

## **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 subclass/group 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.

### **Relationship between large subject matter areas**

[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 relevant to classification in this subclass

*This subclass/group does not cover:*

Electrodynamic brake systems and control thereof for vehicles, and in general	<a href="#">B60L</a>
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)	<a href="#">B60W</a>
Brakes or other retarding apparatus peculiar to rail vehicles; Arrangement or disposition of brakes or other retarding apparatus in rail vehicles (see above)	<a href="#">B61H</a>
Arrangement of braking elements on cycles	<a href="#">B62L</a>
Arrangement of braking elements on aircraft	<a href="#">B64C 25/42</a>
Weighing of vehicles	<a href="#">G01G 19/02</a>
Weighing in vehicles	<a href="#">G01G 19/08</a>
Testing of braking systems or brakes	<a href="#">G01L 5/28</a>

Dynamo-electric brakes	<a href="#">H02K 49/00</a>
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## 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	<a href="#">B61K 7/00</a>
Braking devices for cranes, lift hoists, etc.	<a href="#">B66D 5/00</a>
Braking devices for fork lift trucks	<a href="#">B66F 9/075</a>
Safety arrangements on roads for slowing, redirecting or stopping errant vehicles, e.g. guard posts, bollards	<a href="#">E01F 15/00</a>
Pumps	<a href="#">F04B</a> , <a href="#">F04C</a>
Hydraulic systems	<a href="#">F15B</a>
Brakes themselves, i.e. the devices where the braking effect actually occurs, and actuators directly acting on those devices	<a href="#">F16D</a>
Valves	<a href="#">F16K</a>
Foot actuated controlling members	<a href="#">G05G 1/30</a>
Traffic control systems for road vehicles	<a href="#">G08G 1/00</a>

## Special rules of classification within this subclass

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 subclass/group, 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 to 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:

EB	Electronic Brake Assist
BA	Braking Assistant
EBD, EBKV	Electronic Brake Force 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 expressions/words 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)"

## **B60T 1/00**

**Arrangements of braking elements, i.e. of those parts where braking effect occurs [N: specially for vehicles]**

### **Definition statement**

*This subclass/group covers:*

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

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Railway vehicle braking elements	<a href="#">B61H</a>
Air resistance braking of aircraft	<a href="#">B64C</a>
Exhaust brakes	<a href="#">F02D 9/06</a>
Braking elements per se	<a href="#">F16D B60T 17/08</a>
Positive locking in transmissions	<a href="#">F16H 63/48</a>

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## Informative references

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

Regenerative braking	<a href="#">B60L 7/24 B60T 8/00 B60W 30/18127</a>
Control of retarders	<a href="#">B60T 10/00</a>
Combinations of different braking elements or brake types	<a href="#">B60T 13/58</a>
Positive locking brakes	<a href="#">F16D 63/006</a>

## B60T 3/00

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

### Definition statement

*This subclass/group covers:*

Portable wheel chocks, wedges.

### References relevant to classification in this group

*This subclass/group does not cover:*

Chocks on vehicle carrying vehicles	<a href="#">B60P 3/077</a>
Restricting vehicle movement at loading stations	<a href="#">B65G 69/003</a>

## B60T 5/00

**Vehicle modifications to facilitate cooling of brakes**

### Definition statement

*This subclass/group covers:*

For example air flow guiding elements, air ducts.

## References relevant to classification in this group

*This subclass/group does not cover:*

Spoilers per se	<a href="#">B62D 35/00</a>
Ventilated discs or drums of braking elements	<a href="#">F16D</a>
Collecting brake dust	<a href="#">F16D</a>

## B60T 7/00

### Brake-action initiating means

#### Definition statement

*This subclass/group covers:*

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

Automatic initiation of braking systems, also for trailers.

## References relevant to classification in this group

*This subclass/group does not cover:*

Accelerator pedals etc.	<a href="#">G05G 1/00</a>
Traffic control systems	<a href="#">G08G</a>

## Informative references

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

Trailer braking systems	<a href="#">B60T 13/00</a> <a href="#">B60T 8/00</a>
Overrun brakes	<a href="#">B60T 13/08</a> <a href="#">B60T 7/122</a>
Hand- or foot actuated brake-action initiating means in pneumatic braking systems	<a href="#">B60T 15/04</a>
Hill-Holding	<a href="#">B60T 8/17</a> <a href="#">B60W 30/18118</a>
ACC	<a href="#">B60T 8/48</a> <a href="#">B60T 7/22</a> <a href="#">B60K 31/0008</a>

	<a href="#">B60T 8/48</a>
Hand- or foot actuated controlling members in general	<a href="#">G05G 1/00</a>

## **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 B60T17/10)**

### **Definition statement**

*This subclass/group 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 within this group**

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 [N: (detecting or indicating faulty operation B60T8/885)**

### **Definition statement**

*This subclass/group 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 relevant to classification in this group

*This subclass/group does not cover:*

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

Conjoint control	<a href="#">B60W</a>
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### Informative references

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

ABS vehicle reference speed	<a href="#">B60T 8/172</a>
Friction condition (road/tire)	<a href="#">B60T 8/172</a>

### B60T 8/18

**responsive to vehicle weight or load, e.g. load distribution ([N: using electrical circuitry on regulation means B60T8/17;] B60T8/30 takes precedence; responsive to weight and speed condition B60T8/58 )**

### Definition statement

*This subclass/group 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 relevant to classification in this group

*This subclass/group does not cover:*

Load dependent braking in speed responsive braking systems or systems producing differential braking forces between the two axles of the	<a href="#">B60T 8/58</a> <a href="#">B60T 8/30</a>
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vehicle	
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## B60T 8/24

**responsive to vehicle inclination or change of direction, e.g. negotiating bends [N: (using electrical circuitry or regulation means B60T8/17 )]**

### Definition statement

*This subclass/group covers:*

Braking systems or parts thereof producing differential brake forces (left/right) according to roll of vehicle or while 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 relevant to classification in this subgroup

*This subclass/group does not cover:*

ESP	<a href="#">B60T 8/48</a>
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### Informative references

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

Trailer braking systems	<a href="#">B60T 7/20</a>
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## B60T 8/26

**characterised by producing differential braking between front and rear wheels [N: (using electrical circuitry or regulation means B60T8/17 )]**

### Definition statement

*This subclass/group 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.

## Informative references

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

Motor cycle braking systems	<a href="#">B62L B60T 8/3225</a>
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## B60T 8/32

responsive to a speed condition, e.g. acceleration or deceleration ([N: using electrical circuitry or regulation means B60T8/17]; B60T8/28 takes precedence; electric devices on electrically propelled vehicles indicating the wheel slip B60L3/10; measuring linear or angular speed per se G01P3/00)

## Definition Statement

*This subclass/group 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 relevant to classification in this subgroup

*This subclass/group does not cover:*

Systems for increasing wheel adhesion	<a href="#">B60B</a>
Special tyre constructions for improving adhesion	<a href="#">B60C</a>
Pressure sensors for ABS, ASR etc.	<a href="#">G01L</a>
Speed sensors for ABS, ASR etc.	<a href="#">G01P</a>

## Informative references

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

Non-electrically controlled valves	<a href="#">B60T 8/341</a>
Electrically controlled valves	<a href="#">B60T 8/3615</a>
Electric control of the valve itself	<a href="#">B60T 8/36</a>

Electrically controlled valves incorporated in control units	<a href="#">B60T 8/3675</a>
Pumps	<a href="#">B60T 8/4018</a> , <a href="#">B60T 8/4031</a>
Pump control	<a href="#">B60T 8/404</a>
EBS	<a href="#">B60T 8/327</a> , <a href="#">B60T 13/66</a>
EHB	<a href="#">B60T 8/4072</a>
BBW	<a href="#">B60T 8/3255</a> , <a href="#">B60T 13/74</a>
BA	<a href="#">B60T 8/3275</a>
Specially adapted master cylinders for ABS, ASR etc.	<a href="#">B60T 8/38</a>
Pump-back type (closed) ABS	<a href="#">B60T 8/4275</a>
Open ABS	<a href="#">B60T 8/445</a>
ABS with controlled pressure increase and decrease rate	<a href="#">B60T 8/50</a>
Fluid damping aspects	<a href="#">B60T 8/4068</a> , <a href="#">B60T 8/4291</a> , <a href="#">B60T 8/42</a>
Booster aspects	<a href="#">B60T 8/441</a>
Booster used for ABS	<a href="#">B60T 8/447</a>
ABS using volume expansion units (debooster systems)	<a href="#">B60T 8/4208</a>
Automatic braking systems for all kinds of functions not initiated by the driver or rider	<a href="#">B60T 8/48</a> , <a href="#">B60T 8/3205</a>
Fly wheel type ABS	<a href="#">B60T 8/72</a>
Mechanical ABS systems	<a href="#">B60T 8/54</a> , <a href="#">B60T 8/32</a>
Lay out of the braking system	<a href="#">B60T 8/343</a>

Speed sensor arrangement	<a href="#">B60T 8/329</a>
Systems with torque sensing	<a href="#">B60T 8/58</a>
Speed sensing by means of wheel driven pumps	<a href="#">B60T 8/4095</a>
Means for changing the friction coefficient	<a href="#">B60T 8/56</a>
Systems specially adapted for a particular kind of vehicle	<a href="#">B60T 8/321</a>
Air over hydraulic braking systems	<a href="#">B60T 8/46</a>
Response to failure	<a href="#">B60T 8/88</a> , <a href="#">B60T 8/4036</a>
Diagnosing	<a href="#">B60T 8/90</a>
Braking systems with Hill-Hold function	<a href="#">B60T 7/122</a>
Braking systems with ACC	<a href="#">B60T 7/22</a>
Braking systems in which the brake elements are used for drying or reducing vibrations	<a href="#">B60T 8/00</a>
Filling and bleeding	<a href="#">B60T 8/34</a> , <a href="#">B60T 17/222</a>
Systems combined with brake locking means	<a href="#">B60T 8/32</a>

## **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 subclass/group covers:*

Hydrostatically and hydrodynamically controlled retarders.

## References relevant to classification in this group

*This subclass/group does not cover:*

Electric retarders, regenerative braking systems	<a href="#">B60L 7/00</a>
Liquid-resistance brakes	<a href="#">F16D 57/00</a>

## Informative references

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

Regenerative non-electric brakes	<a href="#">B60T 1/10</a>
Combination of friction brakes and electric retarders	<a href="#">B60T 8/00</a>
Energy recovery in soil-shifting machines	<a href="#">B60T 13/585 B60L 7/24 E02F 9/2217</a>

## B60T 11/00

**Transmitting braking action from initiating means to ultimate brake actuator without power assistance or drive or where such assistance is irrelevant (the power assistance of drive being essential B60T13/00)**

### Definition statement

*This subclass/group covers:*

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

## References relevant to classification in this group

*This subclass/group does not cover:*

Slip, spin or stability control (ABS, ASR, ESP etc.)	<a href="#">B60T 8/00</a>
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## Informative references

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

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

## **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 B60T8/00; valves incorporated in such systems B60T15/00)**

### **Definition statement**

*This subclass/group covers:*

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

### **References relevant to classification in this group**

*This subclass/group does not cover:*

Slip, spin or stability control (ABS, ASR, ESP etc.)	<a href="#">B60T 8/00</a>
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## Informative references

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

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

## B60T 15/00

**Construction, arrangement, or operation of valves incorporated in power brake systems and not covered by the groups B60T11/00 or B60T13/00 (valve structures responsive to a speed condition B60T8/34, valves in general F16K)**

### Definition statement

*This subclass/group covers:*

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

## Informative references

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

Bleed valves	<a href="#">B60T 11/30</a>
Valves for ABS, ASR, ESP etc.	<a href="#">B60T 8/36</a> , <a href="#">B60T 8/341</a>
Valves per se	<a href="#">F16K</a>

## B60T 17/00

**Component parts, details, or accessories of brake systems not covered by the groups B60T8/00, B60T13/00 or B60T15/00, or presenting other characteristic features**

**Definition statement**

*This subclass/group 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 relevant to classification in this group**

*This subclass/group does not cover:*

Pumps, compressors per se	<a href="#">F04B</a> , <a href="#">F04C</a>
High pressure reservoirs	<a href="#">F17C</a>

**Informative references**

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

Train braking systems	<a href="#">B61H</a>
Braking systems for single track vehicles	<a href="#">B62L</a>
Arrangement of components in ABS/ASR units	<a href="#">B60T 8/3675</a>
Mounting of ABS/ASR units in or onto the vehicle	<a href="#">B60T 8/3685</a>
Glad-Hands	<a href="#">B60T 17/043</a>
Gas drying by absorption	<a href="#">B01D 53/261</a>
Details of desiccator beds	<a href="#">B01D 53/0407</a>
Master Cylinder Reservoirs	<a href="#">B60T 11/26</a> <a href="#">B60T 11/22</a>

Brake cylinders	<a href="#">B60T 17/08 F16D 65/14B10</a>
Braking system with monitoring of pressure differences between two circuits	<a href="#">B60T 17/18 B60T 8/26</a>
Failure responsive means or control in ABS or the like	<a href="#">B60T 8/88</a>
Bleeding of ABS, ASR, ESP etc.	<a href="#">B60T 8/34</a>

### Special rules of classification within this group

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 subclass/group, the following terms (or expressions) are used with the meaning indicated:*

Monitoring	in use
Checking	stationary; in factory or workshop