
INTERNATIONAL STANDARD



1151 / II

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Terms and symbols for flight dynamics — Part II : Motions of the aircraft and the atmosphere relative to the Earth

*Termes et symboles de la mécanique du vol — Partie II : Mouvements de l'avion et de l'atmosphère
par rapport à la Terre*

First edition — 1974-03-01

Reference No. amended 1976-08-15

UDC 629.7.015 : 003.62

Ref. No. ISO 1151/II-1974 (E)

Descriptors : aerodynamics, aircraft, flight characteristics, motion, vocabulary, symbols.

Price based on 6 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1152 was drawn up by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

It was submitted directly to the ISO Council, in accordance with clause 6.12.1 of the *Directives for the technical work of ISO*.

This International Standard cancels and replaces ISO Recommendation R 1152-1969, which had been approved by the Member Bodies of the following countries :

Belgium	Israel	Sweden
Czechoslovakia	Italy	Switzerland
Egypt, Arab Rep. of	Netherlands	Turkey
France	New Zealand	United Kingdom
Germany	Poland	Yugoslavia
India	Spain	

The Member Bodies of the following countries had disapproved the Recommendation :

U.S.A.
U.S.S.R.

International Standard ISO 1152, *Terms and symbols for flight dynamics – Part II : Motions of the aircraft and the atmosphere relative to the Earth*, is the second in a series of International Standards, the purpose of which is to define the principal terms used in flight dynamics and to specify symbols for these terms.

Other International Standards in this series, which will be further extended in the future, are at present as follows :

ISO 1151, *Terms and symbols for flight dynamics – Part I : Aircraft motion relative to the air*.

ISO 1153, *Terms and symbols for flight dynamics – Part III : Derivatives of forces, moments and their coefficients*.

ISO 2764, *Terms and symbols for flight dynamics – Part IV : Parameters used in the study of aircraft stability and control*.

ISO 2765, *Terms and symbols for flight dynamics – Part V : Quantities used in measurements*.

In these International Standards, the term "aircraft" denotes an aerodyne having a fore-and-aft plane of symmetry. This plane is determined by the geometrical characteristics of the aircraft. When there are more than one fore-and-aft planes of symmetry, the reference plane of symmetry is arbitrary and it is necessary to indicate the choice made.

Angles of rotation, angular velocities and moments about any axis are positive clockwise when viewed in the positive direction of the axis.

All the axis systems used are three-dimensional, orthogonal and right-handed, which implies that a clockwise (positive) rotation through $\pi/2$ about the x-axis brings the y-axis into the position previously occupied by the z-axis.

Numbering of sections and clauses

Each of these International Standards represents a part of the whole study on terms and symbols for flight dynamics.

To permit easier reference to a section or a clause from one part to another, a decimal numbering has been adopted which begins in each International Standard with the number of the part it represents.

CONTENTS

	Page
2.0 Introduction	1
2.1 Axis system	2
2.2 Velocities	2
2.3 Flight-path angles	3
2.4 Wind direction angles	4
Figure 1 — Flight-path angles	5
Figure 2 — Wind direction angles	6

Terms and symbols for flight dynamics — Part II : Motions of the aircraft and the atmosphere relative to the Earth

2.0 INTRODUCTION

This International Standard deals with the motions of the aircraft and the atmosphere relative to the Earth.

In this International Standard.

- 1) the effects of the Earth's curvature are not considered; for the purpose of the definition of Earth axes, the Earth's surface is treated as a plane, that is, the Earth's radius is taken as infinite;
- 2) the motion of the air is defined at a given instant and in the space surrounding the aircraft (outside its aerodynamic field) by a single vector. The wind gradients and the turbulence in the air surrounding the aircraft are not taken into account.

To account fully for aeroelastic effects, certain aspects of the definition of the flight-path axis system would need to be considered in greater detail. This definition applies as it stands to the rigid aircraft.