

## Bristell NG-5 Aircraft

### Change in the Pilot and Passenger Moment Arm measurement to be Used in Pre-flight Centre of Gravity Calculations

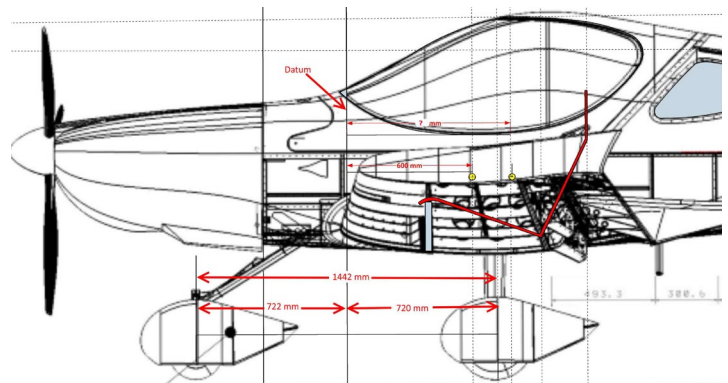
During a recent weight and balance check carried out on a Bristell NG5 aircraft at the LAA's Turweston HQ, it was found that the pilot and passenger moment arm, as measured from the aircraft's datum, was different than that defined in the Pilot's Operating Handbook (POH). The POH defines this moment as 600mm aft of the datum where the true figure appears to lie between 700 and 750 mm aft of the datum.

The consequence of this further rearward location of the pilot and passenger is that the loaded centre of gravity of the aircraft will be further aft than previously calculated. Pilots using the 600 mm pilot moment arm in their pre-flight centre of gravity calculations might therefore inadvertently fly the aircraft with the centre of gravity outside of the aft cg limit.

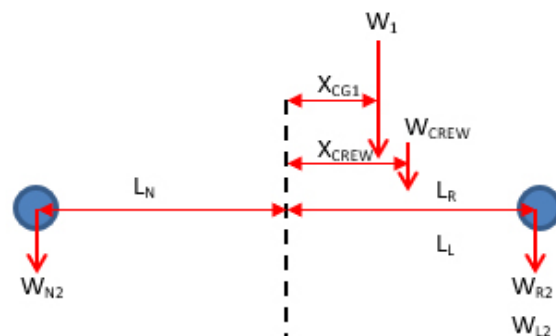
The possibility that an aircraft could be flown beyond its rearward limit is, naturally, increased when flown two-up. Flying an aircraft beyond the aft cg limit can be extremely dangerous for a number of reasons; in particular, there is an increased risk of degraded flight handling characteristics and a possible departure from controlled flight.

Whilst further investigations are being carried out to determine a more accurate moment arm for the pilot and passenger, and until further notice, a pilot moment arm of 750 mm aft of the datum must be used in all pre-flight centre of gravity calculations.

The Airworthiness Information Leaflet (AIL) (LAA/MOD/385/011 Issue 1) mandating this change may be downloaded [HERE](#).



As part of their training, all pilots learn how to carry out a weight and balance calculation to ensure that the aircraft's centre of gravity will remain within tested limits during all phases of the flight; this assessment must be carried out before every flight. Naturally, to establish the accurate centre of gravity of a loaded aircraft, the moment arms, as measured from a pre-determined datum, must be accurately defined.



Small variations in moment arms can add up to quite large variations in centre of gravity position, that's why every aircraft must be both weighed and measured during an aircraft's empty centre of gravity determination. Because of normal morphological differences between people, the pilot's and passenger's moment arms can be tricky to calculate, the worst case pilot and passenger moment arms must therefore take account of body shapes and sizes.