# CPC COOPERATIVE PATENT CLASSIFICATION

**B** PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

## TRANSPORTING

**B60** VEHICLES IN GENERAL

(NOTE omitted)

**B60Y** INDEXING SCHEME RELATING TO ASPECTS CROSS-CUTTING VEHICLE TECHNOLOGY

<table>
<thead>
<tr>
<th>Type of vehicle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200/00</td>
<td>Type of vehicle (not used; see subgroups)</td>
</tr>
<tr>
<td>2200/10</td>
<td>Road Vehicles</td>
</tr>
<tr>
<td>2200/11</td>
<td>Passenger cars; Automobiles</td>
</tr>
<tr>
<td>2200/112</td>
<td>City movers, small sized city motor vehicles</td>
</tr>
<tr>
<td>2200/114</td>
<td>Racing vehicles, e.g. Formula one, Karts</td>
</tr>
<tr>
<td>2200/116</td>
<td>Ambulances</td>
</tr>
<tr>
<td>2200/12</td>
<td>Motorcycles, Trikes; Quads; Scooters</td>
</tr>
<tr>
<td>2200/122</td>
<td>Trikes</td>
</tr>
<tr>
<td>2200/124</td>
<td>Buggies, Quads</td>
</tr>
<tr>
<td>2200/126</td>
<td>Scooters</td>
</tr>
<tr>
<td>2200/13</td>
<td>Bicycles; Tricycles</td>
</tr>
<tr>
<td>2200/132</td>
<td>All terrain bikes</td>
</tr>
<tr>
<td>2200/134</td>
<td>Racing bikes</td>
</tr>
<tr>
<td>2200/14</td>
<td>Trucks; Load vehicles, Busses</td>
</tr>
<tr>
<td>2200/141</td>
<td>Light trucks</td>
</tr>
<tr>
<td>2200/142</td>
<td>Heavy duty trucks</td>
</tr>
<tr>
<td>2200/1422</td>
<td>Multi-axle trucks</td>
</tr>
<tr>
<td>2200/143</td>
<td>Buses</td>
</tr>
<tr>
<td>2200/1432</td>
<td>Low floor busses</td>
</tr>
<tr>
<td>2200/144</td>
<td>Garbage trucks, e.g. refuse trucks</td>
</tr>
<tr>
<td>2200/145</td>
<td>Haulage vehicles, trailing trucks</td>
</tr>
<tr>
<td>2200/146</td>
<td>Silo or fluid transporting vehicles</td>
</tr>
<tr>
<td>2200/147</td>
<td>Trailers, e.g. full trailers or caravans</td>
</tr>
<tr>
<td>2200/148</td>
<td>Semi-trailers, articulated vehicles</td>
</tr>
<tr>
<td>2200/15</td>
<td>Fork lift trucks, Industrial trucks</td>
</tr>
<tr>
<td>2200/16</td>
<td>Vehicles with lowerable bed or chassis, e.g. to facilitate loading</td>
</tr>
<tr>
<td>2200/20</td>
<td>Off-Road Vehicles</td>
</tr>
<tr>
<td>2200/22</td>
<td>Agricultural vehicles</td>
</tr>
<tr>
<td>2200/221</td>
<td>Tractors</td>
</tr>
<tr>
<td>2200/222</td>
<td>Harvesters</td>
</tr>
<tr>
<td>2200/223</td>
<td>Rideable lawn mowers</td>
</tr>
<tr>
<td>2200/224</td>
<td>Boom carrying vehicles, e.g. for irrigation</td>
</tr>
<tr>
<td>2200/225</td>
<td>Walk behind vehicles, e.g. motorized wheel barrows</td>
</tr>
<tr>
<td>2200/23</td>
<td>Rideable golf cars</td>
</tr>
<tr>
<td>2200/24</td>
<td>Military vehicles</td>
</tr>
<tr>
<td>2200/25</td>
<td>Track vehicles</td>
</tr>
<tr>
<td>2200/252</td>
<td>Snowmobiles</td>
</tr>
<tr>
<td>2200/254</td>
<td>Tanks</td>
</tr>
<tr>
<td>2200/30</td>
<td>Railway vehicles</td>
</tr>
<tr>
<td>2200/31</td>
<td>Locomotives</td>
</tr>
<tr>
<td>2200/33</td>
<td>Rail cars; Waggons</td>
</tr>
<tr>
<td>2200/34</td>
<td>Monorails</td>
</tr>
<tr>
<td>2200/37</td>
<td>Roller coasters</td>
</tr>
<tr>
<td>2200/39</td>
<td>having track following mechanism for lateral stability</td>
</tr>
<tr>
<td>2200/40</td>
<td>Special vehicles</td>
</tr>
<tr>
<td>2200/41</td>
<td>Construction vehicles, e.g. graders, excavators</td>
</tr>
<tr>
<td>2200/411</td>
<td>Bulldozers, Graders</td>
</tr>
<tr>
<td>2200/412</td>
<td>Excavators</td>
</tr>
<tr>
<td>2200/413</td>
<td>Compactors</td>
</tr>
<tr>
<td>2200/414</td>
<td>Pavers</td>
</tr>
<tr>
<td>2200/415</td>
<td>Wheel loaders</td>
</tr>
<tr>
<td>2200/416</td>
<td>Cranes</td>
</tr>
<tr>
<td>2200/417</td>
<td>Articulated frame vehicles</td>
</tr>
<tr>
<td>2200/42</td>
<td>Amphibious vehicles</td>
</tr>
<tr>
<td>2200/43</td>
<td>Variable track or wheelbase vehicles</td>
</tr>
<tr>
<td>2200/44</td>
<td>Multi-axle long vehicles, with independently drivable or steerable wheels</td>
</tr>
<tr>
<td>2200/45</td>
<td>Vehicles having steerable wheels mounted on a vertically moving column</td>
</tr>
<tr>
<td>2200/46</td>
<td>Arctic-/Extraterrestrial explorers</td>
</tr>
<tr>
<td>2200/47</td>
<td>Climbing vehicles, e.g. facade climbing devices</td>
</tr>
<tr>
<td>2200/48</td>
<td>Stair-climbing vehicles</td>
</tr>
<tr>
<td>2200/49</td>
<td>Movable platforms, Load ramps, e.g. working platforms</td>
</tr>
<tr>
<td>2200/50</td>
<td>Aeroplanes, Helicopters</td>
</tr>
<tr>
<td>2200/51</td>
<td>Aeroplanes</td>
</tr>
<tr>
<td>2200/52</td>
<td>Helicopters</td>
</tr>
<tr>
<td>2200/60</td>
<td>Industrial applications, e.g. pipe inspection vehicles</td>
</tr>
<tr>
<td>2200/62</td>
<td>Conveyors, floor conveyors</td>
</tr>
<tr>
<td>2200/64</td>
<td>Beam Hoists</td>
</tr>
<tr>
<td>2200/66</td>
<td>Containers; Pallets; Skids</td>
</tr>
<tr>
<td>2200/80</td>
<td>Other vehicles not covered by groups</td>
</tr>
</tbody>
</table>

**B60Y 2200/10 - B60Y 2200/60**

<table>
<thead>
<tr>
<th>Type of vehicle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200/81</td>
<td>Toys</td>
</tr>
<tr>
<td>2200/83</td>
<td>Perambulators; Buggies; Strollers</td>
</tr>
<tr>
<td>2200/84</td>
<td>Wheelchairs</td>
</tr>
<tr>
<td>2200/86</td>
<td>Carts; Golf carts</td>
</tr>
<tr>
<td>2200/90</td>
<td>Vehicles comprising electric prime movers</td>
</tr>
<tr>
<td>2200/91</td>
<td>Electric vehicles</td>
</tr>
<tr>
<td>2200/912</td>
<td>Electric vehicles with power supply external to vehicle, e.g. trolley buses or trams</td>
</tr>
<tr>
<td>2200/92</td>
<td>Hybrid vehicles</td>
</tr>
</tbody>
</table>

**2300/00** Purposes or special features of road vehicle drive control systems (for systems using conjoint control of multiple vehicle sub-units B60W 30/00)

<table>
<thead>
<tr>
<th>Type of vehicle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300/02</td>
<td>Control of vehicle driving stability</td>
</tr>
<tr>
<td>2300/022</td>
<td>Stability in turns or during cornering</td>
</tr>
</tbody>
</table>
2300/0223 . related to over-steering
2300/0227 . related to under-steering
2300/045 . Improving turning performance, e.g. agility of a vehicle in a curve
2300/0453 . about the pitch axis
2300/0457 . about the roll axis
2300/06 . Automatic manoeuvring for parking
2300/08 . Predicting or avoiding probable or impending collision
2300/085 . Taking automatic action to adjust vehicle attitude or components thereof in preparation for collision, e.g. adjusting bumpers or wheels or braking for nose dropping
2300/09 . Taking automatic action to avoid collision, e.g. braking or steering
2300/095 . Predicting travel path or likelihood of collision
2300/0952 . the prediction being responsive to vehicle dynamic parameters
2300/0954 . the prediction being responsive to traffic or environmental parameters
2300/097 . Vehicle operation after collision
2300/10 . Path keeping
2300/12 . Lane keeping
2300/14 . Cruise control
2300/143 . Speed control
2300/146 . Speed limiting
2300/16 . Control of distance between vehicles, e.g. keeping a distance to preceding vehicle
2300/162 . Speed limiting therefor
2300/165 . Automatically following the path of a preceding lead vehicle, e.g. "electronic tow-bar"
2300/17 . with provision for special action when the preceding vehicle comes to a halt, e.g. stop-and-go
2300/18 . Propelling the vehicle
2300/18008 . related to particular drive situations
2300/18016 . Start-stop drive, e.g. in a traffic jam
2300/18025 . Drive off, accelerating from standstill
2300/18033 . Reversing
2300/18041 . Rocking, i.e. fast change between forward and reverse
2300/1805 . at stand still, e.g. engine in idling state
2300/18058 . Creeping
2300/18066 . Coasting
2300/18075 . with torque flow from driveshaft to engine, i.e. engine being driven by vehicle
2300/18083 . without torque flow between driveshaft and engine, e.g. with clutch disengaged or transmission in neutral
2300/18091 . Preparing for stopping
2300/181 . Hill climbing or descending
2300/18108 . Braking
2300/18116 . Hill holding
2300/18125 . Regenerative braking
2300/18133 . Engine braking
2300/18141 . Braking for parking
2300/1815 . Cornering
2300/18158 . Approaching intersection
2300/18166 . Overtaking, changing lanes
2300/18175 . Preventing, or responsive to skidding of wheels
2300/18183 . Propulsion control with common controlling member for different functions
2300/18191 . Propulsion control with control means using analogue circuits, relays or mechanical links
2300/182 . Selecting between different operative modes, e.g. comfort and performance modes
2300/184 . Preventing damage resulting from overload or excessive wear of the driveline
2300/1845 . Preventing of breakage of drive line components, e.g. parts of the gearing
2300/186 . Excessive wear or burn out of friction elements, e.g. clutches
2300/1865 . Overheating of driveline components
2300/188 . Controlling power parameters of the driveline, e.g. determining the required power
2300/1882 . characterised by the working point of the engine, e.g. by using engine output chart
2300/1884 . Avoiding stall or over-speed of the engine
2300/1886 . Controlling power supply to auxiliary devices
2300/1888 . Control of power take off [PTO]
2300/19 . Improvement of gear change, e.g. synchronisation or smoothing gear shift
2300/192 . Power-up or power-down of the driveline, e.g. start up of a cold engine
2300/194 . related to low temperature conditions, e.g. high viscosity of hydraulic fluid
2300/20 . Reducing vibrations in the driveline
2300/202 . related or induced by the clutch
2300/205 . related or induced by the engine
2300/207 . related to drive shaft torsion, e.g. driveline oscillations
2300/22 . Reducing road induced vibrations, suppressing road noise
2300/24 . Adaptation to external conditions, e.g. road surface conditions
2300/244 . Adaptation to traffic conditions
2300/26 . Dangerous conditions
2300/28 . related to towing or towed situations
2300/30 . related to stationary vehicle situations, e.g. parked vehicles
2300/301 . Kneeling, e.g. for letting passengers on or off
2300/303 . Lowering or adjusting the floor for loading or unloading
2300/305 . Adjusting floor height to loading ramp level
2300/306 . Mechanism to lock the height
2300/308 . Jacking-up for changing tyre or for vehicle inspection
2300/42 . Control of clutches
2300/421 . Control of lock-up type clutches, e.g. in a torque converter
2300/423 . Control of power take-off clutches
2300/424 . Control of freewheel clutches
2300/425 . Control of clutches to regulate engine speed or torque
2300/426 . Reducing engagement shocks in main clutch
2300/427 . Control of clutch touch point, e.g. kiss point
2300/428 . Reducing clutch wear
2300/429 . Control of secondary clutches in drivelines
2300/43 . Control of engines
2300/431 . Control of engine air-fuel ratio
2300/432 . Control of engine fuel injection
2300/433 . Control of engine throttle
2300/434 . Control of engine inlet air duct by secondary means
2300/435 . Control of engine cylinder cut-off
2300/436  . . Control of engine ignition
2300/437  . . Control of engine valves
2300/44  . Control of engine at idle speed
2300/45  . Engine shutdown at standstill
2300/46  . Engine injection cut at coasting
2300/47  . Engine emissions
2300/472  . . Catalyst reactivation
2300/474  . . Catalyst warm up
2300/476  . . Regeneration of particle filters
2300/48  . Engine direct start by injecting fuel and fire
2300/50  . Engine start by use of flywheel kinetic energy
2300/51  . Driving or powering of engine accessories
2300/52  . Engine fuel consumption
2300/525  . . by reducing drag torque, e.g. by closing valves to reduce pumping
2300/53  . Engine over-speed
2300/54  . Engine overload, high loads on engine
2300/55  . Engine low load mode
2300/56  . Engine stall prevention
2300/57  . Engine torque resume after shifting
2300/58  . Engine torque vibration dampers, e.g. flywheels, dual-mass-springs
2300/60  . Control of electric machines, e.g. problems related to electric motors or generators
2300/61  . . Inductive lock-up
2300/62  . . Mechanical lock-up, e.g. using brake to immobilise the rotor
2300/63  . . Starter motor mode
2300/64  . . Drag run or drag torque compensation, e.g. motor to drive engine with drag torque or engine speed is brought to start speed before injection and firing
2300/65  . . Reduce shocks on mode change, e.g. during engine shutdown
2300/66  . . Control for gear shift synchronisation
2300/67  . . High load on electric machines, e.g. overheating
2300/68  . . Over-speed of electric machines
2300/69  . . Motor boost, e.g. short time overpower
2300/70  . . Control of gearings
2300/71  . . Limiting transmission input torque
2300/72  . . Facilitate disengaging of gears, e.g. by inducing a torque reversal
2300/73  . . Synchronisation of shaft speeds
2300/74  . . Reducing shift shocks
2300/75  . . Dither torque, e.g. to remove tooth butting
2300/77  . . Torque reversal, e.g. avoid clunks when changing between driving and coasting
2300/78  . . Power split
2300/785  . . Geared neutral
2300/80  . . Control of differentials
2300/82  . . Torque vectoring
2300/84  . . Differential locking
2300/88  . . Reducing brake wear
2300/89  . . Repartition of braking force, e.g. friction braking versus regenerative braking
2300/90  . . Releasing parking brake at start
2300/91  . . Battery charging
2300/92  . . Battery protection from overload or overcharge

2302/00 Responses or measures related to driver conditions
(for propulsion units B60K 28/02, related to driving style B60W 40/09)
2302/01  . Preventing starting of the vehicle
2302/03  . Actuating a signal or alarm device
2302/05  . Leading to automatic stopping of the vehicle
2302/07  . Disabling particular vehicle functions, e.g. to affect the driving style
2302/09  . Reducing the workload of driver

2304/00 Optimising design; Manufacturing; Testing
2304/01  . Minimizing space with more compact designs or arrangements
2304/03  . Reducing weight
2304/05  . Reducing production costs, e.g. by redesign
2304/07  . Facilitating assembling or mounting
2304/072  . . by preassembled subunits
2304/074  . . by improved accessibility
2304/076  . . by add-on parts, e.g. retrofit
2304/078  . . by interchangeable parts, e.g. new part adapting to old design
2304/09  . Testing or calibrating during manufacturing

2306/00 Other features of vehicle sub-units
2306/01  . Reducing damages in case of crash, e.g. by improving battery protection
2306/03  . Lubrication
2306/05  . Cooling
2306/07  . Heating of passenger cabins
2306/09  . Reducing noise
2306/11  . Noise generation, e.g. drive noise to warn pedestrians that an electric vehicle is approaching
2306/13  . Failsafe arrangements
2306/15  . Failure diagnostics

2400/00 Special features of vehicle units
2400/10  . Energy storage devices
2400/102  . . for hydrogen fuel
2400/104  . . for liquid petrol gas
2400/106  . . for gasoil
2400/11  . Electric energy storages
2400/112  . . Batteries
2400/114  . . Super-capacities
2400/14  . Hydraulic energy storages, e.g. hydraulic accumulators
2400/15  . Pneumatic energy storages, e.g. pressure air tanks
2400/16  . Mechanic energy storages
2400/162  . . Flywheels
2400/164  . . Springs
2400/20  . Energy converters
2400/202  . . Fuel cells
2400/204  . . Generator sets, engine and generator as one unit
2400/206  . . Thermo-electric generators
2400/208  . . Pelletier or Thomson elements for cooling or heating
2400/209  . . Piezo-electric elements
2400/21  . External power supplies
2400/212  . . by power from overhead cables using trolleys
2400/214  . . by power from domestic supply, e.g. plug in supplies
2400/216  . . by solar panels
2400/30  . Sensors
2400/301  . . for position or displacement
2400/3012  . . using Hall effect
Engines

Clutches or brakes

Actuators for moving a controlled member

Manual actuators, i.e. input levers or linkages therefor

with adjustable positions

providing feel, e.g. with feedback force

Electro-magnetic actuators, e.g. with an electromagnet not rotating for moving a clutching member

Electro-magnetic valves, i.e. solenoids

Electric motors actuators

Hydraulic actuators

Pneumatic actuators

Mechanical transmissions for actuators

Bowden cables or linkages

Lost motion linkages

Slack adjustments

Screw-nut mechanisms

Ramp or cam mechanisms

Centrifugal actuators

Power assistance, e.g. servo-motors

Mechanical assistance, i.e. using springs or accumulators without feedback control

Servo-motors, e.g. electric or fluidic with feedback control

Clutches or brakes

Dog type clutches or brakes

Synchronesh type clutches or brakes

Electromagnetic clutches, e.g. powder type clutches

Friction clutches

of dry type

of wet type, e.g. using multiple lamellae

Viscous couplings

Hydrodynamic couplings, e.g. torque converters

One-way clutches

Double clutch arrangements; Dual clutches

Engines

Gas turbine engines

Diesel Engines

Gas Engines, e.g. using LPG, natural gas or gasifiers

Hydrogen fuel engines

Supercharger or turbochargers

Electromagnetic engines valves

Exhaust turbines driving generators

Exhaust gas recirculation [EGR]

Exhaust gas reformers, e.g. treated by fuel cells

Engine start hydraulic or electric motors

Starter generator drive systems

Vibration dampers, e.g. dual mass flywheels

Electric Machines, e.g. motors or generators

DC Machines

AC Machines, e.g. asynchronous motors

Axial flux machines

Clutch motors, i.e. having rotating stators

Arrangements of controllers for electric machines, e.g. inverters

Gearings

Worm gearings

Manual or semi-automatic, e.g. automated manual transmissions

Continuous variable transmissions [CVT]

Planetary gearings

with intermeshing planetary gears, e.g. Ravigneaux

Shaft brakes, e.g. input shaft brakes

Power shifting, e.g. without interruption of drive torque

Automatic gearshift to neutral

Gearshift position determination, e.g. check of neutral position

Pumps, e.g. jet type

Pump drives

Drive shafts, output shafts or propeller shafts

Power take off

Differentials

Differential locking systems

Torque vectoring arrangements

Braking systems

Four wheel drive systems

Steering input members

Rear wheel steering; All wheel steerings

Skid-steer systems, e.g. for tracked vehicles

Suspension systems

Auxiliary drives

Air conditioners, e.g. compressor drives

Cooling systems, e.g. fan drives

Driver alarms

giving haptic or tactile signals

Driver displays

Constructional features of vehicle sub-units

Housings

Shaft arrangements; Shaft supports, e.g. bearings

Concentric shaft arrangements

Hydraulic valves

Valve bodies; Mounting of hydraulic controllers

Aggregate identification or specification, e.g. using RFID

Mount clips, snap-fit, e.g. quick fit with elastic members

Shields, e.g. for heat protection

Electric wiring; Electric connectors

Production or manufacturing of vehicle parts

Metal parts manufactured by moulding

Plastic parts manufactured by moulding

Over-moulded parts

Welded parts
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2410/125</td>
<td>Bounded parts</td>
</tr>
<tr>
<td>2410/13</td>
<td>Materials or fluids with special properties</td>
</tr>
<tr>
<td>2410/132</td>
<td>Magnetic, e.g. permanent magnets</td>
</tr>
<tr>
<td>2410/134</td>
<td>Rheological, magneto- or electro- fluids</td>
</tr>
<tr>
<td>2410/136</td>
<td>Memory alloys</td>
</tr>
</tbody>
</table>