

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING (NOTES omitted)

### TRANSPORTING

#### B64 AIRCRAFT; AVIATION; COSMONAUTICS

#### 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.

##### WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:  
[B64C 35/02](#) covered by [B64C 35/00](#)
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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

<b>1/00</b>	<b>Fuselages; Constructional features common to fuselages, wings, stabilising surfaces and the like</b> (aerodynamical features common to fuselages, wings, stabilising surfaces, and the like <a href="#">B64C 23/00</a> ; flight-deck installations <a href="#">B64D</a> )	1/10	. . Bulkheads
1/0009	. {Aerodynamic aspects}	1/12	. . Construction or attachment of skin panels
2001/0018	. {comprising two decks adapted for carrying passengers only}	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 <a href="#">B64C 25/16</a> ; bomb doors <a href="#">B64D 1/06</a> )
2001/0027	. . {arranged one above the other}	1/1407	. . {Doors; surrounding frames}
2001/0036	. . {arranged side by side at the same level}	1/1415	. . . {Cargo doors, e.g. incorporating ramps}
2001/0045	. {Fuselages characterised by special shapes}	1/1423	. . . {Passenger doors}
2001/0054	. {Fuselage structures substantially made from particular materials}	1/143	. . . . {of the plug type}
2001/0063	. . {from wood}	1/1438	. . . . {of the sliding type}
2001/0072	. . {from composite materials}	1/1446	. . . {Inspection hatches (for engine cowls <a href="#">B64D 29/08</a> )}
2001/0081	. . {from metallic materials}	1/1453	. . . {Drain masts}
2001/009	. {comprising decompression panels or valves for pressure equalisation in fuselages or floors}	1/1461	. . . {Structures of doors or surrounding frames}
1/06	. Frames; Stringers; Longerons {; Fuselage sections}	1/1469	. . . {Doors between cockpit and cabin}
1/061	. . {Frames}	1/1476	. . {Canopies; Windscreens or similar transparent elements}
1/062	. . . {specially adapted to absorb crash loads}	1/1484	. . . {Windows ( <a href="#">B64C 1/1492</a> takes precedence)}
1/063	. . . {Folding or collapsing to reduce overall dimensions, e.g. foldable tail booms (folding or collapsing wings <a href="#">B64C 3/56</a> )}	1/1492	. . . {Structure and mounting of the transparent elements in the window or windscreen}
1/064	. . {Stringers; Longerons}	1/16	. specially adapted for mounting power plant
1/065	. . {Spars}	1/18	. Floors
1/066	. . {Interior liners}	1/20	. . specially adapted for freight
1/067	. . . {comprising means for preventing icing or condensation conditions}	1/22	. Other structures integral with fuselages to facilitate loading {, e.g. cargo bays, cranes (cargo door type ramps <a href="#">B64C 1/1415</a> )}
1/068	. . {Fuselage sections}	1/24	. Steps mounted on, and retractable within, fuselages (readily removable <a href="#">B64D 9/00</a> )
1/0683	. . . {Nose cones}	1/26	. Attaching the wing or tail units or stabilising surfaces
1/0685	. . . {Tail cones}	1/28	. Parts of fuselage relatively movable to improve pilots view
1/069	. . . {Joining arrangements therefor}		
1/08	. . Geodetic or other open-frame structures		

1/30	Parts of fuselage relatively movable to reduce overall size for storage	3/36	Structures adapted to reduce effects of aerodynamic or other external heating {(cooling structural parts of aircrafts with air flow <a href="#">B64D 13/006</a> )}
1/32	Severable or jettisonable parts of fuselage facilitating emergency escape (ejector seats <a href="#">B64D 25/10</a> )	3/38	Adjustment of complete wings or parts thereof
1/34	comprising inflatable structural components (connection of valves to inflatable elastic bodies <a href="#">B60C 29/00</a> )	3/385	{Variable incidence wings}
1/36	adapted to receive antennas or radomes (antennas or radomes per se <a href="#">H01Q</a> )	3/40	Varying angle of sweep
1/38	Constructions adapted to reduce effects of aerodynamic or other external heating {(cooling structural parts of aircrafts with air flow <a href="#">B64D 13/006</a> )}	3/42	Adjusting about chordwise axes
1/40	Sound or heat insulation {, e.g. using insulation blankets (insulating elements for vehicles, in general <a href="#">B60R 13/08</a> )}	3/44	Varying camber
1/403	{Arrangement of fasteners specially adapted therefor, e.g. of clips (in vehicles in general <a href="#">B60R 13/0206</a> )}	2003/445	{by changing shape according to the speed, e.g. by morphing}
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 <a href="#">B60R 16/00</a> ; supports for pipes, cables or protective tubing <a href="#">F16L 3/00</a> ; installations of electric cables or lines in vehicles <a href="#">H02G 3/00</a> )}	3/46	by inflatable elements (connection of valves to inflatable elastic bodies <a href="#">B60C 29/00</a> )
3/00	<b>Wings</b> (stabilising surfaces <a href="#">B64C 5/00</a> ; ornithopter wings <a href="#">B64C 33/02</a> )	3/48	by relatively-movable parts of wing structures
3/10	Shape of wings	3/50	by leading or trailing edge flaps (ailerons <a href="#">B64C 9/00</a> )
3/14	Aerofoil profile	3/52	Warping
3/141	{Circulation Control Airfoils}	3/54	Varying in area (flaps extendable to increase camber <a href="#">B64C 3/44</a> )
2003/142	{with variable camber along the airfoil chord}	2003/543	{by changing shape according to the speed, e.g. by morphing}
2003/143	{comprising interior channels}	3/546	{by foldable elements}
2003/144	{including a flat surface on either the extrados or intrados}	3/56	Folding or collapsing to reduce overall dimensions of aircraft
2003/145	{comprising 'Gurney' flaps}	3/58	provided with fences or spoilers (adjustable for control purposes <a href="#">B64C 9/00</a> )
2003/146	{comprising leading edges of particular shape}	5/00	<b>Stabilising surfaces</b> (attaching stabilising surfaces to fuselage <a href="#">B64C 1/26</a> )
2003/147	{comprising trailing edges of particular shape}	5/02	Tailplanes (fins <a href="#">B64C 5/06</a> )
2003/148	{comprising protuberances, e.g. for modifying boundary layer flow}	5/04	Noseplanes
2003/149	{for supercritical or transonic flow}	5/06	Fins (specially for wings <a href="#">B64C 5/08</a> )
3/16	Frontal aspect	5/08	mounted on or supported by wings
3/18	Spars; Ribs; Stringers (attaching wing unit to fuselage <a href="#">B64C 1/26</a> )	5/10	adjustable
3/182	{Stringers, longerons}	5/12	for retraction against or within fuselage or nacelle
3/185	{Spars}	5/14	Varying angle of sweep
3/187	{Ribs}	5/16	about spanwise axes
3/20	Integral or sandwich constructions (layered products or sandwich constructions in general <a href="#">B32B</a> )	5/18	in area (attaching stabilising surfaces to fuselage <a href="#">B64C 1/26</a> )
3/22	Geodetic or other open-frame structures	7/00	<b>Structures or fairings not otherwise provided for</b>
3/24	Moulded or cast structures	7/02	Nacelles
3/26	Construction, shape, or attachment of separate skins, e.g. panels	9/00	<b>Adjustable control surfaces or members, e.g. rudders</b> (trimming stabilising surfaces <a href="#">B64C 5/10</a> )
3/28	Leading or trailing edges attached to primary structures, e.g. forming fixed slots	2009/005	{Ailerons}
3/30	comprising inflatable structural components (connection of valves to inflatable elastic bodies <a href="#">B60C 29/00</a> )	9/02	Mounting or supporting thereof
3/32	specially adapted for mounting power plant	9/04	with compound dependent movements
3/34	Integrally-constructed tanks, e.g. for fuel (other aircraft fuel tanks or fuel systems <a href="#">B64D</a> )	9/06	with two or more independent movements
		9/08	bodily displaceable (varying camber of wings <a href="#">B64C 3/44</a> )
		9/10	one surface adjusted by movement of another, e.g. servo tabs ( <a href="#">B64C 9/04</a> takes precedence; adjusting surfaces of different type or function <a href="#">B64C 9/12</a> )
		9/12	surfaces of different type or function being simultaneously adjusted
		9/14	forming slots (boundary-layer control <a href="#">B64C 21/00</a> )
		2009/143	{comprising independently adjustable elements for closing or opening the slot between the main wing and leading or trailing edge flaps}
		9/146	{at an other wing location than the rear or the front (wings provided with fixed fences or spoilers <a href="#">B64C 3/58</a> )}
		9/16	at the rear of the wing
		9/18	by single flaps

- 9/20 . . . by multiple flaps
- 9/22 . . at the front of the wing
- 9/24 . . . by single flap
- 9/26 . . . by multiple flaps
- 9/28 . . by flaps at both the front and rear of the wing operating in unison
- 9/30 . Balancing hinged surfaces, e.g. dynamically
- 9/32 . Air braking surfaces ([braking by parachutes B64D 17/80](#))
- 9/323 . . {associated with wings}
- 9/326 . . {associated with fuselages}
- 9/34 . collapsing or retracting against or within other surfaces or other members
- 9/36 . . the members being fuselages or nacelles
- 9/38 . Jet flaps

**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](#)

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

- 11/301 . . {characterised by blade position indicating means}
- 11/303 . . {characterised by comprising a governor}

- 11/305 . . {characterised by being influenced by other control systems, e.g. fuel supply}
- 11/306 . . {specially adapted for contrarotating propellers}
- 11/308 . . . {automatic}
- 11/32 . . mechanical
- 11/325 . . . {comprising feathering, braking or stopping systems}
- 11/34 . . . automatic
- 11/343 . . . . {actuated by the centrifugal force or the aerodynamic drag acting on the blades}
- 11/346 . . . . {actuated by the centrifugal force or the aerodynamic drag acting on auxiliary masses or surfaces}
- 11/36 . . . non-automatic
- 11/38 . . fluid, e.g. hydraulic
- 11/385 . . . {comprising feathering, braking or stopping systems}
- 11/40 . . . automatic
- 11/42 . . . non-automatic
- 11/44 . . electric
- 11/46 . Arrangements of or constructional features peculiar to multiple propellers ([B64C 11/306 takes precedence](#))
- 11/48 . . Units of two or more coaxial propellers
- 11/50 . . Phase synchronisation between multiple propellers

**13/00 Control systems or transmitting systems for actuating flying-control surfaces, lift-increasing flaps, air brakes, or spoilers**

- 13/02 . Initiating means
- 13/04 . . actuated personally
- 13/042 . . . {operated by hand}
- 13/0421 . . . . {control sticks for primary flight controls}
- 13/0423 . . . . {yokes or steering wheels for primary flight controls}
- 13/0425 . . . . {for actuating trailing or leading edge flaps, air brakes or spoilers}
- 13/0427 . . . . {for actuating trim}
- 13/044 . . . {operated by feet, e.g. pedals}
- 13/06 . . . adjustable to suit individual persons
- 13/08 . . . Trimming zero positions
- 13/10 . . . comprising warning devices
- 13/12 . . . Dual control apparatus
- 13/14 . . . lockable ([locking in position to suit individual persons B64C 13/06](#))
- 13/16 . . actuated automatically, e.g. responsive to gust detectors
- 13/18 . . . using automatic pilot
- 13/20 . . . using radiated signals
- 13/22 . . . readily revertible to personal control
- 13/24 . Transmitting means
- 13/26 . . without power amplification or where power amplification is irrelevant
- 13/28 . . . mechanical
- 13/30 . . . . using cable, chain, or rod mechanisms
- 13/32 . . . . using cam mechanisms
- 13/34 . . . . using toothed gearing
- 13/341 . . . . {having duplication or stand-by provisions}
- 13/343 . . . . {overriding of personal controls; with automatic return to inoperative position}
- 13/345 . . . . {with artificial feel}
- 13/36 . . . fluid

13/38	. . with power amplification	23/076	. . . . {the wing tip airfoil devices comprising one or more separate moveable members thereon affecting the vortices, e.g. flaps}
13/40	. . . using fluid pressure	23/08	. using Magnus effect
13/42	. . . . having duplication or stand-by provisions	<b>25/00</b>	<b>Alighting gear (air-cushion alighting gear B60V 3/08)</b>
13/44	. . . . overriding of personal controls; with automatic return to inoperative position	25/001	. {Devices not provided for in the groups B64C 25/02 - B64C 25/68}
13/46	. . . . with artificial feel	2025/003	. {Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors}
13/48	. . . . characterised by the fluid being gaseous	2025/005	. {Tail skids for fuselage tail strike protection on tricycle landing gear aircraft}
13/50	. . . using electrical energy	2025/006	. {Landing gear legs comprising torque arms}
13/503	. . . . {Fly-by-Wire}	2025/008	. {Comprising means for modifying their length, e.g. for kneeling, for jumping, or for leveling the aircraft}
13/504	. . . . {using electro-hydrostatic actuators [EHA's]}	25/02	. Undercarriages
13/505	. . . . {having duplication or stand-by provisions}	25/04	. . Arrangement or disposition on aircraft
13/506	. . . . {overriding of personal controls; with automatic return to inoperative position}	25/06	. . fixed
13/507	. . . . {with artificial feel}	25/08	. . non-fixed, e.g. jettisonable
<b>15/00</b>	<b>Attitude, flight direction, or altitude control by jet reaction</b>	25/10	. . . retractable, foldable, or the like
15/02	. the jets being propulsion jets	25/12	. . . . sideways
15/12	. . the power plant being tilttable	2025/125	. . . . {into the fuselage, e.g. main landing gear pivotally retracting into or extending out of the fuselage}
15/14	. the jets being other than main propulsion jets (jet flaps B64C 9/38)	25/14	. . . . fore-and-aft
<b>17/00</b>	<b>Aircraft stabilisation not otherwise provided for</b>	25/16	. . . . Fairings movable in conjunction with undercarriage elements
17/02	. by gravity or inertia-actuated apparatus	25/18	. . . . Operating mechanisms
17/04	. . by pendular bodies	25/20	. . . . . mechanical
17/06	. . by gyroscopic apparatus (automatic pilot control B64C 13/18)	25/22	. . . . . fluid
17/08	. by ballast supply or discharge (for lighter-than-air aircraft B64B)	25/24	. . . . . electric
17/10	. Transferring fuel to adjust trim	25/26	. . . . . Control or locking systems therefor
<b>19/00</b>	<b>Aircraft control not otherwise provided for</b>	25/28	. . . . . with indicating or warning devices
19/02	. Conjoint controls	25/30	. . . . . emergency actuated
		25/32	. characterised by the ground or like engaging elements (arrestor hooks B64C 25/68)
<b><u>Influencing air-flow over aircraft surfaces, not otherwise provided for</u></b>		2025/325	. . {specially adapted for helicopters}
<b>21/00</b>	<b>Influencing air-flow over aircraft surfaces by affecting boundary-layer flow (boundary-layer control in general F15D)</b>	25/34	. . wheeled type, e.g. multi-wheeled bogies
21/02	. by use of slot, ducts, porous areas, or the like	2025/345	. . . {Multi-wheel bogies having one or more steering axes}
21/025	. . {for simultaneous blowing and sucking}	25/36	. . . Arrangements or adaptations of wheels, tyres, or axles in general (construction of wheels or axles B60B; construction of tyres in general B60C)
21/04	. . for blowing (B64C 21/08 takes precedence)	25/38	. . endless-track type
21/06	. . for sucking (B64C 21/08 takes precedence)	25/40	. . the elements being rotated before touch-down
21/08	. . adjustable	25/405	. . . {Powered wheels, e.g. for taxiing}
21/10	. using other surface properties, e.g. roughness	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)
<b>23/00</b>	<b>Influencing air-flow over aircraft surfaces, not otherwise provided for</b>	25/423	. . . {Braking devices acting by reaction of gaseous medium (B64C 25/426 takes precedence; using rockets B64D 27/023)}
23/005	. {by other means not covered by groups B64C 23/02 - B64C 23/08, e.g. by electric charges, magnetic panels, piezoelectric elements, static charges or ultrasounds}	25/426	. . . {Braking devices providing an automatic sequence of braking}
23/02	. by means of rotating members of cylindrical or similar form	25/44	. . . Actuating mechanisms
23/04	. by generating shock waves	25/445	. . . . {Brake regulators for preventing somersaulting}
23/06	. by generating vortices		
23/065	. . {at the wing tips}		
23/069	. . . {using one or more wing tip airfoil devices, e.g. winglets, splines, wing tip fences or raked wingtips}		
23/072	. . . . {the wing tip airfoil devices being moveable in their entirety}		



- 25/46 . . . . Brake regulators for preventing skidding or aircraft somersaulting {[\(anti-skidding regulators; electric or electronic controllers therefor B60T 8/1703\)](#)}
- 25/48 . . . . differentially operated for steering purposes
- 25/50 . . Steerable undercarriages; Shimmy damping ([steering devices applicable to land vehicles B62D](#))
- 25/505 . . . {[Shimmy damping](#)}
- 25/52 . . Skis or runners
- 25/54 . . Floats
- 25/56 . . . inflatable ([connection of valves to inflatable elastic bodies B60C 29/00](#))
- 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](#))
- 25/60 . . . Oleo legs
- 25/62 . . . Spring shock-absorbers; Springs
- 25/64 . . . . using rubber or like elements
- 25/66 . . Convertible alighting gear; Combinations of different kinds of ground or like engaging elements
- 25/68 . . Arrester hooks ([arresting gear, e.g. on aircraft carriers B64F](#))
- 27/16 . . . . Drive of rotors by means, e.g. propellers, mounted on rotor blades
- 27/18 . . . . the means being jet-reaction apparatus
- 27/20 . . Rotorcraft characterised by having shrouded rotors, e.g. flying platforms
- 27/22 . . Compound rotorcraft, i.e. aircraft using in flight the features of both aeroplane and rotorcraft
- 27/24 . . with rotor blades fixed in flight to act as lifting surfaces
- 27/26 . . characterised by provision of fixed wings
- 27/28 . . with forward-propulsion propellers pivotable to act as lifting rotors
- 27/30 . . with provision for reducing drag of inoperative rotor
- 27/32 . . Rotors ([features common to rotors and propellers B64C 11/00](#))
- 27/322 . . {[Blade travel limiting devices, e.g. droop stops](#)}
- 27/325 . . {[Circulation-control rotors](#)}
- 27/327 . . {[Retention means relieving the stress from the arm, e.g. tie-bars](#)}
- 27/33 . . having flexing arms
- 27/35 . . having elastomeric joints
- 27/37 . . having articulated joints ([B64C 27/33, B64C 27/35 take precedence](#))
- 27/39 . . . with individually articulated blades, i.e. with flapping or drag hinges
- 27/41 . . . with flapping or universal joint, common to the blades
- 27/43 . . . . see-saw type, i.e. two-bladed rotor
- 27/45 . . . with a feathering hinge only
- 27/46 . . Blades
- 27/463 . . . {[Blade tips](#)}
- 27/467 . . . Aerodynamic features {([B64C 27/463 takes precedence](#))}
- 27/473 . . . Constructional features {([B64C 27/463 takes precedence](#))}
- 2027/4733 . . . . {[Rotor blades substantially made from particular materials](#)}
- 2027/4736 . . . . . {[from composite materials](#)}
- 27/48 . . . . Root attachment to rotor head
- 27/50 . . . . Blades foldable to facilitate stowage of aircraft
- 27/51 . . Damping of blade movements
- 27/52 . . Tilting of rotor bodily relative to fuselage ([of see-saw type construction B64C 27/43](#))
- 27/54 . . Mechanisms for controlling blade adjustment or movement relative to rotor head, e.g. lag-lead movement
- 27/56 . . Initiating means, e.g. actuated personally
- 27/57 . . . automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust
- 27/58 . . Transmitting means
- 27/59 . . . mechanical
- 27/605 . . . . including swash plate, spider or cam mechanisms
- 27/615 . . . . including flaps mounted on blades
- 27/625 . . . . including rotating masses or servo rotors
- 27/635 . . . . specially for controlling lag-lead movements of blades
- 27/64 . . . . using fluid pressure
- 27/68 . . . . using electrical energy
- 27/72 . . Means acting on blades

**Aircraft kinds and components not otherwise provided for**

- 27/00 Rotorcraft; Rotors peculiar thereto ([alighting gear B64C 25/00](#))**
- 27/001 . {[Vibration damping devices](#)}
- 2027/002 . . {[mounted between the rotor drive and the fuselage](#)}
- 2027/003 . . {[mounted on rotor hub, e.g. a rotary force generator](#)}
- 2027/004 . . {[using actuators, e.g. active systems](#)}
- 2027/005 . . {[using suspended masses](#)}
- 27/006 . {[Safety devices](#)}
- 27/007 . . {[adapted for detection of blade cracks](#)}
- 27/008 . {[Rotors tracking or balancing devices](#)}
- 27/02 . Gyroplanes
- 27/021 . . {[Rotor or rotor head construction \(for helicopters B64C 27/32\)](#)}
- 27/022 . . . {[Devices for folding or adjusting the blades](#)}
- 27/023 . . . {[Construction of the blades; Coating of the blades](#)}
- 27/024 . . . {[Devices for shifting the rotor axis](#)}
- 27/025 . . . {[Rotor drives, in particular for taking off; Combination of autorotation rotors and driven rotors](#)}
- 27/026 . . . {[Devices for converting a fixed wing into an autorotation rotor and viceversa](#)}
- 27/027 . . {[Control devices using other means than the rotor](#)}
- 27/028 . . {[Other constructional elements; Rotor balancing](#)}
- 27/04 . Helicopters
- 27/06 . . with single rotor
- 27/08 . . with two or more rotors
- 27/10 . . . arranged coaxially
- 27/12 . . Rotor drives
- 2027/125 . . . {[including toroidal transmissions, e.g. of the CVT type](#)}
- 27/14 . . . Direct drive between power plant and rotor hub

- 2027/7205 . . . {on each blade individually, e.g. individual blade control [IBC]}
- 2027/7211 . . . . {without flaps}
- 2027/7216 . . . . . {using one actuator per blade}
- 2027/7222 . . . . . {using airfoil deformation}
- 2027/7227 . . . . . {using blowing slots actuated by piezoelectric actuators}
- 2027/7233 . . . . . {using higher-harmonic control [HHC]}
- 2027/7238 . . . . . {by controlling existing swash plate actuators}
- 2027/7244 . . . . . {by using dedicated actuators}
- 2027/725 . . . . . {using jets controlled by piezoelectric actuators}
- 2027/7255 . . . . . {using one or more swash plates}
- 2027/7261 . . . . . {with flaps}
- 2027/7266 . . . . . {actuated by actuators}
- 2027/7272 . . . . . {of the electro-hydraulic type}
- 2027/7277 . . . . . {of the magnetostrictive type}
- 2027/7283 . . . . . {of the piezoelectric type}
- 2027/7288 . . . . . {of the memory shape type}
- 2027/7294 . . . . . {actuated mechanically, e.g. by means of linkages}
- 27/78 . . . in association with pitch adjustment of blades of anti-torque rotor
- 27/80 . . . for differential adjustment of blade pitch between two or more lifting rotors
- 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
- 2027/8209 . . . {Electrically driven tail rotors}
- 2027/8218 . . . {wherein the rotor or the jet axis is inclined with respect to the longitudinal horizontal or vertical plane of the helicopter}
- 2027/8227 . . . {comprising more than one rotor}
- 2027/8236 . . . {including pusher propellers}
- 2027/8245 . . . {using air jets}
- 2027/8254 . . . {Shrouded tail rotors, e.g. "Fenestron" fans}
- 2027/8263 . . . {comprising in addition rudders, tails, fins, or the like}
- 2027/8272 . . . . {comprising fins, or movable rudders}
- 2027/8281 . . . . {comprising horizontal tail planes}
- 2027/829 . . . . {comprising a V-tail units}
- 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](#))
- 29/0008 . . {having its flight directional axis horizontal when grounded}
- 29/0016 . . . {the lift during taking-off being created by free or ducted propellers or by blowers}
- 29/0025 . . . {the propellers being fixed relative to the fuselage}
- 29/0033 . . . {the propellers being tiltable relative to the fuselage}
- 29/0041 . . . {the lift during taking-off being created by jet motors}
- 29/005 . . . {the motors being fixed relative to the fuselage}
- 29/0058 . . . {with vertical jet}
- 29/0066 . . . {with horizontal jet and jet deflector}
- 29/0075 . . . {the motors being tiltable relative to the fuselage}

- 29/0083 . . . {the lift during taking-off being created by several motors of different type}
- 29/0091 . . {Accessories not provided for elsewhere}
- 29/02 . . . having its flight directional axis vertical when grounded
- 29/04 . . . characterised by jet-reaction propulsion
- 30/00 Supersonic-type aircraft**
- 31/00 Aircraft intended to be sustained without power plant; Powered hang-glider-type aircraft; Microlight-type aircraft**
- 31/02 . . Gliders, e.g. sailplanes ([hang-gliders B64C 31/028](#))
- 31/024 . . . with auxiliary power plant
- 31/028 . . Hang-glider-type aircraft; Microlight-type aircraft
- 31/0285 . . . {Safety devices}
- 31/032 . . . having delta shaped wing
- 31/036 . . . having parachute-type wing ([parachutes B64D 17/00](#))
- 31/04 . . Man-powered aircraft ([ornithopters B64C 33/00](#))
- 31/06 . . Kites ([hang-gliders B64C 31/028](#); toy aspects [A63H 27/08](#); towed targets [F41J](#); for propelling water sports boards [B63H 8/10](#); for propelling vessels [B63H 9/069](#))

**WARNING**

Group [B64C 31/06](#) is impacted by reclassification into groups [B63H 8/10](#) - [B63H 8/18](#), [B63H 8/23](#), [B63H 8/25](#), [B63H 8/50](#) - [B63H 8/70](#) and [B63H 9/068](#) - [B63H 9/072](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2031/065 . . . {of inflatable wing type}
- 33/00 Ornithopters**
- 33/02 . . Wings; Actuating mechanisms therefor
- 33/025 . . . {the entire wing moving either up or down}
- 35/00 Flying-boats; Seaplanes** ([alighting gear B64C 25/00](#))
- 35/001 . . {with means for increasing stability on the water}
- 35/002 . . . {using adjustable auxiliary floats}
- 35/003 . . . {using auxiliary floats at the wing tips}
- 35/005 . . {with propellers, rudders or brakes acting in the water}
- 35/006 . . {with lift generating devices}
- 35/007 . . {Specific control surfaces therefor}
- 35/008 . . {Amphibious sea planes}
- 37/00 Convertible aircraft** (vehicles capable of travelling in or on different media [B60F](#))
- 37/02 . . Flying units formed by separate aircraft (towing, air-refuelling, or aircraft-carrying aircraft [B64D](#))
- 39/00 Aircraft not otherwise provided for**
- 39/001 . . {Flying saucers}
- 39/003 . . {with wings, paddle wheels, bladed wheels, moving or rotating in relation to the fuselage ([rotorcraft B64C 27/00](#), [ornithopters B64C 33/00](#))}
- 39/005 . . . {about a horizontal transversal axis}
- 39/006 . . . {about a vertical axis}
- 39/008 . . . {about a longitudinal axis}
- 39/02 . . . characterised by special use
- 39/022 . . . {Tethered aircraft}

- 39/024 . . {of the remote controlled vehicle type, i.e. RPV}
- 39/026 . . {for use as personal propulsion unit}

**WARNING**

Group [B64C 39/026](#) is impacted by reclassification into group [B63B 34/15](#).

Groups [B64C 39/026](#) and [B63B 34/15](#) should be considered in order to perform a complete search.

- 39/028 . . {Micro-sized aircraft}
- 39/029 . . {Asymmetrical aircraft}
- 39/04 . . having multiple fuselages or tail booms
- 39/06 . . having disc- or ring-shaped wings ([B64C 39/001 takes precedence](#))
- 39/062 . . {having annular wings}
- 39/064 . . . {with radial airflow}
- 39/066 . . {having channel wings}
- 39/068 . . {having multiple wings joined at the tips}
- 39/08 . . having multiple wings ([B64C 39/06 takes precedence](#))
- 39/10 . . All-wing aircraft ([B64C 39/001 takes precedence](#))
- 2039/105 . . {of blended wing body type}
- 39/12 . . Canard-type aircraft

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

- 2201/02 . . characterized by type of aircraft
- 2201/021 . . . Airplanes, i.e. having wings and tail planes
- 2201/022 . . . Balloons, blimps or airships
- 2201/024 . . . Helicopters, or autogiros
- 2201/025 . . . Ornithopters, i.e. generating lift and propulsion by flapping wings or insect like means
- 2201/027 . . . Flying platforms
- 2201/028 . . . of all-wing types
- 2201/04 . . characterized by type of power plant
- 2201/042 . . . by electric motors; Electric power sources therefor, e.g. fuel cells, solar panels or batteries
- 2201/044 . . . by internal combustion engines, e.g. oscillating piston or rotary piston engines
- 2201/046 . . . by rocket engines, ramjets, or pulse-reactors
- 2201/048 . . . by jet turbines, or turbofans
- 2201/06 . . characterized by in-flight supply of energy
- 2201/063 . . . by refueling
- 2201/066 . . . by recharging of batteries, e.g. by induction
- 2201/08 . . characterized by the launching method
- 2201/082 . . . Released from other aircraft
- 2201/084 . . . using catapults
- 2201/086 . . . by taking-off horizontally by own power, e.g. from a runway
- 2201/088 . . . Vertical take-off using special means ([for helicopters B64C 2201/024; for balloons B64C 2201/022](#))
- 2201/10 . . characterized by the lift producing means
- 2201/101 . . . Lifting aerostatically, e.g. using lighter-than-air gases in chambers
- 2201/102 . . . Deployable wings, e.g. foldable or morphing wings
- 2201/104 . . . Fixed wings
- 2201/105 . . . Inflatable wings
- 2201/107 . . . Parachutes; Parasails; Kites; Membranes
- 2201/108 . . . using rotors, or propellers

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

**2203/00 Flying model aircraft, flying toy aircraft****2211/00 Modular constructions of airplanes or helicopters****2220/00 Active noise reduction systems****2230/00 Boundary layer controls**

- 2230/02 . . by using acoustic waves generated by transducers
- 2230/04 . . by actively generating fluid flow
- 2230/06 . . by explicitly adjusting fluid flow, e.g. by using valves, variable aperture or slot areas, variable pump action or variable fluid pressure
- 2230/08 . . by influencing fluid flow by means of surface cavities, i.e. net fluid flow is null
- 2230/10 . . by influencing fluid flow by heating using other means than combustion
- 2230/12 . . by using electromagnetic tiles, fluid ionizers, static charges or plasma
- 2230/14 . . achieving noise reductions
- 2230/16 . . by blowing other fluids over the surface than air, e.g. He, H, O<sub>2</sub> or exhaust gases
- 2230/18 . . by using small jets that make the fluid flow oscillate

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- 2230/20 . by passively inducing fluid flow, e.g. by means of a pressure difference between both ends of a slot or duct
- 2230/22 . by using a surface having multiple apertures of relatively small openings other than slots
- 2230/24 . by using passive resonance cavities, e.g. without transducers
- 2230/26 . by using rib lets or hydrophobic surfaces
- 2230/28 . at propeller or rotor blades