AIRWORTHINESS BULLETIN

Aircraft Seat Belts - Inadvertent Detachment.

AWB 25-005 **Issue :** 3
Date : 15 May 2015

1. Effectivity

All aircraft seats equipped with “D-ring” type seat belt attachment fittings used with seat belts having hooks at each end with simple spring-loaded keepers.

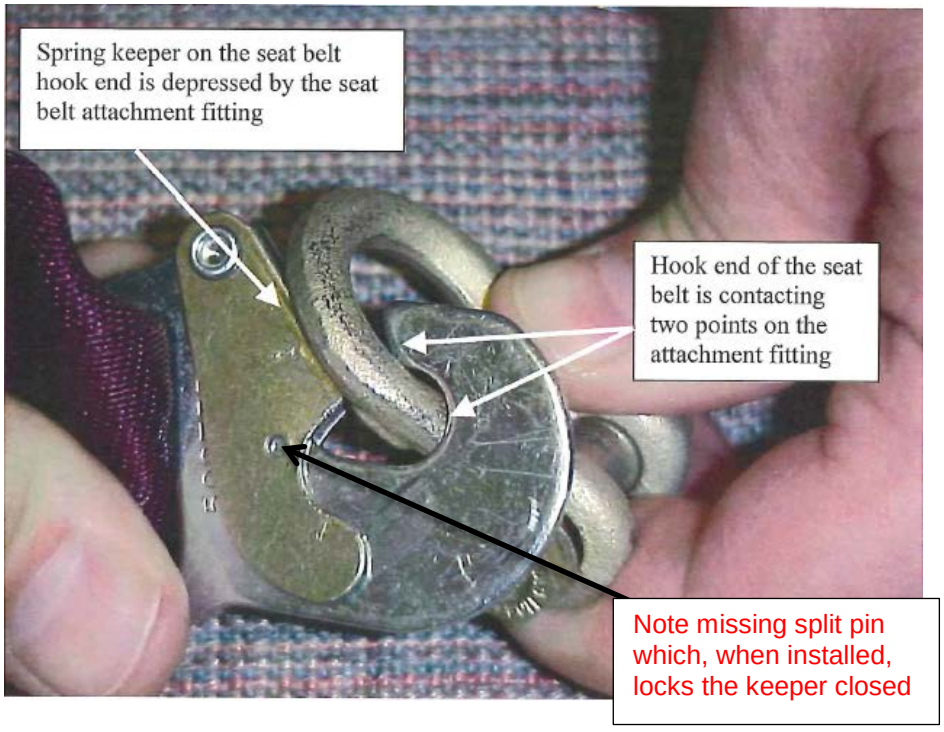
2. Purpose

Alert all operators and maintainers of aircraft with passenger seats equipped with “D-ring” type seat belt anchor fittings that passenger seat belts with hook ends and spring-loaded keepers have the potential to inadvertently release from the “D-ring”.

3. Background

The FAA has received reports showing that during two accidents involving Transport Category aeroplanes, several passengers’ seat belt hooks released from the seat attachments by unhooking from the “D-ring” fittings although the seat belts had remained buckled. (Figure 1.)

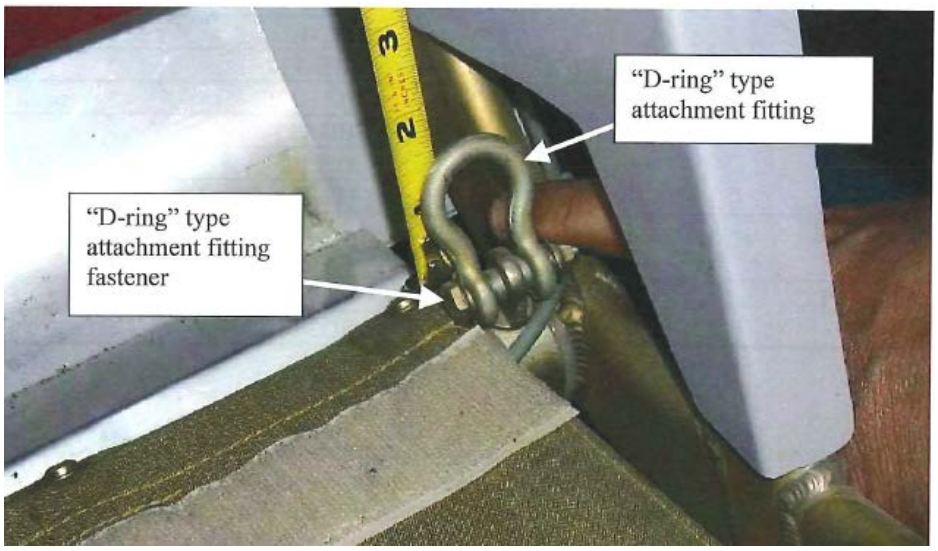
Figure 1. Seat belt detaching from a seat attachment “D-ring” fitting.



“When the hook end of a seat belt is near the fastener that attaches the fitting to the seat, the seat belt hook end can become aligned such that the hook end is contacting two points on the “D-ring” fitting. In this configuration, the spring keeper on the hook end of the seat belt is in alignment with the upper portion of the “D-ring” type attachment fitting. Detachment occurs when an out-of-plane load is applied to the hook end of the seat belt by the seat belt webbing. As the

seat belt attempts to align the hook end of the seat belt with the load, the spring keeper is depressed and the seat belt becomes detached from the fitting." (Figure 1). (FAA SAIB NM-04-37)

Figure 2. Typical passenger seat belt attachment "D" ring.



"The absence of damage to the hook end of the seat belts and the "D-ring" type seat belt attachment fittings suggested that the cause of release was an adverse alignment of the hook end with a spring loaded keeper and "D-ring" which allowed inadvertent disengagement". This phenomenon is also known as "Dynamic Roll-out or "D" Ring Reversal. It can occur when the internal diameter of the "D-ring" is large enough to pass over the tip of the hook to depress and open a simple, unlocked spring-loaded keeper.

The Cessna C208 Illustrated Parts Catalogue (IPC) approves seat belt hooks similar to those in Figure 1 of this AWB.

The IPC for this aircraft also specifies the split pins (cotter pins) to be used with the hooks, which, when installed, are intended to prevent the keeper opening and prevent dynamic roll-out.

4. Recommendations

CASA concurs with and reiterates the FAA's recommendation, that passenger seat "D-ring" attachment fittings used with seat belts equipped with hooks having simple spring-loaded keepers - which have no locking device - be replaced with an improved design seat belt attachment as soon as possible.

Where seats have Technical Standard Order (TSO) approval, the operator should contact the seat manufacturer for service information. If seats are not TSO approved, the operator should contact the aircraft manufacturer for service information.

5. Reporting

All defects relating to and occurrences of inadvertent seat belt release should be reported to CASA via the SDR system

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

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Standards Division
Civil Aviation Safety Authority
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