

**CPC****COOPERATIVE PATENT CLASSIFICATION****B60T**

**VEHICLE BRAKE CONTROL SYSTEMS OR PARTS THEREOF ;  
BRAKE CONTROL SYSTEMS OR PARTS THEREOF, IN GENERAL (**  
 electrodynamic brake systems for vehicle, in general [B60L](#) ; brakes per se, i.e. devices  
 where braking effect occurs, including ultimate brake actuators, [F16D](#) ) ;  
**ARRANGEMENT OF BRAKING ELEMENTS ON VEHICLES IN  
GENERAL ; PORTABLE DEVICES FOR PREVENTING UNWANTED  
MOVEMENT OF VEHICLES ; VEHICLE MODIFICATIONS TO  
FACILITATE COOLING OF BRAKES**

**NOTE**

In this subclass, the term "brake control systems" includes brake control systems for vehicles or of general applicability

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B60T 8/20](#) covered by [B60T 8/18](#)  
[B60T 8/22](#) covered by [B60T 8/18](#)  
[B60T 8/60](#) - [B60T 8/70](#) covered by [B60T 8/17](#)  
[B60T 8/78](#) - [B60T 8/84](#) covered by [B60T 8/17](#)  
[B60T 13/122](#) covered by [B60T 13/147](#) , [B60T 13/167](#)  
[B60T 13/125](#) covered by [B60T 13/141](#)  
[B60T 13/128](#) covered by [B60T 13/145](#) , [B60T 13/165](#)  
[B60T 13/13](#) covered by [B60T 13/146](#) , [B60T 13/166](#)  
[B60T 13/132](#) covered by [B60T 13/143](#) , [B60T 13/162](#)  
[B60T 13/135](#) covered by [B60T 13/144](#) , [B60T 13/163](#)  
[B60T 13/138](#) covered by [B60T 13/148](#) , [B60T 13/168](#)  
[B60T 13/60](#) covered by [B60T 13/58](#)  
[B60T 15/06](#) covered by [B60T 15/04](#)  
[B60T 15/08](#) covered by [B60T 15/04](#)

**Guidance heading:**

- B60T 1/00** Arrangements of braking elements, i.e. of those parts where braking effect occurs { specially for vehicles }
- B60T 1/005** . { by locking of wheel or transmission rotation }
- B60T 1/02** . acting by retarding wheels
- B60T 1/04** .. acting directly on tread
- B60T 1/06** .. acting otherwise than on tread, e.g. employing rim, drum, disc, or transmission { or on double wheels }
- B60T 1/062** ... { acting on transmission parts }
- B60T 1/065** ... { employing disc ( [B60T 1/062](#) takes precedence ) }
- B60T 1/067** ... { employing drum ( [B60T 1/062](#) takes precedence ) }
- B60T 1/08** .. using fluid or powdered medium

- B60T 1/087 . . . in hydrodynamic, i.e. non-positive displacement, retarders
- B60T 1/093 . . . in hydrostatic, i.e. positive displacement, retarders
- B60T 1/10 . . by utilising wheel movement for accumulating energy, e.g. driving air compressors  
( using propulsion unit as braking means, see the relevant class )
- B60T 1/12 . acting otherwise than by retarding wheels, e.g. jet action
- B60T 1/14 . . directly on road ( portable devices, e.g. chocks [B60T 3/00](#) )
- B60T 1/16 . . by increasing air resistance, e.g. flaps

**B60T 3/00** **Portable devices for preventing unwanted movement of vehicles, e.g. chocks**

**B60T 5/00** **Vehicle modifications to facilitate cooling of brakes**

**Guidance heading:** **Brake control systems or parts thereof**

**B60T 7/00** **Brake-action initiating means**

- B60T 7/02 . for personal initiation
- B60T 7/04 . . foot actuated
- B60T 7/042 . . . { by electrical means, e.g. using travel or force sensors }
- B60T 7/045 . . . { with locking and release means, e.g. providing parking brake application }
- B60T 7/047 . . . . { Hand-actuated release means }
- B60T 7/06 . . . Disposition of pedal
- B60T 7/065 . . . . { with means to prevent injuries in case of collision ( for vehicle pedals in general by moving them from an operative to an out-of-the way position [B60R 21/09](#) ) }
- B60T 7/08 . . hand actuated
- B60T 7/085 . . . { by electrical means, e.g. travel, force sensors }
- B60T 7/10 . . . Disposition of hand control
- B60T 7/101 . . . . { by means of a pull rod }
- B60T 7/102 . . . . { by means of a tilting lever }
- B60T 7/104 . . . . . { with a locking mechanism }
- B60T 7/105 . . . . . { the lock being released by means of a push button }
- B60T 7/107 . . . . { with electrical power assistance }
- B60T 7/108 . . . . { with mechanisms to take up slack in the linkage to the brakes }
- B60T 7/12 . . for automatic initiation ; for initiation not subject to will of driver or passenger { ( limiting speed of vehicles other than rail vehicles [B60K 31/00](#) ) }
- B60T 7/122 . . { for locking of reverse movement }
- B60T 7/124 . . { Brakes for railway vehicles coming into operation in case of accident, derailment or damage of rolling stock or superstructure ( self-acting brakes in general [F16D 59/00](#) ) }
- B60T 7/126 . . { Brakes for railway vehicles coming into operation in case of exceeding a predetermined speed ( self-acting brakes in general [F16D 59/00](#) ) }

- B60T 7/128 .. { Self-acting brakes of different types for railway vehicles ( [B60T 7/12](#) takes precedence; self-acting brakes in general [F16D 59/00](#) ) }
- B60T 7/14 .. operated upon collapse of driver ( deadman`s devices for electrically propelled vehicles [B60L 3/02](#) )
- B60T 7/16 .. operated by remote control, i.e. initiating means not mounted on vehicle
- B60T 7/18 ... operated by wayside apparatus
- B60T 7/20 .. specially for trailers, e.g. in case of uncoupling of { or overrunning by } trailer ( [inertia-actuated over-run brakes B60T 13/08](#) )
- B60T 7/203 ... { with automatic brake release or reduction in case of reverse travel, e.g. by means of mechanisms mounted on the draw bar }
- B60T 7/206 .... { by means of mechanisms mounted on trailer drum brakes }
- B60T 7/22 .. initiated by contact of vehicle, e.g. bumper, with an external object, e.g. another vehicle { , or by means of contactless obstacle detectors mounted on the vehicle }
  
- B60T 8/00** **Arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions, e.g. limiting or varying distribution of braking force ( by changing number of effective brake cylinders in power brake systems [B60T 17/10](#) )**
  
- B60T 8/17 . Using electrical or electronic regulation means to control braking { ( [detecting or indicating faulty operation B60T 8/885](#) ) }
- B60T 8/1701 .. { Braking or traction control means specially adapted for particular types of vehicles ( for vehicles having more than one drive axle [B60T 8/1769](#) ) }
- B60T 8/1703 ... { for aircrafts }
- B60T 8/1705 ... { for rail vehicles }
- B60T 8/1706 ... { for single-track vehicles, e.g. motorcycles }
- B60T 8/1708 ... { for lorries or tractor-trailer combinations }
- B60T 8/171 .. Detecting parameters used in the regulation ; Measuring values used in the regulation
- B60T 8/172 .. Determining control parameters used in the regulation, e.g. by calculations involving measured or detected parameters { ( [B60T 8/17551](#) takes precedence ) }
- B60T 8/1725 ... { Using tyre sensors, e.g. Sidewall Torsion sensors (SWT) ( for tyre pressure and temperature detection [B60C 23/00](#) ) }
- B60T 8/173 .. Eliminating or reducing the effect of unwanted signals, e.g. due to vibrations or electrical noise
- B60T 8/174 .. characterised by using special control logic, e.g. fuzzy logic { ,neural computing }
- B60T 8/175 .. Brake regulation specially adapted to prevent excessive wheel spin during vehicle acceleration, e.g. for traction control ( [safety devices for propulsion unit control responsive to, or preventing, skidding of wheels B60K 28/16](#) )
- B60T 8/1755 .. Brake regulation specially adapted to control the stability of the vehicle, e.g. taking into account yaw rate or transverse acceleration in a curve ( [road vehicle drive control systems for control of driving stability otherwise than by controlling a particular sub-unit B60W 30/02](#) )
- B60T 8/17551 ... { determining control parameters related to vehicle stability used in the regulation, e.g. by calculations involving measured or detected parameters }
- B60T 8/17552 ... { responsive to the tire sideslip angle or the vehicle body slip angle }
- B60T 8/17554 ... { specially adapted for enhancing stability around the vehicles longitudinal axle, i.e. roll-over prevention ( [road vehicle drive control systems for roll-over prevention otherwise than by controlling a particular sub-unit B60W 30/04](#) ) }
- B60T 8/17555 ... { specially adapted for enhancing driver or passenger comfort, e.g. soft

- intervention or pre-actuation strategies }
- B60T 8/17557 . . . { specially adapted for lane departure prevention ( road vehicle drive control systems for lane keeping otherwise than by controlling a particular sub-unit [B60W 30/12](#) ) }
- B60T 8/17558 . . . { specially adapted for collision avoidance or collision mitigation ( road vehicle drive control systems for collision avoidance otherwise than by controlling a particular sub-unit [B60W 30/09](#) ) }
- B60T 8/176 . . Brake regulation specially adapted to prevent excessive wheel slip during vehicle deceleration, e.g. ABS ( [B60T 8/1755](#) takes precedence )
- B60T 8/1761 . . . responsive to wheel or brake dynamics, e.g. wheel slip, wheel acceleration or rate of change of brake fluid pressure
- B60T 8/17613 . . . . { based on analogue circuits or digital circuits comprised of discrete electronic elements }
- B60T 8/17616 . . . . { Microprocessor-based systems }
- B60T 8/1763 . . . responsive to the coefficient of friction between the wheels and the ground surface ( [B60T 8/1764](#) takes precedence )
- B60T 8/17633 . . . . { based on analogue circuits or digital circuits comprised of discrete electronic elements }
- B60T 8/17636 . . . . { Microprocessor-based systems }
- B60T 8/1764 . . . Regulation during travel on surface with different coefficients of friction, e.g. between left and right sides, mu-split { or between front and rear }
- B60T 8/1766 . . . Proportioning of brake forces according to vehicle axle loads, e.g. front to rear of vehicle
- B60T 8/1769 . . . specially adapted for vehicles having more than one driven axle, e.g. four-wheel drive vehicles
- B60T 8/18 . responsive to vehicle weight or load, e.g. load distribution ( { using electrical circuitry on regulation means [B60T 8/17](#) ; } [B60T 8/30](#) takes precedence; responsive to weight and speed condition [B60T 8/58](#) )

**NOTE**

[B60T 8/1887](#) and [B60T 8/1893](#) take precedence over [B60T 8/1806](#) to [B60T 8/18 D](#)

- B60T 8/1806 . . { characterised by the calibration process or the means therefor }
- B60T 8/1812 . . { characterised by the means for pressure reduction }
- B60T 8/1818 . . . { Lever mechanism }
- B60T 8/1825 . . . { Means for changing the diaphragm area submitted to pressure }
- B60T 8/1831 . . . { pressure reducing or limiting valves }
- B60T 8/1837 . . { characterised by the load-detecting arrangements }
- B60T 8/1843 . . . { Arrangements for detecting air spring pressure }
- B60T 8/185 . . . { Arrangements for detecting vehicle level }
- B60T 8/1856 . . . { Arrangements for detecting suspension spring load ( [B60T 8/1843](#) takes precedence ) }
- B60T 8/1862 . . . . { comprising sensors of the type providing a fluid output signal representing the load on the vehicle suspension }
- B60T 8/1868 . . . . { comprising sensors of the type providing a mechanical output signal representing the load on the vehicle suspension }

- B60T 8/1875 . . . . { comprising sensors of the type providing an electrical output signal representing the load on the vehicle suspension }
- B60T 8/1881 . . { characterised by failure-responsive means }
- B60T 8/1887 . . { especially adapted for tractor-trailer combinations }
- B60T 8/1893 . . { especially adapted for railway vehicles }
  
- B60T 8/24 . responsive to vehicle inclination or change of direction, e.g. negotiating bends { ( using electrical circuitry or regulation means [B60T 8/17](#) ) }
- B60T 8/241 . . { Lateral vehicle inclination }
- B60T 8/243 . . . { for roll-over protection }
- B60T 8/245 . . { Longitudinal vehicle inclination }
- B60T 8/246 . . { Change of direction }
- B60T 8/248 . . { Trailer sway, e.g. for preventing jackknifing }
  
- B60T 8/26 . characterised by producing differential braking between front and rear wheels { ( using electrical circuitry or regulation means [B60T 8/17](#) ) }
- B60T 8/261 . . { specially adapted for use in motorcycles }
- B60T 8/262 . . { using valves with stepped characteristics ( [B60T 8/261](#) , [B60T 8/266](#) take precedence ) }
- B60T 8/263 . . . { for pneumatic brake systems }
- B60T 8/265 . . . { for hydraulic brake systems }
- B60T 8/266 . . { using valves or actuators with external control means ( [B60T 8/261](#) takes precedence ) }
- B60T 8/267 . . . { for hybrid systems with different kind of brakes on different axles }
- B60T 8/268 . . . { using the valves of an ABS, ASR or ESP system }
- B60T 8/28 . responsive to deceleration { ( [B60T 8/261](#) , [B60T 8/262](#) , [B60T 8/266](#) take precedence ) }
- B60T 8/282 . . . { using ball and ramp }
- B60T 8/285 . . . { using horizontal moving mass }
- B60T 8/287 . . . { using pendulums }
- B60T 8/30 . responsive to load { ( [B60T 8/261](#) , [B60T 8/262](#) , [B60T 8/266](#) take precedence ) }
- B60T 8/303 . . . { using pneumatic valves }
- B60T 8/306 . . . { using hydraulic valves }
  
- B60T 8/32 . responsive to a speed condition, e.g. acceleration or deceleration ( { using electrical circuitry or regulation means [B60T 8/17](#) } ; [B60T 8/28](#) takes precedence; electric devices on electrically propelled vehicles indicating the wheel slip [B60L 3/10](#) ; measuring linear or angular speed per se [G01P 3/00](#) ) }
- B60T 8/3205 . . { acceleration ( [B60T 8/34](#) , [B60T 8/52](#) , [B60T 8/54](#) , [B60T 8/56](#) , [B60T 8/58](#) , [B60T 8/72](#) , [B60T 8/86](#) , [B60T 8/88](#) take precedence ) }
- B60T 8/321 . . { deceleration ( [B60T 8/34](#) , [B60T 8/52](#) , [B60T 8/54](#) , [B60T 8/56](#) , [B60T 8/58](#) , [B60T 8/72](#) , [B60T 8/86](#) , [B60T 8/88](#) take precedence ) }
- B60T 8/3215 . . . { Systems characterised by having means acting on components of the drive line, e.g. retarder, clutch or differential gear ( [B60T 8/322](#) takes precedence ) }
- B60T 8/322 . . . { Systems specially adapted for vehicles driven by more than one axle, e.g. Four Wheel-Drive vehicles }

B60T 8/3225	...	{ Systems specially adapted for single-track vehicles, e.g. motorcycles ( <a href="#">B60T 8/3235</a> takes precedence ) }
B60T 8/323	...	{ Systems specially adapted for tractor-trailer combinations }
B60T 8/3235	...	{ Systems specially adapted for rail vehicles }
B60T 8/324	....	{ Speed measurement by means of centrifugal governors or the like }
B60T 8/3245	....	{ responsive to the speed difference between wheels and rail, or between two wheels or two axles }
B60T 8/325	...	{ Systems specially adapted for aircraft }
B60T 8/3255	...	{ Systems in which the braking action is dependent on brake pedal data }
B60T 8/326	....	{ Hydraulic systems }
B60T 8/3265	.....	{ with control of the booster ( <a href="#">B60T 8/3275</a> takes precedence ) }
B60T 8/327	....	{ Pneumatic systems }
B60T 8/3275	....	{ Systems with a braking assistant function, i.e. automatic full braking initiation in dependence of brake pedal velocity }
B60T 8/328	...	{ Systems sharing components with other fluid systems onboard the vehicle }
B60T 8/3285	....	{ the other fluid systems being suspension elements }
B60T 8/329	...	{ Systems characterised by their speed sensor arrangements }
B60T 8/3295	...	{ Systems in which there is a pulsating signal superposed on the command signal }
B60T 8/34	..	having a fluid pressure regulator responsive to a speed condition
B60T 8/341	...	{ Systems characterised by their valves ( <a href="#">B60T 8/36</a> , <a href="#">B60T 8/38</a> take precedence ) }
B60T 8/342	....	{ Pneumatic systems }
B60T 8/343	...	{ Systems characterised by their lay-out ( <a href="#">B60T 8/349</a> takes precedence ) }
B60T 8/344	....	{ Hydraulic systems }
B60T 8/345	.....	{ having more than one brake circuit per wheel }
B60T 8/346	.....	{ 2 Channel systems ( <a href="#">B60T 8/345</a> takes precedence ) }
B60T 8/347	.....	{ 3 Channel systems ( <a href="#">B60T 8/345</a> takes precedence ) }
B60T 8/348	.....	{ 4 Channel systems ( <a href="#">B60T 8/345</a> takes precedence ) }
B60T 8/349	...	{ Systems adapted to control a set of axles, e.g. tandem axles }
B60T 8/36	...	including a pilot valve responding to an electromagnetic force
B60T 8/3605	....	{ wherein the pilot valve is mounted in a circuit controlling the working fluid system }
B60T 8/361	....	{ wherein the pilot valve is mounted in a circuit controlling an auxiliary fluid system }
B60T 8/3615	....	{ Electromagnetic valves specially adapted for anti-lock brake and traction control systems ( electromagnetic valves in general <a href="#">F16K 31/06</a> ) }
B60T 8/362	.....	{ in pneumatic systems ( <a href="#">B60T 8/3655</a> , <a href="#">B60T 8/3675</a> and <a href="#">B60T 8/369</a> take precedence ) }
B60T 8/3625	.....	{ having at least one vacuum connection }
B60T 8/363	.....	{ in hydraulic systems ( <a href="#">B60T 8/3655</a> , <a href="#">B60T 8/3675</a> and <a href="#">B60T 8/369</a> take precedence ) }
B60T 8/3635	.....	{ switching between more than two connections, e.g. 3/2-valves ( <a href="#">B60T 8/364</a> , <a href="#">B60T 8/3645</a> and <a href="#">B60T 8/365</a> take precedence ) }
B60T 8/364	.....	{ switching between a number of discrete positions as a function of the applied signal, e.g. 3/3-valves ( <a href="#">B60T 8/3645</a> takes precedence ) }



B60T 8/3645	.....	{ having more than one electromagnetic coil inside a common housing }
B60T 8/365	.....	{ combining a plurality of functions in one unit, e.g. pressure relief }
B60T 8/3655	.....	{ Continuously controlled electromagnetic valves }
B60T 8/366	.....	{ Valve details }
B60T 8/3665	.....	{ Sliding valves }
B60T 8/367	.....	{ Seat valves, e.g. poppet valves }
B60T 8/3675	.....	{ integrated in modulator units }
B60T 8/368	.....	{ combined with other mechanical components, e.g. pump units, master cylinders }
B60T 8/3685	.....	{ characterised by the mounting of the modulator unit onto the vehicle }
B60T 8/369	.....	{ Valves using piezo-electric elements ( in general <a href="#">F16K 31/004</a> ) }
B60T 8/3695	....	{ wherein the pilot valve is mounted separately from its power section ( <a href="#">B60T 8/3605</a> , <a href="#">B60T 8/361</a> and <a href="#">B60T 8/3615</a> take precedence ) }
B60T 8/38	...	including valve means of the relay or driver controlled type
B60T 8/40	...	comprising an additional fluid circuit including fluid pressurising means for modifying the pressure of the braking fluid, e.g. including wheel driven pumps for detecting a speed condition, or pumps which are controlled by means independent of the braking system
B60T 8/4004	....	{ Repositioning the piston(s) of the brake control means by means of a fluid pressurising means in order to reduce the brake pressure }
B60T 8/4009	.....	{ the brake control means being the wheel cylinders }
B60T 8/4013	....	{ Fluid pressurising means for more than one fluid circuit, e.g. separate pump units used for hydraulic booster and anti-lock braking }
B60T 8/4018	....	{ Pump units characterised by their drive mechanisms ( <a href="#">B60T 8/4095</a> takes precedence ) }
B60T 8/4022	.....	{ Pump units driven by an individual electric motor ( <a href="#">B60T 8/4027</a> takes precedence ) }
B60T 8/4027	.....	{ Pump units driven by ( parts of ) the vehicle propulsion unit }
B60T 8/4031	....	{ Pump units characterised by their construction or mounting ( pump units in combination with valve blocks <a href="#">B60T 8/36</a> ) }
B60T 8/4036	....	{ Pump units characterised by their failure-responsive means ( <a href="#">B60T 8/88</a> takes precedence ) }
B60T 8/404	....	{ Control of the pump unit }
B60T 8/4045	.....	{ involving ON/OFF switching }
B60T 8/405	.....	{ involving the start-up phase }
B60T 8/4054	.....	{ involving the delivery pressure control ( <a href="#">B60T 8/4072</a> takes precedence ) }
B60T 8/4059	.....	{ involving the rate of delivery }
B60T 8/4063	.....	{ involving the direction of fluid flow }
B60T 8/4068	....	{ the additional fluid circuit comprising means for attenuating pressure pulsations }
B60T 8/4072	....	{ Systems in which a driver input signal is used as a control signal for the additional fluid circuit which is normally used for braking }
B60T 8/4077	.....	{ Systems in which the booster is used as an auxiliary pressure source }
B60T 8/4081	.....	{ Systems with stroke simulating devices for driver input ( <a href="#">B60T 8/4077</a>

		takes precedence ) }
B60T 8/4086	.....	{ the stroke simulating device being connected to, or integrated in the driver input device }
B60T 8/409	.....	{ characterised by details of the stroke simulating device }
B60T 8/4095	....	{ including wheel driven pumps for detecting a speed condition }
B60T 8/42	...	having expanding chambers for controlling pressure { i.e. closed systems }
B60T 8/4208	....	{ Debooster systems }
B60T 8/4216	.....	{ having a mechanically actuated expansion unit ( <a href="#">B60T 8/4225</a> and <a href="#">B60T 8/4266</a> take precedence ) }
B60T 8/4225	.....	{ having a fluid actuated expansion unit }
B60T 8/4233	.....	{ with brake pressure relief by introducing fluid pressure into the expansion unit ( <a href="#">B60T 8/4241</a> takes precedence ) }
B60T 8/4241	.....	{ pneumatically }
B60T 8/425	.....	{ using a vacuum }
B60T 8/4258	.....	{ with brake pressure relief by creating vacuum inside the expansion unit }
B60T 8/4266	.....	{ having an electro-mechanically actuated expansion unit, e.g. solenoid, electric motor, piezo stack }
B60T 8/4275	....	{ Pump-back systems }
B60T 8/4283	.....	{ having a pressure sensitive inlet valve }
B60T 8/4291	.....	{ having means to reduce or eliminate pedal kick-back }
B60T 8/44	...	co-operating with a power-assist booster means associated with a master cylinder for controlling the release and reapplication of brake pressure through an interaction with the power assist device { i.e. open systems }
B60T 8/441	....	{ using hydraulic boosters ( <a href="#">B60T 8/445</a> , <a href="#">B60T 8/446</a> , <a href="#">B60T 8/447</a> take precedence ) }
B60T 8/442	.....	{ the booster being a fluid return pump, e.g. in combination with a brake pedal force booster }
B60T 8/443	....	{ using compressed air ( <a href="#">B60T 8/445</a> , <a href="#">B60T 8/446</a> , <a href="#">B60T 8/448</a> take precedence ) }
B60T 8/444	....	{ using vacuum ( <a href="#">B60T 8/445</a> , <a href="#">B60T 8/446</a> , <a href="#">B60T 8/448</a> take precedence ) }
B60T 8/445	....	{ replenishing the released brake fluid volume into the brake piping }
B60T 8/446	....	{ replenishing the released brake fluid volume via the master cylinder }
B60T 8/447	....	{ Reducing the boost of the power-assist booster means to reduce brake pressure }
B60T 8/448	.....	{ the power-assist booster means being a vacuum or compressed air booster }
B60T 8/449	.....	{ of the multiple booster type }
B60T 8/46	...	the pressure being reduced by exhausting fluid
B60T 8/48	...	connecting the brake actuator to an alternative or additional source of fluid pressure { e.g. traction control systems }
B60T 8/4809	....	{ Traction control, stability control, using both the wheel brakes and other automatic braking systems }
B60T 8/4818	.....	{ in pneumatic brake systems }
B60T 8/4827	.....	{ in hydraulic brake systems }
B60T 8/4836	.....	{ wherein a booster output pressure is used for normal or anti lock braking ( <a href="#">B60T 8/4845</a> , <a href="#">B60T 8/4863</a> , <a href="#">B60T 8/489</a> take precedence ) }



		}
B60T 8/4845	.....	{ using a booster or a master cylinder for traction control }
B60T 8/4854	.....	{ pneumatic boosters }
B60T 8/4863	.....	{ closed systems ( <a href="#">B60T 8/4845</a> , <a href="#">B60T 8/489</a> take precedence ) }
B60T 8/4872	.....	{ pump-back systems }
B60T 8/4881	.....	{ having priming means }
B60T 8/489	.....	{ using separate traction control modulators }
B60T 8/50	...	having means for controlling the rate at which pressure is reapplied to { or released from } the brake
B60T 8/5006	....	{ Pressure reapplication by pulsing of valves ( <a href="#">B60T 8/5012</a> , <a href="#">B60T 8/5018</a> , <a href="#">B60T 8/505</a> , <a href="#">B60T 8/5056</a> take precedence ) }
B60T 8/5012	....	{ Pressure reapplication using a plurality of valves in parallel }
B60T 8/5018	....	{ Pressure reapplication using restrictions ( <a href="#">B60T 8/5012</a> , <a href="#">B60T 8/505</a> take precedence ) }
B60T 8/5025	.....	{ in hydraulic brake systems }
B60T 8/5031	.....	{ open systems }
B60T 8/5037	.....	{ closed systems }
B60T 8/5043	.....	{ deboster systems }
B60T 8/505	....	{ Pressure reapplication in a mu-split situation, i.e. a situation with different coefficients of friction on both sides of the vehicle }
B60T 8/5056	....	{ Pressure reapplication using memory devices }
B60T 8/5062	.....	{ using memory chambers }
B60T 8/5068	.....	{ having decay means }
B60T 8/5075	....	{ Pressure release by pulsing of valves ( <a href="#">B60T 8/50 N</a> , <a href="#">B60T 8/5087</a> take precedence ) }
B60T 8/5081	....	{ Pressure release using a plurality of valves in parallel }
B60T 8/5087	....	{ Pressure release using restrictions ( <a href="#">B60T 8/5081</a> takes precedence ) }
B60T 8/5093	.....	{ in hydraulic brake systems }
B60T 8/52	..	Torque sensing, i.e. wherein the braking action is controlled by forces producing or tending to produce a twisting or rotating motion on a braked rotating member
B60T 8/54	..	by mechanical means
B60T 8/56	..	having means for changing the coefficient of friction
B60T 8/58	..	responsive to speed and another condition or to plural speed conditions

**NOTE**

In this group, a single condition which is itself responsive to, or representative of, another single condition is not regarded as plural conditions

B60T 8/72	..	responsive to a difference between a speed condition, e.g. deceleration, and a fixed reference
B60T 8/74	...	sensing a rate of change of velocity
B60T 8/76	...	two or more sensing means from different wheels indicative of the same type of speed condition
B60T 8/86	..	wherein the brakes are automatically applied in accordance with a speed condition and having means for overriding the automatic braking device when a skid condition occurs

- B60T 8/88 . . with failure responsive means, i.e. means for detecting and indicating faulty operation of the speed responsive control means
- B60T 8/885 . . . { using electrical circuitry }
- B60T 8/90 . . . using a simulated speed signal to test speed responsive control means
- B60T 8/92 . . . automatically taking corrective action
- B60T 8/94 . . . . on a fluid pressure regulator
- B60T 8/96 . . . . on speed responsive control means
  
- B60T 10/00** **Control or regulation for continuous braking making use of fluid or powdered medium, e.g. for use when descending a long slope**
  
- B60T 10/02 . with hydrodynamic brake
- B60T 10/04 . with hydrostatic brake
  
- B60T 11/00** **Transmitting braking action from initiating means to ultimate brake actuator without power assistance or drive or where such assistance or drive is irrelevant ( the power assistance or drive being essential [B60T 13/00](#) )**
  
- B60T 11/04 . transmitting mechanically
- B60T 11/043 . . { in case of steerable wheels }
- B60T 11/046 . . { Using cables ( [B60T 11/043](#) takes precedence ) }
- B60T 11/06 . . Equalising arrangements
- B60T 11/08 . . providing variable leverage
  
- B60T 11/10 . transmitting by fluid means, e.g. hydraulic
- B60T 11/101 . . { equalising arrangements }
- B60T 11/102 . . { in combination with mechanical elements }
- B60T 11/103 . . { in combination with other control devices ( conjoint control of brake system and at least another sub-unit [B60K 41/00](#) ) }
- B60T 11/105 . . . { with brake locking after actuation, release of the brake by a different control device, e.g. gear lever }
- B60T 11/106 . . . . { locking and release of the brake by the clutch }
- B60T 11/107 . . { overrun brakes with fluid means }
- B60T 11/108 . . { to a trailer fluid system }
- B60T 11/12 . . the transmitted force being varied therein ( [B60T 11/16](#) to [B60T 11/26](#) take precedence )
- B60T 11/14 . . the transmitted force being substantially unchanged
- B60T 11/16 . . Master control, e.g. master cylinders ( master cylinders associated with vacuum boosters [B60T 13/565](#) )
- B60T 11/165 . . . { Single master cylinders for pressurised systems }
- B60T 11/18 . . Connection thereof to initiating means
- B60T 11/20 . . Tandem, side-by-side, or other multiple master cylinder units
- B60T 11/203 . . . . { Side-by-side configuration }
- B60T 11/206 . . . . . { with control by a force distributing lever }
- B60T 11/21 . . . with two pedals operating on respective circuits, pressures therein being

equalised when both pedals are operated together, e.g. for steering ( [steering non-deflectable wheels or endless tracks by differentially driving ground-engaging elements on opposite vehicle sides using brakes as main steering effecting means B62D 11/08](#) )

- B60T 11/22 . . . characterised by being integral with reservoir
- B60T 11/224 . . . with pressure-varying means, e.g. with two stage operation provided by use of different piston diameters including continuous variation from one diameter to another
- B60T 11/228 . . . Pressure-maintaining arrangements, e.g. for replenishing the master cylinder chamber with fluid from a reservoir ( [B60T 11/232 takes precedence](#) )
- B60T 11/232 . . . Recuperation valves
- B60T 11/236 . . . Piston sealing arrangements
- B60T 11/24 . . Single initiating means operating on more than one circuit e.g. dual circuits ( [multiple master cylinder units B60T 11/20](#) )
- B60T 11/26 . . Reservoirs ( [integral with master controls B60T 11/22](#) )
- B60T 11/28 . . Valves specially adapted therefor ( [recuperation valves B60T 11/232](#) )
- B60T 11/30 . . . Bleed valves for hydraulic brake systems
- B60T 11/32 . . . Automatic cut-off valves for defective pipes
- B60T 11/323 . . . . { in hydraulic systems }
- B60T 11/326 . . . . { in pneumatic systems }
- B60T 11/34 . . . Pressure reducing or limiting valves { ( [for arrangements for adjusting wheel-braking force responsive to vehicle weight or load B60T 8/1831](#) ) }

**B60T 13/00** **Transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive ; Brake systems incorporating such transmitting means, e.g. air-pressure brake systems** ( [arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions B60T 8/00](#) ; valves incorporated in such systems [B60T 15/00](#) )

- B60T 13/02 . with mechanical assistance or drive { ( [combined with fluid pressure B60T 13/588](#) ) }
- B60T 13/04 . . by spring or weight ( [fluid released B60T 13/10](#) )
- B60T 13/06 . . by inertia, e.g. flywheel
- B60T 13/065 . . . { of the propulsion system }
- B60T 13/08 . . . Over-run brakes
- B60T 13/10 . with fluid assistance, drive, or release
- B60T 13/12 . . the fluid being liquid
- B60T 13/14 . . . using accumulators or reservoirs { [fed by pumps](#) }
- B60T 13/141 . . . . { [Systems with distributor valve \( B60T 13/147 takes precedence \)](#) }
- B60T 13/142 . . . . { [Systems with master cylinder](#) }
- B60T 13/143 . . . . . { [Master cylinder mechanically coupled with booster](#) }
- B60T 13/144 . . . . . { [Pilot valve provided inside booster piston](#) }
- B60T 13/145 . . . . . { [Master cylinder integrated or hydraulically coupled with booster](#) }
- B60T 13/146 . . . . . { [Part of the system directly actuated by booster pressure](#) }
- B60T 13/147 . . . . . { [In combination with distributor valve](#) }
- B60T 13/148 . . . . { [Arrangements for pressure supply](#) }

B60T 13/16	...	using pumps directly, i.e. without interposition of accumulators or reservoirs
B60T 13/161	....	{ Systems with master cylinder }
B60T 13/162	.....	{ Master cylinder mechanically coupled with booster }
B60T 13/163	.....	{ Pilot valve provided inside booster piston }
B60T 13/165	.....	{ Master cylinder integrated or hydraulically coupled with booster }
B60T 13/166	.....	{ Part of the system directly actuated by booster pressure }
B60T 13/167	.....	{ In combination with distributor valve }
B60T 13/168	....	{ Arrangements for pressure supply }
B60T 13/18	....	with control of pump output delivery { e.g. by distributor valves ( <a href="#">B60T 13/167</a> takes precedence ) }
B60T 13/20	....	with control of pump driving means
B60T 13/22	...	Brakes applied by springs or weights and released hydraulically
B60T 13/24	..	the fluid being gaseous
B60T 13/241	...	{ Differential pressure systems }
B60T 13/242	....	{ The control valve is provided as one unit with the servomotor cylinder }
B60T 13/243	.....	{ Mechanical command of the control valve, mechanical transmission to the brakes }
B60T 13/244	.....	{ Mechanical command of the control valve, hydraulic transmission to the brakes }
B60T 13/245	.....	{ Hydraulic command of the control valve, hydraulic transmission to the brake }
B60T 13/246	....	{ The control valve is provided apart from the servomotor cylinder }
B60T 13/247	.....	{ Mechanical command of the control valve, mechanical transmission to the brakes }
B60T 13/248	.....	{ Mechanical command of the control valve, hydraulic transmission to the brakes }
B60T 13/249	.....	{ Hydraulic command of the control valve, hydraulic transmission to the brakes }
B60T 13/26	...	Compressed-air systems
B60T 13/261	....	{ systems with both indirect application and application by springs or weights and released by compressed air }
B60T 13/263	.....	{ specially adapted for coupling with dependent systems, e.g. tractor-trailer systems }
B60T 13/265	.....	{ dependent systems e.g. trailer systems }
B60T 13/266	....	{ Systems with both direct and indirect application, e.g. in railway vehicles }
B60T 13/268	....	{ using accumulators or reservoirs }
B60T 13/36	....	direct, i.e. brakes applied directly by compressed air
B60T 13/365	.....	{ for railway vehicles }
B60T 13/38	....	Brakes applied by springs or weights and released by compressed air { ( <a href="#">B60T 13/261</a> takes precedence ) }
B60T 13/385	.....	{ Control arrangements therefor }
B60T 13/40	....	indirect i.e. compressed air booster units { indirect systems }
B60T 13/403	.....	{ specially adapted for coupling with dependent systems, e.g. tractor-trailer systems }
B60T 13/406	.....	{ specially adapted for transfer of two or more command signals e.g. railway systems ( with electrical control <a href="#">B60T 13/665</a> ) }

B60T 13/44	.....	with two-chamber booster units
B60T 13/45	.....	with multiple booster units, e.g. tandem booster units
B60T 13/46	...	Vacuum systems
B60T 13/465	....	{ for railway vehicles }
B60T 13/48	....	direct, i.e. brakes applied directly by vacuum
B60T 13/50	....	Brakes applied by springs or weights and released by vacuum
B60T 13/52	....	indirect, i.e. vacuum booster units
B60T 13/56	.....	with two-chamber booster units
B60T 13/563	.....	with multiple booster units, e.g. tandem booster units
B60T 13/565	.....	characterised by being associated with master cylinders, e.g. integrally formed
B60T 13/567	.....	characterised by constructional features of the casing or by its strengthening or mounting arrangements
B60T 13/5675	.....	{ Supportstruts }
B60T 13/569	.....	characterised by piston details, e.g. construction, mounting of diaphragm
B60T 13/57	.....	characterised by constructional features of control valves
B60T 13/573	.....	characterised by reaction devices
B60T 13/575	.....	using resilient discs or pads
B60T 13/577	.....	using levers
B60T 13/58	..	Combined or convertible systems
B60T 13/581	...	{ both hydraulic and pneumatic }
B60T 13/583	....	{ using converters }
B60T 13/585	...	{ comprising friction brakes and retarders }
B60T 13/586	....	{ the retarders being of the electric type }
B60T 13/588	...	{ both fluid and mechanical assistance or drive }
B60T 13/62	...	both straight and automatic
B60T 13/64	...	both single and multiple, e.g. single and tandem
B60T 13/66	..	Electrical control in fluid-pressure brake systems
B60T 13/662	...	{ characterised by specified functions of the control system components }
B60T 13/665	...	{ the systems being specially adapted for transferring two or more command signals, e.g. railway systems ( <a href="#">B60T 13/662</a> takes precedence ) }
B60T 13/667	....	{ and combined with electro-magnetic brakes }
B60T 13/68	...	by electrically-controlled valves { ( <a href="#">B60T 13/662</a> and <a href="#">B60T 13/665</a> take precedence ) }
B60T 13/683	....	{ in pneumatic systems or parts thereof ( in vacuum systems <a href="#">B60T 13/72</a> ) }
B60T 13/686	....	{ in hydraulic systems or parts thereof }
B60T 13/70	...	by fluid-controlled switches
B60T 13/72	...	in vacuum systems { or vacuum booster units }
B60T 13/74	.	with electrical assistance or drive
B60T 13/741	..	{ acting on an ultimate actuator }
B60T 13/743	...	{ with a spring accumulator }
B60T 13/745	..	{ acting on a hydraulic system, e.g. a master cylinder }
B60T 13/746	..	{ and mechanical transmission of the braking action }

- B60T 13/748      ..      { acting on electro-magnetic brakes ( combined with fluid-pressure brake systems [B60T 13/667](#) ) }
- B60T 15/00**      **Construction arrangement, or operation of valves incorporated in power brake systems and not covered by groups [B60T 11/00](#) or [B60T 13/00](#) ( valve structures responsive to a speed condition [B60T 8/34](#) ; valves in general [F16K](#) )**
- B60T 15/02      .      Application and release valves
- B60T 15/021      ..      { Railway control or brake valves }
- B60T 15/022      ...      { with one slide valve, e.g. an emergency slide valve }
- B60T 15/024      ....      { with quick braking action and evacuation of air to a reservoir, to the atmosphere or to the brake cylinder }
- B60T 15/025      ..      { Electrically controlled valves }
- B60T 15/027      ...      { in pneumatic systems }
- B60T 15/028      ...      { in hydraulic systems }
- B60T 15/04      ..      Driver`s valves
- B60T 15/041      ...      { controlling auxiliary pressure brakes, e.g. parking or emergency brakes ( [B60T 15/048](#) takes precedence ) }
- B60T 15/043      ...      { controlling service pressure brakes ( [B60T 15/048](#) takes precedence ) }
- B60T 15/045      ....      { in multiple circuit systems, e.g. dual circuit systems }
- B60T 15/046      .....      { with valves mounted in tandem }
- B60T 15/048      ...      { Controlling pressure brakes of railway vehicles }
- B60T 15/10      ...      for vacuum brakes
- B60T 15/12      ...      combined with relay valves or the like
- B60T 15/14      ...      influencing electric control means
- B60T 15/16      ...      Arrangements enabling systems to be controlled from two or more positions
- B60T 15/18      ..      Triple or other relay valves which allow step-wise application or release and which are actuated by brake-pipe pressure variation to connect brake cylinders or equivalent to compressed air or vacuum source or atmosphere
- B60T 15/181      ...      { Trailer control valves ( [B60T 15/20](#) and [B60T 15/243](#) take precedence ) }
- B60T 15/182      ...      { Trailer brake valves ( [B60T 15/20](#) and [B60T 15/246](#) take precedence ) }
- B60T 15/184      ...      { Railway control or brake valves }
- B60T 15/185      ....      { with one slide valve }
- B60T 15/187      .....      { with a slide valve for initiation and a second slide valve for control of the braking }
- B60T 15/188      .....      { with a slide valve for initiation and annular valves for control of the braking }
- B60T 15/20      ...      controlled by two fluid pressures
- B60T 15/203      ....      { Trailer control valves ( [B60T 15/223](#) takes precedence ) }
- B60T 15/206      ....      { Trailer brake valves ( [B60T 15/226](#) takes precedence ) }
- B60T 15/22      ....      with one or more auxiliary valves, for braking, releasing, filling reservoirs
- B60T 15/223      .....      { Trailer control valves }
- B60T 15/226      .....      { Trailer brake valves }
- B60T 15/24      ...      controlled by three fluid pressures
- B60T 15/243      ....      { Trailer control valves }



B60T 15/246	....	{ Trailer brake valves }
B60T 15/26	....	without a quick braking action
B60T 15/28	.....	and having auxiliary valves
B60T 15/30	....	with a quick braking action
B60T 15/302	.....	{ Railway control or brake valves with evacuation of air to a reservoir, to the atmosphere or to the brake cylinder }
B60T 15/304	.....	{ with one slide valve }
B60T 15/306	.....	{ with a slide valve for initiation and a second slide valve for control of the braking }
B60T 15/308	.....	{ with a slide valve for initiation and annular valves for control of the braking }
B60T 15/32	.....	and having auxiliary valves
B60T 15/34	...	controlled alternatively by two or three fluid pressures
B60T 15/36	..	Other control devices or valves characterised by definite functions { ( electrically controlled valves in fluid-pressure brake systems <a href="#">B60T 15/027</a> , <a href="#">B60T 15/028</a> ) }
B60T 15/38	...	for quick take-up and heavy braking, e.g. with auxiliary reservoir for taking-up slack
B60T 15/40	....	with separate take-up and applying cylinders
B60T 15/42	...	with a quick braking action, i.e. with accelerating valves actuated by brake-pipe pressure variation
B60T 15/44	....	and operating independently of the main control device
B60T 15/46	...	for retarding braking action to prevent rear vehicles of a vehicle train overtaking the forward ones
B60T 15/48	...	for filling reservoirs
B60T 15/50	....	with means for limiting or relieving pressure in reservoirs
B60T 15/52	...	for quick release of brakes, e.g. for influencing counter- pressure in triple valve or recirculating air from reservoir or brake cylinder to brake pipe
B60T 15/54	...	for controlling exhaust from triple valve or from brake cylinder
B60T 15/56	...	for filling reservoirs by means of a secondary supply pipe
B60T 15/58	...	for supplying control impulses through a secondary air pipe
B60T 15/60	...	for releasing or applying brakes when vehicles of a vehicle train are uncoupled
<b>B60T 17/00</b>		<b>Component parts, details, or accessories of power brake systems not covered by groups <a href="#">B60T 8/00</a> , <a href="#">B60T 13/00</a> or <a href="#">B60T 15/00</a> , or presenting other characteristic features ( air compressors per se <a href="#">F04</a> )</b>
B60T 17/002	.	{ Air treatment devices }
B60T 17/004	..	{ Draining and drying devices }
B60T 17/006	..	{ Anti-frost devices }
B60T 17/008	..	{ Silencer devices }
B60T 17/02	.	Arrangements of pumps or compressors, or control devices therefor
B60T 17/04	.	Arrangements of piping, valves in the piping, e.g. cut-off valves, couplings or air hoses ( traction couplings involving joints for supply lines, electric circuits, or the like <a href="#">B60D 1/62</a> ; couplings peculiar to railway vehicles for, or combined with, couplings or connectors for fluid conduits or electric cables <a href="#">B61G 5/06</a> ; pipes, cut-off valves, couplings, air hoses per se <a href="#">F16C</a> , <a href="#">F16K</a> , <a href="#">F16L</a> )

- B60T 17/043 . . { Brake line couplings, air hoses and stopcocks }
- B60T 17/046 . . { Devices for pipe guiding and fixing }
- B60T 17/06 . Applications or arrangements of reservoirs
- B60T 17/08 . Brake cylinders other than ultimate actuators ( with built-in wear-compensating mechanisms, ultimate actuators [F16D](#) )
- B60T 17/081 . . { Single service brake actuators }
- B60T 17/083 . . { Combination of service brake actuators with spring loaded brake actuators }
- B60T 17/085 . . { Spring loaded brake actuators }
- B60T 17/086 . . . { Spring loaded brake actuators with emergency release device }
- B60T 17/088 . . { Mounting arrangements }
- B60T 17/10 . . Two or more cylinders acting on the same brake with means for rendering them effective selectively or successively, the number of effective cylinders being variable
- B60T 17/12 . . . according to vehicle weight
- B60T 17/14 . . . according to vehicle speed
- B60T 17/16 . . Locking of brake cylinders
- B60T 17/18 . Safety devices ; Monitoring
- B60T 17/20 . . Safety devices operable by passengers other than the driver, { e.g. for railway vehicles }
- B60T 17/22 . . Devices for monitoring or checking brake systems ; Signal devices
- B60T 17/221 . . . { Procedure or apparatus for checking or keeping in a correct functioning condition of brake systems ( hydraulic pressure systems in general [F15B 19/00](#) , [F15B 21/04](#) ; testing structures or apparatus [G01M](#) ) }
- B60T 17/222 . . . . { by filling or bleeding of hydraulic systems }
- B60T 17/223 . . . . . { Devices for pressurising brake systems acting on pedal }
- B60T 17/225 . . . { brake fluid level indicators ( level indication in general [G01F](#) ; [H01H](#) ) }
- B60T 17/226 . . . { using devices being responsive to the difference between the fluid pressures in conduits of multiple braking systems }
- B60T 17/227 . . . . { With additional functions, e.g. by-pass }
- B60T 17/228 . . . { for railway vehicles }

#### Guidance heading:

#### **B60T 2201/00 Particular use of vehicle brake systems ; Special systems using also the brakes ; Special software modules within the brake system controller**

- B60T 2201/02 . Active or adaptive cruise control system ; Distance control
- B60T 2201/022 . . Collision avoidance systems
- B60T 2201/024 . . Collision mitigation systems
- B60T 2201/03 . Brake assistants
- B60T 2201/04 . Hill descent control

- B60T 2201/06 . Hill holder ; Start aid systems on inclined road
- B60T 2201/08 . Lane monitoring ; Lane Keeping Systems
- B60T 2201/081 . . using distance control
- B60T 2201/082 . . using alarm actuation
- B60T 2201/083 . . using active brake actuation
- B60T 2201/084 . . using suspension control
- B60T 2201/085 . . using several actuators ; Coordination of the lane keeping system with other control systems
- B60T 2201/086 . . using driver related features
- B60T 2201/087 . . using active steering actuation
- B60T 2201/088 . . using transmission control
- B60T 2201/089 . . using optical detection
- B60T 2201/09 . Engine drag compensation
- B60T 2201/10 . Automatic or semi-automatic parking aid systems
- B60T 2201/12 . Pre-actuation of braking systems without significant braking effect ; Optimizing brake performance by reduction of play between brake pads and brake disc
- B60T 2201/122 . . Pre-actuation in case of ESP control
- B60T 2201/124 . . Rain brake support (RBS) ; Cleaning or drying brake discs, e.g. removing water or dirt
- B60T 2201/14 . Electronic locking-differential
- B60T 2201/16 . Curve braking control, e.g. turn control within ABS control algorithm

#### Guidance heading:

- B60T 2210/00      Detection or estimation of road or environment conditions ; Detection or estimation of road shapes**
- B60T 2210/10 . Detection or estimation of road conditions
- B60T 2210/12 . . Friction
- B60T 2210/122 . . . using fuzzy logic, neural computing
- B60T 2210/124 . . . Roads with different friction levels
- B60T 2210/13 . . Aquaplaning, hydroplaning
- B60T 2210/14 . . Rough roads, bad roads, gravel roads
- B60T 2210/16 . . Off-road driving conditions
- B60T 2210/20 . Road shapes
- B60T 2210/22 . . Banked curves
- B60T 2210/24 . . Curve radius
- B60T 2210/30 . Environment conditions or position therewithin

B60T 2210/32	. .	Vehicle surroundings
B60T 2210/34	. .	Blind spots
B60T 2210/36	. .	Global Positioning System (GPS)
<b>B60T 2220/00</b>		<b>Monitoring, detecting driver behaviour ; Signalling thereof ; Counteracting thereof</b>
B60T 2220/02	.	Driver type ; Driving style ; Driver adaptive features
B60T 2220/03	.	Driver counter-steering ; Avoidance of conflicts with ESP control
B60T 2220/04	.	Pedal travel sensor, stroke sensor ; Sensing brake request
B60T 2220/06	.	Adjustment of accelerator pedal reaction forces
<b>B60T 2230/00</b>		<b>Monitoring, detecting special vehicle behaviour ; Counteracting thereof</b>
B60T 2230/02	.	Side slip angle, attitude angle, floating angle, drift angle
B60T 2230/03	.	Overturn, rollover
B60T 2230/04	.	Jerk, soft-stop ; Anti-jerk, reduction of pitch or nose-dive when braking
B60T 2230/06	.	Tractor-trailer swaying
B60T 2230/08	.	Driving in reverse
<b>B60T 2240/00</b>		<b>Monitoring, detecting wheel/tire behaviour ; counteracting thereof</b>
B60T 2240/02	.	Longitudinal grip ( detection of road friction <a href="#">B60T 2210/10</a> )
B60T 2240/03	.	Tire sensors
B60T 2240/04	.	Tire deformation
B60T 2240/06	.	Wheel load ; Wheel lift
B60T 2240/07	.	Tire tolerance compensation
B60T 2240/08	.	Spare wheel detection ; Adjusting brake control in case of spare wheel use
<b>B60T 2250/00</b>		<b>Monitoring, detecting, estimating vehicle conditions</b>
B60T 2250/02	.	Vehicle mass
B60T 2250/03	.	Vehicle yaw rate
B60T 2250/04	.	Vehicle reference speed ; Vehicle body speed
B60T 2250/042	. .	Reference speed calculation in ASR or under wheel spinning condition

- B60T 2250/06 . Sensor zero-point adjustment ; Offset compensation
- B60T 2250/062 .. loosing zero-point calibration of yaw rate sensors when travelling on banked roads or in case of temperature variations

#### **B60T 2260/00 Interaction of vehicle brake system with other systems**

- B60T 2260/02 . Active Steering, Steer-by-Wire
- B60T 2260/022 .. Rear-wheel steering ; Four-wheel steering
- B60T 2260/024 .. Yawing moment compensation during mu-split braking
- B60T 2260/04 . Automatic transmission
- B60T 2260/06 . Active Suspension System
- B60T 2260/08 . Coordination of integrated systems
- B60T 2260/09 . Complex systems ; Conjoint control of two or more vehicle active control systems

#### **B60T 2270/00 Further aspects of brake control systems not otherwise provided for**

- B60T 2270/10 . ABS control systems
- B60T 2270/12 .. for all-wheel drive vehicles
- B60T 2270/14 .. hydraulic model
- B60T 2270/20 . ASR control systems
- B60T 2270/202 .. for all-wheel drive vehicles
- B60T 2270/203 .. hydraulic system components
- B60T 2270/204 .. hydraulic model
- B60T 2270/206 .. Monitoring, e.g. parameter monitoring, plausibility check
- B60T 2270/208 .. adapted to friction condition
- B60T 2270/211 .. Setting or adjusting start-control threshold
- B60T 2270/213 .. Driving off under Mu-split conditions
- B60T 2270/30 . ESP control system
- B60T 2270/302 .. for all-wheel drive vehicles
- B60T 2270/303 .. Stability control with active acceleration
- B60T 2270/304 .. during driver brake actuation
- B60T 2270/306 .. hydraulic system components
- B60T 2270/308 .. hydraulic model
- B60T 2270/311 .. Predefined control maps, lookup tables
- B60T 2270/313 .. with less than three sensors ( [yaw rate](#), [steering angle](#), [lateral acceleration](#) )
- B60T 2270/40 . Failsafe aspects of brake control systems
- B60T 2270/402 .. Back-up
- B60T 2270/403 .. Brake circuit failure

B60T 2270/404	..	Brake-by-wire or X-by-wire failsafe
B60T 2270/406	..	Test-mode ; Self-diagnosis
B60T 2270/408	..	Hierarchical failure detection
B60T 2270/411	..	Offset failure
B60T 2270/413	..	Plausibility monitoring, cross check, redundancy
B60T 2270/414	..	Power supply failure
B60T 2270/415	..	Short-circuit, open circuit failure
B60T 2270/416	..	Wheel speed sensor failure
B60T 2270/60	.	Regenerative braking
B60T 2270/602	..	ABS features related thereto
B60T 2270/603	..	ASR features related thereto
B60T 2270/604	..	Merging friction therewith ; Adjusting their repartition
B60T 2270/606	..	Axle differential or center differential features related thereto
B60T 2270/608	..	Electronic brake distribution (EBV/EBD) features related thereto
B60T 2270/611	..	Engine braking features related thereto
B60T 2270/613	..	ESP features related thereto
B60T 2270/82	.	Brake-by-Wire, EHB
B60T 2270/83	.	Control features of electronic wedge brake (EWB)
B60T 2270/84	.	Driver circuits for actuating motor, valve and the like
B60T 2270/86	.	Optimizing braking by using ESP vehicle or tire model
B60T 2270/88	.	Pressure measurement in brake systems
B60T 2270/89	.	Criteria for brake release