

Safety Recommendation Number:	IRLD2022002
AAIU Event Reference:	IRL00919027
AAIU Report Number:	2022-006
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Safety Recommendation Status:	Not accepted, closed

Safety Recommendation:

BRM Aero should review its procedures for the determination of the moment arm for a seated pilot and passenger in each of its aircraft variants, with a view to changing the method to one using available anthropometric data and aircraft seat location and dimensions, taking into account all possible seating configurations, including but not limited to, seat-back recline angle, and seat cushion material.

Response:

The Aircraft Manufacturer provided the following response on 30 November 2022:

‘Please refer to [IRLD2022001] 1 above.

According to BRM experience no other manufacturer has had to publish, or allow for, the cushion material or seat back recline. For example Cessna 172 has reclinable seats for both pilots seats and rear passenger seats.

There is no information, or even statement, in the C172 POH that documents (or even discusses) the effect on the occupant arm. Furthermore the pilot’s seats slide on the seat rails and clearly the pilot’s moment arm will vary considerably depending on the seat position he adjusts his seat to.’

AAIU Reply:

On 23 January 2023, the AAIU responded to the Aircraft Manufacturer as follows:

‘The AAIU’s Final Report outlines in Section 1.6.10.3 and Section 2.5.3 that relatively small changes to the location of variable loads can have a large effect on the CG for light aircraft, and that even a small variation in seat position and seat cushioning material may affect the position of a seated person within the cockpit, and therefore the effective moment arm of that person. The Final Report notes that BRM’s weighing exercise did not state the dimensions of the seat cushion material used.

BRM’s response does not address the content of Safety Recommendation IRLD2022002, and therefore, as per Safety Recommendation IRLD2022001, the AAIU suggests that BRM reconsider the recommendation and provide a response that accurately reflects the content of the Safety Recommendation.

For information, the POH for the Cessna family of aircraft does show a variable arm for adjustable seats and uses ‘an average occupant’ for the CM of someone seated.’

Response:

The Aircraft Manufacturer provided the following response on 16 March 2023:

‘SR Not Accepted. Reason: BRM AERO continues to maintain the position that the determination of the crew arm based on real measurements/weighing of the aircraft with a group of different bodies is absolutely adequate and has a higher realistic predictive value than any theoretical analysis. The inclination of the backrest is fixed. The compression of the upholstery has been considered at weighing. The regulations for this category of aircraft (UL/LSA) do not require the use of anthropometric data to determine the position of the crew centre of gravity.

AAIU Comment:

The AAIU considers the status of this Safety Recommendation as ‘Not accepted, Closed’.