

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