



Contents

44 - Wheels, tyres, vehicle geometry	1
1 Instructions on using the guide	1
1.1 Overview	1
1.2 General information	1
1.3 Notes	2
1.4 Explanations regarding world regions	3
1.5 Definition of tyre package	3
1.6 Procedure for determining the required tyre package	4
1.7 Vehicle registration certificate part 1	5
2 Legislative and technical conditions	7
2.1 Legislative conditions	7
2.2 Technical conditions	8
2.3 Load-carrying capacity depending on vehicle speed, winter tyres	8
2.4 Vehicle registration documents since 1.10.2005	10
2.5 COC document (EEC Certificate of Conformity)	11
2.6 EU general type approval number, sales type and sales or trade designation	11
3 Wheel change	13
3.1 Fitting instructions	13
3.2 Protecting wheel centring seat against corrosion	16
3.3 Fitting wheels	17
3.4 Position of anti-theft wheel bolts for steel wheels	17
4 Fitting tyre	18
4.1 Pressing tyre off wheel rim	18
4.2 Removing tyre sealant	18
4.3 Removing tyre from wheel	19
4.4 Ensuring proper assembly temperature for tyres	22
4.5 Mounting tyre	23
4.6 Matching wheel rims and tyres	28
4.7 Checking radial and lateral runout of wheels and tyres	29
4.8 Matching wheels and tyres	30
4.9 Balancing wheel	31
4.10 Tyre sealant disposal	37
5 Tyre pressure monitoring system	38
5.1 System description - tyre pressure monitoring system	38
5.2 Overview of fitting locations - tyre pressure monitor system	40
5.3 Assembly overview - tyre pressure sensor	42
5.4 Removing and installing tyre pressure sensor G222 / G223 / G224 / G225	45
5.5 Removing and installing tyre pressure monitor control unit J502	52
6 Wheel bolts	55
6.1 Wheel bolts, versions	55
6.2 Wheel bolts, anti-theft wheel bolt	56
6.3 Wheel bolts, adapter sets for anti-theft wheel bolts	56
7 Information on tyres	59
7.1 Identification markings on the tyre sidewall	59
7.2 Tyre dimension	61
7.3 Load rating code/load index (LI)	61
7.4 Speed rating code	62
7.5 EU tyre label	62
7.6 Structure of a radial belted tyre	67
7.7 Run-flat tyre, SST (Self Supporting Tyre)	71
7.8 Tyre storage	73
7.9 Reinforced and Extra Load (XL) tyres	73



7.10	Winter tyres	74
7.11	Winter tyres with speed symbol V	76
7.12	Rolling resistance optimised tyres	77
7.13	Tyre ageing	77
7.14	Tyres with flange protection	79
7.15	Tyre sizes for vehicles with four-wheel drive	79
7.16	Increase in temperature due to insufficient tyre pressure	80
8	Tyre sealant	81
8.1	Models with breakdown set	81
8.2	Storage life	81
8.3	Waste disposal	81
9	Information on wheel rims	82
9.1	Structure of wheel rim	82
9.2	Identification	83
9.3	Composite wheels	83
9.4	Care and maintenance of alloy wheel rims	83
9.5	Restoring alloy wheels	84
9.6	Removing and installing hub cover for alloy wheels with open threaded connection	84
9.7	Renewing trim elements	85
9.8	Removing and installing valve	91
10	Handling problems	94
10.1	Rolling noise	94
10.2	Vehicle pulls to one side	96
10.3	Vibration	100
10.4	Eliminating flat spots caused by storage or handling	101
11	Evaluating tyres	103
11.1	Flat spots caused by storage or handling	103
11.2	Undulations	103
11.3	Saw-tooth wear	104
11.4	Flat spots caused by hard braking	104
11.5	Swellings in the tyre sidewall	104
11.6	Cuts	106
11.7	Damage caused by foreign bodies	106
11.8	Stripped profile	106
11.9	Tyre damage due to insufficient tyre pressure	107
11.10	Checking tyres	107
11.11	Damage caused when fitting	108
12	Tyre wear	110
12.1	Factors influencing the service life of tyres	110
12.2	Saw-tooth wear	111
12.3	Wear behaviour of high-speed tyres	111
12.4	Measuring tread depth	112
12.5	One-sided wear	112
12.6	Outer shoulder wear	115
12.7	Diagonal washout	116
12.8	Wear in middle of tyre	116
12.9	Permissible deviation in tread depth	117
13	Exploded view of components	118
13.1	Assembly overview - wheel	118
14	Snow chains	120
14.1	Assembly and use of snow chains	120
15	Regular and temporary spare wheels, recommended temporary spare tyres	121
15.1	Spare wheel with yellow sticker	121
15.2	Temporary spare wheels and recommended temporary spare tyres	122