

# 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

<b>2200/00</b>	<b>Type of vehicle</b>	<b>2200/39</b>	. . having track following mechanism for lateral stability
2200/10	. Road Vehicles	<b>2200/40</b>	. Special vehicles
2200/11	. . Passenger cars; Automobiles	2200/41	. . Construction vehicles, e.g. graders, excavators
2200/112	. . . City movers, small sized city motor vehicles	2200/411	. . . Bulldozers, Graders
2200/114	. . . Racing vehicles, e.g. Formula one, Karts	2200/412	. . . Excavators
2200/116	. . . Ambulances	2200/413	. . . Compactors
2200/12	. . Motorcycles, Trikes; Quads; Scooters	2200/414	. . . Pavers
2200/122	. . . Trikes	2200/415	. . . Wheel loaders
2200/124	. . . Buggies, Quads	2200/416	. . . Cranes
2200/126	. . . Scooters	2200/417	. . . Articulated frame vehicles
2200/13	. . Bicycles; Tricycles	2200/42	. . Amphibious vehicles
2200/132	. . . All terrain bikes	2200/43	. . Variable track or wheelbase vehicles
2200/134	. . . Racing bikes	2200/44	. . Multi-axle long vehicles, with independently drivable or steerable wheels
2200/14	. . Trucks; Load vehicles, Busses	<b>2200/45</b>	. . Vehicles having steerable wheels mounted on a vertically moving column
2200/141	. . . Light trucks	2200/46	. . Arctic-/Extraterrestrial explorers
2200/142	. . . Heavy duty trucks	2200/47	. . Climbing vehicles, e.g. facade climbing devices
2200/1422	. . . . Multi-axle trucks	2200/48	. . . Stair-climbing vehicles
2200/143	. . . Busses	2200/49	. . Movable platforms, Load ramps, e.g. working platforms
2200/1432	. . . . Low floor busses	2200/50	. Aeroplanes, Helicopters
2200/144	. . . Garbage trucks, e.g. refuse trucks	2200/51	. . Aeroplanes
2200/145	. . . Haulage vehicles, trailing trucks	2200/52	. . Helicopters
2200/146	. . . Silo or fluid transporting vehicles	2200/60	. Industrial applications, e.g. pipe inspection vehicles
2200/147	. . . Trailers, e.g. full trailers or caravans	2200/62	. . Conveyors, floor conveyors
2200/148	. . . Semi-trailers, articulated vehicles	2200/64	. . Beam Hoists
2200/15	. . Fork lift trucks, Industrial trucks	2200/66	. . Containers; Pallets; Skids
2200/16	. . Vehicles with lowerable bed or chassis, e.g. to facilitate loading	2200/80	. Other vehicles not covered by groups <a href="#">B60Y 2200/10</a> - <a href="#">B60Y 2200/60</a>
2200/20	. Off-Road Vehicles	2200/81	. . Toys
2200/22	. . Agricultural vehicles	2200/83	. . Perambulators; Buggies; Strollers
2200/221	. . . Tractors	2200/84	. . Wheelchairs
2200/222	. . . Harvesters	2200/86	. . Carts; Golf carts
2200/223	. . . Ridable lawn mowers	2200/90	. Vehicles comprising electric prime movers
2200/224	. . . Boom carrying vehicles, e.g. for irrigation	2200/91	. . Electric vehicles
2200/225	. . . Walk behind vehicles, e.g. motorized wheel barrows	2200/912	. . . Electric vehicles with power supply external to vehicle, e.g. trolley buses or trams
2200/23	. . Ridable golf cars	2200/92	. . Hybrid vehicles
2200/24	. . Military vehicles	<b>2300/00</b>	<b>Purposes or special features of road vehicle drive control systems (for systems using conjoint control of multiple vehicle sub-units <a href="#">B60W 30/00</a>)</b>
2200/25	. . Track vehicles	2300/02	. Control of vehicle driving stability
2200/252	. . Snowmobiles	2300/022	. . Stability in turns or during cornering
2200/254	. . Tanks		
2200/30	. Railway vehicles		
2200/31	. . Locomotives		
2200/33	. . Rail cars; Waggon		
2200/34	. . Monorails		
2200/37	. . Roller coasters		

- 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	<b>2302/00</b>	<b>Responses or measures related to driver conditions</b> (for propulsion units <a href="#">B60K 28/02</a> , related to driving style <a href="#">B60W 40/09</a> )
2300/437	. . Control of engine valves	2302/01	. Preventing starting of the vehicle
2300/44	. Control of engine at idle speed	2302/03	. Actuating a signal or alarm device
2300/45	. Engine shutdown at standstill	2302/05	. Leading to automatic stopping of the vehicle
2300/46	. Engine injection cut at coasting	2302/07	. Disabling particular vehicle functions, e.g. to affect the driving style
2300/47	. Engine emissions	2302/09	. Reducing the workload of driver
2300/472	. . Catalyst reactivation	<b>2304/00</b>	<b>Optimising design; Manufacturing; Testing</b>
2300/474	. . Catalyst warm up	2304/01	. Minimizing space with more compact designs or arrangements
2300/476	. . Regeneration of particle filters	2304/03	. Reducing weight
2300/48	. Engine direct start by injecting fuel and fire	2304/05	. Reducing production costs, e.g. by redesign
2300/49	. Engine push start or restart by use of vehicle kinetic energy	2304/07	. Facilitating assembling or mounting
2300/50	. Engine start by use of flywheel kinetic energy	2304/072	. . by preassembled subunits
2300/51	. Driving or powering of engine accessories	2304/074	. . by improved accessibility
2300/52	. Engine fuel consumption	2304/076	. . by add-on parts, e.g. retrofit
2300/525	. . by reducing drag torque, e.g. by closing valves to reduce pumping	2304/078	. . by interchangeable parts, e.g. new part adapting to old design
2300/53	. Engine over-speed	2304/09	. Testing or calibrating during manufacturing
2300/54	. Engine overload, high loads on engine	<b>2306/00</b>	<b>Other features of vehicle sub-units</b>
2300/55	. Engine low load mode	2306/01	. Reducing damages in case of crash, e.g. by improving battery protection
2300/56	. Engine stall prevention	2306/03	. Lubrication
2300/57	. Engine torque resume after shifting	2306/05	. Cooling
2300/58	. Engine torque vibration dampers, e.g. flywheels, dual-mass-springs	2306/07	. Heating of passenger cabins
2300/60	. Control of electric machines, e.g. problems related to electric motors or generators	2306/09	. Reducing noise
2300/61	. . Inductive lock-up	2306/11	. Noise generation, e.g. drive noise to warn pedestrians that an electric vehicle is approaching
2300/62	. . Mechanical lock-up, e.g. using brake to immobilise the rotor	2306/13	. Failsafe arrangements
2300/63	. . Starter motor mode	2306/15	. Failure diagnostics
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	<b>2400/00</b>	<b>Special features of vehicle units</b>
2300/65	. . Reduce shocks on mode change, e.g. during engine shutdown	2400/10	. Energy storage devices
2300/66	. . Control for gear shift synchronisation	2400/102	. . for hydrogen fuel
2300/67	. . High load on electric machines, e.g. overheating	2400/104	. . for liquid petrol gas
2300/68	. . Over-speed of electric machines	2400/106	. . for gasoil
2300/69	. . Motor boost, e.g. short time overpower	2400/11	. Electric energy storages
2300/70	. Control of gearings	2400/112	. . Batteries
2300/71	. . Limiting transmission input torque	2400/114	. . Super-capacities
2300/72	. . Facilitate disengaging of gears, e.g. by inducing a torque reversal	2400/14	. Hydraulic energy storages, e.g. hydraulic accumulators
2300/73	. . Synchronisation of shaft speeds	2400/15	. Pneumatic energy storages, e.g. pressure air tanks
2300/74	. . Reducing shift shocks	2400/16	. Mechanic energy storages
2300/75	. . Dither torque, e.g. to remove tooth butting	2400/162	. . Flywheels
2300/77	. . Torque reversal, e.g. avoid clunks when changing between driving and coasting	2400/164	. . Springs
2300/78	. . Power split	2400/20	. Energy converters
2300/785	. . . Geared neutral	2400/202	. . Fuel cells
2300/80	. Control of differentials	2400/204	. . Generator sets, engine and generator as one unit
2300/82	. . Torque vectoring	2400/206	. . Thermo-electric generators
2300/84	. . Differential locking	2400/208	. . Peltier or Thomson elements for cooling or heating
2300/88	. Reducing brake wear	2400/209	. . Piezo-electric elements
2300/89	. Repartition of braking force, e.g. friction braking versus regenerative braking	2400/21	. External power supplies
2300/90	. Releasing parking brake at start	2400/212	. . by power from overhead cables using trolleys
2300/91	. Battery charging	2400/214	. . by power from domestic supply, e.g. plug in supplies
2300/92	. Battery protection from overload or overcharge	2400/216	. . by solar panels
		2400/30	. Sensors
		2400/301	. . for position or displacement
		2400/3012	. . . using Hall effect

2400/3015	. . . Optical cameras	2400/446	. . Exhaust gas reformers, e.g. treated by fuel cells
2400/3017	. . . Radars	2400/46	. Engine start hydraulic or electric motors
2400/3018	. . Flow-meters	2400/47	. Starter generator drive systems
2400/3019	. . Fluid level sensors	2400/48	. Vibration dampers, e.g. dual mass flywheels
2400/302	. . Temperature sensors	2400/60	. Electric Machines, e.g. motors or generators
2400/303	. . Speed sensors	2400/602	. . DC Machines
2400/3032	. . . Wheel speed sensors	2400/604	. . AC Machines, e.g. asynchronous motors
2400/304	. . Acceleration sensors	2400/607	. . Axial flux machines
2400/3042	. . . Collision sensors	2400/608	. . Clutch motors, i.e. having rotating stators
2400/3044	. . . Vibration sensors	2400/61	. Arrangements of controllers for electric machines, e.g. inverters
2400/305	. . Force sensors	2400/70	. Gearings
2400/306	. . Pressure sensors	2400/702	. . Worm gearings
2400/307	. . Torque sensors	2400/71	. . Manual or semi-automatic, e.g. automated manual transmissions
2400/308	. . Electric sensors	2400/72	. . Continuous variable transmissions [CVT]
2400/3084	. . . Electric currents sensors	2400/73	. . Planetary gearings
2400/3086	. . . Electric voltages sensors	2400/732	. . . with intermeshing planetary gears, e.g. Ravigneaux
2400/40	. Actuators for moving a controlled member	2400/74	. . Shaft brakes, e.g. input shaft brakes
2400/402	. . Manual actuators, i.e. input levers or linkages therefor	2400/75	. . Power shifting, e.g. without interruption of drive torque
2400/4024	. . . with adjustable positions	2400/76	. . Automatic gearshift to neutral
2400/4026	. . . providing feel, e.g. with feedback force	2400/77	. . Gearshift position determination, e.g. check of neutral position
2400/404	. . Electro-magnetic actuators, e.g. with an electromagnet not rotating for moving a clutching member	2400/78	. . Pumps, e.g. jet type
2400/4045	. . . Electro-magnetic valves, i.e. solenoids	2400/785	. . . Pump drives
2400/405	. . Electric motors actuators	2400/79	. . Drive shafts, output shafts or propeller shafts
2400/406	. . Hydraulic actuators	2400/795	. . . Power take off
2400/408	. . Pneumatic actuators	2400/80	. Differentials
2400/41	. . Mechanical transmissions for actuators	2400/802	. . Differential locking systems
2400/411	. . . Bowden cables or linkages	2400/804	. . Torque vectoring arrangements
2400/4115	. . . . Lost motion linkages	2400/81	. Braking systems
2400/4117	. . . . Slack adjustments	2400/82	. Four wheel drive systems
2400/412	. . . Screw-nut mechanisms	2400/83	. Steering input members
2400/414	. . . Ramp or cam mechanisms	2400/84	. Rear wheel steering; All wheel steerings
2400/416	. . . Centrifugal actuators	2400/85	. Skid-steer systems, e.g. for tracked vehicles
2400/418	. . Power assistance, e.g. servo-motors	2400/86	. Suspension systems
2400/4185	. . . Mechanical assistance, i.e. using springs or accumulators without feedback control	2400/87	. Auxiliary drives
2400/4187	. . . Servo-motors, e.g. electric or fluidic with feedback control	2400/88	. . Air conditioners, e.g. compressor drives
2400/42	. Clutches or brakes	2400/89	. . Cooling systems, e.g. fan drives
2400/421	. . Dog type clutches or brakes	2400/90	. Driver alarms
2400/422	. . Synchromesh type clutches or brakes	2400/902	. . giving haptic or tactile signals
2400/423	. . Electromagnetic clutches, e.g. powder type clutches	2400/92	. Driver displays
2400/424	. . Friction clutches	<b>2410/00</b>	<b>Constructional features of vehicle sub-units</b>
2400/4242	. . . of dry type	2410/10	. Housings
2400/4244	. . . of wet type, e.g. using multiple lamellae	2410/102	. Shaft arrangements; Shaft supports, e.g. bearings
2400/425	. . Viscous couplings	2410/1022	. . Concentric shaft arrangements
2400/426	. . Hydrodynamic couplings, e.g. torque converters	2410/104	. Hydraulic valves
2400/427	. . One-way clutches	2410/105	. Valve bodies; Mounting of hydraulic controllers
2400/428	. . Double clutch arrangements; Dual clutches	2410/111	. Aggregate identification or specification, e.g. using RFID
2400/43	. Engines	2410/113	. Mount clips, snap-fit, e.g. quick fit with elastic members
2400/431	. . Gas turbine engines	2410/114	. Shields, e.g. for heat protection
2400/432	. . Diesel Engines	2410/115	. Electric wiring; Electric connectors
2400/433	. . Gas Engines, e.g. using LPG, natural gas or gasifiers	2410/12	. Production or manufacturing of vehicle parts
2400/434	. . Hydrogen fuel engines	2410/121	. . Metal parts manufactured by moulding
2400/435	. . Supercharger or turbochargers	2410/122	. . Plastic parts manufactured by moulding
2400/436	. . Electromagnetic engines valves	2410/123	. . Over-moulded parts
2400/44	. . Exhaust turbines driving generators	2410/124	. . Welded parts
2400/442	. . Exhaust gas recirculation [EGR]		

## **B60Y**

- 2410/125 . . Bounded parts
- 2410/13 . Materials or fluids with special properties
- 2410/132 . . Magnetic, e.g. permanent magnets
- 2410/134 . . Rheological, magneto- or electro- fluids
- 2410/136 . . Memory alloys