

**CPC****COOPERATIVE PATENT CLASSIFICATION****B60Y****INDEXING SCHEME RELATING TO ASPECTS CROSS-CUTTING  
VEHICLE TECHNOLOGY****Guidance heading:****B60Y 2200/00****Type of vehicle (not used; see subgroups)**

B60Y 2200/10	. Road Vehicles
B60Y 2200/11	.. Passenger cars; Automobiles
B60Y 2200/112	... City movers, small sized city motor vehicles
B60Y 2200/114	... Racing vehicles, e.g. Formula one, Karts
B60Y 2200/116	... Ambulances
B60Y 2200/12	.. Motorcycles, Trikes; Quads; Scooters
B60Y 2200/122	... Trikes
B60Y 2200/124	... Buggies, Quads
B60Y 2200/126	... Scooters
B60Y 2200/13	.. Bicycles; Tricycles
B60Y 2200/132	... All terrain bikes
B60Y 2200/134	... Racing bikes
B60Y 2200/14	.. Trucks; Load vehicles, Busses
B60Y 2200/141	... Light trucks
B60Y 2200/142	... Heavy duty trucks
B60Y 2200/1422	.... Multi-axle trucks
B60Y 2200/143	... Busses
B60Y 2200/1432	.... Low floor busses
B60Y 2200/144	... Garbage trucks, e.g. refuse trucks
B60Y 2200/145	... Haulage vehicles, trailing trucks
B60Y 2200/146	... Silo or fluid transporting vehicles
B60Y 2200/147	... Trailers, e.g. full trailers or caravans
B60Y 2200/148	... Semi-trailers, articulated vehicles
B60Y 2200/15	.. Fork lift trucks, Industrial trucks
B60Y 2200/16	.. Vehicles with lowerable bed or chassis, e.g. to facilitate loading
B60Y 2200/20	. Off-Road Vehicles
B60Y 2200/22	.. Agricultural vehicles
B60Y 2200/221	... Tractors
B60Y 2200/222	... Harvesters
B60Y 2200/223	... Ridable lawn mowers
B60Y 2200/224	... Boom carrying vehicles, e.g. for irrigation

B60Y 2200/225	...	Walk behind vehicles, e.g. motorized wheel barrows
B60Y 2200/23	..	Ridable golf cars
B60Y 2200/24	..	Military vehicles ( <a href="#">track vehicles L60Y 220/50</a> , <a href="#">tanks L60Y 220/54</a> )
B60Y 2200/25	..	Track vehicles
B60Y 2200/252	..	Snowmobiles
B60Y 2200/254	..	Tanks
B60Y 2200/30	.	Railway vehicles
B60Y 2200/31	..	Locomotives
B60Y 2200/33	..	Rail cars; Waggon
B60Y 2200/34	..	Monorails
B60Y 2200/37	..	Roller coasters
B60Y 2200/39	..	having track following mechanism for lateral stability
B60Y 2200/40	.	Special vehicles
B60Y 2200/41	..	Construction vehicles, e.g. graders, excavators
B60Y 2200/411	...	Bulldozers, Graders
B60Y 2200/412	...	Excavators
B60Y 2200/413	...	Compactors
B60Y 2200/414	...	Pavers
B60Y 2200/415	...	Wheel loaders
B60Y 2200/416	...	Cranes
B60Y 2200/417	...	Articulated frame vehicles
B60Y 2200/42	..	Amphibious vehicles
B60Y 2200/43	..	Variable track or wheelbase vehicles
B60Y 2200/44	..	Multi-axle long vehicles, with independently drivable or steerable wheels
B60Y 2200/45	..	Vehicles having steerable wheels mounted on a vertically moving column
B60Y 2200/46	..	Arctic-/Extraterrestrial explorers
B60Y 2200/47	..	Climbing vehicles, e.g. facade climbing devices
B60Y 2200/48	...	Stair-climbing vehicles
B60Y 2200/49	..	Movable platforms, Load ramps, e.g. working platforms
B60Y 2200/50	.	Aeroplanes, Helicopters
B60Y 2200/51	..	Aeroplanes
B60Y 2200/52	..	Helicopters
B60Y 2200/60	.	Industrial applications, e.g. pipe inspection vehicles
B60Y 2200/62	..	Conveyors, floor conveyors
B60Y 2200/64	..	Beam Hoists
B60Y 2200/66	..	Containers; Pallets; Skids
B60Y 2200/80	.	Other vehicles not covered by groups <a href="#">B60Y 2200/10</a> to <a href="#">B60Y 2200/60</a>
B60Y 2200/81	..	Toys
B60Y 2200/83	..	Perambulators; Buggies; Strollers

- B60Y 2200/84 . . Wheelchairs
- B60Y 2200/86 . . Carts; Golf carts
- B60Y 2200/90 . Vehicles comprising electric prime movers
- B60Y 2200/91 . . Electric vehicles
- B60Y 2200/912 . . . Electric vehicles with power supply external to vehicle, e.g. trolley buses or trams
- B60Y 2200/92 . . Hybrid vehicles

**Guidance heading:**

**B60Y 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](#))

- B60Y 2300/02 . Control of vehicle driving stability
- B60Y 2300/022 . . Stability in turns or during cornering
- B60Y 2300/0223 . . . related to over-steering
- B60Y 2300/0227 . . . related to under-steering
- B60Y 2300/045 . . Improving turning performance, e.g. agility of a vehicle in a curve
- B60Y 2300/0453 . . . about the pitch axis
- B60Y 2300/0457 . . . about the roll axis
- B60Y 2300/06 . Automatic manoeuvring for parking
- B60Y 2300/08 . Predicting or avoiding probable or impending collision
- B60Y 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
- B60Y 2300/09 . . Taking automatic action to avoid collision, e.g. braking or steering
- B60Y 2300/095 . . Predicting travel path or likelihood of collision
- B60Y 2300/0952 . . . the prediction being responsive to vehicle dynamic parameters
- B60Y 2300/0954 . . . the prediction being responsive to traffic or environmental parameters
- B60Y 2300/097 . . Vehicle operation after collision
- B60Y 2300/10 . Path keeping
- B60Y 2300/12 . . Lane keeping
- B60Y 2300/14 . Cruise control
- B60Y 2300/143 . . Speed control
- B60Y 2300/146 . . . Speed limiting
- B60Y 2300/16 . . Control of distance between vehicles, e.g. keeping a distance to preceding vehicle
- B60Y 2300/162 . . . Speed limiting therefor
- B60Y 2300/165 . . . Automatically following the path of a preceding lead vehicle, e.g. "electronic tow-bar"
- B60Y 2300/17 . . . with provision for special action when the preceding vehicle comes to a halt, e.g. stop-and-go

B60Y 2300/18	. Propelling the vehicle
B60Y 2300/18008	.. related to particular drive situations
B60Y 2300/18016	... Start-stop drive, e.g. in a traffic jam
B60Y 2300/18025	... Drive off, accelerating from standstill
B60Y 2300/18033	... Reversing
B60Y 2300/18041	.... Rocking, i.e. fast change between forward and reverse
B60Y 2300/1805	... at stand still, e.g. engine in idling state
B60Y 2300/18058	... Creeping
B60Y 2300/18066	... Coasting
B60Y 2300/18075	.... with torque flow from driveshaft to engine, i.e. engine being driven by vehicle
B60Y 2300/18083	.... without torque flow between driveshaft and engine, e.g. with clutch disengaged or transmission in neutral
B60Y 2300/18091	... Preparing for stopping
B60Y 2300/181	... Hill climbing or descending
B60Y 2300/18108	... Braking
B60Y 2300/18116	.... Hill holding
B60Y 2300/18125	.... Regenerative braking
B60Y 2300/18133	.... Engine braking
B60Y 2300/18141	.... Braking for parking
B60Y 2300/1815	... Cornering
B60Y 2300/18158	... Approaching intersection
B60Y 2300/18166	... Overtaking, changing lanes
B60Y 2300/18175	.. Preventing, or responsive to skidding of wheels
B60Y 2300/18183	.. Propulsion control with common controlling member for different functions
B60Y 2300/18191	.. Propulsion control with control means using analogue circuits, relays or mechanical links
B60Y 2300/182	.. Selecting between different operative modes, e.g. comfort and performance modes
B60Y 2300/184	.. Preventing damage resulting from overload or excessive wear of the driveline
B60Y 2300/1845	... Preventing of breakage of drive line components, e.g. parts of the gearing
B60Y 2300/186	... Excessive wear or burn out of friction elements, e.g. clutches
B60Y 2300/1865	.... Overheating of driveline components
B60Y 2300/188	.. Controlling power parameters of the driveline, e.g. determining the required power
B60Y 2300/1882	... characterised by the working point of the engine, e.g. by using engine output chart
B60Y 2300/1884	... Avoiding stall or over-speed of the engine
B60Y 2300/1886	... Controlling power supply to auxiliary devices
B60Y 2300/1888	.... Control of power take off (PTO)
B60Y 2300/19	.. Improvement of gear change, e.g. synchronisation or smoothing gear shift
B60Y 2300/192	.. Power-up or power-down of the driveline, e.g. start up of a cold engine
B60Y 2300/194	... related to low temperature conditions, e.g. high viscosity of hydraulic fluid
B60Y 2300/20	.. Reducing vibrations in the driveline
B60Y 2300/202	... related or induced by the clutch

B60Y 2300/205	...	related or induced by the engine
B60Y 2300/207	...	related to drive shaft torsion, e.g. driveline oscillations
B60Y 2300/22	..	Reducing road induced vibrations, suppressing road noise
B60Y 2300/24	..	Adaptation to external conditions, e.g. road surface conditions
B60Y 2300/244	...	Adaptation to traffic conditions
B60Y 2300/26	..	Dangerous conditions
B60Y 2300/28	.	related to towing or towed situations
B60Y 2300/30	.	related to stationary vehicle situations, e.g. parked vehicles
B60Y 2300/301	..	Kneeling, e.g. for letting passengers on or off
B60Y 2300/303	..	Lowering or adjusting the floor for loading or unloading
B60Y 2300/305	...	Adjusting floor height to loading ramp level
B60Y 2300/306	...	Mechanism to lock the height
B60Y 2300/308	..	Jacking-up for changing tyre or for vehicle inspection
B60Y 2300/42	.	Control of clutches
B60Y 2300/421	..	Control of lock-up type clutches, e.g. in a torque converter
B60Y 2300/423	..	Control of power take-off clutches
B60Y 2300/424	..	Control of freewheel clutches
B60Y 2300/425	..	Control of clutches to regulate engine speed or torque
B60Y 2300/426	..	Reducing engagement shocks in main clutch
B60Y 2300/427	..	Control of clutch touch point, e.g. kiss point
B60Y 2300/428	..	Reducing clutch wear
B60Y 2300/429	..	Control of secondary clutches in drivelines
B60Y 2300/43	.	Control of engines
B60Y 2300/431	..	Control of engine air-fuel ratio
B60Y 2300/432	..	Control of engine fuel injection
B60Y 2300/433	..	Control of engine throttle
B60Y 2300/434	..	Control of engine inlet air duct by secondary means
B60Y 2300/435	..	Control of engine cylinder cut-off
B60Y 2300/436	..	Control of engine ignition
B60Y 2300/437	..	Control of engine valves
B60Y 2300/44	.	Control of engine at idle speed
B60Y 2300/45	.	Engine shutdown at standstill
B60Y 2300/46	.	Engine injection cut at coasting
B60Y 2300/47	.	Engine emissions
B60Y 2300/472	..	Catalyst reactivation
B60Y 2300/474	..	Catalyst warm up
B60Y 2300/476	..	Regeneration of particle filters

- B60Y 2300/48 . Engine direct start by injecting fuel and fire
- B60Y 2300/49 . Engine push start or restart by use of vehicle kinetic energy
- B60Y 2300/50 . Engine start by use of flywheel kinetic energy
- B60Y 2300/51 . Driving or powering of engine accessories
- B60Y 2300/52 . Engine fuel consumption
- B60Y 2300/525 . . by reducing drag torque, e.g. by closing valves to reduce pumping
- B60Y 2300/53 . Engine over-speed
- B60Y 2300/54 . Engine overload, high loads on engine
- B60Y 2300/55 . Engine low load mode
- B60Y 2300/56 . Engine stall prevention
- B60Y 2300/57 . Engine torque resume after shifting
- B60Y 2300/58 . Engine torque vibration dampers, e.g. flywheels, dual-mass-springs
- B60Y 2300/60 . Control of electric machines, e.g. problems related to electric motors or generators
- B60Y 2300/61 . . Inductive lock-up
- B60Y 2300/62 . . Mechanical lock-up, e.g. using brake to immobilise the rotor
- B60Y 2300/63 . . Starter motor mode
- B60Y 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
- B60Y 2300/65 . . Reduce shocks on mode change, e.g. during engine shutdown
- B60Y 2300/66 . . Control for gear shift synchronisation
- B60Y 2300/67 . . High load on electric machines, e.g. overheating
- B60Y 2300/68 . . Over-speed of electric machines
- B60Y 2300/69 . . Motor boost, e.g. short time overpower
- B60Y 2300/70 . Control of gearings
- B60Y 2300/71 . . Limiting transmission input torque
- B60Y 2300/72 . . Facilitate disengaging of gears, e.g. by inducing a torque reversal
- B60Y 2300/73 . . Synchronisation of shaft speeds
- B60Y 2300/74 . . Reducing shift shocks
- B60Y 2300/75 . . Dither torque , e.g. to remove tooth butting
- B60Y 2300/77 . . Torque reversal, e.g. avoid clunks when changing between driving and coasting
- B60Y 2300/78 . . Power split
- B60Y 2300/785 . . . Geared neutral
- B60Y 2300/80 . Control of differentials
- B60Y 2300/82 . . Torque vectoring

- B60Y 2300/84 . . Differential locking
- B60Y 2300/88 . Reducing brake wear
- B60Y 2300/89 . Repartition of braking force, e.g. friction braking versus regenerative braking
- B60Y 2300/90 . Releasing parking brake at start
- B60Y 2300/91 . Battery charging
- B60Y 2300/92 . Battery protection from overload or overcharge

**Guidance heading:**

**B60Y 2302/00 Responses or measures related to driver conditions** (for propulsion units [B60K 28/02](#), related to driving style [L60W 40/08B](#))

- B60Y 2302/01 . Preventing starting of the vehicle
- B60Y 2302/03 . Actuating a signal or alarm device
- B60Y 2302/05 . Leading to automatic stopping of the vehicle
- B60Y 2302/07 . Disabling particular vehicle functions, e.g. to affect the driving style
- B60Y 2302/09 . Reducing the workload of driver

**Guidance heading:**

**B60Y 2304/00 Optimising design; Manufacturing; Testing**

- B60Y 2304/01 . Minimizing space with more compact designs or arrangements
- B60Y 2304/03 . Reducing weight
- B60Y 2304/05 . Reducing production costs, e.g. by redesign
- B60Y 2304/07 . Facilitating assembling or mounting
  - B60Y 2304/072 . . by preassembled subunits
  - B60Y 2304/074 . . by improved accessibility
  - B60Y 2304/076 . . by add-on parts, e.g. retrofit
  - B60Y 2304/078 . . by interchangeable parts, e.g. new part adapting to old design
- B60Y 2304/09 . Testing or calibrating during manufacturing

**Guidance heading:**

**B60Y 2306/00 Other features of vehicle sub-units**

- B60Y 2306/01 . Reducing damages in case of crash, e.g. by improving battery protection
- B60Y 2306/03 . Lubrication
- B60Y 2306/05 . Cooling
- B60Y 2306/07 . Heating of passenger cabins
- B60Y 2306/09 . Reducing noise
- B60Y 2306/11 . Noise generation, e.g. drive noise to warn pedestrians that an electric vehicle is approaching
- B60Y 2306/13 . Failsafe arrangements
- B60Y 2306/15 . Failure diagnostics

**Guidance heading:**

**B60Y 2400/00      Special features of vehicle units**

- B60Y 2400/10 . Energy storage devices
- B60Y 2400/102 . . for hydrogen fuel
- B60Y 2400/104 . . for liquid petrol gas
- B60Y 2400/106 . . for gasoil
- B60Y 2400/11 . Electric energy storages
- B60Y 2400/112 . . Batteries
- B60Y 2400/114 . . Super-capacities
- B60Y 2400/14 . Hydraulic energy storages, e.g. hydraulic accumulators
- B60Y 2400/15 . Pneumatic energy storages, e.g. pressure air tanks
- B60Y 2400/16 . Mechanic energy storages
- B60Y 2400/162 . . Flywheels
- B60Y 2400/164 . . Springs
- B60Y 2400/20 . Energy converters
- B60Y 2400/202 . . Fuel cells
- B60Y 2400/204 . . Generator sets, engine and generator as one unit
- B60Y 2400/206 . . Thermo-electric generators
- B60Y 2400/208 . . Peltier or Thomson elements for cooling or heating
- B60Y 2400/209 . . Piezo-electric elements
- B60Y 2400/21 . External power supplies
- B60Y 2400/212 . . by power from overhead cables using trolleys



B60Y 2400/214	..	by power from domestic supply, e.g. plug in supplies
B60Y 2400/216	..	by solar panels
B60Y 2400/30	.	Sensors
B60Y 2400/301	..	for position or displacement
B60Y 2400/3012	...	using Hall effect
B60Y 2400/3015	...	Optical cameras
B60Y 2400/3017	...	Radars
B60Y 2400/3018	..	Flow-meters
B60Y 2400/3019	..	Fluid level sensors
B60Y 2400/302	..	Temperature sensors
B60Y 2400/303	..	Speed sensors
B60Y 2400/3032	...	Wheel speed sensors
B60Y 2400/304	..	Acceleration sensors
B60Y 2400/3042	...	Collision sensors
B60Y 2400/3044	...	Vibration sensors
B60Y 2400/305	..	Force sensors
B60Y 2400/306	..	Pressure sensors
B60Y 2400/307	..	Torque sensors
B60Y 2400/308	..	Electric sensors
B60Y 2400/3084	...	Electric currents sensors
B60Y 2400/3086	...	Electric voltages sensors
B60Y 2400/40	.	Actuators for moving a controlled member
B60Y 2400/402	..	Manual actuators, i.e. input levers or linkages therefor
B60Y 2400/4024	...	with adjustable positions
B60Y 2400/4026	...	providing feel, e.g. with feedback force
B60Y 2400/404	..	Electro-magnetic actuators, e.g. with an electromagnet not rotating for moving a clutching member
B60Y 2400/4045	...	Electro-magnetic valves, i.e. solenoids
B60Y 2400/405	..	Electric motors actuators
B60Y 2400/406	..	Hydraulic actuators
B60Y 2400/408	..	Pneumatic actuators
B60Y 2400/41	..	Mechanical transmissions for actuators
B60Y 2400/411	...	Bowden cables or linkages
B60Y 2400/4115	....	Lost motion linkages
B60Y 2400/4117	....	Slack adjustments
B60Y 2400/412	...	Screw-nut mechanisms
B60Y 2400/414	...	Ramp or cam mechanisms
B60Y 2400/416	...	Centrifugal actuators
B60Y 2400/418	..	Power assistance, e.g. servo-motors
B60Y 2400/4185	...	Mechanical assistance, i.e. using springs or accumulators without feedback control

B60Y 2400/4187	...	Servo-motors, e.g. electric or fluidic with feedback control
B60Y 2400/42	.	Clutches or brakes
B60Y 2400/421	..	Dog type clutches or brakes
B60Y 2400/422	..	Synchromesh type clutches or brakes
B60Y 2400/423	..	Electromagnetic clutches, e.g. powder type clutches
B60Y 2400/424	..	Friction clutches
B60Y 2400/4242	...	of dry type
B60Y 2400/4244	...	of wet type, e.g. using multiple lamellae
B60Y 2400/425	..	Viscous couplings
B60Y 2400/426	..	Hydrodynamic couplings, e.g. torque converters
B60Y 2400/427	..	One-way clutches
B60Y 2400/428	..	Double clutch arrangements; Dual clutches
B60Y 2400/43	.	Engines
B60Y 2400/431	..	Gas turbine engines
B60Y 2400/432	..	Diesel Engines
B60Y 2400/433	..	Gas Engines, e.g. using LPG, natural gas or gasifiers
B60Y 2400/434	..	Hydrogen fuel engines
B60Y 2400/435	..	Supercharger or turbochargers
B60Y 2400/436	..	Electromagnetic engines valves
B60Y 2400/44	..	Exhaust turbines driving generators
B60Y 2400/442	..	Exhaust gas recirculation (EGR)
B60Y 2400/446	..	Exhaust gas reformers, e.g. treated by fuel cells
B60Y 2400/46	.	Engine start hydraulic or electric motors
B60Y 2400/47	.	Starter generator drive systems
B60Y 2400/48	.	Vibration dampers, e.g. dual mass flywheels
B60Y 2400/60	.	Electric Machines, e.g. motors or generators
B60Y 2400/602	..	DC Machines
B60Y 2400/604	..	AC Machines, e.g. asynchronous motors
B60Y 2400/607	..	Axial flux machines
B60Y 2400/608	..	Clutch motors, i.e. having rotating stators
B60Y 2400/61	.	Arrangements of controllers for electric machines, e.g. inverters
B60Y 2400/70	.	Gearings
B60Y 2400/702	..	Worm gearings
B60Y 2400/71	..	Manual or semi-automatic, e.g. automated manual transmissions
B60Y 2400/72	..	Continuous variable transmissions (CVT)
B60Y 2400/73	..	Planetary gearings
B60Y 2400/732	...	with intermeshing planetary gears, e.g. Ravigneaux

- B60Y 2400/74 . . Shaft brakes, e.g. input shaft brakes
- B60Y 2400/75 . . Power shifting, e.g. without interruption of drive torque
- B60Y 2400/76 . . Automatic gearshift to neutral
- B60Y 2400/77 . . Gearshift position determination, e.g. check of neutral position
- B60Y 2400/78 . . Pumps, e.g. jet type
- B60Y 2400/785 . . . Pump drives
- B60Y 2400/79 . . Drive shafts, output shafts or propeller shafts
- B60Y 2400/795 . . . Power take off
  
- B60Y 2400/80 . Differentials
- B60Y 2400/802 . . Differential locking systems
- B60Y 2400/804 . . Torque vectoring arrangements
  
- B60Y 2400/81 . Braking systems
  
- B60Y 2400/82 . Four wheel drive systems
  
- B60Y 2400/83 . Steering input members
  
- B60Y 2400/84 . Rear wheel steering; All wheel steerings
  
- B60Y 2400/85 . Skid-steer systems, e.g. for tracked vehicles
  
- B60Y 2400/86 . Suspension systems
  
- B60Y 2400/87 . Auxiliary drives
- B60Y 2400/88 . . Air conditioners, e.g. compressor drives
- B60Y 2400/89 . . Cooling systems, e.g. fan drives
  
- B60Y 2400/90 . Driver alarms
- B60Y 2400/902 . . giving haptic or tactile signals
  
- B60Y 2400/92 . Driver displays

#### **Guidance heading:**

#### **B60Y 2410/00      Constructional features of vehicle sub-units**

- B60Y 2410/10 . Housings
  
- B60Y 2410/102 . Shaft arrangements; Shaft supports, e.g. bearings
- B60Y 2410/1022 . . Concentric shaft arrangements
  
- B60Y 2410/104 . Hydraulic valves
  
- B60Y 2410/105 . Valve bodies; Mounting of hydraulic controllers
  
- B60Y 2410/111 . Aggregate identification or specification, e.g. using RFID

- B60Y 2410/113 . Mount clips, snap-fit, e.g. quick fit with elastic members
- B60Y 2410/114 . Shields, e.g. for heat protection
- B60Y 2410/115 . Electric wiring; Electric connectors
- B60Y 2410/12 . Production or manufacturing of vehicle parts
- B60Y 2410/121 . . Metal parts manufactured by moulding
- B60Y 2410/122 . . Plastic parts manufactured by moulding
- B60Y 2410/123 . . Over-moulded parts
- B60Y 2410/124 . . Welded parts
- B60Y 2410/125 . . Bounded parts
- B60Y 2410/13 . Materials or fluids with special properties
- B60Y 2410/132 . . Magnetic, e.g. permanent magnets
- B60Y 2410/134 . . Rheological, magneto- or electro- fluids
- B60Y 2410/136 . . Memory alloys