

PRELIMINARY REPORT

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This is preliminary information, subject to change, and may contain errors. Any errors in this Report will be corrected when the Final Report has been completed. The sole purpose of this Investigation is the prevention of aviation Accidents and Incidents. It is not the purpose of the Investigation to apportion blame or liability.

1. The Occurrence

On the afternoon of 27 June 2010, a Boeing 737-800 parked on stand 109R at Dublin Airport, following a flight from Krakow. During disembarkation from the rear door the first three passengers emerged from the aircraft onto the mobile air stairs unit. The stairs then partially collapsed trapping and causing serious injury to a passenger's leg.

2. The Air Stairs Unit

The air stairs is a telescopic unit, comprising a fixed (lower) step section and a hydraulically actuated, sliding (upper) step section, which allows the air stairs to be adjusted for various aircraft door heights. The sliding section is adjustable to a height appropriate for its intended use. There are five selectable height positions. In the case of a Boeing 737-800 aircraft, position 1 is used for the front door while position 2 is used for the rear door.

In operation, when set to one of the five positions, the upper platform of the fixed step section aligns level with a tread of the sliding step section. When in these positions a locking mechanism, comprising two pawls, one on each side, is designed to engage against arrestor blocks; thus preventing the sliding section from slipping downwards.

The air stairs unit, part number LTPS 2636, was delivered, new, to the Operator in September 2008.

3. Testing

Following the event, the stairs unit in question was immediately withdrawn from service for inspection by the Investigation.

During testing by the Investigation a number of issues relating to the occurrence stairs unit were identified. In particular, one of the locking pawls was found to be unserviceable and incapable of engaging with the arrestor blocks. The stairs unit manufacturer informed the Investigation that previous testing had shown that one serviceable pawl, correctly engaged, was sufficient to maintain the sliding unit lock. However, the stairs unit manufacturer also observed that, in this case, the unserviceable pawl mechanism on one side was "*working against*" the mechanism for articulating the serviceable pawl on the other side.

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The Investigation's testing revealed that it was possible for the fixed section upper platform and a sliding section step tread to align properly even though the locking mechanism was not fully engaged. This occurred when the arrestor block rested on the upper, leading edge of the serviceable pawl, thereby providing a "*false*" locking of the sliding stair. **Photo No. 1** shows this "*false*" lock condition where the pawl is not correctly engaged.



Photo No. 1: False lock configuration

It was found that this "*false*" lock was sufficient to allow one person to stand on the sliding section without adverse consequence. However, when three people stood on the sliding section the "*false*" lock suddenly gave way and the section slid rapidly downwards until the pawl engaged in the next detent. This was accompanied by a loud noise. During this downward slide, the tread that had been level with the fixed top platform dropped rapidly whilst, instantaneously, the next step slid downwards closing the gap. The result was that anything resting on the tread that had been level with the platform was trapped between the edge of the platform and the edge of the descending (next higher) step.

Following examination of a serviceable air stairs unit of the same part number the Investigation found that it was possible for both pawls to simultaneously engage in a "*false*" lock condition.

Accordingly, the following Safety Recommendations are made:

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4. Safety Recommendations

It is recommended that:

1. Ryanair Ltd. should ensure that personnel involved in the use of mobile air stairs units visually confirm and crosscheck the correct engagement of both pawls immediately prior to each use. ([IRLD2010007](#))

Response:

Ryanair Ltd informed the Investigation by e-mail on 6 July 2010 that it has accepted and implemented this Safety Recommendation.

2. Ryanair Ltd. should ensure that personnel involved in the use of stairs units are trained to recognise when pawl mechanisms are correctly engaged. ([IRLD2010008](#))

Response:

Ryanair Ltd informed the Investigation by e-mail on 6 July 2010 that it has accepted and implemented this Safety Recommendation.

3. Ryanair Ltd. should review their procedures for air stairs maintenance. ([IRLD2010009](#))

Response:

Ryanair Ltd informed the Investigation by e-mail on 6 July 2010 that it has accepted and implemented this Safety Recommendation.

4. TB Davies (UK) Limited should advise operators of the Owen Holland Engineering Ltd. LTPS 2636 air stairs units of the potential problem of “false” lock occurrence. ([IRLD2010010](#))

Response:

TB Davies (UK) Limited informed the Investigation by e-mail on 7 July 2010 that it has accepted this Safety Recommendation and is issuing a Critical Customer Safety Bulletin to all operators of the LTPS 2636 and similar Owen Holland air stairs.

5. TB Davies (UK) Limited should review the design of the LTPS 2636 air stairs units and assess whether modifications and/or additional control measures are required to obviate the possibility of “false” lock occurrence. ([IRLD2010011](#))

Response:

TB Davies (UK) Limited informed the Investigation by e-mail on 7 July 2010 that it has accepted this Safety Recommendation and has assigned engineers to address it.

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