



Civil Aviation
Advisory Publication
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Carriage and restraint of small children in aircraft

This publication is only advisory but it gives the CASA preferred method for complying with the Civil Aviation Regulations 1988 (CAR 1988).

It is not the only method, but experience has shown that if you follow this method you will comply with CAR 1988.

Always read this advice in conjunction with the appropriate regulations.

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References

- Subregulation 235 (7), regulation 251 and Civil Aviation Orders Section 20.16.3.
- Regulations referred to in this CAAP are regulations under CAR 1988

Who this CAAP applies to

- Operators and owners of passenger aircraft
- Passengers

Why this CAAP was written

This CAAP has been prepared by the Civil Aviation Safety Authority (CASA) to provide advice relevant to regulations 235 and 251 and more particularly to subsection 13 of Civil Aviation Order 20.16.3, Air Service Operations – Carriage of Persons. This publication details acceptable means of restraint for a lap held infant and the acceptable types and fitment of ‘car type’ infant seats as an option to the existing methods of carriage and restraining small children in Australian passenger aircraft.

Status of this CAAP

This is the second issue of this CAAP and cancels CAAP 235-2(0).

For further information

Contact the CASA Area Office closest to you.

1. Directions under regulation 251

1.1 Subregulation 251 (1) requires that, during take-off and landing and other specified times during flight, all occupants shall be restrained by at least a seat belt. Subregulation 251 (3) provides for alternate restraint for occupants in lieu of a seat belt.

1.2 Paragraph 13.2 of Civil Aviation Orders Section 20.16.3 (CAO 20.16.3) permits an infant to be carried in the arms or on the lap of an adult passenger, in a bassinet or in an infant seat in accordance with the conditions specified in paragraphs 13.2, 13.3, 13.4, 13.5 and 13.6. However, in all these situations the requirement of subregulation 251 (1) for all occupants to be restrained remains applicable.

2. Restraint for a lap held infant

2.1 An infant carried in the arms of an adult passenger (lap held) must be restrained, but the adult seat belt must not be fastened around both adult and infant. During an emergency landing sequence, the restraining loads on the adult would be transferred from the lap belt through the infant causing serious or potentially fatal injuries.

2.2 A device known as a “supplementary loop belt” provides an additional seat belt with stitched loops through which the adult seat belt is passed. The adult belt is fastened around the adult, and the additional belt is then separately fastened around the infant. This is the only known device which provides an acceptable restraint for a lap held infant during the times specified in CAO 20.16.3 subsection 3.

2.3 The supplementary loop belt was developed from the extension belt used for the larger adult passenger. Without the stitched loops, the webbing would be twisted out of plane when passed through the adult belt and around the infant and would tend to pull the adult belt’s release buckle out of alignment. An extension belt without stitched loops is not acceptable as an infant restraint.

2.4 The supplementary loop belt will provide some restraint to an infant during turbulence or mild longitudinal emergency loading such as a rejected take off. However, the supplementary loop belt does not provide an equivalent level of protection to a lap belt restraint for a separately seated adult during a severe but potentially survivable crash. The supplementary belt is even less effective for a new-born infant as their skeletal structure would be unable to cope with any significant load from the 5 cm wide webbing. For an equivalent level of protection, all infants should be seated in an individual infant restraint device in a separate passenger seat.

3. The use of bassinets

3.1 An infant under approximately 6 months old is unsuitable for a forward facing car type child seat. A rear facing reclined seat or other means to allow the infant to lie down is required.

3.2 Rear facing or convertible car type infant seats are addressed in paragraph 4 below.

3.3 Bassinets have often been used in aircraft to permit a lap held infant to rest during flight. However, most installations have not been approved for use during take-off or landing. A common installation for the bassinet has been to mount it to a bulkhead immediately ahead of the passenger seat. The bassinet is stowed for take-off and landing as it would otherwise interfere with an emergency evacuation.

3.4 A bassinet or other device mounted separately to a passenger seat would only be acceptable if the installation has been shown to provide protection for the infant and does not interfere with any other safety aspect of the aircraft and has been approved to this effect.

4. The use of a car type infant seat in an aircraft

4.1 Subsection 13 of CAO 20.16.3 permits an infant to be carried in an acceptable separate child restraint system (CRS) fastened to a passenger seat. This could be forward or rearward facing and is the preferred method of restraint for an infant. A child up to age 4 would also be more effectively protected if seated in a CRS provided the weight or size of the child does not exceed the placarded limits of the device. Any child seat must be secured to the aircraft seat in accordance with the child seat manufacturer's instructions or an approved alternate method.

4.2 A rear facing CRS could be a capsule type or seat type and is suitable for the younger infant who is unable to sit upright. There are also "convertible" seats which can be rear facing and then forward facing when the infant develops. Due to their design, these CRS are usually larger, and may not physically fit into some aircraft seats, particularly in the smaller regional aircraft. As for all CRS, the installation must be in accordance with the manufacturers' instructions or an approved alternate method.

4.3 A child booster cushion in a motor vehicle allows an older child to be adequately restrained in the lap/sash restraint and for the child to see out the window. Booster cushions normally do not provide any back or side protection and do not have integral belts to restrain the child. For aircraft use, a booster cushion is not recommended and would not be acceptable unless an upper torso harness (either symmetric or single shoulder strap) is fitted to the aircraft seat which is used to restrain both the child and the

booster cushion and where the aircraft seat back does not fold forward under design crash loads. When not in use the cushion should be stowed or otherwise appropriately restrained

4.4 Those seats currently acceptable in Australia are:

- (a) seats complying with Australian design standard AS/NZS 1754 for infant car seats which are secured in the aircraft in a manner consistent with the seats' design criteria. As this standard requires a 3-point attachment, a top tether, in addition to the fastened lap belt, must be fitted. See paragraph 4.5 below;
- (b) seats accepted by the Federal Aviation Administration of the United States of America as meeting the Technical Standard Order TSO-C100b or seats which have two markings: "This Restraint is Certified for Use in Motor Vehicles and Aircraft" in red lettering and "This seat conforms to all applicable Federal motor vehicle safety standards";
- (c) seats approved to Canadian Motor Vehicle Safety Standard (CMVSS) No. 213 entitled "Child Restraint Systems" or CMVSS No. 213.1 entitled "Infant Seating and Restraint Systems";
- (d) seats accepted by the Civil Aviation Authority of the United Kingdom for which general guidance can be found in the CAA Official Record Series 4 General Exemption - Child Restraint (Public Transport);

(The Type 2040-1 Carechair, manufactured by Aviation Furnishings International Limited has been accepted by the CAA(UK) as a child safety seat specifically designed for aircraft applications)
- (e) seats meeting European Safety Standard requirements of ECE Regulation 44.

4.5 If the securing of a child seat in an aircraft involves more than using the aircraft lap belt, the design of the installation must be approved as a modification to the aircraft under regulation 35.

5. Fitment and use

5.1 Child and Infant seats should:

- (a) be installed in accordance with the child/infant seat manufacturer's instructions;
- (b) not be located in the row adjacent to an emergency exit or immediately forward or aft of such a row. This does not apply where the low seating capacity of the aircraft is such that this limitation is impractical; and
- (c) not obstruct access and passageways to any emergency exit.

5.2 A window seat or the middle row of seats in a two-aisle aircraft are the preferred locations although aisle seats are acceptable when the seats in the same row are occupied by persons responsible for the infant.

5.3 Only one infant seat should be located in any one row unless the infants are in the same family or traveling group.

5.4 The condition and continued maintenance of these seats is the responsibility of the owner of the seat. The seat should be serviced in accordance with the manufacturer's instructions.

5.5 Operators or passengers may supply these infant seats. The option of using infant seats on certain flights is a matter purely between operators and passengers.

6. Restraint in special circumstances

6.1 In special operations, such as aeromedical, the condition of the child may prevent, without being detrimental to their health, the use of restraints described above or **any** restraint on the child. In these circumstances, alternate means, such as humidicribs need to be considered which provide as much crash protection to the child and other occupants as is possible within the restrictions due to the child's condition. Any such alternative or non compliance with the regulation must obtain, from CASA, either specific approval or approval of procedures to address the situation. (Refer exemption CASA EX40/2002).

7. Further advice from regulatory bodies

7.1 Further advice on the specific standards applied in the United States can be obtained from:

The Director, Flight Standards Service
Federal Aviation Administration
800 Independence Ave, S.W.
Washington, DC USA
or

National Highway Traffic Safety Administration
Docket Section, Room 5108
400 7th Street, SW
Washington, DC USA

7.2 Further advice on the specific standards applied in the United Kingdom can be obtained from:

Civil Aviation Authority
Safety Regulation Group
Aviation House
Gatwick Airport South
West Sussex RH6 0YR
United Kingdom

7.3 Further advice in the Australian context can be obtained from:

The Executive Manager, Aviation Safety Standards
Civil Aviation Safety Authority
GPO Box 2005
Canberra ACT 2601
Australia

Bill McIntyre
Executive Manager
Aviation Safety Standards