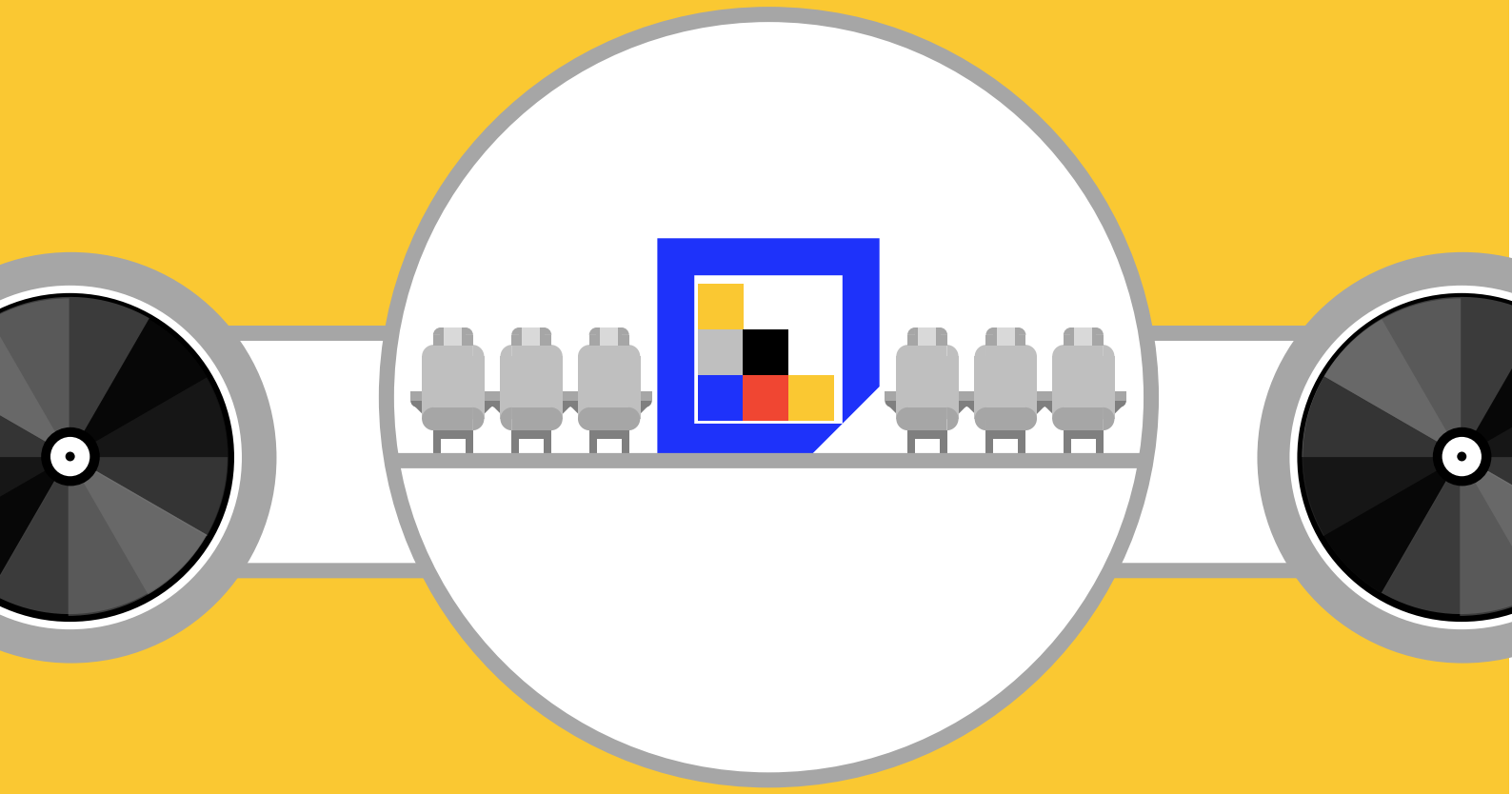
Guidance for the transport of cargo and mail on aircraft configured for the carriage of passengers

Ed 2 17th April 2020



DISCLAIMER

The information contained in this publication is subject to constant review in the light of changing government requirements and regulations. No subscriber or other reader should act on the basis of any such information without referring to applicable laws and regulations and without taking appropriate professional advice.

Although every effort has been made to ensure accuracy, the International Air Transport Association shall not be held responsible for any loss or damage caused by errors, omissions, misprints or misinterpretation of the contents hereof. Furthermore, the International Air Transport Association expressly disclaims any and all liability to any person or entity, whether a purchaser of this publication or not, in respect of anything done or omitted, and the consequences of anything done or omitted, by any such person or entity in reliance on the contents of this publication.

Contents

1. Introduction and scope

Following the disruption caused by COVID 19, various operators have approached IATA seeking guidance on the use of aircraft configured for the carriage of passengers to safely transport cargo and/or mail, including loading cargo in the passenger cabin.

Passenger aircraft are not certified to carry cargo on passenger seats or cargo unit load devices (pallets or containers) in the passenger cabin secured on the seat tracks. However, some operators are evaluating the reconfiguration of passenger aircraft by loading cargo on the passenger seats or by removal of the passenger seats to increase the volume available for the carriage of cargo. Any reconfiguration of an aircraft in this manner requires full evaluation of cargo restraints connected directly to the seat tracks to ensure structural loads are within design limits and the appropriate restraint system is applied. Reconfiguration of the aircraft also requires a formal authorisation from the national aviation authority of the State of the operator.

Before considering such operation, a comprehensive safety risk assessment shall be performed involving all the relevant operational departments (i.e. ground, cargo, cabin, flight, engineering).

Applicable cargo configurations

Cargo Type	Passenger cabin					Cargo compartment
	Overhead bin / coat cupboard	Under seat	On the seats		On the cabin floor with nets and/or straps (seats removed)	
			In cargo seat bags	With nets and/or straps		
Humanitarian supplies / Medicines	✓	✓	A	A	A + C	✓
General cargo and/or mail	✓	✓	A	A	A + C	✓
Dangerous goods	✗	✗	✗	✗	✗	B
Cargo Aircraft Only dangerous goods	✗	✗	✗	✗	✗	D

Legend

A: require CAA approval

B: operators holding a CAA approval to carry dangerous goods as cargo

C: require acceptance by aircraft manufacturer

D: operators holding a CAA approval to carry dangerous goods. Cargo Aircraft Only dangerous goods must be loaded into a Class C cargo compartment (not acceptable where passengers are on the aircraft)

This guidance will be updated as required as further information becomes available.

2. Objective

The purpose of this guidance is to provide the means for operators to ensure an acceptable level of safety is maintained at all times for the utilisation of aircraft configured for the carriage of passengers for the transport of cargo and/or mail, including loading in the passenger cabin. This document provides information on the considerations for a safety risk assessment and provides recommendations on the carriage of dangerous goods, including dangerous goods restricted to a cargo aircraft.

3. General recommendations and safety risk assessment

3.1 General recommendations

It is of the utmost importance that operators are familiar with cargo transport before even considering such an operation.

Typically, operators shall:

a. Perform a detailed safety risk assessment to identify hazards, evaluate and mitigate correlated risks. Some examples of possible risks include, but are not limited to, the following:

   i. Operator general knowledge of cargo transport;

   ii. If applicable, procedures to address the acceptance, handling and loading of Cargo Aircraft Only (CAO) dangerous goods;

   iii. The detection of any smoke or fire and firefighting capabilities of personnel in the cabin;

   iv. Qualification and abilities of crew member or other personnel to control and put out fire in cabin;

   v. The provision, location and storage of sufficient firefighting equipment such as portable breathing equipment, fire extinguishers etc. for use by personnel carried in the cabin;

   vi. EDTO operations;

   vii. Operational approval for Cargo Only flight, as applicable;

   viii. The potential for misdeclared / undeclared or hidden dangerous goods within cargo;

   ix. Unrestricted access to all cargo loaded into the cabin;

   x. Cargo leakage / spillage;

   xi. Unsecured / incorrectly loaded cargo;

   xii. Incorrect loading and unloading sequence;

   xiii. Operational weight and balance limits exceedance;

   xiv. Qualification of ground staff to prepare and load cargo in accordance with applicable regulations and instructions;

xv. Occupational Health and Safety (OHS) risks associated with the new procedures.

b. Use crew members to survey and access all areas of the cabin during all phases of flight. This is to address any possible risk of fire, leakage or other unforeseen circumstances that might occur in the cabin during flight.

c. Use load master or other appropriately trained personnel to coordinate all loading/unloading operations.

d. Before the carriage of Cargo Aircraft Only (CAO) dangerous goods:

1. Review the approval issued by the national aviation authority (NAA) of the State of the operator to validate that there are no restrictions or limitations that prevent the carriage of CAO dangerous goods;

2. Verify the classification of the underfloor cargo compartments for the aircraft type. CAO dangerous goods are only permitted in underfloor cargo compartments that are classified as Class C, see definitions of cargo compartment classification in Appendix A.

3.2 Safety Risk Assessment

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
Cargo Operations													
1	Aircraft denied landing due to concern of pax o/b	Forced to divert	No fuel, hull loss				Intolerable	Notification on Flight Plan that aircraft is carrying cargo only, no pax on board					Tolerable (with mitigation)
Cargo Compartment													
2	Inappropriate handling and carriage of dangerous goods	Uncontained fire, corrosive material leaks	Hull loss	Approval issued by NAA for the carriage of dangerous goods as cargo Documented SOPs Approved training program Follow requirements in IATA DGR (acceptance checks)			Tolerable (with mitigation)						

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
3	Undeclared / misdeclared or hidden DG (including high energy items)	Fire in cargo hold	Hull loss	Documented SOPs Approved training program Follow requirements in IATA DGR at cargo acceptance to check for signs of undeclared DG Shipments carried in class "C" compartment with appropriate fire detection and suppression systems			Tolerable (with mitigation)						
4	Movement of unsecured / misloaded cargo	Weight shift	Hull loss	Cargo loading / fastening recommendations from Manufacturers Weight and Balance and loading SOPs Training of loading personnel			Tolerable (with mitigation)						
5	Carriage of CAO dangerous goods	Improper loading Fire, spill leakage	Hull loss	Approval issued by NAA for the carriage of dangerous goods as cargo Documented SOPs Approved training program Follow requirements in IATA DGR (acceptance checks) Specific ULD build-up and loading requirements.			Tolerable (with mitigation)	Additional information to acceptance, warehouse and ramp staff on acceptance and loading of CAO DG Bulletin to Load Control on loading and segregation requirements for CAO DG Bulletin to flight crew on carriage of CAO DG					

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
Pax Cabin - General													
6	Local structural Failure of floor/ seats/ bulkheads	Excessive weight	Major equipment damage	Manufacturer recommendations			Tolerable (with mitigation)	Follow weight and balance and loading SOPs and procedures					Tolerable (with mitigation)
7	Undeclared / misdeclared or hidden DG (including high energy items) being carried in "Class A" cabins	Uncontained cabin fire Corrosive material or liquid leakage comprising aircraft systems	Hull Loss	Cabin declared class "A" cargo only BCF fire extinguishers			Intolerable	100% verification of contents of cargo to be loaded in the cabin Follow requirements in IATA DGR at cargo acceptance to check for signs of undeclared DG Prohibit carriage of DG in the cabin Documented SOPs assuring compliance with State and Manufacturer requirements					Tolerable (with mitigation)
8	Collapse of load containing liquid	Liquid leakage compromising aircraft systems	Hull Loss				Intolerable	Prohibit loading of liquids in the cabin					Tolerable (with mitigation)

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
9	Removal of pax seats to accommodate cargo	Incorrect weight and balance for aircraft configuration Exceedance of linear, superficial, cumulative, and combined load limitations	Hull loss				Intolerable	Supplemental Type Certificate (STC) and / or Type Certificate approval issued by CAA / NAA. Develop new weight and balance, loading / unloading and restraint procedures to ensure correct loading of aircraft as per Manufacturer Training for new weight and balance loading					Tolerable (with mitigation)
10	Movement of unconstrained / improperly restrained cargo in cabin beyond the structural capability of floor and bulkheads	Cargo shift / loss of control due to CG outside of certified weight and balance limits	Hull loss	Cabin Cargo loading / fastening recommendations from Manufacturers Weight and Balance and loading SOPs and Procedures			Intolerable	Load master (or equivalent with specific training) oversee the loading and unloading of cargo in the cabin Awareness / training for Cabin Crew use of fastening restraints					Tolerable (with mitigation)

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
Pax Cabin - Operational													
11	Use of belt loader and/or high loader for loading operation through cabin doors	Personnel fall from height Aircraft Damage	Fatality unairworthy Aircraft				Intolerable	Provide devices such as safety harness to secure personnel to aircraft and/or equipment (e.g. high loaders) as applicable. Ensure proper training on ad hoc procedures Use most experienced personnel only Assess GSE dimension to be used in accordance with aircraft door location, door opening clearances, door dimensions, fuselage shape and pitot tubes and/or other aircraft sensors locations					Tolerable (with mitigation)
12	Untrained personnel operating pax cabin doors	Inadvertent slide deployment	Injury to persons outside aircraft - fatality Cost				Intolerable	Use trained personnel					Acceptable

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
13	Overheating of cabin systems adjacent to cargo	Uncontained cabin fire	Hull Loss				Intolerable	Turn off entertainment systems, seat power systems, unused galley systems and any other heat generating systems that are not required for the operation of the aircraft					Tolerable (with mitigation)

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
14	Undetected smoke or fire in cabin	Uncontained cabin fire	Hull Loss	lavatory smoke detector			Intolerable	Cabin crew to carry out enhanced fire watch and fire-fighting procedures as necessary (number of crew shall be appropriate to size of aircraft and duration of flight) Limit loading of cargo to ensure visibility, identification and access of smoke/fire source Cabin cargo loading procedures to ensure fire breaks within the cabin If using other personnel, they shall be trained on all cabin fire watch / fighting activities (communication, equipment, procedures, etc.)					Tolerable (with mitigation)

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
15	Cabin floor collapse into belly during depressurization	Structural integrity of aircraft compromised	Hull Loss				Intolerable	Cabin cargo loading procedures to ensure depressurization panels unobstructed as per manufacturer Load master (or equivalent) oversee the loading and unloading of cargo in the cabin					Tolerable (with mitigation)

No.	Event	Hazard	Consequence *(worst case scenario)*	Existing Controls	Risk			Mitigation Action	Ownership	New Controls	Risk		
					Probability	Severity	Rating				Probability	Severity	Rating
Return to Service													
16	Damaged cabin fixtures and fittings	MEL non-compliance	Reduced airworthiness of Pax cabin				Intolerable	Thorough check of all cabin systems, equipment and fittings by Maintenance prior to return-to-pax - service					Tolerable (with mitigation)
OSH													
17	Employee Injury	Fall from heights, trips, slips, falls and manual lifting	Fatality				Intolerable	PPE, appropriate training, SOPs to prevent fall from heights, trips, slips, falls and manual lifting, use of appropriate GSE					Tolerable (with mitigation)

4. Regulatory requirements

4.1 General

Aviation regulations and aircraft manufacturers' permit operators to load verified cargo and mail in the cabin of passenger aircraft subject to defined conditions and, where necessary specific regulatory authorisation,

When cargo is loaded into the passenger cabin, the cargo shall not include any dangerous goods or live animals. For the purposes of this guidance document, the passenger cabin should be considered as a Class A cargo compartment. As such the operator shall ensure that sufficient cabin crew or other qualified personnel are on board to monitor the cabin throughout the duration of the flight for any indication of smoke or fire and when necessary to alert the flight crew and use the available firefighting equipment to fight the fire.

4.1.1 Approved loading locations

Verified cargo may be carried in approved stowage locations within the passenger compartment. These locations include overhead stowage bins, closets, floor mounted stowage, and under seat stowage areas.

Note: It is not recommended to load mail in the passenger cabin unless the contents of the mail can be verified to exclude the presence of dangerous goods.

In these cases, the following limitations typically apply:

a. Stowage maximum capacity shall not be exceeded;

b. The mass of cargo shall not exceed the structural loading limits of the floor or seats; detailed information on allowances should be available in the manufacturer Weight and Balance Manual;

c. The number/type of restraint devices and their attachment points shall be capable of restraining the cargo in accordance with applicable certification specifications;

d. If the cargo is stored under the seats, then the seat shall be equipped with a restraint bar system and the cargo placed fully underneath the seat. The mass of each piece of cargo shall not exceed 9 kg (20 lb);

e. Items shall not be stowed in lavatories or against bulkheads that are incapable of restraining articles against movement forward, sideways, or upwards and unless the bulkheads carry a placard specifying the maximum capacity;

f. Cargo shall not be placed where it can impede access to emergency equipment or hinder egress in case of an emergency evacuation;

g. Cargo placed in enclosed stowage areas shall not be of such size that they prevent latched doors from being closed securely;

h. Checks should be made before take-off, before landing and whenever the fasten seat belt signs are illuminated as well as under orders of pilot in command to ensure that cargo is properly stowed.

4.1.2 Non-approved loading locations

4.1.2.1 On passenger seats

For carriage of cargo in other than approved locations as described in 4.1.1. If the operator wishes to load **cargo on the passenger seats**, the operator shall obtain prior authorisation from their national aviation authority, which may require the issuance of a supplemental type certificate (STC). Specific information from the aircraft manufacturer may also be required.

Typically, the following additional limitations apply:

a. Mass of cargo loaded on the seats shall not exceed seat limitation (refer to aircraft Weight and Balance Manual);

b. Actual weight of cargo and even load distribution shall be used to ensure that the aircraft flight manual (AFM), aircraft Weight and Balance Manual and minimum flight weight limits or equivalent are never violated;

c. Conservatively operational envelope used for regular passenger flights shall be applied. Alternatively, curtailments can be re-assessed but shall include all applicable curtailments;

d. Cargo shall be adequately restrained, the number/type of restraint devices and their attachment points shall be capable of restraining the cargo in accordance with applicable certification specifications;

e. The centre of gravity (CG) of the cargo is equal to or lower than the passenger CG shown in the envelope drawing of the seats in use as reported in the manufacturer weight and balance manual or similar documents;

f. Cargo load shall be appropriately accounted for in the weight and balance system and any aircraft operational limit is respected;

g. The load should be evenly distributed across the seat row. The loading on each seat should not exceed limits as provided by the aircraft and / or seat manufacturer.

4.1.2.2 On passenger cabin floor (seats removed)

If the operator wishes to remove passenger seats and to **load cargo directly on the passenger cabin floor** with cargo restraints connected directly to the seat tracks, typically the following additional limitations apply:

a. There is a minimum of 1 complete row of unoccupied seats at the forward and aft ends of the tie down area. Unoccupied means no passengers and no cargo;

b. Maximum cargo weight for any given tie down scenario is limited to the value recommended by the aircraft manufacturer;

c. Cargo should be evenly distributed across the tie down area and shall not exceed the following area load limits recommended by the aircraft manufacturer;

d. Cargo loaded directly on the floor shall not exceed the floor limits defined in the weight and balance manual or equivalent;

e. The cargo CG height shall not exceed the value provided by the aircraft manufacturer;

f. The lateral and longitudinal CG of the cargo must be within the limits provided by the aircraft manufacturer (typically +/-10% of the centre of the tie down pattern);

g. Cargo shall not extend or overhang into the aisles, doorways, galleys or emergency exits;

h. Cargo must be adequately restrained to ensure the cargo does not come loose or shift during flight or emergency landing conditions;

i. The maximum weights that can be restrained as per forward, aft, lateral and vertical limits shall be within the limits provided by the aircraft manufacturer;

j. The number of tie down points for a given cargo weight and the type, number of stud tie down fittings and strap assemblies shall be applied as per recommendations provided by the aircraft manufacturer. TSO certified nets and straps should be used;

k. Attention must be given to avoid load share of restrained cargo into any galleys, lavatories, partitions, or other fixed structures.

4.2 Regulatory references

Some regulatory references associated with carriage of cargo in passenger seats can be found below. Further requirements may be applicable as per local regulation

FAA - 14 CFR 121.285. ; SAFO 20008

EASA: CAT.OP.MPA.160 Stowage of baggage and cargo
Regulation (EU) No 965/2012
AMC1 CAT.OP.MPA.160 Stowage of baggage and cargo
AMC2 CAT.OP.MPA.160 Stowage of baggage and cargo
ED Decision 2014/015/R

Note: EASA Certification Memorandum CM-CS-003 Issue 01 Installation of "Cargo Seat Bags" on Passenger Seats provides information on carrying cargo on passenger seats. EASA does not permit CSB on passenger seats, unless the carrier obtains EASA-approved special conditions

CAAC: Part 121.285

DGCA: AIC 022020-25012(07)/2/2020-AW

4.3 Other references

Boeing: MOM-20-0239-09B Multi Operator Message dated 9 Apr 2020

Airbus: FOT Cargo transportation in the cabin - REF.: 999.0028/20 Rev 00 dated 30-MAR-2020

IOSA Standard Manual Section Ground Handling Operations GRH 3.4.12 and Cabin Section CAB 3.2.3.

5. Recommended operational procedures

5.1 Cargo preparation

Operators should consider the type of cargo or mail that is proposed to be loaded in the passenger cabin. Specific considerations include:

a. Verification of the content of packages to ensure that there are no dangerous goods;

b. The weight of the individual packages to minimise the potential for manual handling injuries;

c. The volume of packages to ensure that they can be loaded into overhead bins, coat cupboards or under the seats.

d. Medical supplies might contain items such as mercury thermometer and/or alcohol-based sanitizer, which are classified as dangerous goods;

e. Size and weight of the packages and their ability to be loaded into the available bins, bags or alternative methods. This will also include the weight distribution throughout the aircraft in accordance with the load master's instructions;

f. Centre of gravity (CG) of the cargo to ensure that it can be loaded equal to or lower than the CG height recommended by the aircraft manufacturer,

g. Availability of loading, unloading, shoring, load spreading and restraint equipment,

h. Packages should be free of sharp edges as they will be manually loaded;

i. Wet cargo should not be loaded in the passenger cabin.

j. Cargo to be loaded in the passenger cabin shall be within the applicable limits for dimensions and weight.

For carriage of cargo in other than approved locations as described in 4.1.1 if the operator wishes to accept cargo to load on the passenger seats and or aircraft cabin floor, the operator shall also consider:

k. For loading on the passenger seats; the loading limitations and restraint capability of the seats;

l. For loading on the passenger floor, the load limitations as derived by the load limitation form;

m. Identification of the cargo to be loaded in the specific locations.

To identify the cargo that is planned to be loaded in passenger cabin the special handling code "CIC" (cargo loaded in passenger cabin) should be used. This will also facilitate resource planning for loading / unloading, load preparation, load control functions.

Documents and messages that this code will be used include: FBL, FFR, FFA, FFR, FFA, FFM, FWB, UWS, NTM,

5.2 Loading Instruction Report (LIR), weight & balance and documentation

5.2.1 Weight and balance system

Seats remain installed

Most of the weight and balance systems (DCS) are set to calculate the load in the passenger cabin.

If the system is programed to accommodate the passenger weights only, it is recommended to contact the DCS administrator to investigate appropriate solutions to adjust the system for cargo. However, in most of the cases, the systems make provision for allocating "extra" weight in each cabin section (e.g. 0a, 0b etc.) as needed.

If possible, it is recommended for DCS systems to set parameters for weight allocation for each row to reduce CG error in final calculation.

Seats are removed

In general, DCSs are not designed to verify maximum weight limits for passenger cabin floor. Operators shall identify applicable limits for cargo tie down areas and report them in a usable manner to all relevant departments by creating a dedicated loading limitation form.

Note: Cargo loaded in the stowage bins and other applicable areas shall also be accounted for and divided as per new centroids derived by the cargo tie down areas defined for that specific configuration.

5.2.2 LIR

General

LIR forms typically do not include the passenger cabin section. It is therefore recommended to detail all information for this section in the "special Instructions" box.

In the load planning it shall be considered that the cabin depressurization relief vents shall remain unobstructed.

LIR shall report, in addition to normal information, detailed instruction on:

a. Load quantity per each cabin section;

b. Maximum loads for seats, rows, cabin section(s) and / or tie down areas;

c. The load quantity and maximum load per overhead bin and coat cupboard;

d. Loading / unloading sequence.

Note: The load controller should ensure that only cargo identified with the special handling code "CIC" (cargo loaded in passenger cabin) be planned for loading in the passenger cabin.

Seats remain installed

It is recommended to provide the pilot in command (PIC) loading instructions in conjunction with the Layout of Passengers accommodation (LOPA) and the Cargo Manifest to ease identification of no loading areas and cabin sections (i.e. Oa, Ob etc.).

Seats are removed

The load controller shall generate a LIR that is verified against all new applicable limits as per dedicated loading limitation form.

It is recommended to provide the PIC loading instructions in conjunction with the load limitation form and the Cargo Manifest to ease identification of no loading areas and cabin sections (i.e. Oa, Ob etc.).

5.2.3 Load Control

The load controller shall account for the weight limits and distribution of cargo on passenger seats respecting all structural and weight distribution as usual. The final load sheet shall be verified further to ensure the operational limits are respected.
Notification that the lf changes in the configuration are introduced, such as a reduction in the quantity of potable water due to no passengers, the correct dry operating weight and index shall be used.

5.2.4 Documentation and messaging

In addition to the load sheet it is also recommended to provide the details of the cargo (cargo manifest) loaded in the cabin to the pilot in command.
LDM and CPM messages should include code CIC.

5.2.5 Flight dispatch

There should be a notification on the flight plan that identifies the flight as cargo only to ensure no passenger related overflying and landing restrictions are unduly applied.

5.3 Loading and unloading of aircraft

Typically, equipment designed to access aircraft passenger cabin doors is not meant to be used for loading cargo. Nevertheless, all possible measures shall be in place to prevent injury to personnel and damage to aircraft.

The recommended equipment is:

a. Elevating Equipment
b. Passenger Stairs

Elevating equipment, which is typically used for boarding and loading either PRM and/or catering, can be also used for loading cargo safely through the passenger door.

When using passenger stairs to load cargo into the cabin, appropriate consideration shall be made according to the size and weight of each package to be loaded.
It is recommended to distribute loading personnel at different positions on the stairs and proceed to load the shipments by moving the packages from the ramp upwards; passing the packages from one person to the next. This recommendation is intended to mitigate the risk of slips, trips and falls.

When possible (e.g. more than 2 access doors), more than one piece of equipment can be used simultaneously.

Belt loaders and high loaders are not designed to dock to an aircraft cabin door. Where such equipment is used the potential risks (falling from height and aircraft damage) shall be adequately mitigated.

Specific operational procedures defined locally by ground handlers shall be accepted by the airline prior to being implemented.

5.4 Loading and restraint of cargo in the cabin

5.4.1 Loading in passenger cabin with seats installed

Where an operator has received a specific approval from their national aviation authority to load cargo on passenger seats, they should be loaded using appropriate restraint systems to ensure compliance with all applicable regulatory requirements.

a. Recommend covering all seats with a protective material;

b. The number/type of restraint devices and their attachment points should be capable of restraining the cargo in accordance with applicable certification specifications;

c. Keep the cabin depressurization relief vents unobstructed;

d. All aisles, and access to emergency equipment shall always remain free of obstructions;

e. The cargo load shall not extend above the maximum height of the passenger seat in the fully upright position;

f. Always adhere to the loading sequence as reported in the Loading Instruction report (LIR). As a rule, always start to load the cabin from FWD (front) to AFT and (back). Unload from AFT (back) to FWD (front);

g. Avoid heavy items and/or shipments with sharp edges;

h. Ensure seatbacks are in the upright position;

i. Position the seat belts behind the seat cushions;

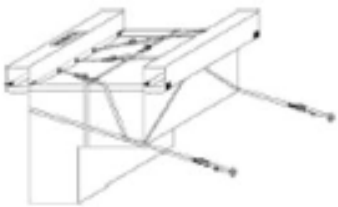
j. Where possible, fold up the inner arm rests;

k. Follow installation instructions provided by bin/ cargo seat bag (CSB) manufacturer;

l. Ensure all bins / CSB are properly secured, and straps are latched and tensioned across the seat.

Fig1: *example of installed CSB ready to be loaded*

Fig 2: *example of cargo CSB and secured*



Note 2: Additional information for CSB may be found in SAE ARP 4049

Additional requirement to load aircraft cabin without the use of CSB:

m. Cover all seats with a protective material

n. Ensure that cargo shipments are accessible to the crew in case of emergency

o. Secure cargo in each seat row with straps, rope or nets

p. Load heavier boxes as low as possible to keep the vertical CG within the limits;

q. Load the heavier boxes towards the centre of the centroid to limit the horizontal CG shift;

r. Distribute the load in a manner to reduce the lateral load imbalance

Note: Passenger seats are mounted in rails on the main deck – called seat tracks. Ensure that the net attachment fittings – sometimes called double stud fittings or single stud fittings are compatible with the seat attachment tracks in main deck floor. Typically, studs that fit the aircraft seat rails meets MS33601A standard.

Fig3: example of Aircraft seat rail

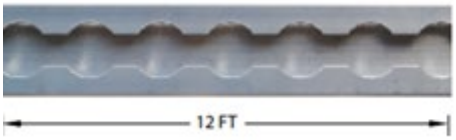


Fig4: example of stud MS33601A

5.4.2 Loading in passenger cabin without seats installed

For general loading restriction adhere to limitations described in section 4.1.2.2 of this document.

Note: specific tie down procedures per aircraft type shall be developed according to aircraft manufacturer recommendations.

5.5 Cabin operations

When cargo is loaded into the cabin, personnel are required to be carried in the cabin in order to ensure cargo remains secured and to maintain fire watch and carry out firefighting procedures as required. The use of cabin crew is recommended. Where other personnel are assigned tasks in the cabin they are to be suitably trained and qualified. The following should be considered:

a. The responsibilities of cabin crew and any other personnel in the cabin shall be clearly defined. A person should be nominated as the "in charge" who is responsible for coordinating communication and response during any emergency situation;

b. All cabin personnel shall be familiarized with the correct methods and means of restraint.;

c. Ensure entertainment systems, seat power systems, unused galley systems and any other heat generating systems that are not required for the operation of the aircraft, are isolated and an appropriate entry made in the aircraft technical logbook;

d. Cabin fire watch and firefighting procedures may need to be amended in order to increase frequency of checks inflight and to allow firefighting procedures to be accomplished with fewer cabin personnel

e. Other cabin procedures such as pre-flight equipment checks, door arming/disarming, evacuation, pilot incapacitation, sterile flight deck and flight deck monitoring should also be reviewed as appropriate;

f. The number of cabin personnel carried should be determined by consideration of:
   i. the size of the aircraft cabin;
   ii. the duration of the flight;
   iii. The amount and type of cargo carried within the cabin.
   iv. The number of persons required to carry out both normal and emergency cabin procedures effectively.

g. Loading of cargo in the cabin should be achieved in such a manner as to:
   i. Ensure visibility, identification and access of any source of smoke or fire;
   ii. introduce fire breaks within the cabin;
   iii. Ensure depressurization vents are not obstructed;
   iv. Ensure decals indicating the location of emergency equipment are not obstructed;
   v. Ensure emergency equipment is not obstructed;
   vi. Ensure aisles and evacuation routes are clear.

h. Cabin personnel should perform checks to validate that loading has been carried out correctly and raise any concerns with the pilot in command;

i. It is recommended that the pilot in command undertakes a physical check of the cabin before acceptance of the final load sheet;

j. All cabin personnel shall be trained on cabin fire watch / fighting activities including communication, equipment and procedures;

k. Load master (or equivalent) is to oversee the loading and unloading of cargo in the cabin.

5.6 Carriage of Cargo Aircraft Only Dangerous Goods

When an aircraft is only used for the carriage of cargo and/or mail and the only personnel on board are crew members, an operator's employee in an official capacity, an authorised representative of an appropriate national authority or a person accompanying a consignment or other cargo then the aircraft may be considered to be a "cargo aircraft" as defined, see Appendix A – Definitions.

Then, provided that there are no specific restrictions in the approval to carry dangerous goods as cargo issued by national aviation authority of the State of the Operator, the aircraft may be used to carry Cargo Aircraft Only (CAO) dangerous goods.

Prior to deciding to carry CAO dangerous goods the operator should conduct a safety risk assessment (SRA) to identify any new risks that may apply to this type of operation and then what mitigations must be applied to bring the risks to a level acceptable for all concerned.

5.7 Security

All cargo should be subject to required security procedures (as required by the national regulations). For details see IATA Cargo Handling Manual.

Aircraft cabin security checks/searches will remain required as per applicable regulations. The operator should review the list of areas subject to this procedure depending on the aircraft cabin configuration. For example, if passenger seats are removed check/search of some areas will be no longer applicable.

To avoid subsequent checks/searches of certain areas the operator may also apply tamper-evident protection. An example could be lavatories – if the operator checked/searched all lavatories and knows only one of them will be used during subsequent turnarounds remaining lavatories could be locked with the tamper-evident sticker on the door. This way subsequent checks/searches will no longer be necessary (unless the seal is broken).

6. Feedback and support

For feedback, questions and/or clarifications please write to groundops@iata.org

7. Appendix A - Definitions

(IATA Dangerous Goods Regulations (DGR)
Cargo Aircraft
Any aircraft, other than a passenger aircraft, which is carrying goods or property.

Passenger Aircraft
An aircraft that carries any person other than a crew member, an operator's employee in an official capacity, an authorised representative of an appropriate national authority or a person accompanying a consignment or other cargo.

Other definitions
Bin or Cargo Seat Bag (CSB)
A specially designed container / bag to be fitted in a row of seats for the purpose of stowing cargo or mail.

Cargo Compartment Classification
These definitions reflect the classification requirements set out in Federal Aviation Regulation (FAR) Section 25.857 and European Aviation Safety Agency (EASA) Certification Standard (CS) 25.857, as shown in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481) (red book).

A Class A cargo or baggage compartment is one in which:

1. the presence of a fire would be easily discovered by a crew member while at his or her station; and
2. each part of the compartment is easily accessible in flight. Class A cargo compartment is not required to have a liner.
3.

A Class B cargo or baggage compartment is one in which:

1. there is sufficient access in flight to enable a crew member to effectively reach any part of the compartment with the contents of a hand fire extinguisher;

2. when the access provisions are being used, no hazardous quantity of smoke, flames, or extinguishing agent, will enter any compartment occupied by the crew or passengers; and

3. there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station.

A Class C cargo or baggage compartment is one not meeting the requirements for either a Class A or B compartment but in which:

1. there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;

2. there is an approved built-in fire extinguishing or suppression system controllable from the pilot or flight engineer station;

3. there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers; and

4. there are means to control ventilation and draughts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

A Class D cargo or baggage compartment is one in which:

1. a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;

2. there are means to exclude hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;

3. ventilation and draughts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and

4. consideration is given to the effect of heat within the compartment on adjacent critical parts of the aeroplane.

Cargo Tie Down Area

Any area of the main passenger cabin floor, which is used to secure cargo, and further defined by the removal of 1, 2, or 3 rows of passenger seats. Exit rows must not be included in the 'cargo tie down area.

Load Master
The member of an aircraft's crew responsible for supervision and coordination of loading, unloading operations.