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

Definition statement

This place covers:

Arrangement of braking elements on vehicles (as defined in the Glossary of terms below).

Portable devices for preventing unwanted movement of vehicles, and especially where the devices are specially adapted to engage an exterior portion of a stationary vehicle to prevent or restrain its movement, e.g. chocks.

Vehicle modifications to facilitate cooling of brakes.

Control systems or parts thereof, in general or specially adapted for vehicles, for processing variables which influence the extent or duration of a braking event, for the following purposes:

- for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions, e.g. limiting or varying distribution of braking force;
- for continuous braking making use of fluid or powdered medium, e.g. when descending a long slope;
- for transmitting braking action from initiating means to ultimate brake actuator.

Component parts, details or accessories of brake control systems, for example:

- brake-action initiating means, e.g. manually or automatically-operated;
- construction, arrangement or operation of valves incorporated in power brake systems;

Component parts, details or accessories presenting other characteristic features, e.g. arrangements of pumps or compressors, brake cylinders other than ultimate actuators, safety or monitoring devices.

Relationships with other classification places

B61H covers brakes or other retarding apparatus peculiar to rail vehicles, and arrangement or disposition of brakes or other retarding apparatus in rail vehicles, but the following aspects thereof in relation to rail vehicles are covered in B60T:

- Arrangements in rail vehicles for adjusting wheel-braking force to meet varying vehicular or permanent way conditions see B60T 8/00;
- 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 see B60T 13/00;
- Construction, arrangement or operation of valves incorporated in power brake systems see B60T 15/00. (B60T 15/00);
- Component parts, details or accessories of brake systems.

References

Limiting references

This place does not cover:

Electrodynamic brake systems and control thereof for vehicles, and in general	B60L
Conjoint control of brakes and other drive units of vehicles, such as engine, gearing or clutch (this may be particularly significant when traction control systems operating on more than just brakes are being classified)	B60W
Brakes or other retarding apparatus peculiar to rail vehicles; Arrangement or disposition of brakes or other retarding apparatus in rail vehicles	B61H
Arrangement of braking elements on cycles	B62L
Arrangement of braking elements on aircraft	B64C 25/42
Weighing of vehicles	G01G 19/02
Weighing in vehicles	G01G 19/08
Testing of braking systems or brakes	G01L 5/28
Dynamo-electric brakes	H02K 49/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Railway stops, track brakes or retarding apparatus, fixed to permanent way	B61K 7/00
Braking devices for cranes, lift hoists, etc.	B66D 5/00
Braking devices for fork lift trucks	B66F 9/075
Safety arrangements on roads for slowing, redirecting or stopping errant vehicles, e.g. guard posts, bollards	E01F 15/00
Pumps	F04B, F04C
Hydraulic systems	F15B
Brakes themselves, i.e. the devices where the braking effect actually occurs, and actuators directly acting on those devices	F16D
Valves	F16K
Foot actuated controlling members	G05G 1/30
Traffic control systems for road vehicles	G08G 1/00

Special rules of classification

In group B60T 8/00, when the subject matter to be classified is characterised by both electronic and non-electronic aspects, multiple classification should be applied, i.e. it should be classified both in group B60T 8/17 or its subgroups, and in groups B60T 8/18, B60T 8/24, B60T 8/26 or B60T 8/32 or their subgroups.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

boosters	means for providing power assistance to the braking effort

vehicle	This term can have two different meanings here, viz. (1) all vehicles except those restricted to one of the following types of vehicles: rail vehicles, waterborne vessels, aircraft, space vehicles, hand carts, cycles, animal-drawn vehicles, and sledges, which are covered by the relevant subclasses of B61 - B64. The term "vehicle" also includes (i) vehicular characteristics which are common to more than one of the above-listed types, and (ii) certain characteristics restricted to automobiles, road or cross-country trailers.(2) In some instances in this definition, the term "vehicle" has been qualified by another word which takes its meaning outside the scope of (1) above (e.g. "rail vehicle"), in which case the word "vehicle" takes its normal dictionary meaning. The reader can determine from the context whether an occurrence of the word "vehicle" in this definition falls within the meaning stated in (1) or (2).

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Anti-lock Braking System
ASR	Anti-Spin Regulation
EBA	Electronic Brake Assist
BA	Braking Assistant
EBD, EBKV	Electronic Brakeforce Distribution
TC, TCS	Traction control
FDR, FSR, ESP	Electronic Stability Control
EHB	Electro-Hydraulic Braking System
EBS	Electronic Braking Systems
BBW	Brake by wire
ACC	Automatic cruise control

In patent documents, the following words/expressions are often used as synonyms:

- "Wheel slip", "wheel-slip", "wheel spin" and "wheel-spin"
- "Traction control" and "ASR (Anti-Spin Regulation) – for combating wheel-spin"
- "Automatic cruise control" and "automatic distance control"
- "Interlocking brake control", "integral braking" and "CBC (for motor cycles)"
- "Antilock", "anti-lock", "anti-skid", "antiskid" and "anti-blocking"

B60T 1/00

Arrangements of braking elements, i.e. of those parts where braking effect occurs {specially for vehicles}

Definition statement

This place covers:

Arrangements of braking elements; braking by positive locking, retarding wheels or otherwise.

References

Limiting references

This place does not cover:

Railway vehicle braking elements	B61H
Air resistance braking of aircraft	B64C
Exhaust brakes	F02D 9/06
Braking elements per se	F16D, B60T 17/08
Positive locking in transmissions	F16H 63/48

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control of retarders	B60T 10/00
Combinations of different braking elements or brake types	B60T 13/58
Regenerative braking	B60L 7/24, B60T 8/00, B60W 30/18127
Positive locking brakes	F16D 63/006

B60T 3/00

Portable devices for preventing unwanted movement of vehicles, e.g. chocks

Definition statement

This place covers:

Portable wheel chocks, wedges.

References

Limiting references

This place does not cover:

Chocks on vehicle carrying vehicles	B60P 3/077
Restricting vehicle movement at loading stations	B65G 69/003

B60T 5/00

Vehicle modifications to facilitate cooling of brakes

Definition statement

This place covers:

For example air flow guiding elements, air ducts.

References

Limiting references

This place does not cover:

Spoilers per se	B62D 35/00
Ventilated discs or drums of braking elements	F16D
Collecting brake dust	F16D

B60T 7/00

Brake-action initiating means

Definition statement

This place covers:

Brake-action initiating means, hand- and foot actuated brake initiating means;

Automatic initiation of braking systems, also for trailers.

References

Limiting references

This place does not cover:

Accelerator pedals etc.	G05G 1/00
Traffic control systems	G08G

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hill-Holding	B60T 8/17, B60W 30/18118
ACC	B60T 8/48, B60T 7/22, B60K 31/0008
Trailer braking systems	B60T 13/00, B60T 8/00
Overrun brakes	B60T 13/08, B60T 7/122
Hand- or foot actuated brake-action initiating means in pneumatic braking systems	B60T 15/04
Hand- or foot actuated controlling members in general	G05G 1/00

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)

Definition statement

This place covers:

- Load dependent braking systems and parts thereof
- Braking systems that produce differential braking pressures on either side of the vehicle or between front and rear wheels of the vehicle and parts thereof,
- Speed responsive braking systems (like ABS, ASR, ESP, BA) and parts thereof, and
- Systems using electrical or electronic regulation means to control the braking.

Special rules of classification

Reference is made to the special rules of classification as defined under B60T

B60T 8/17

Using electrical or electronic regulation means to control braking {(detecting or indicating faulty operation B60T 8/885)}

Definition statement

This place covers:

Electric or electronic regulation means to control:

- Load dependent braking systems,
- Braking systems that produce differential braking pressures on either side of the vehicle or between front and rear wheels of the vehicle
- Speed responsive braking systems (like ABS, ASR, ESP, BA).

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Conjoint control	B60W

Informative references

Attention is drawn to the following places, which may be of interest for search:

ABS vehicle reference speed	B60T 8/172
Friction condition (road/tyre)	B60T 8/172

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)

Definition statement

This place covers:

Braking systems and parts thereof responsive to vehicle weight or load, especially for vehicle having more than two axles or braking systems wherein producing a differential braking between front and rear or left and right wheels is irrelevant.

References

Limiting references

This place does not cover:

Load dependent braking in speed responsive braking systems or systems producing differential braking forces between the two axles of the vehicle	B60T 8/58, B60T 8/30

B60T 8/24

responsive to vehicle inclination or change of direction, e.g. negotiating bends {(using electrical circuitry or regulation means B60T 8/17)}

Definition statement

This place covers:

Braking systems or parts thereof producing differential brake forces (left/right) according to roll of vehicle or wile negotiating bends or to avoid trailer sway and braking systems and parts thereof producing differential brake forces (left/right and/or front/rear) when the vehicle is on a slope.

References

Limiting references

This place does not cover:

ESP	B60T 8/48

Informative references

Attention is drawn to the following places, which may be of interest for search:

Trailer braking systems	B60T 7/20

B60T 8/26

characterised by producing differential braking between front and rear wheels {(using electrical circuitry or regulation means B60T 8/17)}

Definition statement

This place covers:

Braking systems and parts thereof for producing differential braking forces between the front and rear wheel(s) (or axles) of the vehicle.

Pressure, deceleration and load responsive systems and parts thereof.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Motor cycle braking systems	B62L, B60T 8/3225

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)

Definition statement

This place covers:

Subject matter wherein the braking action is adjusted or controlled in accordance with a signal relating to velocity. A speed condition can be, for example, a velocity signal from one or more plural wheels, or a velocity signal from a moving object or a vehicle body.

References

Limiting references

This place does not cover:

Systems for increasing wheel adhesion	B60B
Special tyre constructions for improving adhesion	B60C
Pressure sensors for ABS, ASR etc.	G01L
Speed sensors for ABS, ASR etc.	G01P

Informative references

Attention is drawn to the following places, which may be of interest for search:

Braking systems with Hill-Hold function	B60T 7/122
Braking systems with ACC	B60T 7/22
Braking systems in which the brake elements are used for drying or reducing vibrations	B60T 8/00
Systems specially adapted for a particular kind of vehicle	B60T 8/321

BBW	B60T 8/3255, B60T 13/74
EBS	B60T 8/327, B60T 13/66
BA	B60T 8/3275
Speed sensor arrangement	B60T 8/329
Filling and bleeding	B60T 8/34, B60T 17/222
Non-electrically controlled valves	B60T 8/341
Lay out of the braking system	B60T 8/343
Electric control of the valve itself	B60T 8/36
Electrically controlled valves	B60T 8/3615
Electrically controlled valves incorporated in control units	B60T 8/3675
Specially adapted master cylinders for ABS, ASR etc.	B60T 8/38
Pumps	B60T 8/4018, B60T 8/4031
Pump control	B60T 8/404
Fluid damping aspects	B60T 8/4068, B60T 8/4291, B60T 8/42
EHB	B60T 8/4072
Speed sensing by means of wheel driven pumps	B60T 8/4095
ABS using volume expansion units (debooster systems)	B60T 8/4208
Pump-back type (closed) ABS	B60T 8/4275
Booster aspects	B60T 8/441
Open ABS	B60T 8/445
Booster used for ABS	B60T 8/447
Air over hydraulic braking systems	B60T 8/46
Automatic braking systems for all kinds of functions not initiated by the driver or rider	B60T 8/48, B60T 8/3205
ABS with controlled pressure increase and decrease rate	B60T 8/50
Mechanical ABS systems	B60T 8/54
Means for changing the friction coefficient	B60T 8/56
Systems with torque sensing	B60T 8/58
Fly wheel type ABS	B60T 8/72
Response to failure	B60T 8/88, B60T 8/4036
Diagnosing	B60T 8/90

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

Definition statement

This place covers:

Hydrostatically and hydrodynamically controlled retarders.

References

Limiting references

This place does not cover:

Electric retarders, regenerative baking systems	B60L 7/00
Liquid-resistance brakes	F16D 57/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Regenerative non-electric brakes	B60T 1/10
Combination of friction brakes and electric retarders	B60T 8/00
Energy recovery in soil-shifting machines	B60T 13/585, B60L 7/24, E02F 9/2217

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)

Definition statement

This place covers:

Mechanical, e.g. by means of cables, and fluid transmission of braking force to the braking elements. Master cylinders; Reservoirs; Valves.

References

Limiting references

This place does not cover:

Slip, spin or stability control (ABS, ASR, ESP etc.)	B60T 8/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Trailer braking systems	B60T 7/20
Proportioning valves	B60T 8/18, B60T 8/24, B60T 8/26
Producing different pressures in different brake circuits	B60T 8/26
Master cylinders especially adapted for ABS	B60T 8/38
Overrun brakes	B60T 13/08
Master Cylinders for single track vehicles	B62L 3/023
Master Cylinders for clutches	F16D 25/08
Valves in general	F16K
Pipes or hoses per se	F16L

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)

Definition statement

This place covers:

Mechanically, electrically and/or fluidly assisted transmission or generation of braking force to the braking elements. Brake boosters.

References

Limiting references

This place does not cover:

Slip, spin or stability control (ABS, ASR, ESP etc.)	B60T 8/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Electric parking brake systems	B60T 7/107
Electrical control of boosters for ABS, ASR, BA etc.	B60T 8/3265, B60T 8/3275, B60T 8/447, B60T 8/4845
Electric regenerative or resistance braking systems	B60L 7/00, B60W 10/00, B60W 20/00, B60K 6/22
Rope, cable, or chain winding mechanisms	B66D 1/00
Electric-mechanical braking elements per se	F16D

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)

Definition statement

This place covers:

Application and release valves, driver's valves, relay valves and arrangement or operation thereof

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Valves for ABS, ASR, ESP etc.	B60T 8/36, B60T 8/341
Bleed valves	B60T 11/30
Valves per se	F16K

B60T 17/00

Component parts, details, or accessories of power brake systems not covered by groups B60T 8/00, B60T 13/00 or B60T 15/00, or presenting other characteristic features (air compressors per se F04)

Definition statement

This place covers:

Air treatment devices;

Arrangements of pumps, compressors, piping and reservoirs;

Braking elements not directly acting on the friction material carry parts;

Safety devices;

Filling and bleeding; tools therefor.

References

Limiting references

This place does not cover:

Pumps, compressors per se	F04B, F04C
High pressure reservoirs	F17C

Informative references

Attention is drawn to the following places, which may be of interest for search:

Bleeding of ABS, ASR, ESP etc.	B60T 8/34
Arrangement of components in ABS/ASR units	B60T 8/3675
Mounting of ABS/ASR units in or onto the vehicle	B60T 8/3685
Failure responsive means or control in ABS or the like	B60T 8/88
Master Cylinder Reservoirs	B60T 11/26, B60T 11/22
Glad-Hands	B60T 17/043
Brake cylinders	B60T 17/08, **F16D65/14B10**
Braking system with monotoring of pressure differences between two circuits	B60T 17/18, B60T 8/26
Details of desiccator beds	B01D 53/0407
Gas drying by absorption	B01D 53/261
Train braking systems	B61H
Braking systems for single track vehicles	B62L

Special rules of classification

Documents should be classified in B60T 8/00, B60T 13/00 or B60T 15/00 first; if there are further aspects in the documents to be classified, for which there is no classification possibility available in the above groups, further classification is done in B60T 17/00.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Monitoring	in use
Checking	stationary; in factory or workshop

B60T 2240/02

Longitudinal grip

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Detection or estimation of road conditions	B60T 2210/10