

## Contents

<b>00 - Technical data</b> .....	<b>1</b>
<b>1 Safety information</b> .....	<b>1</b>
1.1 Safety precautions when working on vehicles with start/stop system .....	1
1.2 Safety precautions when using testers and measuring instruments during a road test .....	1
1.3 Safety precautions when working on the subframe .....	1
<b>2 Identification</b> .....	<b>2</b>
2.1 PR number and type of brake system .....	2
<b>3 General notes</b> .....	<b>3</b>
3.1 Steering .....	3
3.2 Types of tyre .....	3
3.3 General notes on Tyre Pressure Loss Indicator (TPLI+) .....	3
3.4 General notes on drive shaft .....	3
<b>4 Repair instructions</b> .....	<b>5</b>
4.1 Checking shock absorbers on shock tester .....	5
4.2 Maximum values "a" in mm .....	6
4.3 Rules for cleanliness .....	6
4.4 General notes .....	7
4.5 General repair instructions .....	8
4.6 Contact corrosion .....	8
4.7 Steering rack .....	8
4.8 Gaskets, seals .....	8
4.9 Nuts, bolts .....	8
4.10 Electrical components .....	9
4.11 Routing and attachment of pipes, hoses and wiring .....	9
4.12 Repairing damaged threads in longitudinal member (subframe to body) .....	9
4.13 Lifting suspension to reference position - vehicles with air suspension .....	9
<b>5 Technical data</b> .....	<b>13</b>
5.1 Running gear .....	13
5.2 Technical data for brakes .....	13
<b>6 Brake test</b> .....	<b>15</b>
6.1 General notes .....	15
6.2 Testing vehicles with all-wheel drive .....	15
6.3 Checking parking brake .....	15
<b>7 Disposal</b> .....	<b>17</b>
7.1 Discharging front suspension strut (air suspension) .....	17
7.2 Discharging accumulator .....	17
<b>40 - Front suspension</b> .....	<b>19</b>
<b>1 Front axle</b> .....	<b>19</b>
1.1 Overview - front axle .....	19
<b>2 Subframe</b> .....	<b>20</b>
2.1 Assembly overview - subframe .....	20
2.2 Removing and installing subframe with steering rack .....	22
2.3 Removing and installing subframe cross brace .....	30
2.4 Removing and installing subframe shield .....	36
2.5 Fixing subframe in position .....	37
2.6 Lowering subframe .....	43
<b>3 Suspension strut, upper suspension links</b> .....	<b>48</b>
3.1 Assembly overview - suspension strut, upper suspension links .....	48
3.2 Assembly overview - strut brace .....	50
3.3 Removing and installing suspension strut .....	52
3.4 Removing and installing upper suspension link .....	54

3.5	Charging suspension strut	57
3.6	Removing and installing shock absorber fork	59
3.7	Removing and installing strut brace	63
<b>4</b>	<b>Lower suspension links, swivel joint</b>	<b>65</b>
4.1	Assembly overview - lower suspension links, swivel joint	65
4.2	Removing and installing track control link	66
4.3	Removing and installing guide link	71
4.4	Removing and installing swivel joint	73
<b>5</b>	<b>Wheel bearing</b>	<b>75</b>
5.1	Assembly overview - wheel bearing	75
5.2	Removing and installing wheel bearing housing	76
5.3	Removing and installing wheel bearing unit	80
<b>6</b>	<b>Drive shaft</b>	<b>82</b>
6.1	Assembly overview - drive shaft	82
6.2	Removing and installing drive shaft	83
6.3	Loosening and tightening bolt securing drive shaft	84
6.4	Removing and installing heat shield for drive shaft	85
<b>7</b>	<b>Anti-roll bar</b>	<b>87</b>
7.1	Assembly overview - anti-roll bar	87
7.2	Removing and installing anti-roll bar	87
7.3	Removing and installing coupling rod	89
<b>42 - Rear suspension</b>		<b>92</b>
<b>1</b>	<b>Rear axle</b>	<b>92</b>
1.1	Overview - rear axle	92
<b>2</b>	<b>Subframe</b>	<b>93</b>
2.1	Assembly overview - subframe	93
2.2	Fixing subframe in position	95
2.3	Removing and installing subframe	99
2.4	Servicing subframe	101
<b>3</b>	<b>Anti-roll bar</b>	<b>113</b>
3.1	Assembly overview - anti-roll bar	113
3.2	Removing and installing anti-roll bar	113
3.3	Removing and installing coupling rod	115
<b>4</b>	<b>Suspension links, track rod</b>	<b>117</b>
4.1	Assembly overview - transverse links	117
4.2	Removing and installing upper transverse links	120
4.3	Removing and installing lower transverse links	125
4.4	Removing and installing track rod	130
<b>5</b>	<b>Suspension strut/shock absorber, spring</b>	<b>133</b>
5.1	Assembly overview - suspension strut/shock absorber, spring	133
5.2	Removing and installing shock absorber stalk	133
5.3	Removing and installing suspension strut	135
<b>6</b>	<b>Wheel bearing, trailing arm</b>	<b>138</b>
6.1	Assembly overview - wheel bearing	138
6.2	Removing and installing wheel bearing housing	139
6.3	Removing and installing wheel bearing unit	143
<b>7</b>	<b>Drive shaft</b>	<b>145</b>
7.1	Assembly overview - drive shaft	145
7.2	Removing and installing drive shaft	145
7.3	Loosening and tightening bolt securing drive shaft	149
<b>43 - Self-levelling suspension</b>		<b>150</b>
<b>1</b>	<b>Vehicle level senders</b>	<b>150</b>

1.1	Assembly overview - front vehicle level senders	150
1.2	Assembly overview - rear vehicle level senders	150
1.3	Removing and installing front vehicle level sender G78/G289	151
1.4	Removing and installing rear vehicle level sender G76/G77	152
<b>2</b>	<b>Air suspension</b>	<b>154</b>
2.1	Overview of fitting locations - electrical components	154
2.2	Overview of fitting locations - air suspension	156
2.3	Assembly overview - air pipes	158
2.4	Assembly overview - air supply unit	160
2.5	Removing and installing adaptive suspension control unit J197	162
2.6	Removing and installing running gear control unit J775	162
2.7	Bleeding and charging air spring system	163
2.8	Checking air suspension for leaks	164
2.9	Servicing air pipe	166
2.10	Renewing connection piece	169
2.11	Removing and installing air supply unit	171
2.12	Removing and installing filter	174
2.13	Removing and installing solenoid valve block	175
2.14	Removing and installing accumulator	175
2.15	Setting normal level and permanently disabling control	177
2.16	Re-adapting normal level	177
<b>44</b>	<b>Wheels, tyres, vehicle geometry</b>	<b>179</b>
<b>1</b>	<b>Wheels, tyres</b>	<b>179</b>
<b>2</b>	<b>Tyre Pressure Monitoring System</b>	<b>180</b>
2.1	Overview of fitting locations - Tyre Pressure Monitoring System	180
2.2	Assembly overview - tyre pressure sensor	181
2.3	Removing and installing Tyre Pressure Monitoring System control unit J502	183
2.4	Operation of Tyre Pressure Monitoring System	183
2.5	Changing tyres on vehicles with Tyre Pressure Monitoring System	184
2.6	Removing and installing metal valve body	185
<b>3</b>	<b>Wheel alignment</b>	<b>187</b>
3.1	Notes on wheel alignment	187
3.2	Test requirements	187
3.3	Preparations for measurement	188
3.4	When does wheel alignment have to be checked?	190
3.5	Wheel alignment procedure	192
3.6	Explanatory notes on production control numbers (PR numbers)	193
3.7	Wheel runout compensation	193
3.8	Checking maximum steering angle	194
3.9	Checking normal level for wheel alignment - vehicles with air suspension	194
3.10	Wheel alignment specifications	195
3.11	Adjusting camber at rear wheels	196
3.12	Adjusting toe setting at rear wheels	197
3.13	Adjusting camber at front wheels	197
3.14	Adjusting toe setting at front wheels	199
3.15	Basic setting for steering angle sender G85	200
<b>4</b>	<b>Dynamic steering</b>	<b>201</b>
4.1	Assembly overview - dynamic steering	201
4.2	Removing and installing active steering control unit J792	201
4.3	Basic setting for dynamic steering	202
<b>5</b>	<b>Adaptive cruise control</b>	<b>204</b>
5.1	Adjusting adaptive cruise control	204
<b>6</b>	<b>Front camera for driver assist systems</b>	<b>205</b>
6.1	Calibrating front camera for driver assist systems	205



<b>7</b>	<b>Night vision system</b>	<b>206</b>
7.1	Calibrating night vision system	206
<b>45</b>	<b>- Anti-lock brake system</b>	<b>207</b>
<b>1</b>	<b>General notes</b>	<b>207</b>
1.1	Notes for repair work on the ABS	207
<b>2</b>	<b>Overview of fitting locations</b>	<b>208</b>
2.1	Overview of fitting locations - ABS/ESP	208
<b>3</b>	<b>Control unit and hydraulic unit</b>	<b>211</b>
3.1	Assembly overview - control unit and hydraulic unit	211
3.2	Removing and installing ABS control unit J104/ABS hydraulic unit N55	213
3.3	Separating control unit from hydraulic unit	220
3.4	Attaching control unit to hydraulic unit	221
<b>4</b>	<b>Sensors</b>	<b>223</b>
4.1	Assembly overview - speed sensors on front axle	223
4.2	Assembly overview - speed sensors on rear axle	223
4.3	Removing and installing brake pedal position sender G100	224
4.4	Removing and installing front wheel speed sensor G45/G47	226
4.5	Removing and installing rear wheel speed sensor G44/G46	227
<b>46</b>	<b>- Brakes - mechanism</b>	<b>228</b>
<b>1</b>	<b>Front brakes</b>	<b>228</b>
1.1	Assembly overview - front brakes	228
1.2	Removing and installing brake pads	230
1.3	Removing and installing brake caliper	234
1.4	Removing and installing brake disc	240
1.5	Removing and installing splash plate	242
1.6	Removing and installing pad wear indicator wire	243
<b>2</b>	<b>Rear brakes</b>	<b>246</b>
2.1	Assembly overview - rear brakes	246
2.2	Removing and installing brake pads	248
2.3	Removing and installing brake caliper	252
2.4	Removing and installing brake carrier	258
2.5	Removing and installing brake disc	260
2.6	Removing and installing splash plate	262
2.7	Removing and installing pad wear indicator wire	265
<b>3</b>	<b>Parking brake</b>	<b>267</b>
3.1	Assembly overview - parking brake	267
3.2	Removing and installing parking brake motor V282/V283	267
3.3	Releasing parking brake manually	270
<b>4</b>	<b>Brake pedal</b>	<b>271</b>
4.1	Assembly overview - brake pedal	271
4.2	Removing and installing mounting bracket	272
4.3	Separating brake pedal from brake servo	274
4.4	Connecting brake pedal to brake servo	275
4.5	Removing and installing brake pedal	275
<b>47</b>	<b>- Brakes - hydraulics</b>	<b>278</b>
<b>1</b>	<b>Front brake caliper</b>	<b>278</b>
1.1	Assembly overview - front brake caliper	278
1.2	Removing and installing brake caliper piston	278
<b>2</b>	<b>Rear brake caliper</b>	<b>283</b>
2.1	Assembly overview - rear brake caliper	283
2.2	Removing and installing brake caliper piston	283

<b>3</b>	<b>Brake servo/brake master cylinder</b>	<b>289</b>
3.1	Assembly overview - brake servo/brake master cylinder	289
3.2	Removing and installing brake servo	291
3.3	Removing and installing brake master cylinder	296
3.4	Removing and installing brake fluid reservoir	299
3.5	Removing and installing brake fluid level warning contact F34	302
<b>4</b>	<b>Vacuum system</b>	<b>304</b>
4.1	Assembly overview - vacuum pump	304
4.2	Checking non-return valve	305
4.3	Removing and installing non-return valve	305
4.4	Removing and installing brake servo pressure sensor	307
4.5	Checking vacuum system	308
4.6	Removing and installing vacuum pump	313
<b>5</b>	<b>Brake lines</b>	<b>315</b>
5.1	Routing of brake lines	315
5.2	Repairing brake lines	315
<b>6</b>	<b>Hydraulic system</b>	<b>316</b>
6.1	General notes on brake fluid	316
6.2	Bleeding hydraulic system (normal bleeding procedure)	318
6.3	Leak test	323
<b>48 - Steering</b>		<b>326</b>
<b>1</b>	<b>Steering wheel</b>	<b>326</b>
1.1	Assembly overview - steering wheel	326
1.2	Removing and installing steering wheel	328
<b>2</b>	<b>Steering column</b>	<b>330</b>
2.1	Assembly overview - steering column	330
2.2	Checking steering column for damage	332
2.3	Handling and transporting steering column	332
2.4	Removing and installing steering column	333
2.5	Removing and installing safety lock for active steering (locking solenoid)	336
2.6	Removing and installing intermediate steering shaft	337
2.7	Removing and installing control unit for electronic steering column lock J764	341
2.8	Removing and installing control unit for electrically adjustable steering column J866	342
<b>3</b>	<b>Steering rack</b>	<b>343</b>
3.1	Assembly overview - steering rack	343
3.2	Handling and transporting steering rack	347
3.3	Removing and installing steering rack	348
3.4	Removing and installing boot	357
3.5	Removing and installing track rod	359
3.6	Removing and installing track rod ball joint	360
3.7	Re-adapting end stops of steering rack	364