

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### TRANSPORTING

#### B60 VEHICLES IN GENERAL

(NOTE omitted)

#### B60K ARRANGEMENT OR MOUNTING OF PROPULSION UNITS OR OF TRANSMISSIONS IN VEHICLES; ARRANGEMENT OR MOUNTING OF PLURAL DIVERSE PRIME-MOVERS IN VEHICLES; AUXILIARY DRIVES FOR VEHICLES; INSTRUMENTATION OR DASHBOARDS FOR VEHICLES; ARRANGEMENTS IN CONNECTION WITH COOLING, AIR INTAKE, GAS EXHAUST OR FUEL SUPPLY OF PROPULSION UNITS IN VEHICLES

##### NOTES

- In this subclass, the following terms or expressions are used with the meanings indicated:
  - "conjoint control of drive units" includes such control for vehicles or of general applicability;
  - "auxiliary drives" means drives of auxiliary or external machines or devices from the propulsion unit, transmission, or other parts of the vehicle, and includes the control of such drives;
  - "transmission" means all propulsion parts linking propulsion units, e.g. engines, to ultimate propulsive elements, e.g. wheels;
  - "drive unit" means propulsion unit conjoint with transmission, a "drive unit" can additionally include the ultimate driven unit;
  - "sub-unit" means, e.g. propulsion unit, clutch, gearing or brake system;
  - "hybrid vehicle" means vehicles with plural diverse prime-movers for mutual or common propulsion
- Attention is drawn to the Note following the title of class [B60](#)

##### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Arrangement or mounting of propulsion units in vehicles (of control devices for such units [B60K 26/00](#); elastic mountings [per se F16F](#); propulsion units or their control [per se, see the relevant classes](#))

<b>1/00</b>	<b>Arrangement or mounting of electrical propulsion units</b> ( <a href="#">B60K 7/00</a> takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion <a href="#">B60K 6/00</a> ; electric transmission arrangements <a href="#">B60K 17/12</a> ; electric equipment or propulsion of electrically-propelled vehicles <a href="#">per se B60L</a> ; current-collectors for power supply lines of electrically-propelled vehicles <a href="#">B60L 5/00</a> )	<a href="#">2001/0405</a>	. . { characterised by their position }
		<a href="#">2001/0411</a>	. . . { Arrangement in the front part of the vehicle }
		<a href="#">2001/0416</a>	. . . { Arrangement in the rear part of the vehicle }
		<a href="#">2001/0422</a>	. . . { Arrangement under the front seats }
		<a href="#">2001/0427</a>	. . . { Arrangement between the seats }
		<a href="#">2001/0433</a>	. . . { Arrangement under the rear seats }
		<a href="#">2001/0438</a>	. . . { Arrangement under the floor }
		<a href="#">2001/0444</a>	. . . { Arrangement on a trailer }
		<a href="#">2001/045</a>	. . . { Arrangement in a wheel, e.g. a spare wheel }
		<a href="#">2001/0455</a>	. . { Removal or replacement of the energy storages }
		<a href="#">2001/0461</a>	. . . { from the side }
		<a href="#">2001/0466</a>	. . . { from above }
		<a href="#">2001/0472</a>	. . . { from below }
		<a href="#">2001/0477</a>	. . . { from the back }
		<a href="#">2001/0483</a>	. . . { from the front }
		<a href="#">2001/0488</a>	. . . { with arrangements for pivoting }
		<a href="#">2001/0494</a>	. . . { with arrangements for sliding }
<a href="#">2001/001</a>	. { one motor mounted on a propulsion axle for rotating right and left wheels of this axle }		
<a href="#">2001/003</a>	. { with means for cooling the electrical propulsion units }		
<a href="#">2001/005</a>	. . { the electric storage means }		
<a href="#">2001/006</a>	. . { the electric motors }		
<a href="#">2001/008</a>	. { with means for heating the electrical propulsion units }		
<a href="#">1/02</a>	. comprising more than one electric motor	<b>3/00</b>	<b>Arrangement or mounting of steam or gaseous-pressure propulsion units</b> ( <a href="#">B60K 7/00</a> takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion <a href="#">B60K 6/00</a> ; gaseous-pressure transmission arrangements <a href="#">B60K 17/10</a> )
<a href="#">1/04</a>	. of the electric storage means for propulsion (for auxiliary purposes only <a href="#">B60R 16/04</a> ; supplying batteries to, or removing batteries from, vehicles <a href="#">B60S 5/06</a> )	<a href="#">3/02</a>	. of piston type

- 3/04 . of turbine type
- 5/00** **Arrangement or mounting of internal-combustion or jet-propulsion units** ([B60K 7/00](#) takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion [B60K 6/00](#))
  - 2005/003 . {the internal combustion or jet propulsion unit is arranged between the front and the rear axle}
  - 2005/006 . {the internal combustion or jet propulsion unit is arranged behind the rear axle}
  - 5/02 . with the engine main axis, e.g. crankshaft axis, substantially in or parallel to the longitudinal centre line of the vehicle
  - 5/04 . with the engine main axis, e.g. crankshaft axis, transversely to the longitudinal centre line of the vehicle
  - 5/06 . . with the engine main axis substantially vertical
  - 5/08 . comprising more than one engine
  - 5/10 . providing for ready detachment of engine
  - 5/12 . Arrangement of engine supports { (supports comprising both a plastic spring and a fluid damper [F16F 13/06](#)) }
  - 5/1208 . . {Resilient supports ([B60K 5/1241](#) - [B60K 5/1291](#) take precedence)}
  - 5/1216 . . . {characterised by the location of the supports relative to the motor or to each other ([B60K 5/1225](#) takes precedence)}
  - 5/1225 . . . {comprising resilient rings surrounding a part of the unit}
  - 5/1233 . . . {comprising protective elements, e.g. for protecting against heat, dust}
  - 5/1241 . . {Link-type support ([B60K 5/125](#), [B60K 5/1275](#) take precedence)}
  - 5/125 . . {Telescopic supports, e.g. telescopic dampers ([B60K 5/1275](#) takes precedence)}
  - 5/1258 . . {Wire-type supports ([B60K 5/1275](#) takes precedence)}
  - 5/1266 . . {Supports comprising friction damping devices ([B60K 5/125](#), [B60K 5/1283](#) take precedence)}
  - 5/1275 . . {Plastically deformable supports}
  - 5/1283 . . {Adjustable supports, e.g. the mounting or the characteristics being adjustable}
  - 5/1291 . . {Supports comprising stoppers}

**6/00**

**Arrangement or mounting of plural diverse prime-movers for mutual or common propulsion, e.g. hybrid propulsion systems comprising electric motors and internal combustion engines {; Control systems therefor, i.e. systems controlling two or more prime movers, or controlling one of these prime movers and any of the transmission, drive or drive units** (arrangement or mounting in vehicles of electrical gearing, in which an electrical machine serves only as reduction gearing and not as the prime mover and in which no electrical storing means are used [B60K 17/12](#); control and regulation of purely electrical prime movers [B60L](#); prime-movers comprising electrical and internal combustion motors in a common engine block or housing *per se* [F02B 65/00](#); electric motors or motor-generators used for starting the combustion engine [F02N 11/04](#); electric motors for synchronising gearing [F16H 3/12](#) )

**{Informative references: mechanical gearings with secondary electric drive [F16H 3/72](#); arrangements for handling mechanical energy structurally associated with the dynamo-electric machine [H02K 7/00](#); machines comprising structurally interrelated motor and generator parts [H02K 51/00](#); dynamo-electric machines not otherwise provided for in [H02K](#) see [H02K 99/00](#)}**

**NOTE**

In this subgroup, the following expressions are used, with the meanings indicated :

- "energy storing means" means apparatus for storing propulsive energy and providing stored energy to drive the prime mover or the ultimate propulsive elements
- "hybrid electric vehicle" (HEV) means a vehicle with an electrical prime mover and a combustion engine, in which the electrical prime mover and the combustion engine either singly or in combination, drive the ultimate propulsive elements, e.g. wheels
- "motor-generator" means an electric motor, or an electric generator, or an electrical machine which can be used for both functions, as a motor or a generator
- "prime mover" means a propulsion unit or source of motive power providing a mechanical output, e.g. via a rotating shaft

- 6/08 . Prime-movers comprising combustion engines and mechanical or fluid energy storing means
- 6/10 . . by means of a chargeable mechanical accumulator, e.g. flywheel
  - 6/105 . . . {the accumulator being a flywheel}
  - 6/12 . . by means of a chargeable fluidic accumulator
  - 2006/123 . . . {for driving pneumatic motors}
  - 2006/126 . . . {the hydraulic accumulator starts the engine}
- 6/20 . the prime-movers consisting of electric motors and internal combustion engines, e.g. HEVs

**NOTE**

When classifying in one of groups [B60K 6/22](#), [B60K 6/42](#) or [B60K 6/50](#), further technical information, which is considered to represent information of interest for search, should also be classified in the other subgroups of main

B60K 6/20

(continued)

group [B60K 6/00](#) to enable searching using a combination of classification symbols

- 6/22 . . characterised by apparatus, components or means specially adapted for HEVs
- 6/24 . . . characterised by the combustion engines
- 6/26 . . . characterised by the motors or the generators
- 2006/262 . . . . {the motor or generator are used as clutch, e.g. between engine and driveshaft}
- 2006/264 . . . . {with outer rotor and inner stator}
- 2006/266 . . . . {with two coaxial motors or generators}
- 2006/268 . . . . {Electric drive motor starts the engine, i.e. used as starter motor}
- 6/28 . . . characterised by the electric energy storing means, e.g. batteries or capacitors
- 6/30 . . . characterised by chargeable mechanical accumulators, e.g. flywheels
- 6/32 . . . characterised by the fuel cells
- 6/34 . . . characterised by the absence of energy storing means
- 6/36 . . . characterised by the transmission gearings
- 6/365 . . . . with the gears having orbital motion
- 6/38 . . . characterised by the driveline clutches ([shift clutches within the gearing or transmission B60K 6/36](#) {, [B60K 6/54](#)})
- 2006/381 . . . . {characterized by driveline brakes ([shift brakes in transmission B60K 6/54](#))}
- 6/383 . . . . One-way clutches or freewheel devices
- 6/387 . . . . Actuated clutches, i.e. clutches engaged or disengaged by electric, hydraulic or mechanical actuating means
- 6/40 . . . characterised by the assembly or relative disposition of components
- 6/405 . . . . Housings
- 6/42 . . characterised by the architecture of the hybrid electric vehicle
- 6/44 . . . Series-parallel type
- 6/442 . . . . Series-parallel switching type
- 6/445 . . . . Differential gearing distribution type
- 6/448 . . . . Electrical distribution type
- 6/46 . . . Series type
- 6/48 . . . Parallel type
- 2006/4808 . . . . {Electric machine connected or connectable to gearbox output shaft}
- 2006/4816 . . . . {Electric machine connected or connectable to gearbox internal shaft}
- 2006/4825 . . . . {Electric machine connected or connectable to gearbox input shaft}
- 2006/4833 . . . . {Step up or reduction gearing driving generator, e.g. to operate generator in most efficient speed range}
- 2006/4841 . . . . . {the gear provides shifting between multiple ratios}
- 6/485 . . . . Motor-assist type
- 6/50 . . Architecture of the driveline characterised by arrangement or kind of transmission units
- 6/52 . . . Driving a plurality of drive axles, e.g. four-wheel drive
- 6/54 . . . Transmission for changing ratio
- 2006/541 . . . . {without reverse ratio using instead electric reversing}
- 2006/542 . . . . {with overdrive ratio}
- 6/543 . . . . the transmission being a continuously variable transmission

- 6/547 . . . . the transmission being a stepped gearing

#### 7/00 Disposition of motor in, or adjacent to, traction wheel ([roller-skate driving mechanisms A63C 17/12](#))

- 7/0007 . {the motor being electric}
- 7/0015 . {the motor being hydraulic}
- 7/0023 . {the motor being pneumatic}
- 2007/003 . {with two or more motors driving a single wheel}
- 2007/0038 . {the motor moving together with the wheel axle}
- 2007/0046 . {the motor moving together with the vehicle body, i.e. moving independently from the wheel axle}
- 2007/0053 . {the motor moving relative to the vehicle body and to the wheel axle}
- 2007/0061 . {the motor axle being parallel to the wheel axle}
- 2007/0069 . {the motor axle being perpendicular to the wheel axle}
- 2007/0076 . . {the motor axle being horizontal}
- 2007/0084 . . {the motor axle being vertical}
- 2007/0092 . {the motor axle being coaxial to the wheel axle}

#### 8/00 Arrangement or mounting of propulsion units not provided for in one of the preceding main groups

#### Arrangements in connection with cooling, air intake, gas exhaust, fuel supply, or power supply of propulsion units in vehicles

- 11/00 Arrangement in connection with cooling of propulsion units ([heating the interior space B60H](#); [cooling internal combustion engines per se F01P](#))
- 11/02 . with liquid cooling
- 11/04 . . Arrangement or mounting of radiators, radiator shutters, or radiator blinds ({[B60K 11/085 takes precedence](#)})
- 11/06 . with air cooling
- 11/08 . Air inlets for cooling; Shutters or blinds therefor ({[radiator or grille guards B60R 19/52](#)})
- 11/085 . . {with adjustable shutters or blinds}
- 13/00 Arrangement in connection with combustion air intake or gas exhaust of propulsion units ([extensions for melting snow or ice on roads or like surfaces E01H 5/00, E01H 6/00](#); [forming part of the engine F01N](#); [supplying combustion engines with combustible mixtures or constituents F02M](#))
- 13/02 . concerning intake
- 13/04 . concerning exhaust ({[collecting exhaust gases with central suction systems not forming part of vehicles, e.g. in workshops or tunnels B08B 15/002, otherwise along carriageways E01C 1/005](#); [extensions for melting snow on roads E01H 5/00, E01H 6/00](#); [exhaust or silencing apparatus for internal combustion engines per se F01N](#); {pipes, joints or supports therefor F16L})
- 13/06 . using structural parts of the vehicle as ducts, e.g. frame parts
- 15/00 Arrangement in connection with fuel supply of combustion engines ([or other fuel consuming energy converters, e.g. fuel cells](#)); [Mounting or construction of fuel tanks](#) ([tanks in general B65D, F17C](#); [supplying combustion engines with combustible mixtures or constituents F02M](#))
- 15/01 . Arrangement of fuel conduits ([chassis frame forming fluid conduit means B62D 21/17](#))
- 15/013 . . {of gas conduits}

2015/016	. . {Fuel conduits having more than one internal passage, e.g. for different types of fuel}	2015/03256	. . {characterised by special valves, the mounting thereof}
15/03	. Fuel tanks ( <a href="#">chassis frame comprising fluid storage compartment B62D 21/16</a> ; Details of the fuel feeding system related to the fuel tank <a href="#">F02M 37/0076</a> )	2015/03263	. . . {Ball valves}
15/03006	. . {Gas tanks ( <a href="#">B60K 15/07 takes precedence</a> )}	2015/03269	. . . {Flap valves}
2015/03013	. . . {Control systems for LPG tanks}	2015/03276	. . . {Valves with membranes}
2015/03019	. . . {Filling of gas tanks}	2015/03282	. . . {Umbrella type valves}
2015/03026	. . . {comprising a valve}	2015/03289	. . . {Float valves; Floats therefor}
2015/03032	. . {Manufacturing of fuel tanks}	2015/03296	. . . {Pressure regulating valves}
2015/03039	. . . {made of a combination of non metallic and metallic materials}	2015/03302	. . . {Electromagnetic valves}
2015/03046	. . . {made from more than one layer}	2015/03309	. . {Tanks specially adapted for particular fuels}
2015/03052	. . . {Fuel tanks made of two balloons, one inside the other}	2015/03315	. . . {for hydrogen}
2015/03059	. . . {Fuel tanks with double shells or more}	2015/03322	. . . {for methanol}
2015/03065	. . . . {with material filled between the walls}	2015/03328	. . {Arrangements or special measures related to fuel tanks or fuel handling}
2015/03072	. . {Arrangements for reducing evaporation}	2015/03335	. . . {for fast filling of fuel tanks, e.g. specific filler pipes for pressurised fuelling}
2015/03078	. . . {Membranes, layers or the like covering the surface of the fuel}	2015/03342	. . . {to allow automatic or robotised filling of the tank}
2015/03085	. . . . {using inflatable bags or bladders in the tanks}	2015/03348	. . . {for supplying additives to fuel}
2015/03092	. . {with latent heat storages to reduce the evaporation of fuel}	2015/03355	. . . {for supplying different types of fuel}
2015/03098	. . {with a device for mixing liquids in the fuel tank, e.g. for mixing oil and fuel}	2015/03361	. . . {for checking the quality or quantity of fuel during filling of fuel tank}
2015/03105	. . {with supplementary interior tanks inside the fuel tank}	2015/03368	. . . {for preventing overfilling of tanks}
2015/03111	. . {Swirl pots}	2015/03375	. . . {to improve security}
2015/03118	. . {Multiple tanks, i.e. two or more separate tanks ( <a href="#">supplementary tanks inside the fuel tank B60K 2015/03105</a> )}	2015/03381	. . . {for preventing explosions}
2015/03125	. . . {Suction lines for dual tanks}	2015/03388	. . . {in case of a roll over of the vehicle}
2015/03131	. . . {Systems for filling dual tanks}	2015/03394	. . . {for preventing expulsion of fuel during filling of the tank}
2015/03138	. . . {Pumping means between the compartments}	2015/03401	. . . {for preventing electrostatic charges}
2015/03144	. . . {Fluid connections between the tanks}	2015/03407	. . . {to protect tanks against projectiles}
2015/03151	. . . {Mechanical connection between the tanks}	2015/03414	. . . {associated with the fuel tank for cooling heated fuel}
2015/03157	. . . {for supply different types of fuel to the motor}	2015/03421	. . . {to protect the fuel tank against heat}
2015/03164	. . {Modular concepts for fuel tanks}	2015/03427	. . . {for heating fuel, e.g. to avoiding freezing}
2015/03171	. . {Expansion tanks}	2015/03434	. . . {for preventing theft of fuel ( <a href="#">locks for filler caps B60K 15/0409</a> ; <a href="#">locking of the inlet cover B60K 2015/0561</a> )}
15/03177	. . {made of non-metallic material, e.g. plastics, or of a combination of non-metallic and metallic material ( <a href="#">B60K 15/03006 takes precedence</a> )}	2015/0344	. . . {comprising baffles}
2015/03184	. . {Exchangeable tanks, i.e. the empty tank is replaced by refilled tank}	2015/03447	. . . {for improving the sealing}
2015/0319	. . {with electronic systems, e.g. for controlling fuelling or venting ( <a href="#">for LPG tanks B60K 2015/03013</a> )}	2015/03453	. . . {for fixing or mounting parts of the fuel tank together}
2015/03197	. . . {Systems for exchanging data}	2015/0346	. . . . {by welding}
2015/03203	. . . . {during refueling}	2015/03467	. . . . {by clip or snap fit fittings}
2015/0321	. . {characterised by special sensors, the mounting thereof}	2015/03473	. . . {for draining or emptying a fuel tank}
2015/03217	. . . {Fuel level sensors}	2015/0348	. . . {for returning the fuel from the motor}
2015/03223	. . . . {comprising at least two level fuel sensors}	2015/03486	. . {characterised by the materials the tank or parts thereof are essentially made from}
2015/0323	. . . {Sensors for detecting presence or absence of the filling nozzle}	2015/03493	. . . {made of plastics}
2015/03236	. . {characterised by special filters, the mounting thereof}	15/035	. . characterised by venting means
2015/03243	. . {characterised by special pumps, the mounting thereof}	15/03504	. . . {adapted to avoid loss of fuel or fuel vapour, e.g. with vapour recovery systems}
2015/0325	. . . {Jet pumps}	2015/03509	. . . . {with a droplet separator in the vent line}
		2015/03514	. . . . {with vapor recovery means}
		15/03519	. . . {Valve arrangements in the vent line}
		2015/03523	. . . {Arrangements of the venting tube}
		2015/03528	. . . . {Mounting of venting tubes}
		2015/03533	. . . . {the venting tube being movable with the fuel level}
		2015/03538	. . . . {the venting tube being connected with the filler tube}
		2015/03542	. . . {Mounting of the venting means ( <a href="#">mounting of venting tubes B60K 2015/03528</a> )}

2015/03547	. . . .	{the venting means are integrated in the fuel cap or inlet cover}	2015/0493	. . . .	{Means for checking absence or presence of closure cap}
2015/03552	. . . .	{the venting means are integrated into the fuel filler pipe}	2015/0496	. . . .	{the fuel inlet being arranged on the top of the fuel tank}
2015/03557	. . . .	{comprising elements of the venting device integrated in the fuel tank, e.g. vapor recovery means}	15/05	. . . .	Inlet covers
2015/03561	. . . .	{Venting means working at specific times}	2015/0507	. . . .	{Arrangements for adjusting the inlet cover}
2015/03566	. . . .	{comprising means for stopping the venting of fuel vapor, e.g. during refueling or engine stop}	2015/0515	. . . .	{Arrangements for closing or opening of inlet cover (locking means <a href="#">B60K 2015/0561</a> )}
2015/03571	. . . .	{Venting during driving}	2015/0523	. . . .	{with sliding connection to the vehicle body}
2015/03576	. . . .	{Venting during filling the reservoir}	2015/053	. . . .	{with hinged connection to the vehicle body}
2015/0358	. . . .	{the venting is actuated by specific signals or positions of particular parts}	2015/0538	. . . .	{with open or close mechanism automatically actuated}
2015/03585	. . . .	{by gas pressure}	2015/0546	. . . .	{Arrangements for checking the position of the inlet cover}
2015/0359	. . . .	{by filler cap or inlet cover position}	2015/0553	. . . .	{Details concerning the inlet box or bowl in the vehicle car body panel}
2015/03595	. . . .	{by filler nozzle}	2015/0561	. . . .	{Locking means for the inlet cover}
15/04	. . . .	Tank inlets ( <a href="#">B60K 15/077</a> takes precedence)	2015/0569	. . . .	{with actuator fixed to the inlet cover}
15/0403	. . . .	{Anti-siphoning devices}	2015/0576	. . . .	{with actuator fixed to the vehicle body}
15/0406	. . . .	{Filler caps for fuel tanks}	2015/0584	. . . .	{the locking bolt is linearly moved to lock or unlock}
15/0409	. . . .	{Provided with a lock}	2015/0592	. . . .	{with storage means for the cap}
2015/0412	. . . .	{the key can only be withdrawn when the cap is placed on the filler neck}	15/06	. . . .	characterised by fuel reserve systems
2015/0416	. . . .	{electrically actuated}	15/061	. . . .	{with level control}
2015/0419	. . . .	{Self-sealing closure caps, e.g. that don't have to be removed manually}	2015/062	. . . .	{Arrangement for filling the fuel reserve systems}
2015/0422	. . . .	{actuated by the inlet cover}	15/063	. . . .	Arrangement of tanks
2015/0425	. . . .	{actuated by a motor}	2015/0631	. . . .	{the fuel tank forming at least part of the vehicle floor}
2015/0429	. . . .	{actuated by the nozzle}	2015/0632	. . . .	{the fuel tank is arranged below the front seat}
2015/0432	. . . .	{having a specific connection between the cap and the vehicle or tank opening}	2015/0633	. . . .	{the fuel tank is arranged below the rear seat}
2015/0435	. . . .	{using a sliding connection}	2015/0634	. . . .	{the fuel tank is arranged below the vehicle floor}
2015/0438	. . . .	{using screw or bayonet}	2015/0635	. . . .	{the fuel tank is arranged between the seats}
2015/0441	. . . .	{with torque control}	2015/0636	. . . .	{the fuel tank being part of the chassis or frame}
2015/0445	. . . .	{using hinges}	2015/0637	. . . .	{the fuel tank is arranged in the front of the vehicle}
2015/0448	. . . .	{comprising spherical valve type closures}	2015/0638	. . . .	{the fuel tank is arranged in the rear of the vehicle}
2015/0451	. . . .	{Sealing means in the closure cap}	2015/0639	. . . .	{the fuel tank is arranged near or in the roof}
2015/0454	. . . .	{combined closing of the fuel inlet and bodywork inlet by one element which is visible from outside}	15/067	. . . .	Mounting of tanks
2015/0458	. . . .	{Details of the tank inlet}	2015/0675	. . . .	{allowing deflection movements of the tank in case of a crash}
2015/0461	. . . .	{comprising a filler pipe shutter, e.g. trap, door or flap for fuel inlet}	15/07	. . . .	of gas tanks
2015/0464	. . . .	{comprising a flexible or extendable filler pipes, e.g. corrugated, foldable or with bellows}	15/073	. . . .	Tank construction specially adapted to the vehicle ( <a href="#">B60K 15/077</a> takes precedence)
2015/0467	. . . .	{Fuel tanks with more than one filler pipe}	15/077	. . . .	with means modifying or controlling distribution or motion of fuel, e.g. to prevent noise, surge, splash or fuel starvation
2015/047	. . . .	{Manufacturing of the fuel inlet or connecting elements to fuel inlet, e.g. pipes or venting tubes}	2015/0772	. . . .	{Floats in the fuel tank (float valves <a href="#">B60K 2015/03289</a> )}
2015/0474	. . . .	{Arrangement of fuel filler pipes in relation to vehicle body}	2015/0775	. . . .	{for reducing movement or slash noise of fuel}
2015/0477	. . . .	{Details of the filler neck tank side}	2015/0777	. . . .	{in-tank reservoirs or baffles integrally manufactured with the fuel Tank}
2015/048	. . . .	{Arrangements for sealing the fuel inlet during filling}	15/10	. . . .	concerning gas-producing plants
2015/0483	. . . .	{Means to inhibit the introduction of too small or too big filler nozzles}			
2015/0487	. . . .	{Means to shield vehicle bodywork from fuel, e.g. during filling}			
2015/049	. . . .	{Means for determining the position of the filler nozzle in the filler pipe}			

16/00	<b>Arrangements in connection with power supply of propulsion units in vehicles from force of nature, e.g. sun or wind</b> (electric propulsion with power supply from force of nature, e.g. sun or wind, <a href="#">B60L 8/00</a> ; effecting propulsion by wind motors driving water-engaging propulsive elements <a href="#">B63H 13/00</a> ; wind motors specially adapted for installation on vehicles <a href="#">F03D 9/32</a> )	17/306	. . {with a universal joint in the axis of the steering knuckle}
		17/32	. the ultimate propulsive elements, e.g. ground wheels, being rockable about a horizontal pivot
		17/34	. for driving both front and rear wheels, e.g. four wheel drive vehicles (arrangement or mounting of control devices for changing number of driven wheels <a href="#">B60K 23/08</a> )
	<b>WARNING</b>	17/342	. . having a longitudinal, endless element, e.g. belt or chain, for transmitting drive to wheels
	Group <a href="#">B60K 16/00</a> is impacted by reclassification into group <a href="#">F03D 9/32</a> .	17/344	. . having a transfer gear
	Groups <a href="#">B60K 16/00</a> and <a href="#">F03D 9/32</a> should be considered in order to perform a complete search.	17/346	. . . the transfer gear being a differential gear
2016/003	. {solar power driven}	17/3462	. . . . {with means for changing distribution of torque between front and rear wheels}
2016/006	. {wind power driven}	17/3465	. . . . . {self-actuated means, e.g. differential locked automatically by difference of speed}
<b>Arrangement or mounting of transmissions or their control in vehicles</b> (torque-transmitting axles <a href="#">B60B</a> ; combined transmission and steering gear for steering non-deflectable wheels <a href="#">B62D</a> )		17/3467	. . . . {combined with a change speed gearing, e.g. range gear}
17/00	<b>Arrangement or mounting of transmissions in vehicles</b> (clutches <i>per se</i> , e.g. construction thereof, <a href="#">F16D</a> ; gearing <i>per se</i> , e.g. construction thereof, <a href="#">F16H</a> )	17/348	. . having differential means for driving one set of wheels, e.g. the front, at one speed and the other set, e.g. the rear, at a different speed ( <a href="#">B60K 17/346</a> takes precedence)
17/02	. characterised by arrangement, location, or kind of clutch	17/35	. . . including arrangements for suppressing or influencing the power transfer, e.g. viscous clutches (differential gearing with locking devices { <a href="#">F16H 48/20</a> })
17/04	. characterised by arrangement, location, or kind of gearing (electric equipment or propulsion of electrically-propelled vehicles <a href="#">B60L</a> )	17/3505	. . . . {with self-actuated means, e.g. by difference of speed}
17/043	. . {Transmission unit disposed in on near the vehicle wheel, or between the differential gear unit and the wheel}	17/351	. . . . . {comprising a viscous clutch}
17/046	. . . {with planetary gearing having orbital motion}	17/3515	. . . . {with a clutch adjacent to traction wheel, e.g. automatic wheel hub}
17/06	. . of change-speed gearing ( <a href="#">B60K 17/10</a> - <a href="#">B60K 17/16</a> take precedence)	17/352	. . . . {manually operated}
17/08	. . . of mechanical type	17/354	. . having separate mechanical assemblies for transmitting drive to the front or to the rear wheels or set of wheels
17/10	. . of fluid gearing (of fluid clutches <a href="#">B60K 17/02</a> )	17/356	. . having fluid or electric motor, for driving one or more wheels (disposition of motor in, or adjacent to, traction wheel <a href="#">B60K 7/00</a> )
17/105	. . . {Units comprising at least a part of the gearing and a torque-transmitting axle, e.g. transaxles ( <a href="#">B60K 17/14</a> takes precedence)}	17/358	. . {all driven wheels being steerable}
17/12	. . of electric gearing (of electrically-actuated clutches <a href="#">B60K 17/02</a> )	17/36	. for driving tandem wheels
17/14	. . the motor of fluid or electric gearing being disposed in or adjacent to traction wheel ( <a href="#">B60K 7/00</a> takes precedence)	20/00	<b>Arrangement or mounting of change-speed gearing control devices in vehicles</b> (movable cabs having special adaptations of vehicle control devices <a href="#">B62D 33/06</a> ; such control devices <i>per se</i> <a href="#">F16H</a> )
17/145	. . . {the electric gearing being disposed in or adjacent to traction wheel}	20/02	. of initiating means (control mechanisms in general <a href="#">G05G</a> )
17/16	. . of differential gearing	20/04	. . floor mounted
17/165	. . . {provided between independent half axles ( <a href="#">B60K 17/18</a> , <a href="#">B60K 17/20</a> take precedence)}	20/06	. . mounted on steering column or the like
17/18	. . . {in which the differential movement is obtained by resilient means}	20/08	. . Dashboard means
17/20	. . . {in which the differential movement is limited}	<b>WARNINGS</b>	
17/22	. characterised by arrangement, location, or type of main drive shafting, e.g. cardan shaft	1. The groups <a href="#">F16H 59/00</a> - <a href="#">F16H 63/00</a> were introduced on 1 May, 1988. These groups include the subject matter of <a href="#">B60K 20/14</a> , which from this date is no longer used for the classification of new documents	
17/24	. . Arrangements of mountings for shafting	2. Documents from the backlog of group <a href="#">B60K 20/14</a> are in the process of being systematically transferred to groups <a href="#">F16H 59/00</a> - <a href="#">F16H 63/00</a>	
17/26	. characterised by arrangement, location, of type of freewheel device	20/14	. . {fluid}
17/28	. characterised by arrangement, location, or type of power take-off		
17/30	. the ultimate propulsive elements, e.g. ground wheels, being steerable		
17/303	. . {with a gearwheel on the steering knuckle or kingpin axis}		

<b>23/00</b>	<b>Arrangement or mounting of control devices for vehicle transmissions, or parts thereof, not otherwise provided for (movable cabs having special adaptations of vehicle control devices <a href="#">B62D 33/06</a>; such control devices per se <a href="#">F16D</a>, <a href="#">F16H</a>)</b>	26/021	. . {with means for providing feel, e.g. by changing pedal force characteristics}
2023/005	. {Adjusting multiple pedals, e.g. for their initial position}	2026/022	. . . {with tactile feedback from a controller, e.g. vibrations}
23/02	. for main transmission clutches	2026/023	. . . {with electrical means to generate counter force or torque}
2023/025	. . {Adjusting of clutch pedal positions (clutch adjustment for removing slack <a href="#">F16D 13/75</a> )}	2026/024	. . {Adjustable consoles, e.g. for changing position of mounting casings}
23/04	. for differential gearing	2026/025	. . {Input devices for controlling electric drive motors}
2023/043	. . {Control means for varying left-right torque distribution, e.g. torque vectoring}	2026/026	. . {Adjusting of accelerator pedal positions}
2023/046	. . {Axle differential locking means}	2026/027	. . {Acceleration input members mounted on a seat}
23/06	. for freewheel devices	2026/028	. . {Acceleration input members mounted on steering wheel or column}
23/08	. for changing number of driven wheels {, for switching from driving one axle to driving two or more axles ( <a href="#">B60K 17/3515</a> takes precedence)}	2026/029	. . {Joystick type control devices for acceleration}
23/0808	. . {for varying torque distribution between driven axles, e.g. by transfer clutch}	26/04	. of means connecting initiating means or elements to propulsion unit
2023/0816	. . . {for varying front-rear torque distribution with a central differential}	2026/043	. . {with mechanical gearings}
2023/0825	. . . . {for adding torque to the front wheels}	2026/046	. . {with electrical transmission means}
2023/0833	. . . . {for adding torque to the rear wheels}	<b>28/00</b>	<b>Safety devices for propulsion-unit control, specially adapted for, or arranged in, vehicles, e.g. preventing fuel supply or ignition in the event of potentially dangerous conditions (for electrically-propelled vehicles <a href="#">B60L 3/00</a>; road vehicle drive control systems for purposes not related to the control of a particular sub-units <a href="#">B60W 30/00</a>)</b>
2023/0841	. . . {for locking a central differential, e.g. by using a lock-up clutch}	2028/003	. {inhibiting the starter motor, e.g. by controlling ignition or park lock circuits}
2023/085	. . {automatically actuated}	2028/006	. {disconnecting the electric power supply, e.g. the vehicle battery}
2023/0858	. . . {with electric means, e.g. electro-hydraulic means}	28/02	. responsive to conditions relating to the driver {(see provisionally also <a href="#">B60K 28/00</a> )}
2023/0866	. . . {with hydraulic means only}	28/04	. . responsive to presence or absence of the driver, e.g. to weight or lack thereof
2023/0875	. . . {with mechanical means only}	28/06	. . responsive to incapacity of driver
2023/0883	. . {manually actuated}	28/063	. . . {preventing starting of vehicles}
2023/0891	. . . {with actuator levers, e.g. shift levers or linkage for changing two-wheel to four-wheel drive}	28/066	. . . {actuating a signalling device ( <a href="#">B60K 28/063</a> takes precedence)}
<b>25/00</b>	<b>Auxiliary drives (<a href="#">B60K 16/00</a> takes precedence; arrangements of tyre-inflating pumps mounted on vehicles <a href="#">B60C 23/10</a>; driving tyre-inflating pumps <a href="#">B60C</a>; driving engine auxiliaries <a href="#">F02B</a>)</b>	28/08	. responsive to conditions relating to the cargo, e.g. overload {(see provisionally also <a href="#">B60K 28/00</a> )}
2025/005	. {driven by electric motors forming part of the propulsion unit}	28/10	. responsive to conditions relating to the vehicle {(see provisionally also <a href="#">B60K 28/00</a> )}
25/02	. directly from an engine shaft	28/12	. . responsive to conditions relating to doors or doors locks, e.g. open door {(see provisionally also <a href="#">B60K 28/00</a> )}
2025/022	. . {by a mechanical transmission}	28/14	. . responsive to accident or emergency, e.g. deceleration, tilt of vehicle
2025/024	. . . {with variable ratio}	28/16	. . responsive to, or preventing, skidding of wheels (brake control systems for vehicle drive stability <a href="#">B60T 8/1755</a> ; arrangements responsive to a speed condition for adjusting wheel braking force <a href="#">B60T 8/32</a> ; control of vehicle driving stability otherwise than by controlling the propulsion unit only <a href="#">B60W 30/02</a> ; preventing wheel slippage by reducing power in rail vehicles <a href="#">B61C 15/00</a> )
2025/026	. . {by a hydraulic transmission}	28/165	. . . {acting on elements of the vehicle drive train other than the propulsion unit and brakes, e.g. transmission, clutch, differential (acting on brakes <a href="#">B60T 8/17</a> )}
2025/028	. . {by a pneumatic transmission}		
25/04	. from static or dynamic pressure or vacuum, developed by the engine		
25/06	. from the transmission power take-off (transmissions having power-take-off <a href="#">B60K 17/28</a> )		
2025/065	. . {the transmission being fluidic, e.g. hydraulic}		
25/08	. from a ground wheel, e.g. engaging the wheel tread or rim		
25/10	. directly from oscillating movements due to vehicle running motion, e.g. suspension movement (resilient suspensions having dampers accumulating utilisable energy, e.g. compressing air, <a href="#">B60G 13/14</a> )		
2025/103	. . {by electric means}		
2025/106	. . {by fluid means}		
<b>26/00</b>	<b>Arrangements or mounting of propulsion unit control devices in vehicles</b>		
26/02	. of initiating means or elements		

**31/00** Vehicle fittings, acting on a single sub-unit only, for automatically controlling, i.e. preventing speed from exceeding an arbitrarily established velocity or maintaining speed at a particular velocity, as selected by the vehicle operator (fittings acting on two or more sub-units [B60W 30/14](#); propulsion unit control in general, [see the relevant classes or subclasses, e.g. F02D](#); speedometers [G01P](#); systems or devices for controlling speed in general [G05D 13/00](#); {in traffic anti-collision system for road vehicles [G08G 1/16](#)})

**NOTE**

In this group:

- the means ordinarily includes a device, e.g. a servomechanism, for operating a velocity-affecting element of the vehicle, e.g. the throttle;
- a means for preventing a vehicle from exceeding a particular speed is often referred to as a "governor", whereas a means for maintaining the vehicle within a relatively narrow speed range is generally designated as "speed control". Since these two functions are frequently interrelated, no attempt has been made to identify such means as being particularly adapted to perform only one, or the other of the functions.

- 31/0008 . {including means for detecting potential obstacles in vehicle path}
- 2031/0016 . . {Identification of obstacles; Selection of a target vehicle}
- 2031/0025 . . {Detecting position of target vehicle, e.g. vehicle driving ahead from host vehicle}
- 2031/0033 . . {Detecting longitudinal speed or acceleration of target vehicle}
- 2031/0041 . . {Detecting lateral speed of target vehicle}
- 2031/005 . . {Selecting more than one target vehicle, e.g. using several preceding vehicles as target}
- 31/0058 . {responsive to externally generated signalling}
- 31/0066 . {responsive to vehicle path curvature}
- 31/0075 . . {responsive to vehicle steering angle}
- 31/0083 . . {responsive to centrifugal force acting on vehicle due to the path it is following}
- 2031/0091 . {Speed limiters or speed cutters}
- 31/02 . including electrically actuated servomechanism {including an electric control system or a servomechanism in which the vehicle velocity affecting element is actuated electrically}
- 31/04 . . and means for comparing one electrical quantity, e.g. voltage, pulse, waveform, flux, or the like, with another quantity of a like kind, which comparison means is involved in the development of an electrical signal which is fed into the controlling means
- 31/042 . . . {where at least one electrical quantity is set by the vehicle operator}
- 31/045 . . . . {in a memory, e.g. a capacitor}
- 31/047 . . . . {the memory being digital}
- 31/06 . including fluid pressure actuated servomechanism {in which the vehicle velocity affecting element is actuated by fluid pressure}
- 31/08 . . and one or more electrical components for establishing or regulating input pressure

- 31/10 . . and means for comparing one electrical quantity, e.g. voltage, pulse, waveform, flux, or the like, with another quantity of a like kind, which comparison means is involved in the development of a pressure which is fed into the controlling means
- 31/102 . . . {where at least one electrical quantity is set by the vehicle operator}
- 31/105 . . . . {in a memory, e.g. a capacitor}
- 31/107 . . . . {the memory being digital}
- 31/12 . including a device responsive to centrifugal forces {(centrifugal force acting on the vehicle due to the path it is following [B60K 31/0083](#), motor speed limiting by governors [G05D 13/10](#))}
- 31/14 . . having an electrical switch which is caused to function by the centrifugal force
- 31/16 . having means to prevent or discourage unauthorised use or adjusting of the controlling means {(vehicle theft prevention in general [B60R 25/00](#))}
- 31/18 . including a device to audibly, visibly, or otherwise signal the existence of unusual or unintended speed {to the driver of the vehicle (devices primarily intended for indicating speed to other traffic [B60Q 1/54](#))}
- 31/185 . . {connected to the speedometer display, e.g. by sensors or switches responsive to the position of the indicator needle (arrangement of pointers in automobile speedometers for indicating predetermined speeds by the detection of the position of the indicator needle [G01P 1/11](#))}

### **Arrangement of adaptations of instruments specially for vehicles; Dashboards**

- 35/00** Arrangement of adaptations of instruments (arrangements on dashboard [B60K 37/02](#))
- 37/00** Dashboards (as road-vehicle superstructure sub-unit [B62D](#))
- 37/02 . Arrangement of instruments (arrangement of lighting devices for dashboards [B60Q 3/10](#))
- 37/04 . Arrangement of fittings on dashboard (of instruments [B60K 37/02](#))
- 37/06 . . of controls, e.g. controls knobs

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- 2310/00** Arrangements, adaptations or methods for cruise controls
  - 2310/20 . Operator actuated switches or levers for cruise control or speed limiting systems
  - 2310/22 . Displays for target speed
  - 2310/24 . Speed setting methods
  - 2310/242 . . setting initial target speed, e.g. initial algorithms
  - 2310/244 . . changing target speed or setting a new target speed, e.g. changing algorithms
  - 2310/246 . . releasing speed control, e.g. inhibiting speed control if a brake pedal is depressed
  - 2310/248 . . resuming speed control, e.g. returning to old target speed
  - 2310/26 . Distance setting methods, e.g. determining target distance to target vehicle
  - 2310/262 . . setting initial distance to preceding vehicle, e.g. initial algorithms
  - 2310/264 . . changing distance, e.g. reducing the distance for overtaking

- 2310/266 . . releasing distance control, e.g. inhibiting control if target vehicle lost or changing lane
- 2310/268 . . resuming distance control, e.g. changing target vehicle
- 2310/28 . Following time setting methods, e.g. elapsed delay between preceding and host vehicle
- 2310/30 . Mode switching, e.g. changing from one cruise control mode to another

**Arrangement or mounting of propulsion units in vehicles (of control devices for such units B60K 26/00; elastic mountings per se F16F; propulsion units or their control per se, see the relevant classes)**

**2350/00 Arrangements or adaptations of instruments; Dashboards**

- 2350/10 . Input/output devices or features thereof
- 2350/1004 . . Graphical user interfaces or menu aspects
- 2350/1008 . . Input devices or features thereof
- 2350/1012 . . . Controls by an approaching finger
- 2350/1016 . . . with reconfigurable control functions
- 2350/102 . . . Rotary controllers
- 2350/1024 . . . Touch sensitive control means or buttons
- 2350/1028 . . . . Touch screens
- 2350/1032 . . . . Emulation of control buttons
- 2350/1036 . . . . Touch switches
- 2350/104 . . Input by combination of touch screen and control button
- 2350/1044 . . . Input by voice
- 2350/1048 . . . Joysticks
- 2350/1052 . . . Input by gesture
- 2350/1056 . . Output devices of features thereof
- 2350/106 . . . Video screens
- 2350/1064 . . . Combined instruments with analogue meters and additional displays
- 2350/1068 . . . the same information is available on different displays
- 2350/1072 . . . Virtual instruments
- 2350/1076 . . Type of information
- 2350/108 . . . Explanation of functions
- 2350/1084 . . . Distance to obstacles or vehicles
- 2350/1088 . . . Reversing assist
- 2350/1092 . . . Economic driving
- 2350/1096 . . . Information displayed according to relevancy
- 2350/20 . Optical features of instruments
- 2350/2004 . . Displays on a manual operation element
- 2350/2008 . . using color changes
- 2350/2013 . . using a camera
- 2350/2017 . . Three-dimensional displays
- 2350/2021 . . using a filter
- 2350/2026 . . Holographic features
- 2350/203 . . Illumination features
- 2350/2034 . . . Electroluminescent elements
- 2350/2039 . . . Backlit symbols
- 2350/2043 . . . Translucent dashboard skins
- 2350/2047 . . using a laser
- 2350/2052 . . using projection means
- 2350/2056 . . Optical elements for superposition of display information
- 2350/206 . . Optical elements in front of, or behind a dial
- 2350/2065 . . using real or virtual images of components
- 2350/2069 . . Adjustment of brightness
- 2350/2073 . . Fogging prevention
- 2350/2078 . . Glare prevention

- 2350/2082 . . Anti-reflection means
- 2350/2086 . . Instrument cover plate features
- 2350/2091 . . . for instruments which should not be visible
- 2350/2095 . . Semi-transparent optical elements
- 2350/30 . Hardware adaptations for dashboards
- 2350/302 . . Circuit board features
- 2350/305 . . Wiring harness
- 2350/307 . . Electrical connections
- 2350/35 . Control system arrangements
- 2350/352 . . Control of displays
- 2350/355 . . Remote controls
- 2350/357 . . Wireless data transfers
- 2350/40 . Structural details of dashboards
- 2350/401 . . Dashboard parts used as air ducts
- 2350/402 . . Instrument dial features
- 2350/403 . . . with several available dial configurations
- 2350/405 . . Foldable or movable screens
- 2350/406 . . Means to cover or hide instruments
- 2350/407 . . Instruments movable with steering column
- 2350/408 . . Pointers of combined instruments
- 2350/90 . Problems related to user adaptation
- 2350/901 . . the user is the driver
- 2350/903 . . the user is the passenger
- 2350/905 . . Adaptation to left or right steering
- 2350/906 . . Disabling of display functions
- 2350/908 . . Manual selection of display features
- 2350/92 . Mounting positions or locations
- 2350/921 . . characterised by locations other than the dashboard
- 2350/922 . . . on the ceiling
- 2350/924 . . . at vehicle exterior
- 2350/925 . . . on or in the centre console
- 2350/927 . . . on sun visor or rear view mirror
- 2350/928 . . . on the steering wheel
- 2350/94 . Mounting process, Fixation means
- 2350/941 . . Fixation of instruments to dashboard
- 2350/943 . . Fixation of dashboard to vehicle structure
- 2350/945 . . using exchangeable modules
- 2350/946 . . using inserts
- 2350/948 . . with pluggable connections
- 2350/96 . Perception or visibility of information
- 2350/962 . . Perception adaptable to driving situations
- 2350/965 . . Means for improving awareness
- 2350/967 . . Blocking display functions

**2700/00 Control mechanisms and elements applying a mechanical movement**

- 2700/02 . regulating mechanisms combined with non-mechanical transmissions

**2702/00 Control devices wherein the control is combined with or essentially influenced by the engine or coupling, e.g. in an internal combustion engine, the control device is coupled with a carburettor control device or influenced by carburettor depression**

- 2702/02 . Automatic transmission with toothed gearing
- 2702/04 . . Control dependent on speed
- 2702/06 . . Control dependent on torque
- 2702/08 . Semi-automatic or non-automatic transmission with toothed gearing
- 2702/10 . . without a preselection system
- 2702/12 . . . the control being mechanical

- 2702/14 . . . the control being hydraulic or pneumatic
- 2702/16 . . . the control being electric
- 2702/18 . . with a preselection system, e.g. semi-automatic
- 2702/20 . . . using different control members for preselection and actuating, e.g. shift actuation is initiated by clutch pedal with elastic connection for energy accumulation
- 2704/00 Control devices, wherein the control is combined with or mainly influenced by the working of the engine or the main coupling, e.g. control device is linked to the carburettor control and is influenced by depression of pedal, for semi-automatic or non-automatic transmission having toothed wheels**
- 2704/02 . without preselection system, the control being mechanical
- 2704/04 . with preselection system, e.g. for semi-automatic transmission