

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### TRANSPORTING

#### B60 VEHICLES IN GENERAL

(NOTE omitted)

#### B60C VEHICLE TYRES TYRE INFLATION; TYRE CHANGING OR REPAIRING; REPAIRING, OR CONNECTING VALVES TO, INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES

##### NOTES

1. 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
2. Attention is drawn to the note following the title of class [B60](#).

##### WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:  
[B60C 11/113](#) covered by [B60C 11/0311](#)  
[B60C 11/117](#) covered by [B60C 11/032](#)
2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

<b>1/00</b>	<b>Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition</b>	<b>3/08</b>	• collapsible into storage or non-use condition, e.g. space-saving spare tyres
	<b>NOTE</b>	<b>5/00</b>	<b>Inflatable pneumatic tyres or inner tubes</b> ( <a href="#">B60C 1/00</a> , <a href="#">B60C 9/00</a> - <a href="#">B60C 17/00</a> take precedence)
	Tyres characterised by compositions only, i.e. having no significant tyre structure, are classified only with the compositions, e.g. <a href="#">C08K</a> , <a href="#">C08L</a>	<b>5/001</b>	• {filled with gas other than air}
<b>1/0008</b>	• {Compositions of the inner liner}	<b>5/002</b>	• {filled at least partially with foam material}
<b>1/0016</b>	• {Compositions of the tread}	<b>5/004</b>	• {filled at least partially with liquid ( <a href="#">B60C 19/12</a> takes precedence)}
<b>1/0025</b>	• {Compositions of the sidewalls}	<b>5/005</b>	• • {Ballast tyres}
<b>2001/0033</b>	• {Compositions of the sidewall inserts, e.g. for runflat}	<b>5/007</b>	• {made from other material than rubber}
<b>1/0041</b>	• {Compositions of the carcass layers}	<b>5/008</b>	• {Low pressure tyres, e.g. for all terrain vehicles}
<b>2001/005</b>	• {Compositions of the bead portions, e.g. clinch or chafer rubber or cushion rubber}	<b>5/01</b>	• without substantial cord reinforcement, e.g. cordless tyres, cast tyres
<b>2001/0058</b>	• • {Compositions of the bead apexes}	<b>5/02</b>	• having separate inflatable inserts, e.g. with inner tubes; Means for lubricating, venting, preventing relative movement between tyre and inner tube ( <a href="#">B60C 5/20</a> takes precedence)
<b>2001/0066</b>	• {Compositions of the belt layers}	<b>5/025</b>	• • {separated by a part of the tyre (inflatable inserts with several inflatable chambers <a href="#">B60C 5/20</a> )}
<b>2001/0075</b>	• {Compositions of belt cushioning layers}	<b>5/04</b>	• • Shape or construction of inflatable inserts ( <a href="#">B60C 5/10</a> takes precedence)
<b>2001/0083</b>	• {Compositions of the cap ply layers}	<b>5/08</b>	• • • having reinforcing means
<b>2001/0091</b>	• {Compositions of non-inflatable or solid tyres}	<b>5/10</b>	• • • formed as a single discontinuous ring with contiguous ends which may be connected together
<b>3/00</b>	<b>Tyres characterised by the transverse section</b>	<b>5/12</b>	• without separate inflatable inserts, e.g. tubeless tyres with transverse section open to the rim ( <a href="#">B60C 5/20</a> takes precedence)
<b>2003/005</b>	• {Twin tyres}	<b>5/14</b>	• • with impervious liner or coating on the inner wall of the tyre
<b>3/02</b>	• Closed, e.g. toroidal, tyres		
<b>3/04</b>	• characterised by the relative dimensions of the section, e.g. low profile ( <a href="#">B60C 3/06</a> takes precedence)		
<b>3/06</b>	• Asymmetric {(asymmetric bead seats <a href="#">B60C 15/0236</a> ; asymmetric bead reinforcement <a href="#">B60C 2015/0696</a> )}		

5/142	. . . {provided partially, i.e. not covering the whole inner wall}	9/0057	. {Reinforcements comprising preshaped elements, e.g. undulated or zig-zag filaments}
2005/145	. . . {made of laminated layers}	9/0064	. {Reinforcements comprising monofilaments}
2005/147	. . . {characterised by the joint or splice}	2009/0071	. {characterised by special physical properties of the reinforcements}
5/16	. . Sealing means between beads and rims, e.g. bands	2009/0078	. . {Modulus}
5/18	. Sectional casings, e.g. comprising replaceable arcuate parts	2009/0085	. . {Tensile strength}
5/20	. having multiple separate inflatable chambers	2009/0092	. . {Twist structure}
5/22	. . the chambers being annular	9/02	. Carcasses
5/24	. . the walls of the chambers extending transversely of the tyre	9/0207	. . {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}
<b>7/00</b>	<b>Non-inflatable or solid tyres (<a href="#">B60C 1/00</a> takes precedence)</b>	2009/0215	. . {Partial carcass reinforcing plies, i.e. the plies neither crossing the equatorial plane nor folded around the bead core}
2007/005	. {made by casting, e.g. of polyurethane}	2009/0223	. . {comprising a cushion layer between adjacent carcass plies}
7/02	. made from ropes or bristles	9/023	. . {built up from narrow strips, individual cords or filaments, e.g. using filament winding}
7/04	. made of wood or leather	9/0238	. . {characterised by special physical properties of the carcass ply}
7/06	. made of metal	2009/0246	. . . {Modulus of the ply}
7/08	. built-up from a plurality of arcuate parts	2009/0253	. . . . {being different between adjacent plies}
7/10	. characterised by means for increasing resiliency	2009/0261	. . . . {being different within the same ply}
7/102	. . {Tyres built-up with separate rubber parts}	2009/0269	. . {Physical properties or dimensions of the carcass coating rubber}
7/105	. . {using foam material}	2009/0276	. . . {Modulus; Hardness; Loss modulus or "tangens delta"}
2007/107	. . {comprising lateral openings}	2009/0284	. . . {Thickness}
7/12	. . using enclosed chambers, e.g. gas-filled	9/0292	. . {Carcass ply curvature ( <a href="#">sidewall curvature B60C 13/003</a> )}
7/125	. . . {enclosed chambers defined between rim and tread}	9/04	. . the reinforcing cords of each carcass ply arranged in a substantially parallel relationship
7/14	. . using springs	2009/0408	. . . {Carcass joints or splices}
7/143	. . . {having a lateral extension disposed in a plane parallel to the wheel axis}	2009/0416	. . . {Physical properties or dimensions of the carcass cords}
2007/146	. . . {extending substantially radially, e.g. like spokes}	2009/0425	. . . . {Diameters of the cords; Linear density thereof}
7/16	. . . of helical or flat coil form	2009/0433	. . . . {Modulus}
7/18	. . . . disposed radially relative to wheel axis	2009/0441	. . . . {Density in width direction}
7/20	. . . . disposed circumferentially relative to wheel axis	2009/045	. . . . {Tensile strength}
7/22	. having inlays other than for increasing resiliency, e.g. for armouring	2009/0458	. . . . {Elongation of the reinforcements at break point}
7/24	. characterised by means for securing tyres on rim or wheel body	2009/0466	. . . . {Twist structures}
7/26	. . using bolts	2009/0475	. . . . {Particular materials of the carcass cords}
7/28	. . using straps or the like, e.g. vulcanised into the tyre	2009/0483	. . . . {Different cords in the same layer}
<b>9/00</b>	<b>Reinforcements or ply arrangement of pneumatic tyres (inserts having reinforcing means <a href="#">B60C 5/08</a>; bead structure, e.g. turnout or overlap construction, <a href="#">B60C 15/00</a>)</b>	2009/0491	. . . . {with special path of the carcass cords, e.g. sinusoidal}
	<b>NOTE</b>	9/06	. . . the cords extend diagonally from bead to bead and run in opposite directions in each successive carcass ply, i.e. bias angle ply ( <a href="#">B60C 9/07</a> , <a href="#">B60C 9/09</a> take precedence)
	When classifying in this group, classification is also made in subclass <a href="#">B32B</a> insofar as any layered product is concerned	9/07	. . . the cords curve from bead to bead in plural planes, e.g. S-shaped cords
9/0007	. {Reinforcements made of metallic elements, e.g. cords, yarns, filaments or fibres made from metal}	9/08	. . . the cords extend transversely from bead to bead, i.e. radial ply ( <a href="#">B60C 9/07</a> takes precedence)
2009/0014	. . {Surface treatments of steel cords}	9/09	. . . . combined with other carcass plies having cords extending diagonally from bead to bead, i.e. combined radial ply and bias angle ply
2009/0021	. . {Coating rubbers for steel cords}		
9/0028	. {Reinforcements comprising mineral fibres, e.g. glass or carbon fibres}		
2009/0035	. {Reinforcements made of organic materials, e.g. rayon, cotton or silk}		
9/0042	. {Reinforcements made of synthetic materials}		
9/005	. {Reinforcements made of different materials, e.g. hybrid or composite cords}		

9/10	. . the reinforcing cords within each carcass ply arranged in a crossing relationship	2009/2058	. . . . . {being different between adjacent plies}
9/11	. . . Woven, braided, or knitted plies	2009/2061	. . . {Physical properties or dimensions of the belt coating rubber}
9/12	. . built-up with rubberised layers of discrete fibres or filaments	2009/2064	. . . . {Modulus; Hardness; Loss modulus or "tangens delta"}
9/13	. . . with two or more differing cord materials	2009/2067	. . . . {Thickness}
9/14	. . built-up with sheets, webs, or films of homogeneous material, e.g. synthetics, sheet metal, rubber	2009/207	. . . . {Double layers, e.g. using different rubbers in the same belt ply}
2009/145	. . . {at the inner side of the carcass structure}	2009/2074	. . . {Physical properties or dimension of the belt cord}
9/16	. . built-up with metallic reinforcing inlays	2009/2077	. . . . {Diameters of the cords; Linear density thereof}
9/17	. . asymmetric to the midcircumferential plane of the tyre	2009/208	. . . . {Modulus of the cords}
9/18	. Structure or arrangement of belts or breakers, crown-reinforcing or cushioning layers	2009/2083	. . . . {Density in width direction}
9/1807	. . {comprising fabric reinforcements}	2009/2087	. . . . . {with variable density in the same layer}
2009/1814	. . . {square woven}	2009/209	. . . . {Tensile strength}
9/1821	. . {comprising discrete fibres or filaments}	2009/2093	. . . . {Elongation of the reinforcements at break point}
2009/1828	. . {characterised by special physical properties of the belt ply}	2009/2096	. . . . {Twist structures}
9/1835	. . {Rubber strips or cushions at the belt edges (compositions <a href="#">B60C 2001/0075</a> )}	9/22	. . . the plies being arranged with all cords disposed along the circumference of the tyre
2009/1842	. . . {Width or thickness of the strips or cushions}	9/2204	. . . . {obtained by circumferentially narrow strip winding}
9/185	. . . {between adjacent or radially below the belt plies}	2009/2209	. . . . . {characterised by tension of the cord during winding}
2009/1857	. . . {radially above the belt plies}	2009/2214	. . . . {characterised by the materials of the zero degree ply cords}
2009/1864	. . . {wrapped around the edges of the belt}	2009/2219	. . . . {with a partial zero degree ply at the belt edges - edge band}
2009/1871	. . {with flat cushions or shear layers between belt layers}	2009/2223	. . . . {with an interrupted zero degree ply, e.g. using two or more portions for the same ply}
2009/1878	. . {with flat cushions or shear layers between the carcass and the belt}	2009/2228	. . . . {characterised by special physical properties of the zero degree plies}
2009/1885	. . {with belt ply between adjacent carcass plies}	2009/2233	. . . . . {Modulus of the zero degree ply}
2009/1892	. . {with belt ply radial inside the carcass structure}	2009/2238	. . . . {Physical properties or dimensions of the ply coating rubber}
9/20	. . built-up from rubberised plies each having all cords arranged substantially parallel	2009/2242	. . . . . {Modulus; Hardness; Loss modulus or "tangens delta"}
9/2003	. . . {characterised by the materials of the belt cords}	2009/2247	. . . . . {Thickness}
9/2006	. . . . {consisting of steel cord plies only}	2009/2252	. . . . {Physical properties or dimension of the zero degree ply cords}
9/2009	. . . . {comprising plies of different materials}	2009/2257	. . . . . {Diameters of the cords; Linear density thereof}
2009/2012	. . . {with particular configuration of the belt cords in the respective belt layers}	2009/2261	. . . . . {Modulus of the cords}
2009/2016	. . . . {comprising cords at an angle of 10 to 30 degrees to the circumferential direction}	2009/2266	. . . . . {Density of the cords in width direction}
2009/2019	. . . . {comprising cords at an angle of 30 to 60 degrees to the circumferential direction}	2009/2271	. . . . . {with variable density}
2009/2022	. . . . {comprising cords at an angle of 60 to 90 degrees to the circumferential direction}	2009/2276	. . . . . {Tensile strength}
2009/2025	. . . . {with angle different or variable in the same layer}	2009/228	. . . . . {Elongation of the reinforcements at break point}
2009/2029	. . . . {with different cords in the same layer, i.e. cords with different materials or dimensions}	2009/2285	. . . . . {Twist structures}
2009/2032	. . . . {characterised by the course of the belt cords, e.g. undulated or sinusoidal}	2009/229	. . . . . {characterised by the course of the cords, e.g. undulated or sinusoidal}
2009/2035	. . . {built-up by narrow strips}	2009/2295	. . . . . {with different cords in the same layer}
2009/2038	. . . {using lateral belt strips at belt edges, e.g. edge bands}	9/24	. . built-up of arcuate parts
2009/2041	. . . {with an interrupted belt ply, e.g. using two or more portions of the same ply}	9/26	. . Folded plies
2009/2045	. . . {with belt joints or splices}	9/263	. . . {further characterised by an endless zigzag configuration in at least one belt ply, i.e. no cut edge being present}
2009/2048	. . . {characterised by special physical properties of the belt plies}	2009/266	. . . . {combined with non folded cut-belt plies}
2009/2051	. . . . {Modulus of the ply}	9/28	. . characterised by the belt or breaker dimensions or curvature relative to carcass ( <a href="#">B60C 9/30</a> takes precedence)
2009/2054	. . . . . {being different within the same ply}	2009/283	. . . {characterised by belt curvature}

2009/286	. . . . {being substantially flat}	2011/036	. . . . {Narrow grooves, i.e. having a width of less than 3 mm}
9/30	. . asymmetric to the midcircumferential plane of the tyre	2011/0362	. . . . {Shallow grooves, i.e. having a depth of less than 50% of other grooves}
<b>11/00</b>	<b>Tyre tread bands; Tread patterns; Anti-skid inserts</b>	2011/0365	. . . . {characterised by width}
11/0008	. {characterised by the tread rubber}	2011/0367	. . . . {characterised by depth}
2011/0016	. . {Physical properties or dimensions}	2011/0369	. . . . {with varying depth of the groove}
2011/0025	. . . {Modulus or tan delta}	2011/0372	. . . . {with particular inclination angles}
2011/0033	. . . {Thickness of the tread}	2011/0374	. . . . {Slant grooves, i.e. having an angle of about 5 to 35 degrees to the equatorial plane}
11/0041	. {comprising different tread rubber layers}	2011/0376	. . . . {characterised by width}
11/005	. . {with cap and base layers}	2011/0379	. . . . {characterised by depth}
11/0058	. . . {with different cap rubber layers in the axial direction}	2011/0381	. . . . {Blind or isolated grooves}
11/0066	. . . . {having an asymmetric arrangement}	2011/0383	. . . . {at the centre of the tread}
11/0075	. . . {with different base rubber layers in the axial direction}	2011/0386	. . . {Continuous ribs}
11/0083	. {characterised by the curvature of the tyre tread}	2011/0388	. . . . {provided at the equatorial plane}
2011/0091	. {built-up by narrow strip winding}	2011/039	. . . . {provided at the shoulder portion}
11/01	. Shape of the shoulders between tread and sidewall, e.g. rounded, stepped or cantilevered	2011/0393	. . . . {Narrow ribs, i.e. having a rib width of less than 8 mm}
2011/013	. . {provided with a recessed portion}	2011/0395	. . . . {for linking shoulder blocks}
2011/016	. . {different rubber for tread wings}	2011/0397	. . . . {Sacrificial ribs, i.e. ribs recessed from outer tread contour}
11/02	. Replaceable treads	11/04	. . in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zig-zag ( <a href="#">B60C 11/12</a> , <a href="#">B60C 11/13</a> take precedence)
11/03	. Tread patterns	11/042	. . . {further characterised by the groove cross-section}
11/0302	. . {directional pattern, i.e. with main rolling direction}	11/045	. . . . {the groove walls having a three-dimensional shape}
11/0304	. . {Asymmetric patterns}	11/047	. . . . {the groove bottom comprising stone trapping protection elements, e.g. ribs}
11/0306	. . {Patterns comprising block rows or discontinuous ribs}	11/11	. . in which the raised area of the pattern consists only of isolated elements, e.g. blocks ( <a href="#">B60C 11/12</a> , <a href="#">B60C 11/13</a> take precedence)
11/0309	. . . {further characterised by the groove cross-section}	11/12	. . characterised by the use of narrow slits or incisions, e.g. sipes
11/0311	. . {Patterns comprising tread lugs arranged parallel or oblique to the axis of rotation}	11/1204	. . . {with special shape of the sipe}
2011/0313	. . . {directional type}	2011/1209	. . . . {straight at the tread surface}
11/0316	. . . {further characterised by the groove cross-section}	2011/1213	. . . . {sinusoidal or zigzag at the tread surface}
11/0318	. . {irregular patterns with particular pitch sequence}	11/1218	. . . . {Three-dimensional shape with regard to depth and extending direction}
11/032	. . {Patterns comprising isolated recesses}	11/1222	. . . . {Twisted or warped shape in the sipe plane}
11/0323	. . . {tread comprising channels under the tread surface, e.g. for draining water}	2011/1227	. . . . {having different shape within the pattern}
11/0327	. . {characterised by special properties of the tread pattern}	2011/1231	. . . . {being shallow, i.e. sipe depth of less than 3 mm}
11/033	. . . {by the void or net-to-gross ratios of the patterns}	11/1236	. . . {with special arrangements in the tread pattern}
11/0332	. . . {by the footprint-ground contacting area of the tyre tread}	11/124	. . . . {inclined with regard to a plane normal to the tread surface}
2011/0334	. . . {Stiffness}	2011/1245	. . . . {being arranged in crossing relation, e.g. sipe mesh}
2011/0337	. . {characterised by particular design features of the pattern}	11/125	. . . . {arranged at the groove bottom}
2011/0339	. . . {Grooves}	2011/1254	. . . . {with closed sipe, i.e. not extending to a groove}
2011/0341	. . . . {Circumferential grooves}	11/1259	. . . {Depth of the sipe}
2011/0344	. . . . . {provided at the equatorial plane}	11/1263	. . . . {different within the same sipe}
2011/0346	. . . . . {with zigzag shape}	2011/1268	. . . . {being different from sipe to sipe}
2011/0348	. . . . . {Narrow grooves, i.e. having a width of less than 4 mm}	11/1272	. . . {Width of the sipe}
2011/0351	. . . . . {Shallow grooves, i.e. having a depth of less than 50% of other grooves}	2011/1277	. . . . {being narrow, i.e. less than 0.3 mm}
2011/0353	. . . . . {characterised by width}	11/1281	. . . . {different within the same sipe, i.e. enlarged width portion at sipe bottom or along its length}
2011/0355	. . . . . {characterised by depth}	2011/1286	. . . . {being different from sipe to sipe}
2011/0358	. . . . {Lateral grooves, i.e. having an angle of 45 to 90 degrees to the equatorial plane}		



2011/129	. . . {Sipe density, i.e. the distance between the sipes within the pattern}	13/00	<b>Tyre sidewalls; Protecting, decorating, marking, or the like, thereof</b> ( <a href="#">B60C 17/08</a> takes precedence; tyre shoulders <a href="#">B60C 11/01</a> ; removable tyre sidewall trim rings <a href="#">B60B 7/01</a> )
2011/1295	. . . . {variable}	13/001	. {Decorating, marking or the like}
11/13	. . characterised by the groove cross-section, e.g. for buttressing or preventing stone-trapping	13/002	. {Protection against exterior elements}
11/1307	. . . {with special features of the groove walls}	13/003	. {characterised by sidewall curvature (carcass ply curvature <a href="#">B60C 9/0292</a> )}
11/1315	. . . . {having variable inclination angles, e.g. warped groove walls}	13/004	. . {of the internal side of the tyre}
11/1323	. . . . {asymmetric}	2013/005	. {Physical properties of the sidewall rubber}
2011/133	. . . . {comprising recesses}	2013/006	. . {Modulus; Hardness; Loss modulus or "tangens delta"}
2011/1338	. . . . {comprising protrusions}	2013/007	. . {Thickness}
11/1346	. . . . {covered by a rubber different from the tread rubber}	2013/008	. {built-up by narrow strip winding}
11/1353	. . . {with special features of the groove bottom}	13/009	. {comprising additional bead cores in the sidewall}
2011/1361	. . . . {with protrusions extending from the groove bottom}	13/02	. Arrangement of grooves or ribs
11/1369	. . . {Tie bars for linking block elements and bridging the groove}	13/023	. . {preventing watersplash}
11/1376	. . . {Three dimensional block surfaces departing from the enveloping tread contour}	2013/026	. . {provided at the interior side only}
11/1384	. . . . {with chamfered block corners}	13/04	. having annular inlays or covers, e.g. white sidewalls
11/1392	. . . . {with chamfered block edges}	2013/045	. . {comprising different sidewall rubber layers}
11/14	. Anti-skid inserts, e.g. vulcanised into the tread band	15/00	<b>Tyre beads, e.g. ply turn-up or overlap</b>
2011/142	. . {Granular particles, e.g. hard granules}	15/0009	. {features of the carcass terminal portion}
2011/145	. . {Discontinuous fibres}	15/0018	. . {not folded around the bead core, e.g. floating or down ply}
2011/147	. . {Foamed rubber or sponge rubber on the tread band}	15/0027	. . {with low ply turn-up, i.e. folded around the bead core and terminating at the bead core}
11/16	. . of plug form, e.g. made from metal, textile	15/0036	. . {with high ply turn-up, i.e. folded around the bead core and terminating radially above the point of maximum section width}
11/1606	. . . {retractable plug}	15/0045	. . . {with ply turn-up up to the belt edges, i.e. folded around the bead core and extending to the belt edges}
11/1612	. . . . {actuated by fluid, e.g. using fluid pressure difference}	15/0054	. . {with ply turn-up portion parallel and adjacent to carcass main portion}
11/1618	. . . . {actuated by temperature, e.g. by means of temperature sensitive elements}	15/0063	. . {with ply turn-up portion diverging from carcass main portion}
11/1625	. . . {Arrangements thereof in the tread patterns, e.g. irregular}	15/0072	. . {with ply reverse folding, i.e. carcass layer folded around the bead core from the outside to the inside}
11/1631	. . . {inclined with regard to the radial direction}	15/0081	. . {the carcass plies folded around or between more than one bead core}
11/1637	. . . {Attachment of the plugs into the tread, e.g. screwed}	2015/009	. . {Height of the carcass terminal portion defined in terms of a numerical value or ratio in proportion to section height}
11/1643	. . . {with special shape of the plug-body portion, i.e. not cylindrical}	15/02	. Seating or securing beads on rims ( <a href="#">sealing means between beads and rims of tubeless tyres B60C 5/16</a> ; means for securing solid tyres on rims <a href="#">B60C 7/24</a> )
11/165	. . . . {conical}	15/0203	. . {using axially extending bead seating, i.e. the bead and the lower sidewall portion extend in the axial direction ( <a href="#">B60C 15/0206</a> takes precedence)}
11/1656	. . . . {concave or convex, e.g. barrel-shaped}	15/0206	. . {using inside rim bead seating, i.e. the bead being seated at a radially inner side of the rim}
11/1662	. . . . {helical-shaped}	15/0209	. . {Supplementary means for securing the bead}
11/1668	. . . . {with an additional collar}	15/0213	. . . {the bead being clamped by rings, cables, rim flanges or other parts of the rim}
11/1675	. . . {with special shape of the plug- tip}	15/0216	. . . {the bead being pierced by bolts, rivets, clips or other elements}
11/1681	. . . . {Spherical top portions}	15/022	. . . {the bead being secured by turned-in rim flanges, e.g. rim of the clincher type}
11/1687	. . . . {Multiple tips}	15/0223	. . . {the bead being secured by clip-hook elements not forming part of the rim flange}
11/1693	. . . {Attachment of the plug-tip within the plug-body}		
11/18	. . of strip form, e.g. metallic combs, rubber strips of different wear resistance ( <a href="#">B60C 11/20</a> takes precedence)		
11/185	. . . {of metal comb form, lamellar shaped or blade-like}		
11/20	. . in coiled form		
11/22	. Tread rings between dual tyres		
11/24	. Wear-indicating arrangements		
11/243	. . {Tread wear sensors, e.g. electronic sensors}		
11/246	. . {Tread wear monitoring systems ( <a href="#">tyre pressure monitoring B60C 23/04</a> )}		

15/0226	. . . {the bead being secured by protrusions of the rim extending from the bead seat, e.g. hump or serrations}	2015/065	. . . {at the axially outer side of the carcass turn-up portion not wrapped around the bead core}
15/023	. . . {the bead being secured by bead extensions which extend over and wrap around the rim flange}	15/0653	. . . {with particular configuration of the cords in the respective bead reinforcing layer}
15/0233	. . {Securing tyres without beads; Securing closed torus or tubular tyres}	2015/0657	. . . {comprising cords at an angle of maximal 10 degrees to the circumferential direction}
15/0236	. . {Asymmetric bead seats, e.g. different bead diameter or inclination angle ( <a href="#">asymmetric transverse section B60C 3/06</a> ; <a href="#">asymmetric bead reinforcement B60C 2015/0696</a> )}	2015/066	. . . {comprising cords at an angle of 10 to 30 degrees to the circumferential direction}
15/024	. . Bead contour, e.g. lips, grooves, or ribs	2015/0664	. . . {comprising cords at an angle of 30 to 60 degrees to the circumferential direction}
15/0242	. . . {with bead extensions located radially outside the rim flange position, e.g. rim flange protectors}	2015/0667	. . . {comprising cords at an angle of 60 to 90 degrees to the circumferential direction}
2015/0245	. . . {Bead lips at the bead toe portion, i.e. the axially and radially inner end of the bead}	2015/0671	. . . {the cord angle being different or variable within the same layer}
15/0247	. . . {with reverse bead seat inclination, i.e. the axially inner diameter of the bead seat is bigger than the axially outer diameter thereof}	2015/0675	. . . {characterised by the course of the cords, e.g. undulated or sinusoidal}
15/028	. . Spacers between beads ( <a href="#">emergency load-supporting means B60C 17/00</a> )	2015/0678	. . . {Physical properties of the bead reinforcing layer, e.g. modulus of the ply}
15/032	. . . inflatable	2015/0682	. . . {Physical properties or dimensions of the coating rubber}
15/036	. . Tyres permanently fixed to the rim, e.g. by adhesive, by vulcanisation	2015/0685	. . . {Physical properties or dimensions of the cords, e.g. modulus of the cords}
15/04	. Bead cores	2015/0689	. . . {Cord density in width direction}
2015/042	. . {characterised by the material of the core, e.g. alloy}	2015/0692	. . . {characterised by particular materials of the cords}
2015/044	. . {characterised by a wrapping layer}	2015/0696	. . {Asymmetric bead reinforcement, e.g. arrangement of bead reinforcing layer or apex}
2015/046	. . {Cable cores, i.e. cores made-up of twisted wires}	<b>17/00</b>	<b>Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor</b>
2015/048	. . {Polygonal cores characterised by the winding sequence}	17/0009	. {comprising sidewall rubber inserts, e.g. crescent shaped inserts}
15/05	. . multiple, i.e. with two or more cores in each bead	17/0018	. . {two or more inserts in each sidewall portion}
15/06	. Flipper strips, fillers, or chafing strips {and reinforcing layers for the construction of the bead}	17/0027	. . {comprising portions of different rubbers in a single insert}
15/0603	. . {characterised by features of the bead filler or apex ( <a href="#">compositions of the apex rubber B60C 2001/0058</a> )}	17/0036	. . {comprising additional reinforcements}
15/0607	. . . {comprising several parts, e.g. made of different rubbers}	17/0045	. . {comprising grooves or ribs, e.g. at the inner side of the insert}
2015/061	. . . {Dimensions of the bead filler in terms of numerical values or ratio in proportion to section height}	2017/0054	. . {Physical properties or dimensions of the inserts}
2015/0614	. . {characterised by features of the chafer or clinch portion, i.e. the part of the bead contacting the rim}	2017/0063	. . . {Modulus; Hardness; Loss modulus or "tangens delta"}
2015/0617	. . {comprising a cushion rubber other than the chafer or clinch rubber}	2017/0072	. . . {Thickness}
2015/0621	. . . {adjacent to the carcass turnup portion}	2017/0081	. {comprising special reinforcing means in the crown area}
2015/0625	. . . {provided at the terminal edge portion of a carcass or reinforcing layer}	17/009	. {comprising annular protrusions projecting into the tyre cavity}
15/0628	. . {comprising a bead reinforcing layer}	17/01	. utilising additional inflatable supports which become load-supporting in emergency
15/0632	. . . {using flippers in contact with and wrapped around the bead core and, at least partially, in contact with the bead filler}	17/02	. . inflated or expanded in emergency only
15/0635	. . . {using chippers between the carcass layer and chafer rubber wrapped around the bead}	17/04	. utilising additional non-inflatable supports which become load-supporting in emergency
2015/0639	. . . {between carcass main portion and bead filler not wrapped around the bead core}	17/041	. . {characterised by coupling or locking means between rim and support}
2015/0642	. . . {between carcass turn-up and bead filler not wrapped around the bead core}	17/042	. . . {preventing sliding or rotation between support and rim}
2015/0646	. . . {at the axially inner side of the carcass main portion not wrapped around the bead core}	17/043	. . {made-up of an annular metallic shell}
		17/044	. . {Expandable supports}
		17/045	. . {Rotatable supports relative to the rim}
		17/046	. . . {by means of ball bearings}
		17/047	. . {comprising circumferential ribs}
		17/048	. . {comprising transverse ribs}
		17/06	. . resilient
		17/061	. . . {comprising lateral openings}

2017/063	. . . {comprising circumferentially extending reinforcements}	23/00305	. . . {Wheel circumventing supply lines, e.g. not through or about the axles}
17/065	. . . {made-up of foam inserts (tyres filled with foam <a href="#">B60C 5/002</a> )}		<b>WARNING</b>
17/066	. . . {made-up of plural spherical elements provided in the tyre chamber}		Group <a href="#">B60C 23/00305</a> is incomplete pending reclassification of documents from group <a href="#">B60C 23/003</a> .
2017/068	. . . {comprising springs, e.g. helical springs}		Groups <a href="#">B60C 23/003</a> and <a href="#">B60C 23/00305</a> should be considered in order to perform a complete search.
17/08	. Means facilitating folding of sidewalls, e.g. run-flat sidewalls		
17/10	. Internal lubrication		
17/103	. . {by means of surface coating, e.g. PTFE}	23/00309	. . . {characterised by the location of the components, e.g. valves, sealings, conduits or sensors}
17/106	. . {Composition of the lubricant}		<b>WARNING</b>
<b>19/00</b>	<b>Tyre parts or constructions not otherwise provided for</b>		Groups <a href="#">B60C 23/00309</a> – <a href="#">B60C 23/00336</a> are incomplete pending reclassification of documents from group <a href="#">B60C 23/003</a> .
19/001	. {Tyres requiring an asymmetric or a special mounting}		Groups <a href="#">B60C 23/00309</a> – <a href="#">B60C 23/00336</a> should be considered in order to perform a complete search.
19/002	. {Noise damping elements provided in the tyre structure or attached thereto, e.g. in the tyre interior}		
19/003	. {Balancing means attached to the tyre}		
2019/004	. {Tyre sensors other than for detecting tyre pressure}	23/00318	. . . . {on the wheels or the hubs}
2019/005	. {Magnets integrated within the tyre structure}	23/00327	. . . . {integrally with the hub caps}
2019/006	. {Warning devices, e.g. devices generating noise due to flat or worn tyres}	23/00336	. . . . {on the axles}
2019/007	. . {triggered by sensors}	23/00345	. . . {Details of the rotational joints}
2019/008	. {Venting means, e.g. for expelling entrapped air}		<b>WARNING</b>
19/04	. Tyre with openings closeable by means other than the rim; Closing means therefor		Groups <a href="#">B60C 23/00345</a> and <a href="#">B60C 23/00347</a> are incomplete pending reclassification of documents from group <a href="#">B60C 23/003</a> .
19/08	. Electric-charge-dissipating arrangements		Groups <a href="#">B60C 23/00345</a> , <a href="#">B60C 23/00347</a> and <a href="#">B60C 23/003</a> should be considered in order to perform a complete search.
19/082	. . {comprising a conductive tread insert}		
19/084	. . {using conductive carcasses}	23/00347	. . . . {comprising two or more feedthrough}
19/086	. . {using conductive sidewalls}	23/00354	. . . {Details of valves}
19/088	. . {using conductive beads}		<b>WARNING</b>
19/12	. Puncture preventing arrangements		Group <a href="#">B60C 23/00354</a> is incomplete pending reclassification of documents from group <a href="#">B60C 23/003</a> .
19/122	. . {disposed inside of the inner liner}		Groups <a href="#">B60C 23/00354</a> and <a href="#">B60C 23/003</a> should be considered in order to perform a complete search.
19/125	. . {disposed removably on the tyre}		
19/127	. . {for inner tubes}		
<b>23/00</b>	<b>Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles; Arrangement of tyre inflating devices on vehicles, e.g. of pumps or of tanks; Tyre cooling arrangements</b>		
23/001	. {Devices for manually or automatically controlling or distributing tyre pressure whilst the vehicle is moving}	23/00363	. . . {Details of sealings}
23/002	. . {by monitoring conditions other than tyre pressure or deformation}		<b>WARNING</b>
23/003	. . {comprising rotational joints between vehicle-mounted pressure sources and the tyres}		Group <a href="#">B60C 23/00363</a> is incomplete pending reclassification of documents from group <a href="#">B60C 23/003</a> .
	<b>WARNING</b>		Groups <a href="#">B60C 23/00363</a> and <a href="#">B60C 23/003</a> should be considered in order to perform a complete search.
	Group <a href="#">B60C 23/003</a> is impacted by reclassification into groups <a href="#">B60C 23/00305</a> - <a href="#">B60C 23/0039</a> .		
	All groups listed in this Warning should be considered in order to perform a complete search.	23/00372	. . . {characterised by fluid diagrams}
			<b>WARNING</b>
			Group <a href="#">B60C 23/00372</a> is incomplete pending reclassification of documents from group <a href="#">B60C 23/003</a> .
			Groups <a href="#">B60C 23/00372</a> and <a href="#">B60C 23/003</a> should be considered in order to perform a complete search.

23/00381 . . . {specially adapted for steerable wheels}

**WARNING**

Group [B60C 23/00381](#) is incomplete pending reclassification of documents from group [B60C 23/003](#).

Groups [B60C 23/00381](#) and [B60C 23/003](#) should be considered in order to perform a complete search.

23/0039 . . . {specially adapted for driven wheels}

**WARNING**

Group [B60C 23/0039](#) is incomplete pending reclassification of documents from group [B60C 23/003](#).

Groups [B60C 23/0039](#) and [B60C 23/003](#) should be considered in order to perform a complete search.

23/004 . . {the control being done on the wheel, e.g. using a wheel-mounted reservoir}

23/005 . {Devices specially adapted for special wheel arrangements}

**NOTE**

[B60C 23/001](#), [B60C 23/02](#), [B60C 23/04](#), [B60C 23/06](#) or [B60C 23/08](#)

23/006 . . {having two wheels only}

23/007 . . {having multiple wheels arranged side by side}

23/008 . . {having wheels on more than two axles}

23/009 . . {having wheels on a trailer}

23/02 . Signalling devices actuated by tyre pressure {(hand-held tyre pressure gauges [G01L 17/00](#))}

23/04 . . mounted on the wheel or tyre

23/0401 . . . {characterised by the type of alarm}

23/0403 . . . . {Mechanically generated audible signals, e.g. by buzzer or whistle signals}

23/0405 . . . . {Mechanically generated visible signals, e.g. by using a gauge needle}

23/0406 . . . . {Alarms noticeable from outside the vehicle, e.g. indication in side mirror, front light or audible alarms ([B60C 23/0403](#), [B60C 23/0405](#) take precedence)}

23/0408 . . . {transmitting the signals by non-mechanical means from the wheel or tyre to a vehicle body mounted receiver}

23/041 . . . . {Means for supplying power to the signal-transmitting means on the wheel}

23/0411 . . . . . {Piezo-electric generators}

23/0413 . . . . . {Wireless charging of active radio frequency circuits}

23/0415 . . . . {Automatically identifying wheel mounted units, e.g. after replacement or exchange of wheels}

23/0416 . . . . . {allocating a corresponding wheel position on vehicle, e.g. front/left or rear/right}

23/0418 . . . . {Sharing hardware components like housing, antenna, receiver or signal transmission line with other vehicle systems like keyless entry or brake control units}

23/042 . . . . . {cooperating with wheel hub mounted speed sensors}

23/0422 . . . . {characterised by the type of signal transmission means}

23/0423 . . . . . {Photo-electric, infra-red or visible light means}

23/0425 . . . . . {Means comprising permanent magnets, e.g. Hall-effect or Reed-switches}

23/0427 . . . . . {Near field transmission with inductive or capacitive coupling means}

23/0428 . . . . . {using passive wheel mounted resonance circuits}

23/043 . . . . . {using transformer type signal transducers, e.g. rotary transformers}

23/0432 . . . . . {using vehicle structural parts as signal path, e.g. chassis, axle or fender}

23/0433 . . . . . {Radio signals}

23/0435 . . . . . {Vehicle body mounted circuits, e.g. transceiver or antenna fixed to central console, door, roof, mirror or fender}

23/0437 . . . . . {Means for detecting electromagnetic field changes not being part of the signal transmission *per se*, e.g. strength, direction, propagation or masking}

23/0438 . . . . . {comprising signal transmission means, e.g. for a bidirectional communication with a corresponding wheel mounted receiver}

23/044 . . . . . {Near field triggers, e.g. magnets or triggers with 125 KHz}

23/0442 . . . . . {the transmitted signal comprises further information, e.g. instruction codes, sensor characteristics or identification data}

23/0444 . . . . . {Antenna structures, control or arrangements thereof, e.g. for directional antennas, diversity antenna, antenna multiplexing or antennas integrated in fenders}

23/0445 . . . . . {Means for changing operating mode, e.g. sleep mode, factory mode or energy saving mode}

23/0447 . . . . . {Wheel or tyre mounted circuits}

23/0449 . . . . . {Passive transducers, e.g. using surface acoustic waves, backscatter technology or pressure sensitive resonators ([near field passive transducers B60C 23/0428](#))}

23/045 . . . . . {Means for detecting electromagnetic field changes being not part of the signal transmission *per se*, e.g. strength, direction, propagation or masking}

23/0452 . . . . . {Antenna structure, control or arrangement ([vehicle tyre mounted antennas H01Q 1/2241](#))}

23/0454 . . . . . {Means for changing operation mode, e.g. sleep mode, factory mode or energy save mode}

23/0455 . . . . . {Transmission control of wireless signals}

23/0457 . . . . . {self triggered by timer}

23/0459 . . . . . {self triggered by motion sensor}

23/0461 . . . . . {externally triggered, e.g. by wireless request signal, magnet or manual switch}

23/0462 . . . . . {Structure of transmission protocol}



- 23/0464 . . . . . {to avoid signal interference}
- 23/0466 . . . . . {with signals sent by transmitters mounted on adjacent vehicles}
- 23/0467 . . . . . {Electric contact means, e.g. slip-rings, rollers, brushes}
- 23/0469 . . . . . {Transmission by sound, e.g. ultra-sound}
- 23/0471 . . . . . {System initialisation, e.g. upload or calibration of operating parameters}
- 23/0472 . . . . . {to manually allocate ID codes or mounting positions, e.g. by service technicians}
- 23/0474 . . . . . {Measurement control, e.g. setting measurement rate or calibrating of sensors; Further processing of measured values, e.g. filtering, compensating or slope monitoring}
- 23/0476 . . . . . {Temperature compensation of measured pressure values}
- 23/0477 . . . . . {Evaluating waveform of pressure readings}
- 23/0479 . . . . . {Communicating with external units being not part of the vehicle, e.g. tools for diagnostic, mobile phones, electronic keys or service stations}
- 23/0481 . . . . . {System diagnostic, e.g. monitoring battery voltage, detecting hardware detachments or identifying wireless transmission failures}
- 23/0483 . . . . . {Wireless routers between wheel mounted transmitters and chassis mounted receivers}
- 23/0484 . . . . . {Detecting an ongoing tyre inflation}
- 23/0486 . . . . . {comprising additional sensors in the wheel or tyre mounted monitoring device, e.g. movement sensors, microphones or earth magnetic field sensors}
- 23/0488 . . . . . {Movement sensor, e.g. for sensing angular speed, acceleration or centripetal force}
- 23/0489 . . . . . {for detecting the actual angular position of the monitoring device while the wheel is turning}
- 23/0491 . . . . . {Constructional details of means for attaching the control device}
- 23/0493 . . . . . {for attachment on the tyre}
- 23/0494 . . . . . {Valve stem attachments positioned inside the tyre chamber}
- 23/0496 . . . . . {Valve stem attachments positioned outside of the tyre chamber}
- 23/0498 . . . . . {for rim attachments ([B60C 23/0494](#), [B60C 23/0496](#) take precedence)}

**WARNING**

Group [B60C 23/0498](#) is impacted by reclassification into group [B60C 23/04985](#).

Groups [B60C 23/0498](#) and [B60C 23/04985](#) should be considered in order to perform a complete search.

- 23/04985 . . . . . {using straps surrounding the rims}

**WARNING**

Group [B60C 23/04985](#) is incomplete pending reclassification of documents from group [B60C 23/0498](#).

Groups [B60C 23/04985](#) and [B60C 23/0498](#) should be considered in order to perform a complete search.

- 23/06 . . . . . {Signalling devices actuated by deformation of the tyre {, 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}}
- 23/061 . . . . . {by monitoring wheel speed ([measuring distance traversed on the ground by vehicles G01C 22/00](#))}
- 23/062 . . . . . {Frequency spectrum analysis of wheel speed signals, e.g. using Fourier transformation}
- 23/063 . . . . . {Generating directly an audible signal by deformation of the tyre ([by touching the ground B60C 23/085](#))}
- 23/064 . . . . . {comprising tyre mounted deformation sensors, e.g. to determine road contact area}
- 23/065 . . . . . {by monitoring vibrations in tyres or suspensions ([B60C 23/062](#) takes precedence)}
- 23/066 . . . . . {by monitoring wheel-centre to ground distance}
- 23/067 . . . . . {by monitoring chassis to ground distance}
- 23/068 . . . . . {by monitoring chassis to tyre distance}
- 23/08 . . . . . by touching the ground
- 23/085 . . . . . {putting directly into action an audible signal}
- 23/10 . . . . . Arrangement of tyre-inflating pumps mounted on vehicles
- 23/105 . . . . . {the pump being mounted in the saddle-pillar of a bicycle}
- 23/12 . . . . . operated by a running wheel

**WARNING**

Group [B60C 23/12](#) is impacted by reclassification into groups [B60C 23/121](#) - [B60C 23/137](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 23/121 . . . . . {the pumps being mounted on the tyres}

**WARNING**

Groups [B60C 23/121](#) – [B60C 23/124](#) are incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/121](#) – [B60C 23/124](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/123 . . . . . {Elongate peristaltic pumps}
- 23/124 . . . . . {Bladders}

- 23/126 . . . {the pumps being mounted on the wheel rims}

**WARNING**

Group [B60C 23/126](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/126](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/127 . . . {the pumps being mounted on the hubs}

**WARNING**

Group [B60C 23/127](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/127](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/129 . . . {the pumps being mounted on wheel spokes}

**WARNING**

Group [B60C 23/129](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/129](#) and [B60C 23/12](#) and [B60C 23/129](#) should be considered in order to perform a complete search.

- 23/131 . . . {activated by force of gravity}

**WARNING**

Group [B60C 23/131](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/131](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/133 . . . {activated by centrifugal force}

**WARNING**

Group [B60C 23/133](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/133](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/135 . . . {activated due to tyre deformation}

**WARNING**

Group [B60C 23/135](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/135](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/137 . . . {comprising cam driven pistons}

**WARNING**

Group [B60C 23/137](#) is incomplete pending reclassification of documents from group [B60C 23/12](#).

Groups [B60C 23/137](#) and [B60C 23/12](#) should be considered in order to perform a complete search.

- 23/14 . . operated by the prime mover of the vehicle  
 23/16 . Arrangement of air tanks mounted on vehicles  
 23/18 . Tyre cooling arrangements {, e.g. heat shields (wheels with cooling fins [B60B 19/10](#))}  
 23/19 . . for dissipating heat  
 23/20 . Devices for measuring or signalling tyre temperature {only}

- 25/00 Apparatus or tools adapted for mounting, removing or inspecting tyres (testing of tyres [G01M 17/02](#))**

- 25/002 . {Inspecting tyres}

**NOTE**

When classifying in this group, classification is also made in the appropriate subgroups of [B60C 25/0548](#)

- 25/005 . . {inside surface}  
 25/007 . . {outside surface (measuring profile depth [G01B 11/22](#))}  
 25/01 . for removing tyres from or mounting tyres on wheels  
 25/015 . . {for only breaking the beads}  
 25/02 . . Tyre levers or the like, e.g. hand-held  
 25/025 . . . {with a jack}  
 25/04 . . . pivotal about the wheel axis, or movable along the rim edge, e.g. rollable  
 25/05 . . Machines  
 25/0503 . . . {for mounting only}  
 25/0506 . . . {for demounting only}  
 25/0509 . . . {for inserting additional parts, e.g. support rings, sensors}  
 25/0512 . . . {Integrated systems performing multiple operations, e.g. assembly lines}  
 25/0515 . . . {Automated devices, e.g. mounting robots}  
 25/0518 . . . {Horizontal wheel axis in working position}  
 25/0521 . . . {Handling of rim or tyre, e.g. lifting and positioning devices}  
 25/0524 . . . {Separating tyres from rims, e.g. by destroying}  
 25/0527 . . . {Adapting to different wheel diameters, i.e. distance between support and tool}  
 25/053 . . . {Support of wheel parts during machine operation}  
 25/0533 . . . . {Fixing the tyre only, e.g. gripping the tread portion for inserting the rim}  
 25/0536 . . . . {axially fixing the rim, e.g. pulling devices}  
 25/0539 . . . . {radially fixing the rim, e.g. with gripping claws}  
 25/0542 . . . . {with self-centering means, e.g. cones}  
 25/0545 . . . . {with rotary motion of tool or tyre support, e.g. turntables}  
 25/0548 . . . {equipped with sensing means, e.g. for positioning, measuring or controlling}

- 25/0551 . . . . {mechanical}
- 25/0554 . . . . {optical, e.g. cameras}
- 25/0557 . . . . {thermal}
- 25/056 . . . . {measuring speed, acceleration or forces}
- 25/0563 . . . {Tools interacting with the tyre and moved in relation to the tyre during operation}
- 25/0566 . . . . {rolling only}
- 25/0569 . . . . {gliding only}
- 25/0572 . . . . {pressing only}
- 25/0575 . . . . {levering only}
- 25/0578 . . . . {hooking only}
- 25/0581 . . . . {Translational tool trajectory only}
- 25/0584 . . . . {Predetermined tool path, e.g. coulisse, multi-link}
- 25/0587 . . . . {Programmed tool path, e.g. robot arm with multiple degrees of freedom}
- 25/059 . . . . {Conjoint tool operations, i.e. at least two tools cooperating simultaneously}
- 25/0593 . . . . {Multi-functional tools for performing at least two operations, e.g. bead breaking and bead seeking}
- 25/0596 . . . {Soaping devices}
- 25/12 . . . for only seating the beads
- 25/122 . . . . acting on the tyre tread
- 25/125 . . . for only breaking the beads
- 25/128 . . . . acting axially on the whole circumference of the bead or side wall
- 25/13 . . . . acting axially on a part of the bead or side wall only at localised regions of the bead or side wall
- 25/132 . . . for removing and mounting tyres (for only seating the beads [B60C 25/12](#); for only breaking the beads [B60C 25/125](#) ; for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims [B60C 25/145](#)))
- 25/135 . . . . having a tyre support or a tool, movable along wheel axis
- 25/138 . . . . with rotary motion of tool or tyre support
- 25/14 . . Apparatus or tools for spreading {or locating} tyre beads
- 25/142 . . {Devices for tightening or expanding the felly, devices for spreading the tyres}
- 25/145 . . {for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims, e.g. air filling bell}
- 25/147 . . {Safety cages for inflation}
- 25/15 . . with means for inverting the tyre
- 25/16 . {Tools for repairing damaged tyres}
- 25/18 . Tools for mounting or demounting air valves
- 25/185 . . {Automated devices, e.g. robots}
- 25/20 . Tools for attaching metallic tyres, e.g. iron tyres upon wooden rims
- 27/00 Non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels**
- 27/003 . {Mounting aids, e.g. auxiliary tensioning tools, slotted ramps}
- 27/006 . {provided with protective parts, e.g. rubber elements to protect the rim portion}
- 27/02 . extending over restricted arcuate part of tread ([B60C 27/20 takes precedence](#))
- 27/0207 . . {involving lugs or rings taking up wear, e.g. chain links, chain connectors ([chain couplings for, e.g. hoisting F16G 15/00](#))}
- 27/0215 . . . {Profiled links, e.g. cross-section other than round}
- 27/0223 . . . {Studded links, i.e. traction enhancing parts located on the link or inserted into the link}
- 27/023 . . {provided with radial arms for supporting the ground engaging parts on the wheel}
- 27/0238 . . {provided with tensioning means}
- 27/0246 . . . {Resilient pretension}
- 27/0253 . . . {Centrifugal forces for tensioning while driving}
- 27/0261 . . {provided with fastening means}
- 27/0269 . . . {acting on the wheel, e.g. on the rim or wheel bolts}
- 27/0276 . . . . {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}
- 27/0284 . . . {acting on the tread portion, e.g. special fixing agents, fastened in the groove of the tyre}
- 27/0292 . . . {acting on the sidewall of the tyre}
- 27/04 . . the ground-engaging part being rigid
- 27/045 . . . {involving retractable devices ([fixing of spade lugs B60B 15/00](#))}
- 27/06 . extending over the complete circumference of the tread, e.g. made of chains {or cables} ([B60C 27/20 takes precedence](#))
- 27/061 . . {provided with radial arms for supporting the ground engaging parts on the tread}
- 27/062 . . {provided with fastening means}
- 27/063 . . . {acting on the wheel, e.g. on the rim or wheel bolts}
- 27/064 . . . {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}
- 27/065 . . . {acting on the tread portion, e.g. special fixing agents, fastened in the groove of the tyre}
- 27/066 . . . {acting on the sidewall of the tyre}
- 27/067 . . {Special chain layout;, i.e. distribution of chain portions over the tread, e.g. arranged in polygon pattern}
- 27/068 . . {the ground-engaging part being rigid}
- 27/08 . . involving lugs or rings taking up wear {, e.g. chain links, chain connectors }
- 27/083 . . . {Profiled links, i.e. cross-section other than round, e.g. hexagonal}
- 27/086 . . . {Studded links, i.e. traction enhancing parts located on the link or inserted into the link}
- 27/10 . . having tensioning means
- 27/12 . . . resilient {pretension}
- 27/125 . . . . {Centrifugal forces for tensioning while driving}
- 27/14 . . automatically attachable
- 27/145 . . . {the anti-skid device being wound around the wheel by its rotation from a point connected to the body frame of the vehicle}
- 27/16 . . formed of close material, e.g. leather {or synthetic mats}
- 27/18 . . . the material being fabric, e.g. woven wire {or textile}
- 27/20 . having ground-engaging plate-like elements
- 27/22 . for tandem tyres

## B60C

- 29/00** Arrangements of tyre-inflating valves to tyres or rims; Accessories for tyre-inflating valves, not otherwise provided for (tools for mounting or demounting valves [B60C 25/18](#))
- 29/002 . {characterised by particular features of the valve core}
- 29/005 . {characterised by particular features of the valve stem}
- 29/007 . {for tyres with segmental sections or for multi-chamber tyres}
- 29/02 . Connection to rims
- 29/04 . Connection to tyres {or inner tubes}
- 29/06 . Accessories for tyre-inflating valves, e.g. housings, guards, covers for valve caps, locks, not otherwise provided for {(B60C 23/0496 takes precedence; tools for screwing and unscrewing valve caps [B25B 27/0057](#); pump connectors [F04B 33/005](#))}
- 29/062 . . {for filling a tyre with particular materials, e.g. liquids ([B60C 5/004](#), [B60C 5/005](#) take precedence)}
- 29/064 . . {Hose connections for pneumatic tyres, e.g. to spare wheels}
- 29/066 . . {Valve caps}
- 29/068 . . {Pressure relief devices, i.e. safety devices for overpressure}
- 99/00** Subject matter not provided for in other groups of this subclass
- 99/003 . {Tyre heating arrangements}
- 99/006 . {Computer aided tyre design or simulation}

### 2200/00 Tyres specially adapted for particular applications

- 2200/02 . for aircrafts
- 2200/04 . for road vehicles, e.g. passenger cars
- 2200/06 . for heavy duty vehicles
- 2200/065 . . for construction vehicles
- 2200/08 . for agricultural vehicles
- 2200/10 . for motorcycles, scooters or the like
- 2200/12 . for bicycles
- 2200/14 . for off-road use