

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

- 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

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 1/06 . {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}

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}
- 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
- 1/40 . Sound or heat insulation {, e.g. using insulation blankets}
- 1/403 . . {Arrangement of fasteners specially adapted therefor, e.g. of clips}
- 1/406 . . . {in combination with supports for lines, e.g. for pipes or cables}
- 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
- 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

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](#)}
- 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}	13/505	. . . . {having duplication or stand-by provisions}
11/36	. . . non-automatic	13/506	. . . . {overriding of personal controls; with automatic return to inoperative position}
11/38	. . fluid, e.g. hydraulic	13/507	. . . . {with artificial feel}
11/385	. . . {comprising feathering, braking or stopping systems}	15/00	Attitude, flight direction, or altitude control by jet reaction
11/40	. . . automatic	15/02	. the jets being propulsion jets
11/42	. . . non-automatic	15/12	. . the power plant being tiltable
11/44	. . electric	15/14	. the jets being other than main propulsion jets (jet flaps B64C 9/38)
11/46	. Arrangements of, or constructional features peculiar to, multiple propellers {(B64C 11/306 takes precedence)}	17/00	Aircraft stabilisation not otherwise provided for
11/48	. . Units of two or more coaxial propellers	17/02	. by gravity or inertia-actuated apparatus
11/50	. . Phase synchronisation between multiple propellers	17/04	. . by pendular bodies
13/00	Control systems or transmitting systems for actuating flying-control surfaces, lift-increasing flaps, air brakes, or spoilers	17/06	. . by gyroscopic apparatus
13/02	. Initiating means	17/08	. by ballast supply or discharge
13/04	. . actuated personally	17/10	. Transferring fuel to adjust trim
13/042	. . . {operated by hand}	19/00	Aircraft control not otherwise provided for
13/0421	. . . . {control sticks for primary flight controls}	19/02	. Conjoint controls
13/0423	. . . . {yokes or steering wheels for primary flight controls}	Influencing air flow over aircraft surfaces, not otherwise provided for	
13/0425	. . . . {for actuating trailing or leading edge flaps, air brakes or spoilers}	21/00	Influencing air flow over aircraft surfaces by affecting boundary layer flow
13/0427	. . . . {for actuating trim}	21/01	. Boundary layer ingestion [BLI] propulsion
13/044	. . . {operated by feet, e.g. pedals}	21/02	. by use of slot, ducts, porous areas or the like
13/06	. . . adjustable to suit individual persons	21/025	. . {for simultaneous blowing and sucking}
13/08	. . . Trimming zero positions	21/04	. . for blowing
13/10	. . . comprising warning devices	21/06	. . for sucking (BLI propulsion B64C 21/01)
13/12	. . . Dual control apparatus	21/08	. . adjustable
13/14	. . . lockable	21/10	. using other surface properties, e.g. roughness
13/16	. . actuated automatically, e.g. responsive to gust detectors	23/00	Influencing air flow over aircraft surfaces, not otherwise provided for
13/18	. . . using automatic pilot	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}
13/20	. . . using radiated signals	23/02	. by means of rotating members of cylindrical or similar form
13/22	. . . readily revertible to personal control	23/04	. by generating shock waves
13/24	. Transmitting means	23/06	. by generating vortices
13/26	. . without power amplification or where power amplification is irrelevant	23/065	. . {at the wing tips}
13/28	. . . mechanical	23/069	. . . {using one or more wing tip airfoil devices, e.g. winglets, splines, wing tip fences or raked wingtips}
13/30	. . . . using cable, chain, or rod mechanisms	23/072	. . . . {the wing tip airfoil devices being moveable in their entirety}
13/32	. . . . using cam mechanisms	23/076	. . . . {the wing tip airfoil devices comprising one or more separate moveable members thereon affecting the vortices, e.g. flaps}
13/34	. . . . using toothed gearing	23/08	. using Magnus effect
13/341	. . . . {having duplication or stand-by provisions}	<hr/>	
13/343	. . . . {overriding of personal controls; with automatic return to inoperative position}	25/00	Alighting gear (air-cushion alighting gear B60V 3/08)
13/345	. . . . {with artificial feel}	25/001	. {Devices not provided for in the groups B64C 25/02 - B64C 25/68 }
13/36	. . . fluid	2025/003	. . {Means for reducing landing gear noise, or turbulent flow around it, e.g. landing gear doors used as deflectors}
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]}		

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 elements which contact the ground or similar surface (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
25/38	. . endless-track type
25/40	. . the elements being rotated before touch-down
25/405	. . {Powered wheels, e.g. for taxiing}
25/42	. . Arrangement or adaptation of brakes
25/423	. . . {Braking devices acting by reaction of gaseous medium}
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 (shimmy-dampers B64C 25/50)
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

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
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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
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2027/125	. . . {including toroidal transmissions, e.g. of the CVT type}	27/56	. . characterised by the control initiating means, e.g. manually actuated
27/14	. . . Direct drive between power plant and rotor hub	27/57	. . . automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust
27/16	. . . Drive of rotors by means, e.g. propellers, mounted on rotor blades	27/58	. . Transmitting means, e.g. interrelated with initiating means or means acting on blades (means acting on blades B64C 27/72)
27/18	. . . the means being jet-reaction apparatus	27/59	. . . mechanical
27/20	. Rotorcraft characterised by having shrouded rotors, e.g. flying platforms	27/605	. . . . including swash plate, spider or cam mechanisms
WARNING		27/615	. . . . including flaps mounted on blades
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.		27/625	. . . . including rotating masses or servo rotors
All groups listed in this Warning should be considered in order to perform a complete search.		27/635	. . . . specially for controlling lag-lead movements of blades
27/22	. Compound rotorcraft, i.e. aircraft using in flight the features of both aeroplane and rotorcraft	27/64	. . . using fluid pressure, e.g. having fluid power amplification
27/24	. . with rotor blades fixed in flight to act as lifting surfaces	27/68	. . . using electrical energy, e.g. having electrical power amplification
27/26	. . characterised by provision of fixed wings	27/72	. . Means acting on blades
27/28	. . with forward-propulsion propellers pivotable to act as lifting rotors	2027/7205	. . . {on each blade individually, e.g. individual blade control [IBC]}
27/30	. . with provision for reducing drag of inoperative rotor	2027/7211	. . . . {without flaps}
27/32	. Rotors	2027/7216	. . . . . {using one actuator per blade}
27/322	. . {Blade travel limiting devices, e.g. droop stops}	2027/7222	. . . . . {using airfoil deformation}
27/325	. . {Circulation-control rotors}	2027/7227	. . . . . {using blowing slots actuated by piezoelectric actuators}
27/327	. . {Retention means relieving the stress from the arm, e.g. tie-bars}	2027/7233	. . . . . {using higher-harmonic control [HHC]}
27/33	. . having flexing arms	2027/7238	. . . . . {by controlling existing swash plate actuators}
27/35	. . having elastomeric joints	2027/7244	. . . . . {by using dedicated actuators}
27/37	. . having articulated joints	2027/725	. . . . . {using jets controlled by piezoelectric actuators}
27/39	. . . with individually articulated blades, i.e. with flapping or drag hinges	2027/7255	. . . . . {using one or more swash plates}
27/41	. . . with flapping hinge or universal joint, common to the blades	2027/7261	. . . . . {with flaps}
27/43	. . . . see-saw type, i.e. two-bladed rotor	2027/7266	. . . . . {actuated by actuators}
27/45	. . . with a feathering hinge only	2027/7272	. . . . . {of the electro-hydraulic type}
27/46	. . Blades	2027/7277	. . . . . {of the magnetostrictive type}
27/463	. . . {Blade tips}	2027/7283	. . . . . {of the piezoelectric type}
27/467	. . . Aerodynamic features	2027/7288	. . . . . {of the memory shape type}
27/473	. . . Constructional features	2027/7294	. . . . . {actuated mechanically, e.g. by means of linkages}
2027/4733	. . . . {Rotor blades substantially made from particular materials}	27/78	. . in association with pitch adjustment of blades of anti-torque rotor
2027/4736	. . . . . {from composite materials}	27/80	. . for differential adjustment of blade pitch between two or more lifting rotors
27/48	. . . . Root attachment to rotor head	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
27/50	. . . . Blades foldable to facilitate stowage of aircraft	2027/8209	. . {Electrically driven tail rotors}
27/51	. Damping of blade movements	2027/8218	. . {wherein the rotor or the jet axis is inclined with respect to the longitudinal horizontal or vertical plane of the helicopter}
27/52	. Tilting of rotor bodily relative to fuselage (of see-saw type construction B64C 27/43)	2027/8227	. . {comprising more than one rotor}
27/54	. Mechanisms for controlling blade adjustment or movement relative to rotor head, e.g. lag-lead movement	2027/8236	. . {including pusher propellers}
		2027/8245	. . {using air jets}
		2027/8254	. . {Shrouded tail rotors, e.g. "Fenestron" fans}
		2027/8263	. . {comprising in addition rudders, tails, fins, or the like}
		2027/8272	. . . {comprising fins, or movable rudders}
		2027/8281	. . . {comprising horizontal tail planes}
		2027/829	. . . {comprising a V-tail units}

29/00 Aircraft capable of landing or taking-off vertically, e.g. vertical take-off and landing [VTOL] aircraft (rotorcraft B64C 27/00)

- 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
- 31/04 . Man-powered aircraft
- 31/06 . Kites (toy aspects A63H 27/08; airborne towed targets, e.g. kites F41J 9/10)

- 2031/065 . . {of inflatable wing type}

33/00 Ornithopters**WARNING**

Group B64C 33/00 is impacted by reclassification into group B64U 10/40.

Groups B64C 33/00 and B64U 10/40 should be considered in order to perform a complete search.

- 33/02 . Wings; Actuating mechanisms therefor
- 33/025 . . {the entire wing moving either up or down}

35/00 Flying-boats; Seaplanes

- 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

- 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
- 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
- 2039/105 . . {of blended wing body type}
- 39/12 . Canard-type aircraft

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, 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