



## Contents

<b>44 - Wheels, tyres, vehicle geometry</b>	<b>1</b>
<b>1 Instructions on using the guide</b>	<b>1</b>
1.1 Overview	1
1.2 General information	1
1.3 Notes	2
1.4 Determining correct wheel and tyre combinations, according to NEDC with tyre package	3
1.5 Determining correct wheel and tyre combinations according to WLTP	4
1.6 NEDC, WLTP and RDE	6
1.7 Definition of tyre package	6
1.8 Explanations regarding world regions	7
<b>2 Legislative and technical conditions</b>	<b>9</b>
2.1 Legislative conditions	9
2.2 Technical conditions	10
2.3 Load-carrying capacity depending on vehicle speed, winter tyres	10
2.4 Vehicle registration documents since 01.10.2005	12
2.5 COC document (EEC Certificate of Conformity)	13
2.6 EU general type approval number, sales type and sales or trade designation	13
<b>3 Wheel change</b>	<b>16</b>
3.1 Fitting instructions	16
3.2 Protecting wheel centring seat against corrosion	19
3.3 Fitting wheels	19
3.4 Position of anti-theft wheel bolts for steel wheels	20
<b>4 Fitting tyre</b>	<b>22</b>
4.1 Pressing tyre off wheel rim	22
4.2 Removing tyre sealant	23
4.3 Removing tyre from wheel	23
4.4 Ensuring proper assembly temperature for tyres	27
4.5 Fitting tyre	28
4.6 Matching wheel rims and tyres	32
4.7 Checking radial and lateral runout of wheels and tyres	33
4.8 Matching wheels and tyres	35
4.9 Balancing wheel	36
4.10 Tyre sealant disposal	41
<b>5 Tyre Pressure Monitoring System</b>	<b>42</b>
5.1 System description - Tyre Pressure Monitoring System	42
5.2 Overview of fitting locations - Tyre Pressure Monitoring System	46
5.3 Assembly overview - tyre pressure sensor	50
5.4 Removing and installing tyre pressure sensor G222/G223/G224/G225	55
5.5 Removing and installing Tyre Pressure Monitoring System control unit J502	63
5.6 Removing and installing tyre pressure monitor sender unit in wheel housing	72
<b>6 Wheel bolts</b>	<b>75</b>
6.1 Wheel bolts, versions	75
6.2 Wheel bolts, anti-theft wheel bolt	77
6.3 Wheel bolts, adapter sets for anti-theft wheel bolts	77
<b>7 Information on tyres</b>	<b>80</b>
7.1 Identification markings on the tyre sidewall	80
7.2 Tyre dimension	82
7.3 Load rating code/load index (LI)	82
7.4 Speed rating code	83
7.5 EU tyre label	83
7.6 Structure of a radial belted tyre	89
7.7 Run-flat tyre, SST (Self Supporting Tyre)	95



7.8	Tyre storage	96
7.9	Reinforced and Extra Load (XL) tyres	97
7.10	M+S tyres	98
7.11	Winter tyres with speed symbol V	100
7.12	All-season tyres	101
7.13	Optimised rolling resistance tyres	102
7.14	Tyre ageing	102
7.15	Tyres with flange protection	104
7.16	Tyre sizes for vehicles with all-wheel drive	104
7.17	Increase in temperature due to insufficient tyre pressure	104
<b>8</b>	<b>Tyre sealant</b>	<b>106</b>
8.1	Models with breakdown set	106
8.2	Storage life	106
8.3	Disposal	106
<b>9</b>	<b>Information about wheels (rims)</b>	<b>107</b>
9.1	Structure of wheel (rim)	107
9.2	Identification	108
9.3	Composite wheels	109
9.4	Care and maintenance of alloy wheel rims	109
9.5	Restoring alloy wheels	109
9.6	Removing and installing hub cover for alloy wheels with open threaded connection	110
9.7	Renewing trim elements	111
9.8	Removing and installing valve	116
<b>10</b>	<b>Handling problems</b>	<b>120</b>
10.1	Rolling noise	120
10.2	Vehicle pulls to one side	122
10.3	Vibration	127
10.4	Eliminating flat spots caused by storage or handling	128
<b>11</b>	<b>Evaluating tyres</b>	<b>130</b>
11.1	Flat spots caused by storage or handling	130
11.2	Undulations	130
11.3	Saw-tooth wear	131
11.4	Flat spots caused by hard braking	131
11.5	Swellings in the tyre sidewall	131
11.6	Cuts	133
11.7	Damage caused by foreign bodies	133
11.8	Stripped profile	134
11.9	Tyre damage due to insufficient tyre pressure	134
11.10	Checking tyres	135
11.11	Damage caused when fitting	136
<b>12</b>	<b>Tyre wear</b>	<b>138</b>
12.1	Factors influencing the service life of tyres	138
12.2	Saw-tooth wear	139
12.3	Wear behaviour of high-speed tyres	140
12.4	Measuring tread depth	140
12.5	One-sided wear	141
12.6	Outer shoulder wear	143
12.7	Diagonal washout	144
12.8	Wear in middle of tyre	145
12.9	Permissible deviation in tread depth	145
<b>13</b>	<b>Overview of components</b>	<b>146</b>
13.1	Assembly overview - wheel	146
<b>14</b>	<b>Snow chains</b>	<b>149</b>
14.1	Assembly and use of snow chains	149



<b>15</b>	<b>Regular and temporary spare wheels, recommended temporary spare tyres</b> .....	<b>150</b>
15.1	Spare wheel with yellow sticker .....	150
15.2	Temporary spare wheels and recommended temporary spare tyres .....	151