

CPC**COOPERATIVE PATENT CLASSIFICATION****B60Y****INDEXING SCHEME RELATING TO ASPECTS CROSS-CUTTING
VEHICLE TECHNOLOGY****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

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 B60Y 2200/10 to B60Y 2200/60
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
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

B60Y 2302/00 **Responses or measures related to driver conditions** (for propulsion units [B60K 28/02](#), related to driving style [B60W 40/09](#))

- 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

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
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
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

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