# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

*(NOTES omitted)*

## TRANSPORTING

## B64 AIRCRAFT; AVIATION; COSMONAUTICS

## B64G COSMONAUTICS; VEHICLES OR EQUIPMENT THEREFOR

**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**
1/002 . {Launch systems}
1/005 . . {Air launch}
1/006 . . {Reusable launch rockets or boosters}
1/008 . . {Arrangement of launch rockets or boosters}
1/10 . Artificial satellites; Systems of such satellites; Interplanetary vehicles (space shuttles B64G 1/14)
1/1007 . . {Communications satellites}
1/1014 . . {Navigation satellites}
1/1021 . . {Earth observation satellites}
1/1028 . . . {using optical means for mapping, surveying or detection, e.g. of intelligence}
1/1035 . . . {using radar for mapping, surveying or detection, e.g. of intelligence}
1/1042 . . . {specifically adapted for meteorology}
1/105 . . {Space science}
1/1057 . . . {specifically adapted for astronomy}
1/1064 . . . {specifically adapted for interplanetary, solar or interstellar exploration}
1/1071 . . . . {Planetary landers intended for the exploration of the surface of planets, moons or comets}
1/1078 . . {Maintenance satellites (refuelling in space B64G 1/4024)}
1/1081 . . . {for debris removal}
1/1085 . . {Swarms and constellations}
1/12 . . manned
1/14 . Space shuttles {(reusable launch rockets B64G 1/006)}
1/16 . Extraterrestrial cars
1/22 . Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles
1/222 . . {for deploying structures between a stowed and deployed state}
1/2221 . . . {characterised by the manner of deployment}
1/2222 . . . . {Folding}
1/2223 . . . . . {via scissor linkage}
1/2224 . . . . . {about multiple axes}
1/2225 . . . . {Rolling or unfurling (B64G 1/2227 takes precedence)}
1/2226 . . . . {Telescoping}
1/2227 . . . . {Inflating}
1/2228 . . . {characterised by the hold-down or release mechanisms}
1/2229 . . . {characterised by the deployment actuating mechanism (inflating B64G 1/2227)}
1/223 . . {Modular spacecraft systems}
1/226 . . {Special coatings for spacecraft}
1/228 . . {Damping of high-frequency vibration effects on spacecraft elements, e.g. by using acoustic vibration dampers}
1/24 . . Guiding or controlling apparatus, e.g. for attitude control
1/242 . . . {Orbits and trajectories}
1/2421 . . . . {Aerobraking}
1/2422 . . . . {using Lagrange points, e.g. halo orbits}
1/2423 . . . . {Sun-synchronous orbits}
1/2425 . . . . {Geosynchronous orbits}
1/2427 . . . . {Transfer orbits}
1/2429 . . . . {Station keeping}
1/244 . . . {Spacecraft control systems}
1/245 . . . . {Attitude control algorithms for spacecraft attitude control}
1/247 . . . . {Advanced control concepts for autonomous, robotic spacecraft, e.g. by using artificial intelligence, neural networks or autonomous agents}
1/26 . . . using jets
1/262 . . . . {having adjustable angles, e.g. gimbaled thrusters}
1/264 . . . . . {mounted on adjustable booms or the like}
1/28 . . . using inertia or gyro effect
1/281 . . . . {Spin-stabilised spacecraft}
1/283 . . . . {using reaction wheels}
1/285 . . . . {using momentum wheels}
1/286 . . . . {using control momentum gyroscopes (CMGs)}
1/32 . . . using earth's magnetic field
1/34 . . . using gravity gradient
1/36 . . . using sensors, e.g. sun-sensors, horizon sensors
1/361 . . . . {using star sensors}
1/363 . . . . {using sun sensors}

1/365 . . . . {using horizon or Earth sensors}
1/366 . . . . {using magnetometers}
1/368 . . . . {using gravimeters}
1/369 . . . . {using gyroscopes as attitude sensors}
1/38 . . . damping of oscillations, e.g. nutation dampers
1/40 . . Arrangements or adaptations of propulsion systems
1/4005 . . . {Air-breathing propulsion}
1/401 . . . {Liquid propellant rocket engines (Ion or plasma engines B64G 1/413; Arcjets and other resistojets B64G 1/415)}
1/402 . . . {Propellant tanks; Feeding propellants}
1/4021 . . . . {Tank construction; Details thereof}
1/4022 . . . . {Arrangements of tanks in or on spacecraft}
1/4024 . . . . {refuelling in space}
1/4026 . . . . {providing propellant to propulsion systems of differing type}
1/403 . . . {Solid propellant rocket engines}
1/404 . . . . {Hybrid rocket engines}
1/407 . . . {Solar sailing}
1/408 . . . {Nuclear spacecraft propulsion}
1/409 . . . {Unconventional spacecraft propulsion systems}
1/411 . . . {Electric propulsion}
1/413 . . . . {Ion or plasma engines}
1/415 . . . . {Arcjets or resistojets}
1/417 . . . . {Electromagnetic fields or flux without mass expulsion}
1/42 . . Arrangements or adaptations of power supply systems
1/421 . . . {Non-solar power generation}
1/422 . . . . {Nuclear power generation}
1/423 . . . . {Fuel cells}
1/425 . . . {Power storage}
1/426 . . . . {Flywheels}
1/427 . . . . {Thermal power storage}
1/428 . . . {Power distribution and management}
1/4282 . . . . {for transmitting power to earth or other spacecraft}
1/44 . . . using radiation, e.g. deployable solar arrays
1/443 . . . . {Photovoltaic cell arrays}
1/446 . . . . {Thermal solar power generation}
1/46 . . Arrangements or adaptations of devices for control of environment or living conditions
1/465 . . . {for controlling gravity}
1/48 . . . for treatment of the atmosphere (B64G 1/50 takes precedence)
1/50 . . . for temperature control
1/503 . . . . {Radiator panels}
1/506 . . . . {Heat pipes}
1/52 . . Protection, safety or emergency devices; Survival aids
1/525 . . . {Survival aids}
1/54 . . . Protection against radiation
1/543 . . . . {protecting the crew in manned spacecraft}
1/546 . . . . {shielding electronic equipment}
1/56 . . . Protection against meteoroids or space debris
1/58 . . . Thermal protection, e.g. heat shields
1/60 . . Crew or passenger accommodations
1/62 . . Systems for re-entry into the earth's atmosphere; Retarding or landing devices
1/623 . . . {Retarding devices, e.g. retrorockets}
1/625 . . . {Landing devices; Undercarriages}
1/64 . . Systems for coupling or separating cosmonautic vehicles or parts thereof, e.g. docking arrangements
1/641 . . . {Interstage or payload connectors (docking systems B64G 1/646)}
1/642 . . . . {Clamps, e.g. Marman clamps}
1/6425 . . . . {arrangements for damping vibrations}
1/643 . . . . {for arranging multiple satellites in a single launcher}
1/644 . . . . . {arranged for independent deployment}
1/645 . . . {Separators}
1/6455 . . . . {Pyrotechnics; Using heat}
1/6457 . . . . {Springs; Shape memory actuators}
1/6459 . . . . {Fluid-actuated}
1/646 . . . {Docking or rendezvous systems (refuelling in space B64G 1/4024)}
1/6462 . . . . {characterised by the means for engaging other vehicles}
1/6464 . . . . . {Docking probes and receivers}
1/648 . . . {Tethers}
1/66 . . Arrangements or adaptations of apparatus or instruments, not otherwise provided for
1/68 . . . of meteoroid or space debris detectors

**3/00 Observing or tracking cosmonautic vehicles**

**4/00 Tools specially adapted for use in space**
2004/005 . {Robotic manipulator systems for use in space}

**5/00 Ground equipment for vehicles, e.g. starting towers, fuelling arrangements** (B64G 3/00 takes precedence)
2005/005 . {Systems for launching spacecraft from a platform at sea}

**6/00 Space suits**

**7/00 Simulating cosmonautic conditions, e.g. for conditioning crews**
2007/005 . {Space simulation vacuum chambers}

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