



GROUND HANDLING OPERATIONS SAFETY TEAM

## Last Minute Changes

Before departure, mass and balance documentation must reflect the actual loaded state of the aircraft. In order to comply with this legal requirement, it is often necessary to adjust the loadsheet after completion. These adjustments are called last minute changes (LMC).

The last minute change process is a way to enter late alterations/updates to a final manual or electronically produced loadsheet, without requiring revisions to the main body or the preparation of a new document.

### Using LMCs

Any LMC increase or change must not exceed the:

- Allowable underload calculation.
- Maximum mass and balance limits for zero fuel, take-off and landing.
- Limitation of any compartment that is intended to be used.

There is a maximum allowable change to the number of passengers or hold load as a LMC, which will be specified in the individual operator's operations manual for each aircraft type. Operators must also specify a similar rule for changes to the balance condition, to be defined in index units.

Changes to fuel quantities and/or locations, figures should be fully recalculated and new documentation produced because of the significance in terms of the aircraft mass and balance condition. However, some operators may permit fuel LMCs for lesser quantities, so fuel mass and index data must be made available and should be checked.

Remember, margins may be further reduced as many operators request significantly aft trims to provide better fuel efficiency.

It is also possible that the operator may be able to manage the effect of LMCs using stricter curtailments of the flight envelope. Maximum allowable adjustments for given bays, holds and compartments can be defined to ensure centre of gravity limitations are not exceeded.

If in any doubt about the limitations of the aircraft, use the mass and balance system to produce a new loadsheet. In the case of a manual loadsheet, use a balance chart to ensure compliance.

Anyone responsible for completing LMC calculations must be appropriately trained and the mass and index data must be readily available. They must also be aware of the mass and balance condition of an aircraft before and after any changes, in order to avoid the aircraft going beyond limitations as a result of the LMC.

If the information/instruction is held within the ground operations manual, away from the aircraft side, an alternative and accessible source of information should be considered.

## Recording

The LMC should contain the following minimum information:

- The load to be changed (bags, passengers and/or cargo etc).
- The mass of the load to be changed.
- The location of load to be changed (cabin/bay area, hold and/or compartment etc.).
- The nature of the change (enter + or – as appropriate).
- The intended location of the load (if remaining onboard).
- The total mass and index change of the LMC.

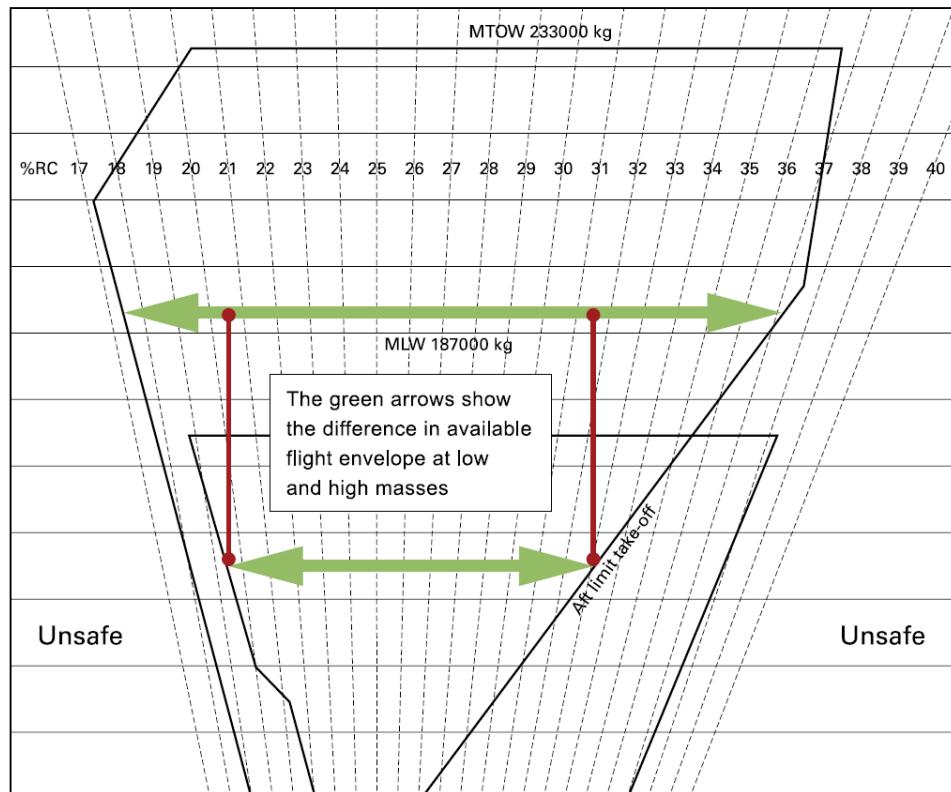
## Reporting

If any LMC occurs after the completion of the mass and balance documentation, it must be brought to the attention of the captain and clearly entered on the documentation. The captain should amend the mass and balance sheet, but it is essential that it is recorded on the copy kept at the airport.

## Important Considerations

Be aware that any change to the loading position of dangerous goods must comply with the operator's instructions for ensuring the segregation of incompatible dangerous goods. An amendment must then be made to the notification to the commander (NOTOC) and given to the captain before departure, and the captain must confirm the amendment has been received. A copy of this information must be kept on the ground and be accessible to the flight operations officer, flight dispatcher or ground personnel responsible for flight operations until after the arrival of the flight.

Many aircraft flight envelopes are more restrictive at lower weights. So while it may seem that a lighter-loaded aircraft can accept larger load changes, this will affect its centre of gravity more, so a LMC must be checked very carefully.



It is also important to be aware that passengers are now carrying more hand luggage which can mean that items of cabin baggage need to be relocated into a cargo hold. If this happens, the calculations must be completed as part of the LMC.



Everyone involved in loading and securing an aircraft, from load control to the flight deck, must be aware of the importance of accurate mass, balance and loading. See our free DVD, Safety in the Balance on the CAA website at [caa.co.uk/ghost](http://caa.co.uk/ghost)

For any related comments, feedback or information please contact [GHOST@caa.co.uk](mailto:GHOST@caa.co.uk)