Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

AWB 25-032 Issue 1 – 23 April 2018

Cessna Pilot Seat Track Locking - Pre-Flight Check, Maintenance and Mod Status

1. Effectivity

All Single Engine Cessna Aircraft listed in in Cessna Single Engine Service Bulletin SEB07-5, “Pilot and Co-pilot Secondary Seat Stop Installation”, latest revision.

2. Purpose

This AWB is to remind and to reinforce the message for all Cessna operators and maintainers of the importance of meticulous inspection plus timely maintenance to ensure pilot seats, adjustment mechanisms and seat track locking mechanisms are secured correctly to prevent inadvertent seat movement particularly during critical phases of flight.

This AWB is also to ensure that all operators and maintainers are aware of the manufacturer’s Service Bulletin to fit a Secondary Seat Stop to each pilot seat. The manufacturer’s modification is designed to prevent inadvertent seat movement if the primary seat locking mechanism latch pins are not properly engaged in the seat track/rail.

This AWB is issued to supersede and cancel AWB 53-010 Issue 1 and to provide additional information and background.

3. Background

There have been numerous tragic accidents, several fatal, that have occurred due to inadequate inspection and maintenance practices on seat assemblies fitted to single engine Cessna aircraft, including incorrect placement of seat stops, worn seat adjustment mechanisms, poor seat latch/ track engagement and the installation of unapproved parts.

It is essential that aircraft seats, their adjustment mechanisms and any attaching systems, such as seat belts, safety harnesses be in good condition to ensure secure and safe operation for the flight crew and passengers.

FAA Airworthiness Directive 2011-10-09 ‘Seat Rails and Roller Housing Inspections’ became effective on 17 June 2011 with compliance due every 100 hours or 12 months, whichever comes first.

The AD provides inspection criteria and limitations for seat track/rails and associated seat components in response to the following identified "Unsafe Condition";

> "This AD was prompted by reports of seats slipping on the rails where the primary latch pin for the pilot/co-pilot seat is not properly engaged in the seat track/rail and reports of the seat roller housing departing the seat rail. We are issuing this AD to prevent seat slippage or the seat roller housing from departing the seat rail, which may consequently cause the pilot/co-pilot to be unable to reach all the controls. This failure could lead to the pilot/co-pilot losing control of the airplane."

A previous ATSB report AO-2014-053 investigated a loss of control and subsequent fatal crash of a Cessna U206G performing parachuting operations.

The report investigated partial power loss, uncommanded pilot seat movement, flight control obstruction, aircraft defects and serviceability issues that may have contributed to the accident. The report also provides a good reference to other seat slippage reports (Page 42) and related investigations.

The ATSB findings reported the following;

> "Contributing Factors
>
> Shortly after take-off, and for reasons that could not be determined, the aircraft aerodynamically stalled at a height from which the pilot was unable to recover control prior to collision with terrain."

And,

> "Other Factors that increased risk (abridged)
>
> - Past operation of VH-FRT with fuselage damage…
> - ***It was likely that the pilot seat rear rail stop was not fitted in VH-FRT at the time of the accident. This increased the risk of seat feet disengagement from the rear of the seat rails and, if the primary locking pins were not secure or failed, uncommanded rearward movement of the seat and subsequent in-flight loss of control.***
> - ***Despite being categorised as mandatory for the pilot's seat by the aircraft manufacturer, a secondary seat stop modification designed to prevent uncommanded rearward pilot seat movement and potential loss of control was not fitted to VH-FRT, nor was it required to be under United States or Australian regulations. [Safety Issue]***
> - Some Cessna 206 parachuting aircraft, including VH-FRT, had their flight control systems modified without an appropriate maintenance procedure or approval...
> - ***It was likely that the shoulder restraint portion of the pilot's seatbelt was not used on the accident flight…***

- Research has identified that rear-facing occupants of parachuting aircraft have a higher chance of survival when secured by dual-point restraints, rather than the standard single-point restraints that were required to be fitted to Australian parachuting aircraft…
- ***It was likely that the parachutists on the accident flight, as well as those that had participated in previous flights, were not secured to the single-point restraints that were fitted to VH-FRT. While research indicates that single-point restraints provide limited protection when compared to dual-point restraints, they do reduce the risk of load shift following an in-flight upset, which can lead to aircraft controllability issues…***
- Briefings detailing the safety features of the aircraft, how to wear a restraint and how to brace or egress in the event of an emergency were not consistently provided to tandem parachutists, despite being a regulatory and Australian Parachute Federation requirement….
- Classification of parachuting operations in the private category did not provide comparable risk controls to other similar aviation activities that involve the carriage of the general public for payment…"

The ATSB report also noted that the aircraft manufacturer advised that the risk of uncommanded pilot seat movement is increased during take-off or landing if the pilot's seat primary locking pins are not secured or have failed, if a secondary seat stop modification is not incorporated or serviceable, and if a seat rail rear stop is missing it will increase the risk of seat feet disengagement from the rear of the seat rails, with subsequent in-flight loss of control.

Overall, as the position of the pilot's seat primary locking pins could not be established, it was not possible to determine if the likely absence of the rear rail stop influenced the development of the accident.

The manufactures secondary seat stop was not installed on the accident aircraft.

The ATSB issued a safety recommendation for the Civil Aviation Safety Authority to take action to strengthen incorporation of in Cessna Single Engine Service Bulletin SEB07-5, "Pilot and Co-pilot Secondary Seat Stop Installation", modification.

In response to the ATSB report safety recommendation CASA replied;

> "CASA has reviewed the purpose and function of the secondary seat stop modification and concluded that this modification in itself would not address an unsafe condition. CASA issued Airworthiness Bulletin (AWB) 53-010 in July 2016 to clarify the legislative requirements relative to the Cessna Supplemental Inspection Documents (SIDS) inspection program. The AWB addresses the incorporation of Cessna Single Engine Service Bulletin SEB07-5 where CASA's position is that this modification, while highly recommended, does not have a legislative requirement for incorporation.

The US Federal Aviation Administration (FAA) released Special Airworthiness Information Bulletin (SAIB) CE-09-10 in February 2009, which alerted operators to the availability and potential safety concern that is addressed by this particular modification. SAIB's are issued with the following caveat:

At this time, this airworthiness concern is not an unsafe condition that would warrant AD action under Title 14 of the Code of Federal Regulations (14 CFR) part 39.

As such, the FAA did not, and has not since decided that regulatory action was appropriate for this condition."

CASA previously issued Airworthiness Bulletin (AWB) 53-010 Issue 1 (cancelled) to recommend the incorporation of the manufacturers secondary seat stop for applicable aircraft listed in Cessna SEB07-5 latest revision.

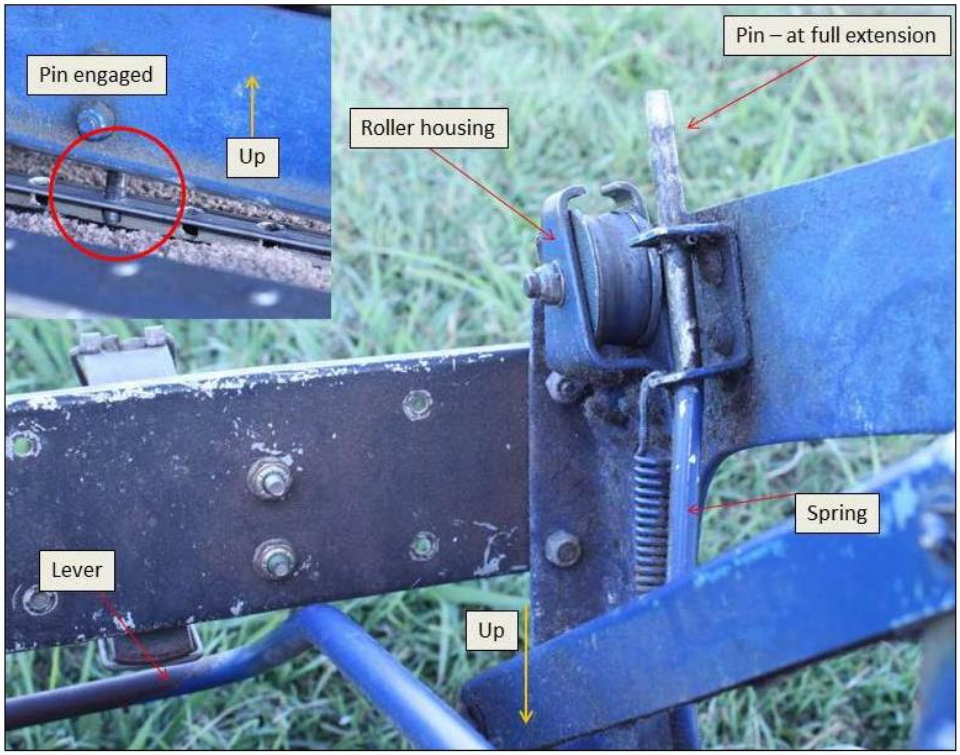

Figure 1: Exemplar of a primary seat stop showing the primary seat stop (latch) pin engaged in the seat rail at left inset (circled in red).

Source: ATSB Report AO-2014-053

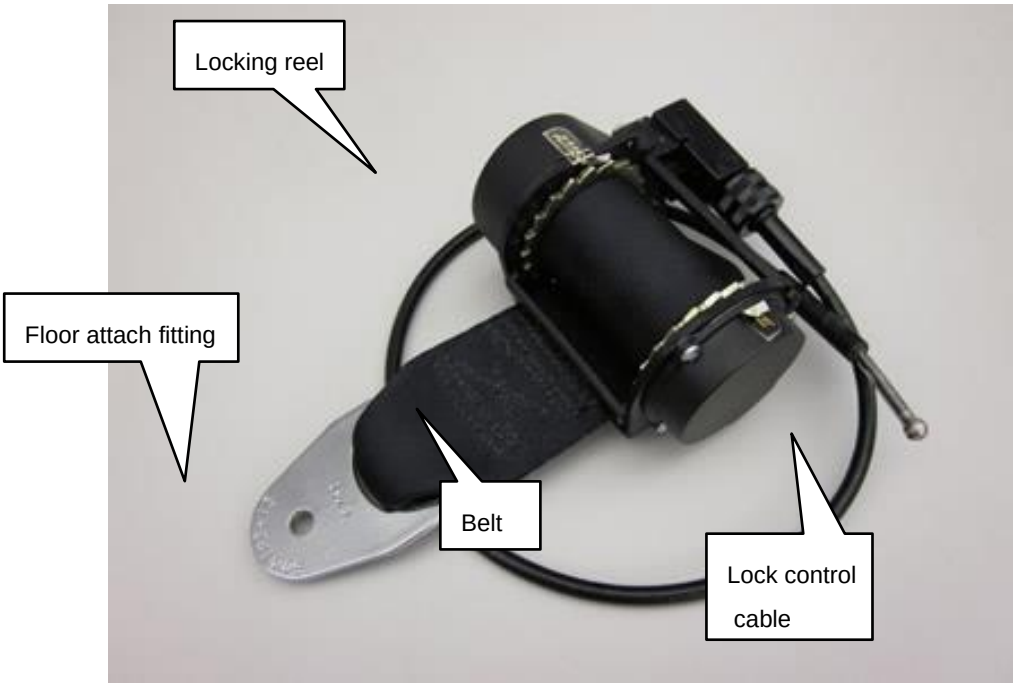

Figure 2: Close-up view of Cessna Mod Kit SEB07-5 Secondary Seat Stop locking reel, belt, floor attach fitting and lock control cable.

Source: CASA AWB 53-010 Issue 1 (Cancelled)

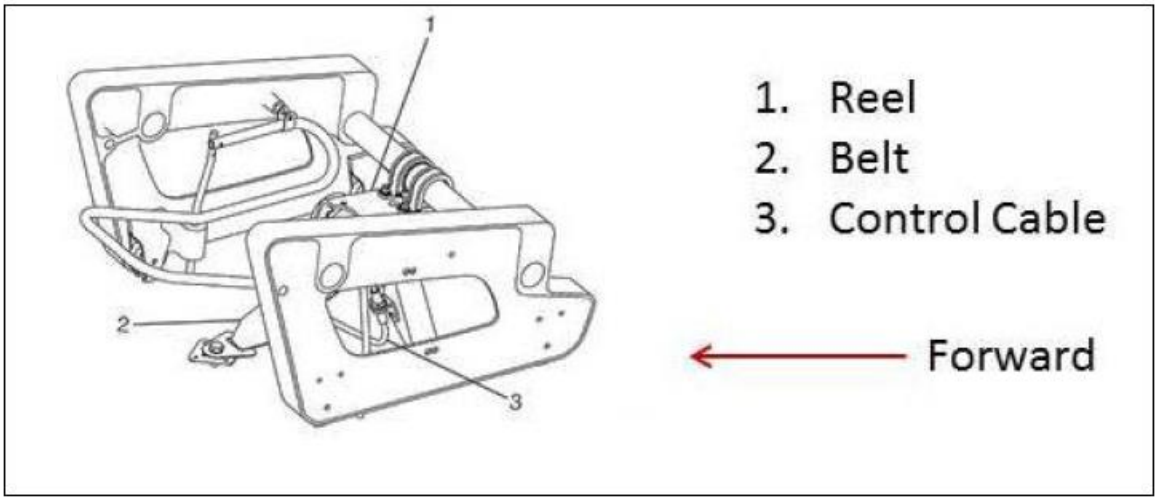

Figure 3: Exemplar installation of a secondary seat stop showing the locking reel, belt & lock control cable (items 1 and 2) that connect the seat frame to the cockpit floor

Source: Cessna, modified by the ATSB. ATSB Report AO-2014-053

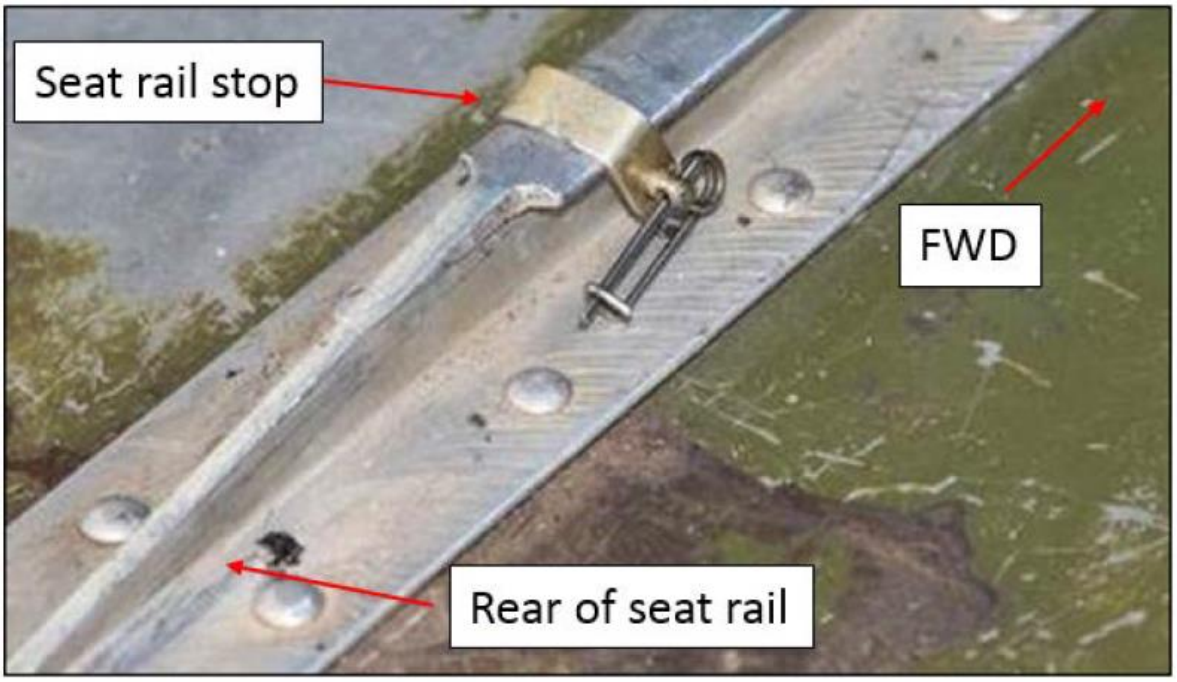

Figure 4: Exemplar of a Rear Seat Track/Rail Stop

Source: ATSB Report AO-2014-053

4. Recommendations

CASA strongly recommends that all operators and maintainers carry out the following actions;

1. Maintenance Practices

Removal, installation and inspection of pilot seats are frequently performed by unlicensed maintenance staff during maintenance events, and also as a pilot maintenance task approved under CAR Schedule 8.

It is essential that certifying staff ensure that all maintenance personnel undertaking any maintenance task are aware of all inspection requirements, including special inspections and Airworthiness Directives (AD's) including FAA Airworthiness Directive 2011-10-09 'Seat Rails and Roller Housing Inspections' with compliance due every 100 hours or 12 months, whichever comes first. The content of the Instructions for Continuing Airworthiness (ICA) should be familiar to the maintainer and constantly reviewed to ensure the maintainer is using up-to-date data.

Another factor required for correct operation of seat mechanisms is the use of appropriate components and parts. The maintainer should always refer to the aircraft's Illustrated Parts Catalogue (IPC) to identify that the correct seat stops, cotter pins, etc. are utilized. Do not accept that the parts previously used are genuine or correct. Verify this yourself.

Although removal and installation of seats may seem a mundane task, the importance to ensure correct positioning of the primary seat locking mechanism, the secondary seat stop, and rear track seat stops cannot be overstated. Maintenance personnel should check that the seat operates correctly throughout its entire range of movement (forward/aft, recline and height). Seats should be verified both visually and operationally for the functionality of the adjustment mechanism, particularly at the extreme positions of the seat travel. Inspection should also extend to any approved supplemental or secondary seat stop devices to ensure correct operation.

2. Pre-flight Inspections – Pilots and Crew/Passenger

The checking of seat adjustment, locking and security to the seat track/rail is as much a part of the pre-flight inspection requirements as that of checking seat belts, the flight controls or aircraft fluids and as such should be carried out with diligence.

Seat adjustment should occur before the aircraft is started. Operation of the seat for adjustment should be smooth and deliberate, with movement slow enough to allow the primary seat locking mechanism and the secondary seat stop to engage correctly.

Ensure that any flight bags, headset cables, seat covers etc. do not foul the seat actuating or locking mechanisms, which could cause inadvertent seat movement.

Any discovered defects must be noted in the Maintenance Release (refer CASR 50) and reported to the Registered Operator/Owner before further flights. Report all major defects to CASA as required by CAR 52.

3. Secondary Seat Stop Modification per Cessna Single Engine Service Bulletin SEB07-5, “Pilot and Co-pilot Secondary Seat Stop Installation”.

CASA highly recommends the incorporation of the Cessna Secondary Seat Stop Mod Kit SEB07-5 on the applicable aircraft. The kit is available to applicable aircraft via warranty claim (credit) via the local Cessna distributor.

5. Reporting

ATSB Occurrence Investigation AO-2014-053

CASA AWB 25-2 Issue 1 – Aircraft Seats

CESSNA Single Engine Service Bulletin SEB07-5 Revision 2, Pilot and Co-pilot Secondary Seat Stop Installation

CASA CAAP 42ZC-1 – Schedule 8 of CAR 1988 – The Pilot Maintenance Schedule

6. Enquiries

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

AirworthinessBulletin@casa.gov.au

Or in writing, to:

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Civil Aviation Safety Authority
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