

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](#)

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](#))

1/00 Arrangement or mounting of electrical propulsion units ([B60K 7/00](#) takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion [B60K 6/00](#); electric transmission arrangements [B60K 17/12](#); electric equipment or propulsion of electrically-propelled vehicles [per se B60L](#); current-collectors for power supply lines of electrically-propelled vehicles [B60L 5/00](#))

- 2001/001 . {one motor mounted on a propulsion axle for rotating right and left wheels of this axle}
- 2001/003 . {with means for cooling the electrical propulsion units}
- 2001/005 . . {the electric storage means}
- 2001/006 . . {the electric motors}
- 2001/008 . {with means for heating the electrical propulsion units}
- 1/02 . comprising more than one electric motor
- 1/04 . of the electric storage means for propulsion (for auxiliary purposes only [B60R 16/04](#); supplying batteries to, or removing batteries from, vehicles [B60S 5/06](#))
- 2001/0405 . . {characterised by their position}
- 2001/0411 . . . {Arrangement in the front part of the vehicle}
- 2001/0416 . . . {Arrangement in the rear part of the vehicle}
- 2001/0422 . . . {Arrangement under the front seats}

- 2001/0427 . . . {Arrangement between the seats}
- 2001/0433 . . . {Arrangement under the rear seats}
- 2001/0438 . . . {Arrangement under the floor}
- 2001/0444 . . . {Arrangement on a trailer}
- 2001/045 . . . {Arrangement in a wheel, e.g. a spare wheel}
- 2001/0455 . . {Removal or replacement of the energy storages}
- 2001/0461 . . . {from the side}
- 2001/0466 . . . {from above}
- 2001/0472 . . . {from below}
- 2001/0477 . . . {from the back}
- 2001/0483 . . . {from the front}
- 2001/0488 . . . {with arrangements for pivoting}
- 2001/0494 . . . {with arrangements for sliding}

3/00 Arrangement or mounting of steam or gaseous-pressure propulsion units ([B60K 7/00](#) takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion [B60K 6/00](#); gaseous-pressure transmission arrangements [B60K 17/10](#))

- 3/02 . 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 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}
15/03	. Fuel tanks (chassis frame comprising fluid storage compartment B62D 21/16 ; Details of the fuel feeding system related to the fuel tank F02M 37/0076)
15/03006	. . {Gas tanks (B60K 15/07 takes precedence)}
2015/03013	. . . {Control systems for LPG tanks}
2015/03019	. . . {Filling of gas tanks}
2015/03026	. . . {comprising a valve}
2015/03032	. . {Manufacturing of fuel tanks}
2015/03039	. . . {made of a combination of non metallic and metallic materials}
2015/03046	. . . {made from more than one layer}
2015/03052	. . . {Fuel tanks made of two balloons, one inside the other}
2015/03059	. . . {Fuel tanks with double shells or more}
2015/03065	. . . . {with material filled between the walls}
2015/03072	. . {Arrangements for reducing evaporation}
2015/03078	. . . {Membranes, layers or the like covering the surface of the fuel}
2015/03085	. . . . {using inflatable bags or bladders in the tanks}
2015/03092	. . {with latent heat storages to reduce the evaporation of fuel}
2015/03098	. . {with a device for mixing liquids in the fuel tank, e.g. for mixing oil and fuel}
2015/03105	. . {with supplementary interior tanks inside the fuel tank}

2015/03111	. . . {Swirl pots}	2015/03414	. . . {associated with the fuel tank for cooling heated fuel}
2015/03118	. . . {Multiple tanks, i.e. two or more separate tanks (supplementary tanks inside the fuel tank B60K 2015/03105)}	2015/03421	. . . {to protect the fuel tank against heat}
2015/03125	. . . {Suction lines for dual tanks}	2015/03427	. . . {for heating fuel, e.g. to avoiding freezing}
2015/03131	. . . {Systems for filling dual tanks}	2015/03434	. . . {for preventing theft of fuel (locks for filler caps B60K 15/0409 ; locking of the inlet cover B60K 2015/0561)}
2015/03138	. . . {Pumping means between the compartments}	2015/0344	. . . {comprising baffles}
2015/03144	. . . {Fluid connections between the tanks}	2015/03447	. . . {for improving the sealing}
2015/03151	. . . {Mechanical connection between the tanks}	2015/03453	. . . {for fixing or mounting parts of the fuel tank together}
2015/03157	. . . {for supply different types of fuel to the motor}	2015/0346	. . . . {by welding}
2015/03164	. . . {Modular concepts for fuel tanks}	2015/03467	. . . . {by clip or snap fit fittings}
2015/03171	. . . {Expansion tanks}	2015/03473	. . . {for draining or emptying a fuel tank}
15/03177	. . . {made of non-metallic material, e.g. plastics, or of a combination of non-metallic and metallic material (B60K 15/03006 takes precedence)}	2015/0348	. . . {for returning the fuel from the motor}
2015/03184	. . . {Exchangeable tanks, i.e. the empty tank is replaced by refilled tank}	2015/03486	. . . {characterised by the materials the tank or parts thereof are essentially made from}
2015/0319	. . . {with electronic systems, e.g. for controlling fuelling or venting (for LPG tanks B60K 2015/03013)}	2015/03493	. . . {made of plastics}
2015/03197	. . . {Systems for exchanging data}	15/035	. . . characterised by venting means
2015/03203	. . . . {during refueling}	15/03504	. . . {adapted to avoid loss of fuel or fuel vapour, e.g. with vapour recovery systems}
2015/0321	. . . {characterised by special sensors, the mounting thereof}	2015/03509	. . . . {with a droplet separator in the vent line}
2015/03217	. . . {Fuel level sensors}	2015/03514	. . . . {with vapor recovery means}
2015/03223	. . . . {comprising at least two level fuel sensors}	15/03519	. . . {Valve arrangements in the vent line}
2015/0323	. . . {Sensors for detecting presence or absence of the filling nozzle}	2015/03523	. . . {Arrangements of the venting tube}
2015/03236	. . . {characterised by special filters, the mounting thereof}	2015/03528	. . . . {Mounting of venting tubes}
2015/03243	. . . {characterised by special pumps, the mounting thereof}	2015/03533	. . . . {the venting tube being movable with the fuel level}
2015/0325	. . . {Jet pumps}	2015/03538	. . . . {the venting tube being connected with the filler tube}
2015/03256	. . . {characterised by special valves, the mounting thereof}	2015/03542	. . . {Mounting of the venting means (mounting of venting tubes B60K 2015/03528)}
2015/03263	. . . {Ball valves}	2015/03547	. . . . {the venting means are integrated in the fuel cap or inlet cover}
2015/03269	. . . {Flap valves}	2015/03552	. . . . {the venting means are integrated into the fuel filler pipe}
2015/03276	. . . {Valves with membranes}	2015/03557	. . . . {comprising elements of the venting device integrated in the fuel tank, e.g. vapor recovery means}
2015/03282	. . . {Umbrella type valves}	2015/03561	. . . {Venting means working at specific times}
2015/03289	. . . {Float valves; Floats therefor}	2015/03566	. . . . {comprising means for stopping the venting of fuel vapor, e.g. during refueling or engine stop}
2015/03296	. . . {Pressure regulating valves}	2015/03571	. . . . {Venting during driving}
2015/03302	. . . {Electromagnetic valves}	2015/03576	. . . . {Venting during filling the reservoir}
2015/03309	. . . {Tanks specially adapted for particular fuels}	2015/0358	. . . {the venting is actuated by specific signals or positions of particular parts}
2015/03315	. . . {for hydrogen}	2015/03585	. . . . {by gas pressure}
2015/03322	. . . {for methanol}	2015/0359	. . . . {by filler cap or inlet cover position}
2015/03328	. . . {Arrangements or special measures related to fuel tanks or fuel handling}	2015/03595	. . . . {by filler nozzle}
2015/03335	. . . {for fast filling of fuel tanks, e.g. specific filler pipes for pressurised fuelling}	15/04	. . . Tank inlets (B60K 15/077 takes precedence)
2015/03342	. . . {to allow automatic or robotised filling of the tank}	15/0403	. . . {Anti-siphoning devices}
2015/03348	. . . {for supplying additives to fuel}	15/0406	. . . {Filler caps for fuel tanks}
2015/03355	. . . {for supplying different types of fuel}	15/0409	. . . . {Provided with a lock}
2015/03361	. . . {for checking the quality or quantity of fuel during filling of fuel tank}	2015/0412	. . . . . {the key can only be withdrawn when the cap is placed on the filler neck}
2015/03368	. . . {for preventing overfilling of tanks}	2015/0416	. . . . . {electrically actuated}
2015/03375	. . . {to improve security}	2015/0419	. . . . {Self-sealing closure caps, e.g. that don't have to be removed manually}
2015/03381	. . . {for preventing explosions}	2015/0422	. . . . . {actuated by the inlet cover}
2015/03388	. . . {in case of a roll over of the vehicle}	2015/0425	. . . . . {actuated by a motor}
2015/03394	. . . {for preventing expulsion of fuel during filling of the tank}	2015/0429	. . . . . {actuated by the nozzle}
2015/03401	. . . {for preventing electrostatic charges}		
2015/03407	. . . {to protect tanks against projectiles}		

2015/0432	. . . .	{having a specific connection between the cap and the vehicle or tank opening}
2015/0435	. . . . .	{using a sliding connection}
2015/0438	. . . . .	{using screw or bayonet}
2015/0441	. . . . .	{with torque control}
2015/0445	. . . . .	{using hinges}
2015/0448	. . . . .	{comprising spherical valve type closures}
2015/0451	. . . . .	{Sealing means in the closure cap}
2015/0454	. . . . .	{combined closing of the fuel inlet and bodywork inlet by one element which is visible from outside}
2015/0458	. . . .	{Details of the tank inlet}
2015/0461	. . . . .	{comprising a filler pipe shutter, e.g. trap, door or flap for fuel inlet}
2015/0464	. . . . .	{comprising a flexible or extendable filler pipes, e.g. corrugated, foldable or with bellows}
2015/0467	. . . . .	{Fuel tanks with more than one filler pipe}
2015/047	. . . . .	{Manufacturing of the fuel inlet or connecting elements to fuel inlet, e.g. pipes or venting tubes}
2015/0474	. . . . .	{Arrangement of fuel filler pipes in relation to vehicle body}
2015/0477	. . . . .	{Details of the filler neck tank side}
2015/048	. . . . .	{Arrangements for sealing the fuel inlet during filling}
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}
2015/0493	. . . . .	{Means for checking absence or presence of closure cap}
2015/0496	. . . . .	{the fuel inlet being arranged on the top of the fuel tank}
15/05	. . . .	Inlet covers
2015/0507	. . . . .	{Arrangements for adjusting the inlet cover}
2015/0515	. . . . .	{Arrangements for closing or opening of inlet cover (locking means B60K 2015/0561)}
2015/0523	. . . . .	{with sliding connection to the vehicle body}
2015/053	. . . . .	{with hinged connection to the vehicle body}
2015/0538	. . . . .	{with open or close mechanism automatically actuated}
2015/0546	. . . . .	{Arrangements for checking the position of the inlet cover}
2015/0553	. . . . .	{Details concerning the inlet box or bowl in the vehicle car body panel}
2015/0561	. . . . .	{Locking means for the inlet cover}
2015/0569	. . . . .	{with actuator fixed to the inlet cover}
2015/0576	. . . . .	{with actuator fixed to the vehicle body}
2015/0584	. . . . .	{the locking bolt is linearly moved to lock or unlock}
2015/0592	. . . . .	{with storage means for the cap}
15/06	. . . .	characterised by fuel reserve systems
15/061	. . . .	{with level control}
2015/062	. . . . .	{Arrangement for filling the fuel reserve systems}
15/063	. . . .	Arrangement of tanks

2015/0631	. . . .	{the fuel tank forming at least part of the vehicle floor}
2015/0632	. . . .	{the fuel tank is arranged below the front seat}
2015/0633	. . . .	{the fuel tank is arranged below the rear seat}
2015/0634	. . . .	{the fuel tank is arranged below the vehicle floor}
2015/0635	. . . .	{the fuel tank is arranged between the seats}
2015/0636	. . . .	{the fuel tank being part of the chassis or frame}
2015/0637	. . . .	{the fuel tank is arranged in the front of the vehicle}
2015/0638	. . . .	{the fuel tank is arranged in the rear of the vehicle}
2015/0639	. . . .	{the fuel tank is arranged near or in the roof}
15/067	. . . .	Mounting of tanks
2015/0675	. . . . .	{allowing deflection movements of the tank in case of a crash}
15/07	. . . . .	of gas tanks
15/073	. . . .	Tank construction specially adapted to the vehicle (B60K 15/077 takes precedence)
15/077	. . . .	with means modifying or controlling distribution or motion of fuel, e.g. to prevent noise, surge, splash or fuel starvation
2015/0772	. . . . .	{Floats in the fuel tank (float valves B60K 2015/03289)}
2015/0775	. . . . .	{for reducing movement or slash noise of fuel}
2015/0777	. . . . .	{in-tank reservoirs or baffles integrally manufactured with the fuel Tank}
15/10	. . . .	concerning gas-producing plants
16/00		Arrangements in connection with power supply of propulsion units in vehicles from force of nature, e.g. sun or wind (electric propulsion with power supply from force of nature, e.g. sun or wind, B60L 8/00 ; effecting propulsion by wind motors driving water-engaging propulsive elements B63H 13/00 ; wind motors specially adapted for installation on vehicles F03D 9/32)
		WARNING Group B60K 16/00 is impacted by reclassification into group F03D 9/32 . Groups B60K 16/00 and F03D 9/32 should be considered in order to perform a complete search.
2016/003	. . . .	{solar power driven}
2016/006	. . . .	{wind power driven}

Arrangement or mounting of transmissions or their control in vehicles ([torque-transmitting axles B60B](#); [combined transmission and steering gear for steering non-deflectable wheels B62D](#))

17/00		Arrangement or mounting of transmissions in vehicles (clutches per se, e.g. construction thereof, F16D ; gearing per se, e.g. construction thereof, F16H)
17/02	. . . .	characterised by arrangement, location, or kind of clutch
17/04	. . . .	characterised by arrangement, location, or kind of gearing (electric equipment or propulsion of electrically-propelled vehicles B60L)
17/043	. . . .	{Transmission unit disposed in on near the vehicle wheel, or between the differential gear unit and the wheel}
17/046	. . . .	{with planetary gearing having orbital motion}

- 17/06 . . of change-speed gearing
([B60K 17/10](#) - [B60K 17/16](#) take precedence)
- 17/08 . . . of mechanical type
- 17/10 . . of fluid gearing (of fluid clutches [B60K 17/02](#))
- 17/105 . . . {Units comprising at least a part of the gearing and a torque-transmitting axle, e.g. transaxles
([B60K 17/14](#) takes precedence)}
- 17/12 . . of electric gearing (of electrically-actuated clutches [B60K 17/02](#))
- 17/14 . . the motor of fluid or electric gearing being disposed in or adjacent to traction wheel
([B60K 7/00](#) takes precedence)
- 17/145 . . . {the electric gearing being disposed in or adjacent to traction wheel}
- 17/16 . . of differential gearing
- 17/165 . . . {provided between independent half axles
([B60K 17/18](#), [B60K 17/20](#) take precedence)}
- 17/18 . . . {in which the differential movement is obtained by resilient means}
- 17/20 . . . {in which the differential movement is limited}
- 17/22 . characterised by arrangement, location, or type of main drive shafting, e.g. cardan shaft
- 17/24 . . Arrangements of mountings for shafting
- 17/26 . characterised by arrangement, location, of type of freewheel device
- 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}
- 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 [B60K 23/08](#))
- 17/342 . . having a longitudinal, endless element, e.g. belt or chain, for transmitting drive to wheels
- 17/344 . . having a transfer gear
- 17/346 . . . the transfer gear being a differential gear
- 17/3462 {with means for changing distribution of torque between front and rear wheels}
- 17/3465 {self-actuated means, e.g. differential locked automatically by difference of speed}
- 17/3467 {combined with a change speed gearing, e.g. range gear}
- 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
([B60K 17/346](#) takes precedence)
- 17/35 . . . including arrangements for suppressing or influencing the power transfer, e.g. viscous clutches (differential gearing with locking devices [F16H 48/20](#))
- 17/3505 {with self-actuated means, e.g. by difference of speed}
- 17/351 {comprising a viscous clutch}
- 17/3515 {with a clutch adjacent to traction wheel, e.g. automatic wheel hub}
- 17/352 {manually operated}
- 17/354 . . having separate mechanical assemblies for transmitting drive to the front or to the rear wheels or set of wheels
- 17/356 . . having fluid or electric motor, for driving one or more wheels (disposition of motor in, or adjacent to, traction wheel [B60K 7/00](#))
- 17/358 . . {all driven wheels being steerable}
- 17/36 . for driving tandem wheels
- 20/00** **Arrangement or mounting of change-speed gearing control devices in vehicles (movable cabs having special adaptations of vehicle control devices [B62D 33/06](#); such control devices per se [F16H](#))**
- 20/02 . of initiating means (control mechanisms in general [G05G](#))
- 20/04 . . floor mounted
- 20/06 . . mounted on steering column or the like
- 20/08 . . Dashboard means
- WARNINGS**
- 1. The groups [F16H 59/00](#) - [F16H 63/00](#) were introduced on 1 May, 1988. These groups include the subject matter of [B60K 20/14](#), which from this date is no longer used for the classification of new documents
- 2. Documents from the backlog of group [B60K 20/14](#) are in the process of being systematically transferred to groups [F16H 59/00](#) - [F16H 63/00](#)
- 20/14 . . {fluid}
- 23/00** **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 [B62D 33/06](#); such control devices per se [F16D](#), [F16H](#))**
- 2023/005 . {Adjusting multiple pedals, e.g. for their initial position}
- 23/02 . for main transmission clutches
- 2023/025 . . {Adjusting of clutch pedal positions (clutch adjustment for removing slack [F16D 13/75](#))}
- 23/04 . for differential gearing
- 2023/043 . . {Control means for varying left-right torque distribution, e.g. torque vectoring}
- 2023/046 . . {Axle differential locking means}
- 23/06 . for freewheel devices
- 23/08 . for changing number of driven wheels{, for switching from driving one axle to driving two or more axles ([B60K 17/3515](#) takes precedence)}
- 23/0808 . . {for varying torque distribution between driven axles, e.g. by transfer clutch}
- 2023/0816 . . . {for varying front-rear torque distribution with a central differential}
- 2023/0825 {for adding torque to the front wheels}
- 2023/0833 {for adding torque to the rear wheels}
- 2023/0841 . . . {for locking a central differential, e.g. by using a lock-up clutch}
- 2023/085 . . {automatically actuated}
- 2023/0858 . . . {with electric means, e.g. electro-hydraulic means}
- 2023/0866 . . . {with hydraulic means only}
- 2023/0875 . . . {with mechanical means only}
- 2023/0883 . . {manually actuated}

2023/0891	. . . {with actuator levers, e.g. shift levers or linkage for changing two-wheel to four-wheel drive}	28/04	. . responsive to presence or absence of the driver, e.g. to weight or lack thereof
25/00	Auxiliary drives (B60K 16/00 takes precedence; arrangements of tyre-inflating pumps mounted on vehicles B60C 23/10; driving tyre-inflating pumps B60C; driving engine auxiliaries F02B)	28/06	. . responsive to incapacity of driver
2025/005	. {driven by electric motors forming part of the propulsion unit}	28/063	. . . {preventing starting of vehicles}
25/02	. directly from an engine shaft	28/066	. . . {actuating a signalling device (B60K 28/063 takes precedence)}
2025/022	. . {by a mechanical transmission}	28/08	. responsive to conditions relating to the cargo, e.g. overload {(see provisionally also B60K 28/00)}
2025/024	. . . {with variable ratio}	28/10	. responsive to conditions relating to the vehicle {(see provisionally also B60K 28/00)}
2025/026	. . {by a hydraulic transmission}	28/12	. . responsive to conditions relating to doors or doors locks, e.g. open door {(see provisionally also B60K 28/00)}
2025/028	. . {by a pneumatic transmission}	28/14	. . responsive to accident or emergency, e.g. deceleration, tilt of vehicle
25/04	. from static or dynamic pressure or vacuum, developed by the engine	28/16	. . responsive to, or preventing, skidding of wheels (brake control systems for vehicle drive stability B60T 8/1755; arrangements responsive to a speed condition for adjusting wheel braking force B60T 8/32; control of vehicle driving stability otherwise than by controlling the propulsion unit only B60W 30/02; preventing wheel slippage by reducing power in rail vehicles B61C 15/00)
25/06	. from the transmission power take-off (transmissions having power-take-off B60K 17/28)	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 B60T 8/17)}
2025/065	. . {the transmission being fluidic, e.g. hydraulic}	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})
25/08	. from a ground wheel, e.g. engaging the wheel tread or rim		NOTE
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, B60G 13/14)		In this group:
2025/103	. . {by electric means}		– the means ordinarily includes a device, e.g. a servomechanism, for operating a velocity-affecting element of the vehicle, e.g. the throttle;
2025/106	. . {by fluid means}		– 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.
26/00	Arrangements or mounting of propulsion unit control devices in vehicles	31/0008	. {including means for detecting potential obstacles in vehicle path}
26/02	. of initiating means or elements	2031/0016	. . {Identification of obstacles; Selection of a target vehicle}
26/021	. . {with means for providing feel, e.g. by changing pedal force characteristics}	2031/0025	. . {Detecting position of target vehicle, e.g. vehicle driving ahead from host vehicle}
2026/022	. . . {with tactile feedback from a controller, e.g. vibrations}	2031/0033	. . {Detecting longitudinal speed or acceleration of target vehicle}
2026/023	. . . {with electrical means to generate counter force or torque}	2031/0041	. . {Detecting lateral speed of target vehicle}
2026/024	. . {Adjustable consoles, e.g. for changing position of mounting casings}		
2026/025	. . {Input devices for controlling electric drive motors}		
2026/026	. . {Adjusting of accelerator pedal positions}		
2026/027	. . {Acceleration input members mounted on a seat}		
2026/028	. . {Acceleration input members mounted on steering wheel or column}		
2026/029	. . {Joystick type control devices for acceleration}		
26/04	. of means connecting initiating means or elements to propulsion unit		
2026/043	. . {with mechanical gearings}		
2026/046	. . {with electrical transmission means}		
28/00	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 B60L 3/00; road vehicle drive control systems for purposes not related to the control of a particular sub-units B60W 30/00)		
2028/003	. {inhibiting the starter motor, e.g. by controlling ignition or park lock circuits}		
2028/006	. {disconnecting the electric power supply, e.g. the vehicle battery}		
28/02	. responsive to conditions relating to the driver {(see provisionally also B60K 28/00)}		

2031/005	. . {Selecting more than one target vehicle, e.g. using several preceding vehicles as target}	37/02	. Arrangement of instruments (arrangement of lighting devices for dashboards B60Q 3/10)
31/0058	. {responsive to externally generated signalling}	37/04	. Arrangement of fittings on dashboard (of instruments B60K 37/02)
31/0066	. {responsive to vehicle path curvature}	37/06	. . of controls, e.g. controls knobs
31/0075	. . {responsive to vehicle steering angle}	41/00	{Conjoint control of drive units; Conjoint control of at least two sub-units thereof} (arrangement of plural diverse prime-movers for mutual or common propulsion B60K 6/00)
31/0083	. . {responsive to centrifugal force acting on vehicle due to the path it is following}		NOTES
2031/0091	. {Speed limiters or speed cutters}		1. The control of a single sub-unit is classified in the relevant class for the sub-unit. Where a single sub-unit is controlled by means of signals or commands from other sub-units the control of this single sub-unit is classified in the relevant class for this sub-unit. For instance, the control of variable-ratio gearing by means of signals from the engine or { from another sub-unit influenced by } the accelerator is classified in subclass F16H
31/02	. including electrically actuated servomechanism {including an electric control system or a servomechanism in which the vehicle velocity affecting element is actuated electrically}		2. Conjoint control of drive units, e.g. propulsion units, and variable-ratio gearing occurring only transiently during ratio shift and being also characterised by the control of the gearing is classified in subclass F16H
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		WARNING
31/042	. . . {where at least one electrical quantity is set by the vehicle operator}		This group and its subgroups are no longer used for the classification of new documents as from January 1st, 2006. The backlog of these groups is being continuously reclassified to the relevant groups of B60W .
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}	41/002	. {Changing foot controls into hand controls, e.g. for invalid people}
31/105	. . . . {in a memory, e.g. a capacitor}	41/004	. {using electrical means}
31/107	. . . . {the memory being digital}	41/006	. . {with analogue circuits, relays and switches}
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)}	41/008	. {using hydraulic or pneumatic means}
31/14	. . having an electrical switch which is caused to function by the centrifugal force	41/02	. {of propulsion unit and clutch}
31/16	. having means to prevent or discourage unauthorised use or adjusting of the controlling means {(vehicle theft prevention in general B60R 25/00)}	41/022	. . {using electrical means}
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)}	41/025	. . . {with analogue circuits, relays and switches}
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)}	41/027	. . {using hydraulic or pneumatic means}
		41/04	. {of propulsion unit and gearing}
		41/042	. . {using electrical means}
		41/045	. . . {with analogue circuits, relays and switches}
		41/047	. . {using hydraulic or pneumatic means}
		41/06	. . {the gearing being stepped}
		41/062	. . . {using electrical means}
		41/065	. . . . {with analogue circuits, relays and switches}
		41/067	. . . {using hydraulic or pneumatic means}
		41/08	. . . {with interruption of the drive}
		41/082	. . . . {using electrical means}
		41/085	. . . . {with analogue circuits, relays and switches}
		41/087	. . . . {using hydraulic or pneumatic means}
		41/10	. . . {without interruption of the drive}
		41/102	. . . . {using electrical means}
		41/105	. . . . {with analogue circuits, relays and switches}
		41/107	. . . . {using hydraulic or pneumatic means}
		41/12	. . {the gearing being infinitely variable}
		41/14	. . . {of mechanical type}
		41/142	. . . . {using electrical means}
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)		

- 41/145 {with analogue circuits, relays and switches}
- 41/147 {using hydraulic or pneumatic means}
- 41/16 . . . {of fluid type}
- 41/162 {using electrical means}
- 41/165 {with analogue circuits, relays and switches}
- 41/167 {using hydraulic or pneumatic means}
- 41/18 . . . {of electric type, e.g. electromagnetic}
- 41/20 . {of propulsion unit and brake system}
- 41/202 . . {using electrical means}
- 41/205 . . . {with analogue circuits, relays and switches}
- 41/207 . . {using hydraulic or pneumatic means}
- 41/22 . {of clutch and gearing (control of torque converter lock-up clutches F16H 61/14)}
- 41/222 . . {using electrical means}
- 41/225 . . . {with analogue circuits, relays and switches}
- 41/227 . . {using hydraulic or pneumatic means}
- 41/24 . {of clutch and brake system}
- 41/242 . . {using electrical means}
- 41/245 . . . {with analogue circuits, relays and switches}
- 41/247 . . {using hydraulic or pneumatic means}
- 41/26 . {of gearing and brake system}
- 41/262 . . {using electrical means}
- 41/265 . . . {with analogue circuits, relays and switches}
- 41/267 . . {using hydraulic or pneumatic means}
- 41/28 . {of three or more sub-units}
- 41/282 . . {using electrical means}
- 41/284 . . . {the sub-units being engine, clutch and gearing}
- 41/286 . . . {with analogue circuits, relays and switches}
- 41/288 . . {using hydraulic or pneumatic means}

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 F16E; 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	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
2350/352	• • Control of displays	2704/02	• without preselection system, the control being mechanical
2350/355	• • Remote controls	2704/04	• with preselection system, e.g. for semi-automatic transmission
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	2741/003	• Changing foot controls into hand controls, e.g. for invalid people
2350/924	• • • at vehicle exterior	2741/006	• using electrical means
2350/925	• • • on or in the centre console	2741/02	• of propulsion unit and clutch
2350/927	• • • on sun visor or rear view mirror	2741/025	• • using electrical means
2350/928	• • • on the steering wheel	2741/04	• of propulsion unit and gearing
2350/94	• Mounting process, Fixation means	2741/045	• • using electrical means
2350/941	• • Fixation of instruments to dashboard	2741/06	• • the gearing being stepped
2350/943	• • Fixation of dashboard to vehicle structure	2741/065	• • • using electrical means
2350/945	• • using exchangeable modules	2741/08	• • • with interruption of the drive
2350/946	• • using inserts	2741/085	• • • using electrical means
2350/948	• • with pluggable connections	2741/10	• • • without interruption of the drive
2350/96	• Perception or visibility of information	2741/105	• • • using electrical means
2350/962	• • Perception adaptable to driving situations	2741/12	• • the gearing being infinitely variable
2350/965	• • Means for improving awareness	2741/14	• • • of mechanical type
2350/967	• • Blocking display functions	2741/145	• • • using electrical means
2700/00	Control mechanisms and elements applying a mechanical movement	2741/16	• • • of fluid type
2700/02	• regulating mechanisms combined with non-mechanical transmissions	2741/165	• • • using electrical means
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	2741/18	• • • of electric type, e.g. electromagnetic
2702/02	• Automatic transmission with toothed gearing	2741/20	• of propulsion unit and brake system
2702/04	• • Control dependent on speed	2741/205	• • using electrical means
2702/06	• • Control dependent on torque	2741/22	• of clutch and gearing
2702/08	• Semi-automatic or non-automatic transmission with toothed gearing	2741/225	• • using electrical means
2702/10	• • without a preselection system	2741/24	• of clutch and brake system
2702/12	• • • the control being mechanical	2741/245	• • using electrical means
2702/14	• • • the control being hydraulic or pneumatic	2741/26	• of gearing and brake system
2702/16	• • • the control being electric	2741/265	• • using electrical means
2702/18	• • with a preselection system, e.g. semi-automatic	2741/28	• of three or more sub-units
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	2741/283	• • using electrical means
		2741/286	• • • the sub-units being engine, clutch and gearing

NOTE

These groups are created for temporary back-up of former group [B60K 41/00](#) which will be replaced by [B60W](#)