

## SECTION B — PERFORMING OPERATIONS; TRANSPORTING

### B60 VEHICLES IN GENERAL

**B60L PROPULSION OF ELECTRICALLY-PROPELLED VEHICLES** (arrangements or mounting of electrical propulsion units or of plural diverse prime-movers for mutual or common propulsion in vehicles B60K 1/00, B60K 6/20; arrangements or mounting of electrical gearing in vehicles B60K 17/12, B60K 17/14; preventing wheel slip by reducing power in rail vehicles B61C 15/08; dynamo-electric machines H02K; control or regulation of electric motors H02P); **SUPPLYING ELECTRIC POWER FOR AUXILIARY EQUIPMENT OF ELECTRICALLY-PROPELLED VEHICLES** (electric coupling devices combined with mechanical couplings of vehicles B60D 1/64; electric heating for vehicles B60H 1/00); **ELECTRODYNAMIC BRAKE SYSTEMS FOR VEHICLES IN GENERAL** (control or regulation of electric motors H02P); **MAGNETIC SUSPENSION OR LEVITATION FOR VEHICLES; MONITORING OPERATING VARIABLES OF ELECTRICALLY-PROPELLED VEHICLES; ELECTRIC SAFETY DEVICES FOR ELECTRICALLY-PROPELLED VEHICLES** [4]

#### Subclass index

#### ELECTRIC PROPULSION

With external or internal supply.....	8/00-11/00
For monorail vehicles, suspension vehicles or rack railways; Magnetic suspension or levitation for vehicles.....	13/00
Control.....	15/00
CURRENT-COLLECTORS.....	5/00
ELECTRIC SUPPLY TO AUXILIARY EQUIPMENT.....	1/00
SAFETY ARRANGEMENTS.....	3/00
ELECTRODYNAMIC BRAKING.....	7/00

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| <p><b>1/00 Supplying electric power to auxiliary equipment of electrically-propelled vehicles</b> (arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general B60Q) [1, 6, 2006.01]</p> <p>1/02 • to electric heating circuits [1, 2006.01]</p> <p>1/04 • • fed by the power supply line [1, 2006.01]</p> <p>1/06 • • • using only one supply [1, 2006.01]</p> <p>1/08 • • • • Methods or devices for control or regulation [1, 2006.01]</p> <p>1/10 • • • with provision for using different supplies [1, 2006.01]</p> <p>1/12 • • • • Methods or devices for control or regulation [1, 2006.01]</p> <p>1/14 • to electric lighting circuits [1, 2006.01]</p> <p>1/16 • • fed by the power supply line [1, 2006.01]</p> <p><b>3/00 Electric devices on electrically-propelled vehicles for safety purposes; Monitoring operating variables, e.g. speed, deceleration, power consumption</b> [1, 2006.01]</p> <p>3/02 • Dead-man's devices [1, 2006.01]</p> <p>3/04 • Cutting-off the power supply under fault conditions [1, 2006.01]</p> <p>3/06 • Limiting the traction current under mechanical-overload conditions [1, 2006.01]</p> <p>3/08 • Means for preventing excessive speed of the vehicle [1, 2006.01]</p> <p>3/10 • Indicating wheel slip [1, 2006.01]</p> <p>3/12 • Recording operating variables [1, 2006.01]</p> <p><b>5/00 Current-collectors for power supply lines of electrically-propelled vehicles</b> [1, 2006.01]</p> | <p>5/02 • with ice-removing device [1, 2006.01]</p> <p>5/04 • using rollers or sliding shoes in contact with trolley wire (B60L 5/40 takes precedence) [1, 2006.01]</p> <p>5/06 • • Structure of the rollers or their carrying means [1, 2006.01]</p> <p>5/08 • • Structure of the sliding shoes or their carrying means [1, 2006.01]</p> <p>5/10 • • Devices preventing the collector from jumping off [1, 2006.01]</p> <p>5/12 • • Structural features of poles or their bases [1, 2006.01]</p> <p>5/14 • • • Devices for automatic lowering of a jumped-off collector [1, 2006.01]</p> <p>5/16 • • • Devices for lifting and resetting the collector (B60L 5/34 takes precedence) [1, 2006.01]</p> <p>5/18 • using bow-type collectors in contact with trolley wire [1, 2006.01]</p> <p>5/19 • • using arrangements for effecting collector movement transverse to the direction of vehicle motion [3, 2006.01]</p> <p>5/20 • • Details of contact bow [1, 2006.01]</p> <p>5/22 • • Supporting means for the contact bow [1, 2006.01]</p> <p>5/24 • • • Pantographs [1, 2006.01]</p> <p>5/26 • • • Half-pantographs, e.g. using counter-rocking beams [1, 2006.01]</p> <p>5/28 • • • Devices for lifting and resetting the collector [1, 2006.01]</p> <p>5/30 • • • • using springs [1, 2006.01]</p> <p>5/32 • • • • using fluid pressure [1, 2006.01]</p> <p>5/34 • with devices to enable one vehicle to pass another one using the same power supply line [1, 2006.01]</p> |
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- 5/36 • with means for collecting current simultaneously from more than one conductor, e.g. from more than one phase [1, 2006.01]
- 5/38 • for collecting current from conductor rails (B60L 5/40 takes precedence) [1, 2006.01]
- 5/39 • • from third rail [3, 2006.01]
- 5/40 • for collecting current from lines in slotted conduits [1, 2006.01]
- 5/42 • for collecting current from individual contact pieces connected to the power supply line [1, 2006.01]
- 7/00 Electrodynamic brake systems for vehicles in general [1, 4, 2006.01]**
- 7/02 • Dynamic electric resistor braking (B60L 7/22 takes precedence) [1, 2006.01]
- 7/04 • • for vehicles propelled by dc motors [1, 2006.01]
- 7/06 • • for vehicles propelled by ac motors [1, 2006.01]
- 7/08 • • Controlling the braking effect (B60L 7/04, B60L 7/06 take precedence) [1, 2006.01]
- 7/10 • Dynamic electric regenerative braking (B60L 7/22 takes precedence) [1, 2006.01]
- 7/12 • • for vehicles propelled by dc motors [1, 2006.01]
- 7/14 • • for vehicles propelled by ac motors [1, 2006.01]
- 7/16 • • for vehicles comprising converters between the power source and the motor [1, 2006.01]
- 7/18 • • Controlling the braking effect (B60L 7/12, B60L 7/14, B60L 7/16 take precedence) [1, 2006.01]
- 7/20 • Braking by supplying regenerated power to the prime mover of vehicles comprising engine-driven generators [1, 2006.01]
- 7/22 • Dynamic electric resistor braking, combined with dynamic electric regenerative braking [1, 2006.01]
- 7/24 • with additional mechanical or electromagnetic braking [1, 2006.01]
- 7/26 • • Controlling the braking effect [1, 2006.01]
- 7/28 • Eddy-current braking [1, 2006.01]
- 8/00 Electric propulsion with power supply from force of nature, e.g. sun, wind [5, 2006.01]**
- 9/00 Electric propulsion with power supply external to vehicle (B60L 8/00, B60L 13/00 take precedence) [1, 5, 6, 2006.01]**
- 9/02 • using dc motors [1, 2006.01]
- 9/04 • • fed from dc supply lines [1, 2006.01]
- 9/06 • • • with conversion by metadyne [1, 2006.01]
- 9/08 • • fed from ac supply lines [1, 2006.01]
- 9/10 • • • with rotary converters [1, 2006.01]
- 9/12 • • • with static converters [1, 2006.01]
- 9/14 • • fed from different kinds of power supply lines [1, 2006.01]
- 9/16 • using ac induction motors [1, 2006.01]
- 9/18 • • fed from dc supply lines [1, 2006.01]
- 9/20 • • • single-phase motors [1, 2006.01]
- 9/22 • • • polyphase motors [1, 2006.01]
- 9/24 • • fed from ac supply lines [1, 2006.01]
- 9/26 • • • single-phase motors [1, 2006.01]
- 9/28 • • • polyphase motors [1, 2006.01]
- 9/30 • • fed from different kinds of power supply lines [1, 2006.01]
- 9/32 • using ac brush-displacement motors [1, 2006.01]

- 11/00 Electric propulsion with power supplied within the vehicle (B60L 8/00, B60L 13/00 take precedence; arrangements or mounting of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion B60K 6/20) [1, 5, 6, 2006.01]**
- 11/02 • using engine-driven generators [1, 2006.01]
- 11/04 • • using dc generators and motors [1, 2006.01]
- 11/06 • • using ac generators and dc motors [1, 2006.01]
- 11/08 • • using ac generators and motors [1, 2006.01]
- 11/10 • • using dc generators and ac motors [1, 2006.01]
- 11/12 • • with additional electric power supply, e.g. accumulator [1, 2006.01]
- 11/14 • • with provision for direct mechanical propulsion [1, 2006.01]
- 11/16 • using power stored mechanically, e.g. in flywheel [1, 2006.01]
- 11/18 • using power supplied from primary cells, secondary cells, or fuel cells [1, 2006.01]
- 13/00 Electric propulsion for monorail vehicles, suspension vehicles or rack railways; Magnetic suspension or levitation for vehicles [1, 4, 6, 2006.01]**
- 13/03 • Electric propulsion by linear motors [6, 2006.01]
- 13/04 • Magnetic suspension or levitation for vehicles [4, 2006.01]
- 13/06 • • Means to sense or control vehicle position or attitude with respect to railway [4, 2006.01]
- 13/08 • • • for the lateral position [4, 2006.01]
- 13/10 • Combination of electric propulsion and magnetic suspension or levitation [4, 2006.01]
- 15/00 Methods, circuits or devices for controlling the propulsion of electrically-propelled vehicles, e.g. their traction-motor speed, to achieve a desired performance; Adaptation of control equipment on electrically-propelled vehicles for remote actuation from a stationary place, from alternative parts of the vehicle or from alternative vehicles of the same vehicle train [1, 2006.01]**
- 15/02 • characterised by the form of the current used in the control circuit [1, 2006.01]
- 15/04 • • using dc [1, 2006.01]
- 15/06 • • using substantially-sinusoidal ac [1, 2006.01]
- 15/08 • • using pulses [1, 2006.01]
- 15/10 • for automatic control superimposed on human control to limit the acceleration of the vehicle, e.g. to prevent excessive motor current (electric devices for safety purposes B60L 3/00) [1, 2006.01]
- 15/12 • • with circuits controlled by relays or contactors [1, 2006.01]
- 15/14 • • with main controller driven by a servomotor (B60L 15/18 takes precedence) [1, 2006.01]
- 15/16 • • with main controller driven through a ratchet mechanism (B60L 15/18 takes precedence) [1, 2006.01]
- 15/18 • • without contact-making and breaking, e.g. using a transducer [1, 2006.01]
- 15/20 • for control of the vehicle or its driving motor to achieve a desired performance, e.g. speed, torque, programmed variation of speed [1, 2006.01]
- 15/22 • • with sequential operation of interdependent switches, e.g. relays, contactors, programme drum [1, 2006.01]
- 15/24 • • with main controller driven by a servomotor (B60L 15/28 takes precedence) [1, 2006.01]

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| <p>15/26 • • with main controller driven through a ratchet mechanism (B60L 15/28 takes precedence) <b>[1, 2006.01]</b></p> <p>15/28 • • without contact-making and breaking, e.g. using a transducer <b>[1, 2006.01]</b></p> <p>15/30 • • with means to change-over to human control <b>[1, 2006.01]</b></p> <p>15/32 • Control or regulation of multiple-unit electrically-propelled vehicles <b>[1, 2006.01]</b></p> <p>15/34 • • with human control of a setting device <b>[1, 2006.01]</b></p> | <p>15/36 • • • with automatic control superimposed, e.g. to prevent excessive motor current <b>[1, 2006.01]</b></p> <p>15/38 • • with automatic control <b>[1, 2006.01]</b></p> <p>15/40 • Adaptation of control equipment on vehicle for remote actuation from a stationary place (devices along the route for controlling devices on rail vehicles B61L 3/00; central rail-traffic control systems B61L 27/00) <b>[1, 2006.01]</b></p> <p>15/42 • Adaptation of control equipment on vehicle for actuation from alternative parts of the vehicle or from alternative vehicles of the same vehicle train (B60L 15/32 takes precedence) <b>[1, 2006.01]</b></p> |
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