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

1. 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

2. 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 21/000)

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 23/000; flight-deck installations B64D)

1/0009  [Aerodynamic aspects]
   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)
   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]
   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 windsreen]

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
Aircraft structures or fairings

3/00 Wings (stabilising surfaces B64C 5/00; 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 (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 Mouled 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
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 displacable (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
Aircraft structures or fairings

... by multiple flaps
... by flaps at both the front and rear of the wing operating in unison
Balancing hinged surfaces, e.g. dynamically
Air braking surfaces (braking by parachutes B64D 17/80)
[associated with wings]
[associated with fuselages]
collapsing or retracting against or within other surfaces or other members
... the members being fuselages or nacelles
Jet flaps

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

[Shrouded propellers]
[Braking propellers, e.g. for measuring the power output of an engine]
[Variable-diameter propellers; Mechanisms therefor]
[Spiral-shaped propellers]
[Paddle wheels]
[Propulsive discs, i.e. discs having the surface specially adapted for propulsion purposes]
[characterised by vibration absorbing or balancing means (for rotorcraft B64C 27/001)]
Hub construction
Blade mountings
... for variable-pitch blades
... [variable only when stationary]
... for non-adjustable blades
... rigid
... flexible
... Spinners
... Blades
Aerodynamic features
Construcrional features
... [for protecting blades, e.g. coating]
... Solid blades
... Hollow blades
... Fabricated blades
... Collapsible or foldable blades
... 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
... [characterised by blade position indicating means]
... [characterised by comprising a governor]
... [characterised by being influenced by other control systems, e.g. fuel supply]
... [specially adapted for contrarotating propellers]
... [automatic]

... mechanical
... [comprising feathering, braking or stopping systems]
... automatic
... [actuated by the centrifugal force or the aerodynamic drag acting on the blades]
... [actuated by the centrifugal force or the aerodynamic drag acting on auxiliary masses or surfaces]
... non-automatic
... fluid, e.g. hydraulic
... [comprising feathering, braking or stopping systems]
... automatic
... non-automatic
... electric
... Arrangements of or constructional features peculiar to multiple propellers \{(B64C 11/306 takes precedence)\}
... Units of two or more coaxial propellers
... Phase synchronisation between multiple propellers

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

... Initiating means
... 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.

... [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.

... [control sticks for primary flight controls]
... [yokes or steering wheels for primary flight controls]
... [for actuating trailing or leading edge flaps, air brakes or spoilers]
... [for actuating trim]
Aircraft structures or fairings

13/044 . . . lockable (locking in position to suit individual persons B64C 13/06)

**WARNING**
Group B64C 13/14 is impacted by reclassification of documents from groups B64C 13/04, 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.

13/06 . . . 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 . . . [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.

13/16 . . . 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.
13/057 . . . . [with artificial feel]

**WARNING**

Group B64C 13/057 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 13/53.

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 (jetflaps 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

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25/00 Alighting gear (air-cushion alighting gear B60V 3/08)
25/001 . . . . . . [Devices not provided for in the groups B64C 25/02 - B64C 25/68]
2025/003 . . . . . . [Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors]
2025/005 . . . . . . [Tail skids for fuselage tail strike protection on tricycle landing gear aircraft]
2025/006 . . . . . . [Landing gear legs comprising torque arms]
2025/008 . . . . . . [Comprising means for modifying their length, e.g. for kneeling, for jumping, or for leveling the aircraft]
25/02 . . . . . . . . Undercarriages
25/04 . . . . . . . . Arrangement or disposition on aircraft
25/06 . . . . . . . . fixed
25/08 . . . . . . . . non-fixed, e.g. jettisonable
25/10 . . . . . . . . retractable, foldable, or the like
25/12 . . . . . . . . sideways
2025/125 . . . . . . . . [into the fuselage, e.g. main landing gear pivotally retracting into or extending out of the fuselage]
25/14 . . . . . . . . fore-and-aft
25/16 . . . . . . . . Fairings movable in conjunction with undercarriage elements
25/18 . . . . . . . . Operating mechanisms
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 (arrester hooks B64C 25/68)
2025/325 . . . . . . . . [specially adapted for helicopters]
25/34 . . . . . . . . wheeled type, e.g. multi-wheeled bogies
2025/345 . . . . . . . . [Multi-wheel bogies having one or more steering axes]
25/36 . . . . . . . . Arrangements or adaptations of wheels, tyres, or axles in general (construction of wheels or axles B60B; construction of tyres in general B60C)
25/38 . . . . . . . . endless-track type
25/40 . . . . . . . . the elements being rotated before touch-down
25/405 . . . . . . . . [Powered wheels, e.g. for taxiing]
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)
25/423 . . . . . . . . [Braking devices acting by reaction of gaseous medium (B64C 25/426 takes precedence; using rockets B64D 27/023)]
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 (anti-skidding regulators; electric or electronic controllers therefor B60T 8/1703)
25/48 . . . . . . . . . . . . differentially operated for steering purposes
Influencing air-flow over aircraft surfaces, not otherwise provided for

25/50 . . . Steerable undercarriages; Shimmy damping (steering devices applicable to land vehicles B62D)
25/505 . . . [Shimmy damping]
25/52 . . . Skis or runners
25/54 . . . Floats
25/56 . . . inflatable (connection of valves to inflatable elastic bodies B60C 29/00)
25/58 . . . Arrangements or adaptations of shock-absorbers or springs (shimmy dampers B64C 25/50; vehicle suspension arrangements in general B60G; shock absorber per se F16F)
25/60 . . . Oleo legs
25/62 . . . Spring shock-absorbers; Springs
25/64 . . . using rubber or like elements
25/66 . . . Convertible alighting gear; Combinations of different kinds of ground or like engaging elements
25/68 . . . Arrester hooks (arresting gear, e.g. on aircraft carriers B64F)

Aircraft kinds and components not otherwise provided for

27/00 Rotorcraft; Rotors peculiar thereto (alighting gear B64C 25/00)
27/001 . . . [Vibration damping devices]
2027/002 . . . {mounted between the rotor drive and the fuselage}
2027/003 . . . {mounted on rotor hub, e.g. a rotary force generator}
2027/004 . . . {using actuators, e.g. active systems}
2027/005 . . . {using suspended masses}
27/006 . . . {Safety devices}
27/007 . . . {adapted for detection of blade cracks}
27/008 . . . {Rotors tracking or balancing devices}
27/02 . . . Gyroplanes
27/021 . . . {Rotor or rotor head construction (for helicopters B64C 27/32)}
27/022 . . . {Devices for folding or adjusting the blades}
27/023 . . . {Construction of the blades; Coating of the blades}
27/024 . . . {Devices for shifting the rotor axis}
27/025 . . . {Rotor drives, in particular for taking off; Combination of autorotation rotors and driven rotors}
27/026 . . . {Devices for converting a fixed wing into an autorotation rotor and vice versa}
27/027 . . . {Control devices using other means than the rotor}
27/028 . . . {Other constructional elements; Rotor balancing}
27/04 . . . Helicopters
27/06 . . . with single rotor
27/08 . . . with two or more rotors
27/10 . . . arranged coaxially
27/12 . . . Rotor drives
2027/125 . . . {including toroidal transmissions, e.g. of the CVT type}
27/14 . . . Direct drive between power plant and rotor hub
27/16 . . . Drive of rotors by means, e.g. propellers, mounted on rotor blades
27/18 . . . the means being jet-reaction apparatus
27/20 . . . Rotorcraft characterised by having shrouded rotors, e.g. flying platforms

27/22 . . . Compound rotorcraft, i.e. aircraft using in flight the features of both aeroplane and rotorcraft
27/24 . . . with rotor blades fixed in flight to act as lifting surfaces
27/26 . . . characterised by provision of fixed wings
27/28 . . . with forward-propulsion propellers pivotable to act as lifting rotors
27/30 . . . with provision for reducing drag of inoperative rotor
27/32 . . . Rotors (features common to rotors and propellers B64C 11/00)
27/322 . . . {Blade travel limiting devices, e.g. droop stops}
27/325 . . . {Circulation-control rotors}
27/327 . . . {Retention means relieving the stress from the arm, e.g. tie-bars}
27/33 . . . having flexing arms
27/35 . . . having elastomeric joints
27/37 . . . having articulated joints (B64C 27/33, B64C 27/35 take precedence)
27/39 . . . with individually articulated blades, i.e. with flapping or drag hinges
27/41 . . . with flapping or universal joint, common to the blades
27/43 . . . see-saw type, i.e. two-bladed rotor
27/45 . . . with a feathering tip 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)}
27/4733 . . . {Rotor blades substantially made from particular materials}
27/4736 . . . {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
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}
Aircraft kinds and components not otherwise provided for

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 . . . . (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 rotocraft

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 additionudders, tails, fins, or the like)
2027/8272 . . . . (comprising fins, or movable rudders)
2027/8281 . . . . (comprising horizontal tail planes)
2027/8289 . . . . (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 15/000; 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 boats B63H 9/0685; for propelling wind driven boards, control means and harnesses therefor B63B 35/7976)

3021/065 . . . . (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)
39/028 . . . . (Microsized 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)
Aircraft kinds and components not otherwise provided for

B64C

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 turbolans
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 characterized 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 riblets or hydrophobic surfaces
2230/28 at propeller or rotor blades