## Appendix 2: List of parameters (to complete with the values of the two aircrafts if they differ)

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| --- | --- | --- |
| **Parameters** | **USI** | **US/Imp** |
| **Fuselage** |
| Height: **HEIGHTfus** |  |  |
| Width:**WIDTHfus** |  |  |
| Length: **LENGTHfus** |  |  |
| **Wing** |
| span: **b** |  |  |
| Aspect Ratio: **AR** |  |
| Gross Surface: **S** |  |  |
| Exposed: **S\_exp** |  |  |
| Taper Ratio: **Lambda** |  |
| Cord at root: **Croot** |  |  |
| Cord at tip: **Ctip** |  |  |
| Sweep angle at chord quarter: **Lambda\_quart** |  |
| Geometric twist: **Eps\_gtip** |  |
| Mean Aerodynamic Chord: **MAC** |  |  |
| X coordinate of Aerodynamic center: **Xac** |  |  |
| Y coordinate of Aerodynamic center: **Yac** |  |  |
| Compressibility parameter: **BETA** |  |  |
| Cruise Mach: **M** |  |
| Average airfoil thickness: **t\_bar** |  |  |
| Fuel volume: **V\_fuel** |  |  |
| Wetted wing surface: **S\_wetted\_w** |  |  |
| Wing lift coefficient in cruise: **C\_L\_w** |  |
| Wing lift coefficient derivative: **a** |  |
| Angle of attack at root (cruise): **Alpha\_root** |  |
| Zero-lift angle of attack at root: **Alpha\_L0** |  |
| Zero-lift angle of attack of the profile:**Alpha\_l0** |  |
| Aerodynamics twist coefficient: **Alpha\_01** |  |
| Aerodynamics twist: **Eps\_a\_tip** |  |
| Maximum lift coefficient of the wing (flaps in): **CLmax** |  |
| Stall velocity (flaps in): **Vs** |  |  |
| Stall velocity (flaps out): **Vs0** |  |  |
| Reynolds number: **Re** |  |  |
| Airfoil lift coefficient derivative: **c\_l\_a** |  |
| Airfoil design lift coefficient: **c\_l\_i** |  |  |
| Maximum camber: **cmax** |  |  |
| Lift coefficient (cruise): **LW** |  |  |
| **Stability (for each flight configuration)** |
| Plane lift coefficient (cruise): **CL** |  |
| Empennage/canard plane lift coefficient (cruise): **CLT** |  |
| Surface of the empennage/canard: **ST** |  |  |
| Fuselage angle of attack: **Alpha\_f** |  |
| Zero-lift fuselage angle of attack: **Alpha\_f0** |  |
| Pitching moment coefficient: **Cm** |  |  |
| Wing pitching moment coefficient: **Cm0** |  |  |
| X-coordinate of the gravity center: **Xcg** |  |  |
| Empennage/canard pitching moment coefficient: **CmT** |  |  |
| Empennage/canard lift: **LT** |  |  |
| Non-dimensional center of gravity position: **h** |  |
| Non-dimensional AC position: **h0** |  |
| Non-dimensional stability limit of the center of gravity position: **hn** |  |
| Incidence angle of the wing on the fuselage: **iw** |  |
| Plane lift coefficient derivative: **CL\_alpha\_plane** |  |
| Empennage/canard angle of attack: **Alpha\_T** |  |
| Downwash: **Eps** |  |
| Downwash gradient: **d\_eps\_d\_alpha** |  |
| Vertical distance between wing and empennage/canard: **m** |  |
| Stability margin: **Kn** |  |
| Incidence angle of the empennage/canard on the fuselage: **iT** |  |
| **Horizontal empennage/canard** |
| Span: **bT** |  |  |
| Aspect Ratio: **AR\_T** |  |
| Taper ratio: **Lamba\_T** |  |  |
| Sweep angle at chord quarter: **Lambda\_quart\_T** |  |
| Chord at root: **CTroot** |  |  |
| Chord at tip: **CTtip** |  |  |
| Distance between the plane gravity center and the empennage AC: **lT** |  |  |
| **Vertical empennage** |
| Height: **bF** |  |  |
| Aspect Ratio: **ARF** |  |
| Surface: **SF** |  |  |
| Taper Ratio: **Lambda\_F** |  |
| Sweep angle at chord quarter: **Lambda\_quart\_F** |  |
| Chord at root: **CFroot** |  |  |
| Chord at tip: **CFtip** |  |  |
| Distance between the plane gravity center and the empennage AC: **lF** |  |  |
| Lift coefficient (critical case): **CLF** |  |
| Lift coefficient (critical case): **LF** |  |  |
| Yaw moment coefficient (critical case): **CN** |  |
| Yaw moment coefficient derivative: **CNbeta** |  |
| Rudder height: **hr** |  |  |
| Rudder surface: **Sr** |  |  |
| **Drag** |
| Drag (cruise): **D** |  |  |
| Drag coefficient: **CD** |  |
| Zero-lift drag coefficient**: CD0** |  |
| e-factor: **E** |  |
| Compressibility drag coefficient: **CompCD** |  |
| Security velocity: **V2** |  |  |
| Drag coefficient at security velocity: **CDV2s** |  |
| **Engine** |
| Take-off thrust: **Tto** |  |  |
| Cruise thrust: **T** |  |  |
| **Weights** |
| Wing: **Ww** |  |  |
| Empennage/canard weight: **WT** |  |  |
| Vertical empennage weight (without rudder): **WF1** |  |  |
| Vertical empennage weight (with rudder): **WF2** |  |  |
| **n\_ultime** |  |
| Cabin pressure: **DeltaPmax** |  |  |
| **n\_limite** |  |  |
| Fuselage weight: **Wfus** |  |  |
| Gear weight: **Wgear** |  |  |
| Control weight: **Wsc** |  |  |
| Propulsion weight: **Wprop** |  |  |
| Instrument weight: **Winst** |  |  |
| Electrical devices weight: **Welec** |  |  |
| Electronical devices weight: **Wetronic** |  |  |
| Payload: **Wpayload** |  |  |
| Fuel weight for take-off: **Wto** |  |  |
| Fuel weight for landing: **Wland** |  |  |
| Reserve fuel weight: **Wres** |  |  |
| Fuel weight for climb: **Wclimb** |  |  |
| Fuel weight for cruise: **Wf** |  |  |
| Manufacturer empty weight: **MEW** |  |  |
| Zero-fuel-weight: **ZFW** |  |  |
| Take-off weight: **Wto** |  |  |
| Wing loading **W/S** |  |  |
| Thrust to weight **T/W** |  |  |
| Fuel ratio **Wf /Wto** |  |  |
| Range at maximum payload: **d\_etoile** |  |  |
| **Landing gear** |
| Maximum pitch angle: **Theta** |  |  |
| Maximum roll angle: **Phi** |  |  |
| Dihedral angle: **Gamma** |  |  |
| Hauteur de l'aile: **Hg** |  |  |
| Distance between landing gears: **t** |  |  |
| Angle of attack at lift-off: **AlphaLOF** |  |  |
| Lift-off speed: **V\_LOF** |  |  |
| Touch down angle: **ThetaTD** |  |  |
| Distance between plane gravity center and aft landing gear: **lm** |  |  |
| Plane gravity center height: **Zcg** |  |  |
| **Positions of centres of gravity:** |
| **Xwing** |  |  |
| **XempH** |  |  |
| **XempV** |  |  |
| **Xfus** |  |  |
| **Xsyst\_elec** |  |  |
| **Xelec\_instr** |  |  |
| **Xpayload** |  |  |
| **Xfuel** |  |  |