

B64 AIRCRAFT; AVIATION; COSMONAUTICS**B64B LIGHTER-THAN-AIR AIRCRAFT** (ground installations for aircraft in general B64F)

1/00	Lighter-than-air aircraft	1/38	. . Controlling position of centre of gravity
1/02	. Non-rigid airships (B64B 1/58 takes precedence; balloons B64B 1/40)	1/40	. Balloons (B64B 1/58 takes precedence; toy balloons A63H 27/10)
1/04	. . the profile being maintained by ties or cords connecting opposite surfaces	1/42	. . Construction or attachment of stabilising surfaces
1/06	. Rigid airships; Semi-rigid airships (B64B 1/58 takes precedence)	1/44	. . adapted to maintain predetermined altitude
1/08	. . Framework construction	1/46	. . associated with apparatus to cause bursting
1/10	. . Tail unit construction (B64B 1/12 takes precedence)	1/48	. . . to enable load to be dropped by parachute
1/12	. . Movable control surfaces	1/50	. . Captive balloons
1/14	. . Outer covering	1/52	. . . attaching trailing entanglements
1/16	. . . rigid	1/54	. . . connecting two or more balloons in superimposed relationship
1/18	. . . Attachment to structure	1/56	. . . stabilised by rotary motion
1/20	. . provided with wings or stabilising surfaces	1/58	. Arrangements or construction of gas-bags; Filling arrangements (connection of valves to inflatable elastic bodies B60C 29/00)
1/22	. . Arrangement of cabins or gondolas	1/60	. . Gas-bags surrounded by separate containers of inert gas
1/24	. . Arrangement of propulsion plant (B64B 1/34 takes precedence)	1/62	. . Controlling gas pressure, heating, cooling, or discharging gas
1/26	. . . housed in ducts	1/64	. . Gas-valve operating mechanisms
1/28	. . . housed in nacelles	1/66	. Mooring attachments (mooring masts B64F 1/14)
1/30	. . . Arrangement of propellers	1/68	. Water flotation gear
1/32	. . . . surrounding hull	1/70	. Ballasting arrangements
1/34	. . . . of lifting propellers		
1/36	. . Arrangement of jet reaction apparatus for propulsion or directional control		

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. [3]

Subclass Index**STRUCTURES, FAIRINGS**

Features common to different elements	1/00
Fuselages; wings; stabilising surfaces	1/00; 3/00; 5/00
Other structural elements	7/00

PROPELLERS, FLIGHT CONTROL

Propellers	11/00
Adjustable control surfaces or members; control systems	9/00; 13/00
Control by jet reaction	15/00
Stabilisation and controls not otherwise provided for	17/00, 19/00

MODIFYING LIFT BY ACTION ON AIR-

FLOW	13/00, 21/00, 23/00
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ALIGHTING GEAR	25/00
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AIRCRAFT KINDS AND THEIR COMPONENTS NOT OTHERWISE PROVIDED FOR

Supersonic	30/00
Seaplanes	35/00
Aircraft intended to be sustained without power plant; powered hand-glider-type aircraft; microlight aircraft	31/00
Convertible aircraft	37/00
Vertical-take-off or landing aircraft	29/00
Rotorcraft; ornithopters	27/00; 33/00
Others	39/00

Aircraft structures or fairings (boundary-layer controls
B64C 21/00)

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

(aerodynamical features common to fuselages, wings, stabilising surfaces, or the like B64C 23/00; flight-deck installations B64D)

- 1/06 . Frames; Stringers; Longerons
- 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 (fairings movable in conjunction with undercarriage elements B64C 25/16; bomb doors B64D 1/06)
- 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
- 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 dimensions of aircraft
- 1/32 . Severable or jettisonable parts of fuselage facilitating emergency escape (ejector seats B64D 25/10)
- 1/34 . comprising inflatable structural components (connection of valves to inflatable elastic bodies B60C 29/00)
- 1/36 . adapted to receive aerals or radomes (aerals or radomes *per se* H01Q)
- 1/38 . Constructions adapted to reduce effects of aerodynamic or other external heating
- 1/40 . Sound or heat insulation

3/00 Wings (stabilising surfaces B64C 5/00; ornithopter wings B64C 33/02)

- 3/10 . Shape of wings
- 3/14 . . Aerofoil profile
- 3/16 . . Frontal aspect
- 3/18 . Spars; Ribs; Stringers (attaching wing unit to fuselage B64C 1/26)
- 3/20 . Integral or sandwich constructions (layered products or sandwich constructions in general B32B)
- 3/22 . Geodetic or other open-frame structures
- 3/24 . Moulded or cast structures
- 3/26 . Construction, shape, or attachment of separate skins, e.g. panels
- 3/28 . Leading or trailing edges attached to primary structures, e.g. forming fixed slots
- 3/30 . comprising inflatable structural components (connection of valves to inflatable elastic bodies B60C 29/00)
- 3/32 . specially adapted for mounting power plant
- 3/34 . Integrally-constructed tanks, e.g. for fuel (other aircraft fuel tanks or fuel systems B64D)
- 3/36 . Structures adapted to reduce effects of aerodynamic or other external heating
- 3/38 . Adjustment of complete wings or parts thereof
- 3/40 . . Varying angle of sweep
- 3/42 . . Adjusting about chordwise axes
- 3/44 . . Varying camber

- 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)
- 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

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; systems for actuating flying-control surfaces B64C 13/00)

- 9/02 . Mounting or supporting thereof
- 9/04 . with compound dependent movements
- 9/06 . with two or more independent movements
- 9/08 . bodily displaceable (varying camber of wings B64C 3/44)
- 9/10 . one surface adjusted by movement of another, e.g. servo tabs (B64C 9/04 takes precedence; adjusting surfaces of different type or function B64C 9/12)
- 9/12 . surfaces of different type or function being simultaneously adjusted
- 9/14 . forming slots (boundary-layer control B64C 21/00)
- 9/16 . . at the rear of the wing
- 9/18 . . . by single flaps
- 9/20 . . . by multiple flaps
- 9/22 . . at the front of the wing
- 9/24 . . . by single flap
- 9/26 . . . by multiple flaps
- 9/28 . . by flaps at both the front and rear of the wing operating in unison
- 9/30 . Balancing hinged surfaces, e.g. dynamically
- 9/32 . Air braking surfaces (braking by parachutes B64D 17/80)
- 9/34 . collapsing or retracting against or within other surfaces or other members
- 9/36 . . the members being fuselages or nacelles
- 9/38 . Jet flaps

11/00 Propellers, e.g. of ducted type; Features common to propellers and rotors for rotorcraft (rotors specially adapted for rotorcraft B64C 27/32)

- 11/02 . Hub construction
- 11/04 . . Blade mountings
- 11/06 . . . for variable-pitch blades
- 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
11/22	. . . Solid blades
11/24	. . . Hollow blades
11/26	. . . Fabricated blades
11/28	. . . Collapsible or foldable blades
11/30	. Blade pitch-changing mechanisms
11/32	. . mechanical
11/34	. . . automatic
11/36	. . . non-automatic
11/38	. . fluid, e.g. hydraulic
11/40	. . . automatic
11/42	. . . non-automatic
11/44	. . electric
11/46	. Arrangements of, or constructional features peculiar to, multiple propellers
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
13/06	. . . adjustable to suit individual persons
13/08	. . . Trimming zero positions
13/10	. . . comprising warning devices
13/12	. . . Dual control apparatus
13/14	. . . lockable (locking in position to suit individual persons B64C 13/06)
13/16	. . actuated automatically, e.g. responsive to gust detectors
13/18	. . . using automatic pilot (automatic pilots <u>per se</u> G05D 1/00)
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
13/36	. . . 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

15/00 Attitude, flight direction, or altitude control by jet reaction (details of jet-engine plants, e.g. of nozzles or jet pipes, F02K) [3]

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

17/00	Aircraft stabilisation not otherwise provided for
17/02	• by gravity or inertia-actuated apparatus
17/04	• • by pendular bodies
17/06	• • by gyroscopic apparatus (automatic-pilot control B64C 13/18)
17/08	• by ballast supply or discharge (for lighter-than-air aircraft B64B)
17/10	• Transferring fuel to adjust trim
19/00	Aircraft control not otherwise provided for
19/02	• Conjoint controls

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

21/00	Influencing air-flow over aircraft surfaces by affecting boundary-layer flow (boundary-layer control in general F15D)
21/02	• by use of slot, ducts, porous areas, or the like
21/04	• • 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
23/02	• by means of rotating members of cylindrical or similar form
23/04	• by generating shock waves
23/06	• by generating vortices
23/08	• using Magnus effect

25/00 Alighting gear (air-cushion alighting gear B60V 3/08)

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
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 (arrestor hooks B64C 25/68)
25/34	. . wheeled type, e.g. multi-wheeled bogies
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
25/42	. . Arrangement or adaptation 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) [4]
25/44	. . . Actuating mechanisms
25/46	. . . . Brake regulators for preventing skidding or aircraft somersaulting

B64C

- 25/48 differentially operated for steering purposes
- 25/50 . . Steerable undercarriages; Shimmy-damping (steering devices applicable to land vehicles B62D)
- 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-absorbers *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)
- 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 . . characterised by the control initiating means, e.g. manually actuated (B64C 27/58 takes precedence)
- 27/57 . . . automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust [3]
- 27/58 . . Transmitting means, e.g. interrelated with initiating means or means acting on blades (initiating means B64C 27/56; means acting on blades B64C 27/72)
- 27/59 . . . mechanical [3]
- 27/605 . . . including swash plate, spider or cam mechanisms [3]
- 27/615 . . . including flaps mounted on blades [3]
- 27/625 . . . including rotating masses or servo rotors [3]
- 27/635 . . . specially for controlling lag-lead movements of blades [3]
- 27/64 . . . using fluid pressure, e.g. having fluid power amplification [3]
- 27/68 . . . using electrical energy, e.g. having electrical power amplification [3]
- 27/72 . . Means acting on blades
- 27/78 . . in association with pitch adjustment of blades of anti-torque rotor
- 27/80 . . for differential adjustment of blade pitch between two or more lifting rotors
- 27/82 . characterised by the provision of an auxiliary rotor or fluid-jet device for counter-balancing lifting-rotor torque or changing direction of rotorcraft

Aircraft kinds or components not otherwise provided for

- 27/00 Rotorcraft; Rotors peculiar thereto** (alighting gear B64C 25/00)
- 27/02 . Gyroplanes
- 27/04 . Helicopters
- 27/06 . . with single rotor
- 27/08 . . with two or more rotors
- 27/10 . . . arranged coaxially
- 27/12 . . Rotor drives
- 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)
- 27/33 . . having flexing arms [3]
- 27/35 . . having elastomeric joints [3]
- 27/37 . . having articulated joints (B64C 27/33, B64C 27/35 take precedence) [3]
- 27/39 . . . with individually articulated blades, i.e. with flapping or drag hinges [3]
- 27/41 . . . with flapping hinge or universal joint, common to the blades [3]
- 27/43 see-saw type, i.e. two-bladed rotor [3]
- 27/45 . . . with a feathering hinge only [3]
- 27/46 . . Blades
- 27/467 . . . Aerodynamic features [6]
- 27/473 . . . Constructional features [6]
- 27/48 Root attachment to rotor head
- 27/50 Blades foldable to facilitate stowage of aircraft
- 27/51 . Damping of blade movements [3]
- 29/00 Aircraft capable of landing or taking-off vertically** (attitude, flight direction, or altitude control by jet reaction B64C 15/00; rotorcraft B64C 27/00; air-cushion vehicles B60V; details of jet-engine plants, e.g. of nozzles or jet pipes, F02K)
- 29/02 . having its flight directional axis vertical when grounded
- 29/04 . . characterised by jet-reaction propulsion
- 30/00 Supersonic type aircraft [3]**
- 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) [6]
- 31/024 . . with auxiliary power plant [6]
- 31/028 . Hang-glider-type aircraft; Microlight-type aircraft [6]
- 31/032 . . having delta shaped wing [6]
- 31/036 . . having parachute-type wing (parachutes B64D 17/00) [6]
- 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)
- 33/00 Ornithopters**
- 33/02 . Wings; Actuating mechanisms therefor
- 35/00 Flying-boats; Seaplanes** (alighting gear B64C 25/00)
- 35/02 . Flying-boat hulls [3]

37/00	Convertible aircraft (vehicles capable of travelling in or on different media B60F)	39/04	• having multiple fuselages or tail booms [3]
37/02	• Flying units formed by separate aircraft (towing, air-refuelling, or aircraft-carrying aircraft B64D)	39/06	• having disc- or ring-shaped wings [3]
39/00	Aircraft not otherwise provided for	39/08	• having multiple wings [3]
39/02	• characterised by special use	39/10	• All-wing aircraft [3]
		39/12	• Canard-type aircraft [3]

B64D EQUIPMENT FOR FITTING IN OR TO AIRCRAFT; FLYING SUITS; PARACHUTES; ARRANGEMENTS OR MOUNTING OF POWER PLANTS OR PROPULSION TRANSMISSIONS

Subclass Index

FLIGHT ARRANGEMENTS ON AIRCRAFT

Of power plant and auxiliaries	27/00, 29/00, 33/00, 41/00
Of power-plant controls and transmissions	31/00, 35/00
For fuel supply	37/00, 39/00
Of flying instruments	43/00

USE OF AIRCRAFT

For military purposes	1/00, 7/00
For persons or freight	9/00 to 13/00

SAFETY OR EMERGENCY ARRANGEMENTS OR EQUIPMENTS

For the aircraft	
against icing; against lightning	15/00; 45/02
for landing	17/80, 45/00

For jettisoning or other means concerning fuel	37/26, 37/32
For persons or material	
by holding or ejecting means	25/00
by parachutes; parachuting	17/00 to 21/00; 23/00
Other safety, emergency, or protection means	10/00, 25/00, 45/00

EQUIPMENT FOR OPERATIONS PERFORMED DURING FLIGHT

Releasing or receiving articles, fluent materials, or another aircraft	1/00, 5/00
Towing, fuel replenishing	3/00, 39/00

OTHER ARRANGEMENTS OR EQUIPMENT

1/00	Dropping, ejecting, releasing, or receiving articles, liquids, or the like, in flight (with respect to weapon sights, F41G takes precedence; parachutes B64D 17/00; ejectable seats B64D 25/10; ejectable capsules B64D 25/12; refuelling during flight B64D 39/00; launching apparatus for projecting projectiles or missiles F41F 1/00, F41F 7/00; rocket or torpedo launchers F41F 3/00)	7/00	Arrangement of military equipment, e.g. armaments, armament accessories, or military shielding, in aircraft; Adaptations of armament mountings for aircraft (dropping bombs or the like B64D 1/00; armaments or mountings therefor <u>per se</u> F41)
1/02	• Dropping, ejecting, or releasing articles (jettisonable fuel reservoirs B64D 37/12)	7/02	• the armaments being firearms
1/04	• . . the articles being explosive, e.g. bombs (arming or setting bomb fuzes F42C)	7/04	• . . fixedly mounted
1/06	• . . Bomb releasing; Bomb doors	7/06	• . . movably mounted
1/08	• . the articles being load-carrying devices	7/08	• Arrangement of rocket launchers (rocket launchers <u>per se</u> , e.g. rocket pods, F41F 3/06)
1/10	• . . Stowage arrangements for the devices in aircraft		
1/12	• . . Releasing		
1/14	• . . Absorbing landing shocks		
1/16	• Dropping or releasing powdered, liquid or gaseous matter, e.g. for fire-fighting (jettisoning fuel B64D 37/26) [5]		
1/18	• . by spraying, e.g. insecticides (spraying apparatus in general B05B)		
1/20	• . for sky-writing		
1/22	• Taking-up articles from earth's surface		
3/00	Aircraft adaptations to facilitate towing or being towed (B64D 39/00 takes precedence; ground installations for launching or towing aircraft B64F; towing ropes <u>per se</u> D07B)	9/00	Equipment for handling freight; Equipment for facilitating passenger embarkation or the like (emergency equipment B64D 17/00, B64D 19/00, B64D 25/00; structures integral with fuselage to facilitate loading, fuselage floors specially adapted for freight, steps mounted on, and retractable within, aircraft B64C; ground installations B64F)
3/02	• for towing targets (towed targets <u>per se</u> F41J)	10/00	Flying suits (helmets in general A42B 3/00; breathing helmets A62B 18/00) [3]
5/00	Aircraft transported by aircraft, e.g. for release or reberthing during flight (flying units formed by separate aircraft B64C 37/02)	11/00	Passenger or crew accommodation; Flight-deck installations not otherwise provided for
		11/02	• Toilet fittings (of general application A47K)
		11/04	• Galleys
		11/06	• Arrangements or adaptations of seats (seat constructions for emergency purposes B64D 25/04)
		13/00	Arrangements or adaptations of air-treatment apparatus for aircraft crew or passengers, or freight space (treatment rooms with artificial climate for medical purposes A61G 10/02; respiratory apparatus in general A62B; for vehicles in general B60H)
		13/02	• the air being pressurised
		13/04	• . . Automatic control of pressure

- 13/06 . the air being conditioned (pressurising B64D 13/02)
- 13/08 . . the air being heated or cooled
- 15/00 De-icing or preventing icing on exterior surfaces of aircraft** (motor vehicles specially adapted for carrying de-icing equipment B60P)
- 15/02 . by ducted hot gas or liquid
- 15/04 . . Hot gas application
- 15/06 . . Liquid application (in general B05)
- 15/08 . . . exuded from surface
- 15/10 . . . sprayed over surface
- 15/12 . by electric heating (H05B 3/84 takes precedence; electric heating elements in general H05B) [5]
- 15/14 . . controlled cyclically along length of surface
- 15/16 . by mechanical means, e.g. pulsating mats or shoes attached to, or built into, surface
- 15/18 . . the surface being an aerofoil, rotor, or propeller
- 15/20 . Means for detecting icing or initiating de-icing
- 15/22 . . Automatic initiation by icing detector
- 17/00 Parachutes** (non-canopied parachutes B64D 19/00)
- 17/02 . Canopy arrangement or construction
- 17/04 . . formed with two or more canopies arranged about a common axis
- 17/06 . . formed with two or more canopies arranged in a cluster
- 17/08 . . Secondary or shock-absorbing canopies attached to load line
- 17/10 . . Ribbon construction or the like
- 17/12 . . constructed to provide variable or non-uniform porosity over area of canopy
- 17/14 . . with skirt or air-deflecting panels
- 17/16 . . . secured to hem of main canopy
- 17/18 . . Vent arrangement or construction
- 17/20 . . . variable in area
- 17/22 . Load suspension
- 17/24 . . Rigging lines
- 17/26 . . . attached to hem of canopy
- 17/28 . . . attached to apex of canopy
- 17/30 . . Harnesses [4]
- 17/32 . . . Construction of quick-release box
- 17/34 . . adapted to control direction or rate of descent
- 17/36 . . incorporating friction devices or frangible connections to reduce shock loading of canopy
- 17/38 . . Releasable fastening devices between parachute and load or pack
- 17/40 . Packs
- 17/42 . . rigid
- 17/44 . . . forming part of load
- 17/46 . . Closing means
- 17/48 . . with separate pack for extractor of auxiliary parachute
- 17/50 . . formed with separate compartments for main canopy, rigging lines, or auxiliary parachute
- 17/52 . . Opening, e.g. manual
- 17/54 . . . automatic
- 17/56 responsive to barometric pressure
- 17/58 responsive to time-delay mechanism
- 17/60 by static line
- 17/62 . Deployment
- 17/64 . . by extractor parachute
- 17/66 . . . attached to hem of main canopy
- 17/68 . . . attached to apex of main canopy
- 17/70 . . by springs
- 17/72 . . by explosive or inflatable means (connection of valves to inflatable elastic bodies B60C 29/00)
- 17/74 . . Sequential deployment of a plurality of canopies
- 17/76 . . facilitated by method of folding or packing
- 17/78 . . in association with other load-retarding apparatus
- 17/80 . . in association with aircraft, e.g. for braking thereof
- 19/00 Non-canopied parachutes**
- 19/02 . Rotary-wing parachutes
- 21/00 Testing of parachutes**
- 23/00 Training of parachutists**
- 25/00 Emergency apparatus or devices, not otherwise provided for** (parachutes B64D 17/00, B64D 19/00; jettisoning of fuel tanks or fuel B64D 37/00; safety belts or body harnesses in general A62B 35/00; safety belts or body harnesses for land vehicles B60R 22/00; severable or jettisonable parts of fuselage facilitating emergency escape B64C) [4]
- 25/02 . Supports or holding means for living bodies (for ejector seats B64D 25/115) [5]
- 25/04 . . Seat modifications
- 25/06 . . Harnessing [4]
- 25/08 . Ejecting or escaping means (escape apertures B64C)
- 25/10 . . Ejector seats
- 25/102 . . . Propelling means, e.g. by a combination of catapult and rocket means (B64D 25/11, B64D 25/112 take precedence) [5]
- 25/105 by catapult means only [5]
- 25/108 by rocket means only [5]
- 25/11 . . . Controlling attitude or direction of ejector seat or associated mechanism prior to ejection [5]
- 25/112 . . . Controlling attitude or direction of ejector seat after ejection [5]
- 25/115 . . . Occupant restraining, positioning or protecting devices [5]
- 25/118 . . . Separation of occupant from seat after ejection [5]
- 25/12 . . Ejectable capsules
- 25/14 . . Inflatable escape chutes (connection of valves to inflatable elastic bodies B60C 29/00)
- 25/16 . . Dinghy stowage
- 25/18 . . Flotation gear (aircraft alighting gear B64C)
- 25/20 . . Releasing of crash-position indicators
- 27/00 Arrangement or mounting of power plant in aircraft; Aircraft characterised thereby** (attitude, flight-direction, or altitude control of aircraft by jet reaction B64C)
- 27/02 . Aircraft characterised by the type or position of power plant (fuselages or wings adapted for mounting power plant B64C)
- 27/04 . . of piston type
- 27/06 . . . within, or attached to, wing
- 27/08 . . . within, or attached to, fuselage
- 27/10 . . of gas-turbine type (B64D 27/16 takes precedence)
- 27/12 . . . within, or attached to, wing
- 27/14 . . . within, or attached to, fuselage
- 27/16 . . of jet type
- 27/18 . . . within, or attached to, wing
- 27/20 . . . within, or attached to, fuselage
- 27/22 . . using atomic energy

- 27/24 . . . using steam, electricity, or spring force (B64D 27/16 takes precedence)
- 27/26 . Aircraft characterised by construction of power-plant mounting
- 29/00 Power-plant nacelles, fairings, or cowlings** (nacelles not otherwise provided for B64C)
 - 29/02 . associated with wings (wings adapted for mounting power plant B64C)
 - 29/04 . associated with fuselages
 - 29/06 . Attaching of nacelles, fairings, or cowlings
 - 29/08 . Inspection panels for power plants
- 31/00 Power plant control; Arrangement thereof** (flying controls, conjoint control of power plant and propeller B64C)
 - 31/02 . Initiating means
 - 31/04 . . . actuated personally
 - 31/06 . . . actuated automatically
 - 31/08 for keeping cruising speed constant
 - 31/10 for preventing asymmetric thrust upon failure of one power plant
 - 31/12 for equalising or synchronising power plants
 - 31/14 . Transmitting means between initiating means and power plants
- 33/00 Arrangement in aircraft of power plant parts or auxiliaries not otherwise provided for**
 - 33/02 . of combustion air intakes (air intakes for gas-turbine plants or jet-propulsion plants per se F02C 7/04; air intakes for combustion engines in general F02M 35/00)
 - 33/04 . of exhaust outlets or jet pipes (exhaust outlets for combustion engines in general F01N; jet pipes or nozzles for jet-propulsion plants per se F02K; plants characterised by the form or arrangement of the jet pipe or nozzle F02K) [3]
 - 33/08 . of power plant cooling systems (cooling of internal-combustion engines per se F01P; cooling of gas-turbine plants or jet-propulsion plants per se F02C, F02K)
 - 33/10 . . . Radiator arrangement
 - 33/12 of retractable type
- 35/00 Transmitting power from power plant to propellers or rotors; Arrangements of transmissions** (propellers or rotors per se, helicopter transmissions B64C)
 - 35/02 . characterised by the type of power plant
 - 35/04 . characterised by the transmission driving a plurality of propellers or rotors
 - 35/06 . . . the propellers or rotors being counter-rotating
 - 35/08 . characterised by the transmission being driven by a plurality of power plants
- 37/00 Arrangements in connection with fuel supply for power plant** (refuelling during flight B64D 39/00)
 - 37/02 . Tanks (tanks constructed integrally with aircraft wings B64C; tanks in general B65D)
 - 37/04 . . . Arrangement thereof in or on aircraft
 - 37/06 Constructional adaptations thereof
 - 37/08 Internal partitioning
 - 37/10 to facilitate fuel pressurisation
 - 37/12 jettisonable
 - 37/14 Filling or emptying (transferring fuels to adjust aircraft trim B64C)
 - 37/16 Filling systems (ground installations for fuelling aircraft B64F)
 - 37/18 Conditioning fuel during filling
 - 37/20 Emptying systems
 - 37/22 facilitating emptying in any position of tank
 - 37/24 using gas pressure
 - 37/26 Jettisoning of fuel
 - 37/28 Control thereof
 - 37/30 . Fuel systems for specific fuels
 - 37/32 . Safety measures not otherwise provided for, e.g. preventing explosive conditions (extinguishing or preventing fires in aircraft A62C)
- 37/34 . Conditioning fuel, e.g. heating (during filling B64D 37/18)
- 39/00 Refuelling during flight** (filling or emptying fuel tanks B64D 37/14)
 - 39/02 . Means for paying-in or out hose
 - 39/04 . Adaptations of hose construction (pipes in general F16L)
 - 39/06 . Connecting hose to aircraft; Disconnecting hose therefrom
- 41/00 Power installations for auxiliary purposes**
- 43/00 Arrangements or adaptations of instruments** (arrangements of cameras B64D 47/08; aeronautical measuring instruments per se G01C)
 - 43/02 . for indicating aircraft speed or stalling conditions
- 45/00 Aircraft indicators or protectors not otherwise provided for** (camouflage F41H 3/00)
 - 45/02 . Lightning protectors (lightning arrestors H01C 7/12, H01C 8/04, H01G 9/18, H01T; circuit arrangements therefor H02H); Static dischargers (in general H05F 3/00)
 - 45/04 . Landing aids; Safety measures to prevent collision with earth's surface
 - 45/06 . . . mechanical
 - 45/08 . . . optical
- 47/00 Equipment not otherwise provided for**
 - 47/02 . Arrangements or adaptations of signal or lighting devices
 - 47/04 . . . the lighting devices being primarily intended to illuminate the way ahead
 - 47/06 for indicating aircraft presence
 - 47/08 . Arrangements of cameras

B64F GROUND OR AIRCRAFT-CARRIER-DECK INSTALLATIONS**Note**

In this subclass, the following terms or expressions are used with the meanings indicated:

- “installations” embraces equipment, including mobile equipment, peculiar to use in connection with aircraft and not fitted thereto;
- “ground installations” embraces waterborne installations. [3]

1/00	Ground or aircraft-carrier-deck installations (specially adapted for captive aircraft B64F 3/00; aircraft-carriers B63; fog-dispersal installations E01H; wind tunnels G01M; grounded flight trainers G09B)	1/28	• Liquid-handling installations specially adapted for fuelling stationary aircraft (liquid handling in general B67)
1/02	• Arresting gear; Liquid barriers	1/30	• for embarking or disembarking passengers
1/04	• Launching or towing gear (railway aspects B61; aircraft towing aircraft B64D 3/00; ammunition launching gear F41F)	1/305	• • Bridges extending between terminal building and aircraft, e.g. telescopic, vertically adjustable [3]
1/06	• • using catapults	1/31	• • Passenger vehicles specially adapted to co-operate, e.g. dock, with aircraft or terminal buildings [3]
1/08	• • using winches	1/315	• • Mobile stairs (movable stairways in general E04F 11/04) [3]
1/10	• • using self-propelled vehicles	1/32	• for handling freight
1/12	• Anchoring	1/34	• for starting propulsion plant
1/14	• • Towers or masts for mooring airships or balloons (mooring attachments of lighter-than-air aircraft B64B 1/66; building aspects E04H 6/00, E04H 12/00)	1/36	• Other airport installations (construction of, or surfacing for, airfields E01C)
1/16	• • Pickets or ground anchors; Wheel chocks	3/00	Ground installations specially adapted for captive aircraft (railway aspects B61)
1/18	• Visual or acoustic landing aids (optical or acoustic signalling in general G08)	3/02	• with means for supplying electricity to aircraft during flight
1/20	• • Arrangement of optical beacons	5/00	Designing, manufacturing, assembling, cleaning, maintaining, or repairing aircraft, not otherwise provided for
1/22	• installed for handling aircraft		
1/24	• • Adaptations of turntables		
1/26	• for reducing engine or jet noise; Protecting airports from jet erosion		

B64G COSMONAUTICS; VEHICLES OR EQUIPMENT THEREFOR (apparatus for, or methods of, winning materials from extraterrestrial sources E21C 51/00)**Notes**

- (1) This subclass covers only vehicles, equipment or the like, which are specially adapted for cosmonautics.
- (2) This subclass does not cover vehicles and equipment applicable to both cosmonautics and aeronautics, which are covered by the appropriate aeronautical subclasses of class B64.
- (3) In this subclass, the following term is used with the meaning indicated:
 - “cosmonautics” includes all transport outside the earth’s atmosphere, and thus includes artificial earth satellites, and interplanetary and interstellar travel.

1/00	Cosmonautic vehicles [3]	1/26	• • • using jets [3]
1/10	• Artificial satellites; Systems of such satellites; Interplanetary vehicles (space shuttles B64G 1/14; radio transmission systems using satellites H04B 7/185)	1/28	• • • using inertia or gyro effect [3]
1/12	• • manned [3]	1/32	• • • using earth’s magnetic field [3]
1/14	• Space shuttles [3]	1/34	• • • using gravity gradient [3]
1/16	• Extraterrestrial cars (land vehicle aspects B60 to B62) [3]	1/36	• • • using sensors, e.g. sun-sensors, horizon sensors [3]
1/22	• Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles [3]	1/38	• • • damping of oscillations, e.g. nutation dampers [3]
1/24	• • Guiding or controlling apparatus, e.g. for attitude control (jet-propulsion plants F02K; navigation or navigational instruments, <u>see</u> the relevant subclasses, e.g. G01C; automatic pilots G05D 1/00) [3]	1/40	• • Arrangements or adaptations of propulsion systems (B64G 1/26 takes precedence; propulsion plants <u>per se</u> , <u>see</u> the relevant subclasses, e.g. F02K, F03H) [3]
		1/42	• • Arrangements or adaptations of power supply systems (power supply systems <u>per se</u> , <u>see</u> the relevant subclasses) [3]

- 1/44 . . . using radiation, e.g. deployable solar arrays (solar cells per se H01L 31/00) [3]
- 1/46 . . Arrangements or adaptations of devices for control of environment or living conditions (space suits B64G 6/00) [3]
- 1/48 . . . for treatment of the atmosphere (B64G 1/50 takes precedence; air conditioning in general F24F) [3]
- 1/50 . . . for temperature control (temperature control in general G05D 23/00) [3]
- 1/52 . . Protection, safety or emergency devices; Survival aids (life-saving in general A62) [3]
- 1/54 . . . Protection against radiation (against radiation in general G21F) [3]
- 1/56 . . . Protection against meteorites (meteorite detectors B64G 1/68) [3]
- 1/58 . . . Thermal protection, e.g. heat shields (thermal insulation in general F16L 59/00; chemical aspects, see the relevant classes) [3]
- 1/60 . . Crew or passenger accommodations [3]
- 1/62 . . Systems for re-entry into the earth's atmosphere; Retarding or landing devices [3]
- 1/64 . . Systems for coupling or separating cosmonautic vehicles or parts thereof, e.g. docking arrangements [3]
- 1/66 . . Arrangements or adaptations of apparatus or instruments, not otherwise provided for (instruments per se, see the relevant classes, e.g. aerals for use in satellites H01Q 1/28) [3]
- 1/68 . . . of meteorite detectors [3]
- 3/00 Observing or tracking cosmonautic vehicles** (radio or other waves systems for navigation or tracking G01S)
- 4/00 Tools specially adapted for use in space** [3]
- 5/00 Ground equipment for vehicles, e.g. starting towers, fuelling arrangements** (B64G 3/00 takes precedence)
- 6/00 Space suits** [3]
- 7/00 Simulating cosmonautic conditions, e.g. for conditioning crews** (simulators for teaching or training purposes G09B 9/00)
- 9/00 Cosmonautics not otherwise provided for**