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Flight dynamics — Concepts, quantities and symbols — Part 2 : Motions of the aircraft and the atmosphere relative to the Earth
ADDENDUM 1

Mécanique du vol — Concepts, grandeurs et symboles — Partie 2 : Mouvements de l'avion et de l'atmosphère par rapport à la Terre
ADDITIF 1

Addendum 1 to ISO 1151-2 : 1985 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles.*

Page iii

Replace the text on this page with the text on page iii in ISO 1151-5.

Page 3

Immediately after sub-clause 2.4, add the following sub-clause :

2.5 Quantities related to energy

The quantities defined in 2.5.1 to 2.5.4 are related to the energy of the aircraft with respect to the Earth. The zero level of the potential energy is chosen arbitrarily as the geopotential altitude $H = 0$. The total flight-path climb speed (2.5.3) and the total flight-path climb angle (2.5.4) are directly accessible by flight measurements. The total flight-path altitude (2.5.2) results from an integration of the total flight-path climb speed (2.5.3).

In definitions 2.5.1 to 2.5.4 :

m is the aircraft mass (1.4.1);

V_K is the flight-path speed (2.2.1);

h is the geometric altitude (5.2.1);

H is the geopotential altitude (5.2.2);

$g(h)$ is the acceleration of free fall defined in the standard atmosphere used (ISO 2533) as a function of the geometric altitude h (5.2.1);

g_n is the standard acceleration of free fall (g_n = 9,806 65 m·s^{-2} according to ISO 2533).

NOTE — In the following terms, the qualification "flight-path" can be omitted, if there is not likely to be any confusion with the quantities defined in 1.10.

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Descriptors : aircraft, dynamic properties, flight dynamics, aerodynamics, quantities, symbols, definitions.

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No.	Term	Definition	Symbol
2.5.1	Total flight-path energy	Energy defined as follows : $E_{tK} = mg_n H + \frac{m}{2} V_K^2$	E_{tK}
2.5.2	Total flight-path altitude	Ratio of the total flight-path energy (2.5.1) to the quantity mg_n : $H_{tK} = H + \frac{1}{2g_n} V_K^2$	H_{tK}
2.5.3	Total flight-path climb speed	Speed defined as being the scalar product between the total load factor vector (1.5.7) and the flight-path velocity (2.2.1) : $V_{ZtK} = \vec{n}_t \cdot \vec{V}_K$ NOTE — The total flight-path climb speed is related to the derivative of the total flight-path altitude (2.5.2) with respect to time by the following relationship : $V_{ZtK} = \frac{g_n}{g(h)} \cdot \frac{dH_{tK}}{dt}$	V_{ZtK} or V_{tK}
2.5.4	Total flight-path climb angle	Angle the sine of which is equal to the ratio of the total flight-path climb speed (2.5.3) to the flight-path speed (2.2.1) : $\sin \gamma_{tK} = \frac{V_{ZtK}}{V_K}$ NOTE — The total flight-path climb angle is only defined when the magnitude of total flight-path climb speed is less than or equal to the flight-path speed.	γ_{tK}