B64C
AEROPLANES; HELICOPTERS (air-cushion vehicles B60V)

Special rules of classification
The use of the available Indexing Codes under B64C 1/00 - B64C 2230/00 is mandatory for classifying additional information.

B64C 1/00
Fuselages; Constructional features common to fuselages, wings, stabilising surfaces and the like (aerodynamical features common to fuselages, wings, stabilising surfaces, and the like B64C 23/00; flight-deck installations B64D)

Definition statement
This place covers:

• Overall fuselage shapes and concepts (only documents relating thereto are attributed the symbol B64C 1/00, when the emphasis is on aerodynamic aspects the symbol B64C 1/009 is attributed).
• Structural features (including frames, stringers, longerons, bulkheads, skin panels and interior liners).
• Windows and doors (including hatch covers, access panels, drain masts, canopies and windscreens).
• Fuselage structures adapted for mounting power plants, floors, integral loading means (such as steps).
• Attachment of wing or tail units or stabilising surfaces to the fuselage;
• Relatively movable fuselage parts (for improving pilot's view or for reducing size for storage).
• Severable/jettisonable parts for facilitating emergency escape.
• Inflatable fuselage components.
• Fuselage adaptations for receiving aerials or radomes.
• Passive cooling of fuselage structures and sound/heat insulation (including isolation mats, and clips for mounting such mats and components such as pipes or cables).

References
Limiting references
This place does not cover:

<table>
<thead>
<tr>
<th>Structural features and concepts are attributed the relevant symbol(s) in</th>
<th>B64C 1/06 - B64C 1/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerodynamical features common to fuselages, wings, stabilising surfaces, and the like</td>
<td>B64C 23/00</td>
</tr>
<tr>
<td>Flight-deck installations</td>
<td>B64D</td>
</tr>
</tbody>
</table>

Special rules of classification
Structures and components for helicopters falling within this main group and/or appended subgroups are additionally attributed the symbol B64C 27/04.

As an example, a helicopter fuselage with crash absorbing frames would be attributed the symbols B64C 1/062 and B64C 27/04.
B64C 1/0009
{Aerodynamic aspects}

Definition statement
This place covers:
Complete fuselage shapes for obtaining aerodynamic effects, e.g. reduced drag.

B64C 1/06
Frames; Stringers; Longerons {; Fuselage sections}

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| plastic composite structures, frames, stringers, spars, beams, longerons, stringers and skins (also filament-wound fuselage shells) (working with plastics) | B29C |
| plastic composite structures, frames, stringers, spars, beams, longerons, stringers and skins (also filament-wound fuselage shells) (laminates) | B32B |

B64C 1/061
{Frames}

Relationships with other classification places
Fuselage bulkheads: B64C 1/10

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

Relationships with other classification places
Parts of fuselage relatively moveable to reduce overall size for storage: B64C 1/30

References
Limiting references
This place does not cover:

| Folding or collapsing wings | B64C 3/56 |

B64C 1/064
{Stringers; Longerons}

Relationships with other classification places
Specifically for wings: B64C 3/182
**Synonyms and Keywords**

*In patent documents the following expressions/words "stringer" is often also used in German.*

**B64C 1/065**

{Spars}

**Relationships with other classification places**

Specifically for wings: **B64C 3/185**

**B64C 1/066**

{Interior liners}

**Definition statement**

*This place covers:*

Interior liners for aesthetic and/or protective purposes generally following the shape of the fuselage and visible from the inside in the completed fuselage.

**References**

**Limiting references**

*This place does not cover:*

| Sound or heat insulating mat assemblies for being positioned adjacent the fuselage outer skin | B64C 1/40 |

**B64C 1/068**

{Fuselage sections}

**Definition statement**

*This place covers:*

Complete fuselage structures (frames, stringers, skin) with the emphasis on structural features.

**Relationships with other classification places**

Assembling (e.g. moving, positioning) fuselage components (e.g. barrels) into a complete fuselage: **B64F 5/10**

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Working with plastics: documents describing plastic composite fuselage shells can also be attributed the symbols | B29C |
| Laminates only: when the emphasis is on manufacturing issues rather than the function in an aircraft context | B32B |
B64C 1/0683
{Nose cones}

Definition statement
This place covers:
Constructional features specially adapted for the nose of the fuselage.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Nose cones for missiles or torpedoes

B64C 1/0685
{Tail cones}

Definition statement
This place covers:
Constructional features specially adapted for the aft end of the fuselage.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Mountings for vertical or horizontal stabilizers
Mountings for auxiliary power units

B64C 1/10
Bulkheads

Definition statement
This place covers:
Aircraft fuselage bulkheads such as pressure bulkheads.

Relationships with other classification places
Fuselage frames: B64C 1/061

References
Limiting references
This place does not cover:

Cabin dividers for class separation
B64C 1/12

Construction or attachment of skin panels

Relationships with other classification places

Skins specifically for wings: B64C 3/26

Special rules of classification

Aircraft skin structures with integral lightning protection features are concurrently attributed the symbols B64C 1/12 and B64D 45/02 (aircraft lightning protectors).

B64C 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)

References

Limiting references

This place does not cover:

| Fairings movable in conjunction with undercarriage elements | B64C 25/16 |
| Bomb doors | B64D 1/06 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Cleaning vehicle windows and windscreens | B60S 1/02 - B60S 1/606 |

B64C 1/1407

{Doors; surrounding frames}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Door and window locks, handles and latches in general | E05B |
| Door and window operating mechanisms in general | E05F |
| Doors and windows in general | E06B |
B64C 1/1415
{Cargo doors, e.g. incorporating ramps}

Relationships with other classification places
Other structures integral with the fuselage to facilitate loading (e.g. cargo bays, cranes): B64C 1/22

B64C 1/1446
{Inspection hatches (for engine cowls B64D 29/08)}

References

Limiting references
This place does not cover:

| Inspection hatches for engine cowls and nacelles | B64D 29/08 |

B64C 1/1469
{Doors between cockpit and cabin}

Relationships with other classification places
Doors or door arrangements specially adapted to restrict unauthorized access are classified in this place (B64C 1/1469) and in B64D 45/0028 (multiple classification).

B64C 1/1476
{Canopies; Windscreens or similar transparent elements}

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Windows in vehicles | B60J |
| Windows in trains   | B61D 25/00 |

B64C 1/1492
{Structure and mounting of the transparent elements in the window or windscreen}

References

Limiting references
This place does not cover:

| Pyrotechnics for shattering canopies: | B64C 1/32 |
**B64C 1/16**  
**specially adapted for mounting power plant**

**Relationships with other classification places**

Aircraft characterised by the power plant being within or attached to the fuselage (piston): [B64D 27/08](#).  
(turboprop): [B64D 27/14](#); (turbofan and turbojet): [B64D 27/20](#).  
Aircraft characterised by the power plant mounting: [B64D 27/26](#).

**B64C 1/18**

**Floors**

**Definition statement**

This place covers:  
- Construction of aircraft floors.  
- Decompression valves for mounting in the floor region.

**B64C 1/20**  
**specially adapted for freight**

**Definition statement**

This place covers:  
- Aircraft floors specially adapted to freight by virtue of location, strength and/or shape(s).  
- Aircraft floors with anchoring points or rails for freight;  
- Aircraft seat rails.

**References**

**Limiting references**

This place does not cover:

- Roller trays, Power Drive Units (PDU), clamping devices and other device for moving and/or securing freight [B64D 9/003](#).

**B64C 1/22**  
**Other structures integral with fuselages to facilitate loading {, e.g. cargo bays, cranes (cargo door type ramps [B64C 1/1415](#))}**

**Relationships with other classification places**

Equipment for handling freight in aircraft: [B64D 9/00](#) - [B64D 9/003](#).

**References**

**Limiting references**

This place does not cover:

- Cargo door type ramps [B64C 1/1415](#).
**B64C 1/24**
Steps mounted on, and retractable within, fuselages (readily removable
B64D 9/00)

References

**Limiting references**
This place does not cover:

| Readily removable steps or stairs | B64D 9/00 |

**B64C 1/30**
Parts of fuselage relatively movable to reduce overall size for storage

References

**Limiting references**
This place does not cover:

| Folding or collapsing wings | B64C 3/56 |

**B64C 1/32**
Severable or jettisonable parts of fuselage facilitating emergency escape (ejector seats B64D 25/10)

Definition statement
This place covers:
Also includes pyrotechnics for shattering canopies.

References

**Limiting references**
This place does not cover:

| Ejection seats            | B64D 25/10 |
| Ejectable capsules        | B64D 25/12 |
**B64C 1/34**

comprising inflatable structural components (connection of valves to inflatable elastic bodies B60C 29/00)

**References**

**Limiting references**

*This place does not cover:*

| Inflatable structural components for wings | B64C 3/30 |
| Varying camber of complete wings or parts thereof by inflatable elements | B64C 3/46 |
| Connection of valves to inflatable elastic bodies | B60C 29/00 |

**Definition statement**

*This place covers:*

Details of the mounting of the antenna or radome to the fuselage, e.g. hinged connections for maintenance purposes

**References**

**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

| Antennas or radomes per se | H01Q |

**B64C 1/36**

adapted to receive antennas or radomes (antennas or radomes per se H01Q)

**Definition statement**

*This place covers:*

Cooling of the external fuselage skin

**Relationships with other classification places**

Specifically for wings: B64C 3/36

**References**

**Limiting references**

*This place does not cover:*

| Insulation mats or blankets adjacent the fuselage skin | B64C 1/40 |
| Cooling structural parts of aircraft with air from an air-treatment apparatus (e.g. environmental control system) in the aircraft | B64D 13/006 |
B64C 1/40

Sound or heat insulation {, e.g. using insulation blankets (insulating elements for vehicles, in general B60R 13/08)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling of the external fuselage skin</td>
<td>B64C 1/38</td>
</tr>
<tr>
<td>Insulating elements for vehicles in general</td>
<td>B60R 13/08</td>
</tr>
</tbody>
</table>

B64C 1/403

{Arrangement of fasteners specially adapted therefor, e.g. of clips (in vehicles in general B60R 13/0206)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clips for sound or heat insulation in vehicles in general</td>
<td>B60R 13/0206</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasteners in general</td>
<td>F16B</td>
</tr>
</tbody>
</table>

B64C 1/406

{in combination with supports for lines, e.g. for pipes or cables (arrangement of elements of electric or fluid circuits specially adapted for vehicles, in general B60R 16/00; supports for pipes, cables or protective tubing F16L 3/00; installations of electric cables or lines in vehicles H02G 3/00)}

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Description</th>
<th>CPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrangement of elements of electric or fluid circuits specially adapted for vehicles in general</td>
<td>B60R 16/00</td>
</tr>
<tr>
<td>Supports for pipes, cables or protective tubing</td>
<td>F16L 3/00</td>
</tr>
<tr>
<td>Installations of electric cables or lines in vehicles</td>
<td>H02G 3/00</td>
</tr>
</tbody>
</table>
B64C 3/00

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

Definition statement

This place covers:

• Wing shapes (planform, airfoil profile, frontal aspect).
• Wing structures (spars, ribs, stringers, skin panels).
• Wing adaptations for accommodating power plants.
• Integral fuel tanks in the wings.
• Passive cooling of wing structures.
• Adjustment of complete wings or parts thereof (variable sweep, incidence, camber or area; warping, folding for storage purposes).
• Wings with fixed fences or spoilers.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Stabilising surfaces</th>
<th>B64C 5/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hang-glider wings (delta-shaped)</td>
<td>B64C 31/032</td>
</tr>
<tr>
<td>Hang-glider wings (parafoil)</td>
<td>B64C 31/036</td>
</tr>
<tr>
<td>Ornithopter wings</td>
<td>B64C 33/02</td>
</tr>
<tr>
<td>Disc- or ring-shaped wings</td>
<td>B64C 39/06 - B64C 39/068</td>
</tr>
<tr>
<td>Flying wings</td>
<td>B64C 39/10</td>
</tr>
</tbody>
</table>

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Working with plastics: documents describing plastic composite fuselage shells can also be attributed the symbols</th>
<th>B29C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laminates only: when the emphasis is on manufacturing issues rather than the function in an aircraft context</td>
<td>B32B</td>
</tr>
</tbody>
</table>
**B64C 3/141**

{Circulation Control Airfoils}

**Definition statement**

This place covers:

Example (from US3756540):

**B64C 3/16**

Frontal aspect

**Definition statement**

This place covers:

Shape of wing(s) when viewed from the front, e.g. dihedral, anhedral, gull-wing.

**B64C 3/18**

Spars; Ribs; Stringers (attaching wing unit to fuselage **B64C 1/26**)

**Relationships with other classification places**

For fuselages: **B64C 1/06**

**References**

**Limiting references**

This place does not cover:

| Attaching wing unit to fuselage | **B64C 1/26** |
B64C 3/182
{Stringers, longerons}

Relationships with other classification places
For fuselages: B64C 1/064

Synonyms and Keywords
The expression "stringer" is often also used in German

B64C 3/185
{Spars}

Relationships with other classification places
For fuselages: B64C 1/065

B64C 3/20
Integral or sandwich constructions (layered products or sandwich constructions in general B32B)

References
Limiting references
This place does not cover:

| Layered products or sandwich constructions in general | B32B |

B64C 3/26
Construction, shape, or attachment of separate skins, e.g. panels

Relationships with other classification places
For fuselages: B64C 1/12

B64C 3/30
comprising inflatable structural components (connection of valves to inflatable elastic bodies B60C 29/00)

Relationships with other classification places
Inflatable structural components for fuselages: B64C 1/34

References
Limiting references
This place does not cover:

| For variation of shape, e.g. camber, for aerodynamical purposes | B64C 3/46 |
| Connection of valves to inflatable elastic bodies | B60C 29/00 |
B64C 3/32
specially adapted for mounting power plant

Relationships with other classification places
Aircraft characterised by the power plant being within or attached to the wing (piston): B64D 27/06; (turboprop): B64D 27/12; (turbofan and turbojet): B64D 27/18.
Aircraft characterised by the power plant mounting: B64D 27/26.

B64C 3/34
Integrally-constructed tanks, e.g. for fuel (other aircraft fuel tanks or fuel systems B64D)

References
Limiting references
This place does not cover:

Other aircraft fuel tanks or internal fuel systems B64D 37/00 - B64D 37/34

B64C 3/36
Structures adapted to reduce effects of aerodynamic or other external heating {(cooling structural parts of aircrafts with air flow B64D 13/006)}

Definition statement
This place covers:
Cooling of the external wing skin

Relationships with other classification places
For fuselages: B64C 1/38

References
Limiting references
This place does not cover:

Cooling structural parts of aircraft with air from an air-treatment apparatus (e.g. environmental control system) in the aircraft B64D 13/006
**B64C 3/46**
by inflatable elements (connection of valves to inflatable elastic bodies
**B60C 29/00**)

**Definition statement**

*This place covers:*

Example of variation of camber by inflatable elements (WO0224525):
This subgroup also includes documents where additionally wing skins are elastic (morphing; see also Glossary of Terms). Example (EP1442976):

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Connection of valves to elastic bodies</th>
<th>B60C 29/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflatable elements for deicing only (e.g. inflatable leading edge boots)</td>
<td>B64D 15/166</td>
</tr>
</tbody>
</table>

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

| Morphing | modification of wing shape by deformation, e.g. elastic skin |
**B64C 3/48**

**by relatively-movable parts of wing structures**

**Definition statement**

*This place covers:*

Example of variation of camber by movable elements (EP2147856):
This subgroup also includes documents where additionally wing skins are elastic (morphing; see also Glossary of Terms). Example (WO2009137143):

References

Limiting references

This place does not cover:

Connection of valves to elastic bodies
Movable wing elements for deicing only

Inflatable elements for deicing only (e.g. inflatable leading edge boots)

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphing</td>
<td>Modification of wing shape by deformation, e.g. employing elastic skin</td>
</tr>
</tbody>
</table>

**B64C 3/50**

by leading or trailing edge flaps (ailerons B64C 9/00)

**Definition statement**

*This place covers:*

Integral leading and/or trailing edge parts of wings forming flaps by being movable by (elastic) deformation.

**Relationships with other classification places**

Bodily displaceable control surfaces: B64C 9/08

**References**

*Limiting references*

*This place does not cover:*

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ailerons</td>
<td>B64C 9/00</td>
</tr>
<tr>
<td>Rudders and hingedly connected flaps</td>
<td>B64C 9/00 - B64C 9/30</td>
</tr>
</tbody>
</table>

**B64C 3/54**

Varying in area (flaps extendable to increase camber B64C 3/44)

**References**

*Limiting references*

*This place does not cover:*

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flaps extendable to increase camber</td>
<td>B64C 3/44</td>
</tr>
</tbody>
</table>
B64C 3/546
{by foldable elements}

Definition statement
This place covers:
Folding wings or elements thereof to provide variable aerodynamic lift. Example (GB605075):

References
Limiting references
This place does not cover:
Folding wings or elements for reducing dimensions for storage purposes  B64C 3/56

B64C 3/56
Folding or collapsing to reduce overall dimensions of aircraft

Definition statement
This place covers:
Folding or collapsible wings or elements thereof to reduce overall aircraft size for storage, as typically used by aircraft on aircraft carriers or by trailerable aircraft.

Relationships with other classification places
Relatively movable fuselage parts for reducing overall size for storage: B64C 1/32

References
Limiting references
This place does not cover:
Folding wings or elements thereof to provide variable, aerodynamic lift  B64C 3/546
**B64C 3/58**

provided with fences or spoilers (adjustable for control purposes B64C 9/00)

References

*Limiting references*

This place does not cover:

| Adjustable for control purposes | B64C 9/00 |

**B64C 5/00**

Stabilising surfaces (attaching stabilising surfaces to fuselage B64C 1/26)

Definition statement

This place covers:

Substantially fixed stabilising structures such as tailplanes, noseplanes and fins. Adjustable stabilising structures only when adjustment is limited and not for primary control purposes, e.g. an adjustable tail plane)

References

*Limiting references*

This place does not cover:

| Attaching stabilising surfaces to fuselage | B64C 1/26 |

**B64C 5/02**

Tailplanes (fins B64C 5/06)

References

*Limiting references*

This place does not cover:

<table>
<thead>
<tr>
<th>Fins</th>
<th>B64C 5/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movable parts</td>
<td>B64C 9/00</td>
</tr>
</tbody>
</table>

**B64C 5/04**

Noseplanes

References

*Limiting references*

This place does not cover:

| Canard-type aircraft: B64C 39/12 |   |

Relationships with other classification places

Canard-type aircraft: B64C 39/12
B64C 5/06
Fins (specially for wings B64C 5/08)

References
Limiting references
This place does not cover:

| Specially for wings | B64C 5/08 |

B64C 5/08
mounted on or supported by wings

Definition statement
This place covers:
Also some winglets

References
Informative references

| Surfaces at the wing tip creating vortices | B64C 23/065 |

B64C 5/10
adjustable

References
Informative references

| Adjustable to produce different aerodynamic forces for control purposes | B64C 9/00 |

B64C 5/12
for retraction against or within fuselage or nacelle

References
Informative references

| Adjustable to produce different aerodynamic forces for control purposes | B64C 9/34 |
**B64C 5/14**

Varying angle of sweep

**Relationships with other classification places**
Variable wing sweep: **B64C 3/40**

**B64C 5/16**

about spanwise axes

**Definition statement**

*This place covers:*
For example horizontal stabilisers with limited movement about a spanwise axis for pitch trim.

**B64C 5/18**

in area (attaching stabilising surfaces to fuselage **B64C 1/26**)

**Relationships with other classification places**
Varying wing area for variation in lift: **B64C 3/54 - B64C 3/546**

**References**

*Limiting references*

*This place does not cover:*

| Attaching stabilising surfaces to fuselages | **B64C 1/26** |

**B64C 7/00**

Structures or fairings not otherwise provided for

**Definition statement**

*This place covers:*
- Any structure or fairing which is not provided for elsewhere in **B64**;
- Sealing strips or fairings between fuselages and stabilising surfaces or wings;
- Some gap seals for control surfaces (see also **B64C 9/02**);
- Helicopter rotor hub fairings (see also the Special Rules of Classification below)

**Relationships with other classification places**
Mounting control surfaces: **B64C 9/02**

**Special rules of classification**
Helicopter rotor hub fairings are concurrently attributed the symbols **B64C 7/00** and **B64C 27/04**
B64C 7/02

Nacelles

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Power plant nacelles | B64D 29/00 |

B64C 9/00

Adjustable control surfaces or members, e.g. rudders (trimming stabilising surfaces B64C 5/10)

Definition statement

This place covers:
Control surfaces such as rudders, ailerons, flaps, elevators, trim/servo tabs and air brakes, as well as their mounting and balancing.

References

Limiting references

This place does not cover:

| Trimming stabilising surfaces | B64C 5/10 |

B64C 9/02

Mounting or supporting thereof

Definition statement

This place covers:
Mechanical (hinged, sliding) connections between control surfaces (e.g. aileron) and supporting part (wings).

Gap covers and seals.

Relationships with other classification places

Structures and fairings not otherwise provided for: B64C 7/00

B64C 9/04

with compound dependent movements

Definition statement

This place covers:
For example flaperons
B64C 9/08
bodily displaceable (varying camber of wings B64C 3/44)

References
Limiting references
This place does not cover:

| Varying camber of wings | B64C 3/44 |

B64C 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)

References
Limiting references
This place does not cover:

| Takes precedence | B64C 9/04 |
| Adjusting surfaces of different type of function | B64C 9/12 |

B64C 9/14
forming slots (boundary-layer control B64C 21/00)

Relationships with other classification places
Fixed leading or trailing edge slots: B64C 3/28

References
Limiting references
This place does not cover:

| Boundary-layer control | B64C 21/00 |

B64C 9/146
{at an other wing location than the rear or the front (wings provided with fixed fences or spoilers B64C 3/58)}

References
Limiting references
This place does not cover:

| Wings provided with fixed fences or spoilers | B64C 3/58 |
**B64C 9/16**

at the rear of the wing

**Definition statement**

*This place covers:*

Mainly actuating connections and linkages in the region of the flap and the supporting structure (e.g. wing), as well as further details such as covers. Aerodynamic (airflow) aspects are attributed B64C 9/18 (single flaps) or B64C 9/20 (multiple flaps).

This and the associated subgroups also covers trailing edge flaps where no slot is formed (e.g. conventional split flaps)

**B64C 9/18**

by single flaps

**Definition statement**

*This place covers:*

- Aerodynamic (airflow) aspects.
- Single flap in a given chordwise direction.

**B64C 9/20**

by multiple flaps

**Definition statement**

*This place covers:*

- Aerodynamic (airflow) aspects.
- Multiple flaps in a given chordwise direction.

**B64C 9/22**

at the front of the wing

**Definition statement**

*This place covers:*

Mainly actuating connections and linkages in the region of the flap and the supporting structure (e.g. wing), as well as further details such as covers. Aerodynamic (airflow) aspects are attributed B64C 9/24 (single flaps) or B64C 9/26 (multiple flaps).

This and the associated subgroups also covers leading edge flaps where no slot is formed (e.g. conventional Krüger flaps).

**B64C 9/24**

by single flap

**Definition statement**

*This place covers:*

- Aerodynamic (airflow) aspects.
- Single flap in a given chordwise direction.
**B64C 9/26**

by multiple flaps

**Definition statement**

This place covers:

- Aerodynamic (airflow) aspects.
- Multiple flaps in a given chordwise direction.

**B64C 9/32**

Air braking surfaces (braking by parachutes B64D 17/80)

**Relationships with other classification places**

Stabilising surfaces for retraction against or within fuselage or nacelle: B64C 5/12

**References**

**Limiting references**

This place does not cover:

| Braking by parachutes | B64D 17/80 |

**B64C 9/34**

collapsing or retracting against or within other surfaces or other members

**Relationships with other classification places**

Stabilising surfaces for retraction against or within fuselage or nacelle: B64C 5/12

**B64C 9/38**

Jet flaps

**Definition statement**

This place covers:

Example (US4674716):

![Diagram of jet flaps]

FIG.2
Example (US4398687):

B64C 11/00

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

Definition statement

This place covers:

- Propeller hubs, blades and pitch-changing mechanisms.
- Propeller vibration absorbing or balancing means.- Arrangements of multiple propellers (e.g. coaxial propellers).
- Active or passive propeller measures for noise reduction (only such disclosures are attributed the symbol B64C 11/00).

Relationships with other classification places

Helicopter rotor blades with tips for noise reduction: B64C 27/463

References

Limiting references

This place does not cover:

| In rotors and blades for rotorcraft | B64C 27/021, B64C 27/32, B64C 27/46 |
| In marine propulsion               | B63H                                    |
| In gas turbines (except for some documents relating to propellers of the "unducted fan" or "open rotor" type) | F02C, F01D                             |
| In wind motors/generators          | F03D                                    |
| In pumps                           | F04D                                    |
| In (domestic) ventilation fans     | F04D                                    |

Special rules of classification

Propellers and associated components are only attributed B64C 11/00 and/or associated subgroup symbols when they are disclosed as being for use with aircraft, generally for producing longitudinal thrust.
B64C 11/008
(characterised by vibration absorbing or balancing means (for rotorcraft B64C 27/001))

References

Limiting references
This place does not cover:

| For rotorcraft | B64C 27/001 |

B64C 11/22
Solid blades

Definition statement
This place covers:
Mainly wooden blades.

B64C 11/24
Hollow blades

Definition statement
This place covers:
Mainly metal blades.

B64C 11/26
Fabricated blades

Definition statement
This place covers:
Mainly composite blades.

B64C 11/46
Arrangements of or constructional features peculiar to multiple propellers (B64C 11/306 takes precedence)

Definition statement
This place covers:
This and the associated subgroups B64C 11/48 and B64C 11/50 can also cover multiple propellers of the "unducted fan" or "open rotor" type.

References

Limiting references
This place does not cover:

| Takes precedence | B64C 11/306 |
B64C 13/00

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

Definition statement

This place covers:

- Control sticks and yokes, stick shakers, tactile or force-feedback.
- Mechanical, fluid or electric transmission means to the control surface(s), including use of autopilots, fly-by-wire and fly-by-light.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Asymmetric flap detection       | B64D 45/0005 |

B64C 13/04

actuated personally

Definition statement

This place covers:

Control sticks and yokes as well as associated components and details in the region thereof.

Relationships with other classification places

Initiating means in rotorcraft: B64C 27/56

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Controlling members in general (e.g. joysticks, handles) | G05G |

B64C 13/06

adjustable to suit individual persons

Definition statement

This place covers:

For example longitudinal adjustment of rudder pedal assemblies.

B64C 13/10

comprising warning devices

Definition statement

This place covers:

- Vibrating control sticks or yokes ("stick shakers").
• Tactile cueing

Relationships with other classification places
Artificial feel (e.g. “force feedback”) in the transmitting system: mechanical B64C 13/345, fluid B64C 13/46, electric B64C 13/507

B64C 13/12
Dual control apparatus

Definition statement
This place covers:
Devices characterized by having two inputs actuated to effect control.

![Diagram of dual control apparatus]

B64C 13/14
Lockable (locking in position to suit individual persons B64C 13/06)

Definition statement
This place covers:
For example locking a yoke against the dashboard to lock the control surfaces against wind gusts

References

Limiting references
This place does not cover:
Locking in position to suit individual persons B64C 13/06

B64C 13/16
Actuated automatically, e.g. responsive to gust detectors

Definition statement
This place covers:
Also covers for example automatic rudder/aileron deflection to counter asymmetric thrust.
Relationships with other classification places

Automatic or condition responsive initiating members in rotorcraft: B64C 27/57.

Fly-by-wire or fly-by-light: B64C 13/503.

Automatic or condition responsive initiating members in aircraft power plant control: B64D 31/06 - B64D 31/12.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Autopilots, stability augmentation systems, gust detection response and yaw dampers per se and with the emphasis on control technology G05D 1/00 - G05D 1/12

B64C 13/18

using automatic pilot

Definition statement

This place covers:
Autopilots, stability augmentation systems, yaw dampers, mostly in the context of the whole or a major part of the transmitting system.

Relationships with other classification places

Fly-by-wire or fly-by-light: B64C 13/503.

B64C 13/20

using radiated signals

Definition statement

This place covers:
For example radio control

Relationships with other classification places


References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Remote controlled toy aircraft A63H 27/00
Air traffic control G08G
readily revertible to personal control

Definition statement
This place covers:
For example unmanned aerial vehicles, which can also be flown by a pilot (e.g. aircraft converted to "drones" or aerial targets).

Transmitting means

Definition statement
This place covers:
Transmitting means between the initiating means (e.g. control stick) and the control surface (e.g. aileron).

Documents relating to power amplifying actuators (fluid, electric, mechanic) in aircraft control surfaces transmitting means are attributed this and the symbols of the associated subclasses when their use, mounting and/or function in the context of the transmitting means as a whole is described.

using toothed gearing

Definition statement
This place covers:
Only intermeshing toothed gearing.

using fluid pressure

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Hydraulic circuits | F15B |

overriding of personal controls; with automatic return to inoperative position

Relationships with other classification places
Automatically activated personal initiating means: B64C 13/16 - B64C 13/22.
Automatic or condition responsive personal initiating members in rotorcraft: B64C 27/57.
Automatic or condition responsive initiating members in aircraft power plant control: B64D 31/06 - B64D 31/12.
B64C 13/46
with artificial feel

Relationships with other classification places
Personally activated initiating means with warning devices (e.g. "stick shakers", tactile cueing):
B64C 13/10.

B64C 13/503
{Fly-by-Wire}

Definition statement
This place covers:
Also covers fly-by-light.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

Fly-by-wire or fly-by-light technology with the emphasis on control technology
G05D 1/00 - G05D 1/12

B64C 15/00
Attitude, flight direction, or altitude control by jet reaction

Definition statement
This place covers:
Control of aircraft by jet(s) generated by any means (including propellers).

References
Limiting references
This place does not cover:
Vertical take-off and landing (VTOL) aircraft
B64C 29/00

B64C 15/02
the jets being propulsion jets

Definition statement
This place covers:
Thrust vectoring.

Relationships with other classification places
See also B64D 33/04 for arrangements of exhaust outlets or jet pipes.
**B64C 15/12**

the power plant being tiltable

**Definition statement**

*This place covers:*

Thrust vectoring obtained by rotating the power unit as a whole.

**B64C 15/14**

the jets being other than main propulsion jets (jet flaps B64C 9/38)

**Definition statement**

*This place covers:*

Aircraft control obtained by using dedicated jets.

**References**

**Limiting references**

*This place does not cover:*

<table>
<thead>
<tr>
<th>Jet flaps</th>
<th>B64C 9/38</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary layer control</td>
<td>B64C 21/04</td>
</tr>
</tbody>
</table>

**B64C 17/00**

Aircraft stabilisation not otherwise provided for

**Definition statement**

*This place covers:*

This group contains documents concerning aircraft stabilisation which are not classified in e.g. B64C 5/00.

**B64C 17/02**

by gravity or inertia-actuated apparatus

**Definition statement**

*This place covers:*

Stability control by e.g. shifting the CoG

**B64C 17/04**

by pendular bodies

**Definition statement**

*This place covers:*

Pendulum stability is achieved when the centre of lift is above the CoG of the aircraft, or by using a dedicated pendulum.
**B64C 17/06**

by gyroscopic apparatus (automatic pilot control **B64C 13/18**)

**Definition statement**

*This place covers:*

A gyro is used to directly stabilize the aircraft.

**References**

*Limiting references*

*This place does not cover:*

| Automatic pilot control | **B64C 13/18** |

---

**B64C 17/08**

by ballast supply or discharge (for lighter-than-air aircraft **B64B**)

**Relationships with other classification places**

See **B64B** for lighter-than-air aircraft.

---

**B64C 17/10**

Transferring fuel to adjust trim

**Definition statement**

*This place covers:*

Displacement of the CoG, aimed at reaching a desired trim condition, is achieved by fuel transfer between the internal tanks of the aircraft.

---

**B64C 19/00**

Aircraft control not otherwise provided for

**Definition statement**

*This place covers:*

Control of aircraft by using e.g. gyroscopic effects, vortex generators, moving aircraft parts and/or surfaces not provided for in **B64C 9/00** or, in general, systems not provided for in **B64C 13/00** or **B64C 15/00**.

---

**B64C 21/00**

Influencing air-flow over aircraft surfaces by affecting boundary-layer flow (boundary-layer control in general **F15D**)

**Definition statement**

*This place covers:*

Any device/method operating within the airfoil boundary layer to influence the air flow around the airfoil, especially in order to control boundary layer separation.
Relationships with other classification places
Classify also in B64C 23/00 if necessary.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Hydrodynamic or hydrostatic features</th>
<th>B63B 1/34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary layer control in general</td>
<td>F15D 1/00</td>
</tr>
</tbody>
</table>

B64C 21/02
by use of slot, ducts, porous areas, or the like

Definition statement
This place covers:
Cavities, slots, holes along a structural surface whereby the net flow is null.

B64C 21/025
{for simultaneous blowing and sucking}

Definition statement
This place covers:
Fluid is blown and sucked

References
Limiting references
This place does not cover:
Takes precedence: B64C 21/08

B64C 21/04
for blowing (B64C 21/08 takes precedence)

Definition statement
This place covers:
Fluid is only blown.

References
Limiting references
This place does not cover:
Takes precedence: B64C 21/08
**B64C 21/06**

for sucking ([B64C 21/08](#) takes precedence)

**Definition statement**

*This place covers:*

Fluid is only sucked

**References**

*Limiting references*

*This place does not cover:*

| Takes precedence | B64C 21/08 |

---

**B64C 21/08**

**Definition statement**

*This place covers:*

Fluid flow is explicitly adjustable by e.g. valves, variable aperture or slot area, variable pump action or fluid pressure.

**References**

*Limiting references*

*This place does not cover:*

Always classify, in the case or blown and/or sucked fluid, also in B64C 21/025 or B64C 21/04 or B64C 21/06.

---

**B64C 21/10**

using other surface properties, e.g. roughness

**Special rules of classification**

The properties referred to are e.g. roughness or riblets.

---

**B64C 23/00**

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

**Definition statement**

*This place covers:*

Air-flow over aircraft surfaces influenced e.g. by magnetic, electric or piezoelectric panels, by static charges, by ultrasound, by special shape, by rotating bodies.

**Relationships with other classification places**

Influencing boundary layer: [B64C 21/00](#).
References

Limiting references
This place does not cover:

| Attitude control by jet reaction | B64C 15/00 |

B64C 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}

Relationships with other classification places
Also B64C 21/00 if boundary layer explicitly involved.

B64C 23/02
by means of rotating members of cylindrical or similar form

Relationships with other classification places
Circulation control airfoils: B64C 3/141
Using Magnus effect: B64C 23/08

B64C 23/04
by generating shock waves

Definition statement
This place covers:
Shock wave modification devices and methods. Reduction of shock drag as main searched technical effect.

Relationships with other classification places

<table>
<thead>
<tr>
<th>Supersonic type aircraft</th>
<th>B64C 30/00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific airfoil shape</td>
<td>B64C 3/14</td>
</tr>
</tbody>
</table>

B64C 23/06
by generating vortices

Relationships with other classification places

| Fins mounted on wings | B64C 5/08 |


**B64C 23/065**

{at the wing tips}

**Definition statement**

*This place covers:*

Devices of any type (winglets, fins, turbines, splines) arranged at the wing tip.

**Relationships with other classification places**

Helicopter rotor blades tips: B64C 27/463

Fins on wings: B64C 5/08

**B64C 23/069**

{using one or more wing tip airfoil devices, e.g. winglets, splines, wing tip fences or raked wingtips}

**Definition statement**

*This place covers:*

A wing tip airfoil device is any separately identifiable airfoil member at the tip of the wing which creates or contributes in affecting vortices.

**B64C 23/08**

using Magnus effect

**Definition statement**

*This place covers:*

Devices having a cylindrical or spherical form which explicitly generate a force by using the Magnus effect.

**Relationships with other classification places**

Circulation control airfoils: B64C 3/141

**B64C 25/00**

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

**Definition statement**

*This place covers:*

- Any structure that supports/arrest the aircraft on a surface.
- Wheels supported by shock absorbers, skis, floats, pontoons or combinations thereof.
- Braking systems specific for aircraft.
- Arrester hooks. Control/actuating systems thereof.

**References**

**Limiting references**

*This place does not cover:*

| Air-cushion alighting gear | B60V 3/08 |
**B64C 25/04**  
Arrangement or disposition on aircraft

**Definition statement**
*This place covers:*
Arrangement or disposition on aircraft with respect to the aircraft structure. Inter-relationship thereof.

**B64C 25/16**  
Fairings movable in conjunction with undercarriage elements

**Definition statement**
*This place covers:*
Systems for opening and closing undercarriage door bays. Fairings in general whose movement is performed in conjunction with the landing gear movement.

**B64C 25/18**  
Operating mechanisms

**Definition statement**
*This place covers:*
General methods and systems for operating unspecified aircraft landing gears.

**B64C 25/20**  
mechanical

**Definition statement**
*This place covers:*
Operating mechanisms comprising levers, pulleys, cables, gear wheels and/or characterised essentially by the kinematic aspects of the retracting/folding displacement.

**Relationships with other classification places**
Locking mechanisms: [B64C 25/26](#)

**B64C 25/22**  
fluid

**Definition statement**
*This place covers:*
Operating mechanisms characterised by the control circuits/operating actuators being hydraulic or pneumatic.
B64C 25/24
electric

**Definition statement**

*This place covers:*

Operating mechanisms characterised by using electrical or electromagnetic actuators.

B64C 25/26
Control or locking systems therefor

**Definition statement**

*This place covers:*

Uplock assemblies for retaining and releasing landing gear systems, bracing locking devices, undercarriage locking and unlocking systems in general.

**Relationships with other classification places**

Operating systems, mechanical aspects: B64C 25/20

B64C 25/28
with indicating or warning devices

**Definition statement**

*This place covers:*

Ground lock detection devices, landing gear warning systems, landing gear verification systems.

**Relationships with other classification places**


devices specially adapted to indicate the position of a movable element of the aircraft, e.g. landing gear | B64D 45/0005

B64C 25/30
emergency actuated

**Definition statement**

*This place covers:*

Emergency release/actuation actuators and relevant control.

**Relationships with other classification places**


devices specially adapted to indicate the position of a movable element of the aircraft, e.g. landing gear | B64D 45/0005
B64C 25/32
characterised by the ground or like engaging elements (arrester hooks B64C 25/68)

References
Limiting references
This place does not cover:

| Arrester hooks: | B64C 25/68 |

B64C 25/36
Arrangements or adaptations of wheels, tyres, or axles in general (construction of wheels or axles B60B; construction of tyres in general B60C)

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Construction of wheels or axles | B60B |
| Construction of tyres | B60C |
**B64C 25/38**

endless-track type

**Definition statement**

*This place covers:*

![Diagram of endless-track type](image)

**B64C 25/40**

the elements being rotated before touch-down

**Definition statement**

*This place covers:*

Pre-landing acceleration devices for aircraft wheels, generally passive.

**B64C 25/405**

{Powered wheels, e.g. for taxing}

**Definition statement**

*This place covers:*

Motorised wheels, any type of motor or installation thereof.
**B64C 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**)

**References**

**Limiting references**

This place does not cover:

| 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 |

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Vehicle brake control systems or parts thereof | B60T |

**B64C 25/423**

{Braking devices acting by reaction of gaseous medium (**B64C 25/426** takes precedence; using rockets **B64D 27/023**)}

**References**

**Limiting references**

This place does not cover:

| Takes precedence | B64C 25/426 |
| Using rockets | B64D 27/023 |
| Thrust reversers | B64D 33/04 |

**Special rules of classification**

Originally meant for covering e.g. thrust reversers it is no longer used in this respect.

Thrust reversers shall not be classified in **B64C 25/423**.

**B64C 25/426**

{Braking devices providing an automatic sequence of braking}

**Definition statement**

This place covers:

Braking methods/systems wherein the braking sequence is controlled by an electronic control unit and performed in accordance with predetermined steps, including controlling the brakes independently, to achieve a predetermined target, e.g. to achieve a predetermined deceleration rate or to optimize the braking force.
B64C 25/44
Actuating mechanisms

Definition statement
This place covers:
Regulators, disks, valves.

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Arrangements of brakes specially adapted for aircraft | B60T 8/325 |

B64C 25/46
Brake regulators for preventing skidding or aircraft somersaulting { (anti-skidding regulators; electric or electronic controllers therefor B60T 8/1703) } 

References
Informative references
Attention is drawn to the following places, which may be of interest for search:

| Anti-skidding regulators; electric or electronic controllers therefor | B60T 8/1703 |

B64C 25/50
Steerable undercarriages; Shimmy damping (steering devices applicable to land vehicles B62D)

Definition statement
This place covers:
Undercarriages which can be steered, relevant control systems and actuators, steering angle warning systems.

Relationships with other classification places
When operated in combination with towing vehicles: B64F 1/22

B64C 25/505
{Shimmy damping}

Definition statement
This place covers:
Wheel shimmy is a condition in which the landing gear wheel or wheels oscillate from side to side along a straight line parallel to the direction of travel of the aircraft. Documents concerning this problem are classified here.
**B64C 25/52**

Skis or runners

**Definition statement**

*This place covers:*

Skis, skids, runners, various ground engaging structures, especially suitable for helicopters.

**Relationships with other classification places**

Safety devices for helicopters: B64C 27/006

**B64C 25/56**

inflatable (connection of valves to inflatable elastic bodies B60C 29/00)

**Definition statement**

*This place covers:*

**B64C 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)

**Relationships with other classification places**

Shimmy dampers: B64C 25/505
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Suspensions in generals</th>
<th>B60G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock absorbers per se</td>
<td>F16F</td>
</tr>
</tbody>
</table>

B64C 25/60

Oleo legs

Definition statement

This place covers:

Any shock absorber comprising hydraulic or pneumatic cylinders.

B64C 25/66

Convertible alighting gear; Combinations of different kinds of ground or like engaging elements

Definition statement

This place covers:

The ground engaging elements can be converted from e.g. wheeled to floats or skis and vice-versa depending on the specific landing surface.

B64C 25/68

Arrester hooks (arresting gear, e.g. on aircraft carriers B64F)

Definition statement

This place covers:

Comprises capturing/retrieving systems on aircraft.

Relationships with other classification places

Arresting/launching/towing gears: B64F 1/02, B64F 1/04

B64C 27/00

Rotorcraft; Rotors peculiar thereto (alighting gear B64C 25/00)

Definition statement

This place covers:

- Vibration damping, safety devices and rotor tracking/balancing devices for rotorcraft rotors.
- Gyroplanes and autogyros, and rotors therefor.
- Helicopters, flying platforms and compound rotorcraft/helicopters.
- Rotors (including tail rotors), hubs, blades and rotor blade adjustment control (including flying controls, such as collective and pitch levers).
References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alighting gear for rotorcraft</td>
<td>B64C 25/00</td>
</tr>
</tbody>
</table>

B64C 27/001

{Vibration damping devices}

Definition statement

This place covers:

Vibration or noise damping by means of isolators on the rotor head, suspended masses, actuators acting on the complete rotor assembly or active noise cancellation.

References

Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Reference</th>
<th>CPC Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise or vibration damping by specifically shaped rotor blade tips</td>
<td>B64C 27/463</td>
</tr>
<tr>
<td>Noise or vibration damping by individual rotor blade control using flaps on the blades</td>
<td>B64C 27/615</td>
</tr>
<tr>
<td>Noise or vibration damping by individual control of rotor blades using individual actuators</td>
<td>B64C 27/72</td>
</tr>
</tbody>
</table>

B64C 27/006

{Safety devices}

Definition statement

This place covers:

For example wire cutters or detectors, helicopter-specific use of airbags, distance sensors for tail booms, rotor blade crack detection, tail rotor guards, emergency tail rotor drives or emergency anti-torque means.

Relationships with other classification places

Aircraft emergency devices: B64D 25/00

B64C 27/008

{Rotors tracking or balancing devices}

Definition statement

This place covers:

For example rotor blade tip weights or rotor blade tracking apparatus and methods.
B64C 27/021

{Rotor or rotor head construction (for helicopters B64C 27/32)}

References

Limiting references

This place does not cover:

| For helicopters | B64C 27/32 |

B64C 27/04

Helicopters

Special rules of classification

The following helicopter components are not attributed any of the symbols in B64C 27/00 but only the symbol B64C 27/04 and one of the following associated, applicable symbols:

- Fuselage structures and windows: B64C 1/00 - B64C 1/40
- Rotor hub fairings: B64C 7/00
- Armament: B64D 7/00 - B64D 7/08
- Underslung loads: B64D 1/22
- Mounting cameras: B64D 47/08

B64C 27/20

Rotorcraft characterised by having shrouded rotors, e.g. flying platforms

Relationships with other classification places

- Shrouded propellers: B64C 11/001
- Unmanned aerial vehicles: B64C 39/024

References

Limiting references

This place does not cover:

| With wings | B64C 29/0025 |

B64C 27/28

with forward-propulsion propellers pivotable to act as lifting rotors

Definition statement

This place covers:

Mostly tiltrotor aircraft requiring an anti-torque tail rotor.
References

Limiting references
This place does not cover:

| Takes preference | B64C 29/0033 |

B64C 27/32

Rotor hubs, special or unconventional rotors.

Definition statement
This place covers:

Rotor hubs, special or unconventional rotors.

Relationships with other classification places
Propeller hubs: B64C 11/02

References

Limiting references
This place does not cover:

| Features common to rotors and propellers | B64C 11/00 |

B64C 27/33

having flexing arms

Definition statement
This place covers:

Flexbeams for rigid rotors.

Relationships with other classification places
Root attachment to rotor head: B64C 27/48

B64C 27/35

having elastomeric joints

Definition statement
This place covers:

Elastomeric joints for articulated rotors

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Springs | F16F |
**B64C 27/37**

having articulated joints (**B64C 27/33**, **B64C 27/35** take precedence)

References

*Limiting references*

This place does not cover:

| Take preference                  | **B64C 27/33**, **B64C 27/35** |

**B64C 27/467**

Aerodynamic features {(**B64C 27/463** takes precedence)}

References

*Limiting references*

This place does not cover:

| Takes preference                  | **B64C 27/463** |

**B64C 27/473**

Constructional features {(**B64C 27/463** takes precedence)}

Relationships with other classification places

Constructional features for propeller blades: **B64C 11/20** - **B64C 11/26**

References

*Limiting references*

This place does not cover:

| Takes preference                  | **B64C 27/463** |
| Rotors for wind motors            | **F03D** |

**B64C 27/48**

Root attachment to rotor head

Relationships with other classification places

Root attachment of propeller blades: **B64C 11/04** - **B64C 11/12**

**B64C 27/50**

Blades foldable to facilitate stowage of aircraft

Relationships with other classification places

Foldable propeller blades: **B64C 11/28**

For autogyros: **B64C 27/022**
**B64C 27/51**

Damping of blade movements

**Relationships with other classification places**

Transmitting means for controlling lead-lag movement of rotor blades: [B64C 27/635](#)

**B64C 27/52**

Tilting of rotor bodily relative to fuselage (of see-saw type construction [B64C 27/43](#))

**References**

*Limiting references*

This place does not cover:

| See-saw type construction | [B64C 27/43](#) |

**B64C 27/56**

Initiating means, e.g. actuated personally

**Definition statement**

This place covers:

Cyclic sticks and collective levers as well as associated components and details in the region thereof.

**Relationships with other classification places**

Personal control surface initiating means in aeroplanes: [B64C 13/04](#)

**References**

*Informative references*

Attention is drawn to the following places, which may be of interest for search:

| Controlling members in general (e.g. joysticks, handles) | [G05G](#) |

**B64C 27/57**

automatic or condition responsive, e.g. responsive to rotor speed, torque or thrust

**Definition statement**

This place covers:

Can also cover maintaining hover position or attitude.

**Relationships with other classification places**

Automatic or condition responsive initiating members in aeroplanes: [B64C 13/16](#) - [B64C 13/22](#)

Fly-by-wire or fly-by-light: [B64C 13/503](#)
Automatic or condition responsive initiating members in aircraft power plant control:
B64D 31/06 - B64D 31/12

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| With the emphasis on control technology | G05D 1/00 - G05D 1/12 |

B64C 27/58

Transmitting means

Definition statement
This place covers:
Transmitting means downstream of the cyclic stick and the collective lever.

Relationships with other classification places
Transmitting means for aeroplanes: B64C 13/24 - B64C 13/503

B64C 27/72

Means acting on blades

Definition statement
This place covers:
Individual blade control by acting directly on the blade, e.g. by a separate actuator for each blade.

References

Limiting references
This place does not cover:

| Individual rotor blade control using flaps on the blades | B64C 27/615 |

B64C 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)

Definition statement
This place covers:
Vertical take-off and landing (VTOL) aircraft, e.g. of the BAe Harrier or Tiltrotor types.

References

Limiting references
This place does not cover:

<p>| Attitude, flight direction or altitude control by jet reaction | B64C 15/00 |</p>
<table>
<thead>
<tr>
<th>B64C 29/00</th>
<th>CPC - B64C - 2020.02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotorcraft</td>
<td>B64C 27/00</td>
</tr>
<tr>
<td>Air-cushion vehicles</td>
<td>B60V</td>
</tr>
</tbody>
</table>

**B64C 29/0025**

{the propellers being fixed relative to the fuselage}

**References**

*Limiting references*

This place does not cover:

| Without wings | B64C 27/20 |

**B64C 29/0033**

{the propellers being tiltable relative to the fuselage}

**References**

*Limiting references*

This place does not cover:

| With anti-torque means (e.g. tail rotor) | B64C 27/28 |

**B64C 29/0066**

{with horizontal jet and jet deflector}

**Definition statement**

This place covers:

Also covers horizontal propeller/blower and airflow deflector.

**B64C 30/00**

Supersonic-type aircraft

**Definition statement**

This place covers:

- Complete aircraft or structural features described as facilitating supersonic/hypersonic flight, including special shapes and planforms of complete aircraft.
- Sonic boom alleviation means and methods.

**References**

*Limiting references*

This place does not cover:

| Airfoil profiles | B64C 3/14 |
B64C 31/00

Aircraft intended to be sustained without power plant; Powered hang-glider-type aircraft; Microlight-type aircraft

Definition statement

This place covers:

• Gliders/sailplanes, accessories therefor when they cannot be classified elsewhere.- Microlight, ultralight and Light Sport Aircraft, and safety devices therefore (e.g. Ballistic Rescue Systems).
• Hang-gliders (e.g. of the "Rogallo" type).
• Man-powered (e.g. using pedals to drive a propeller) aircraft.
• Kites.

B64C 31/02

Gliders, e.g. sailplanes (hang-gliders B64C 31/028)

Definition statement

This place covers:

Also covers accessories for gliders (e.g. insect removal from leading edges) which cannot be adequately classified elsewhere.

B64C 31/028

Hang-glider-type aircraft; Microlight-type aircraft

Definition statement

This place covers:

Mainly very simple and light, powered single or two-seat aircraft with an open frame fuselage, but also covers light, single or two-seat aircraft when the emphasis is on low weight and simplicity, and/or when described as an "ultralight", "microlight" or "light sport aircraft".
Example (US4548371)

Example (WO2004094228):

FIG. 1
Example, "Trike" or weight-shift controlled microlight (DE3346860):

Example; powered hang-glider (GB2164614):

References

Limiting references
This place does not cover:

Unpowered hang-gliders with delta-shaped wings ("Rogallo"-type)  B64C 31/032

Informative references
Attention is drawn to the following places, which may be of interest for search:

Hang-glider-type aircraft with delta wings  B64C 31/032
Special rules of classification
Attribute the symbol B64C 31/032 as well when details of a delta-shaped wing are also disclosed.

Glossary of terms
In this place, the following terms or expressions are used with the meaning indicated:

| Microlight or ultralight | Also covers the type of aircraft known in the USA as “Light Sport Aircraft” |

Synonyms and Keywords
In patent documents, the following abbreviations are often used:

| ULM | Avion ultra-légèr motorisé |

In patent documents, the following words/expressions are often used as synonyms:
- “ultralight aircraft”, “light sport aircraft”, “microlight aircraft” and “ultraleichtflugzeug” (german)
- “trike” (english, german), “weight-shift control” and “gewichtskraftgesteuert” (german)

B64C 31/0285
{Safety devices}

Definition statement
This place covers:
For example (ballistic) parachute rescue systems specially adapted to microlight aircraft or hang-gliders.

Example:

U.S. Patent May 1, 1984 Sheet 1 of 2 4,445,654
Relationships with other classification places

Aircraft emergency apparatus comprising ejectable capsules or even whole aircraft with a rescue parachute: **B64D 25/12**

**B64C 31/032**

having delta shaped wing

**Definition statement**

*This place covers:*

Mainly unpowered hang-gliders with rigid, delta-shaped wings of the "Rogallo"-type.

Example (FR2286055):

![Image of hang-gliders with delta wings]

Also covers powered, microlight aircraft when comprising details of such wings.

**References**

**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| Powered microlight-type aircraft with such wings | B64C 31/028 |

**B64C 31/036**

having parachute-type wing (parachutes **B64D 17/00**)

**Definition statement**

*This place covers:*

Microlight aircraft - mainly powered - with a parachute or parafoil type wing attached to a rigid/substantial structure (e.g. framework or rigid seat). Also covers backpack-type powerplants for paragliders.
Example (EP0278784):

Example; backpack-powerplant (FR2606736):
## References

### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parachutes</td>
<td>B64D 17/00</td>
</tr>
<tr>
<td>Paragliders</td>
<td>B64D 17/025</td>
</tr>
</tbody>
</table>

### B64C 31/04

**Man-powered aircraft** *(ornithopters B64C 33/00)*

### Definition statement

This place covers:

Propulsive power produced by the pilot, e.g. pedals connected to a propeller.

### References

#### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ornithtopters</td>
<td>B64C 33/00</td>
</tr>
</tbody>
</table>

### B64C 31/06

**Kites** *(hang-gliders B64C 31/028; toy aspects A63H 27/08; towed targets F41J; for propelling water sports boards B63H 8/10; for propelling vessels B63H 9/069)*

### References

#### Limiting references

This place does not cover:

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hang-gliders</td>
<td>B64C 31/028</td>
</tr>
<tr>
<td>Toy aspects</td>
<td>A63H 27/08</td>
</tr>
<tr>
<td>Kites for propelling water sports boards</td>
<td>B63H 8/10</td>
</tr>
<tr>
<td>Kites for propelling vessels</td>
<td>B63H 9/069</td>
</tr>
<tr>
<td>Towed targets</td>
<td>F41J</td>
</tr>
</tbody>
</table>

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising with kites</td>
<td>G09F 21/06</td>
</tr>
</tbody>
</table>
B64C 33/00
Ornithopters

Definition statement
This place covers:
All aircraft which fly by flapping the wings.

References
Limiting references
This place does not cover:

| Toy aircraft propelled by flapping of wings | A63H 27/008 |

B64C 33/02
Wings; Actuating mechanisms therefor

Definition statement
This place covers:
Illustrative example of subject matter classified in this group.
B64C 35/00
Flying-boats; Seaplanes (alighting gear B64C 25/00)

Definition statement
This place covers:
The word “seaplane” is used to describe two types of air/water vehicles: the floatplane and the flying boat. A floatplane has slender floats, mounted under the fuselage. Two floats are common, but other configurations are possible. Only the floats of a floatplane normally come into contact with water. The fuselage remains above water. In a flying boat, the main source of buoyancy is the fuselage, which acts like a ship’s hull in the water. Most flying boats have small floats mounted on their wings to keep them stable.

Relationships with other classification places
Floats: B64C 25/54

B64C 35/005
{with propellers, rudders or brakes acting in the water}

Definition statement
This place covers:
Comprising devices acting in the water to generate thrust and/or slow down and/or steer the aircraft (e.g. propellers, jets, rudders).

B64C 35/006
{with lift generating devices}

Definition statement
This place covers:
Comprising lift generating devices which are peculiar to the shape of a seaplane.

B64C 35/008
{Amphibious sea planes}

Definition statement
This place covers:
Aircraft suitable for ground and water take-off and landing.

B64C 37/00
Convertible aircraft (vehicles capable of travelling in or on different media B60F)

Definition statement
This place covers:
Combined road (and/or water) /air vehicles usually provided with wheels (and/or e.g. pontoons) and in-air propelling/thrust means.
References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Vehicles convertible into aircraft | B60F 5/02 |

B64C 37/02

Flying units formed by separate aircraft (towing, air-refuelling, or aircraft-carrying aircraft B64D)

Definition statement

This place covers:

Flying units wherein (possibly after an initial engagement phase) the multitude of (possibly different) flying vehicles (possibly including ground and/or water vehicles and/or dedicated units) are permanently connected.

References

Limiting references

This place does not cover:

| Aircraft adaptations to facilitate towing or being towed | B64D 3/00 |
| Aircraft transported by aircraft | B64D 5/00 |
| In-flight refuelling | B64D 39/00 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Aircraft having multiple fuselages or tail booms | B64C 39/04 |

B64C 39/00

Aircraft not otherwise provided for

Definition statement

This place covers:

Essentially all the flying vehicles not classified in one of the previous groups, highly unconventional aircraft.

B64C 39/001

{Flying saucers}

Definition statement

This place covers:

Flying vehicles characterised by sustainment without aerodynamic lift, often flying disks having a UFO-shape.
Relationships with other classification places

Rotorcraft characterised by having shrouded rotors, e.g. flying platforms: B64C 27/20

References

Limiting references

This place does not cover:

| Aircraft having annular wings with radial airflow | B64C 39/064 |

Informative references

Attention is drawn to the following places, which may be of interest for search:

| Inertia motors | F03G |

B64C 39/003

{with wings, paddle wheels, bladed wheels, moving or rotating in relation to the fuselage (rotorcraft B64C 27/00, ornithopters B64C 33/00)}

Definition statement

This place covers:

Example taken from GB2403460

Relationships with other classification places

Using Magnus effect: B64C 23/08

Paddle wheels: B64C 11/006
B64C 39/022
{Tethered aircraft}

References
Limiting references
This place does not cover:

| Captive toy aircraft | A63H 27/04 |

B64C 39/024
{of the remote controlled vehicle type, i.e. RPV}

Definition statement
This place covers:
UAVs, UCAVs, drones, remotely piloted flying vehicles in general

References
Limiting references
This place does not cover:

| Controlling aircraft by using radiated signal | B64C 13/20 |
| Model aircraft                                 | A63H 27/02 |
| Model helicopters                              | A63H 27/12 |

B64C 39/026
{for use as personal propulsion unit}

Definition statement
This place covers:
Devices including rotors, wings, propellers, turbojets to be "worn" by a user.

Relationships with other classification places
Parachutes: B64D 17/00
Ornithopters: B64C 33/00
Rotary wing parachutes: B64D 19/02

References
References out of a residual place
Examples of places in relation to which this place is residual:

| Power-driven personal watercraft for hydroflight sports | B63B 34/15 |
**B64C 39/028**  
{Micro-sized aircraft}

**Definition statement**

This place covers:

MAVs (microaerial vehicles), usually for military purposes, any maximum dimension of which does not exceed 15 cm (6 inches).

**B64C 39/029**  
{Asymmetrical aircraft}

**Definition statement**

This place covers:

Aircraft that lack symmetry with respect to a longitudinal vertical plane.
References

References out of a residual place

Examples of places in relation to which this place is residual:

<table>
<thead>
<tr>
<th>Description</th>
<th>Classification Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotorcraft asymmetry due to placement of auxiliary rotor or fluid-jet device for counter-balancing lifting rotor torque</td>
<td>B64C 27/82</td>
</tr>
</tbody>
</table>

B64C 39/04

having multiple fuselages or tail booms

Relationships with other classification places

Flying units formed by separate aircraft: B64C 37/02

B64C 39/06

having disc- or ring-shaped wings {(B64C 39/001 takes precedence)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

Relationships with other classification places

Aircraft capable of landing or taking-off vertically, having its flight directional axis vertical when landed: B64C 29/02
References

Limiting references
This place does not cover:

| Takes precedence | B64C 39/001 |

B64C 39/064

{with radial airflow}

Definition statement
This place covers:
An example taken from GB2471663

Relationships with other classification places
Flying saucers: B64C 39/001

References

Informative references
Attention is drawn to the following places, which may be of interest for search:

| Coanda effect flying vehicles | -- |
B64C 39/066
{having channel wings}

Definition statement
This place covers:
Illustrative example of subject matter classified in this group.

Fig. 1

Relationships with other classification places
Frontal shape of wing: B64C 3/16
B64C 39/068

{having multiple wings joined at the tips}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

Relationships with other classification places

Frontal shape of wing: B64C 3/16

B64C 39/08

having multiple wings {(B64C 39/06 takes precedence)}

Relationships with other classification places

Canard-type aircraft: B64C 39/12

References

Limiting references

This place does not cover:

| Takes precedence | B64C 39/06 |
**B64C 39/10**

All-wing aircraft \{**(B64C 39/001 takes precedence)**\}

**Definition statement**

*This place covers:*

This group includes e.g. the BWB (blended-wing-body)-type aircraft

**References**

*Limiting references*

*This place does not cover:*

| Takes precedence | B64C 39/001 |