

031 Mass & Balance

031-01 Purpose of M & B

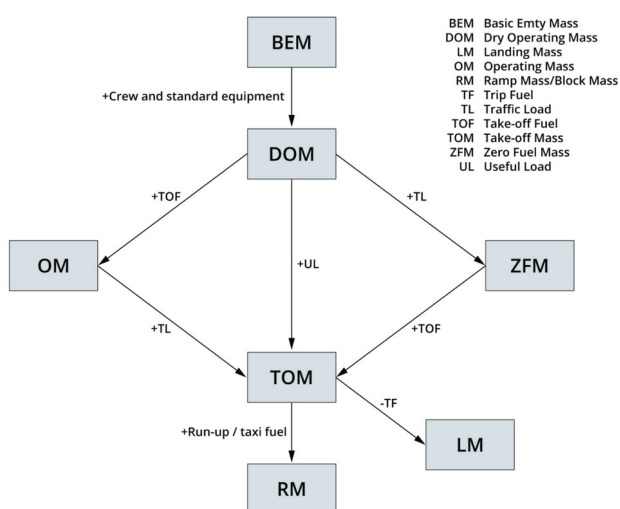
V_{MU} minimum unstick speed

031-01-02 Centre of Gravity (CG) Limitations

CG aft: less drag, less fuel, less stable, lower stall

CG fwd: more drag, more fuel, more elevator force

031-02 Loading



4 kg for clothing, 6 kg for hand baggage

when < 10 pax seats available then oral

use standard baggage weights when >= 20 pax seats

type of flight	baggage
domestic	11 kg
within europe	13 kg
intercontinental	15 kg
other	13 kg

flight crew: 85 kg

cabin crew: 75 kg

031-03 Fundamentals of CG

$$\text{Moment} = \text{Force} \times \text{Arm}$$

031-04 M & B Details of Aircraft

weighing: by operator, prior to initial entry into service and every 4 years

9 years when using fleet mass:

# ac	weighings
2 or 3	n
4 to 9	(n + 3) / 2
>= 10	(n + 51) / 10

031-02-02 Mass Limits

Maximum Floor Load: mass per area (e.g. kg/m²)

031-02-03 Mass Calculations

seats	1 – 5	6 – 9	10 – 19
male	104 kg	96 kg	92 kg
female	86 kg	78 kg	74 kg
children	35 kg	35 kg	25 kg

seats	≥ 20		≥ 30
	male	female	adult
non-holiday	88 kg	70 kg	84 kg
holiday charter	83 kg	69 kg	76 kg
children	35 kg	35 kg	35 kg

basic empty mass is recorded in weighing schedule

031-06 Cargo Handling

bulk cargo – large items with uneven shape, inappropriate for containers or pallets, rush bags, crew bags

containers – each container has its own manifest

pallets – secured with straps or nets

variable load: mass of crew, crew baggage, removable units of equipment

mzfm is calculated for +2.5g