

**CPC****COOPERATIVE PATENT CLASSIFICATION****B64C****AEROPLANES ; HELICOPTERS** ( [air-cushion vehicles B60V](#) )**NOTE**

As far as possible, classification is made according to constructional features; classification according to particular kinds of aircraft is normally regarded as being of secondary importance, except in cases where this is considered to be the characteristic feature.

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [B64C 35/02](#) covered by [B64C 35/00](#)

**Guidance heading:** **Aircraft structures or fairings** ( [boundary-layer controls B64C 21/00](#) )

**B64C 1/00**

**Fuselages ; Constructional features common to fuselages, wings, stabilising surfaces and the like** ( [aerodynamical features common to fuselages, wings, stabilising surfaces, and the like B64C 23/00](#) ; [flight-deck installations B64D](#) )

**B64C 1/0009**

- . { [Aerodynamic aspects](#) }

**B64C 2001/0018**

- . comprising two decks adapted for carrying passengers only

**B64C 2001/0027**

- .. arranged one above the other

**B64C 2001/0036**

- .. arranged side by side at the same level

**B64C 2001/0045**

- . Fuselages characterised by special shapes

**B64C 2001/0054**

- . Fuselage structures substantially made from particular materials

**B64C 2001/0063**

- .. from wood

**B64C 2001/0072**

- .. from composite materials

**B64C 2001/0081**

- .. from metallic materials

**B64C 2001/009**

- . comprising decompression panels or valves for pressure equalisation in fuselages or floors

**B64C 1/06**

- . Frames ; Stringers ; Longerons; { [Fuselage sections](#) }

**B64C 1/061**

- .. { [Frames](#) }

**B64C 1/062**

- ... { [specially adapted to absorb crash loads](#) }

**B64C 1/063**

- ... { [Folding or collapsing to reduce overall dimensions, e.g. foldable tail booms \( folding or collapsing wings B64C 3/56 \)](#) }

**B64C 1/064**

- .. { [Stringers; Longerons](#) }

**B64C 1/065**

- .. { [Spars](#) }

**B64C 1/066**

- .. { [Interior liners](#) }

- B64C 1/067 . . . { comprising means for preventing icing or condensation conditions }
- B64C 1/068 . . { Fuselage sections }
- B64C 1/069 . . . { Joining arrangements therefor }
- B64C 1/08 . . Geodetic or other open-frame structures
- B64C 1/10 . . Bulkheads
- B64C 1/12 . . Construction or attachment of skin panels
  
- B64C 1/14 . Windows ; Doors ; Hatch covers or access panels ; Surrounding frame structures ; Canopies ; Windscreens { accessories therefor, e.g. pressure sensors, water deflectors, hinges, seals, handles, latches, windscreen wipers } ( fairings movable in conjunction with undercarriage elements [B64C 25/16](#) ; bomb doors [B64D 1/06](#) )
- B64C 1/1407 . . { Doors; surrounding frames }
- B64C 1/1415 . . . { Cargo doors, e.g. incorporating ramps }
- B64C 1/1423 . . . { Passenger doors }
- B64C 1/143 . . . . { of the plug type }
- B64C 1/1438 . . . . { of the sliding type }
- B64C 1/1446 . . { Inspection hatches ( for engine cowlings [B64D 29/08](#) ) }
- B64C 1/1453 . . { Drain masts }
- B64C 1/1461 . . { Structures of doors or surrounding frames }
- B64C 1/1469 . . { Doors between cockpit and cabin }
- B64C 1/1476 . . { Canopies; Windscreens or similar transparent elements }
- B64C 1/1484 . . . { Windows ( [B64C 1/1492](#) takes precedence ) }
- B64C 1/1492 . . . { Structure and mounting of the transparent elements in the window or windscreen }
  
- B64C 1/16 . specially adapted for mounting power plant
  
- B64C 1/18 . Floors
- B64C 1/20 . . specially adapted for freight
  
- B64C 1/22 . Other structures integral with fuselages to facilitate loading { e.g. cargo bays, cranes ( cargo door type ramps [B64C 1/1415](#) ) }
  
- B64C 1/24 . Steps mounted on, and retractable within, fuselages ( readily removable [B64D 9/00](#) )
  
- B64C 1/26 . Attaching the wing or tail units or stabilising surfaces
  
- B64C 1/28 . Parts of fuselage relatively movable to improve pilots view
  
- B64C 1/30 . Parts of fuselage relatively movable to reduce overall size for storage
  
- B64C 1/32 . Severable or jettisonable parts of fuselage facilitating emergency escape ( ejector seats [B64D 25/10](#) )
  
- B64C 1/34 . comprising inflatable structural components ( connection of valves to inflatable elastic bodies [B60C 29/00](#) )
  
- B64C 1/36 . adapted to receive aerials or radomes ( aerials or radomes per se [H01Q](#) )

- B64C 1/38 . Constructions adapted to reduce effects of aerodynamic or other external heating { ( cooling structural parts of aircrafts with air flow [B64D 13/006](#) ) }
- B64C 1/40 . Sound or heat insulation, { e.g. using insulation blankets ( insulating elements for vehicles, in general [B60R 13/08](#) ) }
- B64C 1/403 .. { Arrangement of fasteners specially adapted therefor, e.g. of clips ( in vehicles in general [B60R 13/0206](#) ) }
- B64C 1/406 ... { in combination with supports for lines, e.g. for pipes or cables ( arrangement of elements of electric or fluid circuits specially adapted for vehicles, in general [B60R 16/00](#) ; supports for pipes, cables or protective tubing [F16L 3/00](#) ; installations of electric cables or lines in vehicles [H02G 3/00](#) ) }

## **B64C 3/00**      **Wings** ( stabilising surfaces [B64C 5/00](#) ; ornithopter wings [B64C 33/02](#) )

- B64C 3/10 . Shape of wings
- B64C 3/14 .. Aerofoil profile
- B64C 3/141 ... { Circulation Control Airfoils }
- B64C 2003/142 ... with variable camber along the airfoil chord
- B64C 2003/143 ... comprising interior channels
- B64C 2003/144 ... including a flat surface on either the extrados or intrados
- B64C 2003/145 ... comprising 'Gurney' flaps
- B64C 2003/146 ... comprising leading edges of particular shape
- B64C 2003/147 ... comprising trailing edges of particular shape
- B64C 2003/148 ... comprising protuberances, e.g. for modifying boundary layer flow
- B64C 2003/149 ... for supercritical or transonic flow
- B64C 3/16 .. Frontal aspect
- B64C 3/18 . Spars ; Ribs ; Stringers ( attaching wing unit to fuselage [B64C 1/26](#) )
- B64C 3/182 .. { Stringers, longerons }
- B64C 3/185 .. { Spars }
- B64C 3/187 .. { Ribs }
- B64C 3/20 . Integral or sandwich constructions ( layered products or sandwich constructions in general [B32B](#) )
- B64C 3/22 . Geodetic or other open-frame structures
- B64C 3/24 . Moulded or cast structures
- B64C 3/26 . Construction, shape, or attachment of separate skins, e.g. panels
- B64C 3/28 . Leading or trailing edges attached to primary structures, e.g. forming fixed slots
- B64C 3/30 . comprising inflatable structural components ( connection of valves to inflatable elastic bodies [B60C 29/00](#) )
- B64C 3/32 . specially adapted for mounting power plant

- B64C 3/34 . Integrally-constructed tanks, e.g. for fuel ( [other aircraft fuel tanks or fuel systems B64D](#) )
- B64C 3/36 . Structures adapted to reduce effects of aerodynamic or other external heating { ( [cooling structural parts of aircrafts with air flow B64D 13/006](#) ) }
- B64C 3/38 . Adjustment of complete wings or parts thereof
- B64C 3/385 . . { [Variable incidence wings](#) }
- B64C 3/40 . . Varying angle of sweep
- B64C 3/42 . . Adjusting about chordwise axes
- B64C 3/44 . . Varying camber
- B64C 2003/445 . . . by changing shape according to the speed, e.g. by morphing
- B64C 3/46 . . . by inflatable elements ( [connection of valves to inflatable elastic bodies B60C 29/00](#) )
- B64C 3/48 . . . by relatively-movable parts of wing structures
- B64C 3/50 . . . by leading or trailing edge flaps ( [ailerons B64C 9/00](#) )
- B64C 3/52 . . Warping
- B64C 3/54 . . Varying in area ( [flaps extendable to increase camber B64C 3/44](#) )
- B64C 2003/543 . . . by changing shape according to the speed, e.g. by morphing
- B64C 3/546 . . . { [by foldable elements](#) }
- B64C 3/56 . . Folding or collapsing to reduce overall dimensions of aircraft
- B64C 3/58 . provided with fences or spoilers ( [adjustable for control purposes B64C 9/00](#) )
- B64C 5/00** **Stabilising surfaces** ( [attaching stabilising surfaces to fuselage B64C 1/26](#) )
- B64C 5/02 . Tailplanes ( [fins B64C 5/06](#) )
- B64C 5/04 . Noseplanes
- B64C 5/06 . Fins ( [specially for wings B64C 5/08](#) )
- B64C 5/08 . mounted on or supported by wings
- B64C 5/10 . adjustable
- B64C 5/12 . . for retraction against or within fuselage or nacelle
- B64C 5/14 . . Varying angle of sweep
- B64C 5/16 . . about spanwise axes
- B64C 5/18 . . in area ( [attaching stabilising surfaces to fuselage B64C 1/26](#) )
- B64C 7/00** **Structures or fairings not otherwise provided for**
- B64C 7/02 . Nacelles
- B64C 9/00** **Adjustable control surfaces or members, e.g. rudders** ( [trimming stabilising surfaces B64C 5/10](#) )

- B64C 2009/005 . Ailerons
- B64C 9/02 . Mounting or supporting thereof
- B64C 9/04 . with compound dependent movements
- B64C 9/06 . with two or more independent movements
- B64C 9/08 . bodily displaceable ( [varying camber of wings B64C 3/44](#) )
- B64C 9/10 . one surface adjusted by movement of another, e.g. servo tabs ( [B64C 9/04](#) takes precedence; [adjusting surfaces of different type or function B64C 9/12](#) )
- B64C 9/12 . surfaces of different type or function being simultaneously adjusted
- B64C 9/14 . forming slots ( [boundary-layer control B64C 21/00](#) )
- B64C 2009/143 . . comprising independently adjustable elements for closing or opening the slot between the main wing and leading or trailing edge flaps
- B64C 9/146 . . { [at an other wing location than the rear or the front \( wings provided with fixed fences or spoilers B64C 3/58 \)](#) }
- B64C 9/16 . . at the rear of the wing
- B64C 9/18 . . . by single flaps
- B64C 9/20 . . . by multiple flaps
- B64C 9/22 . . at the front of the wing
- B64C 9/24 . . . by single flap
- B64C 9/26 . . . by multiple flaps
- B64C 9/28 . . by flaps at both the front and rear of the wing operating in unison
- B64C 9/30 . Balancing hinged surfaces, e.g. dynamically
- B64C 9/32 . Air braking surfaces ( [braking by parachutes B64D 17/80](#) )
- B64C 9/323 . . { [associated with wings](#) }
- B64C 9/326 . . { [associated with fuselages](#) }
- B64C 9/34 . collapsing or retracting against or within other surfaces or other members
- B64C 9/36 . . the members being fuselages or nacelles
- B64C 9/38 . Jet flaps

**B64C 11/00** **Propellers, e.g. of ducted type ; Features common to propellers and rotors for rotorcraft** ( [rotors specially adapted for rotorcraft B64C 27/32](#) )

#### **NOTE**

Documents classified in [B64C 11/001](#) - [B64C 11/008](#) which also contain relevant information, covered by other subgroups of [B64C 11/00](#) , are also classified in the appropriate subgroup of [B64C 11/00](#)

- B64C 11/001 . { [Shrouded propellers](#) }

- B64C 11/002 . { Braking propellers, e.g. for measuring the power output of an engine }
- B64C 11/003 . { Variable-diameter propellers; Mechanisms therefor }
- B64C 11/005 . { Spiral-shaped propellers }
- B64C 11/006 . { Paddle wheels }
- B64C 11/007 . { Propulsive discs, i.e. discs having the surface specially adapted for propulsion purposes }
- B64C 11/008 . { characterised by vibration absorbing or balancing means ( [for rotorcraft B64C 27/001](#) ) }
- B64C 11/02 . Hub construction
- B64C 11/04 .. Blade mountings
- B64C 11/06 ... for variable-pitch blades
- B64C 11/065 .... { variable only when stationary }
- B64C 11/08 ... for non-adjustable blades
- B64C 11/10 .... rigid
- B64C 11/12 .... flexible
- B64C 11/14 .. Spinners
- B64C 11/16 . Blades
- B64C 11/18 .. Aerodynamic features
- B64C 11/20 .. Constructional features
- B64C 11/205 ... { for protecting blades, e.g. coating }
- B64C 11/22 ... Solid blades
- B64C 11/24 ... Hollow blades
- B64C 11/26 ... Fabricated blades
- B64C 11/28 ... Collapsible or foldable blades
- B64C 11/30 . Blade pitch-changing mechanisms

**NOTE**

Groups [B64C 11/301](#) , [B64C 11/303](#) , [B64C 11/305](#) and [B64C 11/306](#) take precedence over [B64C 11/32](#) , [B64C 11/38](#) and [B64C 11/44](#)

- B64C 11/301 .. { characterised by blade position indicating means }
- B64C 11/303 .. { characterised by comprising a governor }
- B64C 11/305 .. { characterised by being influenced by other control systems, e.g. fuel supply }
- B64C 11/306 .. { specially adapted for contrarotating propellers }
- B64C 11/308 ... { automatic }
- B64C 11/32 .. mechanical
- B64C 11/325 ... { comprising feathering, braking or stopping systems }
- B64C 11/34 ... automatic

- B64C 11/343 . . . . { actuated by the centrifugal force or the aerodynamic drag acting on the blades }
- B64C 11/346 . . . . { actuated by the centrifugal force or the aerodynamic drag acting on auxiliary masses or surfaces }
- B64C 11/36 . . . non-automatic
- B64C 11/38 . . fluid, e.g. hydraulic
- B64C 11/385 . . . { comprising feathering, braking or stopping systems }
- B64C 11/40 . . . automatic
- B64C 11/42 . . . non-automatic
- B64C 11/44 . . electric
  
- B64C 11/46 . Arrangements of or constructional features peculiar to multiple propellers { ( [B64C 11/306](#) takes precedence ) }
- B64C 11/48 . . Units of two or more coaxial propellers
- B64C 11/50 . . Phase synchronisation between multiple propellers
  
- B64C 13/00** **Control systems or transmitting systems for actuating flying-control surfaces, lift-increasing flaps, air brakes, or spoilers**
  
- B64C 13/02 . Initiating means
- B64C 13/04 . . actuated personally
- B64C 13/06 . . . adjustable to suit individual persons
- B64C 13/08 . . . Trimming zero positions
- B64C 13/10 . . . comprising warning devices
- B64C 13/12 . . . Dual control apparatus
- B64C 13/14 . . . lockable ( [locking in position to suit individual persons](#) [B64C 13/06](#) )
- B64C 13/16 . . actuated automatically, e.g. responsive to gust detectors
- B64C 13/18 . . . using automatic pilot
- B64C 13/20 . . . using radiated signals
- B64C 13/22 . . . readily revertible to personal control
  
- B64C 13/24 . Transmitting means
- B64C 13/26 . . without power amplification or where power amplification is irrelevant
- B64C 13/28 . . . mechanical
- B64C 13/30 . . . . using cable, chain, or rod mechanisms
- B64C 13/32 . . . . using cam mechanisms
- B64C 13/34 . . . . using toothed gearing
- B64C 13/36 . . . fluid
- B64C 13/38 . . with power amplification
- B64C 13/40 . . . using fluid pressure
- B64C 13/42 . . . . having duplication or stand-by provisions
- B64C 13/44 . . . . overriding of personal controls ; with automatic return to inoperative position
- B64C 13/46 . . . . with artificial feel
- B64C 13/48 . . . . characterised by the fluid being gaseous

- B64C 13/50 . . . using electrical energy
- B64C 13/503 . . . . { Fly-by-Wire }
- B64C 2013/506 . . . . . using electro-hydrostatic actuators (EHA's)

#### **B64C 15/00 Attitude, flight direction, or altitude control by jet reaction**

- B64C 15/02 . the jets being propulsion jets
- B64C 15/12 . . the power plant being tiltable
- B64C 15/14 . the jets being other than main propulsion jets ( jet flaps [B64C 9/38](#) )

#### **B64C 17/00 Aircraft stabilisation not otherwise provided for**

- B64C 17/02 . by gravity or inertia-actuated apparatus
- B64C 17/04 . . by pendular bodies
- B64C 17/06 . . by gyroscopic apparatus ( automatic pilot control [B64C 13/18](#) )
- B64C 17/08 . by ballast supply or discharge ( for lighter-than-air aircraft [B64B](#) )
- B64C 17/10 . Transferring fuel to adjust trim

#### **B64C 19/00 Aircraft control not otherwise provided for**

- B64C 19/02 . Conjoint controls

#### **Guidance heading: Influencing air-flow over aircraft surfaces, not otherwise provided for**

#### **B64C 21/00 Influencing air-flow over aircraft surfaces by affecting boundary-layer flow ( boundary-layer control in general [F15D](#) )**

- B64C 21/02 . by use of slot, ducts, porous areas, or the like
- B64C 21/025 . . { for simultaneous blowing and sucking }
- B64C 21/04 . . for blowing ( [B64C 21/08](#) takes precedence )
- B64C 21/06 . . for sucking ( [B64C 21/08](#) takes precedence )
- B64C 21/08 . . adjustable
- B64C 21/10 . using other surface properties, e.g. roughness

#### **B64C 23/00 Influencing air-flow over aircraft surfaces, not otherwise provided for**

- B64C 23/005 . { by other means not covered by groups [B64C 23/02](#) to [B64C 23/08](#) , e.g. by electric charges, magnetic panels, piezoelectric elements, static charges or ultrasounds }
- B64C 23/02 . by means of rotating members of cylindrical or similar form
- B64C 23/04 . by generating shock waves



- B64C 23/06 . by generating vortices
- B64C 23/065 .. { at the wing tip, e.g. winglets, splines }
- B64C 23/08 . using Magnus effect
- B64C 25/00** **Alighting gear ( air-cushion alighting gear [B60V 3/08](#) )**
- B64C 25/001 . { Devices not provided for in the groups [B64C 25/02](#) to [B64C 25/68](#) }
- B64C 25/003 .. Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors
- B64C 25/005 .. Tail skids for fuselage tail strike protection on tricycle landing gear aircraft
- B64C 25/006 .. Landing gear legs comprising torque arms
- B64C 25/008 .. Comprising means for modifying their length, e.g. for kneeling, for jumping, or for leveling the aircraft
- B64C 25/02 . Undercarriages
- B64C 25/04 .. Arrangement or disposition on aircraft
- B64C 25/06 .. fixed
- B64C 25/08 .. non-fixed, e.g. jettisonable
- B64C 25/10 ... retractable, foldable, or the like
- B64C 25/12 .... sideways
- B64C 25/125 ..... into the fuselage, e.g. main landing gear pivotally retracting into or extending out of the fuselage
- B64C 25/14 .... fore-and-aft
- B64C 25/16 .... Fairings movable in conjunction with undercarriage elements
- B64C 25/18 .... Operating mechanisms
- B64C 25/20 ..... mechanical
- B64C 25/22 ..... fluid
- B64C 25/24 ..... electric
- B64C 25/26 ..... Control or locking systems therefor
- B64C 25/28 ..... with indicating or warning devices
- B64C 25/30 ..... emergency actuated
- B64C 25/32 . characterised by the ground or like engaging elements ( [arrester hooks](#) [B64C 25/68](#) )
- B64C 25/325 .. specially adapted for helicopters
- B64C 25/34 .. wheeled type, e.g. multi-wheeled bogies
- B64C 25/345 ... Multi-wheel bogies having one or more steering axes
- B64C 25/36 ... Arrangements or adaptations of wheels, tyres, or axles in general ( [construction of wheels or axles](#) [B60B](#) ; [construction of tyres in general](#) [B60C](#) )
- B64C 25/38 .. Endless-track type
- B64C 25/40 .. the elements being rotated before touch-down
- B64C 25/405 ... { Powered wheels, e.g. for taxiing }
- B64C 25/42 .. Arrangements or adaptations of brakes ( the ground braking force being regulated, at least in part, by a speed condition, e.g. acceleration or deceleration of the ground engaging alighting gear, [B60T 8/32](#) )

- B64C 25/423 . . . { Braking devices acting by reaction of gaseous medium ( [B64C 25/426](#) takes precedence; using rockets [B64D 27/023](#) ) }
- B64C 25/426 . . . { Braking devices providing an automatic sequence of braking }
- B64C 25/44 . . . Actuating mechanisms
- B64C 25/445 . . . . { Brake regulators for preventing somersaulting }
- B64C 25/46 . . . . Brake regulators for preventing skidding or aircraft somersaulting { ( [anti-skidding regulators](#); electric or electronic controllers therefor [B60T 8/1703](#) ) }
- B64C 25/48 . . . . differentially operated for steering purposes
- B64C 25/50 . . Steerable undercarriages ; Shimmy damping ( [steering devices applicable to land vehicles B62D](#) )
- B64C 25/505 . . . { Shimmy damping }
- B64C 25/52 . . Skis or runners
- B64C 25/54 . . Floats
- B64C 25/56 . . . inflatable ( [connection of valves to inflatable elastic bodies B60C 29/00](#) )
- B64C 25/58 . . Arrangements or adaptations of shock-absorbers or springs ( [shimmy dampers B64C 25/50](#) ; [vehicle suspension arrangements in general B60G](#) ; shock absorber per se [F16F](#) )
- B64C 25/60 . . . Oleo legs
- B64C 25/62 . . . Spring shock-absorbers ; Springs
- B64C 25/64 . . . . using rubber or like elements
- B64C 25/66 . . Convertible alighting gear ; Combinations of different kinds of ground or like engaging elements
- B64C 25/68 . . Arrester hooks ( [arresting gear, e.g. on aircraft carriers B64F](#) )

**Guidance heading:** Aircraft kinds and components not otherwise provided for

**B64C 27/00** Rotorcraft ; Rotors peculiar thereto ( [alighting gear B64C 25/00](#) )

- B64C 27/001 . { Vibration damping devices }
- B64C 2027/002 . . mounted between the rotor drive and the fuselage
- B64C 2027/003 . . mounted on rotor hub, e.g. a rotary force generator
- B64C 2027/004 . . using actuators, e.g. active systems
- B64C 2027/005 . . using suspended masses
- B64C 27/006 . { Safety devices }
- B64C 27/007 . . { adapted for detection of blade cracks }
- B64C 27/008 . { Rotors tracking or balancing devices }
- B64C 27/02 . Gyroplanes
- B64C 27/021 . . { Rotor or rotor head construction ( [for helicopters B64C 27/32](#) ) }
- B64C 27/022 . . . { Devices for folding or adjusting the blades }
- B64C 27/023 . . . { Construction of the blades; Coating of the blades }
- B64C 27/024 . . . { Devices for shifting the rotor axis }

- B64C 27/025 . . . { Rotor drives, in particular for taking off; Combination of autorotation rotors and driven rotors }
- B64C 27/026 . . . { Devices for converting a fixed wing into an autorotation rotor and viceversa }
- B64C 27/027 . . { Control devices using other means than the rotor }
- B64C 27/028 . . { Other constructional elements; Rotor balancing }
  
- B64C 27/04 . Helicopters
- B64C 27/06 . . with single rotor
- B64C 27/08 . . with two or more rotors
- B64C 27/10 . . . arranged coaxially
- B64C 27/12 . . Rotor drives
- B64C 2027/125 . . . including toroidal transmissions, e.g. of the CVT type
- B64C 27/14 . . . Direct drive between power plant and rotor hub
- B64C 27/16 . . . Drive of rotors by means, e.g. propellers, mounted on rotor blades
- B64C 27/18 . . . . the means being jet-reaction apparatus
  
- B64C 27/20 . Rotorcraft characterised by having shrouded rotors, e.g. flying platforms
  
- B64C 27/22 . Compound rotorcraft, i.e. aircraft using in flight the features of both aeroplane and rotorcraft
- B64C 27/24 . . with rotor blades fixed in flight to act as lifting surfaces
- B64C 27/26 . . characterised by provision of fixed wings
- B64C 27/28 . . with forward-propulsion propellers pivotable to act as lifting rotors
- B64C 27/30 . . with provision for reducing drag of inoperative rotor
  
- B64C 27/32 . Rotors ( features common to rotors and propellers [B64C 11/00](#) )
- B64C 27/322 . . { Blade travel limiting devices, e.g. droop stops }
- B64C 27/325 . . { Circulation-control rotors }
- B64C 27/327 . . { Retention means relieving the stress from the arm, e.g. tie-bars }
- B64C 27/33 . . having flexing arms
- B64C 27/35 . . having elastomeric joints
- B64C 27/37 . . having articulated joints ( [B64C 27/33](#) , [B64C 27/35](#) take precedence )
- B64C 27/39 . . . with individually articulated blades, i.e. with flapping or drag hinges
- B64C 27/41 . . . with flapping or universal joint, common to the blades
- B64C 27/43 . . . . see-saw type, i.e. two-bladed rotor
- B64C 27/45 . . . with a feathering hinge only
- B64C 27/46 . . Blades
- B64C 27/463 . . . { Blade tips }
- B64C 27/467 . . . Aerodynamic features { ( [B64C 27/463](#) takes precedence ) }
- B64C 27/473 . . . Constructional features { ( [B64C 27/463](#) takes precedence ) }
- B64C 2027/4733 . . . . Rotor blades substantially made from particular materials
- B64C 2027/4736 . . . . . from composite materials
- B64C 27/48 . . . . Root attachment to rotor head
- B64C 27/50 . . . . Blades foldable to facilitate stowage of aircraft

- B64C 27/51 . { Damping of blade movements }
- B64C 27/52 . Tilting of rotor bodily relative to fuselage ( of see-saw type construction [B64C 27/43](#) )
- B64C 27/54 . Mechanisms for controlling blade adjustment or movement relative to rotor head, e.g. lag-lead movement
- B64C 27/56 . . Initiating means, e.g. actuated personally
- B64C 27/57 . . . . automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust
- B64C 27/58 . . Transmitting means
- B64C 27/59 . . . . mechanical
- B64C 27/605 . . . . . including swash plate, spider or cam mechanisms
- B64C 27/615 . . . . . including flaps mounted on blades
- B64C 27/625 . . . . . including rotating masses or servo rotors
- B64C 27/635 . . . . . specially for controlling lag-lead movements of blades
- B64C 27/64 . . . . . using fluid pressure
- B64C 27/68 . . . . . using electrical energy
- B64C 27/72 . . Means acting on blades
- B64C 2027/7205 . . . . on each blade individually, e.g. individual blade control (IBC)
- B64C 2027/7211 . . . . . without flaps
- B64C 2027/7216 . . . . . . using one actuator per blade
- B64C 2027/7222 . . . . . . using airfoil deformation
- B64C 2027/7227 . . . . . . using blowing slots actuated by piezoelectric actuators
- B64C 2027/7233 . . . . . . using higher-harmonic control (HHC)
- B64C 2027/7238 . . . . . . . by controlling existing swash plate actuators
- B64C 2027/7244 . . . . . . . by using dedicated actuators
- B64C 2027/725 . . . . . . using jets controlled by piezoelectric actuators
- B64C 2027/7255 . . . . . . using one or more swash plates
- B64C 2027/7261 . . . . . with flaps
- B64C 2027/7266 . . . . . . actuated by actuators
- B64C 2027/7272 . . . . . . . of the electro-hydraulic type
- B64C 2027/7277 . . . . . . . of the magnetostrictive type
- B64C 2027/7283 . . . . . . . of the piezoelectric type
- B64C 2027/7288 . . . . . . . of the memory shape type
- B64C 2027/7294 . . . . . . . actuated mechanically, e.g. by means of linkages
- B64C 27/78 . . . in association with pitch adjustment of blades of anti-torque rotor
- B64C 27/80 . . . for differential adjustment of blade pitch between two or more lifting rotors
- B64C 27/82 . . characterised by the provision of an auxiliary rotor or fluid-jet device for counter-balancing lifting rotor torque or changing direction of rotorcraft
- B64C 2027/8209 . . . Electrically driven tail rotors
- B64C 2027/8218 . . . wherein the rotor or the jet axis is inclined with respect to the longitudinal horizontal or vertical plane of the helicopter
- B64C 2027/8227 . . . comprising more than one rotor

- B64C 2027/8236 . . including pusher propellers
- B64C 2027/8245 . . using air jets
- B64C 2027/8254 . . Shrouded tail rotors, e.g. "Fenestron" fans
- B64C 2027/8263 . . comprising in addition rudders, tails, fins, or the like
- B64C 2027/8272 . . . comprising fins, or movable rudders
- B64C 2027/8281 . . . comprising horizontal tail planes
- B64C 2027/829 . . . comprising a V-tail units

**B64C 29/00**

**Aircraft capable of landing or taking-off vertically ( attitude, flight direction, or altitude control by jet reaction [B64C 15/00](#) ; rotorcraft [B64C 27/00](#) ; air-cushion vehicles [B60V](#) )**

- B64C 29/0008 . { having its flight directional axis horizontal when grounded }
- B64C 29/0016 . . { the lift during taking-off being created by free or ducted propellers or by blowers }
- B64C 29/0025 . . . { the propellers being fixed relative to the fuselage }
- B64C 29/0033 . . . { the propellers being tiltable relative to the fuselage }
- B64C 29/0041 . . { the lift during taking-off being created by jet motors }
- B64C 29/005 . . . { the motors being fixed relative to the fuselage }
- B64C 29/0058 . . . { with vertical jet }
- B64C 29/0066 . . . { with horizontal jet and jet deflector }
- B64C 29/0075 . . . { the motors being tiltable relative to the fuselage }
- B64C 29/0083 . . { the lift during taking-off being created by several motors of different type }
- B64C 29/0091 . { Accessories not provided for elsewhere }
- B64C 29/02 . having its flight directional axis vertical when grounded
- B64C 29/04 . . characterised by jet-reaction propulsion

**B64C 30/00**

**Supersonic-type aircraft**

**B64C 31/00**

**Aircraft intended to be sustained without power plant ; Powered hang-glider-type aircraft ; Microlight-type aircraft**

- B64C 31/02 . Gliders, e.g. sailplanes ( [hang-gliders B64C 31/028](#) )
- B64C 31/024 . . with auxiliary power plant
- B64C 31/028 . Hang-glider-type aircraft ; Microlight-type aircraft
- B64C 31/0285 . . { Safety devices }
- B64C 31/032 . . having delta shaped wing
- B64C 31/036 . . having parachute-type wing ( [parachutes B64D 17/00](#) )
- B64C 31/04 . Man-powered aircraft ( [ornithopters B64C 33/00](#) )
- B64C 31/06 . Kites ( [hang-gliders B64C 31/028](#) ; toy aspects [A63H 27/08](#) ; towed targets [F41J](#) { for propelling boats [B63H 9/0685](#) ; for propelling wind driven boards, control means and harnesses therefor [B63B 35/7976](#) } )

B64C 2031/065 . . of inflatable wing type

## **B64C 33/00 Ornithopters**

B64C 33/02 . Wings ; Actuating mechanisms therefor  
 B64C 33/025 . . { the entire wing moving either up or down }

## **B64C 35/00 Flying-boats ; Seaplanes ( alighting gear [B64C 25/00](#) )**

B64C 35/001 . { with means for increasing stability on the water }  
 B64C 35/002 . . { using adjustable auxiliary floats }  
 B64C 35/003 . . { using auxiliary floats at the wing tips }  
 B64C 35/005 . { with propellers, rudders or brakes acting in the water }  
 B64C 35/006 . { with lift generating devices }  
 B64C 35/007 . { Specific control surfaces therefor }  
 B64C 35/008 . { Amphibious sea planes }

## **B64C 37/00 Convertible aircraft ( vehicles capable of travelling in or on different media [B60F](#) )**

B64C 37/02 . Flying units formed by separate aircraft ( towing, air-refuelling, or aircraft-carrying aircraft [B64D](#) )

## **B64C 39/00 Aircraft not otherwise provided for**

B64C 39/001 . { Flying saucers }  
 B64C 39/003 . { with wings, paddle wheels, bladed wheels, moving or rotating in relation to the fuselage ( rotorcraft [B64C 27/00](#) , ornithopters [B64C 33/00](#) ) }  
 B64C 39/005 . . { about a horizontal transversal axis }  
 B64C 39/006 . . { about a vertical axis }  
 B64C 39/008 . . { about a longitudinal axis }  
 B64C 39/02 . characterised by special use  
 B64C 39/022 . . { Tethered aircraft }  
 B64C 39/024 . . { of the remote controlled vehicle type, i.e. RPV }  
 B64C 39/026 . . { for use as personal propulsion unit }  
 B64C 39/028 . . { Micro-sized aircraft }  
 B64C 39/04 . having multiple fuselages or tail booms  
 B64C 39/06 . having disc- or ring-shaped wings { ( [B64C 39/001](#) takes precedence ) }  
 B64C 39/062 . . { having annular wings }

- B64C 39/064 . . . { with radial airflow }
- B64C 39/066 . . { having channel wings }
- B64C 39/068 . . { having multiple wings joined at the tips }
- B64C 39/08 . having multiple wings { ( [B64C 39/06](#) takes precedence ) }
- B64C 39/10 . All-wing aircraft { ( [B64C 39/001](#) takes precedence ) }
- B64C 2039/105 . of blended wing body type
- B64C 39/12 . Canard-type aircraft

## **B64C 2201/00 Unmanned aerial vehicles ; Equipment therefor**

- B64C 2201/02 . characterized by type of aircraft
- B64C 2201/021 . . Airplanes, i.e. having wings and tail planes
- B64C 2201/022 . . Balloons, blimps or airships
- B64C 2201/024 . . Helicopters, or autogiros
- B64C 2201/025 . . Ornithopters, i.e. generating lift and propulsion by flapping wings or insect like means
- B64C 2201/027 . . Flying platforms
- B64C 2201/028 . . of all-wing types
- B64C 2201/04 . characterised by type of power plant
- B64C 2201/042 . . by electric motors ; Electric power sources therefor, e.g. fuel cells, solar panels or batteries
- B64C 2201/044 . . by internal combustion engines, e.g. oscillating piston or rotary piston engines
- B64C 2201/046 . . by rocket engines, ramjets, or pulse-reactors
- B64C 2201/048 . . by jet turbines, or turbofans
- B64C 2201/06 . characterised by in-flight supply of energy
- B64C 2201/063 . . by refueling
- B64C 2201/066 . . by recharging of batteries, e.g. by induction
- B64C 2201/08 . characterised by the launching method
- B64C 2201/082 . . Released from other aircraft
- B64C 2201/084 . . using catapults
- B64C 2201/086 . . by taking-off horizontally by own power, e.g. from a runway
- B64C 2201/088 . . Vertical take-off using special means ( for helicopters [B64C 2201/024](#) ; for balloons [B64C 2201/022](#) )
- B64C 2201/10 . characterised by the lift producing means
- B64C 2201/101 . . Lifting aerostatically, e.g. using lighter-than-air gases in chambers
- B64C 2201/102 . . Deployable wings, e.g. foldable or morphing wings
- B64C 2201/104 . . Fixed wings
- B64C 2201/105 . . Inflatable wings

|                     |  |
|---------------------|--|
| B64C 2201/107       | .. Parachutes ; Parasails ; Kites ; Membranes  |
| B64C 2201/108       | .. using rotors, or propellers   |
| B64C 2201/12        | . adapted for particular use   |
| B64C 2201/121       | .. for dropping bombs ; for electronic warfare ; Flying bombs  |
| B64C 2201/122       | .. as communication relays, e.g. high altitude platforms   |
| B64C 2201/123       | .. for imaging, or topography  |
| B64C 2201/125       | .. for meteorology   |
| B64C 2201/126       | .. adapted for performing different kinds of missions, e.g. multipurpose use   |
| B64C 2201/127       | .. for photography, or video recording, e.g. by using cameras  |
| B64C 2201/128       | .. for transporting goods other than bombs   |
| B64C 2201/14        | . characterised by flight control  |
| B64C 2201/141       | .. autonomous, i.e. by navigating independently from ground or air stations, e.g. by using inertial navigation systems (INS) |
| B64C 2201/143       | ... adapted for flying in formations   |
| B64C 2201/145       | ... using satellite radio beacon positioning systems, e.g. GPS   |
| B64C 2201/146       | .. Remote controls   |
| B64C 2201/148       | ... using tethers for connecting to ground station   |
| B64C 2201/16        | . characterised by type of propulsion unit   |
| B64C 2201/162       | .. using ducted fans or propellers   |
| B64C 2201/165       | .. using unducted propellers   |
| B64C 2201/167       | .. using rockets, ramjets, pulse jets, plasma, or the like   |
| B64C 2201/18        | . characterised by landing method  |
| B64C 2201/182       | .. by being caught in mid-air, or next to the ground, e.g. using a net   |
| B64C 2201/185       | .. by deploying parachutes, or the like  |
| B64C 2201/187       | .. by landing horizontally, e.g. on a runway   |
| B64C 2201/20        | . Methods for transport, or storage of unmanned aerial vehicles  |
| B64C 2201/201       | .. in containers   |
| B64C 2201/203       | .. in rucksacks, or bags to be carried by persons  |
| B64C 2201/205       | .. by waterborne vehicles, e.g. ships or submarines or by hovercraft   |
| B64C 2201/206       | .. by airborne vehicles, e.g. airplanes or helicopters   |
| B64C 2201/208       | .. by landborne vehicles, e.g. trucks, lorries, tanks or cars  |
| B64C 2201/22        | . having stealth characteristics   |
| <b>B64C 2203/00</b> | <b>Flying model aircraft, flying toy aircraft</b>  |
| <b>B64C 2211/00</b> | <b>Modular constructions of airplanes or helicopters</b>   |
| <b>B64C 2220/00</b> | <b>Active noise reduction systems</b>  |



**B64C 2230/00**      **Boundary layer controls**

- B64C 2230/02      .    by using acoustic waves generated by transducers
- B64C 2230/04      .    by actively generating fluid flow
- B64C 2230/06      .    by explicitly adjusting fluid flow, e.g. by using valves, variable aperture or slot areas, variable pump action or variable fluid pressure
- B64C 2230/08      .    by influencing fluid flow by means of surface cavities, i.e. net fluid flow is null
- B64C 2230/10      .    by influencing fluid flow by heating using other means than combustion
- B64C 2230/12      .    by using electromagnetic tiles, fluid ionizers, static charges or plasma
- B64C 2230/14      .    achieving noise reductions
- B64C 2230/16      .    by blowing other fluids over the surface than air, e.g. He, H, O<sub>2</sub> or exhaust gases
- B64C 2230/18      .    by using small jets that make the fluid flow oscillate
- B64C 2230/20      .    by passively inducing fluid flow, e.g. by means of a pressure difference between both ends of a slot or duct
- B64C 2230/22      .    by using a surface having multiple apertures of relatively small openings other than slots
- B64C 2230/24      .    by using passive resonance cavities, e.g. without transducers
- B64C 2230/26      .    by using rib lets or hydrophobic surfaces
- B64C 2230/28      .    at propeller or rotor blades

**B64C 2700/00**      **Codes corresponding to the former IdT classification**

- B64C 2700/62      .    Codes corresponding to the former IdT classification of class 62
- B64C 2700/6201    . .    Airplanes, helicopters, autogyros
- B64C 2700/6202    . . .    Characteristics not limited to an aircraft type
- B64C 2700/6204    . . . .    Materials
- B64C 2700/6205    . . . .    Protection means, e.g. against rust, water, fire
- B64C 2700/6207    . . . .    Stabilisation
- B64C 2700/6208    . . . . .    Longitudinal and transversal stability
- B64C 2700/6209    . . . . .    automatically controlled
- B64C 2700/6211    . . . . .    with movable weight not acting as pendulum
- B64C 2700/6212    . . . . .    with weight acting as pendulum
- B64C 2700/6214    . . . . .    with parts of the aircraft acting as pendulum
- B64C 2700/6215    . . . . .    with fluid acting as pendulum

|                |       |   |
|----------------|-------|---|
| B64C 2700/6216 | ..... | by gyroscopical effect ( <a href="#">also in combination with pendulum</a> )                                |
| B64C 2700/6218 | ..... | by other pulse power source, e.g. aerodynamical effect, propellers  |
| B64C 2700/6219 | ..... | by auxiliary fixed or movable surfaces or other special devices, or surfaces acting as parachutes           |
| B64C 2700/6221 | ..... | manually controlled   |
| B64C 2700/6222 | ..... | with movable weight not acting as pendulum  |
| B64C 2700/6223 | ..... | with weight acting as pendulum  |
| B64C 2700/6225 | ..... | by gyroscopical effect ( <a href="#">also in combination with pendulum</a> )                                |
| B64C 2700/6226 | ..... | by other pulse power source ; e.g. aerodynamical effect, popeller   |
| B64C 2700/6228 | ..... | by auxiliary planes or parachutes   |
| B64C 2700/6229 | ..... | Special devices to stabilise or to compensate a helicopter rotor by other means than counter rotating rotor |
| B64C 2700/623  | ..... | Special devices to stabilise or to compensate a gyroplane pivoting torque                                   |
| B64C 2700/6232 | ...   | Airplanes with fixed or movable wings   |
| B64C 2700/6233 | ....  | Design, structure or mounting of wings  |
| B64C 2700/6235 | ..... | Guy-wires assemblies ; Connections between wings and fuselage   |
| B64C 2700/6236 | ..... | Honeycomb stiffeners  |
| B64C 2700/6238 | ..... | Pressure equalising devices between the inside of the wing and the atmosphere                               |
| B64C 2700/6239 | ..... | Ful wing structures   |
| B64C 2700/624  | ..... | Wings or parts thereof movable during flight  |
| B64C 2700/6242 | ..... | adjustable about several axes   |
| B64C 2700/6243 | ....  | Control systems   |
| B64C 2700/6245 | ..... | by warping of wings tips  |
| B64C 2700/6246 | ..... | by auxiliary surfaces at the wings tips   |
| B64C 2700/6247 | ..... | by auxiliary surfaces outside the wings tips  |
| B64C 2700/6249 | ..... | by propellers   |
| B64C 2700/625  | ..... | by jet flaps  |
| B64C 2700/6252 | ..... | Control systems assemblies  |
| B64C 2700/6253 | ..... | Feedback compensation devices   |
| B64C 2700/6254 | ..... | Control systems or transmitting systems for actuating control surfaces                                      |
| B64C 2700/6256 | ..... | Control devices for fins or rudders   |
| B64C 2700/6257 | ..... | by hydraulical, pneumatical or electrical means   |
| B64C 2700/6259 | ..... | Control devices for feed-back compensating and guiding surfaces   |
| B64C 2700/626  | ..... | by hydraulical, pneumatical or electrical means   |
| B64C 2700/6261 | ..... | Transmission systems  |
| B64C 2700/6263 | ..... | Servo actuators ; Auxiliary motors  |
| B64C 2700/6264 | ..... | Vibrations suppressing devices  |
| B64C 2700/6266 | ..... | Safety devices  |
| B64C 2700/6267 | ..... | Control devices for a special position of the flying aircraft or a special position of the pilot            |
| B64C 2700/6269 | ..... | Control from outside the aircraft   |
| B64C 2700/627  | ....  | Influencing airflow over aircraft surfaces  |

|                |       |   |
|----------------|-------|---|
| B64C 2700/6271 | ..... | by fluid flow around the aircraft                                     |
| B64C 2700/6273 | ..... | lift being provided by static devices, e.g. balloons                  |
| B64C 2700/6274 | ..... | by other means, e.g. propellers, rotors, air jets                     |
| B64C 2700/6276 | ...   | Rotorcraft  |
| B64C 2700/6277 | ....  | with driven or windmilling propellers                                 |
| B64C 2700/6278 | ..... | Features common for any type of rotorcraft                            |
| B64C 2700/628  | ..... | Devices for the adjustment of the blades ; Folding blades             |
| B64C 2700/6281 | ..... | Helicopters   |
| B64C 2700/6283 | ..... | Rotor construction  |
| B64C 2700/6284 | ..... | Blades control devices  |
| B64C 2700/6285 | ..... | Drag reducing devices for an inoperative rotor                        |
| B64C 2700/6287 | ..... | Rotor drives  |
| B64C 2700/6288 | ..... | Hydraulic, electric or man powered rotorcrafts                        |
| B64C 2700/629  | ..... | Rotors which can be used as propulsion means                          |
| B64C 2700/6291 | ..... | Rotors stowable in the wings  |
| B64C 2700/6292 | ..... | Control means using other devices than the rotor                      |
| B64C 2700/6294 | ..... | Construction parts, e.g. frames ; Balancing ; Flight control ; Brakes |
| B64C 2700/6295 | ...   | Aircraft specially adapted for special uses                           |
| B64C 2700/6297 | ....  | for military uses   |
| B64C 2700/6298 | ...   | Gliders   |