

# European Union Aviation Safety Agency

## GUIDELINES

### **TRANSPORT OF CARGO IN PASSENGER COMPARTMENT - EXEMPTIONS UNDER ARTICLE 71(1) OF REGULATION (EU) 2018/1139 (THE BASIC REGULATION)**

Issue 5.1, Cologne, 18 December 2020

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## 1. Purpose of these Guidelines

Air cargo services are vital for the economy and for coping with the logistical challenges related to COVID-19, as European and global supply chains depend on them being unhindered. Air cargo should therefore be able to deliver continuously critical products such as food, medical supplies and personal protective equipment (PPE), and other products, which are vital for the functioning of sensitive supply chains. Consequently, more and more operators may need to transport cargo in the cabin of passenger aircraft. Additionally, in the aftermath of the peak of contamination in the first half of 2020 and the subsequent drop of demand for passenger commercial air transport, operators have been looking at new business opportunities using passenger aircraft to transport cargo on the main deck.

In order to enable such operations, Design Organisations (with adequate scope) should apply and receive from EASA time-limited airworthiness approvals for those aircraft configurations as the design of the passenger cabin does not meet any of the CS-25 cargo compartment class definitions. The concept of such approvals is offering sufficient flexibility while ensuring adequate control from an aircraft certification perspective. For that purpose, EASA has published<sup>1</sup> on 26 October 2020 the Deviation from CS 25.855 related to the “Transportation of cargo in passenger compartments”. As part of the approval’s certification basis, it provides a standard approach how design changes can be developed in order to allow the transportation of cargo in passenger compartments.

Exceptionally, Member States may decide to also accept the operation of aircraft with unapproved design modifications, by issuing exemptions pursuant Article 71 of Regulation (EU) 2018/1139 (hereinafter, the Basic Regulation).

Such exemptions should be issued in the following cases:

1. To enable operations covered by an expiring exemption to continue, provided that:
  - a) there is the evidence that an application for an associated Major Change to TC or STC has been made to EASA,
  - b) the duration of the requested extension of the exemption does not exceed the time to complete the technical investigation for the associated design change approval (typically no more than 3 months)
  - c) and the Operator has committed to comply with Annex 1 of these guidelines at Issue 5.
2. To enable the transportation of supplies essential for COVID-19 response, and for which no adequate cargo capacity is readily available.

The purpose of this document is to provide guidelines for NCAs to consider when granting exemptions under Art. 71 to allow the Transport of Cargo in Passenger Compartments in the context of the current COVID-19 outbreak. These exemptions granted as per Article 71(1) should take into account the present guidelines. Those guidelines apply as well to older exemptions to be extended after the publication date of this document consecutively to a positive EASA recommendation as per Article 71(2).

Exhaustive technical guidance from EASA is included in Annex 1 of these guidelines. Documents published by the Industry (aircraft OEMs, SAE) to provide guidance on how to transport cargo in the passenger cabin are referenced in Annex 2.

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<sup>1</sup> <https://www.easa.europa.eu/document-library/product-certification-consultations/deviation-transportation-cargo-passenger>



The guidance material detailed in this document is designed to mitigate during a limited period of time the additional risks associated with those configurations, the most critical of which being a fire on board during flight. A particular consequence of those risks is that a combination of passengers and cargo transportation in the cabin is in no case foreseen and will therefore not be covered by those Guidelines.

## 2. Scope of exemptions

The transportation of cargo in the passenger cabin of large aeroplanes beyond already approved stowage areas is usually not covered by the approval of the aircraft. AMC2 CAT.OP.MPA.160 (b) (2) specifies the need for approved restraint equipment to secure cargo in stowage provisions available in the passenger cabin. The terminology “cargo” used in CAT.OP.MPA.160 is intended to include everything that is not a luggage.

The conditions that operators should meet in order to be allowed to transport cargo in the passenger cabin under the provisioning of Art. 71 of the Basic Regulation are included in Annex 1 and Annex 2 of these guidelines.

**2.1.** When applying Article 71(1) of the Basic Regulation to exempt operators from certain requirements of Regulation 748/2012, Regulation (EU) n° 1321/2014 and Air OPS- Regulation 965/2012,<sup>2</sup> the NCAs should specify the following:

- a) The period of exemption: the period should refer to the duration of the COVID-19 outbreak in the Member State, but in any case should be less than 8 months.
- b) The scope of exemption: as applicable.
- c) The exempted provisions should be limited to:
  - CAT.IDE.A.100 “Instrument and Equipment/General, if applicable
  - CAT.OP.MPA.160 “Stowage of Baggage and Cargo”,
  - 21.A.181 Duration and continued validity (of the airworthiness certificate)
  - M.A.304, M.A.501 M.A.902(b)(2), M.A.902(b)(5) of the Annex I (Part M)

**2.2.** The exemption should allow, on a temporary basis and as applicable or necessary, the transport of cargo and a limited number of occupants in the passenger cabin, if justified by a fire risk assessment. Cargo items may be installed on seats, with adequate restraint systems/means, or, if seats are removed, directly attached onto the aircraft floor<sup>3</sup> using the available seat tracks.

## 3. Operational aspects for Transport of Cargo in passenger compartment

Cargo shall only be transported by Operators holding valid Cargo transport approvals.

### 3.1. Crew composition

- a) Operations without passengers shall still require the presence of cabin occupants to survey and access all areas of the cabin during all phases of flight. Any fire that might occur must be timely detected and effectively fought utilizing the available existing emergency equipment.

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<sup>2</sup> Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

<sup>3</sup> Note: The expression "cargo restrained on the cabin floor" refers to any installation in which seats are removed and the cargo does not transfer load to the aircraft structure only through the seats.



- b) (deleted)

### 3.2. Procedures

- a) A risk assessment shall be performed in order to identify hazards related to operating cargo flights using cabin configurations which have been approved for transporting only passengers.
- b) Checks shall be made before take-off, before landing and whenever requested by the captain to ensure that cargo is properly stowed and secured.
- c) Operators shall establish procedures to manage emergencies in the cabin.
- d) Operators shall publish temporary revisions to the OM to include the new type of operations and the related procedures.

### 3.3. Loading, Mitigations (Focus areas for the competent authorities) for transport of cargo in passenger compartment including on passenger seats

- a) Exact cargo weight and position in the cabin and in the cargo hold shall be reflected in the mass and balance documentation (load sheet).
- b) The pilot-in-command shall be provided with information on the content of all the cargo such as through provision of the cargo manifest or other appropriate documentation.
- c) The operator shall load the aircraft considering the different levels of available fire protections of the loading areas (i.e. passenger cabin and lower deck cargo compartments).
- d) For the bulkheads that have a placard indicating maximum capacity, the cargo items stowed in aft of these bulkheads shall not exceed the maximum capacity indicated in the placard.
- e) The maximum capacity limitations in the required safety placards (on or adjacent to the cargo approved stowage locations) shall not be exceeded. All stowage instructions specified in the placards apply.
- f) The mass of the cargo shall not exceed the structural loading limits of the aircraft. Compliance with CS 25.561, 25.787 and CS 25.789 is expected.
- g) The cargo placed in enclosed stowage areas shall not be of such size that they prevent latched doors from being closed securely.
- h) The cargo items shall be stowed only in a location that is capable of restraining it.
- i) The cargo stowage location shall be such that, in the event of an emergency evacuation, it will not hinder aisle access and egress.
- j) The cargo shall not be placed where it can impede access to emergency equipment.
- k) The cargo shall be checked to ensure proper stowage in the following instances (at the minimum):
  - Before take-off,
  - Before landing,
  - Under orders of the Pilot in Command (PIC).
- l) The available aisle(s) shall remain free to enable access to the cargo to fight a fire.
- m) Any smoke/ fire within the cabin must be able to be detected and extinguished using the existing emergency equipment. Thoroughly briefed cabin occupants (not part of the flight crew) shall be on-board to survey and access all areas of the cabin during all flight phases. There must be an adequate number of trained cabin occupants acting as fire-fighter with sufficient amount of firefighting equipment. This equipment may be stowed in the cabin using existing stowage provisions (overhead bins, stowage's) provided that the location is



identifiable for the crew. Specific details must be coordinated with local regulatory authorities.

- n) Cabin occupants should use existing cabin crew seats and must not share seat rows with cargo. There must be a clear separation of areas occupied by cabin occupants and those fitted with cargo during taxi, take-off and landing. At least one empty seat row between cargo and reserved occupant seats must be established.
- o) 'Under seat stowage' is allowed only if the seat is equipped with a restraint bar system and the cargo items can be placed fully underneath the seat. The loading of the cargo under each seat should not exceed 9 kg (20 lbs).
- p) The cargo packaging shall be able to equalize the pressure so that it can handle the delta pressure during the flight, as applicable.
- q) All smoke and fire detectors shall be maintained as per Maintenance Manual instructions.
- r) The Air Conditioning system shall be set taking into account the nature of the cargo transported in the cabin and the number and distribution of cabin occupants.
- s) (deleted)
- t) (deleted)
- u) (deleted)
- v) If nets are used to restrain cargo items, these nets should be (E)TSO approved and any load limitations of these nets including their attachment means should be adhered to. Any deformation of these nets due to the mass of the cargo items restrained under emergency landing, flight or ground loads should be evaluated for contact to other objects in the cabin and be shown not to block emergency evacuation paths nor access to emergency equipment.

#### 4. Transport of Dangerous Goods

Dangerous goods (DG) shall only be transported by Operators holding an approval (SPA.DG).

- a) In the absence of passengers, the limits for the dangerous goods can be those established in the Technical Instructions for Cargo Aircraft, instead of Passenger Aircraft. The operator shall nevertheless include this aspect in the risk assessment performed.
- b) Additional training/briefing shall be given to the crew, particularly letting them know whether the limits have been increased from those applicable to passengers to those applicable to cargo. This should, at least, include the following:
  - the risks and consequences of increasing the amount of DG in the hold;
  - any changes in the emergency procedures and the emergency equipment that may be on board.
- c) Relevant information on dangerous goods (e.g. affecting emergency procedures) shall be included in the briefing given to other people occupying the aircraft.
- d) Dangerous goods (with an exemption to vaccines cooled by dry ice) shall not be carried in the passenger cabin and always be carried in the hold and shall be transported under the conditions established by the Technical Instructions.
- e) Nobody other than a crew member, an operator's employee in an official capacity, an authorised representative of a NCA or an authorised person accompanying a consignment or other cargo may be present on board. Any other person will be considered a passenger and, therefore, the aircraft will no longer be able to use the provisions applicable to cargo aircraft as regards the transport of dangerous goods.



## **5. Airworthiness aspects for transport of cargo in the passenger cabin of Large Aeroplanes**

### **5.1. Transport of cargo in the passenger cabin under the provisioning of Article 71.1 of the Basic Regulation 2018/1139**

In order to continuously provide a transport solution in the frame of the current COVID-19 situation, EASA supports the use of Article 71 of the Basic Regulation 2018/1139, also in case of on-going certification projects. A design change approval is not a prerequisite for the issuance of an Exemption. However, certain design data may support the process.

Further guidance can be found in Annex 1 of these guidelines.

The present guidelines and additional technical support to NCAs and operators, as required, should enable to address to an acceptable level on a temporary basis (i.e. up to 8 months) the airworthiness certification aspects for projects regarding transport of cargo in the passenger cabin of Large Aeroplanes.

### **5.2. Transport of cargo in the passenger cabin under a design change approval**

In order to allow transport of cargo beyond the limitations set by Article 71 of the Basic Regulation, a design change approval must be pursued.

For transport of cargo restrained on seats as well as in case a removal of seats is necessary to allow fixation of cargo onto the aircraft structure, a Major Change to TC or STC application is required and will be processed by EASA with priority using a certification basis which includes the recently published Final Deviation.

The type of cargo to be transported in the passenger cabin would need to be under control (no unidentified cargo) and assessed beforehand in the frame of the technical investigation by the EASA certification team.

## **6. Information**

For the purpose of notification of exemptions, NCAs are invited to inform EASA of the granted exemptions through EASA Flexi tool.

## **7. Other applicability**

For flights not falling under the scope of the Basic Regulation, the NCA may use these Guidelines with the necessary adaptations.



## Annex 1

### 1. Guidance for transport of cargo in the passenger cabin under the provisioning of Article 71.1 of the Basic Regulation 2018/1139.

The following guidance address in general the transport of cargo restrained on seats and/or on the cabin floor.

The primary objectives to be achieved when using the passenger cabin for transport of different kind of cargo are:

- Timely fire detection, effective fire-fighting and adequate protection of the occupants from hazardous quantities of smoke and toxic gases ;
- Fixation of cargo to ensure occupant safety and prevent changes of aircraft centre of gravity, in normal and emergency conditions;
- Emergency evacuation of occupants.

An applicability list of the below listed areas - depending on the kind of cargo – is provided in Table 1.

#### 1.1. Restrictions to the kind of cargo:

The Transportation of the following cargo in the cabin shall be prohibited:

- i) dangerous goods (with an exemption to vaccines cooled by dry ice dealt with in the separate EASA “Transportation of vaccines using dry ice” guidelines);
- ii) mail;
- iii) batteries, including batteries contained in, or packed with, equipment;
- iv) Cargo of a piercing, dense, rigid, or penetrating nature, or cargo with sharp edges or corners, such as rods, pipes, extrusions, or beams, that could become a projectile hazard during flight operations;
- v) live animals.

#### 1.2. Cabin preparation:

- a) Passenger convenience systems (IFE, in-seat power, galley systems and any other heat generating systems) in the cabin areas in which cargo is transported will have to be disabled or deactivated.
- b) Automatic supplemental oxygen systems in the cabin areas in which cargo is transported will have to be removed from the PSU channels, without leaving any opening, or should be deactivated.

Note: Chemical O2 generator or decentralized gaseous O2 installed in the PSU channel will start the O2 generation or O2 release when certain temperatures are reached. Based on the possible fire scenario originating from the cargo loaded the O2 systems would need to be removed or deactivated (O2 mask drop prevented to keep the shielding from the container doors).

- c) Cargo should not be stowed in any compartment containing oxygen bottles and/or PBEs, as well as devices containing lithium batteries.

#### 1.3. Cargo loading:

- a) It is not required to install a 9g barrier and a smoke barrier to protect the flight deck and cabin occupants. Cargo shall be restrained so that each cargo installation meets 25.561 and other applicable structural requirements.



- b) In each section of the cabin where cargo is transported:
- there should be at least one longitudinal aisle meeting the minimum width dimensions specified in 25.815 for aeroplanes with a seating capacity of 10 or less passengers.
  - Cargo should be loaded so that there is sufficient access to the cargo to allow effective fire-fighting.
  - For twin-aisle aeroplanes in which seats are not removed and are used to restrain cargo, there should be an unloaded seat row to allow crossing from one aisle to the other. To the extent possible the unloaded seat row should be located at equal distance from the available cross-aisles required by CS 25.813.
- c) Floor path marking may be removed or obscured by cargo in areas that are not going to be used as evacuation paths by the cabin occupants.
- d) Features that allow decompression should be maintained, i.e. pallets or cargo should not obstruct decompression vents or flow.
- e) When cargo is loaded on the floor:
- The height of the cargo shall not exceed 127 cm (50 inches) (approximately the height of a typical economy class seat).
  - The volume of each cargo loading area, whether on a pallet or directly tied to the floor should not exceed 3.54m<sup>3</sup> (125 ft<sup>3</sup>).
  - A lateral access should be provided fore and aft of each cargo loading area as noted below. To allow for appropriate access to the cargo and for firefighting the following should be provided:
    - i. A longitudinal aisle(s) width of at least 51 cm (20"). Each longitudinal aisle must enable a crewmember to traverse it while walking upright
    - ii. A lateral access fore and after of each loading area of at least 38 cm (15") wide
    - iii. Access provisions should be unobstructed including from the cargo restraint means
  - In addition, limitations applicable to the mass, distribution and method of restraint of the cargo should be established based on guidance from the aircraft OEM as deemed necessary by the NCA; EASA support can be provided upon request.
- f) Cargo loaded on a seat should not exceed 22.5 kg (50 lbs) per seat place or 50kg (110lbs) in a single package per triple seat respectively, unless other loads can be substantiated. Underseat stowage of up to 9 kg (20 lbs) per seat place is allowed in addition to this limitation. The cargo should not extend above the seatback height. Potential restraint methods might include:
- Seat tracks (after removing the plastic row-to-row track cover), based on guidance from the aircraft OEM as deemed necessary by the NCA.

Attach netting over the seat and boxes. Secure the net to the seat track. Ensure that the net is moderately taut so as to maintain an aisle width for in-flight surveillance of smoke and fire.
  - Seat belts or seat belt shackles.

Add additional strapping attached to or going around the forward and top side of the boxes. This strapping to be attached to the buckled and cinched down seat belt (seat belt does not go around box since it doesn't adequately restrain the box in forward and up directions).





- Seat beams (located immediately below the seat bottom cushion)

Strap the forward and top side of the boxes to the forward and aft beams by routing the straps under the seat.
- Seat legs

Strap the forward and top side of the boxes to the front legs and to the aft legs by looping the straps around the legs.

#### 1.4. Safety equipment:

- a) Portable oxygen equipment should be provided for each cabin occupant whose duties on board include fire detection and fire-fighting in the cabin. The equipment shall meet 25.1439 (b) (1), (2) and (4) and 25.1443(e) and shall be carried by the cabin occupants during their inspections.
- b) Appropriate protective garments (e.g. fire gloves, etc.) shall be stored adjacent to the cabin occupant's stations.
- c) In addition to the extinguishers already installed in the cabin the need for additional firefighting capabilities should be evaluated by considering the cargo to be transported (e.g. expected class of fire).

The following additional fire extinguishers would provide adequate firefighting capabilities in case of no cargo restrictions other than the ones prescribed in paragraph 1.1:

  - Two Underwriters Laboratories (UL)2A (2-1/2 gallon) rated water portable fire extinguishers, and
  - At least two fire extinguishers with a minimum UL 4A-80B:C rating or equivalent. Four UL 2A-10B:C extinguishers is considered equivalent.
- d) Extinguishers should be located next to fire fighters station(s) or at other locations that the operator determines would be more effective in providing fire protection.

#### 1.5. ECS settings:

- a) Normal Procedures

ECS settings shall be adapted considering the number aircraft occupants. If the ECS system is configured with Gasper outlets they should be in close / off position at all phases of flight.
- b) Emergency Procedures

In the event of a fire in the cabin it should be ensured that the ventilation system is set to low flow. The existing Smoke, Fire, Fumes FCOM procedures (which includes possible divert, don oxygen masks, establish crew communications, re-circulation fans switched off, Smoke Fumes Checklist) must be followed.

#### 1.6. Procedures and documentation:

Existing procedures, including emergency procedures, should be reviewed and adapted as necessary.

The Airplane Flight Manual (AFM) should be revised as to include the following:

- a) Minimum number of additional occupants in the cabin:
  - 1. Minimum of two additional cabin occupants whose duties are to detect and fight a fire, and relay information to the flight crew.
  - 2. For twin aisle and other large long range airplanes, a minimum of 3 additional cabin occupants will likely be needed. Additional cabin occupants above 3 should be justified based on a risk assessment. The number of cabin occupants should be minimized to the number necessary to satisfy item 1.



- b) the additional cabin occupants should have received training, including practical sessions, on:
  - Fire-fighting procedure
  - Use of the emergency equipment, including portable oxygen systems
  - Operation of emergency exits and evacuation procedures
- c) The additional cabin occupants should make a visual inspection of the cargo on a regular basis including prior to TT&L.
- d) When making the inspection required above, the additional cabin occupants should carry portable oxygen equipment (see section 1.4 Safety Equipment).
- e) Provisions should be available to allow the flight crew members to notify the cabin occupants of emergencies (e.g. decompression).
- f) Seats that need to be occupied during TT&L and emergency scenarios such as turbulence or decompression (possibly ensuring visibility of cargo).
- g) A new cabin fire emergency procedure based on manual fire-fighting.

## 2. Return to passenger service

Before the aircraft is used for passenger service, the operator should ensure the return of the cabin back to the configuration certified for passenger transportation. Operators are reminded that if the operator wishes to make these changes permanent, then a design change approval is required.



<b>Applicability of sections in Annex 1 depending on the restrictions to the kind of cargo</b>			
	<b>Restrictions to the kind of cargo</b>  As per paragraph 1.4	<b>Restrictions to the kind of cargo</b>  Positive list of kind of cargo	<b>Restrictions to the kind of cargo</b>  Medical supplies only
<b>Cabin preparation</b>	✓	✓ (except that deactivation/removal of supplemental oxygen systems may not be required, depending on the type of cargo)	N/A
<b>Cargo loading</b>	✓	✓	✓
<b>Safety equipment</b>	✓	✓ (with adaptations, as appropriate, depending on the type of cargo transported in the cabin)	✓ (with adaptations, as appropriate)
<b>ECS settings</b>	✓	✓ (with adaptations, as appropriate)	✓
<b>Procedures and documentation</b>	✓	✓ (with adaptations, as appropriate)	✓ (with adaptations, as appropriate)
<b>Appendix to Annex 1</b>	✓	✓	✓

Table 1 - Applicability of sections in Annex 1 depending on the restrictions to the kind of cargo

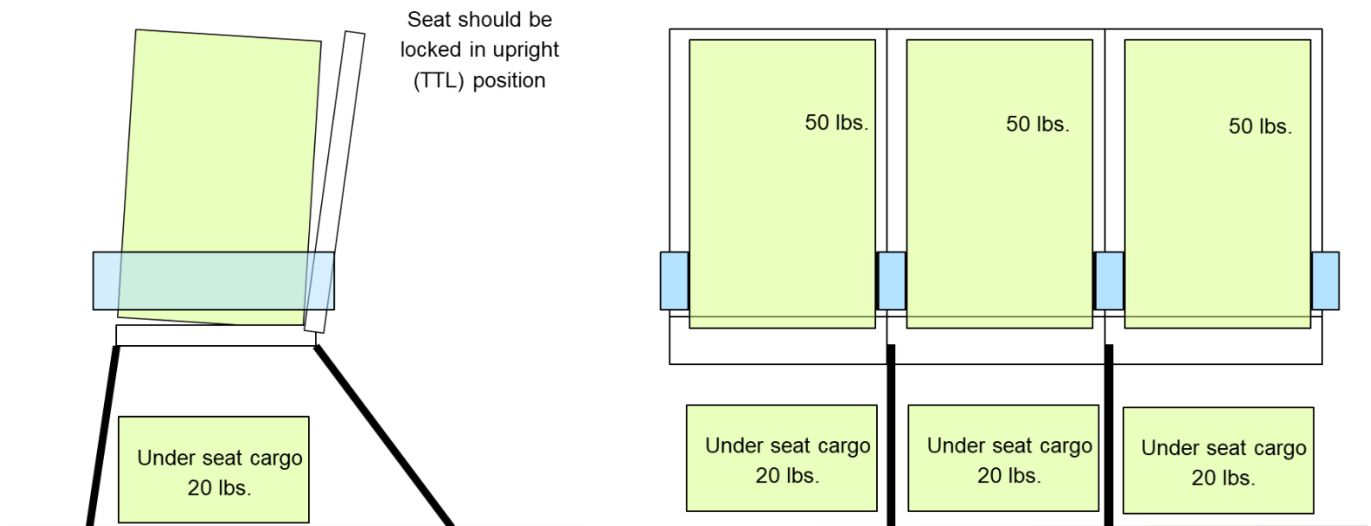


**Appendix 1 to Annex 1**

Example for loading cargo on seats

Interim cargo transportation on seat for 3 boxes maximum 22.5kg (50 lbs)

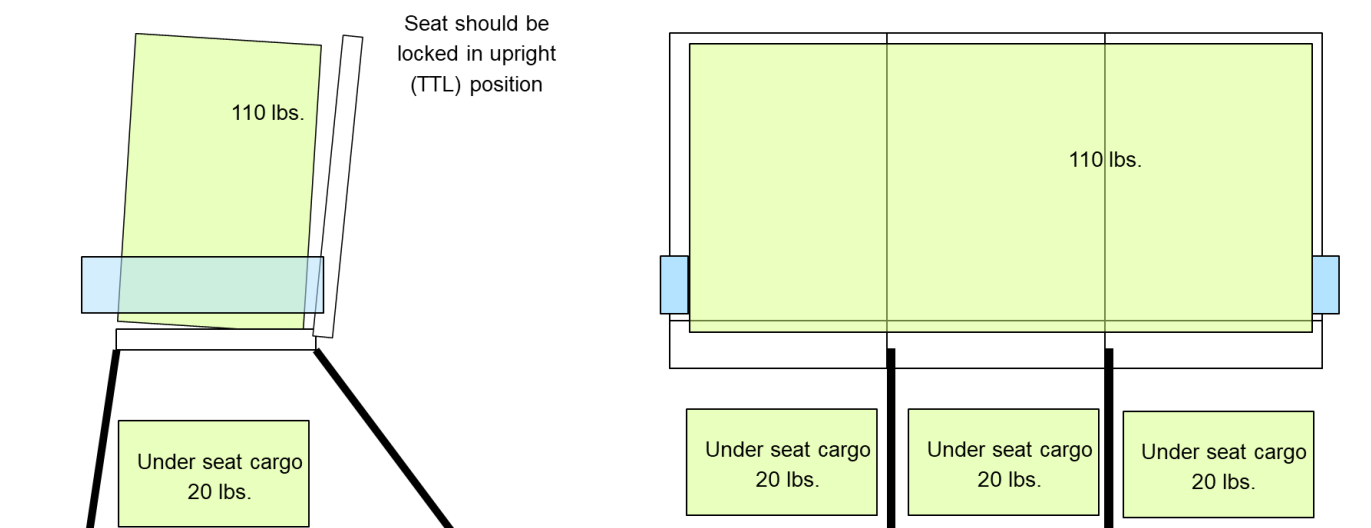
Maximum height of cargo not higher than top of seat backrest



Interim cargo transportation on seat for 1 box maximum 50kg (110 lbs)

Maximum height of cargo not higher than top of seat backrest

Cargo restraint means are not shown.



## Appendix 2 to Annex 1:

### Recommended procedures for loading and unloading cargo

The below recommended procedure is an example. The recommended loading / unloading sequence depends on the aircraft type.

#### Sequence for loading:

- First, load the lower forward cargo compartment
- Next, load the main deck from the front to the back
- Last, load the lower centre/aft cargo compartments (lower cargo compartment aft of the wing)

#### Sequence for unloading:

- reverse order from loading sequence



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## Annex 2 Industry guidance

The following documents were sent by certain aircraft OEMs to provide guidance on how to transport cargo in the passenger cabin:

- Airbus SAS : FOT-999-0028-20-00)
- ATR: OIM2020/003
- The Boeing Company : MOM-MOM-20-0239

Guidance on how to restrain cargo on seats can be found in SAE ARP 4049 Cargo Restraint on Aircraft Passenger Seats – Main Passenger Cabin.

