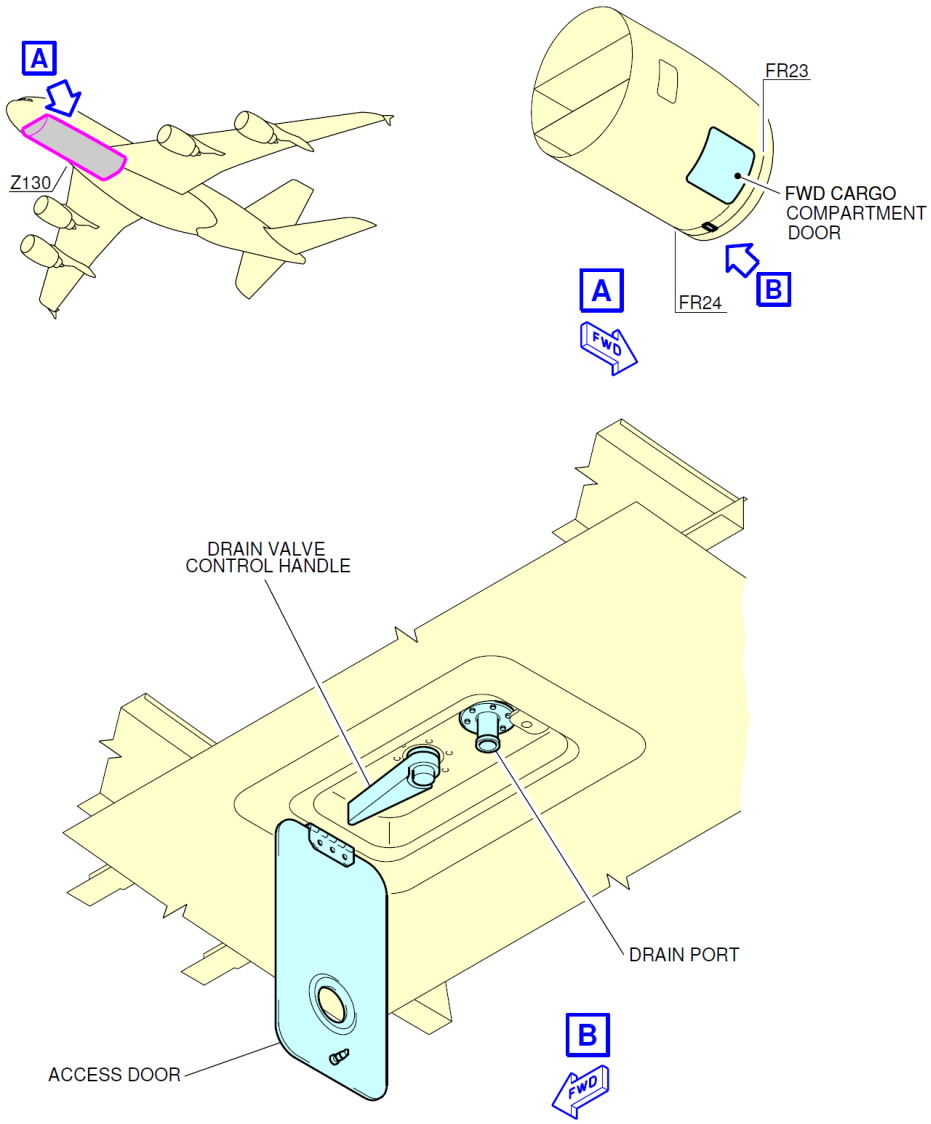
Potable Drain Panel



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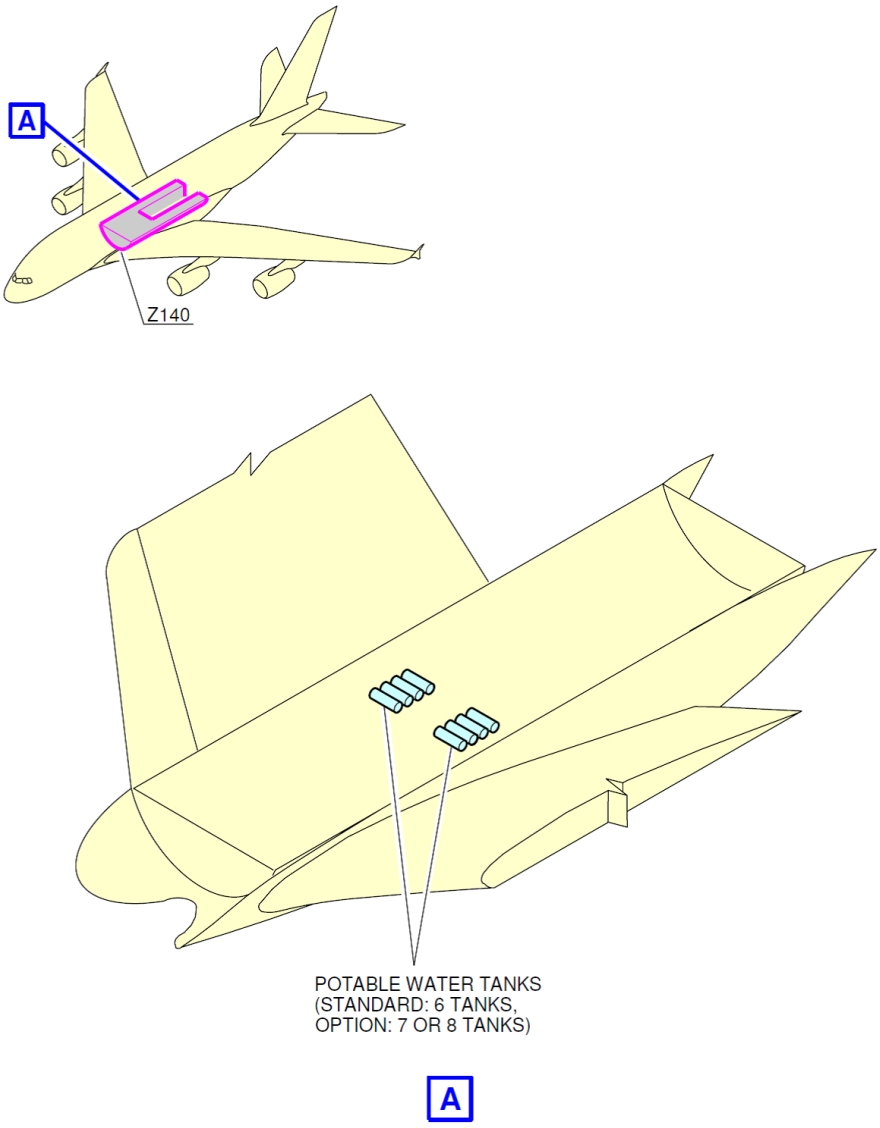
Potable Water Tank Locations



4.4.2.8 Vacuum Toilet System

The vacuum toilet systems specifications include:

- capacity;
  - Upper-deck Waste-Tanks (2 each) is 373 liters (99 US gal). Each tank is pre-charged with 35 liters (9 US gal) of chemical fluid,
  - Main Deck Waste-Tanks (2 each) is 675 liters (178 US gal). Each tank is pre-charged with 35 liters (9 US gal) of chemical fluid,
  - total Waste Tank Capacity is 2,096 liters (554 US gal).
- maximum pressure for rinsing and pre-charge to the rinse/fill port is 3.45 bar (50 psi),

The connectors used in the system include:

- Toilet waste drain-connection—ISO 17775, 4 in.,
- Toilet rinse/fill port—ISO 17775, 1 in.

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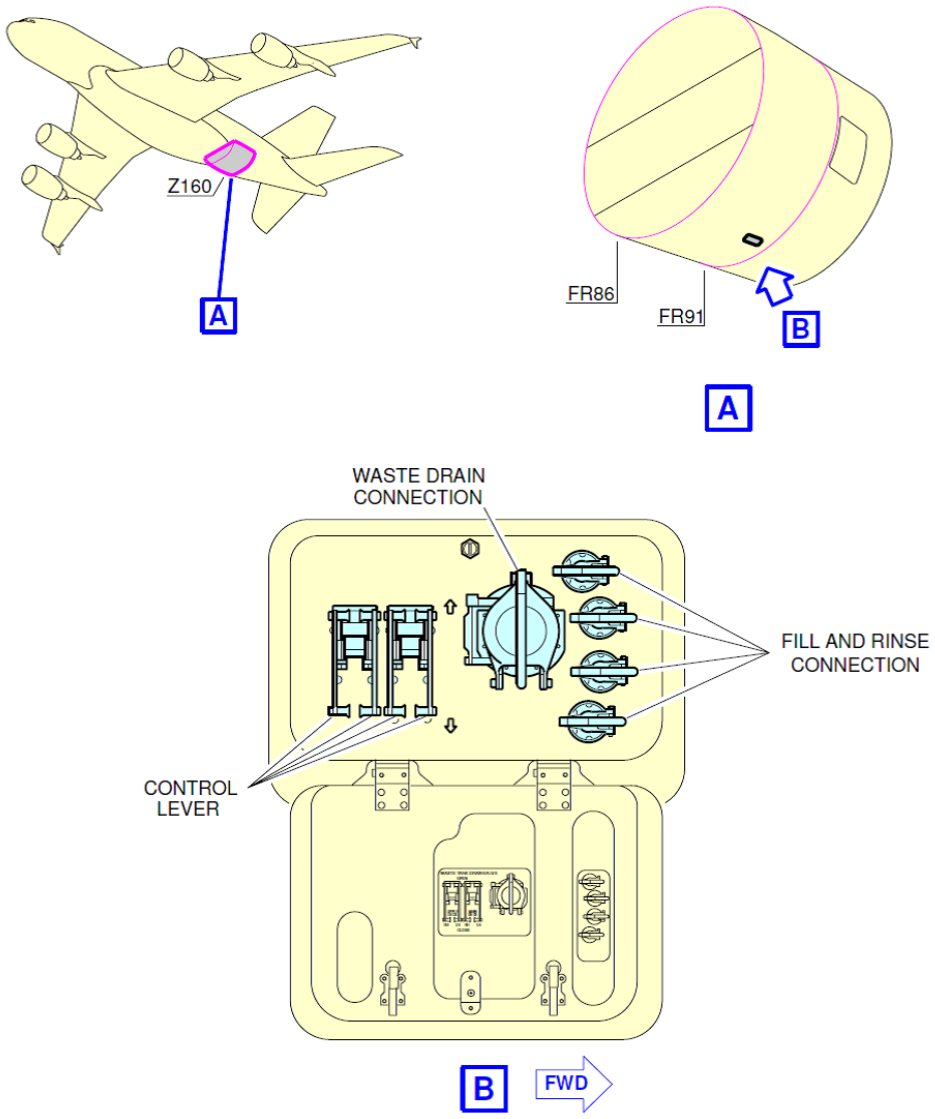
Vacuum Toilet System Locations

Access	Distance: Meters (ft)			
	Aft of Nose	From Airplane Centerline		Mean Height From Ground
		R Side	L Side	
Waste water ground service panel: access door 171AL	53.31 (174.90)	0.26 (0.85)		3.40 (11.15)
Distances are approximate.				

Vacuum Toilet System Location



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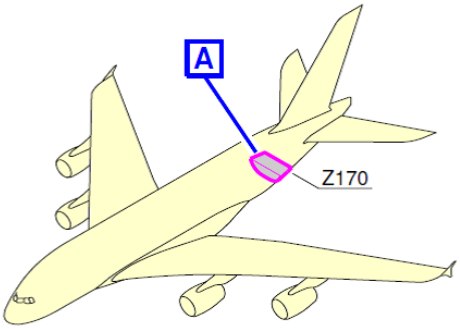
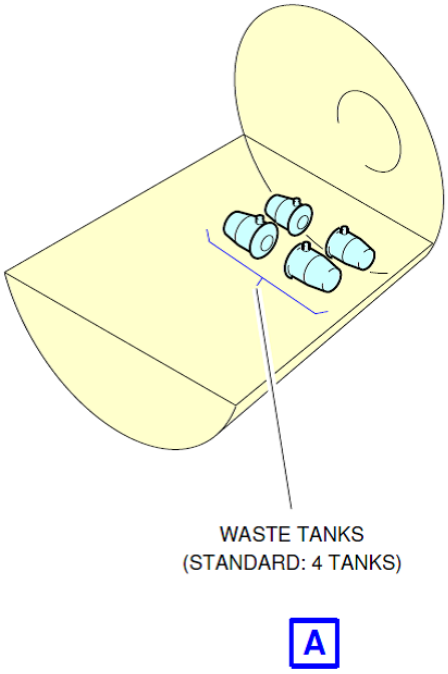
Waste Tank Locations





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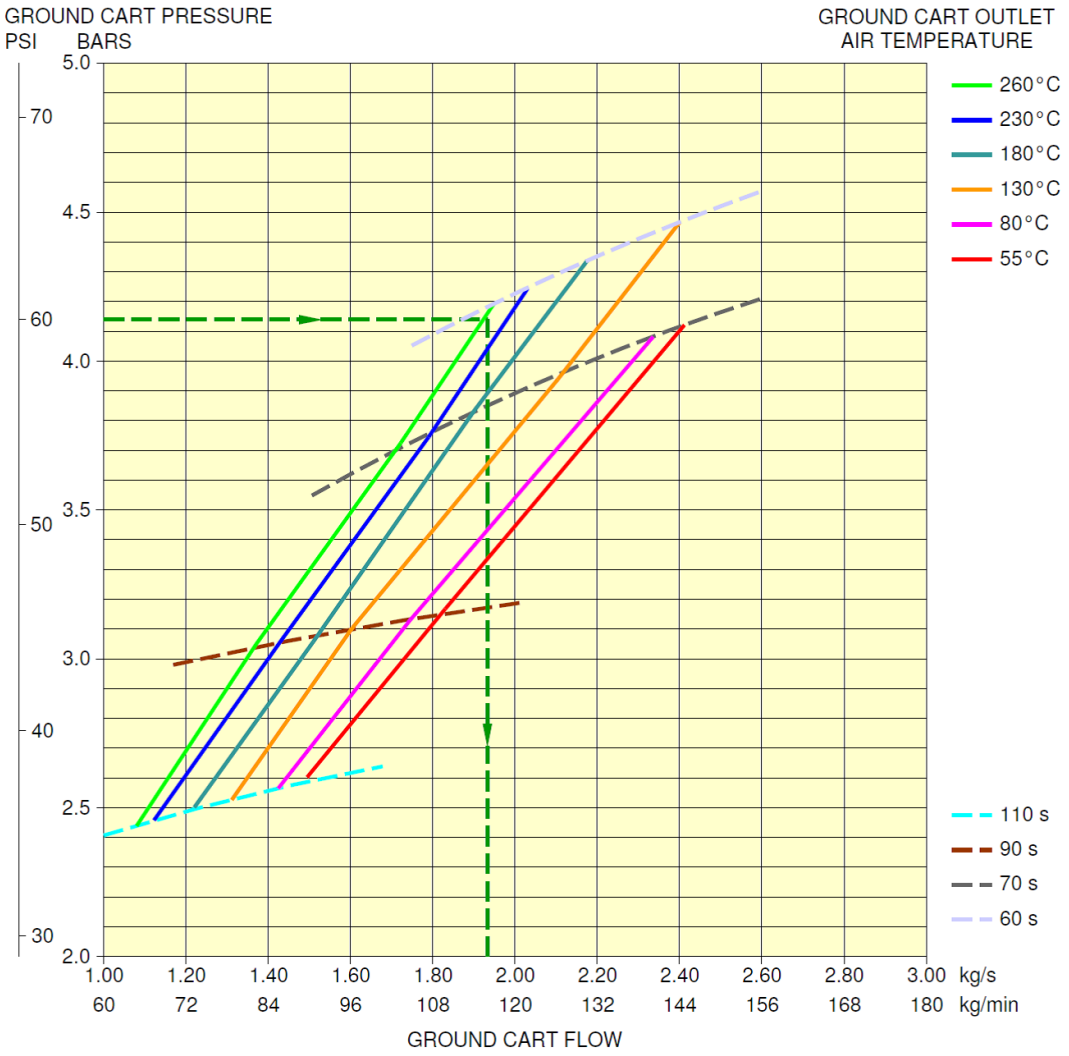
4.5 Engine-Start Pneumatic Power Requirements

4.5.1 General

The on-board Auxiliary Power Unit (APU) which supplies compressed air to the pneumatic starter at each engine normally provides engine-start.

Ground carts supplying compressed air to the starter through standard connections may also provide engine start. Minimum engine-start air requirements at different ambient temperatures are also shown.

Air Flow and Pressure Chart



EXAMPLE TO DETERMINATE THE AIRFLOW REQUIRED AT THE FUSELAGE CONNECTION:
–FOR AN AIR START UNIT DELIVERING 60 PSIA AIR PRESSURE AT THE FUSELAGE CONNECTOR.
–AT A SUPPLIED AIR TEMPERATURE OF 260°C AT THE FUSELAGE CONNECTOR.

1. DRAW AN HORIZONTAL LINE FROM THE SUPPLIED AIR PRESSURE (60 PSIA).
2. FROM THE INTERSECTION WITH THE AIR SUPPLY TEMPERATURE AT FUSELAGE CONNECTION (260°C), DRAW A VERTICAL LINE.
3. THE INTERSECTION WITH THE HORIZONTAL AXIS GIVES THE REQUIRED AIRFLOW AT GROUND CONNECTION (117 kg/min).

4.5.2 Ambient Temperature -40°C (-40°F)

This section provides the engine starting pneumatic requirements for a temperature of –40°C (–40°F).

Minimum requirements very with elevation, ambient temperature, and air start duration. For an ambient condition, there would be several combinations of airflow, pressure and temperature at

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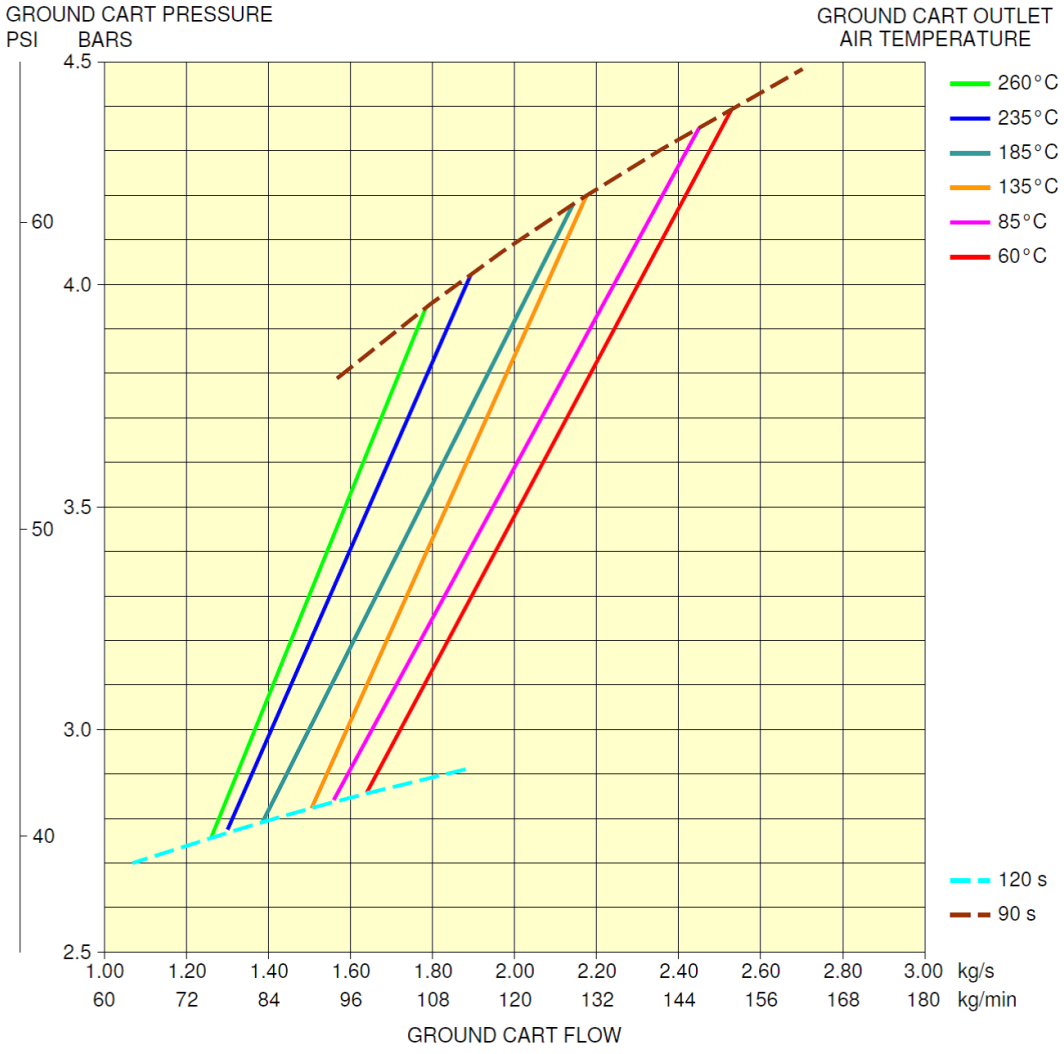
the GAC to meet certain start-time duration. Maximum pressure and temperature at the ground air connection are 60 psi. and 230°C (450°F), respectively.

Two High Pressure Connectors

Air Flow and Pressure Chart



Engine Starting Pneumatic Requirements (two high pressure connectors)
Low Ambient Temperature -40° C (-40° F), sea level - TRENT 900 Engines

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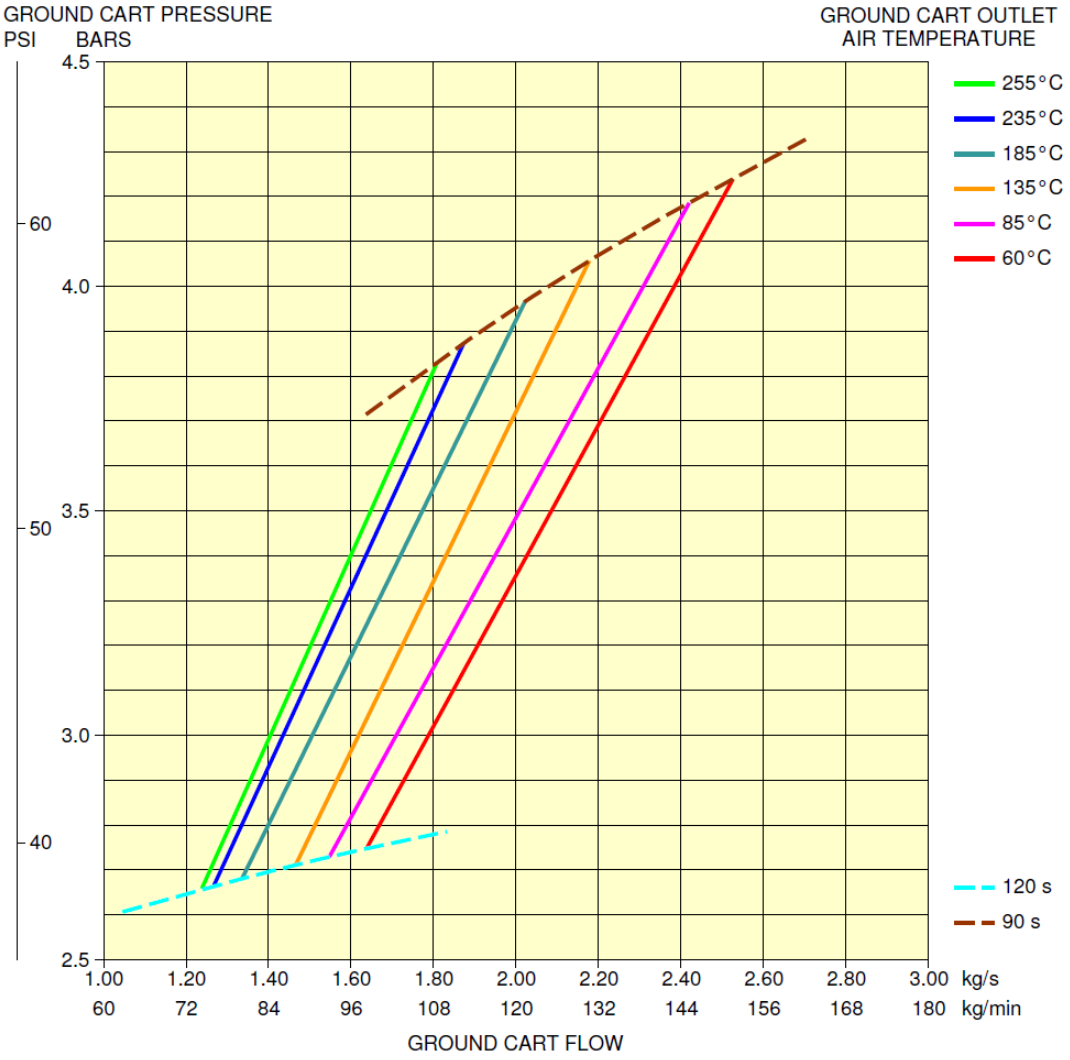
Three High Pressure Connectors

Air Flow and Pressure Chart



Engine Starting Pneumatic Requirements (three high pressure connectors)
Low Ambient Temperature -40° C (-40° F), Sea Level - TRENT 900 Engines

4.5.3 Ambient Temperature +15°C (+59°F)

This section provides the engine starting pneumatic requirements for a temperature of +15°C (+59°F).

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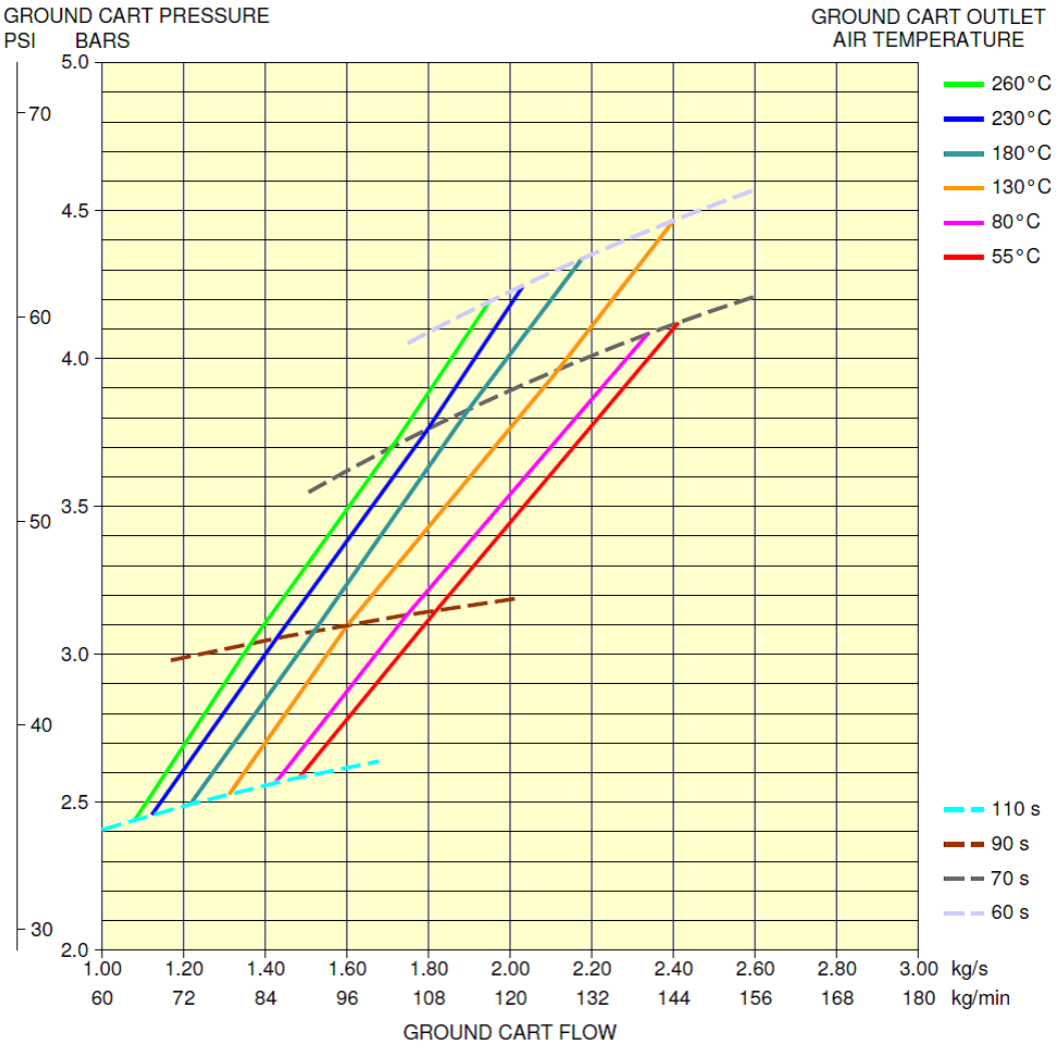
Two High Pressure Connectors

Air Flow and Pressure Chart



Engine Starting Pneumatic Requirements (two high pressure connectors)
Medium Ambient Temperature +15° C (+59° F), Sea Level - TRENT 900 Engines

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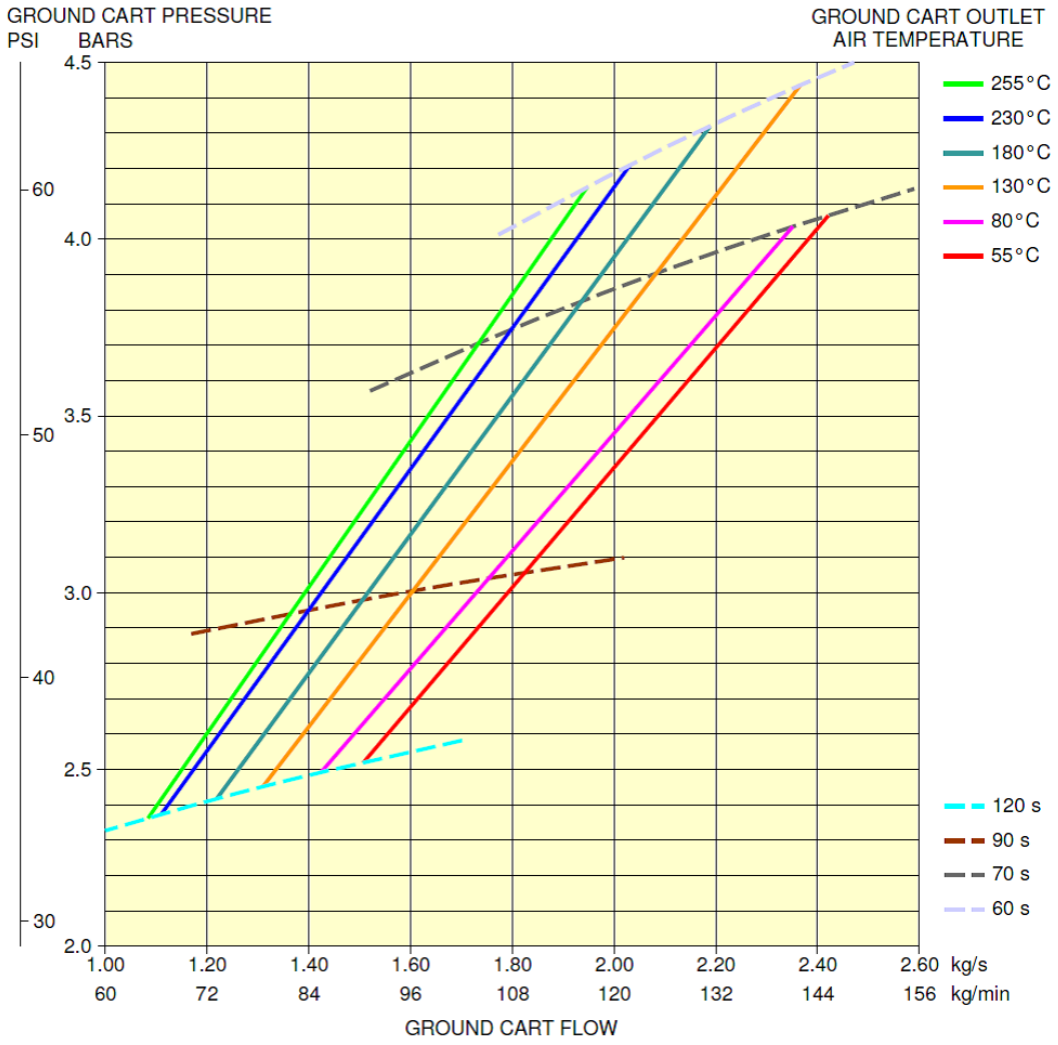
Three High Pressure Connectors

Air Flow and Pressure Chart



Engine Starting Pneumatic Requirements (three high pressure connectors)
Medium Ambient Temperature +15° C (+59° F), Sea Level - TRENT 900 Engines

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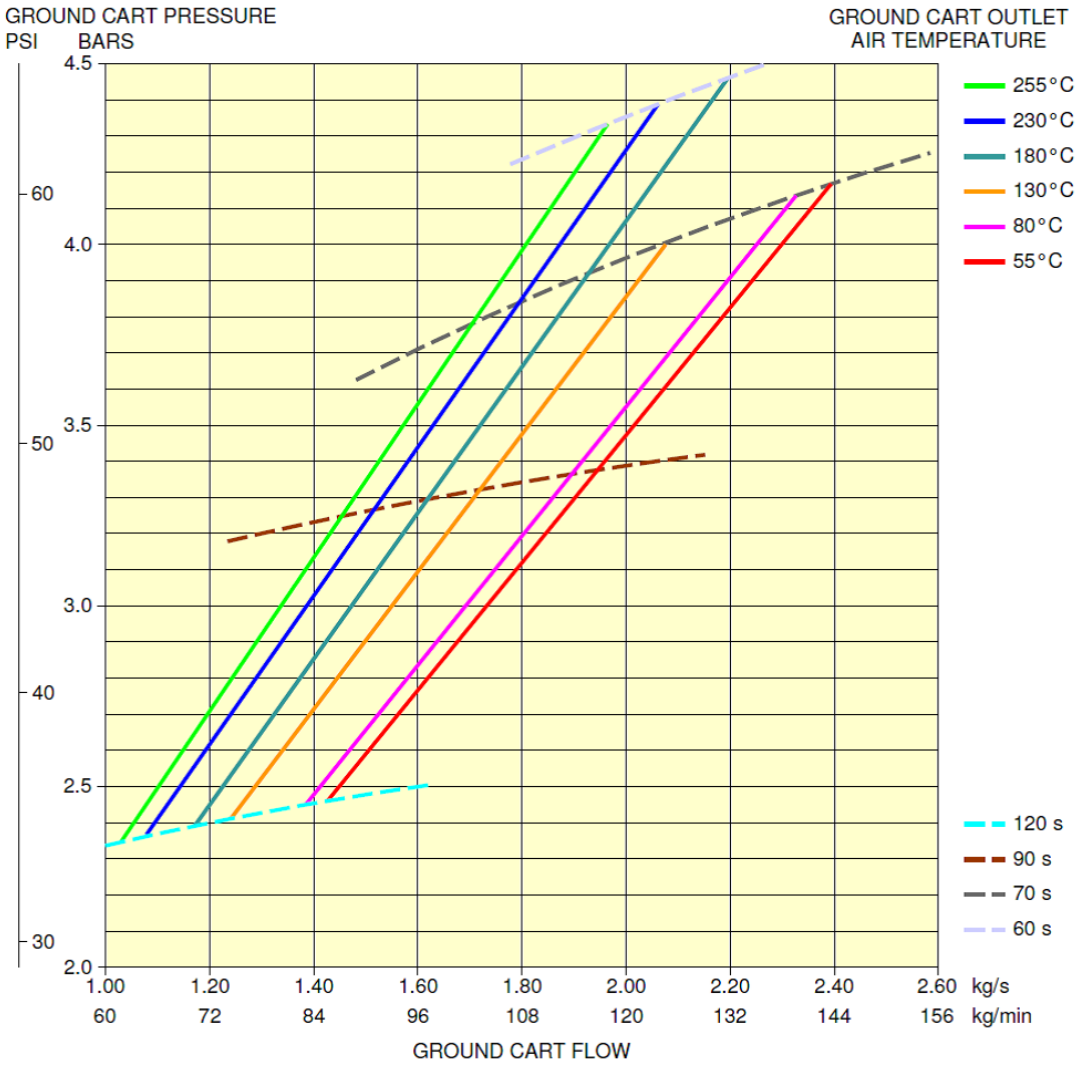
4.5.4 Ambient Temperature +55°C (+131°F)

Two High Pressure Connectors

Air Flow and Pressure Chart



Engine Starting Pneumatic Requirements (two high pressure connectors)
High Ambient Temperature +55° C (+131° F), Sea Level - TRENT 900 Engines

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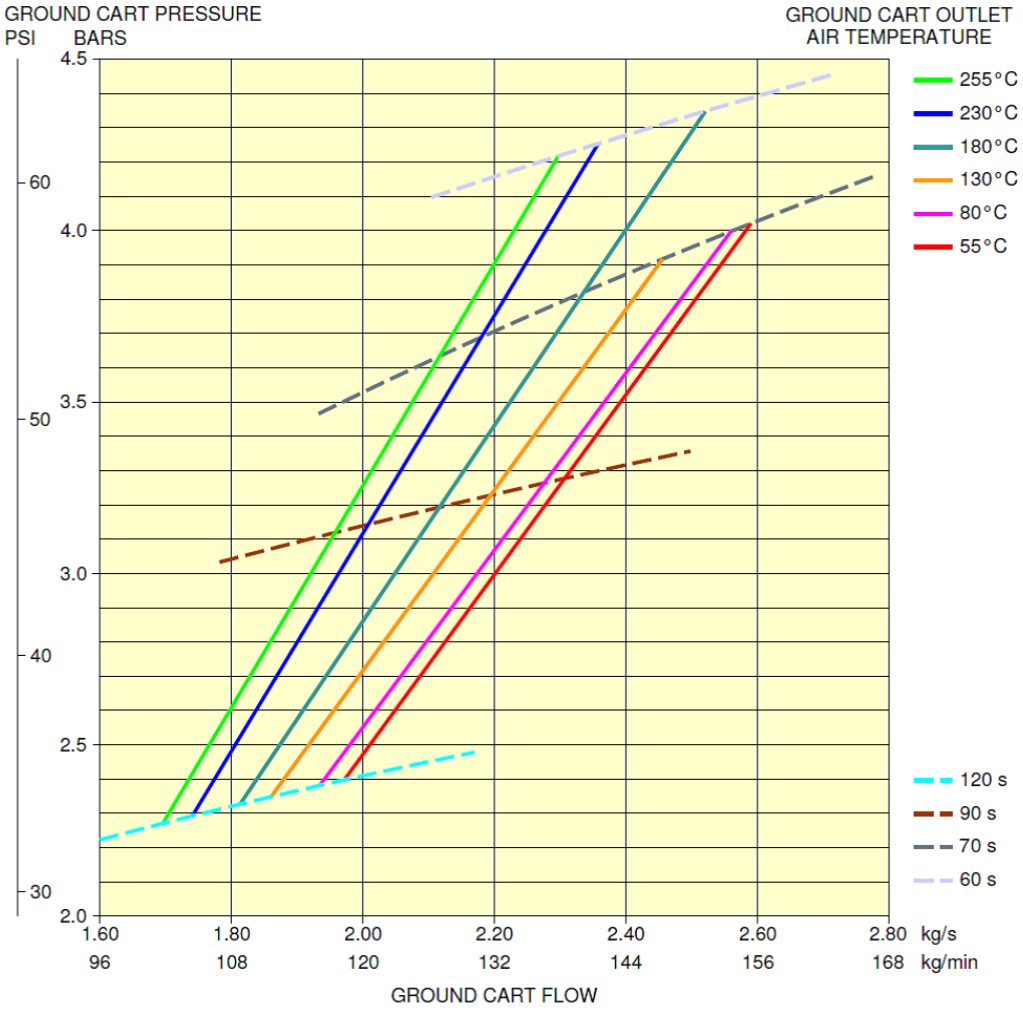
Three High Pressure Connectors

Air Flow and Pressure Chart



Engine Starting Pneumatic Requirements (three high pressure connectors)
High Ambient Temperature +55° C (+131° F), Sea Level - TRENT 900 Engines

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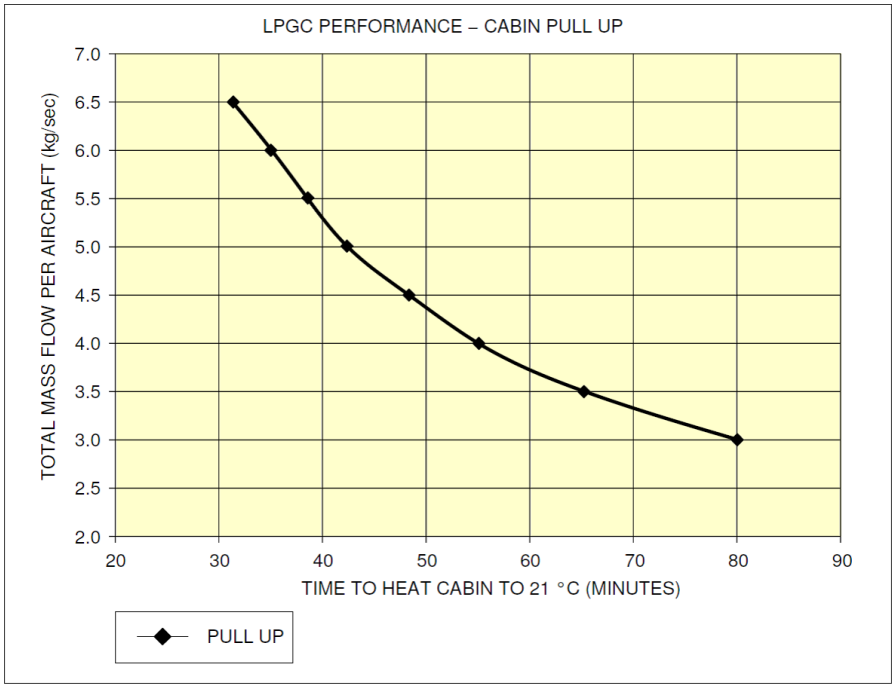
4.6 Preconditioned Airflow Requirements

4.6.1 General

The charts below show air conditioning requirements for heating and cooling (pull-down and pull-up) using ground conditioned air. The curves show airflow requirements to heat or cool the airplane within a given time at ambient conditions.

4.6.2 Heating



Total LPGC Airflow and Time to Heat Cabin Table

Total LPGC Air Flow	Time to Heat Cabin to 21°C (69.8°F) on Ground Pull-up
kg/sec	Minutes
3.0	80
3.5	65
4.0	55
4.5	48
5.0	42.5
5.5	38
6.0	35
6.5	31.6
Pull-up: Initial cabin temperature at -23°C, heat up to 21°C on ground. **Temperature at the ground connection: 70°C.**	

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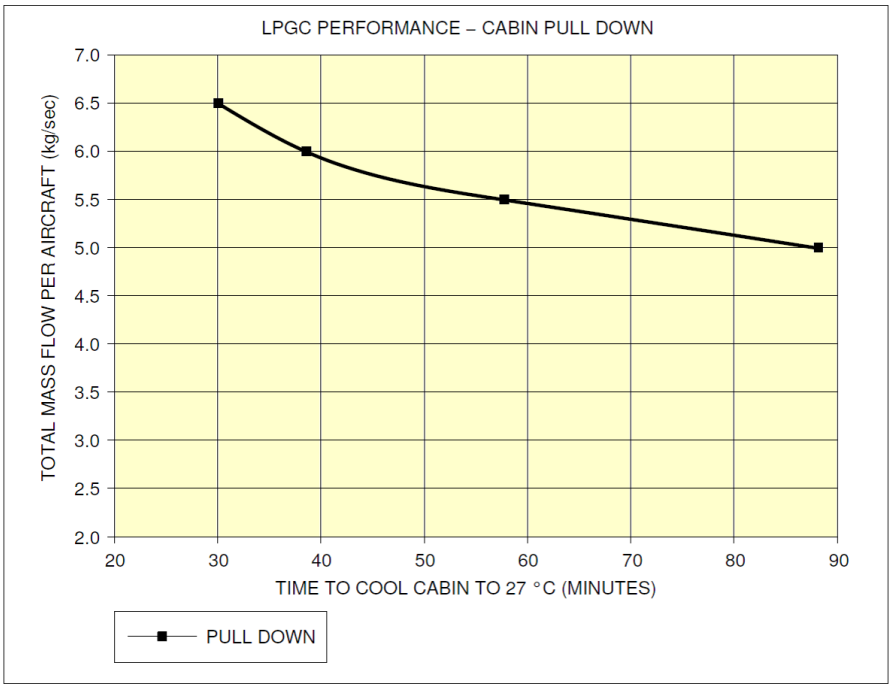
4.6.3 Cooling



Total LPGC Airflow and Time to Cool Cabin Table

Total LPGC Air Flow	**Time to Cool Cabin to 27°C (80.6°F) on Ground Pull-down**
kg/sec	**Minutes**
3.0	-
3.5	-
4.0	-
4.5	-
5.0	87
5.5	58
6.0	38
6.5	30
Same boundary conditions as before (in addition blends down for the pull-down case), HP and LP fans on. **Pull-down: Initial cabin temperature at 38°C, cool down to 27°C on ground.** **Temperature at the ground connection: 1.5°C.**	

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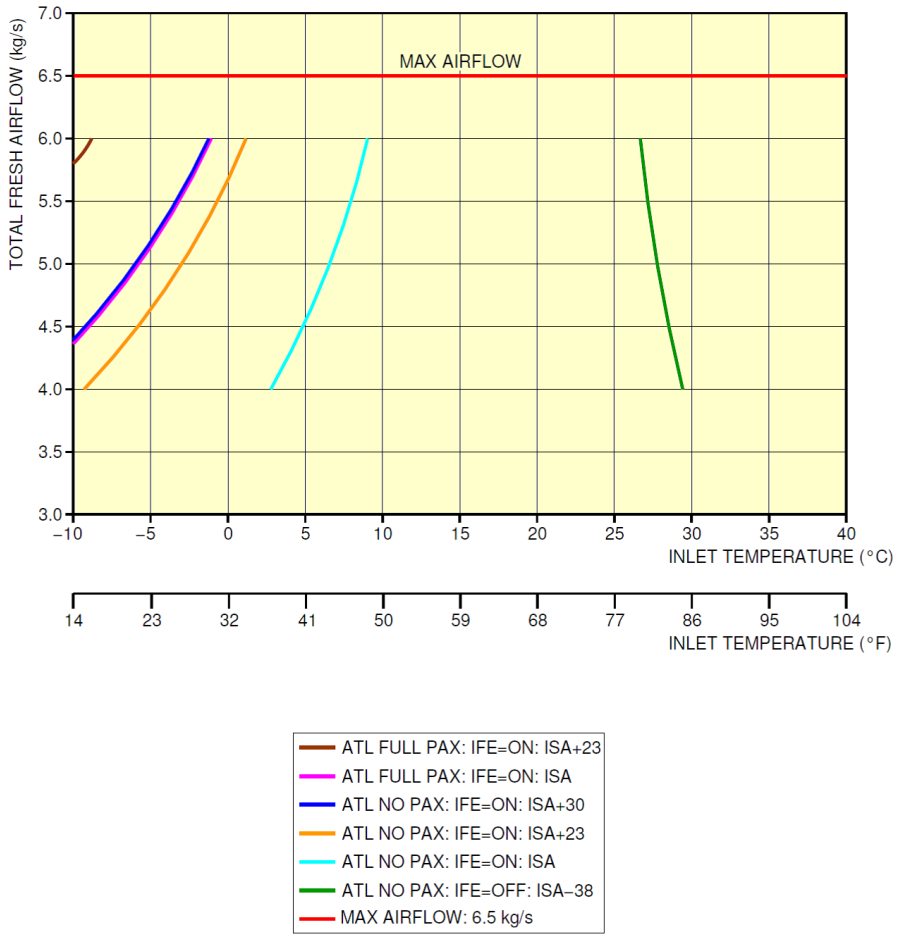
4.6.4 Air Flow Rates

Airflow Rates



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4.7 Ground Towing Requirements

4.7.1 General

The A380-800 is designed with means for conventional towing or towbarless towing. Information on towbarless towing can be found in SIL 09-002 and chapter 9 of the Aircraft Maintenance Manual (AMM A380).

It is possible to tow or push the aircraft, at maximum ramp weight with engines at zero or up to idle thrust, using a towbar attached to the nose gear leg. The towbar fitting is installed at the front of the leg (optional towing fitting for towing from the rear of the NLG available).

The body gears have attachment points for towing or debogging. Refer to chapter 7 of the Aircraft Recovery Manual, AMM A380 for details.

Information on aircraft towing procedures and corresponding aircraft limitations are given in chapter 9 of the Aircraft Maintenance Manual (AMM A380).

Ground Towing Requirements A380-800 Models shows the chart to determine the tow bar pull and tow tractor mass requirements as function of the following physical characteristics:

- aircraft weight,
- slope,
- number of engines at idle.

The chart is based on the A380-800 engine type with the biggest idle thrust.

4.7.2 Tow Bar Design Guidlines

The aircraft tow bar shall comply with the following standards;

- SAE AS 1614,"Main Line Aircraft Tow Bar Attach Fitting Interface",
- SAE ARP 1915 Revision C, "Aircraft Tow Bar",
- ISO 8267-1, "Aircraft—Tow bar attachment fitting - Interface requirements—Part 1: Main line aircraft",
- ISO 9667,"Aircraft ground support equipment—Tow bars", and
- IATA Airport Handling Manual AHM 958, Functional Specification for an Aircraft Tow bar".

A standard type tow bar should be equipped with a damping system to protect the nose gear against jerks and with towing shear pins;

- a traction shear pin calibrated at 62 000 daN (139381.53 lbf),
- a torsion pin calibrated at 4 800 m.daN (424 778.76 lbf.in).

The towing head is designed according to SAE/AS 1614 (issue C) cat. V.

There is a variety of shear pin arrangements and the values of the shear pins depend on them.

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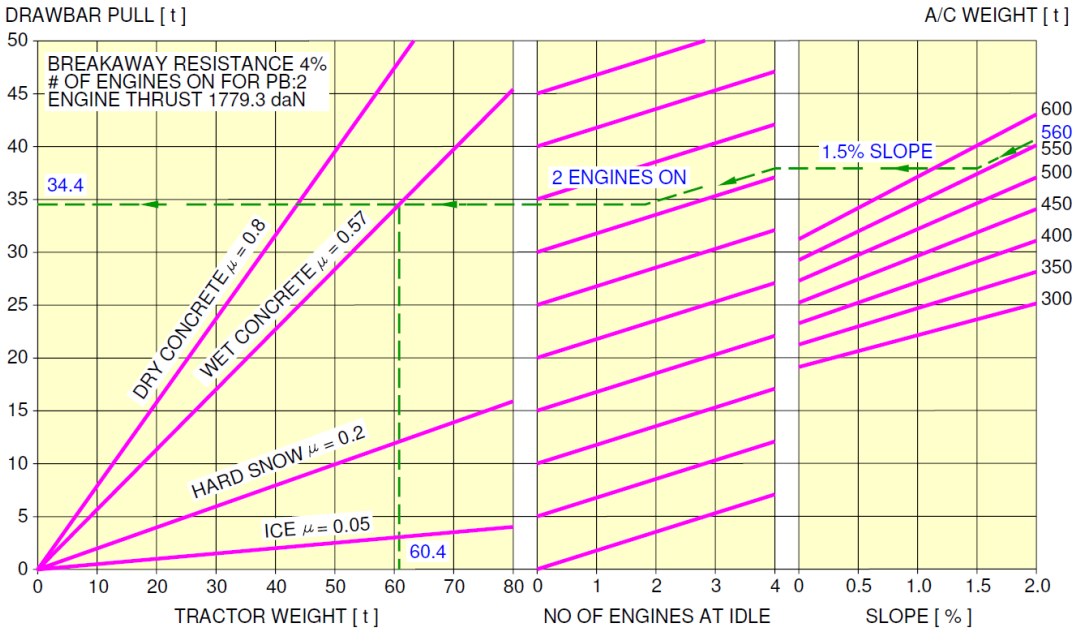
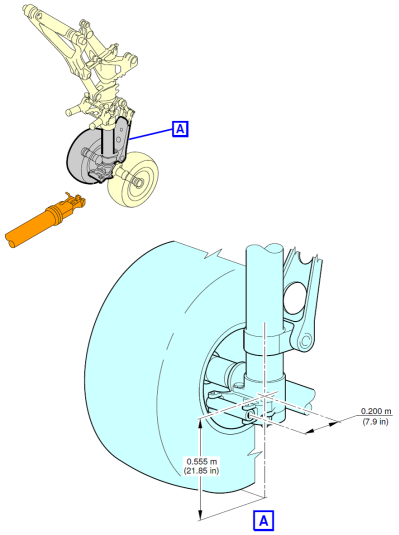


Following is an example of how to determine the mass requirement to tow an A380 at 1.5% slope with 2 engines at idle and wet tarmac conditions.

1. On the right hand side of the graph, choose the relevant aircraft weight (560t).
2. From this point, draw a parallel line to the required slope percentage (1.5%).
3. From the point obtained, draw a straight horizontal line unti9l the number of engines at idle=4.
4. From this point, draw a parallel line to the requested number of engines (2).
5. From this point draw a straight horizontal line to the drawbar pull axis.
6. The Y-coordinate obtained is the necessary drawbar pull for the tractor (34.4 ft).
7. Search the intersection with the "Wet Concrete" line.

The obtained X-coordinate is the recommended minimum tractor weight (60.4 t).

Nose Gear Towing Fittings



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5 JET ENGINE WAKE AND NOISE DATA 1

5.1 General 1

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5.1.2 Exhaust Temperature Contours 5

5.2 Danger Areas of the Engines 1

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5.3 Airport and Community Noise Data 1

5.3.1 Description of Test Conditions 1

5.3.2 Meteorological Data 1

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5 JET ENGINE WAKE AND NOISE DATA

5.1 General

This section shows the estimated engine exhaust efflux velocity and temperature contours for Maximum Take-off, Breakaway and Idle conditions for the A380 engine models.

The Maximum Take-off data are presented at the maximum thrust rating. Therefore, contours hereafter include contours of the A380-800 Passenger version.

The Breakaway data are presented at a rating corresponding to the minimum thrust level required to initiate movement at its maximum ramp weight from static position and on uphill ground.

The Idle data are directly provided by the engine manufacturers. In the charts, longitudinal distances are measured from the inboard engine core nozzle exit station, while lateral distances are measured from the aircraft fuselage centreline.

The contour profiles are based on a computer program, which analytically predicts jet wake velocity and temperature down stream of the exit nozzles. The computer program takes into account ground effects and interaction of the two jet wakes on the aircraft.

The estimated efflux data are presented at ISA+15°C (30°C), Sea Level Static and negligible wind conditions.

The analysis assumes that the core and bypass streams are fully mixed and calculates the jet behavior in free, still air and therefore does not take into account effects such as on-wing installation, ground entrainment and ambient wind conditions.

Velocity contours are presented at 50 ft/s (15 m/s), 100 ft/s (30 m/s) and 150 ft/s (46 m/s), while temperature contours are presented at 40°C (104°F), 50°C (122°F) and 60°C (172°F).

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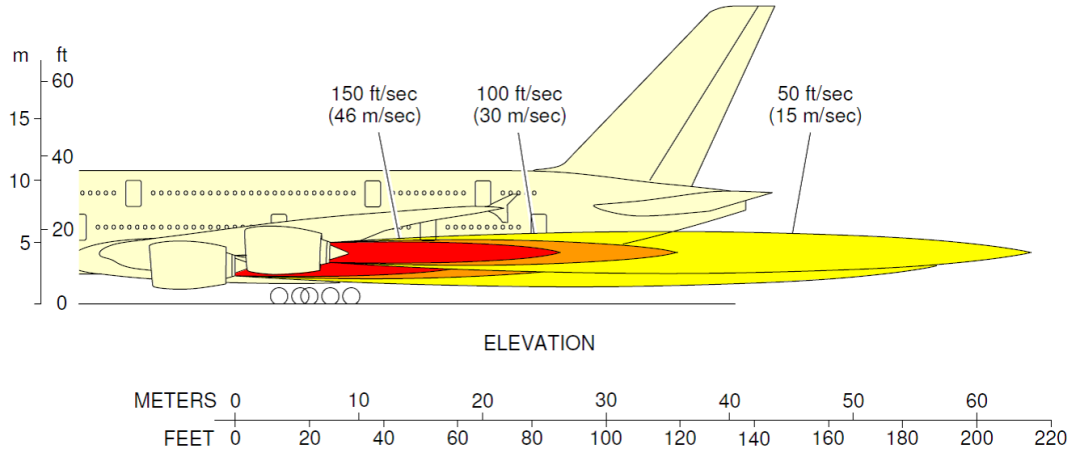
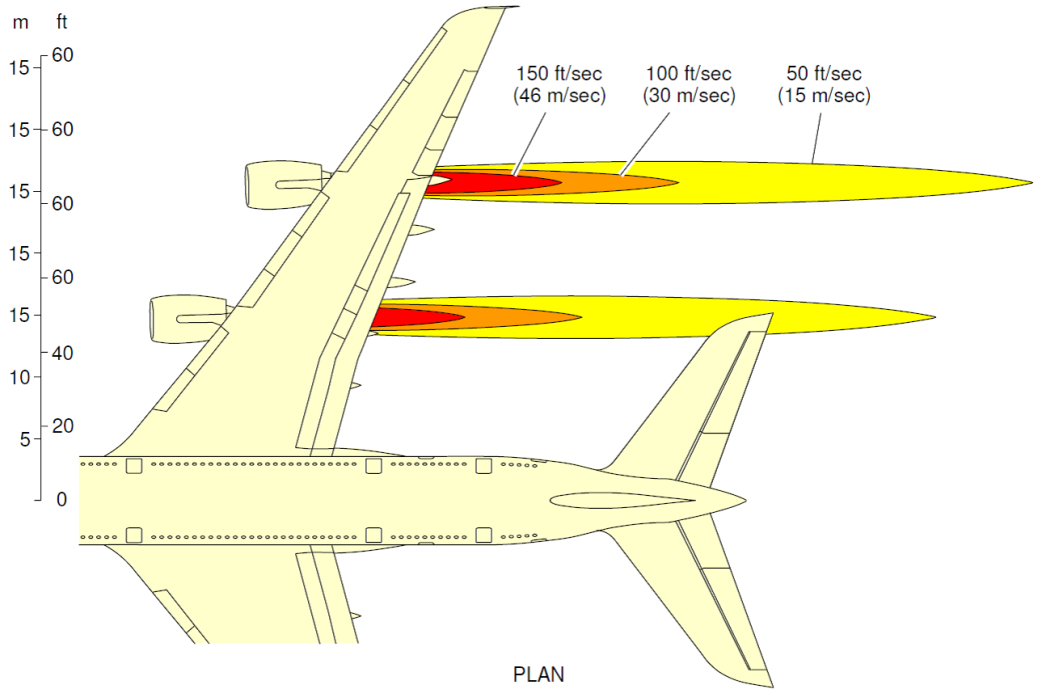
5.1.1 Exhaust Velocity Contours

5.1.1.1 Idle Power



ELEVATION



PLAN

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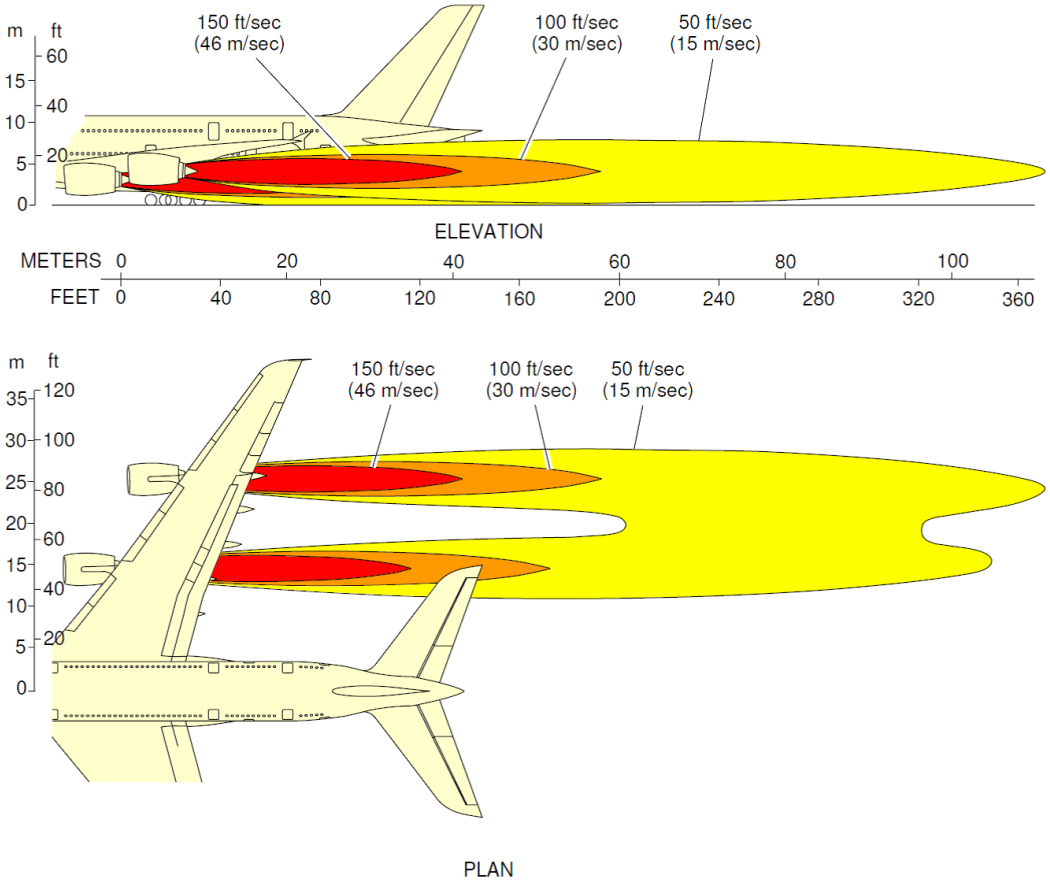
5.1.1.2 Breakaway Power



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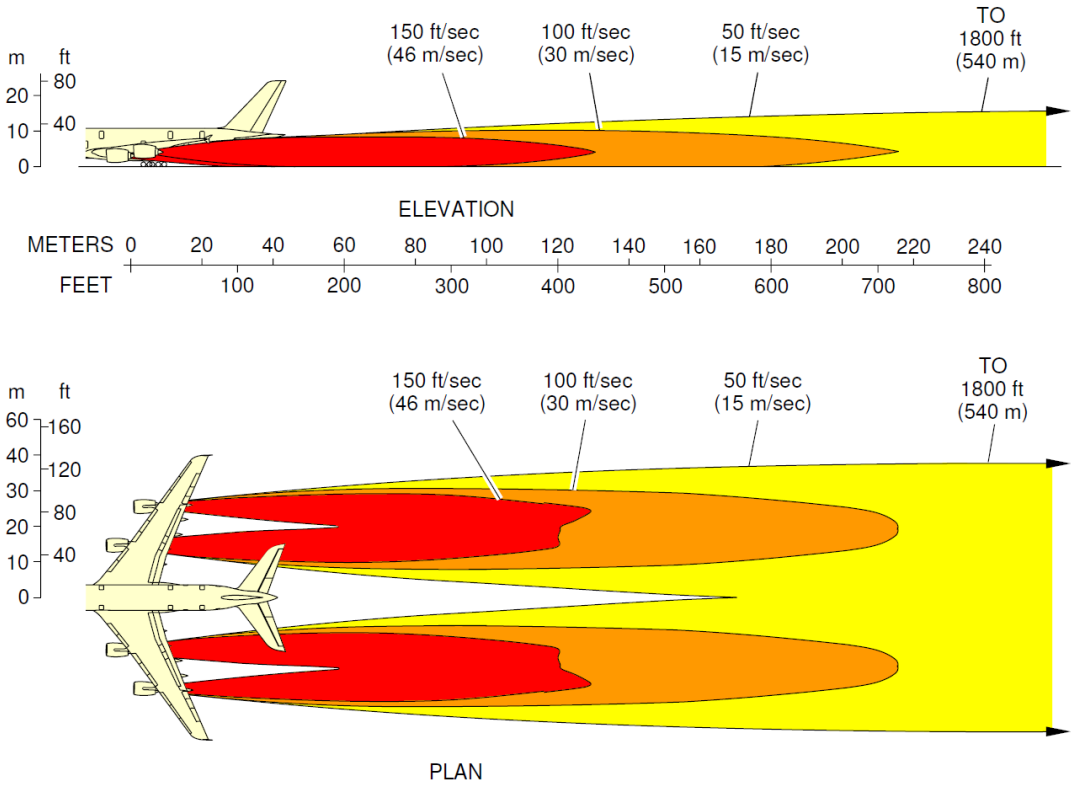
5.1.1.3 Max Take-off Power



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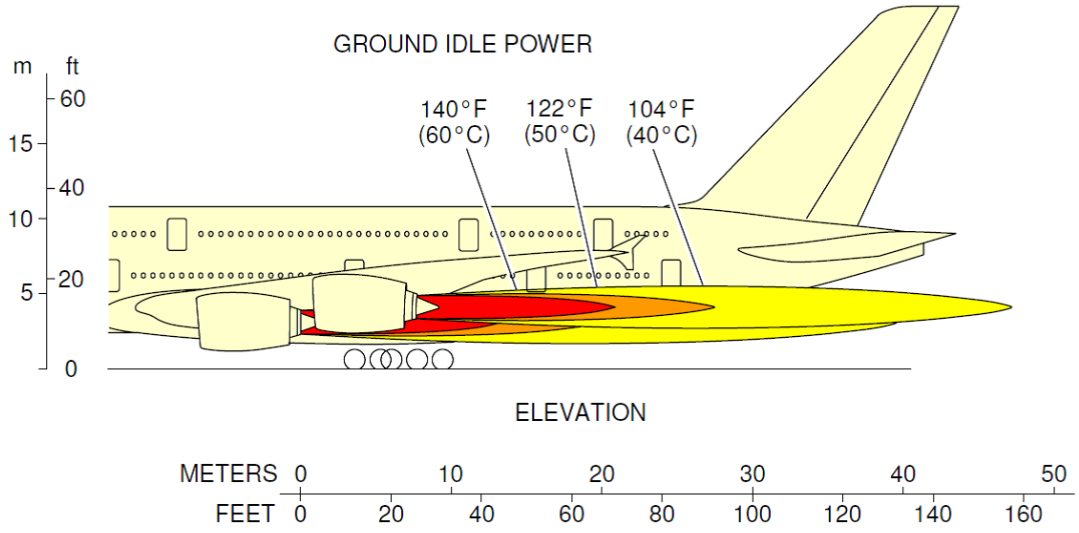
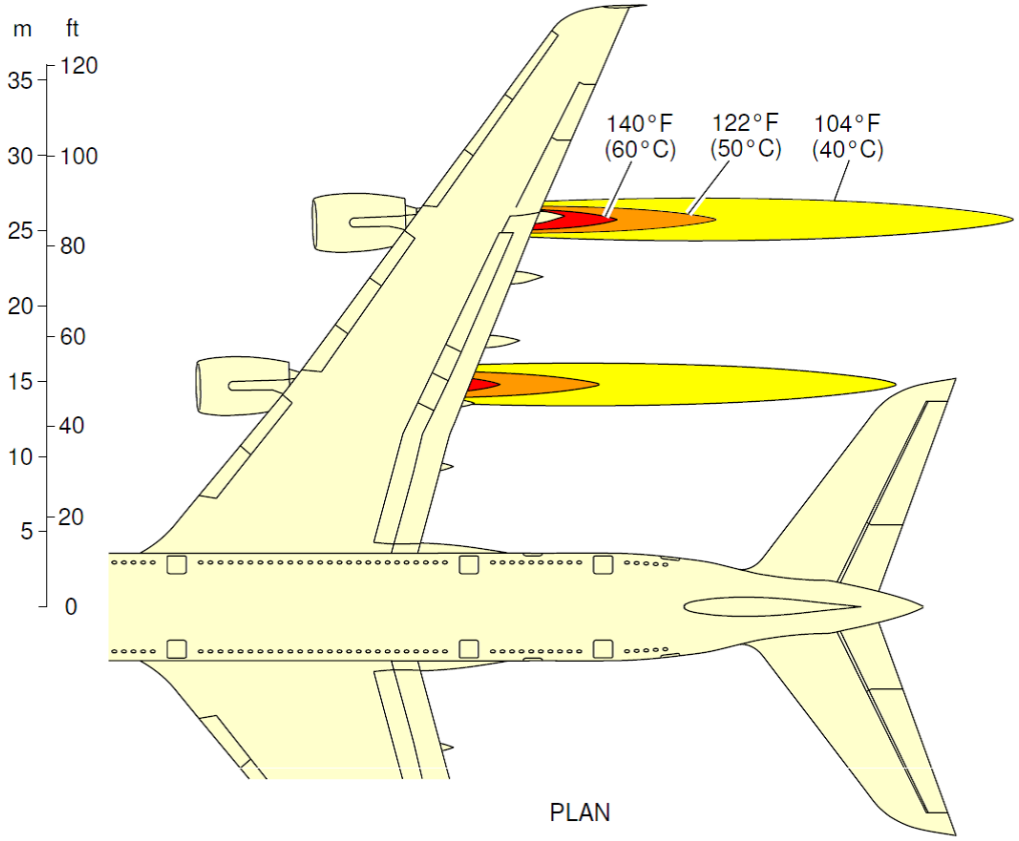
5.1.2 Exhaust Temperature Contours

5.1.2.1 Idle Power





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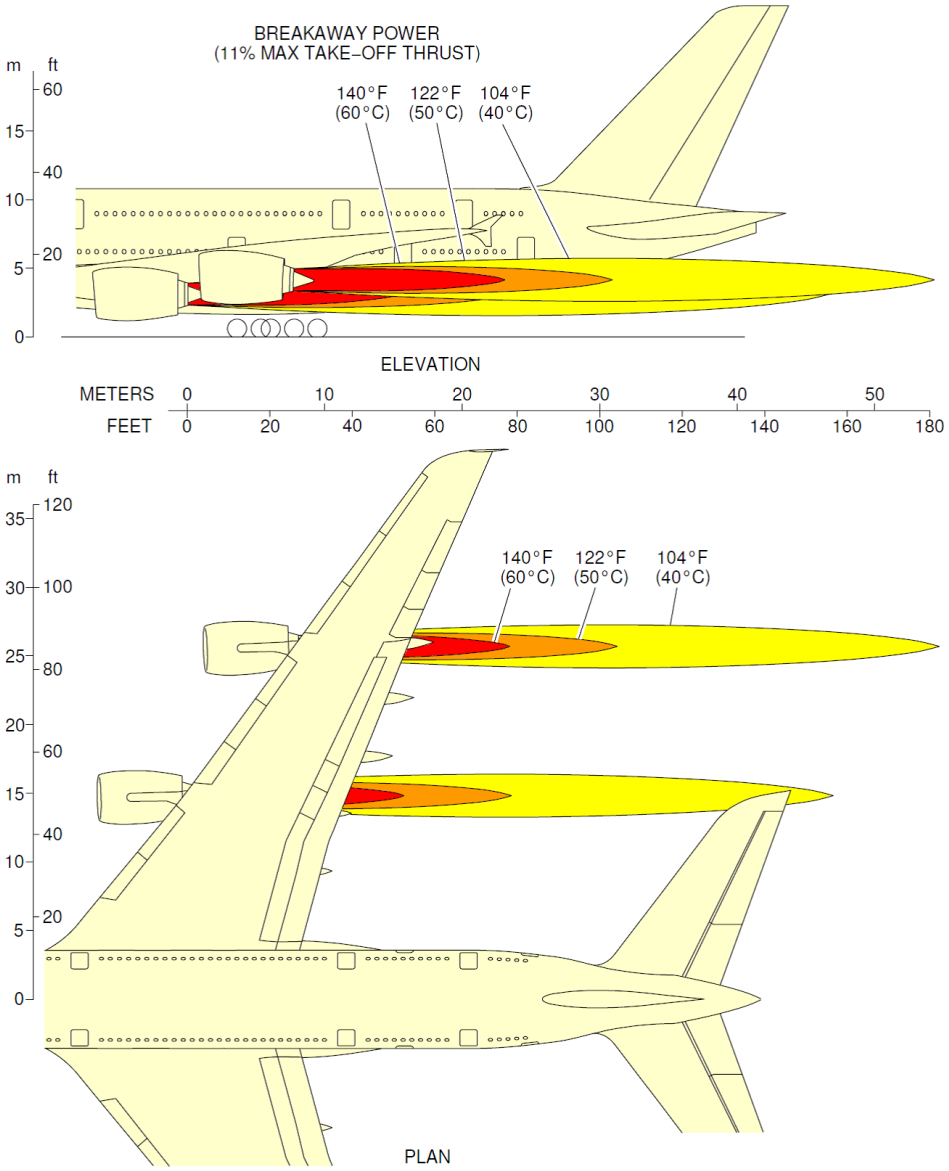
5.1.2.2 Breakaway Power



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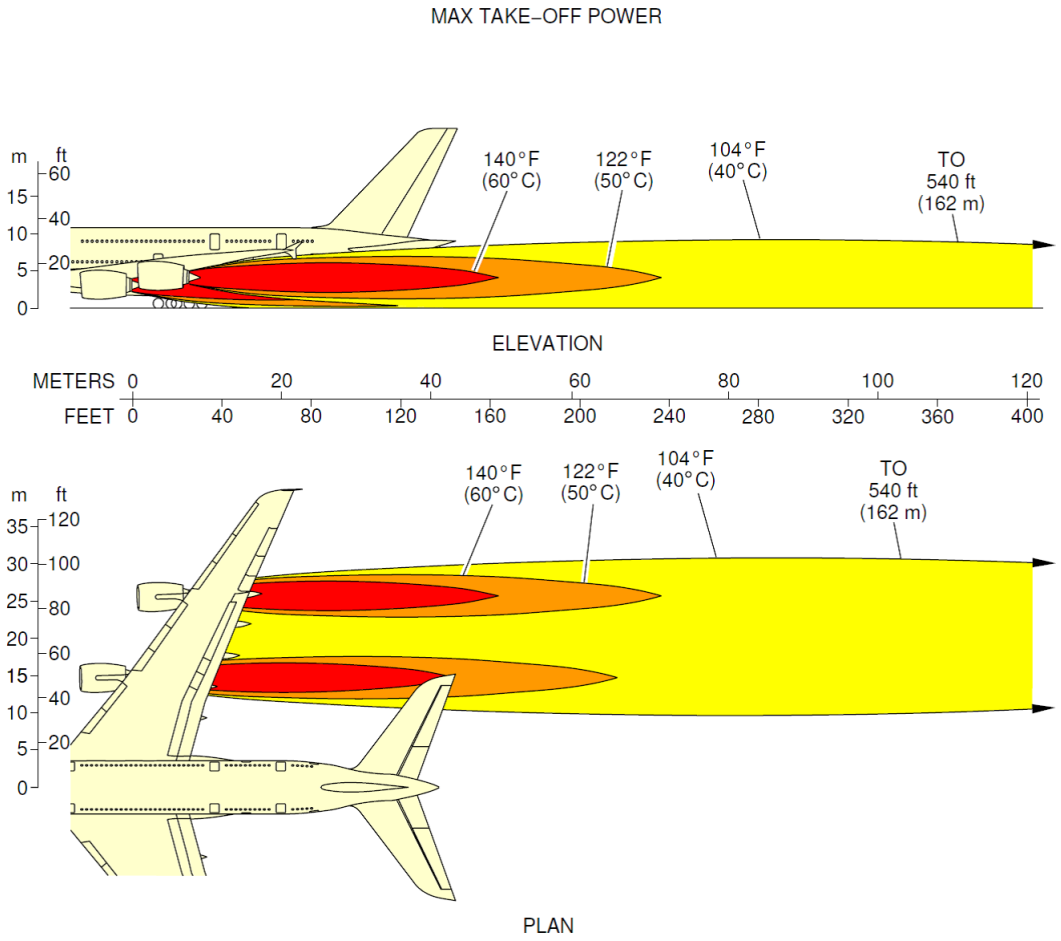
5.1.2.3 Max Take-off Power



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5.2 Danger Areas of the Engines

5.2.1 General

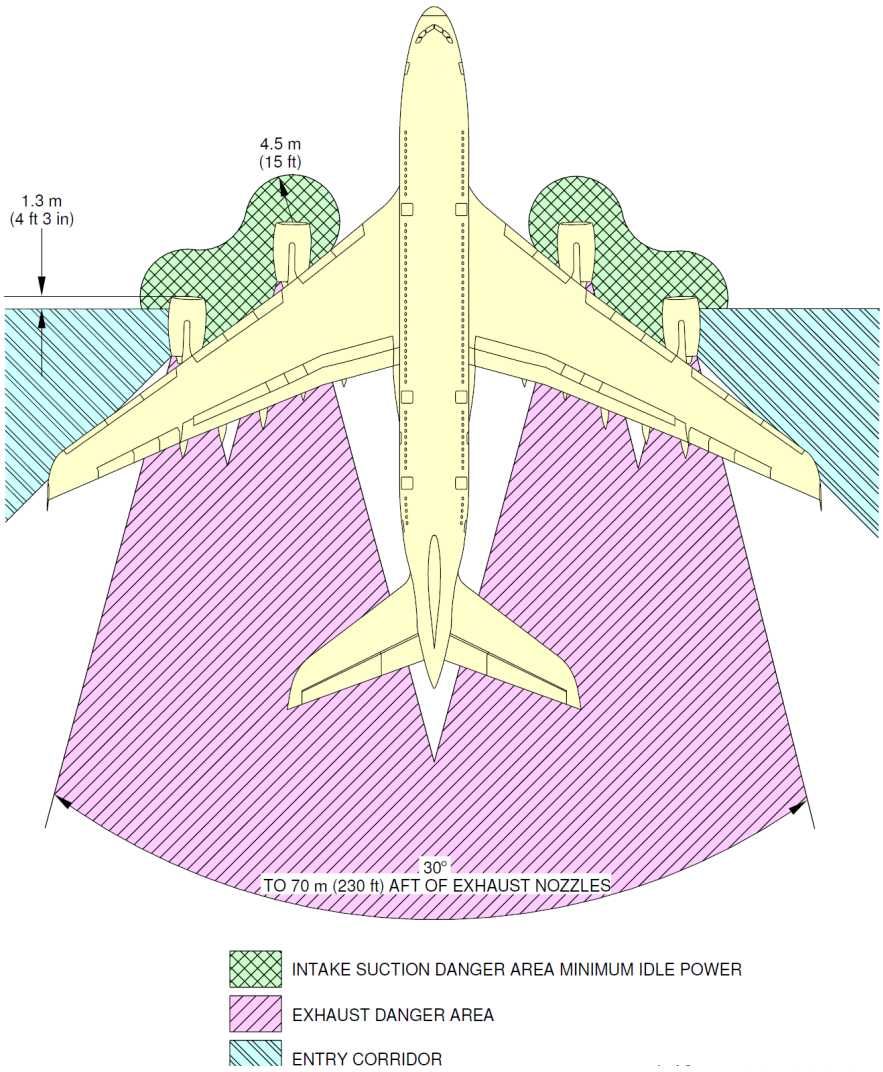
The intake suction danger areas, which are plotted in this chapter, correspond to very low suction velocities in order to prevent very low density objects (hat, handkerchief) from ingestion by engines.

The primary aim of those danger areas is to protect the people working around the engines.

The A380 outer engines are high enough above ground to prevent the ingestion of typical loose objects, which can be found on ground at the edge of runways/taxiways paved areas (loose gravels for example), in the following conditions:

- at usual taxiway thrust (i.e. up to the breakaway power setting), even if the loose objects are below the A380 outer engines,
- at usual take-off thrust (i.e. up to the maximum take-off power setting), if the loose objects are beyond 3 meters from the A380 outer engines center line.

5.2.2 Ground Idle Power



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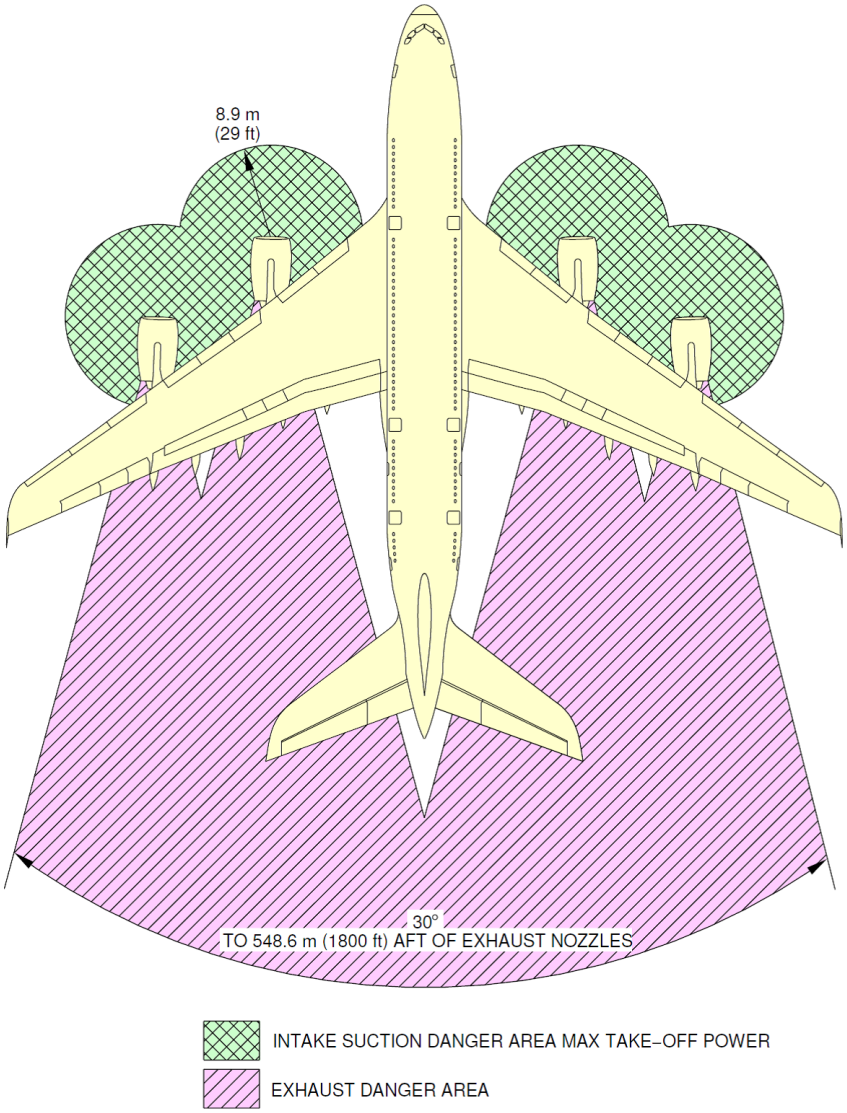
5.2.3 Max Take-off Power



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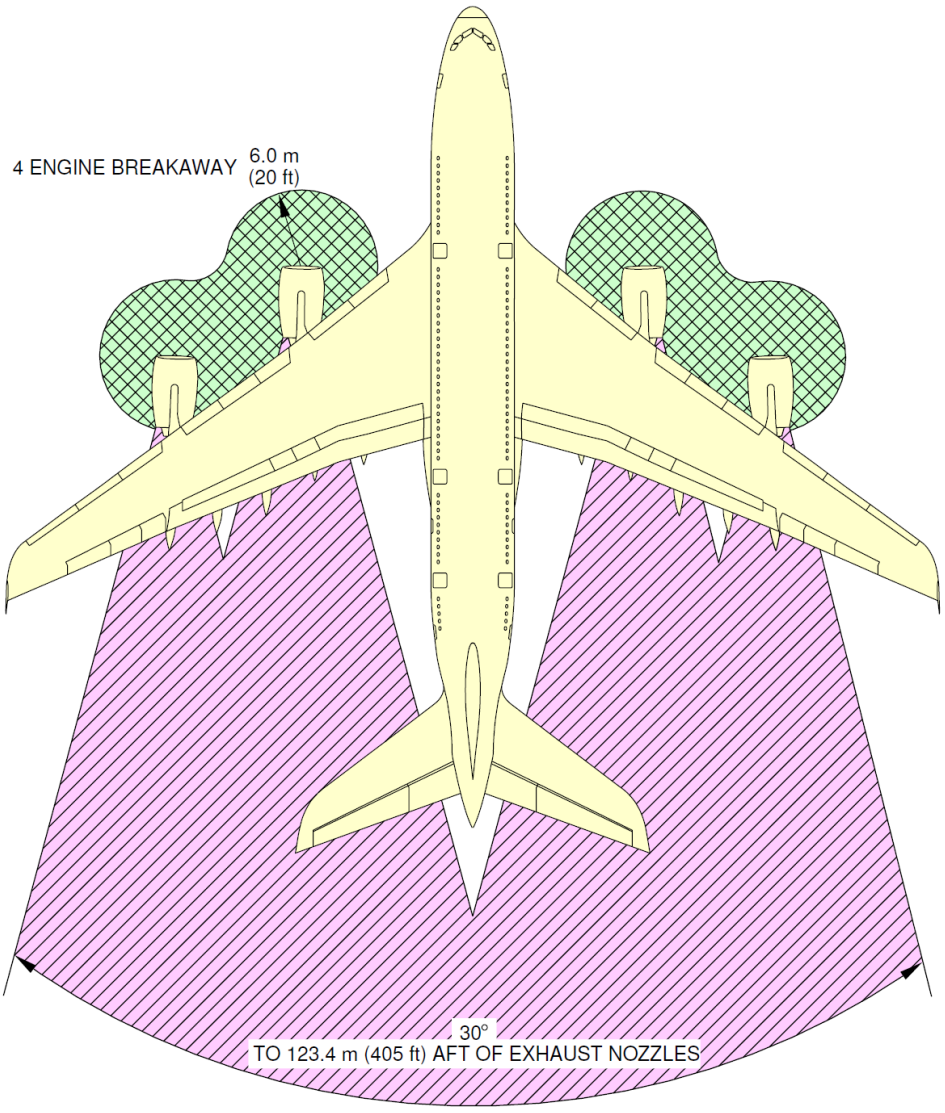
5.2.4 Breakaway Power



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5.3 Airport and Community Noise Data

5.3.1 Description of Test Conditions

The arc of circle (radius = 60 m (196.85 ft)), with microphones 1.2 m (3.94 ft) high, is centered on the position of the noise reference point.

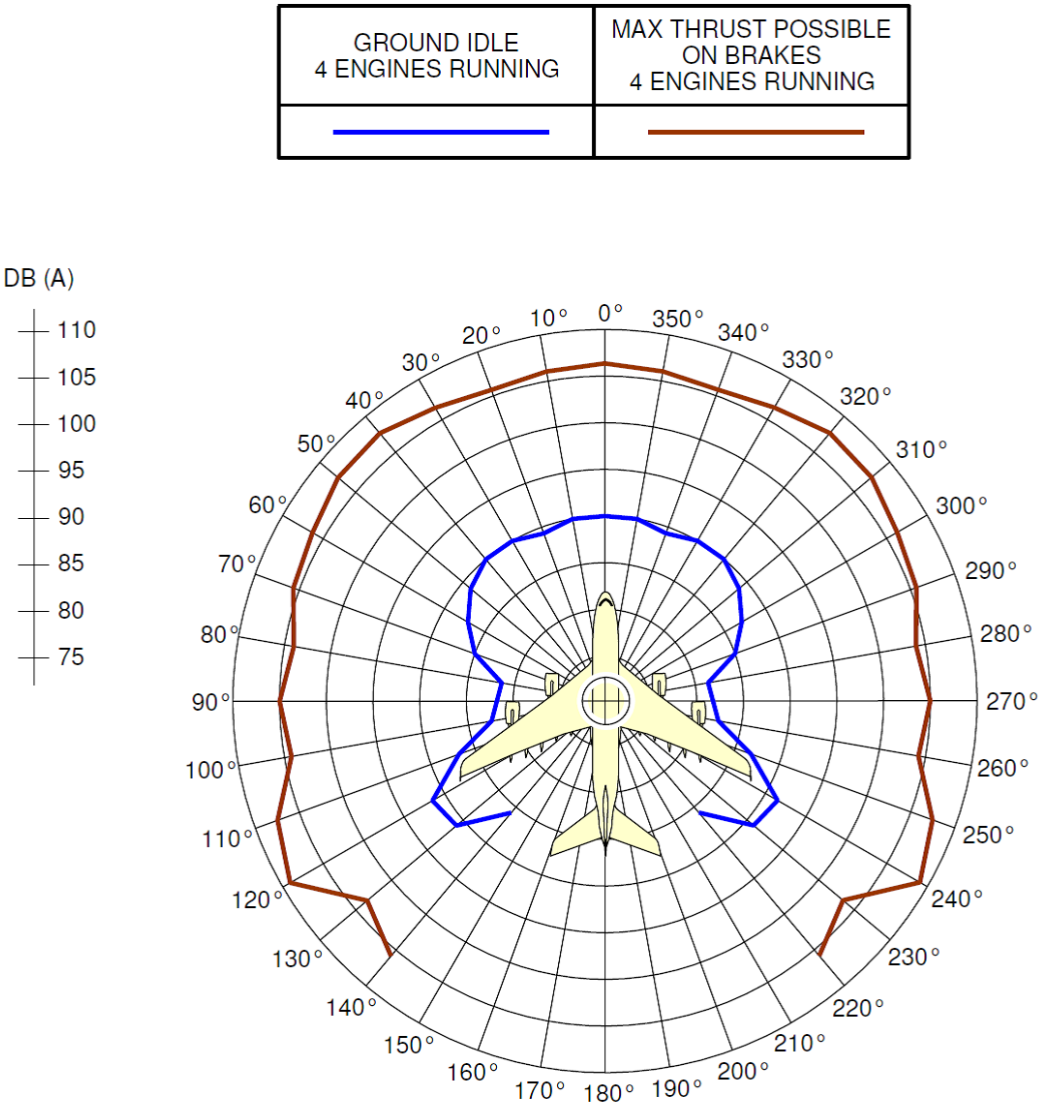
- APU: off,
- ECS: Packs off.

5.3.2 Meteorological Data

The meteorological parameters measured 1.6 m (5.25 ft) from the ground on the day of test were as follows:

- temperature: 32°C,
- relative humidity: 31%,
- atmospheric pressure: 996 hPa,
- wind speed: negligible,
- no rain.

Noise Data



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6 UNLOADING AND LOADING

6.1 Loading Procedures

General

See General LCM, Chapter 14—LOADING for general loading and handling procedures.

Special Procedures

In order to secure and appropriate ULD stock at each station, ULD's shall normally be installed in all positions. Exceptions from this rule can only be granted by BKKKF, copy to BKKKT (BKKKG-M).

Caution: When operating with empty positions (NO-FIT), all latches shall be raised, in positions not occupied by ULD's.

Notes:

1. *ULD's not cleared of snow/ice/water shall be refused for loading.*
2. *Loading of outsized cargo is permitted unless approved by BKKFB copy to BKKFD and BKKKT. See General LCM, Chapter 15—SPECIAL LOADS, HANDLING AND LOADING.*

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6.2 Floor Loading Limits

6.2.1 General

See General LCM, Chapter 12—SUPPORTING for general floor loading limits and supporting procedures.

6.2.2 ULD Compartment Floor

Caution: It is prohibited to carry loose bulk cargo, mail or baggage in any of the ULD compartments.

Floor Structure

The floor structure is capable of supporting, via ballmats or roller tracks, a running load of 2,070 kg/m (116 lb/in) structurally corresponding to an uniformly distributed load of 659 kg/m² (135 lb/ft²). See A380 LCM, Chapter 6.3—ULD Loading Capacities for the maximum ULD gross-weights. See A380 LCM, Chapter 6.6—ULD Center of Gravity Limits for the center of gravity limits according to the allowable center of gravity range table.

Floor Panels

Each floor panels is capable to withstand a local load of 136 kg (300 lb) on any 0.305 m × 0.305 m square area (1 ft²) without permanent deformation.

The local loads must be separated from each other in such a way that the floor structure load limitations as stated above are not exceeded, as well as the maximum compartment loads. See A380 LCM, Chapter 6.3—ULD Loading Capacities.

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6.3 ULD Loading Capacities

6.3.1 General

See A380 LCM, Chapter 3.9—Weight, Volume, and Dimensions for maximum capacities of each ULD compartment.

6.3.2 ULD Capacities for Compartments 1, 2, 3, and 4

Caution: In case of malfunction of any part of the ULD loading system, restrictions may be imposed on pallet/container gross weights or their position in the compartment. See A380 LCM, Chapter 3.15—ULD Loading System Operating Restrictions for guidelines.

Note: Compartment 1 and 2 has maximum cumulative load capacity of 18,650 kg and Compartments 3, 4 and 5 at 10,500 kg.

The ULD compartments can accommodate the following:

Containers

ULD Type	Dimensions (L × W × H)	Tare Weight	Volumne (m²)	Maximum(*) Gross Weight
AVE (NAS 3610–2K2C)	153.4 × 156.2 × 162.6 cm (60.4" × 61.5" × 64")	118 kg	4.3	1,587 kg
AKE (NAS 3610–2K2C)		70/90 kg(**)		
RKN (NAS 3610–2K2C)		190 kg	3.7	
ALF (NAS 3610–2L2C)	153.4 × 317.5 × 162.6 cm (60.4" × 125" × 64")	186 kg	9.2	3,174 kg
AAP (NAS 3610–2A2C)	223.5 × 317.5 × 162.6 cm (88" × 125" × 64")	205 kg	10.5	4,626 kg
AAF (NAS 3610–2A2C)		250 kg	13.1	
KAP (NAS 3610–2A2C)		575 kg	10.5	
RAP (NAS 3610–2A2C)		325 kg	9.7	
AMF (NAS 3610–2A2C)	243.8 × 317.5 × 162.6 cm (96" × 125" × 64")	290 kg	14.7	5,103 kg

(*) The maximum gross weight includes the tare weight of the pallets and nets.

(**) Light weight LD3.

The maximum gross weight of each ULD type must not exceed the maximum allowable for each cargo compartment. See A380 LCM, Chapter 3.6—Versions, ULD Layout for their positions.

Caution: The ULD package must ensure a minimum clearance of 7.62 cm (3 inches) from the compartment door, linings, ceiling and from ULD's on adjacent positions but not valid for the distance between baseplates.

The compartments need not necessarily be loaded with the total number of containers or pallets. See A380 LCM, Chapter 3.6—Versions, ULD Layout for additional information. Any loading position may remain unoccupied (NO FIT). It is necessary to restrict inadvertent movement due to latch failure by raising relevant latches in all adjacent empty positions (NO FIT) so that ULD movement is restricted to one position only.

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Pallets with Nets

ULD Type	Dimensions (L × W × H)	Tare Weight	Volume (m^2)	Maximum(*) Gross Weight
PLA (NAS 3610-2L3)	153.4 × 317.5 × 162.6 cm (60.4" × 125" × 64")	104 kg	7.2	3,174 kg
P1P (NAS 3610-2A1)	223.5 × 317.5 × 162.6 cm (88" × 125" × 64")	105 kg	10.5	4,626 kg
PAJ/PAG (NAS 3610-2A1)		105 kg	9.7	
PAP (NAS 3610-2A1)		95 kg		
PAW/PAU (NAS 3610-2A1)		155 kg		
PAT (NAS 3610-2A1)				
PMC (NAS 3610-2M1)	243.8 × 317.5 × 162.6 cm (96" × 125" × 64")	113 kg	11.5	5,103 kg

(*) The maximum gross weight includes the tare weight of the pallets and nets.

(**) Light weight LD3.

The maximum gross weight of each ULD type must not exceed the maximum allowable for each cargo compartment positions. See A380 LCM, Chapter 3.6—Versions, ULD Layout.

Caution: The ULD package must ensure a minimum clearance of 7.62 cm (3 inches) from the compartment door, linings, ceiling and from ULD's on adjacent positions but not valid for the distance between baseplates.

The compartments need not necessarily be loaded with the total number of containers or pallets. See A380 LCM, Chapter 3.6—Versions, ULD Layout for additional information. Any loading position may remain unoccupied (NO FIT). It is necessary to restrict inadvertent movement due to latch failure by raising relevant latches in all adjacent empty positions (NO FIT) so that ULD movement is restricted to one position only.

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6.4 Split Engine Transportation

The forward and aft cargo hold is equipped with NAS 3610 class 2 restraint system approved for transport of pallets and containers. See A380 LCM, Chapter 3.10—Facilities for facilities specifications. See A380 LCM, Chapter 3.11—Cargo Loading System for cargo loading specifications. See A380 LCM, Chapter 3.15—ULD Loading System Operating Restrictions for ULD loading system operating restrictions. The layout of this cargo loading system allows split engine transport on all pallet with equivalent dimensions and design complying with NAS 3610 restraint system, shall be used.

The engine package may extend over the pallet width to the extent, that the overhang of the package will not have an adverse effect on the cargo door, the cargo compartment lining or to ULDs on next positions. The minimum clearance should be 3 inches (76 mm).

Each split engine pallet and engine stand should be rigidly connected at least as required by NAS 3610, with respect to applicable gross weight and load factors.

If rigid engine to pallet connection is not possible the engine package must be secured to the pallet by strap-nets type:

- NAS 3610-2A1N-2A2N-2A3N-2A6N for 88 × 125 inches pallets, or
- NAS 3610-2M1N-2M2N for 96 × 125 inches pallet.

These nets must be adjustable in order to be compatible with the geometrical from of the cargo and their fittings must be fixed to the pallet rims so those loads are evenly distributed.

The minimum center of gravity deviations must be in accordance with the table below.

ULD Type	Size Code	Allowable center of gravity range					
		Vertical		Lateral		Longitudinal	
		cm	in	cm	in	cm	in
88 × 125 in	A	86.4	34	±31.8	±12.5	±22.4	±8.8
96 × 125 in	M	86.4	34	±31.8	±12.5	±24.4	±9.6

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6.5 Live Animal Transportation

General

The compartments are equipped with temperature control and ventilation systems for transport of livestock and maximum quantity and temperature requirements. See General LCM, Chapter 15.4—Live Animals for more information.

The live animal cargo units shall be designed to restrain the animals, to withstand handling operations during loading and unloading procedures and to withstand forces resulting from aircraft flight conditions.

To minimize cleaning of the ULD compartment and to prevent contamination within the air-conditioning system, the live animals load should be treated as wet cargo and the containers should be designed to keep animal waste inside.

ULD Compartment 1 and 2

See A380 LCM, Chapter 3.13—Environmental Control System.

ULD Compartment 3 and 4

See A380 LCM, Chapter 3.13—Environmental Control System.

Compartment 5

See A380 LCM, Chapter 3.13—Environmental Control System.

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6.6 ULD Center of Gravity Limits

6.6.1 General

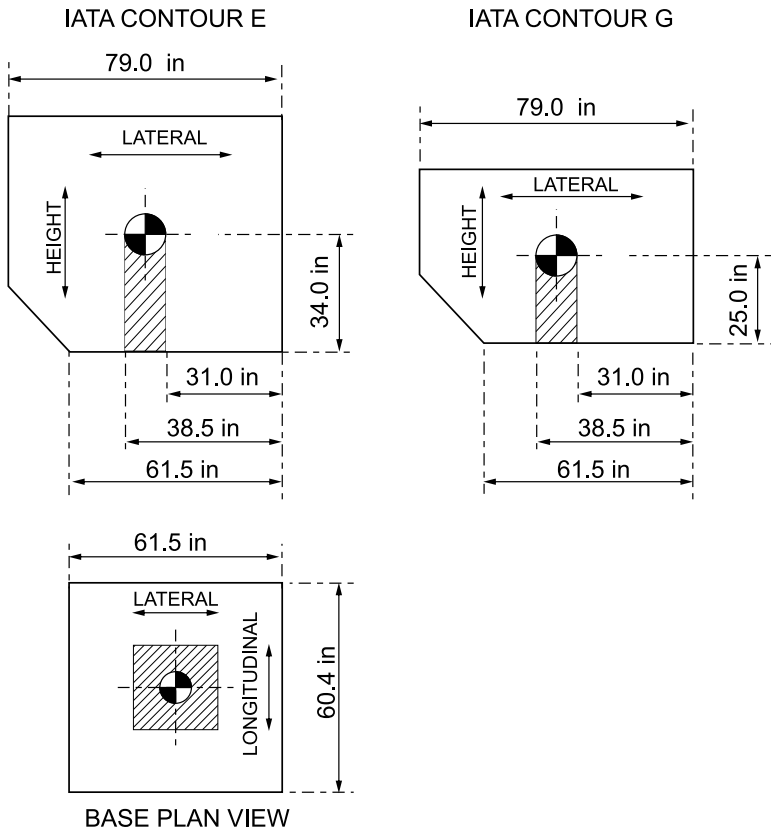
The design capacities of the support fittings and structure have been established with the allowable center of gravity range as shown in the table below.

The maximum allowable center of gravity deviation in lateral and longitudinal direction is based on the geometric center of the ULD baseplate and the maximum allowable center of gravity height in vertical direction is measured from the bottom of the ULD baseplate.

ULD Type	Size Code	Allowable center of gravity range					
		Vertical		Lateral		Longitudinal	
		cm	in	cm	in	cm	in
60.4 × 61.5 in	K	86.4	34	±15.6	±6.15	±15.3	±6.04
60.4 × 125 in	L	86.4	34	±31.8	±12.5	±15.3	±6.04
88 × 125 in	A	91.4	34	±31.8	±12.5	±22.4	±8.8
96 × 125 in	M	91.4	34	±31.8	±12.5	±24.4	±9.6

6.6.2 Half Size Container IATA Contour

Maximum center of gravity height is 34 inches (0.86 meter) IATA contour E from the bottom of the unit load device. The maximum allowable cargo center of gravity deviation from the unit load device geometric center is 6.04 inches (.153 meter) in the longitudinal direction. Maximum allowable cargo center of gravity deviations in the lateral direction are defined in the illustrations below.



6.6.3 Full Size Container IATA Contour F and Full Size Pallets 60.4 × 125

Maximum center of gravity height is 34 inches (0.86 meter) from the bottom of the unit load device. The maximum allowable cargo center of gravity deviation from the unit load device geometric center

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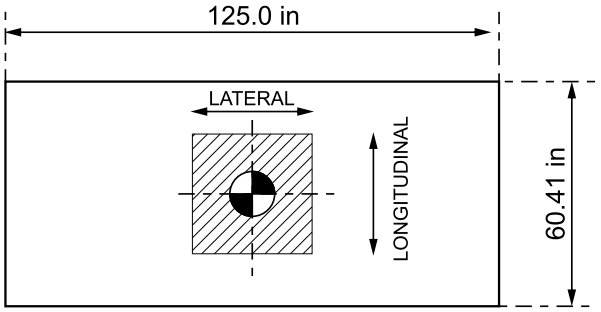
is 12.5 inches (0.318 meter) in the lateral direction and 6.04 inches (0.153 meter) in the longitudinal direction.

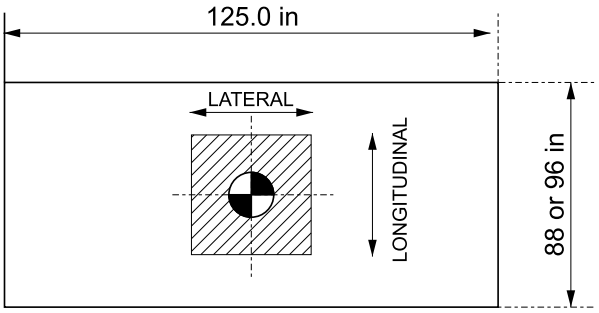


BASE PLAN VIEW

6.6.4 Full Size Container IATA Contour F and Full Size Pallets 88, 96 × 125

The minimum center of gravity height is 34 inches (0.86 meter) for container and 36 inches (0.91 meter) for pallets from the bottom of the unit load device. The maximum allowable cargo center of gravity deviation from the unit load device geometric center is:

- 12.5 inches (.318 meter) in the lateral direction; and,
- 8.8 inches (.224 meter) for pallets 88 × 125 inches,
- 9.6 inches (.244 meter) for pallets 96 × 125 inches in the longitudinal direction.



BASE PLAN VIEW

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6.7 Non-unitized Load and Tie-downs

6.7.1 General

The non-unitized load is the special loading procedure for any cargo which;

- cannot be netted or containerized on/into ULD is to be transported as non-unitized load,
- exceed the limitations for ULD tare weight,
- exceed the limitation s for hard mounted cargo.

Restraining of all individual items of non unitized load must be achieved by tie-down in order to secure these loads.

Non unitized load may be either carried on standardized pallets latched within the cargo loading system, or on standardized pallets which are restrained to the tie-down points on the fixed YZ-latches of the cargo loading system (floating pallets).

The pallet load may extend over the pallet width to the extent that the overhang will not have an adverse effect to the cargo door, compartment linings, equipment, or to cargo on adjacent positions. Minimum clearance of 3 inches (7.6 cm) shall be respected.

Loads on pallets shall be evenly distributed. Unequal loads exceeding locally the maximum floor loads given must be suitably supported by load spreaders with sufficient capability of weight distribution. See General LCM, Chapter 12—SUPPORTING.

6.7.2 Latched Pallets

Any pallet as specified in paragraph 3 above for the forward cargo compartment or standardized pallets with equivalent dimensions and design complying with NAS 3610 requirements may be used.

These pallets must be latched within the cargo loading system. See A380 LCM, Chapter 6.2—Floor Loading Limits for Individual loading limitations. See General LCM, Chapter 12—SUPPORTING for maximum permissible structure loads.

All individual items of load shall be restrained to the pallet tie-down points on the base plate via tie-down straps and nets or equivalent restraint hardware, which is in good condition and provides the specified strength.

The loads must be restrained either to the pallet tie-down points on the base plate or as a complete package with plate to the toe down points on the fixed YZ-latches of the cargo loading system. Restraint of pallet to the aircraft must be achieved via tie-down straps connected to the pallet tie-down points on the baseplate and the tie-down points on the fixed YZ-latehes of the cargo loading system.

Tie-down arrangement vie tie-down straps and nets or equivalent restraint hardware to the pallet shall be carried out in good loading practice to avoid damage to the aircraft under flight load conditions, and to provide evenly distributed loads to the pallet rims under consideration of strap or net elongation.

See General LCM, Chapter 15.2—Heavy and/or Bulky Items for ULD requirements.

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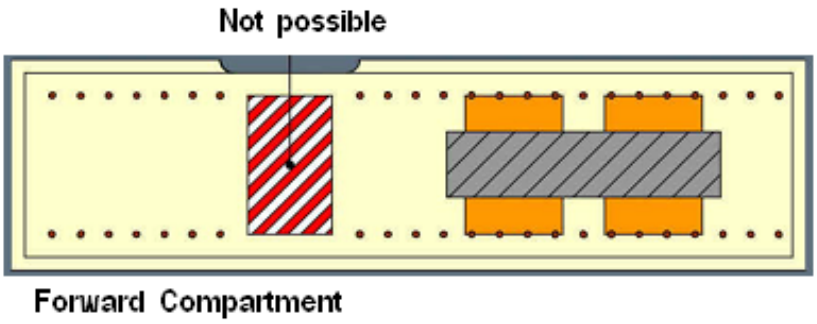
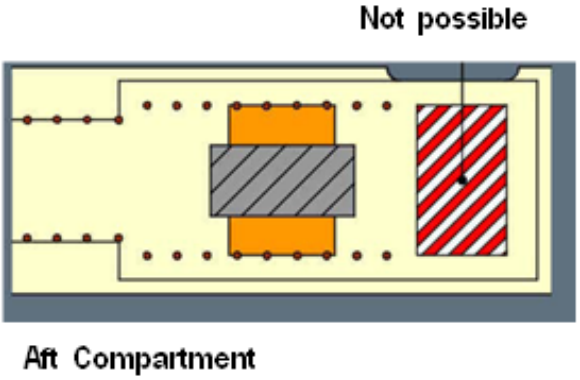
6.7.3 Floating Pallets

An individual load, which due to its geometry or weight cannot be loaded on to the aircraft and positioned on latched pallets may be transported on one or more floating pallets. See following illustration.





The unitization of a floating pallet is not possible in the door area (frame 25–28 for FWD and frame 82–85 for AFT compartment), where there are no fixed YZ-latches.

Each pallet has to be positioned within the area of the cargo loading system with the base plate supported by the roller tracks and the side rows of the YZ-latches.

Maximum center of gravity height for the complete package is 0.91 meter (36.00 inches) from the bottom of the unit load devices. The maximum allowable center of gravity deviation from the pallet geometric center is 10% in the lateral and longitudinal directions. Cargo must be restrained either to the pallet tie-down points on the fixed YZ-latches of the cargo loading system. Restraint of pallet to the aircraft must be achieved via tie-down straps connected to the pallet tie-down points on the base plate and the tie-down points on the fixed YZ-latches of the cargo loading system.

Tie-down arrangement vie tie-down straps and nets or equivalent restraint hardware shall be carried out in good loading practice to avoid damage to the aircraft under flight load conditions, and to provide evenly distributed loads to the pallet rims, cargo loading system and aircraft structure under consideration of strap and net elongation.

6.7.4 Restraint of Load to Pallet

All individual items of load shall be restrained to the pallet tie-down points on the base plate via tie-down straps and nets or equivalent restraint hardware, which is in good condition and provides the specified strength.

Tie-down points on pallets equivalent to configurations:

- NAS 3610-2K3P for 60.4 × 61.5 inches pallets,
- NAS 3610-2L3P-2L4P for 60.4 × 125 inches pallets,

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- NAS 3610-2A1-2A2-2A3-2A4-2A6P for 88 × 125 inches pallets,
- NAS 3610-2M1-2M2-2M3P for 96 × 125 inches pallets.

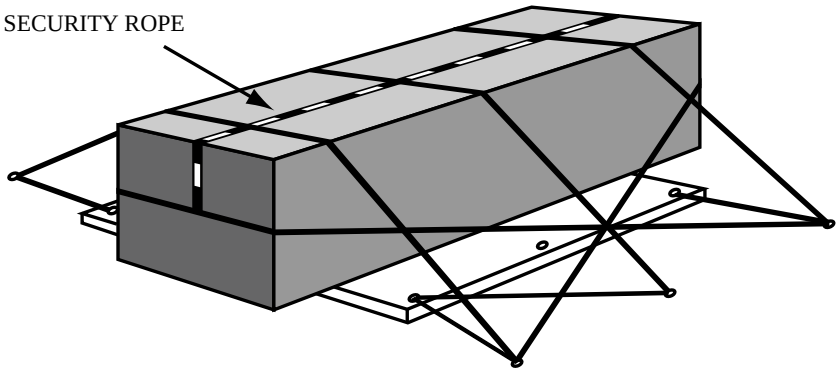
With single stud ultimate load capacities of not less than 906 kg (2000 lb) in any direction, shall be used.

6.7.5 Restraint of Pallet with Load to Aircraft

Pallet or complete cargo/pallet package must be restrained to the tie-down points on the fixed YZ-latches in such a way as to prevent any shifting of the pallet. Restraint hardware shall be in good condition and providing its specified strength. An example of a typical tie-down system is shown in the following illustration.

The tie-down points on the fixed YZ-latches of the cargo loading system ere each designed to an ultimate load of 1,812 kg (4,000 lb) in any direction.

See A380 LCM, Chapter 6.7.9—Tie-down Points Arrangement for tie-down point locations.



6.7.6 Tie-down Requirements

Compartments 1, 2, 3, and 4 are provided with tie-down points on the fixed YZ-latches of the compartment ULD loading system. See A380 LCM, Chapter 6.7.9—Tie-down Points Arrangement for details.

Tie-down requirements for load to pallet and pallet with load to aircraft may be determined by the tie-down methods. See A380 LCM, Chapter 6.7.10—Tie-down Methods for details.

The following table provides the load factors used to determine the applied load:

Compartment Number	Load Factor				
	FWD	Aft	Side		Up
			LH	RH	
1 and 2	3.4	3.7	2.1	2.1	2.9
3 and 4	2.3	1.7	1.7	1.7	2.6
5	2.5	1.8	1.7	1.7	2.6

6.7.7 Tie-down Fitting Load Limits

(Open)

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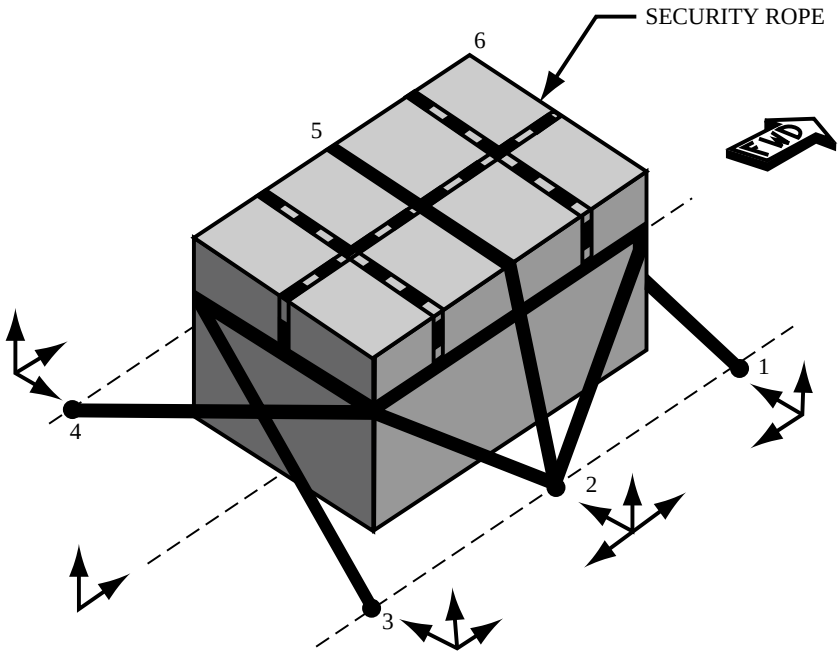
6.7.8 Strap Orientation

The following diagram shows the general arrangement of tie-down of a typical package to the pallet rims or the cargo compartment floor.



Note: Only one end of each strap is shown to simplify the diagram.

6.7.9 Tie-down Points Arrangement

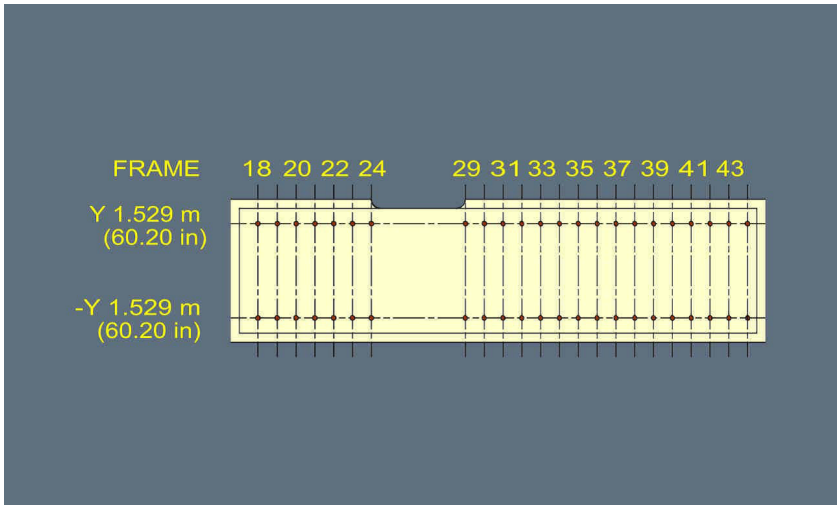
Forward and Aft Compartment

The forward cargo compartment is provided with tie-down points on the fixed YZ-latches of the cargo loading system as illustrated below, these points may be used for the restraint of non unitized load.

Each tie-down point is designed to withstand an ultimate load of 1,812 kg (4,000 lb).

Tie-down requirements for packages may be determined by the tie-down methods. See A380 LCM, Chapter 6.7.10—Tie-down Methods.

Forward Compartment (Compts 1 and 2)



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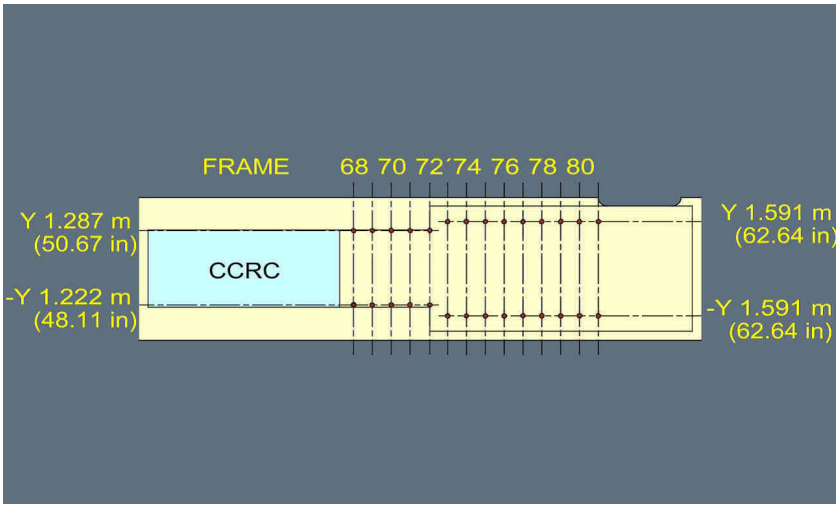
Aft Compartment (Compts 3 and 4)

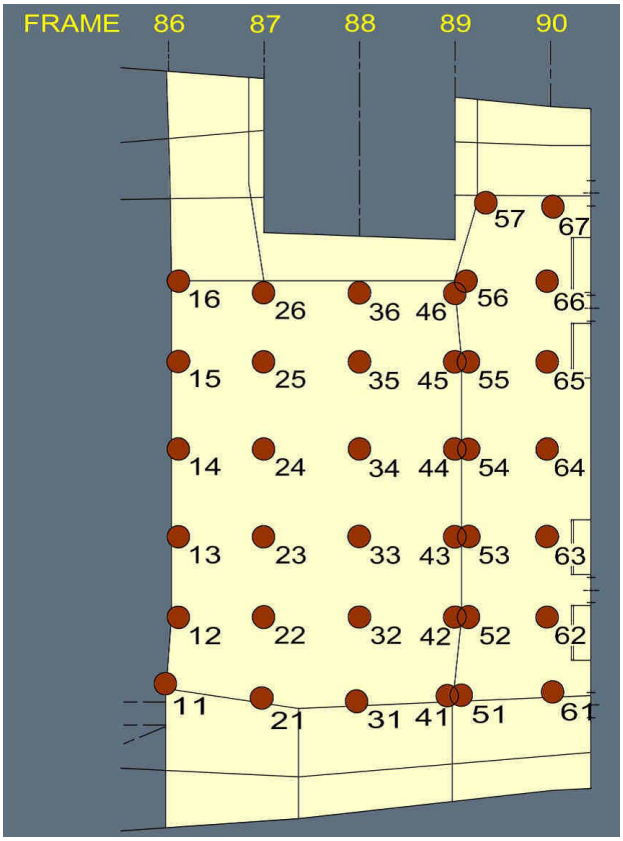


Bulk Compartment

The bulk cargo compartment is provided with tie-down points on the fixed YZ-latches of the cargo loading system as illustrated below, these points may be used for the restraint of non unitized load.

Each tie-down point Is designed to withstand an ultimate load of 906 kg (2,000 lb).

Tie-down requirements for packages may be determined by the tie-down methods. See A380 LCM, Chapter 6.7.10—Tie-down Methods.



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6.7.10 Tie-down Methods

6.7.10.1 Methods of Component Strength Determination

The component strength result from the angle α: Alpha (to the floor) and the angle β: Beta (to the forward direction) the tie-down strap makes with the ground. The component strength can be calculated (see equation method) or graphically (see graphic method) determined when the following values are known:

F The tie-down limit strength.
α Angle to the floor.
β Angle to the forward direction.

The component strength will be added for each direction, to give the total load strength and the ultimate load will be found by multiplying the relevant ultimate load factor with the package weight of the package, which should be tied down.

Graphic Method

Using the graphic method, the following operations have to be done.

1. Draw the vector F with the angle on the right side of the chart.
2. Project the point on the horizontal axis, Fz is determined.
3. Project the point on the vertical axis.
4. Rotate the point to the axis with the angle on the left side of the chart.
5. Project the point on the horizontal axis, Fy is determined.
6. Project the point on the vertical axis.
7. Rotate the point on the horizontal axis, Fx is determined.

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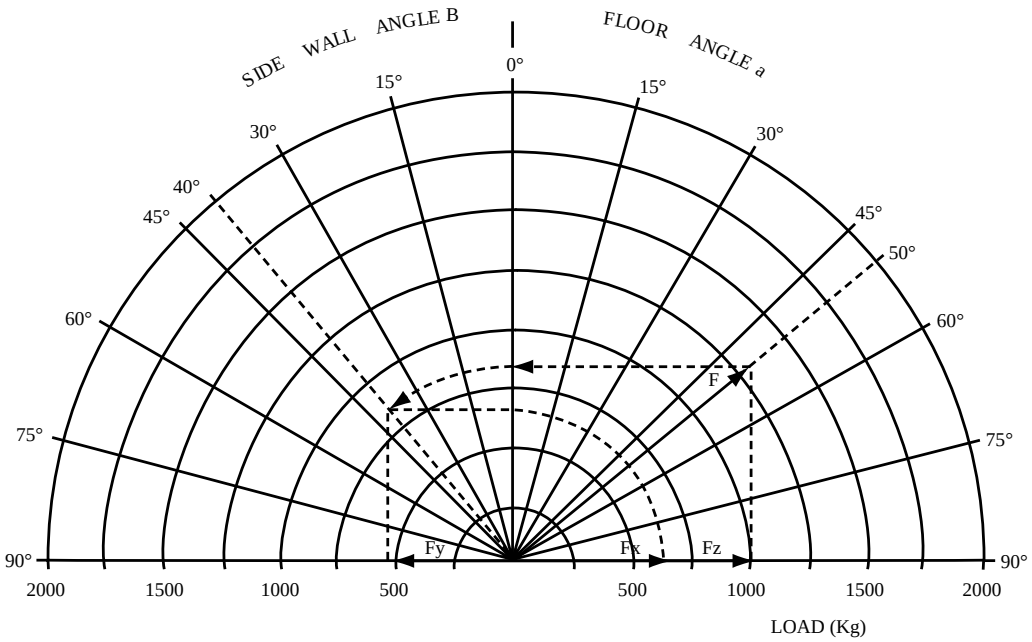

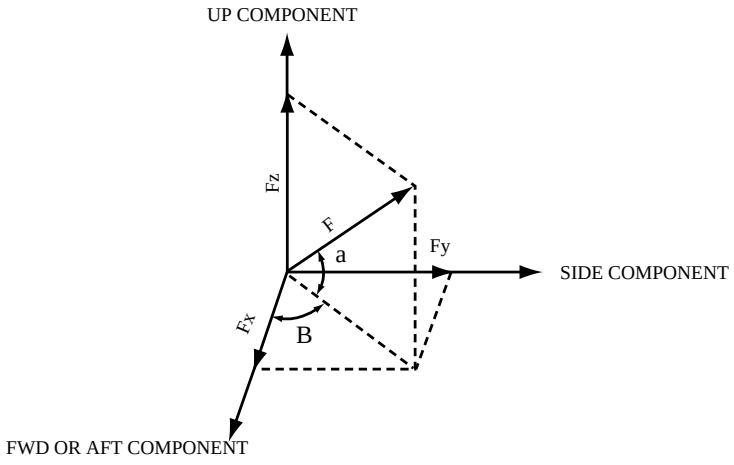

Equation Method

FWD or aft load $Fx = F \times \cos \alpha \times \cos \beta$

Side load $Fy = F \times \cos \alpha \times \sin \beta$

Up load $Fz = F \times \sin \alpha$

Please checks notation in figure above “Tie-down Graphic Method”.

A table is given below permitting a check of maximum load allowed in any direction.

Maximum Load Check Table

Tie-down point	α	β	Up	FWD	Aft	Side	
						LH	RH
1							
2							
3							
4							

Note: *The total maximum load allowed in each direction must be equal to or greater than the ultimate load.*

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Tie-down point	α	β	Up	FWD	Aft	Side	
						LH	RH
5							
6							
7							
8							
Total maximum Load allowed							
Load factor. See A380 LCM, Chapter 6.7.6—Tie-down Requirements.							
Ultimate load (weight × load factor)							
Check (1 > 3)			OK?	OK?	OK?	OK?	OK?

Note: *The total maximum load allowed in each direction must be equal to or greater than the ultimate load.*

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6.8 Pallet and Container Inspection

6.8.1 General

Inspect the condition of containers and pallets before they are accepted for containerization or loading build-up. See A380 LCM, Chapter 6.8.2—Containers for container damage definitions. See A380 LCM, Chapter 6.8.3—Pallets for pallet damage definitions. See A380 LCM, Chapter 6.8.4—Nets for net damage definitions. If damage according to these definitions is discovered, such units shall be taken out of service and immediately sent to BKK for repair with telex advice.

6.8.2 Containers

Base

- Delaminated bottom skin.
- Irregularities i.e. indentations, splits, tears, holes, etc. on bottom, which may cause difficulties in handling.
- Tears and splits of the top skin larger than 5 cm.
- Cracked or distorted edge rails.
- Broken or missing tie down attachment points.

Body

- Tears or punctures in wall panels in excess of 10 cm.
- Cracks or permanent distortion of the structure framework.
- Punctured or distorted roof panel.
- Tears or punctures in the door panels in excess of 10 cm.

See General LCM, Chapter 15.2—Heavy and/or Bulky Items for ULD requirements.

6.8.3 Pallets

- Irregularities i.e. indentations, splits, tears, holes, etc. on bottom, which may cause difficulties in handling.
- Cracked or distorted edge.
- Corrosion on the base or edge.

6.8.4 Nets

- Frayed or damaged of net webbing component, frayed netting will reduce strength by more than 10%.
- Chemical contamination on net webbing component.
- Broken or missing lashing line.
- Damaged or missing pallets tie down fittings.
- Damaged or missing hooks for height adjustment more than 2 points on each side.

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6.9 Container Transportation

Caution: Containers with damaged base plates must not be loaded.

See A380 LCM, Chapter 6.3.2—ULD Capacities for Compartments 1, 2, 3, and 4 for dimensions and edge configurations. Only containers with these dimensions and edge configurations for NAS 3610 types shall be used.

Single loads exceeding 150 kg or loads which could constitute a hazard to the aircraft by their density or shape must be either individually restrained in crushable load filling the container to at least 80% of its maximum volume.

Loads in damaged containers must be individually restrained to the container base plate.

Restraint hardware shall comply with corresponding NAS 3610 configurations providing evenly distributed loads to the container base plate. Maximum floor loads must be adhered to. See A380 LCM, Chapter 6.2—Floor Loading Limits.

The maximum center of gravity deviations must be in accordance with the allowable center of gravity range table. See A380 LCM, Chapter 6.6—ULD Center of Gravity Limits.

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6.10 Pallet Transportation

See A380 LCM, Chapter 6.3.2—ULD Capacities for Compartments 1, 2, 3, and 4 for dimensions and edge configureations. Only pallets with these dimensions and edge configurations for NAS 3610 types shall be used.

Single loads exceeding 150 kg or loads which could constitute a hazard to the aircraft by their density or shape must be restrained on the pallet by an adjustable net. It has to be ensured that the net cannot be damaged or destroyed by the cargo, either by proper methods or by covering the load with crushable load (crushable cargo).

Restraint hardware shall comply with corresponding NAS 3610 configurations providing evenly distributed loads to the pallet rims. Maximum floor loads must be adhered to. See A380 LCM, Chapter 6.2—Floor Loading Limits.

The maximum center of gravity deviations must be in accordance with the allowable center of gravity range table. See A380 LCM, Chapter 6.6—ULD Center of Gravity Limits.

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6.11 ULD Inspection

Before loading into the aircraft, ensure that:

- the containers and pallets do not exceed their maximum capacities;
- the doors are properly closed;
- all door latches are properly locked;
- all pallet and container structures are in order.

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6.12 Ground Stability

(Open)

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7 DOCUMENTATION 1

7.1 Loading Instructions and Report 1

7.1.1 Specimen 2

7.2 Loadsheet 1

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7.4 Balance Table 1

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7.5 Pallet and Container Identification 1

7.6 Container/Pallet Message (CPM) 1

7.7 ULD Control Message (UCM) 1

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7 DOCUMENTATION

7.1 Loading Instructions and Report

See General LCM, Chapter 17.3—Loading Instruction/Report.

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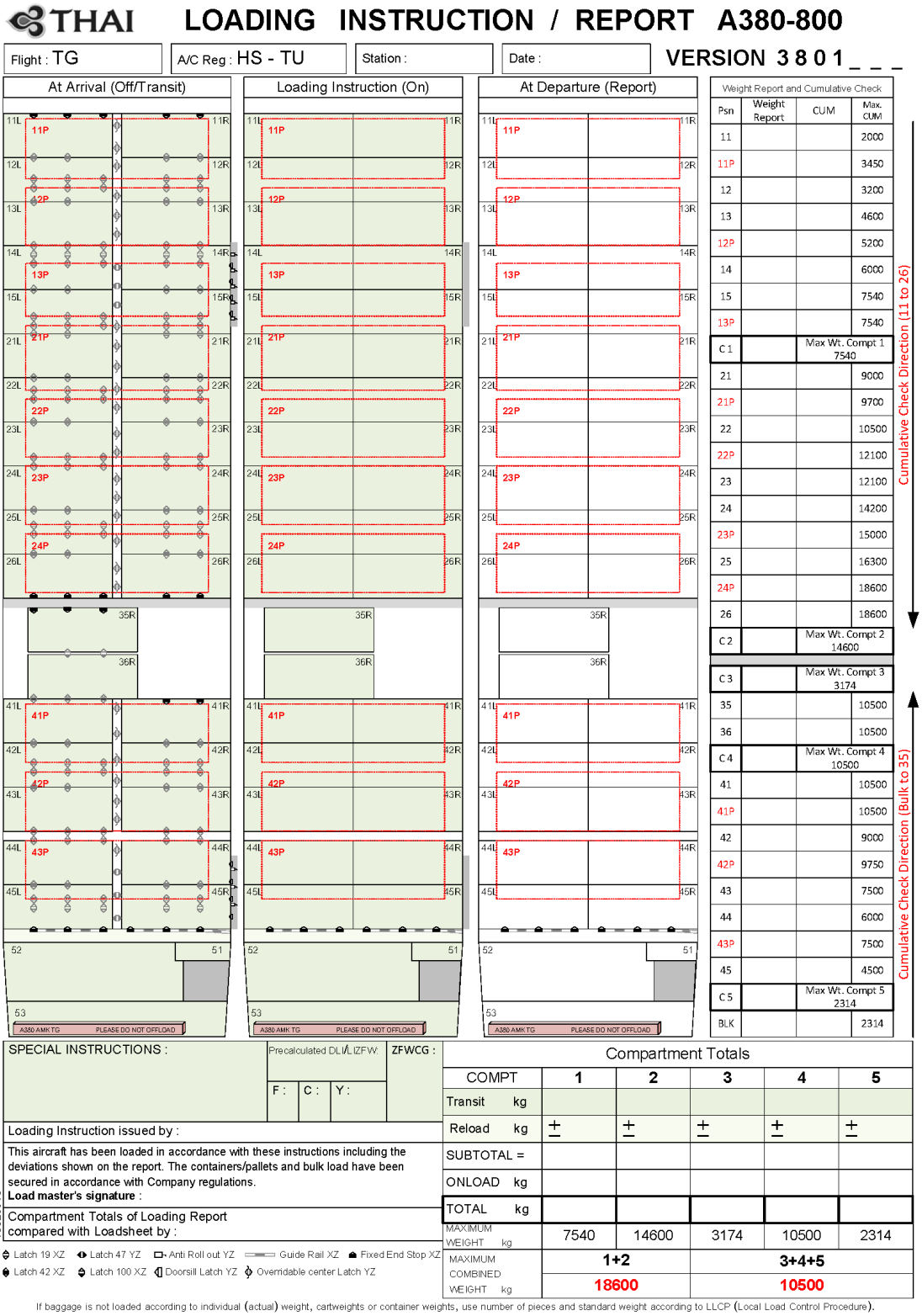
7.1.1 Specimen

A380 Multiple Version (Front)



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A380 Multiple Version (Back)

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7.2 Loadsheet

See General LCM, Chapter 17.4—Loadsheet—Manual for manual information.

See General LCM, Chapter 17.5—Loadsheet—EDP for EDP information.

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7.3 Loadmessage

See General LCM, Chapter 17.10—Load Control Message.

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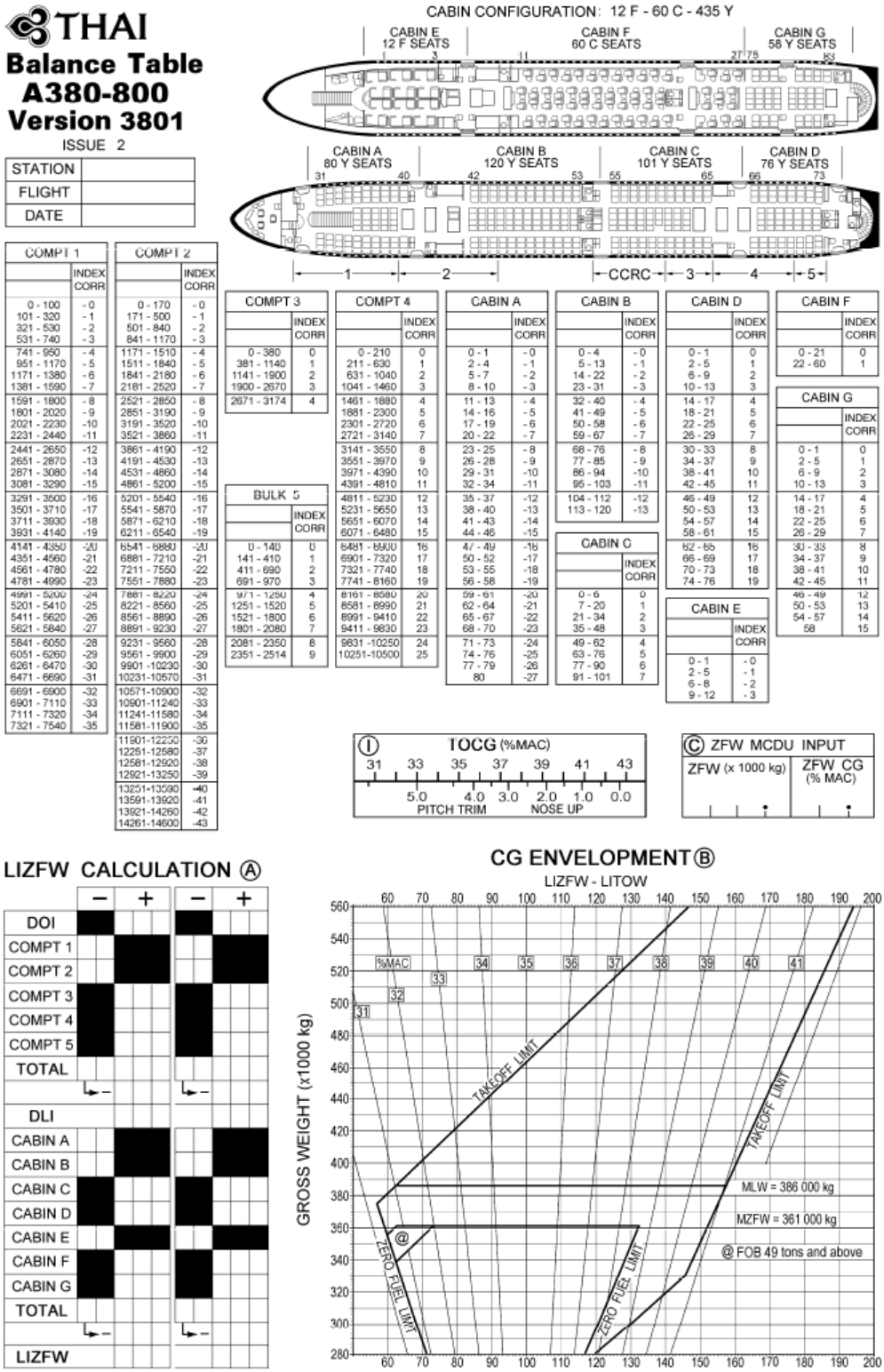
UNCONTROLLED IF DOWNLOADED OR PRINTED

7.4 Balance Table

See General LCM, Chapter 17.6—Balance Table.

7.4.1 Specimen

A380 (Left portion)



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A380 (Right portion)

NON-STANDARD FUEL DISTRIBUTION Ⓖ

FEED 1 or 4	
WEIGHT	INDEX
1 - 560	0
561 - 1 700	1
1 701 - 2 840	2
2 841 - 3 980	3
3 981 - 5 120	4
5 121 - 6 260	5
6 261 - 7 400	6
7 401 - 8 540	7
8 541 - 9 680	8
9 681 - 10 800	9
10 801 - 11 940	10
11 941 - 13 080	11
13 081 - 14 220	12
14 221 - 15 360	13
15 361 - 16 500	14
16 501 - 17 640	15
17 641 - 18 780	16
18 781 - 19 920	17
19 921 - 21 060	18
21 061 - 22 200	19
22 201 - FULL	20

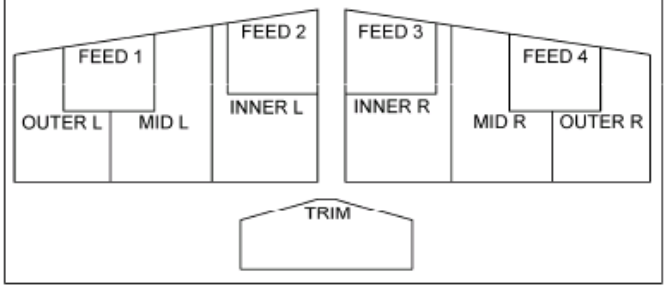
FEED 2 or 3	
WEIGHT	INDEX
1 - 400	- 0
401 - 1 200	- 1
1 201 - 2 020	- 2
2 021 - 2 820	- 3
2 821 - 3 620	- 4
3 621 - 4 420	- 5
4 421 - 5 240	- 6
5 241 - 6 040	- 7
6 041 - 6 840	- 8
6 841 - 7 660	- 9
7 661 - 8 460	-10
8 461 - 9 260	-11
9 261 - 10 060	-12
10 061 - 10 880	-13
10 881 - 11 680	-14
11 681 - 12 480	-15
12 481 - 13 280	-16
13 281 - 14 100	-17
14 101 - 14 900	-18
14 901 - 15 700	-19
15 701 - 16 500	-20
16 501 - 17 320	-21
17 321 - 18 120	-22
18 121 - 18 920	-23
18 921 - 19 740	-24
19 741 - 20 540	-25
20 541 - 21 340	-26
21 341 - 22 140	-27
22 141 - 22 960	-28
22 961 - FULL	-29

INNER L or R	
WEIGHT	INDEX
1 - 860	- 0
861 - 2 580	- 1
2 581 - 4 300	- 2
4 301 - 6 020	- 3
6 021 - 7 740	- 4
7 741 - 9 460	- 5
9 461 - 11 180	- 6
11 181 - 12 900	- 7
12 901 - 14 620	- 8
14 621 - 16 340	- 9
16 341 - 18 060	-10
18 061 - 19 780	-11
19 781 - 21 500	-12
21 501 - 23 220	-13
23 221 - 24 940	-14
24 941 - 26 660	-15
26 661 - 28 380	-16
28 381 - 30 100	-17
30 101 - 31 820	-18
31 821 - 33 540	-19
33 541 - 35 260	-20
35 261 - FULL	-21

MID L or R	
WEIGHT	INDEX
1 - 10 000	- 0
10 001 - FULL	- 1

OUTER L or R	
WEIGHT	INDEX
1 - 260	0
261 - 780	1
781 - 1 280	2
1 281 - 1 800	3
1 801 - 2 300	4
2 301 - 2 820	5
2 821 - 3 340	6
3 341 - 3 840	7
3 841 - 4 360	8
4 361 - 4 880	9
4 881 - 5 380	10
5 381 - 5 900	11
5 901 - 6 420	12
6 421 - 6 920	13
6 921 - 7 440	14
7 441 - 7 960	15
7 961 - FULL	16

- *Fuel Index for Individual Tank*
- *For Trim Tank, use standard table Ⓕ*
- *Do not use Ⓓ Ⓔ and wing tanks Ⓕ for non-standrad calculation*



Ⓕ STANDARD DISTRIBUTION

⟸ OR ⟹

WING TANKS	
WEIGHT	INDEX
5 000 - 10 000	- 3
10 001 - 15 000	- 4
15 001 - 20 000	- 6
20 001 - 25 000	2
25 001 - 35 000	8
35 001 - 40 000	6
40 001 - 45 000	3
45 001 - 50 000	- 0
50 001 - 55 000	- 1
55 001 - 60 000	- 2
60 001 - 65 000	- 3
65 001 - 70 000	- 4
70 001 - 75 000	- 5
75 001 - 80 000	- 6
80 001 - 85 000	7
85 001 - 90 000	- 8
90 001 - 95 000	- 9
95 001 - 100 000	-10
100 001 - 110 000	-11
110 001 - 160 000	-12
160 001 - 162 000	-13
162 001 - 164 000	-14
164 001 - 166 000	-15
166 001 - 168 000	-16
168 001 - 169 500	-17
169 501 - 171 500	-18
171 501 - 173 500	-19
173 501 - 175 500	-20
175 501 - 177 500	-21
177 501 - 179 000	-22
179 001 - 181 000	-23
181 001 - 183 000	-24
183 001 - 184 500	-25
184 501 - 186 500	-26
186 500 - 188 000	-27
188 001 - 190 000	-28
190 001 - 191 500	-29
191 501 - 193 500	-30
193 501 - 195 000	-31
195 001 - 197 000	-32
197 001 - 198 500	-33
198 501 - 200 500	-34
200 501 - 202 000	-35
202 001 - 204 000	-36
204 001 - 205 500	-37
205 501 - 207 500	-38
207 501 - 201 000	-39
201 001 - 214 000	-41
214 001 - 216 500	-43
216 501 - 218 000	-41
218 001 - 219 000	-39
219 001 - 220 000	-37
220 001 - 221 000	-35
221 001 - 222 000	-33
222 001 - 223 000	-31
223 001 - MAX	-30

TRIM TANK	
WEIGHT	INDEX
1 - 400	1
401 - 750	3
751 - 1 100	5
1 151 - 1 500	7
1 501 - 1 850	9
1 851 - 2 200	11
2 201 - 2 550	13
2 551 - 2 900	15
2 901 - 3 300	17
3 301 - 3 650	19
3 651 - 4 000	21
4 001 - 4 400	23
4 401 - 4 750	25
4 751 - 5 100	27
5 101 - 5 450	29
5 451 - 5 800	31
5 801 - 6 150	33
6 151 - 6 500	35
6 501 - 6 850	37
6 851 - 7 200	39
7 201 - 7 550	41
7 551 - 7 900	43
7 901 - 8 200	45
8 201 - 8 550	47
8 551 - 8 900	49
8 901 - 9 200	51
9 201 - 9 550	53
9 551 - 9 900	55
9 901 - 10 250	57
10 251 - 10 600	59
10 601 - 10 900	61
10 901 - 11 250	63
11 251 - 11 600	65
11 601 - 11 950	67
11 951 - 12 300	69
12 301 - 12 600	71
12 601 - 12 950	73
12 951 - 13 300	75
13 301 - 13 650	77
13 651 - 14 000	79
14 001 - 14 300	81
14 301 - 14 650	83
14 651 - 15 000	85
15 001 - 15 350	87
15 351 - 15 700	89
15 701 - 16 000	91
16 001 - 16 350	93
16 351 - 16 700	95
16 701 - 17 050	97
17 051 - 17 400	99
17 401 - 17 700	101
17 701 - 18 050	103
18 051 - 18 400	105
18 401 - 18 750	107
18 751 - 19 100	109
19 001 - MAX	111

39.5% TARGETING TRIM ADJUSTMENT Ⓓ

FOB	ZFW CG (%MAC) 31%	32%	33%	34%	35%	≥ 36%
	TRIM TANK FUEL					
47 000 - 60 000	* (13000)	* (12200)	* (10800)	* (9400)	* (7900)	* (6400)
60 001 - 65 000	13 800	12 400	11 100	9 600	8 200	6 800
65 001 - 70 000	14 000	12 600	11 400	9 800	8 400	7 000
70 001 - 75 000	14 300	12 900	11 600	10 100	8 700	7 300
75 001 - 80 000	14 500	13 100	11 900	10 300	8 900	7 500
80 001 - 85 000	14 800	13 400	12 100	10 600	9 200	7 800
85 001 - 90 000	15 000	13 600	12 400	10 800	9 400	8 000
90 001 - 95 000	15 300	13 900	12 600	11 100	9 700	8 300
95 001 - 100 000	15 600	14 100	12 900	11 300	9 900	8 500
100 001 - 105 000	15 800	14 400	13 100	11 600	10 200	8 800
105 001 - 110 000	16 100	14 700	13 400	11 900	10 400	9 000
110 001 - 115 000	16 300	14 900	13 600	12 100	10 700	9 300
115 001 - 120 000	16 500	15 200	13 800	12 300	10 900	9 400
120 001 - 125 000	16 700	15 300	14 000	12 500	11 000	9 600
125 001 - 130 000	16 900	15 500	14 100	12 600	11 200	9 800
130 001 - 140 000	17 200	15 700	14 300	12 800	11 400	10 000
140 001 - 150 000	17 400	16 000	14 500	13 000	11 600	10 100
150 001 - 160 000	17 600	16 100	14 700	13 200	11 800	10 300
160 001 - 170 000	17 700	16 300	14 900	13 400	11 900	10 500
170 001 - 175 000	17 900	16 400	15 200	13 600	12 400	11 000
175 001 - 180 000	18 100	16 800	15 700	14 100	12 900	11 500
180 001 - 185 000	18 600	17 300	16 300	14 700	13 400	12 000
185 001 - 190 000	18 900	17 800	16 800	15 200	13 900	12 500
190 001 - 195 000	MAX	18 400	17 300	15 700	14 400	13 100
195 001 - 200 000		18 900	17 800	16 200	14 900	13 600
200 001 - 205 000		MAX	18 300	16 700	15 400	14 100
205 000 - 210 000			18 800	17 200	15 900	14 600
210 001 - 215 000			MAX	17 700	16 400	15 100
215 001 - 220 000				18 200	16 900	15 600
220 001 - 225 000				18 800	17 300	16 000
225 001 - 230 000				MAX	17 800	16 500
230 001 - 235 000					18 300	15 500
235 001 - 240 000					16 600	14 500
240 001 - 245 000					16 000	14 500
245 001 - MAX	↓	↓	↓	↓	** (16100)	** (14700)

MAX WING TANKS →
- 0.78 = 233 881 kg
- 0.79 = 236 880 kg
- 0.80 = 239 878 kg
- 0.81 = 242 877 kg
- 0.82 = 245 875 kg

* TRIM TANK = FOB - 47000, but not more than (xxxx).
** TRIM TANK = FOB - MAX WING FUEL but not less than (xxxx).

TOW-LITOW CALCULATION Ⓗ

TANK	WEIGHT (kg)	−	+
FEED 1		■	
FEED 2			■
FEED 3			■
FEED 4		■	
OUTER L		■	
MID L			■
INNER L			■
INNER R			■
MID R			■
OUTER R		■	
		↳ -	
WING TANK		+/-	
TRIM TANK			
TAXI FUEL	-		■
T/O FUEL		+/-	
ZFW LIZFW		+	
TOW LITOW			

STANDARD — NON STANDARD FUEL DISTRIBUTION

FUEL DISTRIBUTION Ⓔ Ⓓ

FOB	
TRIM TANK	−
WING TANKS	=

MAX TRIM TANK
- 0.78 = 18 480 kg
- 0.79 = 18 720 kg
- 0.80 = 18 940 kg
- 0.81 = 19 180 kg
- 0.82 = 19 430 kg

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7.5 Pallet and Container Identification

See General LCM, Chapter 14.1.2—Loading of ULDs.

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7.6 Container/Pallet Message (CPM)

See General LCM, Chapter 17.10.4—Container/Pallet Distribution Message (CPM).

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7.7 ULD Control Message (UCM)

See General LCM, Chapter 17.11—ULD CONTROL MESSAGE (UCM).

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8 AIRCRAFT WEIGHT AND INDEX 1

8.1 Instructions 1

8.2 Weight and Index 1

8.2.1 Basic Weight and Index 1

8.2.2 Crew Weight and Index 1

8.2.3 Catering Weight and Index 2

8.2.4 Last Minute Corrections 2

8.2.5 Gross Weight Limitations 2

8.2.6 Max Fuel Capacity 2

8.2.7 Balance Table to be Used 3

8.2.8 Trapped Fuel Index Correction 3

8.3 Weight Group 1

8.3.1 Weight Group Description 1

8.3.2 Weight Group Selection 1

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8 AIRCRAFT WEIGHT AND INDEX

8.1 Instructions

General

To determine Dry Operating Weight (DOW) and Dry Operating Index (DOI), be sure to understand the concerned definitions properly.

DOW/DOI are built up in the following steps:

- obtain Basic Weight and Basic Index (BW/BI) of the specific aircraft type;
- obtain the information of crew of the specific flight, determine crew adjustment according to crew weight and index table;
- obtain weight group from weight group selection table, determine catering adjustment according to catering weight and index table;
- DOW/DOI are achieved. Round DOI to the nearest integer (round off the decimal portion that is less than 0.5).

Note: It is recommended that, working staff should also recheck the latest updates of the aircraft Basic Weight and Basic Index (BW/BI) summaries displayed in CIS and Amadeus Altea AIS pages.

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8.2 Weight and Index

8.2.1 Basic Weight and Index

Aircraft Registration	Version Number	Basic Weight (kg)	Basic Index
TUA	3801	286200	106.5
TUB		286200	106.5
TUC		284800	107.1
TUD		286620	106.8
TUE		285600	106.8
TUF		285600	106.8
Refer to CIS page and Amadeus Altea AIS for the latest update.			

8.2.2 Crew Weight and Index

Number of Cabin Crew (Seating)	Number of Flight Deck Crew					
	2		3		4	
	Weight	Index	Weight	Index	Weight	Index
16 (2/2/2) (2/2/2/2/2)	1350	–1.0	1425	–1.4	1500	–1.9
17 (2/2/2) (3/2/2/2/2)	1425	–1.4	1500	–1.8	1575	–2.3
18 (2/2/2) (3/3/2/2/2)	1500	–1.7	1575	–2.1	1650	–2.6
19 (2/2/2) (3/3/3/2/2)	1575	–1.7	1650	–2.1	1725	–2.6
20 (2/2/2) (3/3/3/2/3)	1650	–1.4	1725	–1.8	1800	–2.3
21 (3/2/2) (3/3/3/2/3)	1725	–1.6	1800	–2.0	1875	–2.5
22 (3/2/2) (3/4/3/2/3)	1800	–1.8	1875	–2.2	1950	–2.7
23 (3/2/2) (3/4/4/2/3)	1875	–1.8	1950	–2.2	2025	–2.7
24 (4/2/2) (3/4/4/2/3)	1950	–1.7	2025	–2.1	2100	–2.6
Cabin crew seating is sequenced from door U1, U2, U3, M1, M2, M3, M4 and M5 respectively.						

Additional Crew Weight and Index

Increase Weight by 75 kg and adjust Index for each additional crew or extra crew (XCR) seating in crew rest or passenger zone as follows:

No. of Crew	XCR in Passenger Class						
	F (Zone E)	C (Zone F)	Y				
			Zone A	Zone B	Zone C	Zone D	Zone E
1	–0.3	0.0	–0.3	–0.1	0.1	0.3	0.3
2	–0.5	0.0	–0.7	–0.2	0.1	0.5	0.5
3	–0.8	0.1	–1.0	–0.3	0.2	0.8	0.8
4	–1.1	0.1	–1.3	–0.4	0.3	1.0	1.0
5	–1.3	0.1	–1.7	–0.6	0.4	1.3	1.3
6	–1.6	0.1	–2.0	–0.7	0.4	1.5	1.5
7	–1.9	0.2	–2.3	–0.8	0.5	1.8	1.8
8	–2.1	0.2	–2.6	–0.9	0.6	2.0	2.0
9	–2.4	0.2	–3.0	–1.0	0.6	2.3	2.3
10	–2.7	0.2	–3.3	–1.1	0.7	2.5	2.5

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8.2.3 Catering Weight and Index

Increase Basic Weight and adjust Basic Index by the amount of catering uplifted according to weight groups as follows:

Weight Group	Pantry Code	Weight (kg)	Index
00	O	N/a	N/a
11	A	N/a	N/a
21	C	N/a	N/a
22	D	N/a	N/a
31	G	5400	0.0
32	H	6550	–0.7
N/a = Not Available			

8.2.4 Last Minute Corrections

For each additional LMC or absent crew, adjust Dry Operating Weight by 75 kg and adjust Dry Operating Index according to the following table:

LMC Index Adjust for each Crew Adjustment

Position	Additional	Absent	Index Change
Flight Deck	–	+	0.4
Door U1	–	+	0.2
Door U2	+	–	0.1
Door U3	+	–	0.2
Door M1	–	+	0.4
Door M2	–	+	0.3
Door M3	–	+	0.0
Door M4	+	–	0.2
Door M5	+	–	0.3

8.2.5 Gross Weight Limitations

Use following table to check aircraft weight limitations:

Measurement	Weight (kg)
Maximum Taxi Weight	562000
Maximum Takeoff Weight (MTOW)[a)]	560000
Maximum Landing Weight (MLDW)[a)]	386000
Maximum Zero Fuel Weight (MZFW)	361000

a) These weights are maximum structural limitation weights. The actual permissible takeoff/landing weight may be less due to fuel density, runway and/or operational restrictions.

8.2.6 Max Fuel Capacity

Maximum weight capacity depends on fuel density as follows:

Fuel Density	Max Fuel Capacity (kg)
0.770	249130
0.780	252365
0.790	255601
0.795	257219
0.800	258836
Standard taxi fuel is 1000 kg.	

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Fuel Density	Max Fuel Capacity (kg)
0.803	259807
0.810	262072
Standard taxi fuel is 1000 kg.	

8.2.7 Balance Table to be Used

Use the current Balance Table Issue numbers as follows:

Cabin Version	Balance Table		
	THAI Number	SAP Number	Issue Number
3801	N/A	N/A	2

8.2.8 Trapped Fuel Index Correction

See General LCM, Chapter 17.6.2.2.2—Version 3801 Page 2, table G (wing tank) and table F (trim tank) for trapped fuel index correction.

Note: The amount of trapped fuel shall be considered as unusable fuel and included in DOW and DOI.

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8.3 Weight Group

8.3.1 Weight Group Description

Weight group is classified according to the amount of catering uplifted. The weight group number consists of two digits:

- the first digit represents the number of passenger classes,
- the last digit represents the number of meals uplifted.

Weight Group Classification

Weight Group	Pantry Code	Description
00	O	Non-pantry
10	S	1-class service, refreshment
11	A	1-class service, 1 meal or 1½ meals
12	B	1-class service, 2 meals or 2½ meals
20	S	2-class service, refreshment
2A	-	TBD
2B	-	2-class service, 2 meals (Indochina)
21	C	2-class service, 1 meal or 1½ meals
22	D	2-class service, 2 meals or 2½ meals
31	G	3-class service, 1 meal or 1½ meals
32	H	3-class service, 2 meals or 2½ meals

Pantry code is not applicable to Altea FM.

The pantry code represents the weight group selection used in EDP loadsheet.

Snack is not considered as an individual meal.

TBD: To be defined

8.3.2 Weight Group Selection

The catering uplifted does not correspond to the number of meals served in flight. The aircraft often carries additional meals for the connecting or returning flight if there is available space in the galley.

Weight group selection is provided according to the amount of pantry uplifted. If the flight number is not available in the table, please select the weight group by referring to the weight group description.

In case of doubt or if information about catering uplifted is not available, for safety reasons it is recommended to use a two meal weight group.

8.3.2.1 3-Class Configuration Aircraft, 3-Class Operation (F, C, Y), 3-Class Operation (C, U, Y)

Europe

Station	Flight (Day)	Weight Group
BKK	910	32
	916	32
	920	32
	922	32
	924	32
	930	32
	940	32
	944	32
	970	32
CDG	931	32
FCO	945	32

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Station	Flight (Day)	Weight Group
FRA	921	32
	923	32
LHR	911	32
	917	32
MUC	925	32
MXP	941	32
ZRH	971	32

Australia and New Zealand

Station	Flight (Day)	Weight Group
BKK	471	32
	475	32
SYD	472	32
	476	32

Regional

Station	Flight (Day)	Weight Group
BKK	600	31
	606	31
	614	31
	622	31
	642	31
	660	31
	676	31
HKG	601	31
	607	31
HND	661	31
KIX	623	31
NRT	643	31
	677	31
PEK	615	31

8.3.2.2 2-Class Configuration Aircraft, 2-Class Operation (C, Y)

North America

Station	Flight (Day)	Weight Group
BKK	692	21
ICN	692	22
	693	21
LAX	693	22

Europe

Station	Flight (Day)	Weight Group
ARN	961	22
	963	22
BKK	926	22
	934	22

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Station	Flight (Day)	Weight Group
	948	22
	950	22
	952	22
	954	22
	960	22
	962	22
	974	22
BRU	935	22
CPH	951	22
	953	22
DME	975	22
FRA	927	22
HKT	926	22
	927	22
MAD	949	22
OSL	955	22

Africa

Station	Flight (Day)	Weight Group
BKK	991	22
JNB	992	22

Australia and New Zealand

Station	Flight (Day)	Weight Group
ALK	492	22
BKK	461	22
	465	22
	473	22
	483	21
	491	22
BNE	474	22
MEL	462	22
	466	22
PER	484	21

Japan and Manila

Station	Flight (Day)	Weight Group
BKK	620	21
	624	21
	640	21
	644	21
	646	21
	648	21
	670	21
	672	21
	676	21

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Station	Flight (Day)	Weight Group
	682	21
FUK	649	21
HND	683	21
CTS	671	21
KIX	673	21
MNL	621	21
	625	21
NGO	645	21
	647	21
NRT	641	21

Hong Kong, Chinese Taipei, and Republic of Korea

Station	Flight (Day)	Weight Group
BKK	602	21
	628	21
	634	21
	636	21
	638	21
	650	21
	656	21
	658	21
HKG	603	21
	609	21
	628	21
	629	21
	639	21
HKT	608	21
	654	21
ICN	629	21
	635	21
	655	21
	657	21
	659	21
KIX	673	21
PUS	651	21
TPE	634	21
	635	21
	637	21

People's Republic of China

Station	Flight (Day)	Weight Group
BKK	610	22
	612	22
	616	22
	618	22

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Station	Flight (Day)	Weight Group
	662	21
	664	21
	668	22
	674	21
	678	22
CAN	669	22
	679	22
CTU	619	22
KMG	613	22
PEK	675	21
PVG	663	21
	665	21
XMN	611	22
CSX	617	22

Phnom Penh, LAO People's Democratic Republic, and Socialist Republic of Vietnam

Station	Flight (Day)	Weight Group
BKK	550	2B
	556	2B
	560	2B
	564	2B
	570	2B
	574	2B
	576	2B
	580	2B
	584	2B
HAN	561	2B
	565	2B
PNH	581	2B
	585	2B
SGN	551	2B
	557	2B
VTE	571	2B
	575	2B
LPQ	577	2B

Singapore and Indonesia

Station	Flight (Day)	Weight Group
BKK	401	21
	403	22
	407	22
	409	22
	413	22
	431	22
	433	22

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Station	Flight (Day)	Weight Group
	435	22
CGK	434	22
	436	22
DPS	432	22
SIN	402	21
	404	22
	408	22
	410	22
	414	22

Malaysia

Station	Flight (Day)	Weight Group
BKK	415	22
	417	22
	419	21
	425	21
KUL	416	22
	418	22
	420	21
PEN	426	21

India

Station	Flight (Day)	Weight Group
BKK	313	22
	315	22
	317	22
	323	22
	325	22
	327	22
	329	22
	337	22
BLR	326	22
BOM	318	22
CCU	314	22
DEL	316	22
	324	22
GAY	327	22
HYD	330	22
MAA	338	22
VNS	328	22

Myanmar, Dhaka, Kathmandu, and Colombo

Station	Flight (Day)	Weight Group
BKK	301	22
	303	22
	305	22

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Station	Flight (Day)	Weight Group
	307	22
	309	22
	319	22
	321	22
MDL	310	22
DAC	322	22
KTM	320	22
RGN	302	22
	304	22
	306	22
CMB	308	22

Pakistan, Muscat, and Dubai

Station	Flight (Day)	Weight Group
BKK	341	22
	345	22
	349	22
	507	21
	517	21
DXB	518	21
KHI	342	22
	507	21
	508	21
ISB	350	22
LHE	346	22
MCT	508	21

8.3.2.3 Domestic

Use weight group 21 for domestic flights.

8.3.2.4 Charter Flight

See A380 LCM, Chapter 8.3.1—Weight Group Description.

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