

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### TRANSPORTING

## B64 AIRCRAFT; AVIATION; COSMONAUTICS

## B64C AEROPLANES; HELICOPTERS

### 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

#### 1/00 Fuselages; Constructional features common to fuselages, wings, stabilising surfaces or the like

### WARNING

Group [B64C 1/00](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

#### 1/0009 . {Aerodynamic aspects}

### WARNING

Group [B64C 1/0009](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

All groups listed in this Warning 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}
- [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}

### WARNING

Group [B64C 1/06](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

1/061 . . {Frames}

**WARNING**

Group [B64C 1/061](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

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

**WARNING**

Group [B64C 1/062](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

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

Group [B64C 1/063](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

1/064 . . {Stringers; Longerons}

**WARNING**

Group [B64C 1/064](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

1/065 . . {Spars}

**WARNING**

Group [B64C 1/065](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

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 [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

1/0683 . . . {Nose cones}

1/0685 . . . {Tail cones}

1/069 . . . {Joining arrangements therefor}

#### **WARNING**

Group [B64C 1/069](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 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
- 1/26 . Attaching the wing or tail units or stabilising surfaces

#### **WARNING**

Group [B64C 1/26](#) is impacted by reclassification into groups [B64U 20/50](#) and [B64U 30/12](#) - [B64U 30/16](#).

Groups [B64C 1/26](#), [B64U 20/50](#) and [B64U 30/12](#) - [B64U 30/16](#) should be considered in order to perform a complete search.

- 1/28 . Parts of fuselage relatively movable to improve pilots view

- 1/30 . Parts of fuselage relatively movable to reduce overall dimensions of aircraft

#### **WARNING**

Group [B64C 1/30](#) is impacted by reclassification into group [B64U 20/50](#).

Groups [B64C 1/30](#) and [B64U 20/50](#) should be considered in order to perform a complete search.

- 1/32 . Severable or jettisonable parts of fuselage facilitating emergency escape
- 1/34 . comprising inflatable structural components
- 1/36 . adapted to receive antennas or radomes
- 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}
- 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 (ornithopter wings [B64C 33/02](#))**
- 3/10 . Shape of wings
- 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
- 3/18 . Spars; Ribs; Stringers
- 3/182 . . {Stringers, longerons}
- 3/185 . . {Spars}
- 3/187 . . {Ribs}
- 3/20 . Integral or sandwich constructions
- 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
- 3/32 . specially adapted for mounting power plant
- 3/34 . Tanks constructed integrally with wings, e.g. for fuel or water
- 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
- 3/48 . . . by relatively-movable parts of wing structures
- 3/50 . . . by leading or trailing edge flaps
- 3/52 . . Warping
- 3/54 . . Varying in area
- 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

**WARNING**

Group [B64C 3/56](#) is impacted by reclassification into groups [B64U 20/50](#) and [B64U 30/12](#) - [B64U 30/16](#).

Groups [B64C 3/56](#), [B64U 20/50](#) and [B64U 30/12](#) - [B64U 30/16](#) should be considered in order to perform a complete search.

- 3/58 . . provided with fences or spoilers (adjustable for control purposes [B64C 9/00](#))
- 5/00 Stabilising surfaces**
- 5/02 . Tailplanes
- 5/04 . Noseplanes
- 5/06 . Fins ([B64C 5/08](#) takes precedence)
- 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
- 7/00 Structures or fairings not otherwise provided for**
- 7/02 . Nacelles

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**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
- 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
- 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
- 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****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
    - 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
  - 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
  - 13/46 . . . . with artificial feel
  - 13/48 . . . . characterised by the fluid being gaseous
  - 13/50 . . . using electrical energy
  - 13/503 . . . . {Fly-by-Wire}
  - 13/504 . . . . {using electro-hydrostatic actuators [EHA's]}
  - 13/505 . . . . . {having duplication or stand-by provisions}
  - 13/506 . . . . . {overriding of personal controls; with automatic return to inoperative position}
  - 13/507 . . . . . {with artificial feel}
  - 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
    - 17/08 . . . by ballast supply or discharge
    - 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**

**WARNING**

Group [B64C 21/00](#) is impacted by reclassification into group [B64C 21/01](#).

Groups [B64C 21/00](#) and [B64C 21/01](#) should be considered in order to perform a complete search.

    - 21/01 . . . Boundary layer ingestion [BLI] propulsion

**WARNING**

Group [B64C 21/01](#) is incomplete pending reclassification of documents from groups [B64C 21/00](#), [B64C 21/025](#), [B64C 21/04](#), [B64C 21/06](#) and [B64C 21/08](#).

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

    - 21/02 . . . by use of slot, ducts, porous areas or the like
    - 21/025 . . . {for simultaneous blowing and sucking}

**WARNING**

Group [B64C 21/025](#) is impacted by reclassification into group [B64C 21/01](#).

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



21/04	. . for blowing	2025/005	. . {Tail skids for fuselage tail strike protection on tricycle landing gear aircraft}
	<b>WARNING</b>	2025/006	. . {Landing gear legs comprising torque arms}
	Group <a href="#">B64C 21/04</a> is incomplete pending reclassification of documents from group <a href="#">B64C 21/08</a> .	2025/008	. . {Comprising means for modifying their length, e.g. for kneeling, for jumping, or for leveling the aircraft}
	Group <a href="#">B64C 21/04</a> is also impacted by reclassification into group <a href="#">B64C 21/01</a> .	25/02	. Undercarriages
	All groups listed in this Warning should be considered in order to perform a complete search.	25/04	. . Arrangement or disposition on aircraft
21/06	. . for sucking ( <a href="#">BLI propulsion B64C 21/01</a> )	25/06	. . fixed
	<b>WARNING</b>	25/08	. . non-fixed, e.g. jettisonable
	Group <a href="#">B64C 21/06</a> is incomplete pending reclassification of documents from group <a href="#">B64C 21/08</a> .	25/10	. . . retractable, foldable, or the like
	Group <a href="#">B64C 21/06</a> is also impacted by reclassification into group <a href="#">B64C 21/01</a> .	25/12	. . . . sideways
	All groups listed in this Warning should be considered in order to perform a complete search.	2025/125	. . . . {into the fuselage, e.g. main landing gear pivotally retracting into or extending out of the fuselage}
21/08	. . adjustable	25/14	. . . . fore-and-aft
	<b>WARNING</b>	25/16	. . . . Fairings movable in conjunction with undercarriage elements
	Group <a href="#">B64C 21/08</a> is impacted by reclassification into group <a href="#">B64C 21/04</a> , <a href="#">B64C 21/06</a> and <a href="#">B64C 21/01</a> .	25/18	. . . . Operating mechanisms
	All groups listed in this Warning should be considered in order to perform a complete search.	25/20	. . . . . mechanical
21/10	. using other surface properties, e.g. roughness	25/22	. . . . . fluid
<b>23/00</b>	<b>Influencing air flow over aircraft surfaces, not otherwise provided for</b>	25/24	. . . . . electric
23/005	. {by other means not covered by groups <a href="#">B64C 23/02</a> - <a href="#">B64C 23/08</a> , e.g. by electric charges, magnetic panels, piezoelectric elements, static charges or ultrasounds}	25/26	. . . . . Control or locking systems therefor
23/02	. by means of rotating members of cylindrical or similar form	25/28	. . . . . with indicating or warning devices
23/04	. by generating shock waves	25/30	. . . . . emergency actuated
23/06	. by generating vortices	25/32	. characterised by elements which contact the ground or similar surface ( <a href="#">arrestor hooks B64C 25/68</a> )
23/065	. . {at the wing tips}	2025/325	. . {specially adapted for helicopters}
23/069	. . . {using one or more wing tip airfoil devices, e.g. winglets, splines, wing tip fences or raked wingtips}	25/34	. . wheeled type, e.g. multi-wheeled bogies
23/072	. . . . {the wing tip airfoil devices being moveable in their entirety}	2025/345	. . . {Multi-wheel bogies having one or more steering axes}
23/076	. . . . {the wing tip airfoil devices comprising one or more separate moveable members thereon affecting the vortices, e.g. flaps}	25/36	. . . Arrangements or adaptations of wheels, tyres or axles in general
23/08	. using Magnus effect	25/38	. . endless-track type
		25/40	. . the elements being rotated before touch-down
		25/405	. . . {Powered wheels, e.g. for taxing}
		25/42	. . Arrangement or adaptation of brakes
		25/423	. . . {Braking devices acting by reaction of gaseous medium ( <a href="#">B64C 25/426 takes precedence; using rockets B64D 27/023</a> )}
		25/426	. . . {Braking devices providing an automatic sequence of braking}
		25/44	. . . Actuating mechanisms
		25/445	. . . . {Brake regulators for preventing somersaulting}
		25/46	. . . . Brake regulators for preventing skidding or aircraft somersaulting
		25/48	. . . . differentially operated for steering purposes
		25/50	. . Steerable undercarriages; Shimmy-damping
		25/505	. . . {Shimmy damping}
		25/52	. . Skis or runners
		25/54	. . Floats
		25/56	. . . inflatable
		25/58	. . Arrangements or adaptations of shock-absorbers or springs ( <a href="#">shimmy-dampers B64C 25/50</a> )
		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	. Arrestor hooks
<b>25/00</b>	<b>Alighting gear (air-cushion alighting gear <a href="#">B60V 3/08</a>)</b>		
25/001	. {Devices not provided for in the groups <a href="#">B64C 25/02</a> - <a href="#">B64C 25/68</a> }		
2025/003	. . {Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors}		

**Aircraft kinds or components not otherwise provided for****27/00 Rotorcraft; Rotors peculiar thereto**

- 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

**WARNING**

Group [B64C 27/08](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 27/10 . . . arranged coaxially

**WARNING**

Group [B64C 27/10](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 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
- 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

**WARNING**

Group [B64C 27/20](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#) - [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 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
- 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
- 27/39 . . . with individually articulated blades, i.e. with flapping or drag hinges
- 27/41 . . . with flapping hinge 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	2027/829	• . . . {comprising a V-tail units}
27/56	• . characterised by the control initiating means, e.g. manually actuated	29/00	<b>Aircraft capable of landing or taking-off vertically, e.g. vertical take-off and landing [VTOL] aircraft (rotorcraft B64C 27/00)</b>
27/57	• . . . automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust	29/0008	• {having its flight directional axis horizontal when grounded}
27/58	• . Transmitting means, e.g. interrelated with initiating means or means acting on blades (means acting on blades B64C 27/72)	29/0016	• . {the lift during taking-off being created by free or ducted propellers or by blowers}
27/59	• . . . mechanical	29/0025	• . . . {the propellers being fixed relative to the fuselage}
27/605	• . . . including swash plate, spider or cam mechanisms	29/0033	• . . . {the propellers being tiltable relative to the fuselage}
27/615	• . . . including flaps mounted on blades	29/0041	• . {the lift during taking-off being created by jet motors}
27/625	• . . . including rotating masses or servo rotors	29/005	• . . . {the motors being fixed relative to the fuselage}
27/635	• . . . specially for controlling lag-lead movements of blades	29/0058	• . . . {with vertical jet}
27/64	• . . using fluid pressure, e.g. having fluid power amplification	29/0066	• . . . {with horizontal jet and jet deflector}
27/68	• . . using electrical energy, e.g. having electrical power amplification	29/0075	• . . . {the motors being tiltable relative to the fuselage}
27/72	• . Means acting on blades	29/0083	• . {the lift during taking-off being created by several motors of different type}
2027/7205	• . . {on each blade individually, e.g. individual blade control [IBC]}	29/0091	• {Accessories not provided for elsewhere}
2027/7211	• . . . {without flaps}	29/02	• having its flight directional axis vertical when grounded
2027/7216	• . . . . {using one actuator per blade}	29/04	• . characterised by jet-reaction propulsion
2027/7222	• . . . . {using airfoil deformation}	30/00	<b>Supersonic-type aircraft</b>
2027/7227	• . . . . {using blowing slots actuated by piezoelectric actuators}	31/00	<b>Aircraft intended to be sustained without power plant; Powered hang-glider-type aircraft; Microlight-type aircraft</b>
2027/7233	• . . . . {using higher-harmonic control [HHC]}	31/02	• Gliders, e.g. sailplanes (hang-gliders B64C 31/028)
2027/7238	• . . . . {by controlling existing swash plate actuators}	31/024	• . with auxiliary power plant
2027/7244	• . . . . {by using dedicated actuators}	31/028	• Hang-glider-type aircraft; Microlight-type aircraft
2027/725	• . . . . {using jets controlled by piezoelectric actuators}	31/0285	• . {Safety devices}
2027/7255	• . . . . {using one or more swash plates}	31/032	• . having delta shaped wing
2027/7261	• . . . . {with flaps}	31/036	• . having parachute-type wing
2027/7266	• . . . . {actuated by actuators}	31/04	• Man-powered aircraft
2027/7272	• . . . . {of the electro-hydraulic type}	31/06	• Kites (toy aspects A63H 27/08; airborne towed targets, e.g. kites F41J 9/10)
2027/7277	• . . . . {of the magnetostrictive type}	2031/065	• . {of inflatable wing type}
2027/7283	• . . . . {of the piezoelectric type}	33/00	<b>Ornithopters</b>
2027/7288	• . . . . {of the memory shape type}	<b>WARNING</b>	
2027/7294	• . . . . {actuated mechanically, e.g. by means of linkages}		Group B64C 33/00 is impacted by reclassification into group B64U 10/40.
27/78	• . in association with pitch adjustment of blades of anti-torque rotor		Groups B64C 33/00 and B64U 10/40 should be considered in order to perform a complete search.
27/80	• . for differential adjustment of blade pitch between two or more lifting rotors	33/02	• Wings; Actuating mechanisms therefor
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	33/025	• . {the entire wing moving either up or down}
2027/8209	• . {Electrically driven tail rotors}	35/00	<b>Flying-boats; Seaplanes</b>
2027/8218	• . {wherein the rotor or the jet axis is inclined with respect to the longitudinal horizontal or vertical plane of the helicopter}	35/001	• {with means for increasing stability on the water}
2027/8227	• . {comprising more than one rotor}	35/002	• . {using adjustable auxiliary floats}
2027/8236	• . {including pusher propellers}	35/003	• . {using auxiliary floats at the wing tips}
2027/8245	• . {using air jets}	35/005	• {with propellers, rudders or brakes acting in the water}
2027/8254	• . {Shrouded tail rotors, e.g. "Fenestron" fans}	35/006	• {with lift generating devices}
2027/8263	• . {comprising in addition rudders, tails, fins, or the like}	35/007	• {Specific control surfaces therefor}
2027/8272	• . . {comprising fins, or movable rudders}	35/008	• {Amphibious sea planes}
2027/8281	• . . {comprising horizontal tail planes}	37/00	<b>Convertible aircraft</b>



- 37/02 . Flying units formed by separate aircraft ([towing B64D 3/00](#); aircraft transported by aircraft [B64D 5/00](#); air-refuelling [B64D 39/00](#))

### 39/00 Aircraft not otherwise provided for

#### **WARNING**

Group [B64C 39/00](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10-B64U 30/16](#), [B64U 30/20-B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/001 . {Flying saucers}

#### **WARNING**

Group [B64C 39/001](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10-B64U 30/16](#), [B64U 30/20-B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/003 . {with wings, paddle wheels, bladed wheels, moving or rotating in relation to the fuselage ([rotorcraft B64C 27/00](#); [ornithopters B64C 33/00](#))}

#### **WARNING**

Group [B64C 39/003](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10-B64U 30/16](#), [B64U 30/20-B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/005 . . {about a horizontal transversal axis}

#### **WARNING**

Group [B64C 39/005](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10-B64U 30/16](#), [B64U 30/20-B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/006 . . {about a vertical axis}

#### **WARNING**

Group [B64C 39/006](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10-B64U 30/16](#), [B64U 30/20-B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/008 . . {about a longitudinal axis}

#### **WARNING**

Group [B64C 39/008](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10-B64U 30/16](#), [B64U 30/20-B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/02 . characterised by special use

**WARNING**

Group [B64C 39/02](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10](#)-[B64U 30/16](#), [B64U 30/20](#)-[B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/022 . . {Tethered aircraft}

**WARNING**

Group [B64C 39/022](#) is impacted by reclassification into group [B64U 10/60](#).

Groups [B64C 39/022](#) and [B64U 10/60](#) should be considered in order to perform a complete search.

- 39/024 . . {of the remote controlled vehicle type, i.e. RPV}

**WARNING**

Group [B64C 39/024](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10](#)-[B64U 30/16](#), [B64U 30/20](#)-[B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

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

- 39/026 . . {for use as personal propulsion unit}

- 39/028 . . {Micro-sized aircraft}

**WARNING**

Group [B64C 39/028](#) is impacted by reclassification into group [B64U 10/80](#).

Groups [B64C 39/028](#) and [B64U 10/80](#) should be considered in order to perform a complete search.

- 39/029 . {Asymmetrical aircraft}

**WARNING**

Group [B64C 39/029](#) is impacted by reclassification into groups [B64U 10/00](#) - [B64U 10/80](#), [B64U 20/00](#) - [B64U 20/98](#), [B64U 30/00](#), [B64U 30/10](#)-[B64U 30/16](#), [B64U 30/20](#)-[B64U 30/299](#), [B64U 30/30](#), [B64U 30/40](#), [B64U 40/00](#) - [B64U 40/20](#), [B64U 50/00](#) - [B64U 50/39](#), [B64U 60/00](#) - [B64U 60/70](#), [B64U 70/00](#) - [B64U 70/99](#) and [B64U 80/00](#) - [B64U 80/86](#).

All groups listed in this Warning 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

- 39/10 . All-wing aircraft {[\(B64C 39/001 takes precedence\)](#)}

- 2039/105 . {of blended wing body type}

- 39/12 . Canard-type aircraft

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**99/00 Subject matter not provided for in other groups of this subclass**

**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

- 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