

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](#))

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)	1/10	. . Bulkheads
		1/12	. . Construction or attachment of skin panels
		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)
1/0009	. {Aerodynamic aspects}	1/1407	. . {Doors; surrounding frames}
2001/0018	. {comprising two decks adapted for carrying passengers only}	1/1415	. . . {Cargo doors, e.g. incorporating ramps}
2001/0027	. . {arranged one above the other}	1/1423	. . . {Passenger doors}
2001/0036	. . {arranged side by side at the same level}	1/143	. . . . {of the plug type}
2001/0045	. {Fuselages characterised by special shapes}	1/1438	. . . . {of the sliding type}
2001/0054	. {Fuselage structures substantially made from particular materials}	1/1446	. . . {Inspection hatches (for engine cowls B64D 29/08)}
2001/0063	. . {from wood}	1/1453	. . . {Drain masts}
2001/0072	. . {from composite materials}	1/1461	. . . {Structures of doors or surrounding frames}
2001/0081	. . {from metallic materials}	1/1469	. . . {Doors between cockpit and cabin}
2001/009	. {comprising decompression panels or valves for pressure equalisation in fuselages or floors}	1/1476	. . {Canopies; Windscreens or similar transparent elements}
1/06	. Frames; Stringers; Longerons {; Fuselage sections}	1/1484	. . . {Windows (B64C 1/1492 takes precedence)}
1/061	. . {Frames}	1/1492	. . . {Structure and mounting of the transparent elements in the window or windscreen}
1/062	. . . {specially adapted to absorb crash loads}	1/16	. specially adapted for mounting power plant
1/063	. . . {Folding or collapsing to reduce overall dimensions, e.g. foldable tail booms (folding or collapsing wings B64C 3/56)}	1/18	. Floors
1/064	. . {Stringers; Longerons}	1/20	. . specially adapted for freight
1/065	. . {Spars}	1/22	. Other structures integral with fuselages to facilitate loading {, e.g. cargo bays, cranes (cargo door type ramps B64C 1/1415)}
1/066	. . {Interior liners}	1/24	. Steps mounted on, and retractable within, fuselages (readily removable B64D 9/00)
1/067	. . . {comprising means for preventing icing or condensation conditions}	1/26	. Attaching the wing or tail units or stabilising surfaces
1/068	. . {Fuselage sections}	1/28	. Parts of fuselage relatively movable to improve pilots view
1/0683	. . . {Nose cones}		
1/0685	. . . {Tail cones}		
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 B64D 13/006)}
1/32	• Severable or jettisonable parts of fuselage facilitating emergency escape (ejector seats B64D 25/10)	3/38	• Adjustment of complete wings or parts thereof
1/34	• comprising inflatable structural components (connection of valves to inflatable elastic bodies B60C 29/00)	3/385	• • {Variable incidence wings}
1/36	• adapted to receive antennas or radomes (antennas or radomes per se H01Q)	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 B64D 13/006)}	3/42	• • Adjusting about chordwise axes
1/40	• Sound or heat insulation {, e.g. using insulation blankets (insulating elements for vehicles, in general B60R 13/08)}	3/44	• • Varying camber
1/403	• • {Arrangement of fasteners specially adapted therefor, e.g. of clips (in vehicles in general B60R 13/0206)}	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 B60R 16/00 ; supports for pipes, cables or protective tubing F16L 3/00 ; installations of electric cables or lines in vehicles H02G 3/00)}	3/46	• • • by inflatable elements (connection of valves to inflatable elastic bodies B60C 29/00)
3/00	Wings (stabilising surfaces B64C 5/00; ormothopter wings B64C 33/02)	3/48	• • • by relatively-movable parts of wing structures
3/10	• Shape of wings	3/50	• • • by leading or trailing edge flaps (ailerons B64C 9/00)
3/14	• • Aerofoil profile	3/52	• • Warping
3/141	• • • {Circulation Control Airfoils}	3/54	• • Varying in area (flaps extendable to increase camber B64C 3/44)
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 B64C 9/00)
2003/146	• • • {comprising leading edges of particular shape}	5/00	Stabilising surfaces (attaching stabilising surfaces to fuselage B64C 1/26)
2003/147	• • • {comprising trailing edges of particular shape}	5/02	• Tailplanes (fins B64C 5/06)
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 B64C 5/08)
3/16	• • Frontal aspect	5/08	• mounted on or supported by wings
3/18	• Spars; Ribs; Stringers (attaching wing unit to fuselage B64C 1/26)	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 B32B)	5/18	• • in area (attaching stabilising surfaces to fuselage B64C 1/26)
3/22	• Geodetic or other open-frame structures	7/00	Structures or fairings not otherwise provided for
3/24	• Moulded or cast structures	7/02	• Nacelles
3/26	• Construction, shape, or attachment of separate skins, e.g. panels	9/00	Adjustable control surfaces or members, e.g. rudders (trimming stabilising surfaces B64C 5/10)
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 B60C 29/00)	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 B64D)	9/06	• with two or more independent movements
		9/08	• bodily displaceable (varying camber of wings B64C 3/44)
		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)
		9/12	• surfaces of different type or function being simultaneously adjusted
		9/14	• forming slots (boundary-layer control B64C 21/00)
		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 B64C 3/58)}
		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		
13/42	. . . . having duplication or stand-by provisions		
13/44	. . . . overriding of personal controls; with automatic return to inoperative position	23/08	. using Magnus effect
13/46	. . . . with artificial feel	25/00	Alighting gear (air-cushion alighting gear B60V 3/08)
13/48	. . . . characterised by the fluid being gaseous	25/001	. {Devices not provided for in the groups B64C 25/02 - B64C 25/68}
13/50	. . . using electrical energy		
13/503	. . . . {Fly-by-Wire}	2025/003	. {Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors}
13/504	. . . . {using electro-hydrostatic actuators [EHA's]}	2025/005	. {Tail skids for fuselage tail strike protection on tricycle landing gear aircraft}
13/505	. . . . {having duplication or stand-by provisions}	2025/006	. {Landing gear legs comprising torque arms}
13/506	. . . . {overriding of personal controls; with automatic return to inoperative position}	2025/008	. {Comprising means for modifying their length, e.g. for kneeling, for jumping, or for leveling the aircraft}
13/507	. . . . {with artificial feel}		
15/00	Attitude, flight direction, or altitude control by jet reaction		
15/02	. the jets being propulsion jets	25/02	. Undercarriages
15/12	. . the power plant being tiltable	25/04	. . Arrangement or disposition on aircraft
15/14	. the jets being other than main propulsion jets (jet flaps B64C 9/38)	25/06	. . fixed
17/00	Aircraft stabilisation not otherwise provided for	25/08	. . non-fixed, e.g. jettisonable
17/02	. by gravity or inertia-actuated apparatus	25/10	. . . retractable, foldable, or the like
17/04	. . by pendular bodies	25/12	. . . . sideways
17/06	. . by gyroscopic apparatus (automatic pilot control B64C 13/18)	2025/125	. . . . . {into the fuselage, e.g. main landing gear pivotally retracting into or extending out of the fuselage}
17/08	. by ballast supply or discharge (for lighter-than-air aircraft B64B)	25/14	. . . . fore-and-aft
17/10	. Transferring fuel to adjust trim	25/16	. . . . Fairings movable in conjunction with undercarriage elements
19/00	Aircraft control not otherwise provided for	25/18	. . . . Operating mechanisms
19/02	. Conjoint controls	25/20	. . . . . mechanical
		25/22	. . . . . fluid
		25/24	. . . . . electric
		25/26	. . . . . Control or locking systems therefor
		25/28	. . . . . with indicating or warning devices
		25/30	. . . . . emergency actuated
		25/32	. characterised by the ground or like engaging elements (arrestor hooks B64C 25/68)
Influencing air-flow over aircraft surfaces, not otherwise provided for		2025/325	. . {specially adapted for helicopters}
21/00	Influencing air-flow over aircraft surfaces by affecting boundary-layer flow (boundary-layer control in general F15D)	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}		
21/04	. . for blowing (B64C 21/08 takes precedence)	25/36	. . . Arrangements or adaptations of wheels, tyres, or axles in general (construction of wheels or axles B60B; construction of tyres in general B60C)
21/06	. . for sucking (B64C 21/08 takes precedence)		
21/08	. . adjustable	25/38	. . endless-track type
21/10	. using other surface properties, e.g. roughness	25/40	. . the elements being rotated before touch-down
23/00	Influencing air-flow over aircraft surfaces, not otherwise provided for	25/405	. . . {Powered wheels, e.g. for taxiing}
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}	25/42	. . 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)
23/02	. by means of rotating members of cylindrical or similar form		
23/04	. by generating shock waves	25/423	. . . {Braking devices acting by reaction of gaseous medium (B64C 25/426 takes precedence; using rockets B64D 27/023)}
23/06	. by generating vortices	25/426	. . . {Braking devices providing an automatic sequence of braking}
23/065	. . {at the wing tips}	25/44	. . . Actuating mechanisms
23/069	. . . {using one or more wing tip airfoil devices, e.g. winglets, splines, wing tip fences or raked wingtips}	25/445	. . . . {Brake regulators for preventing somersaulting}
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 }	27/16	. . . Drive of rotors by means, e.g. propellers, mounted on rotor blades
25/48	. . . . differentially operated for steering purposes	27/18	. . . . the means being jet-reaction apparatus
25/50	. . Steerable undercarriages; Shimmy damping (steering devices applicable to land vehicles B62D)	27/20	. Rotorcraft characterised by having shrouded rotors, e.g. flying platforms
25/505	. . . { Shimmy damping }	27/22	. Compound rotorcraft, i.e. aircraft using in flight the features of both aeroplane and rotorcraft
25/52	. . Skis or runners	27/24	. . with rotor blades fixed in flight to act as lifting surfaces
25/54	. . Floats	27/26	. . characterised by provision of fixed wings
25/56	. . . inflatable (connection of valves to inflatable elastic bodies B60C 29/00)	27/28	. . with forward-propulsion propellers pivotable to act as lifting rotors
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)	27/30	. . with provision for reducing drag of inoperative rotor
25/60	. . . Oleo legs	27/32	. Rotors (features common to rotors and propellers B64C 11/00)
25/62	. . . Spring shock-absorbers; Springs	27/322	. . { Blade travel limiting devices, e.g. droop stops }
25/64	. . . . using rubber or like elements	27/325	. . { Circulation-control rotors }
25/66	. . Convertible alighting gear; Combinations of different kinds of ground or like engaging elements	27/327	. . { Retention means relieving the stress from the arm, e.g. tie-bars }
25/68	. Arrester hooks (arresting gear, e.g. on aircraft carriers B64E)	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 }	2027/4733	. . . . {Rotor blades substantially made from particular materials }
27/007	. . { adapted for detection of blade cracks }	2027/4736	. . . . . {from composite materials }
27/008	. { Rotors tracking or balancing devices }	27/48	. . . . Root attachment to rotor head
27/02	. Gyroplanes	27/50	. . . . Blades foldable to facilitate stowage of aircraft
27/021	. . { Rotor or rotor head construction (for helicopters B64C 27/32) }	27/51	. Damping of blade movements
27/022	. . . { Devices for folding or adjusting the blades }	27/52	. Tilting of rotor bodily relative to fuselage (of see-saw type construction B64C 27/43)
27/023	. . . { Construction of the blades; Coating of the blades }	27/54	. Mechanisms for controlling blade adjustment or movement relative to rotor head, e.g. lag-lead movement
27/024	. . . { Devices for shifting the rotor axis }	27/56	. . Initiating means, e.g. actuated personally
27/025	. . . { Rotor drives, in particular for taking off; Combination of autorotation rotors and driven rotors }	27/57	. . . automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust
27/026	. . . { Devices for converting a fixed wing into an autorotation rotor and viceversa }	27/58	. . Transmitting means
27/027	. . { Control devices using other means than the rotor }	27/59	. . . mechanical
27/028	. . { Other constructional elements; Rotor balancing }	27/605	. . . . including swash plate, spider or cam mechanisms
27/04	. Helicopters	27/615	. . . . including flaps mounted on blades
27/06	. . with single rotor	27/625	. . . . including rotating masses or servo rotors
27/08	. . with two or more rotors	27/635	. . . . specially for controlling lag-lead movements of blades
27/10	. . . arranged coaxially	27/64	. . . . using fluid pressure
27/12	. . Rotor drives	27/68	. . . . using electrical energy
2027/125	. . . { including toroidal transmissions, e.g. of the CVT type }	27/72	. . Means acting on blades
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

- 2201/12 . . 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, O₂ or exhaust gases
- 2230/18 . . by using small jets that make the fluid flow oscillate

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- 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 . . characterised 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 . . characterised by in-flight supply of energy
 - 2201/063 . . by refueling
 - 2201/066 . . by recharging of batteries, e.g. by induction
 - 2201/08 . . characterised 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 . . characterised 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

B64C

- 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