

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](#))

1/0009 . {Aerodynamic aspects}

WARNING

Group [B64C 1/0009](#) is impacted by reclassification into group [B64C 39/029](#).

Groups [B64C 1/0009](#) and [B64C 39/029](#) should be considered in order to perform a complete search.

2001/0018 . {comprising two decks adapted for carrying passengers only}

2001/0027 . . {arranged one above the other}

2001/0036 . . {arranged side by side at the same level}

2001/0045 . {Fuselages characterised by special shapes}

WARNING

Group [B64C 2001/0045](#) is impacted by reclassification into group [B64C 39/029](#).

Groups [B64C 2001/0045](#) and [B64C 39/029](#) should be considered in order to perform a complete search.

2001/0054 . {Fuselage structures substantially made from particular materials}

2001/0063 . . {from wood}

2001/0072 . . {from composite materials}

2001/0081 . . {from metallic materials}

2001/009 . {comprising decompression panels or valves for pressure equalisation in fuselages or floors}

1/06 . Frames; Stringers; Longerons {; Fuselage sections}

1/061 . . {Frames}

1/062 . . . {specially adapted to absorb crash loads}

1/063 . . . {Folding or collapsing to reduce overall dimensions, e.g. foldable tail booms (folding or collapsing wings [B64C 3/56](#))}

1/064 . . {Stringers; Longerons}

1/065 . . {Spars}

1/066 . . {Interior liners}

1/067 . . . {comprising means for preventing icing or condensation conditions}

1/068 . . {Fuselage sections}

WARNING

Group [B64C 1/068](#) is impacted by reclassification into groups [B64C 1/0683](#) and [B64C 1/0685](#).

Groups [B64C 1/068](#), [B64C 1/0683](#), and [B64C 1/0685](#) should be considered in order to perform a complete search.

1/0683 . . . {Nose cones}

WARNING

Group [B64C 1/0683](#) is incomplete pending reclassification of documents from group [B64C 1/068](#).

Groups [B64C 1/068](#) and [B64C 1/0683](#) should be considered in order to perform a complete search.

1/0685 . . . {Tail cones}

WARNING

Group [B64C 1/0685](#) is incomplete pending reclassification of documents from group [B64C 1/068](#).

Groups [B64C 1/068](#) and [B64C 1/0685](#) should be considered in order to perform a complete search.

- 1/069 . . . {Joining arrangements therefor}
- 1/08 . . Geodetic or other open-frame structures
- 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](#))
- 1/1407 . . {Doors; surrounding frames}
- 1/1415 . . . {Cargo doors, e.g. incorporating ramps}
- 1/1423 . . . {Passenger doors}
- 1/143 {of the plug type}
- 1/1438 {of the sliding type}
- 1/1446 . . . {Inspection hatches (for engine cowls [B64D 29/08](#))}
- 1/1453 . . . {Drain masts}
- 1/1461 . . . {Structures of doors or surrounding frames}
- 1/1469 . . . {Doors between cockpit and cabin}
- 1/1476 . . {Canopies; Windscreens or similar transparent elements}
- 1/1484 . . . {Windows ([B64C 1/1492](#) takes precedence)}
- 1/1492 . . . {Structure and mounting of the transparent elements in the window or windscreen}
- 1/16 . specially adapted for mounting power plant
- 1/18 . Floors
- 1/20 . specially adapted for freight
- 1/22 . Other structures integral with fuselages to facilitate loading {, e.g. cargo bays, cranes (cargo door type ramps [B64C 1/1415](#))}
- 1/24 . Steps mounted on, and retractable within, fuselages ([readily removable B64D 9/00](#))
- 1/26 . Attaching the wing or tail units or stabilising surfaces
- 1/28 . Parts of fuselage relatively movable to improve pilots view
- 1/30 . Parts of fuselage relatively movable to reduce overall size for storage
- 1/32 . Severable or jettisonable parts of fuselage facilitating emergency escape ([ejector seats B64D 25/10](#))
- 1/34 . comprising inflatable structural components (connection of valves to inflatable elastic bodies [B60C 29/00](#))
- 1/36 . adapted to receive antennas or radomes (antennas or radomes per se [H01Q](#))
- 1/38 . Constructions adapted to reduce effects of aerodynamic or other external heating {(cooling structural parts of aircrafts with air flow [B64D 13/006](#))}
- 1/40 . Sound or heat insulation {, e.g. using insulation blankets (insulating elements for vehicles, in general [B60R 13/08](#))}
- 1/403 . . {Arrangement of fasteners specially adapted therefor, e.g. of clips (in vehicles in general [B60R 13/0206](#))}
- 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](#))}
- 3/00 **Wings** (stabilising surfaces [B64C 5/00](#); ornithopter wings [B64C 33/02](#))
- 3/10 . Shape of wings
- WARNING**
Group [B64C 3/10](#) is impacted by reclassification into group [B64C 39/029](#).
Groups [B64C 3/10](#) and [B64C 39/029](#) should be considered in order to perform a complete search.
- 3/14 . . Aerofoil profile
- 3/141 . . . {Circulation Control Airfoils}
- 2003/142 . . . {with variable camber along the airfoil chord}
- 2003/143 . . . {comprising interior channels}
- 2003/144 . . . {including a flat surface on either the extrados or intrados}
- 2003/145 . . . {comprising 'Gurney' flaps}
- 2003/146 . . . {comprising leading edges of particular shape}
- 2003/147 . . . {comprising trailing edges of particular shape}
- 2003/148 . . . {comprising protuberances, e.g. for modifying boundary layer flow}
- 2003/149 . . . {for supercritical or transonic flow}
- 3/16 . . Frontal aspect
- WARNING**
Group [B64C 3/16](#) is impacted by reclassification into group [B64C 39/029](#).
Groups [B64C 3/16](#) and [B64C 39/029](#) should be considered in order to perform a complete search.
- 3/18 . Spars; Ribs; Stringers (attaching wing unit to fuselage [B64C 1/26](#))
- 3/182 . . {Stringers, longerons}
- 3/185 . . {Spars}
- 3/187 . . {Ribs}
- 3/20 . Integral or sandwich constructions (layered products or sandwich constructions in general [B32B](#))
- 3/22 . Geodetic or other open-frame structures
- 3/24 . Moulded or cast structures
- 3/26 . Construction, shape, or attachment of separate skins, e.g. panels
- 3/28 . Leading or trailing edges attached to primary structures, e.g. forming fixed slots
- 3/30 . comprising inflatable structural components (connection of valves to inflatable elastic bodies [B60C 29/00](#))
- 3/32 . specially adapted for mounting power plant
- 3/34 . Integrally-constructed tanks, e.g. for fuel (other aircraft fuel tanks or fuel systems [B64D](#))
- 3/36 . Structures adapted to reduce effects of aerodynamic or other external heating {(cooling structural parts of aircrafts with air flow [B64D 13/006](#))}
- 3/38 . Adjustment of complete wings or parts thereof
- 3/385 . . {Variable incidence wings}
- 3/40 . . Varying angle of sweep

- 3/42 . . Adjusting about chordwise axes
- 3/44 . . Varying camber
- 2003/445 . . . {by changing shape according to the speed, e.g. by morphing}
- 3/46 . . . by inflatable elements (connection of valves to inflatable elastic bodies [B60C 29/00](#))
- 3/48 . . . by relatively-movable parts of wing structures
- 3/50 . . . by leading or trailing edge flaps (ailerons [B64C 9/00](#))
- 3/52 . . Warping
- 3/54 . . Varying in area (flaps extendable to increase camber [B64C 3/44](#))
- 2003/543 . . . {by changing shape according to the speed, e.g. by morphing}
- 3/546 . . . {by foldable elements}
- 3/56 . . Folding or collapsing to reduce overall dimensions of aircraft
- 3/58 . provided with fences or spoilers (adjustable for control purposes [B64C 9/00](#))
- 5/00** **Stabilising surfaces** (attaching stabilising surfaces to fuselage [B64C 1/26](#))
- 5/02 . Tailplanes (fins [B64C 5/06](#))
- 5/04 . Noseplanes
- 5/06 . Fins (specially for wings [B64C 5/08](#))
- 5/08 . mounted on or supported by wings
- 5/10 . adjustable
- 5/12 . . for retraction against or within fuselage or nacelle
- 5/14 . . Varying angle of sweep
- 5/16 . . about spanwise axes
- 5/18 . . in area (attaching stabilising surfaces to fuselage [B64C 1/26](#))
- 7/00** **Structures or fairings not otherwise provided for**
- WARNING**
- Group [B64C 7/00](#) is impacted by reclassification into group [B64C 39/029](#).
- Groups [B64C 7/00](#) and [B64C 39/029](#) should be considered in order to perform a complete search.
- 7/02 . Nacelles
- 9/00** **Adjustable control surfaces or members, e.g. rudders** (trimming stabilising surfaces [B64C 5/10](#))
- 2009/005 . {Ailerons}
- 9/02 . Mounting or supporting thereof
- 9/04 . with compound dependent movements
- 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

WARNING

Group [B64C 13/04](#) is impacted by reclassification into groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), [B64C 13/0427](#), and [B64C 13/044](#).

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

- 13/042 . . . {operated by hand}

WARNING

Groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), and [B64C 13/0427](#) are incomplete pending reclassification of documents from groups [B64C 13/04](#), [B64C 13/06](#), [B64C 13/08](#), [B64C 13/10](#), [B64C 13/12](#), and [B64C 13/14](#).

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

- 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}

WARNING

Group [B64C 13/044](#) is incomplete pending reclassification of documents from groups [B64C 13/04](#), [B64C 13/06](#), [B64C 13/08](#), [B64C 13/10](#), [B64C 13/12](#), and [B64C 13/14](#).

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

- 13/06 . . . adjustable to suit individual persons

WARNING

Group [B64C 13/06](#) is impacted by reclassification into groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), [B64C 13/0427](#), and [B64C 13/044](#).

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

- 13/08 . . . Trimming zero positions

WARNING

Group [B64C 13/08](#) is impacted by reclassification into groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), [B64C 13/0427](#), and [B64C 13/044](#).

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

- 13/10 . . . comprising warning devices

WARNING

Group [B64C 13/10](#) is impacted by reclassification into groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), [B64C 13/0427](#), and [B64C 13/044](#).

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

- 13/12 . . . Dual control apparatus

WARNING

Group [B64C 13/12](#) is impacted by reclassification into groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), [B64C 13/0427](#), and [B64C 13/044](#).

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

- 13/14 . . . lockable (locking in position to suit individual persons [B64C 13/06](#))

WARNING

Group [B64C 13/14](#) is impacted by reclassification into groups [B64C 13/042](#), [B64C 13/0421](#), [B64C 13/0423](#), [B64C 13/0425](#), [B64C 13/0427](#), and [B64C 13/044](#).

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

- 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

WARNING

Groups [B64C 13/28](#), [B64C 13/30](#), [B64C 13/32](#), and [B64C 13/34](#) are impacted by reclassification into groups [B64C 13/341](#), [B64C 13/343](#), and [B64C 13/345](#).

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

- 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}

WARNING

Group [B64C 13/341](#) is incomplete pending reclassification of documents from groups [B64C 13/28](#), [B64C 13/30](#), [B64C 13/32](#), [B64C 13/34](#), [B64C 13/42](#), [B64C 13/44](#), and [B64C 13/46](#).

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

- 13/343 {overriding of personal controls; with automatic return to inoperative position}

WARNING

Group [B64C 13/343](#) is incomplete pending reclassification of documents from groups [B64C 13/28](#), [B64C 13/30](#), [B64C 13/32](#), [B64C 13/34](#), [B64C 13/42](#), [B64C 13/44](#), and [B64C 13/46](#).

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

- 13/345 {with artificial feel}

WARNING

Group [B64C 13/345](#) is incomplete pending reclassification of documents from groups [B64C 13/28](#), [B64C 13/30](#), [B64C 13/32](#), [B64C 13/34](#), [B64C 13/42](#), [B64C 13/44](#), and [B64C 13/46](#).

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

- 13/36 . . . fluid
- 13/38 . . with power amplification
- 13/40 . . . using fluid pressure

WARNING

Group [B64C 13/40](#) is impacted by reclassification into groups [B64C 13/504](#), [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

- 13/42 having duplication or stand-by provisions

WARNING

Group [B64C 13/42](#) is impacted by reclassification into groups [B64C 13/341](#), [B64C 13/343](#), [B64C 13/345](#), [B64C 13/504](#), [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

- 13/44 overriding of personal controls; with automatic return to inoperative position

WARNING

Group [B64C 13/44](#) is impacted by reclassification into groups [B64C 13/341](#), [B64C 13/343](#), [B64C 13/345](#), [B64C 13/504](#), [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

- 13/46 with artificial feel

WARNING

Group [B64C 13/46](#) is impacted by reclassification into groups [B64C 13/341](#), [B64C 13/343](#), [B64C 13/345](#), [B64C 13/504](#), [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

- 13/48 characterised by the fluid being gaseous

13/50 . . . using electrical energy

WARNING

Group [B64C 13/50](#) is impacted by reclassification into groups [B64C 13/504](#), [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

13/503 . . . {Fly-by-Wire}

WARNING

Group [B64C 13/503](#) is impacted by reclassification into groups [B64C 13/504](#), [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

13/504 . . . {using electro-hydrostatic actuators [EHA's]}

WARNING

Group [B64C 13/504](#) is incomplete pending reclassification of documents from groups [B64C 13/40](#), [B64C 13/42](#), [B64C 13/44](#), [B64C 13/46](#), [B64C 13/50](#), and [B64C 13/503](#). Group [B64C 13/504](#) is also impacted by reclassification into groups [B64C 13/505](#), [B64C 13/506](#), and [B64C 13/507](#).

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

13/505 . . . {having duplication or stand-by provisions}

WARNING

Group [B64C 13/505](#) is incomplete pending reclassification of documents from groups [B64C 13/40](#), [B64C 13/42](#), [B64C 13/44](#), [B64C 13/46](#), [B64C 13/50](#), and [B64C 13/503](#).

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

13/506 . . . {overriding of personal controls; with automatic return to inoperative position}

WARNING

Group [B64C 13/506](#) is incomplete pending reclassification of documents from groups [B64C 13/40](#), [B64C 13/42](#), [B64C 13/44](#), [B64C 13/46](#), [B64C 13/50](#), and [B64C 13/503](#).

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

13/507 . . . {with artificial feel}

WARNING

Group [B64C 13/507](#) is incomplete pending reclassification of documents from groups [B64C 13/40](#), [B64C 13/42](#), [B64C 13/44](#), [B64C 13/46](#), [B64C 13/50](#), and [B64C 13/503](#).

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

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

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

17/00 Aircraft stabilisation not otherwise provided for

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

19/00 Aircraft control not otherwise provided for

- 19/02 . Conjoint controls

Influencing air-flow over aircraft surfaces, not otherwise provided for

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

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

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

- 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}
- 23/02 . by means of rotating members of cylindrical or similar form
- 23/04 . by generating shock waves
- 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}
- 23/076 . . . {the wing tip airfoil devices comprising one or more separate moveable members thereon affecting the vortices, e.g. flaps}
- 23/08 . using Magnus effect

25/00	Alighting gear (air-cushion alighting gear B60V 3/08)	25/50	. . Steerable undercarriages; Shimmy damping (steering devices applicable to land vehicles B62D)
25/001	. {Devices not provided for in the groups B64C 25/02 - B64C 25/68 }	25/505	. . . {Shimmy damping}
2025/003	. . {Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors}	25/52	. . Skis or runners
2025/005	. . {Tail skids for fuselage tail strike protection on tricycle landing gear aircraft}	25/54	. . Floats
2025/006	. . {Landing gear legs comprising torque arms}	25/56	. . . inflatable (connection of valves to inflatable elastic bodies B60C 29/00)
2025/008	. . {Comprising means for modifying their length, e.g. for kneeling, for jumping, or for leveling the aircraft}	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)
25/02	. Undercarriages	25/60	. . . Oleo legs
25/04	. . Arrangement or disposition on aircraft	25/62	. . . Spring shock-absorbers; Springs
25/06	. . fixed	25/64	. . . . using rubber or like elements
25/08	. . non-fixed, e.g. jettisonable	25/66	. . Convertible alighting gear; Combinations of different kinds of ground or like engaging elements
25/10	. . . retractable, foldable, or the like	25/68	. . Arrester hooks (arresting gear, e.g. on aircraft carriers B64F)
25/12	. . . . sideways		
2025/125	. . . . {into the fuselage, e.g. main landing gear pivotally retracting into or extending out of the fuselage}	Aircraft kinds and components not otherwise provided for	
25/14	. . . . fore-and-aft	27/00	Rotorcraft; Rotors peculiar thereto (alighting gear B64C 25/00)
25/16	. . . . Fairings movable in conjunction with undercarriage elements	27/001	. {Vibration damping devices}
25/18	. . . . Operating mechanisms	2027/002	. . {mounted between the rotor drive and the fuselage}
25/20	. . . . . mechanical	2027/003	. . {mounted on rotor hub, e.g. a rotary force generator}
25/22	. . . . . fluid	2027/004	. . {using actuators, e.g. active systems}
25/24	. . . . . electric	2027/005	. . {using suspended masses}
25/26	. . . . . Control or locking systems therefor	27/006	. {Safety devices}
25/28	. . . . . with indicating or warning devices	27/007	. . {adapted for detection of blade cracks}
25/30	. . . . . emergency actuated	27/008	. {Rotors tracking or balancing devices}
25/32	. characterised by the ground or like engaging elements (arrestor hooks B64C 25/68)	27/02	. Gyroplanes
2025/325	. . {specially adapted for helicopters}	27/021	. . {Rotor or rotor head construction (for helicopters B64C 27/32)}
25/34	. . wheeled type, e.g. multi-wheeled bogies	27/022	. . . {Devices for folding or adjusting the blades}
2025/345	. . . {Multi-wheel bogies having one or more steering axes}	27/023	. . . {Construction of the blades; Coating of the blades}
25/36	. . . Arrangements or adaptations of wheels, tyres, or axles in general (construction of wheels or axles B60B ; construction of tyres in general B60C)	27/024	. . . {Devices for shifting the rotor axis}
25/38	. . endless-track type	27/025	. . . {Rotor drives, in particular for taking off; Combination of autorotation rotors and driven rotors}
25/40	. . the elements being rotated before touch-down	27/026	. . . {Devices for converting a fixed wing into an autorotation rotor and viceversa}
25/405	. . . {Powered wheels, e.g. for taxiing}	27/027	. . {Control devices using other means than the rotor}
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)	27/028	. . {Other constructional elements; Rotor balancing}
25/423	. . . {Braking devices acting by reaction of gaseous medium (B64C 25/426 takes precedence; using rockets B64D 27/023)}	27/04	. Helicopters
25/426	. . . {Braking devices providing an automatic sequence of braking}	27/06	. . with single rotor
25/44	. . . Actuating mechanisms	27/08	. . with two or more rotors
25/445	. . . . {Brake regulators for preventing somersaulting}	27/10	. . . arranged coaxially
25/46	. . . . Brake regulators for preventing skidding or aircraft somersaulting ((anti-skidding regulators; electric or electronic controllers therefor B60T 8/1703))	27/12	. . Rotor drives
25/48	. . . . differentially operated for steering purposes	2027/125	. . . {including toroidal transmissions, e.g. of the CVT type}
		27/14	. . . Direct drive between power plant and rotor hub
		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	2027/7227	{using blowing slots actuated by piezoelectric actuators}
27/24	with rotor blades fixed in flight to act as lifting surfaces	2027/7233	{using higher-harmonic control [HHC]}
27/26	characterised by provision of fixed wings	2027/7238	{by controlling existing swash plate actuators}
27/28	with forward-propulsion propellers pivotable to act as lifting rotors	2027/7244	{by using dedicated actuators}
27/30	with provision for reducing drag of inoperative rotor	2027/725	{using jets controlled by piezoelectric actuators}
27/32	Rotors (features common to rotors and propellers B64C 11/00)	2027/7255	{using one or more swash plates}
27/322	{Blade travel limiting devices, e.g. droop stops}	2027/7261	{with flaps}
27/325	{Circulation-control rotors}	2027/7266	{actuated by actuators}
27/327	{Retention means relieving the stress from the arm, e.g. tie-bars}	2027/7272	{of the electro-hydraulic type}
27/33	having flexing arms	2027/7277	{of the magnetostrictive type}
27/35	having elastomeric joints	2027/7283	{of the piezoelectric type}
27/37	having articulated joints (B64C 27/33 , B64C 27/35 take precedence)	2027/7288	{of the memory shape type}
27/39	with individually articulated blades, i.e. with flapping or drag hinges	2027/7294	{actuated mechanically, e.g. by means of linkages}
27/41	with flapping or universal joint, common to the blades	27/78	in association with pitch adjustment of blades of anti-torque rotor
27/43	see-saw type, i.e. two-bladed rotor	27/80	for differential adjustment of blade pitch between two or more lifting rotors
27/45	with a feathering hinge only	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
27/46	Blades	2027/8209	{Electrically driven tail rotors}
27/463	{Blade tips}	2027/8218	{wherein the rotor or the jet axis is inclined with respect to the longitudinal horizontal or vertical plane of the helicopter}
27/467	Aerodynamic features {(B64C 27/463 takes precedence)}	2027/8227	{comprising more than one rotor}
27/473	Constructional features {(B64C 27/463 takes precedence)}	2027/8236	{including pusher propellers}
2027/4733	{Rotor blades substantially made from particular materials}	2027/8245	{using air jets}
2027/4736	{from composite materials}	2027/8254	{Shrouded tail rotors, e.g. "Fenestron" fans}
27/48	Root attachment to rotor head	2027/8263	{comprising in addition rudders, tails, fins, or the like}
27/50	Blades foldable to facilitate stowage of aircraft	2027/8272	{comprising fins, or movable rudders}
27/51	Damping of blade movements	2027/8281	{comprising horizontal tail planes}
27/52	Tilting of rotor bodily relative to fuselage (of see-saw type construction B64C 27/43)	2027/829	{comprising a V-tail units}
27/54	Mechanisms for controlling blade adjustment or movement relative to rotor head, e.g. lag-lead movement	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)
27/56	Initiating means, e.g. actuated personally	29/0008	{having its flight directional axis horizontal when grounded}
27/57	automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust	29/0016	{the lift during taking-off being created by free or ducted propellers or by blowers}
27/58	Transmitting means	29/0025	{the propellers being fixed relative to the fuselage}
27/59	mechanical	29/0033	{the propellers being tiltable relative to the fuselage}
27/605	including swash plate, spider or cam mechanisms	29/0041	{the lift during taking-off being created by jet motors}
27/615	including flaps mounted on blades	29/005	{the motors being fixed relative to the fuselage}
27/625	including rotating masses or servo rotors	29/0058	{with vertical jet}
27/635	specially for controlling lag-lead movements of blades	29/0066	{with horizontal jet and jet deflector}
27/64	using fluid pressure	29/0075	{the motors being tiltable relative to the fuselage}
27/68	using electrical energy	29/0083	{the lift during taking-off being created by several motors of different type}
27/72	Means acting on blades	29/0091	{Accessories not provided for elsewhere}
2027/7205	{on each blade individually, e.g. individual blade control [IBC]}	29/02	having its flight directional axis vertical when grounded
2027/7211	{without flaps}		
2027/7216	{using one actuator per blade}		
2027/7222	{using airfoil deformation}		

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-glidiers 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-glidiers 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

WARNING

Group [B64C 39/00](#) is impacted by reclassification into group [B64C 39/029](#).

Groups [B64C 39/00](#) and [B64C 39/029](#) should be considered in order to perform a complete search.

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}

WARNING

Group [B64C 39/029](#) is incomplete pending reclassification of documents from groups [B64C 1/0009](#), [B64C 2001/0045](#), [B64C 3/10](#), [B64C 3/16](#), [B64C 7/00](#), and [B64C 39/00](#).

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

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 . 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
- 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
- 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