

# 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>		
2200/10	. Road Vehicles	2200/39	. . having track following mechanism for lateral stability
2200/11	. . Passenger cars; Automobiles	2200/40	. Special vehicles
2200/112	. . . City movers, small sized city motor vehicles	2200/41	. . Construction vehicles, e.g. graders, excavators
2200/114	. . . Racing vehicles, e.g. Formula one, Karts	2200/411	. . . Bulldozers, Graders
2200/116	. . . Ambulances	2200/412	. . . Excavators
2200/12	. . Motorcycles, Trikes; Quads; Scooters	2200/413	. . . Compactors
2200/122	. . . Trikes	2200/414	. . . Pavers
2200/124	. . . Buggies, Quads	2200/415	. . . Wheel loaders
2200/126	. . . Scooters	2200/416	. . . Cranes
2200/13	. . Bicycles; Tricycles	2200/417	. . . Articulated frame vehicles
2200/132	. . . All terrain bikes	2200/42	. . Amphibious vehicles
2200/134	. . . Racing bikes	2200/43	. . Variable track or wheelbase vehicles
2200/14	. . Trucks; Load vehicles, Busses	2200/44	. . Multi-axle long vehicles, with independently drivable or steerable wheels
2200/141	. . . Light trucks	2200/45	. . Vehicles having steerable wheels mounted on a vertically moving column
2200/142	. . . Heavy duty trucks	2200/46	. . Arctic-/Extraterrestrial explorers
2200/1422	. . . . Multi-axle trucks	2200/47	. . Climbing vehicles, e.g. facade climbing devices
2200/143	. . . Busses	2200/48	. . . Stair-climbing vehicles
2200/1432	. . . . Low floor busses	2200/49	. . Movable platforms, Load ramps, e.g. working platforms
2200/144	. . . Garbage trucks, e.g. refuse trucks	2200/50	. Aeroplanes, Helicopters
2200/145	. . . Haulage vehicles, trailing trucks	2200/51	. . Aeroplanes
2200/146	. . . Silo or fluid transporting vehicles	2200/52	. . Helicopters
2200/147	. . . Trailers, e.g. full trailers or caravans	2200/60	. Industrial applications, e.g. pipe inspection vehicles
2200/148	. . . Semi-trailers, articulated vehicles	2200/62	. . Conveyors, floor conveyors
2200/15	. . Fork lift trucks, Industrial trucks	2200/64	. . Beam Hoists
2200/16	. . Vehicles with lowerable bed or chassis, e.g. to facilitate loading	2200/66	. . Containers; Pallets; Skids
2200/20	. Off-Road Vehicles	2200/80	. Other vehicles not covered by groups <a href="#">B60Y 2200/10</a> - <a href="#">B60Y 2200/60</a>
2200/22	. . Agricultural vehicles	2200/81	. . Toys
2200/221	. . . Tractors	2200/83	. . Perambulators; Buggies; Strollers
2200/222	. . . Harvesters	2200/84	. . Wheelchairs
2200/223	. . . Ridable lawn mowers	2200/86	. . Carts; Golf carts
2200/224	. . . Boom carrying vehicles, e.g. for irrigation	2200/90	. Vehicles comprising electric prime movers
2200/225	. . . Walk behind vehicles, e.g. motorized wheel barrows	2200/91	. . Electric vehicles
2200/23	. . Ridable golf cars	2200/912	. . . Electric vehicles with power supply external to vehicle, e.g. trolley buses or trams
2200/24	. . Military vehicles	2200/92	. . Hybrid vehicles
2200/25	. . Track 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>
2200/252	. . Snowmobiles	2300/02	. Control of vehicle driving stability
2200/254	. . Tanks	2300/022	. . Stability in turns or during cornering
2200/30	. Railway vehicles		
2200/31	. . Locomotives		
2200/33	. . Rail cars; Wagons		
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
- 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
- 2300/49 . Engine push start or restart by use of vehicle kinetic energy
- 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 . . Peltier or Thomson elements for cooling or heating
- 2400/209 . . Piezoelectric 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

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

## 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