



BSI Standards Publication

Rotorcrafts — Flight dynamics — Vocabulary

National foreword

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 8, *Aerospace terminology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Rotorcrafts — Flight dynamics — Vocabulary

1 Scope

This document defines terms used in the field of rotorcrafts flight dynamics and aerodynamics, for example, rotorcraft design documents, with regard to rotorcrafts geometry and dynamic characteristics.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 Basic definitions and classification

3.1.1

rotorcraft

rotary wing aircraft

heavier-than-air aircraft that depends principally for its support in flight on the aerodynamical generated by one or more rotors

3.1.2

helicopter

rotorcraft (3.1.1) that primarily depends on engine driven rotors for motion at all stage of flight

3.1.3

gyroplane

autogyro

gyrocopter

rotaplane

rotorcraft (3.1.1) whose rotors are not engine-driven, except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system

3.1.4

gyrodyne

compound helicopter

compound gyroplane

rotorcraft (3.1.1) with a rotor system that is normally driven by its engine for takeoff, hovering and landing like a *helicopter* (3.1.2), and has an additional propulsion system that is independent of the rotor system

3.1.5

convertiplane

aircraft which uses rotor power for vertical takeoff and landing (vtol) and converts to fixed-wing lift in normal flight

Note 1 to entry: Convertiplanes may be divided into two broad classes, based on whether the rotor is fixed as in a *helicopter* (3.1.2) or tilts to provide thrust in forward flight, as a *proprotor*. a *proprotor* may be in a tilt rotor or tilt wing configuration.

3.1.6

tiltrotor aircraft

rotorcraft (3.1.1) which generates lift and propulsion by way of one or more tiltable (rotating) powered propellers, or *proprotors*, mounted on rotating engine pods or nacelles usually at the ends of a fixed wing

Note 1 to entry: Orientation of wings is fixed. For vertical flight, the rotors are angled so the plane of rotation is horizontal.

3.1.7

tiltwing aircraft

aircraft with a wing that is horizontal for conventional forward flight and rotates up for vertical takeoff and landing

3.1.8

helicopter configuration

combination of features, defining *main rotor* (3.2.1) system, anti-torque system (for *single rotor helicopter* (3.1.9)), flight control system

3.1.9

single rotor helicopter

helicopter (3.1.2) with one (main) rotor that provides lift and propulsive force

Note 1 to entry: Single rotor helicopters may be divided into four or more types depending of anti-torque system:

- with *tail rotor* (3.2.2) (classic configuration);
- with *fenestrone* (3.2.25);
- with *notar* (3.2.26) (no tail rotor) system;
- *tip jets* (3.2.24) (no anti-torque system required).

3.1.10

dual rotor helicopter

twin-rotor helicopter

helicopter (3.1.2) with two counter-rotating *main rotors* (3.2.1) rotors

3.1.11

tandem rotors helicopter

dual rotor helicopter (3.1.10) with two horizontal *main rotors* (3.2.1) assemblies mounted one behind the other

3.1.12

side-by-side rotors

transverse rotors helicopter

dual rotor helicopter (3.1.10) with a set of counter-rotating *main rotors* (3.2.1) assemblies which are located in the same plane side-by-side on the *helicopter* (3.1.2) and where the *stagger* (3.5.15) is greater than the diameter of the disk

3.1.13

coaxial rotors helicopter

dual rotor helicopter (3.1.10) with a pair of counter-rotating *main rotors* (3.2.1) mounted one above the other on the same shaft and turning in opposite directions

3.1.14

intermeshing rotors helicopter synchropter

dual rotor helicopter (3.1.10) with a set of two counter-rotating *main rotors* (3.2.1) with each rotor mast mounted on the *helicopter* (3.1.2) with a slight angle to the other so that the *blades* (3.2.5) intermesh without colliding

3.1.15

multicopter multirotor

rotorcraft (3.1.1) with more than two rotors that provide lift

3.1.16

quadcopter quadrocopter quadrotor

multicopter (3.1.15) that is lifted and propelled by four rotors

3.1.17

hexacopter

multicopter (3.1.15) that is lifted and propelled by six rotors

3.1.18

octocopter

multicopter (3.1.15) that is lifted and propelled by eight rotors

3.2 Basic elements

3.2.1

main rotor

combination of a rotary wing and a control system that generates the aerodynamic lift force that supports the weight of the *helicopter* (3.1.2), and the thrust that counteracts aerodynamic drag in forward flight

3.2.2

tail rotor

smaller rotor mounted so that it rotates vertically or near-vertically at the end of the tail of a traditional *single rotor helicopter* (3.1.9) to compensate *main rotor* (3.2.1) torque moment

3.2.3

main rotor hub

toe unit for the rotor *blades* (3.2.5) attachment to rotor shaft

Note 1 to entry: The hub is located at the top of the mast.

3.2.4

hinge

mechanism that holds the *blades* (3.2.5) proper to the hub and allows free angular motion with zero moment transfer

3.2.5

blade

main working unit of rotor working as rotating wing which provides lift due to rotation about rotor shaft axis