

ECLA EUROPEAN CLASSIFICATION

B60C

VEHICLE TYRES (manufacture B29); TYRE INFLATION; TYRE CHANGING OR REPAIRING; REPAIRING, OR CONNECTING VALVES TO, INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES (testing of tyres [G01M17/02](#)) [C9409]

[N: **WARNING**
[C2012.10]

- The following IPC groups are not used in the internal ECLA classification scheme. Subject matter covered by these groups is classified in the following ECLA groups:

[B60C11/113](#) covered by [B60C11/03J](#)
[B60C11/117](#) covered by [B60C11/03L](#)

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Notes

- In this subclass, the term "tyre" is to be understood as a separate ground-engaging, continuous element outside the periphery of the wheel rim and includes the tyre casing, cover, or jacket and any insert, e.g. inner tube. In the groups relating to repair or connection of valves, the term "tyre" is to be understood to include also inflatable elastic bodies other than tyres or inner tubes
- Attention is drawn to the note following the title of class B 60.

B60C1/00

Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition

Note

Tyres characterised by compositions only, i.e. having no significant tyre structure, are classified only with the compositions, e.g. [C08K](#), [C08L](#)

B60C1/00F

- [N: Compositions of the inner liner]

B60C1/00H

- [N: Compositions of the tread] [N1210]

B60C1/00J

- [N: Compositions of the sidewalls]

B60C1/00N

- [N: Compositions of the carcass layers] [N1210]

B60C3/00

Tyres characterised by the transverse section (characterised by rail-engaging elements [B60B17/00](#))

B60C3/02

- Closed, e.g. toroidal, tyres

B60C3/04

- characterised by the relative dimensions of the section, e.g. low profile ([B60C3/06](#) takes precedence)

B60C3/06

- Asymmetric [N: (asymmetric bead seats [B60C15/02M](#); asymmetric bead

- rcement B60C15/06J)] [N1210]
- B60C3/08 . collapsible into storage or non-use condition, e.g. space-saving spare tyres (run-flat tyres [B60C17/08](#))
- B60C5/00** **Inflatable pneumatic tyres or inner tubes** ([B60C1/00](#), [B60C9/00](#) to [B60C17/00](#) take precedence)
- B60C5/00B . [N: filled with gas other than air] [N1210]
- B60C5/00C . [N: filled at least partially with foam material] [N1210]
- B60C5/00E . [N: filled at least partially with liquid (B60C19/12 takes precedence)] [N1210]
- B60C5/00E2 . . [N: Ballast tyres] [N1210]
- B60C5/00F . [N: made from other material than rubber]
- B60C5/00H . [N: Low pressure tyres, e.g. for all terrain vehicles] [N1210]
- B60C5/01 . without substantial cord reinforcement, e.g. cordless tyres, cast tyres
- B60C5/02 . having separate inflatable inserts, e.g. with inner tubes; Means for lubricating, venting, preventing relative movement between tyre and inner tube ([B60C5/20](#) takes precedence)
- B60C5/02B . . [N: separated by a part of the tyre (inflatable inserts with several inflatable chambers B60C5/20)] [N1210]
- B60C5/04 . . Shape or construction of inflatable inserts ([B60C5/10](#) takes precedence)
- B60C5/08 . . . having reinforcing means
- B60C5/10 . . . formed as a single discontinuous ring with contiguous ends which may be connected together
- B60C5/12 . without separate inflatable inserts, e.g. tubeless tyres with transverse section open to the rim ([B60C5/20](#) takes precedence)
- B60C5/14 . . with impervious liner or coating on the inner wall of the tyre ([B60C21/04](#), [B60C21/08](#) take precedence)
- B60C5/14B . . . [N: provided partially, i.e. not covering the whole inner wall] [N1210]
- B60C5/16 . . Sealing means between beads and rims, e.g. bands
- B60C5/18 . Sectional casings, e.g. comprising replaceable arcuate parts
- B60C5/20 . having multiple separate inflatable chambers (with additional tubes which become load supporting in emergency [B60C17/02](#))
- B60C5/22 . . the chambers being annular
- B60C5/24 . . the walls of the chambers extending transversely of the tyre
- B60C7/00** **Non-inflatable or solid tyres** ([B60C1/00](#) takes precedence; tyres or rims characterised by rail engaging elements [B60B17/00](#))
- B60C7/02 . made from ropes or bristles

- B60C7/04 . made of wood or leather
- B60C7/06 . made of metal
- B60C7/08 . built-up from a plurality of arcuate parts
- B60C7/10 . characterised by means for increasing resiliency ([highly resilient wheels B60B9/00](#))
- B60C7/10B . . [N: Tyres built-up with separate rubber parts] [N1210]
- B60C7/10D . . [N: using foam material]
- B60C7/12 . . using enclosed chambers, e.g. gas-filled ([inflatable tyres B60C5/00](#))
- B60C7/12B . . . [N: enclosed chambers defined between rim and tread] [N1210]
- B60C7/14 . . using springs
- B60C7/14B . . . [N: having a lateral extension disposed in a plane parallel to the wheel axis] [N1210]
- B60C7/16 . . . of helical or flat coil form
- B60C7/18 disposed radially relative to wheel axis
- B60C7/20 disposed circumferentially relative to wheel axis
- B60C7/22 . having inlays other than for increasing resiliency, e.g. for armouring
- B60C7/24 . characterised by means for securing tyres on rim or wheel body
- B60C7/26 . . using bolts
- B60C7/28 . . using straps or the like, e.g. vulcanised into the tyre

B60C9/00 **Reinforcements or ply arrangement of pneumatic tyres** ([inserts having reinforcing means B60C5/08](#); [bead structure, e.g. turnup or overlap construction, B60C15/00](#); [tyre cords per se D02G3/48](#); [fabrics per se D03D, D04H](#); [metal ropes or cables per se D07B1/06](#)) [N: B] [C1110]

Note

When classifying in this group, classification is also made in subclass B32B insofar as any layered product is concerned

- B60C9/00B . [N: Reinforcements made of metallic elements, e.g. cords, yarns, filaments or fibres made from metal] [N1210]
- B60C9/00D . [N: Reinforcements comprising mineral fibres, e.g. glass or carbon fibres] [N1210]
- B60C9/00F . [N: Reinforcements made of synthetic materials] [N1210]
- B60C9/00H . [N: Reinforcements made of different materials, e.g. hybrid or composite cords] [N1210]
- B60C9/00J . [N: Reinforcements comprising preshaped elements, e.g. undulated or zig-zag filaments] [N1210]
- B60C9/00L . [N: Reinforcements comprising monofilaments] [N1210]
- B60C9/02 . Carcasses

- B60C9/02C . . [N: Carcasses comprising an interrupted ply, i.e. where the carcass ply does not continuously extend from bead to bead but is interrupted, e.g. at the belt area, into two or more portions of the same ply] [N1210]
- B60C9/02K . . [N: built up from narrow strips, individual cords or filaments, e.g. using filament winding] [N1210]
- B60C9/02M . . [N: characterised by special physical properties of the carcass ply] [N1210]
- B60C9/02R . . [N: Carcass ply curvature (sidewall curvature B60C13/00H)] [N1210]
- B60C9/04 . . the reinforcing cords of each carcass ply arranged in a substantially parallel relationship
- B60C9/06 . . . the cords extend diagonally from bead to bead and run in opposite directions in each successive carcass ply, i.e. bias angle ply ([B60C9/07](#), [B60C9/09](#) take precedence)
- B60C9/07 . . . the cords curve from bead to bead in plural planes, e.g. S-shaped cords
- B60C9/08 . . . the cords extend transversely from bead to bead, i.e. radial ply ([B60C9/07](#) takes precedence)
- B60C9/09 combined with other carcass plies having cords extending diagonally from bead to bead, i.e. combined radial ply and bias angle ply
- B60C9/10 . . the reinforcing cords within each carcass ply arranged in a crossing relationship
- B60C9/11 . . . Woven, braided, or knitted plies
- B60C9/12 . . built-up with rubberised layers of discrete fibres or filaments
- B60C9/13 . . . with two or more differing cord materials
- B60C9/14 . . built-up with sheets, webs, or films of homogeneous material, e.g. synthetics, sheet metal, rubber
- B60C9/16 . . built-up with metallic reinforcing inlays
- B60C9/17 . . asymmetric to the midcircumferential plane of the tyre
- B60C9/18 . Structure or arrangement of belts or breakers, crown-reinforcing or cushioning layers
- B60C9/18B . . [N: comprising fabric reinforcements] [N1210]
- B60C9/18D . . [N: comprising discrete fibres or filaments] [N1210]
- B60C9/18H . . [N: Rubber strips or cushions at the belt edges (compositions B60C1/00N2)] [N1210]
- B60C9/18H4 . . . [N: between adjacent or radially below the belt plies] [N1210]
- B60C9/20 . . built-up from rubberised plies each having all cords arranged substantially parallel
- B60C9/20C . . . [N: characterised by the materials of the belt cords] [N1210]
- B60C9/20C2 [N: consisting of steel cord plies only] [N1210]
- B60C9/20C4 [N: comprising plies of different materials] [N1210]
- B60C9/22 . . . the plies being arranged with all cords disposed along the circumference of the tyre
- B60C9/22B [N: obtained by circumferentially narrow strip winding]
- B60C9/24 . . built-up of arcuate parts
- B60C9/26 . . Folded plies
- B60C9/26B . . . [N: further characterised by an endless zigzag configuration in at least one belt ply, i.e. no cut edge being present] [N1210]
- B60C9/28 . . characterised by the belt or breaker dimensions or curvature relative to carcass ([B60C9/30](#) takes precedence)
- B60C9/30 . . asymmetric to the midcircumferential plane of the tyre

- B60C11/00 Tyre tread bands; Tread patterns; Anti-skid inserts**
- B60C11/00B . [N: characterised by the tread rubber] [N1210]
 - B60C11/00E . [N: comprising different tread rubber layers] [N1210]
 - B60C11/00E2 . . [N: with cap and base layers] [N1210]
 - B60C11/00E2B . . . [N: with different cap rubber layers in the axial direction] [N1210]
 - B60C11/00E2B2 [N: having an asymmetric arrangement] [N1210]
 - B60C11/00E2D . . . [N: with different base rubber layers in the axial direction] [N1210]
 - B60C11/00G . [N: characterised by the curvature of the tyre tread] [N1210]
 - B60C11/01 . Shape of the shoulders between tread and sidewall, e.g. rounded, stepped, cantilevered (arrangements of grooves or ribs on the sidewalls [B60C13/02](#))
 - B60C11/02 . Replaceable treads
 - B60C11/03 . Tread patterns
 - B60C11/03D . . [N: directional pattern, i.e. with main rolling direction] [N1210]
 - B60C11/03F . . [N: Asymmetric patterns] [N1210]
 - B60C11/03H . . [N: Patterns comprising block rows or discontinuous ribs] [N1210]
 - B60C11/03H2 . . . [N: further characterised by the groove cross-section] [N1210]
 - B60C11/03J . . [N: Patterns comprising tread lugs arranged parallel or oblique to the axis of rotation] [N1210]
 - B60C11/03J4 . . . [N: further characterised by the groove cross-section] [N1210]
 - B60C11/03K . . [N: irregular patterns with particular pitch sequence] [N1210]
 - B60C11/03L . . [N: Patterns comprising isolated recesses] [N1210]
 - B60C11/03L2 . . . [N: tread comprising channels under the tread surface, e.g. for draining water] [N1210]
 - B60C11/03P . . [N: characterised by special properties of the tread pattern] [N1210]
 - B60C11/03P2 . . . [N: by the void or net-to-gross ratios of the patterns] [N1210]
 - B60C11/03P4 . . . [N: by the footprint-ground contacting area of the tyre tread] [N1210]
 - B60C11/04 . . in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zig-zag (B60C11/12, B60C11/13 take precedence) [N1210]
 - B60C11/04B . . . [N: further characterised by the groove cross-section] [N1210]
 - B60C11/04B2 [N: the groove walls having a three-dimensional shape] [N1210]
 - B60C11/04B4 [N: the groove bottom comprising stone trapping protection elements, e.g. ribs] [N1210]
 - B60C11/11 . . in which the raised area of the pattern consists only of isolated elements, e.g. blocks (B60C11/12, B60C11/13 take precedence) [N1210]
 - B60C11/12 . . characterised by the use of narrow slits or incisions, e.g. sipes [N1210]
 - B60C11/12B . . . [N: with special shape of the sipe] [N1210]
 - B60C11/12B6 [N: Three-dimensional shape with regard to depth and extending direction] [N1210]
 - B60C11/12B8 [N: Twisted or warped shape in the sipe plane] [N1210]

- B60C11/12D . . . [N: with special arrangements in the tread pattern] [N1210]
- B60C11/12D2 [N: inclined with regard to a plane normal to the tread surface] [N1210]
- B60C11/12D6 [N: arranged at the groove bottom] [N1210]
- B60C11/12F . . . [N: Depth of the sipe] [N1210]
- B60C11/12F2 [N: different within the same sipe] [N1210]
- B60C11/12H . . . [N: Width of the sipe] [N1210]
- B60C11/12H4 [N: different within the same sipe, i.e. enlarged width portion at sipe bottom or along its length] [N1210]
- B60C11/13 . . characterised by the groove cross-section, e.g. for buttressing or preventing stone-trapping [N9708]
- B60C11/13B . . . [N: with special features of the groove walls] [N1210]
- B60C11/13B2 [N: having variable inclination angles, e.g. warped groove walls] [N1210]
- B60C11/13B4 [N: asymmetric] [N1210]
- B60C11/13B10 [N: covered by a rubber different from the tread rubber] [N1210]
- B60C11/13D . . . [N: with special features of the groove bottom] [N1210]
- B60C11/13F . . . [N: Tie bars for linking block elements and bridging the groove] [N1210]
- B60C11/13H . . . [N: Three dimensional block surfaces departing from the enveloping tread contour] [N1210]
- B60C11/13H2 [N: with chamfered block corners] [N1210]
- B60C11/13H4 [N: with chamfered block edges] [N1210]
- B60C11/14 . . Anti-skid inserts, e.g. vulcanised into the tread band
- B60C11/16 . . of plug form, e.g. made from metal, textile
- B60C11/16B . . . [N: retractable plug]
- B60C11/16B2 [N: actuated by fluid, e.g. using fluid pressure difference] [N1210]
- B60C11/16B4 [N: actuated by temperature, e.g. by means of temperature sensitive elements] [N1210]
- B60C11/16D . . . [N: Arrangements thereof in the tread patterns, e.g. irregular] [N1210]
- B60C11/16F . . . [N: inclined with regard to the radial direction] [N1210]
- B60C11/16H . . . [N: Attachment of the plugs into the tread; e.g. screwed] [N1210]
- B60C11/16K . . . [N: with special shape of the plug-body portion, i.e. not cylindrical] [N1210]
- B60C11/16K2 [N: conical] [N1210]
- B60C11/16K4 [N: concave or convex, e.g. barrel-shaped] [N1210]
- B60C11/16K6 [N: helical-shaped] [N1210]
- B60C11/16K10 [N: with an additional collar] [N1210]
- B60C11/16M . . . [N: with special shape of the plug- tip] [N1210]
- B60C11/16M2 [N: Spherical top portions] [N1210]
- B60C11/16M4 [N: Multiple tips] [N1210]
- B60C11/16P . . . [N: Attachment of the plug-tip within the plug-body] [N1210]
- B60C11/18 . . of strip form, e.g. metallic combs, rubber strips of different wear resistance ([B60C11/20](#) takes precedence)
- B60C11/18B . . . [N: of metal comb form, lamellar shaped or blade-like] [N1210]
- B60C11/20 . . in coiled form
- B60C11/22 . . Tread rings between dual tyres

- B60C11/24 . Wear-indicating arrangements
- B60C11/24B . . [N: Tread wear sensors, e.g. electronic sensors] [N1210]
- B60C11/24D . . [N: Tread wear monitoring systems (tyre pressure monitoring B60C23/04)] [N1210]

- B60C13/00** **Tyre sidewalls; Protecting, decorating, marking, or the like, thereof** ([B60C17/08](#) takes precedence; tyre shoulders [B60C11/01](#))

- B60C13/00B . [N: Decorating, marking or the like]
- B60C13/00D . [N: Protection against exterior elements] [N1210]
- B60C13/00H . [N: characterised by sidewall curvature (carcass ply curvature B60C9/02P)] [N1210]
- B60C13/00H2 . . [N: of the internal side of the tyre] [N1210]
- B60C13/00P . [N: comprising additional bead cores in the sidewall] [N1210]
- B60C13/02 . Arrangement of grooves or ribs
- B60C13/02B . . [N: preventing watersplash] [N1210]
- B60C13/04 . having annular inlays or covers, e.g. while sidewalls

- B60C15/00** **Tyre beads, e.g. ply turn-up or overlap** [N1210]

- B60C15/00A . [N: features of the carcass terminal portion] [N1210]
- B60C15/00A2 . . [N: not folded around the bead core, e.g. floating or down ply] [N1210]
- B60C15/00A4 . . [N: with low ply turn-up, i.e. folded around the bead core and terminating at the bead core] [N1210]
- B60C15/00A6 . . [N: with high ply turn-up, i.e. folded around the bead core and terminating radially above the point of maximum section width] [N1210]
- B60C15/00A6B . . . [N: with ply turn-up up to the belt edges, i.e. folded around the bead core and extending to the belt edges] [N1210]
- B60C15/00A8 . . [N: with ply turn-up portion parallel and adjacent to carcass main portion] [N1210]
- B60C15/00A10 . . [N: with ply turn-up portion diverging from carcass main portion] [N1210]
- B60C15/00A12 . . [N: with ply reverse folding, i.e. carcass layer folded around the bead core from the outside to the inside] [N1210]
- B60C15/00A14 . . [N: the carcass plies folded around or between more than one bead core] [N1210]

- B60C15/02 . Seating or securing beads on rims ([sealing means between beads and rims of tubeless tyres B60C5/16](#); [means for securing solid tyres on rims B60C7/24](#); [rims B60B21/00](#))
- B60C15/02D . . [N: using axially extending bead seating, i.e. the bead and the lower sidewall portion extend in the axial direction (B60C15/02F takes precedence)] [N1210]
- B60C15/02F . . [N: using inside rim bead seating, i.e. the bead being seated at a radially inner side of the rim] [N1210]
- B60C15/02H . . [N: Supplementary means for securing the bead] [N1210]
- B60C15/02H2 . . . [N: the bead being clamped by rings, cables, rim flanges or other parts of the rim] [N1210]

- B60C15/02H4 . . . [N: the bead being pierced by bolts, rivets, clips or other elements] [N1210]
- B60C15/02H6 . . . [N: the bead being secured by turned-in rim flanges, e.g. rim of the clincher type] [N1210]
- B60C15/02H8 . . . [N: the bead being secured by clip-hook elements not forming part of the rim flange] [N1210]
- B60C15/02H10 . . . [N: the bead being secured by protrusions of the rim extending from the bead seat, e.g. hump or serrations] [N1210]
- B60C15/02H12 . . . [N: the bead being secured by bead extensions which extend over and wrap around the rim flange] [N1210]
- B60C15/02L . . . [N: Securing tyres without beads; Securing closed torus or tubular tyres] [N1210]
- B60C15/02M . . . [N: Asymmetric bead seats, e.g. different bead diameter or inclination angle (asymmetric transverse section B60C3/06; asymmetric bead reinforcement B60C15/06J)] [N1210]
- B60C15/024 . . . Bead contour, e.g. lips, grooves or ribs
- B60C15/024B . . . [N: with bead extensions located radially outside the rim flange position, e.g. rim flange protectors] [N1210]
- B60C15/024F . . . [N: with reverse bead seat inclination, i.e. the axially inner diameter of the bead seat is bigger than the axially outer diameter thereof] [N1210]
- B60C15/028 . . . Spacers between beads (emergency load supporting means [B60C17/00](#))
- B60C15/032 . . . inflatable
- B60C15/036 . . . Tyres permanently fixed to the rim, e.g. by adhesive, by vulcanisation

- B60C15/04 . . . Bead cores (producing bead-rings or bead-cores for tyres [B29D30/48](#))
- B60C15/05 . . . Multiple, i.e. with two or more cores in each bead

- B60C15/06 . . . Flipper strips, fillers, or chafing strips [N: and reinforcing layers for the construction of the bead] [N1210]
- B60C15/06B . . . [N: characterised by features of the bead filler or apex (compositions of the apex rubber B60C1/00P2)] [N1210]
- B60C15/06B2 . . . [N: comprising several parts, e.g. made of different rubbers] [N1210]
- B60C15/06H . . . [N: comprising a bead reinforcing layer] [N1210]
- B60C15/06H2 . . . [N: using flippers in contact with and wrapped around the bead core and, at least partially, in contact with the bead filler] [N1210]
- B60C15/06H4 . . . [N: using chippers between the carcass layer and chafer rubber wrapped around the bead] [N1210]
- B60C15/06H14 . . . [N: with particular configuration of the cords in the respective bead reinforcing layer] [N1210]

- B60C17/00** . . . **Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor (having multiple separate inflatable chambers B60C5/20; [N: (additional shear belt layers B60C9/18K)] [N1210]**

- B60C17/00F . . . [N: comprising sidewall rubber inserts, e.g. crescent shaped inserts] [N1210]
- B60C17/00F2 . . . [N: two or more inserts in each sidewall portion] [N1210]
- B60C17/00F4 . . . [N: comprising portions of different rubbers in a single insert] [N1210]
- B60C17/00F6 . . . [N: comprising additional reinforcements] [N1210]
- B60C17/00F8 . . . [N: comprising grooves or ribs, e.g. at the inner side of the insert] [N1210]
- B60C17/00J . . . [N: comprising annular protrusions projecting into the tyre cavity] [N1210]

- B60C17/01 . utilising additional inflatable supports which become load supporting in emergency
- B60C17/02 . . inflated or expanded in emergency only
- B60C17/04 . utilising additional non-inflatable supports which become load-supporting in emergency
- B60C17/04B . . [N: characterised by coupling or locking means between rim and support] [N1210]
- B60C17/04B2 . . . [N: preventing sliding or rotation between support and rim] [N1210]
- B60C17/04D . . [N: made-up of an annular metallic shell] [N1210]
- B60C17/04F . . [N: Expandable supports] [N1210]
- B60C17/04H . . [N: Rotatable supports relative to the rim] [N1210]
- B60C17/04H2 . . . [N: by means of ball bearings] [N1210]
- B60C17/04J . . [N: comprising circumferential ribs] [N1210]
- B60C17/04L . . [N: comprising transverse ribs] [N1210]
- B60C17/06 . . resilient
- B60C17/06B . . . [N: comprising lateral openings] [N1210]
- B60C17/06F . . . [N: made-up of foam inserts (tyres filled with foam B60C5/00C)] [N1210]
- B60C17/06H . . . [N: made-up of plural spherical elements provided in the tyre chamber] [N1210]
- B60C17/08 . Means facilitating folding of sidewalls, e.g. run-flat sidewalls ([for storage purposes B60C3/08](#))
- B60C17/10 . Internal lubrication
- B60C17/10B . . [N: by means of surface coating, e.g. PTFE] [N1210]
- B60C17/10D . . [N: Composition of the lubricant] [N1210]
- B60C19/00 Tyre parts or constructions not otherwise provided for**
- B60C19/00J . [N: Tyres requiring an asymmetric or a special mounting] [N1210]
- B60C19/00L . [N: Noise damping elements provided in the tyre structure or attached thereto, e.g. in the tyre interior] [N1210]
- B60C19/00N . [N: Balancing means attached to the tyre] [N1210]
- B60C19/04 . Tyres with openings closeable by means other than the rim; Closing means therefor
- B60C19/08 . Electric charge dissipating arrangements
- B60C19/08B . . [N: comprising a conductive tread insert] [N1210]
- B60C19/08D . . [N: using conductive carcasses] [N1210]
- B60C19/08F . . [N: using conductive sidewalls] [N1210]
- B60C19/08H . . [N: using conductive beads] [N1210]
- B60C19/12 . Puncture preventing arrangements (B60C9/00 takes precedence; inflatable inserts having reinforcing means B60C5/08);[N: sealing compositions per se B29C73/16C; devices for introducing sealing compositions into the tyre B60C73/16D)] [N1210]
- B60C19/12B . . [N: disposed inside of the inner liner] [N1210]

- B60C19/12D . . [N: disposed removable on the tyre]
 - B60C19/12F . . [N: for inner tubes] [N1210]
- B60C23/00** **Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles (measuring in general G01, e.g. G01L17/00; remote signalling in general G08); Arrangement of tyre inflating devices on vehicles, e.g. of pumps, of tanks [N: (supplying air for tyre inflation B60S5/04)]; Tyre cooling arrangements [C1111]**
- B60C23/00B . [N: Devices for manually or automatically controlling or distributing tyre pressure whilst the vehicle is moving]
 - B60C23/00B1 . . [N: by monitoring conditions other than tyre pressure or deformation]
 - B60C23/00B2 . . [N: the control being done on the vehicle, i.e. comprising a rotating joint between a vehicle mounted tank and the tyre]
 - B60C23/00B3 . . [N: the control being done on the wheel, e.g. using a wheel-mounted reservoir]
 - B60C23/00D . [N: Devices specially adapted for special wheels arrangements] [C1111]
- [N: **Notes**
 [N1111]When classifying in this group, classification is also made in the appropriate groups [B60C23/00B](#), [B60C23/02](#), [B60C23/04](#), [B60C23/06](#) or [B60C23/08](#)
]
- B60C23/00D1 . . [N: having two wheels only] [N1111]
 - B60C23/00D2 . . [N: having multiple wheels arranged side by side] [N1111]
 - B60C23/00D3 . . [N: having wheels on more than two axles] [N1111]
 - B60C23/00D4 . . [N: having wheels on a trailer] [N1111]
- B60C23/02 . Signalling devices actuated by tyre pressure [N: (hand-held tyre pressure gauges G01L17/00)] [C1111]
 - B60C23/04 . . mounted on the wheel or tyre [C1111]
 - B60C23/04B . . . [N: characterised by the type of alarm] [C1111]
 - B60C23/04B1 [Mechanically generated audible signals, e.g. by buzzer or whistle signals] [N1111]
 - B60C23/04B2 [Mechanically generated visible signals, e.g. by using a gauge needle] [N1111]
 - B60C23/04B3 [N: Alarms noticeable from outside the vehicle, e.g. indication in side mirror, front light or audible alarms ([B60C23/04B1](#), [B60C23/04B2](#) take precedence)] [N1111]
 - B60C23/04C . . . [N: transmitting the signals by non-mechanical means from the wheel or tyre to a vehicle body mounted receiver] [C1111]
 - B60C23/04C3 [N: Means for supplying power to the signal- transmitting means on the wheel] [C1111]
 - B60C23/04C3A [N: Piezo-electric generators] [N1111]
 - B60C23/04C3C [N: Wireless charging of active radio frequency circuits] [N1111]
 - B60C23/04C4 [N: Automatically identifying wheel mounted units, e.g. after replacement or exchange of wheels] [C1111]
 - B60C23/04C4A [N: allocating a corresponding wheel position on vehicle, e.g. front/left or rear/right] [N1111]
 - B60C23/04C5 [N: Sharing hardware components like housing, antenna, receiver or signal

		transmission line with other vehicle systems like keyless entry or brake control units] [C1111]
B60C23/04C5A	. . . . .	[N: cooperating with wheel hub mounted speed sensors] [N1111]
B60C23/04C6	. . . . .	[N: characterised by the type of signal transmission means] [C1111]
B60C23/04C6A	. . . . .	[N: Photo-electric, infra-red or visible light means]
B60C23/04C6B	. . . . .	[N: Means comprising permanent magnets, e.g. Hall-effect or Reed-switches] [C1111]
B60C23/04C6C	. . . . .	[N: Near field transmission with inductive or capacitive coupling means] [C1111]
B60C23/04C6C1	. . . . .	[N: using passive wheel mounted resonance circuits] [N1111]
B60C23/04C6C2	. . . . .	[N: using transformer type signal transducers, e.g. rotary transformers] [N1111]
B60C23/04C6C3	. . . . .	[N: using vehicle structural parts as signal path, e.g. chassis, axle or fender] [N1111]
B60C23/04C6D	. . . . .	[N: Radio signals]
B60C23/04C6D1	. . . . .	[N: Vehicle body mounted circuits, e.g. transceiver or antenna fixed to central console, door, roof, mirror or fender] [N1111]
B60C23/04C6D1B	. . . . .	{7 dots} [N: Means for detecting electromagnetic field changes not being part of the signal transmission per se, e.g. strength, direction, propagation or masking] [N1111]
B60C23/04C6D1D	. . . . .	{7 dots} [N: comprising signal transmission means; e.g. for a bidirectional communication with a corresponding wheel mounted receiver] [N1111]
B60C23/04C6D1D2	. . . . .	{8 dots} [N: Near field triggers, e.g. magnets or triggers with 125 KHz] [N1111]
B60C23/04C6D1D4	. . . . .	{8 dots} [N: the transmitted signal comprises further information, e.g. instruction codes, sensor characteristics or identification data] [N1111]
B60C23/04C6D1F	. . . . .	{7 dots} [N: Antenna structures, control or arrangements thereof, e.g. for directional antennas, diversity antenna, antenna multiplexing or antennas integrated in fenders] [N1111]
B60C23/04C6D1H	. . . . .	{7 dots} [N: Means for changing operating mode, e.g. sleep mode, factory mode or energy saving mode] [N1111]
B60C23/04C6D2	. . . . .	[N: Wheel or tyre mounted circuits] [N1111]
		[N: Notes [N1111] Wheel or tyre mounted receivers enabling a bidirectional communication with a corresponding vehicle body mounted transmitter are classified in B60C23/04C6D12 and subgroups only]
B60C23/04C6D2B	. . . . .	{7 dots} [N: Passive transducers, e.g. using surface acoustic waves, backscatter technology or pressure sensitive resonators (near field passive transducers B60C23/04C6C1)] [N1111]
B60C23/04C6D2D	. . . . .	{7 dots} [N: Means for detecting electromagnetic field changes being not part of the signal transmission per se; e.g. strength, direction, propagation or masking] [N1111]
B60C23/04C6D2F	. . . . .	{7 dots} [N: Antenna structure, control or arrangement (vehicle tyre mounted antennas H01Q1/22C8)] [N1111]
B60C23/04C6D2H	. . . . .	{7 dots} [N: Means for changing operation mode, e.g. sleep mode, factory mode or energy save mode] [N1111]

B60C23/04C6D2K	. . . . .	{7 dots} [N: Transmission control of wireless signals] [N1111]
B60C23/04C6D2K2	. . . . .	{8 dots} [N: self triggered by timer] [N1111]
B60C23/04C6D2K4	. . . . .	{8 dots} [N: self triggered by motion sensor] [N1111]
B60C23/04C6D2K6	. . . . .	{8 dots} [N: externally triggered; e.g. by wireless request signal, magnet or manual switch] [N1111]
B60C23/04C6D2K8	. . . . .	{8 dots} [N: Structure of transmission protocol] [N1111]
B60C23/04C6D2K9	. . . . .	{8 dots} [N: to avoid signal interference] [N1111]
B60C23/04C6D2K9B	. . . . .	{9 dots} [N: with signals sent by transmitters mounted on adjacent vehicles] [N1111]
B60C23/04C6E	. . . . .	[N: Electric contact means, e.g. slip-rings, rollers, brushes]
B60C23/04C6F	. . . . .	[N: Transmission by sound, e.g. ultra-sound] [C1111]
B60C23/04C7	. . . . .	[N: System initialisation, e.g. upload or calibration of operating parameters] [N1111]
B60C23/04C7A	. . . . .	[to manually allocate ID codes or mounting positions, e.g. by service technicians] [N1111]
B60C23/04C8	. . . . .	[N: Measurement control, e.g. setting measurement rate or calibrating of sensors; Further processing of measured values, e.g. filtering, compensating or slope monitoring] [N1111]
B60C23/04C8A	. . . . .	[N: Temperature compensation of measured pressure values] [N1111]
B60C23/04C8B	. . . . .	[N: Evaluating waveform of pressure readings] [N1111]
B60C23/04C9	. . . . .	[N: Communicating with external units being not part of the vehicle, e.g. tools for diagnostic, mobile phones, electronic keys or service stations] [N1111]
B60C23/04C10	. . . . .	[N: System diagnostic, e.g. monitoring battery voltage, detecting hardware detachments or identifying wireless transmission failures] [N1111]
B60C23/04C11	. . . . .	[N: Wireless routers between wheel mounted transmitters and chassis mounted receivers] [N1111]
B60C23/04C12	. . . . .	[N: Detecting an ongoing tyre inflation] [N1111]
B60C23/04D	. . . . .	[N: comprising additional sensors in the wheel or tyre mounted monitoring device, e.g. movement sensors, microphones or earth magnetic field sensors] [N1111]
B60C23/04D1	. . . . .	[N: Movement sensor, e.g. for sensing angular speed, acceleration or centripetal force] [N1111]
B60C23/04D2	. . . . .	[N: for detecting the actual angular position of the monitoring device while the wheel is turning] [N1111]
B60C23/04E	. . . . .	[N: Constructional details of means for attaching the control device] [N1111] [C1204]
B60C23/04E1	. . . . .	[N: for attachment on the tyre] [N1111] [C1204]
B60C23/04E2	. . . . .	[N: Valve stem attachments positioned inside the tyre chamber] [N1111] [C1204]
B60C23/04E3	. . . . .	[N: Valve stem attachments positioned outside of the tyre chamber] [N1111] [C1204]
B60C23/04E4	. . . . .	[N: for rim attachments (B60C23/04E2 , B60C23/04E3 takes precedence)] [N1111]
B60C23/06	. . . . .	Signalling devices actuated by deformation of the tyre, [N: e.g. tyre mounted deformation sensors or indirect determination of tyre deformation based on wheel speed, wheel-centre to ground distance or inclination of wheel axle] [C1111]
B60C23/06A	. . . . .	[N: by monitoring wheel speed (measuring distance traversed on the ground by vehicles G01C22/00)]

- B60C23/06A1 . . . [N: Frequency spectrum analysis of wheel speed signals, e.g. using Fourier transformation] [N1111]
- B60C23/06B . . [N: Generating directly an audible signal by deformation of the tyre (by touching the ground [B60C23/08B](#))] [C1111]
- B60C23/06C . . [comprising tyre mounted deformation sensors, e.g. to determine road contact area] [C1111]
- B60C23/06D . . [N: by monitoring vibrations in tyres or suspensions ([B60C23/06A1](#) takes precedence)] [N1111]
- B60C23/06E . . [N: by monitoring wheel-centre to ground distance] [N1111]
- B60C23/06F . . [N: by monitoring chassis to ground distance] [N1111]
- B60C23/06G . . [N: by monitoring chassis to tyre distance] [N1111]
- B60C23/08 . . by touching the ground
- B60C23/08B . . . [N: putting directly into action an audible signal]

- B60C23/10 . Arrangements of tyre-inflating pumps mounted on vehicles [N: ([23/00B](#) takes precedence)]
- B60C23/10B . . [N: the pump being mounted in the saddle-pillar of a bicycle] [C1111]
- B60C23/12 . . operated by a running wheel
- B60C23/14 . . operated by the prime mover of the vehicle

- B60C23/16 . Arrangements of air tanks mounted on vehicles [N: ([B60C23/00B](#) takes precedence)]

- B60C23/18 . Tyre cooling arrangements [N: e.g. heat shields (wheels with cooling fins [B60B19/10](#))]
- B60C23/19 . . for dissipating heat

- B60C23/20 . Devices for measuring or signalling tyre temperature [N: only] [C1111]

- B60C25/00** **Apparatus or tools adapted for mounting, removing, repairing or inspecting pneumatic or solid tyres** (apparatus or tools for mounting or dismounting wheels [B60B29/00](#); apparatus or tools characterised by the means for holding wheels or parts thereof [B60B30/00](#)) [N1210]

- B60C25/00I . [N: Inspecting tyres] [N1210]

- [N: **Note**
When classifying in this group, classification is also made in the appropriate subgroups of [B60C25/05S](#)
]
- B60C25/00I2 . . [N: inside surface] [N1210]
- B60C25/00I4 . . [N: outside surface (measuring profile depth G01B11/22)] [N1210]

- B60C25/01 . for manually removing tyres from or mounting tyres on wheels [N1210]
- B60C25/01B . . [N: for only breaking the beads] [N1210]
- B60C25/02 . . Tyre levers or the like, i.e. hand-held (machine operated [B60C25/05](#)) [C9505]
- B60C25/02B . . . [N: with a jack]
- B60C25/04 . . . pivotal about the wheel axis, or movable along the rim edge, e.g. rollable [N1210]
- B60C25/05 . . Machines, [N: i.e. motorized devices, e.g. for mounting, demounting (matching of tyres with rims, i.e. conjoint balancing G01M)] [N1210]

B60C25/05A	. . .	[N: for mounting only] [N1210]
B60C25/05B	. . .	[N: for demounting only] [N1210]
B60C25/05C	. . .	[N: for inserting additional parts; e.g. support rings, sensors] [N1210]
B60C25/05D	. . .	[N: Integrated systems performing multiple operations e.g. assembly lines] [N1210]
B60C25/05E	. . .	[N: Automated devices, e.g. mounting robots] [N1210]
B60C25/05F	. . .	[N: Horizontal wheel axis in working position] [N1210]
B60C25/05G	. . .	[N: Handling of rim or tyre, e.g. lifting and positioning devices] [N1210]
B60C25/05H	. . .	[N: Separating tyres from rims, e.g. by destroying] [N1210]
B60C25/05K	. . .	[N: Adapting to different wheel diameters, i.e. distance between support and tool] [N1210]
B60C25/05L	. . .	[N: Support of wheel parts during machine operation] [N1210]
B60C25/05L2	. . . .	[N: Fixing the tyre only, e.g. gripping the tread portion for inserting the rim] [N1210]
B60C25/05L4	. . . .	[N: axially fixing the rim, e.g. pulling devices] [N1210]
B60C25/05L6	. . . .	[N: radially fixing the rim, e.g. with gripping claws] [N1210]
B60C25/05L8	. . . .	[N: with self-centering means, e.g. cones] [N1210]
B60C25/05L10	. . . .	[N: with rotary motion of tool or tyre support, e.g. turntables] [N1210]
B60C25/05S	. . .	[N: equipped with sensing means, e.g. for positioning, measuring or controlling] [N1210]
B60C25/05S2	. . . .	[N: mechanical] [N1210]
B60C25/05S4	. . . .	[N: optical, e.g. cameras] [N1210]
B60C25/05S6	. . . .	[N: thermal] [N1210]
B60C25/05S8	. . . .	[N: measuring speed, acceleration or forces] [N1210]
B60C25/05T	. . .	[N: Tools interacting with the tyre and moved in relation to the tyre during operation] [N1210]
B60C25/05T2	. . . .	[N: rolling only] [N1210]
B60C25/05T4	. . . .	[N: gliding only] [N1210]
B60C25/05T6	. . . .	[N: pressing only] [N1210]
B60C25/05T8	. . . .	[N: levering only] [N1210]
B60C25/05T10	. . . .	[N: hooking only] [N1210]
B60C25/05T12	. . . .	[N: Translational tool trajectory only] [N1210]
B60C25/05T14	. . . .	[N: Predetermined tool path, e.g. coulisse, multi-link] [N1210]
B60C25/05T16	. . . .	[N: Programmed tool path, e.g. robot arm with multiple degrees of freedom] [N1210]
B60C25/05T18	. . . .	[N: Conjoint tool operations, i.e. at least two tools cooperating simultaneously] [N1210]
B60C25/05T20	. . . .	[N: Multi-functional tools for performing at least two operations e.g. bead breaking and bead seeking] [N1210]
B60C25/05V	. . .	[N: Soaping devices] [N1210]
B60C25/12	. . .	for only seating the beads [N0403]

[N: **WARNING**

Not complete pending reclassification; see also groups [B60C25/05](#), [B60C25/14D](#)

]

- B60C27/02F4 . . . [N: Centrifugal forces for tensioning while driving] [N1210]
- B60C27/02H . . [N: provided with fastening means] [N1210]
- B60C27/02H2 . . . [N: acting on the wheel, e.g. on the rim or wheel bolts] [N1210]
- B60C27/02H2B [N: through apertures in the rim, e.g. fastening from one lateral side to the other lateral side of the rim; extending axially through the rim] [N1210]
- B60C27/02H4 . . . [N: acting on the tread portion, e.g. special fixing agents, fastened in the groove of the tyre] [N1210]
- B60C27/02H6 . . . [N: acting on the sidewall of the tyre] [N1210]
- B60C27/04 . . the ground-engaging part being rigid
- B60C27/04B . . . [N: involving retractable devices (fixing of spade lugs B60B15/00)] [N1210]
- B60C27/06 . . extending over the complete circumference of the tread, e.g. made of chains [N: or cables] (B60C27/20 takes precedence) [N1210]
- B60C27/06B . . [N: provided with radial arms for supporting the ground engaging parts on the tread] [N1210]
- B60C27/06D . . [N: provided with fastening means] [N1210]
- B60C27/06D2 . . . [N: acting on the wheel, e.g. on the rim or wheel bolts] [N1210]
- B60C27/06D4 . . . [N: through apertures in the rim, e.g. fastening from one lateral side to the other lateral side of the rim; extending axially through the rim] [N1210]
- B60C27/06D6 . . . [N: acting on the tread portion, e.g. special fixing agents, fastened in the groove of the tyre] [N1210]
- B60C27/06D8 . . . [N: acting on the sidewall of the tyre] [N1210]
- B60C27/06F . . [N: Special chain layout; i.e. distribution of chain portions over the tread e.g. arranged in polygon pattern] [N1210]
- B60C27/06H . . [N: the ground-engaging part being rigid] [N1210]
- B60C27/08 . . involving lugs or rings taking up wear, [N: e.g. chain links, chain connectors (chain couplings for e.g. hoisting F16G15/00)] [N1210]
- B60C27/08B . . . [N: Profiled links, i.e. cross-section other than round, e.g. hexagonal] [N1210]
- B60C27/08D . . . [N: Studded links, i.e. traction enhancing parts located on the link or inserted into the link] [N1210]
- B60C27/10 . . [N: provided with] tensioning means [N1210]
- B60C27/12 . . . resilient [N: pretension] [N1210]
- B60C27/12C [N: Centrifugal forces for tensioning while driving] [N1210]
- B60C27/14 . . automatically attachable
- B60C27/14F . . . [N: the anti-skid device being wound around the wheel by its rotation from a point connected to the body frame of the vehicle] [N1210]
- B60C27/16 . . formed of close material, e.g. leather [N: or synthetic mats] [N1210]
- B60C27/18 . . . the material being fabric, e.g. woven wire [N: or textile] [N1210]
- B60C27/20 . . comprising ground-engaging plate-like elements [N1210]
- B60C27/22 . . for tandem tyres (endless-track features B62D) [N1210]
- B60C29/00** **Arrangements of tyre-inflating valves to tyres or rims; Accessories for tyre-inflating valves, not otherwise provided for (tools for mounting or demounting valves B60C25/18; valves per se, valve dust caps F16K) [N1210]**
- B60C29/00B . . [N: characterised by particular features of the valve core] [N1210]

- B60C29/00D . [N: characterised by particular features of the valve stem] [N1210]
- B60C29/00F . [N: for tyres with segmental sections or for multi-chamber tyres] [N1210]
- B60C29/02 . Connection to rims [N1210]
- B60C29/04 . Connection to tyres [N: or inner tubes] [N1210]
- B60C29/06 . Accessories for tyre-inflating valves, e.g. housings, guards, covers for valve caps, locks, not otherwise provided for [N: (B60C23/00C takes precedence; tools for screwing and unscrewing valve caps B25B27/00F4; pump connectors F04B33/00D)] [N1210]
- B60C29/06B . . [N: for filling a tyre with particular materials, e.g. liquids (B60C5/00E, B60C5/00E2 take precedence)] [N1210]
- B60C29/06C . . [N: Hose connections for pneumatic tyres, e.g. to spare wheels] [N1210]
- B60C29/06E . . [N: Valve caps] [N1210]
- B60C29/06G . . [N: Pressure relief devices, i.e. safety devices for overpressure] [N1210]

- B60C99/00** **Subject matter not provided for in other groups of this subclass [N0704]**

- B60C99/00B . [N: Tyre heating arrangements] [N1111]

- B60C99/00D . [N: Computer aided tyre design or simulation] [N1210]