



Contents

00 - Technical data	1
1 Checklist for evaluating running gear of accident vehicles	1
2 General information	3
40 - Front suspension	4
1 Appraisal of accident vehicles	4
2 Raising wheel bearing to unladen position	5
3 Repairing front suspension	7
4 I: Assembly overview: subframe, anti-roll bar, lower suspension link	9
4.1 Repairing thread in longitudinal member	10
4.2 Fixing position of subframe	11
4.3 Removing and installing subframe	13
4.4 Repairing subframe	19
4.5 Removing and installing subframe front bonded rubber bush	22
4.6 Removing and installing subframe rear bonded rubber bush	24
4.7 Checking swivel joint	25
4.8 Removing and installing lower suspension link	25
4.9 Repairing lower suspension link - pressing in and out bonded rubber bushes (camber adjuster screw connection)	27
4.10 Repairing lower suspension link - pressing in and out bonded rubber bushes (caster adjuster screw connection)	29
4.11 Repairing lower suspension link - pressing in and out bonded rubber bushes (caster adjuster screw connection), 18" plus running gear	32
4.12 Repairing lower suspension link - pressing in and out bonded rubber bushes (suspension strut connection)	34
5 Assembly overview: disengageable anti-roll bar	36
5.1 Removing and installing disengageable anti-roll bar	37
5.2 Checking and topping up hydraulic system fluid level for disengageable anti-roll bars	40
5.3 Bleeding disengageable anti-roll bar	41
6 II: Assembly overview: front suspension	43
6.1 Repairing upper suspension link	45
6.2 Removing and installing suspension strut	47
6.3 Removing and installing air spring strut	49
6.4 Charging air spring strut	54
6.5 Removing and installing front left vehicle level sender G78 and front right vehicle level sender G289 – vehicles with suspension struts	55
6.6 Removing and installing bracket for front left vehicle level sender G78 and front right vehicle level sender G289 – vehicles with suspension struts	56
6.7 Removing and installing front left vehicle level sender G78 and front right vehicle level sender G289 – vehicles with air spring struts	59
6.8 Bracket for front left vehicle level sender G78 and front right vehicle level sender G289 – vehicles with air spring struts	60
7 III: Assembly overview: wheel bearing	61
7.1 Removing and installing wheel hub with bearing for 16" inch wheels	62
7.2 Removing and installing wheel bearing for 17"/18"/18" plus running gear	65
8 IV: Assembly overview: suspension strut	71
8.1 Allocation of lower spacer	71
8.2 Repairing front coil spring suspension strut	71
9 V - Front air spring strut	75
9.1 Instructions for repairing air spring struts	75
9.2 Air spring strut	75
9.3 Residual pressure valve	75
9.4 Gaskets and seals	76



9.5	Nuts and bolts	76
9.6	Front air spring strut components	76
9.7	Assembly overview - front air spring strut	78
9.8	Repairing front air spring strut	78
9.9	Removing and installing residual pressure valve	85
10	Assembly overview: drive shaft	87
10.1	Removing and installing jointed shaft	88
10.2	Dismantling and assembling drive shaft	91
10.3	Checking outer joint	95
42	Rear suspension	97
1	Appraisal of accident vehicles	97
2	Repairing rear suspension	98
3	I - Assembly overview: subframe, anti-roll bar, stone deflector	100
3.1	Repairing thread in rear longitudinal member	101
3.2	Fixing position of subframe	102
3.3	Removing and installing subframe	103
3.4	Repairing subframe	107
4	Removing and installing rear vehicle level senders G76/G77	111
5	Assembly overview: disengageable anti-roll bar	113
5.1	Removing and installing disengageable anti-roll bar	114
5.2	Checking and topping up hydraulic system fluid level for disengageable anti-roll bars	116
5.3	Bleeding disengageable anti-roll bar	117
6	Assembly overview: motor/pump unit for disengageable anti-roll bars	119
6.1	Removing and installing motor/pump unit	121
6.2	Removing and installing anti-roll bar uncoupling control unit J742	123
6.3	Line routing for disengageable anti-roll bars	123
7	II - Assembly overview: suspension link, track rod	125
8	III - Assembly overview: rear suspension	128
8.1	Removing and installing suspension strut	129
8.2	Removing and installing air spring strut	130
8.3	Charging air spring strut	132
9	IV - Assembly overview: wheel bearing	134
9.1	Pressing wheel hub with wheel bearing for 16" running gear out and in	135
9.2	Pressing wheel bearing for 17"/18"/18" plus running gear out and in	138
9.3	Repairing wheel bearing housing	144
10	V - Assembly overview: suspension strut	148
10.1	Allocation of lower spacer	148
10.2	Repairing rear coil spring strut	149
11	VI - Rear air spring strut	152
11.1	Instructions for repairing air spring struts	152
11.2	Air spring strut	152
11.3	Residual pressure valve	152
11.4	Gaskets and seals	153
11.5	Nuts and bolts	153
11.6	Rear air spring strut components	153
11.7	Assembly overview - rear air spring strut	155
11.8	Repairing rear air spring strut	155
11.9	Removing and installing residual pressure valve	162
12	VII - Assembly overview: drive shaft	164
12.1	Removing and installing rear drive shaft	165
12.2	Dismantling and assembling drive shaft	169
12.3	Checking inner joint	170



43 - Self-levelling suspension	172
1 Appraisal of accident vehicles	172
2 Jacking mode	173
3 Repairing self-levelling suspension	174
3.1 Fault finding, air spring strut and self-levelling suspension	174
3.2 Self-levelling suspension components and fitting locations	176
3.3 Assembly overview: air supply unit with solenoid valve block	179
3.4 Removing and installing air supply unit without solenoid valve block	180
3.5 Removing and installing air supply unit with solenoid valve block	182
3.6 Assembly overview - air supply unit	183
3.7 Renewing piston ring	184
3.8 Removing and installing adaptive suspension control unit J197	188
3.9 Repairing air line	189
3.10 Basic settings for self-levelling suspension	190
3.11 Measuring ride height	190
44 - Wheels, tyres, vehicle geometry	191
1 Appraisal of accident vehicles	191
2 Torque settings for wheel bolts and tyre assembly	192
2.1 Specified torque for wheel bolts	192
2.2 Fitting tyre	192
3 Removing and fitting tyres (wheels with tyre pressure monitoring)	193
3.1 Notes on safety and conditions for removing and fitting tyres (wheels with tyre pressure monitoring)	193
3.2 Wheel change	193
3.3 Fittings instructions	194
3.4 Pressing tyre off wheel rim	195
3.5 Removing tyre from wheel	196
3.6 Fitting tyre to wheel rim	196
4 Protecting wheel centring seat against corrosion	198
5 Wheel alignment	199
5.1 General	199
5.2 Wheel alignment specifications	199
6 Repairing tyre pressure monitor, 1st generation	202
6.1 Component overview - tyre pressure monitor	202
6.2 Component overview - tyre pressure sensor and metal valve	203
6.3 Removing and installing tyre pressure sensor	204
6.4 Removing and installing metal valve	204
6.5 Removing and installing front tyre pressure monitor aerials R59/R60	205
6.6 Removing and installing rear tyre pressure monitor aerials R61/R62	206
6.7 Removing and installing tyre pressure monitor control unit J502	207
6.8 Fitting tyres on wheels with tyre pressure monitors	207
6.9 Storing current tyre inflation pressure	208
7 Repairing tyre pressure monitor, 2nd generation	209
7.1 Component overview - tyre pressure monitor	209
7.2 Component overview - tyre pressure sensor and metal valve	210
7.3 Removing and installing tyre pressure sensor	211
7.4 Removing and installing metal valve	211
7.5 Removing and installing tyre pressure monitor sender unit in front left wheel housing G431	212
7.6 Removing and installing tyre pressure monitor sender unit in front right wheel housing G432	213
7.7 Removing and installing tyre pressure monitor sender unit in rear left wheel housing G433	214



7.8	Removing and installing tyre pressure monitor sender unit in rear right wheel housing G434	214
7.9	Removing and installing tyre pressure monitor aerial R207	215
7.10	Removing and installing tyre pressure monitor control unit J502	216
7.11	Fitting tyres on wheels with tyre pressure monitors	216
8	Adaptive Cruise Control (ACC)	218
8.1	General information on ACC calibration	218
8.2	ACC calibration during vehicle alignment	218
8.3	ACC calibration without prior vehicle alignment	220
9	Wheels, tyres	223
9.1	Models with breakdown set	223
9.2	Tyre sealant	223
9.3	Removing a tyre	223
9.4	Fitting a new tyre	224
9.5	Tyre sealant disposal	224
10	Instructions for changing or fitting wheels	225
10.1	Fitting wheels	226
11	Protecting wheel centring seat against corrosion	227
12	Rough running due to wheels/tyres - causes and rectification	228
12.1	Causes of rough running	228
12.2	Balancing wheels	228
12.3	Conducting a road test before balancing wheels	228
12.4	Balancing wheels on stationary wheel balancing machine	229
12.5	Vibration control system	232
12.6	Finish balancer	232
12.7	Radial and lateral runout of wheels and tyres	233
12.8	Checking radial and lateral runout on wheels and tyres with tyre gauge V.A.G 1435	233
12.9	Checking radial and lateral runout on wheel rim	234
12.10	Matching	235
12.11	Flat spots caused by storage or handling	236
48 - Steering		238
1	Appraisal of accident vehicles	238
2	Steering column	239
2.1	Assembly overview: steering column	239
2.2	Removing and installing steering column	240
2.3	Removing and installing sealing boot	243
3	Power steering	244
3.1	Assembly overview: power steering, left-hand drive vehicle	244
3.2	Removing and installing power steering box, left-hand drive vehicle	245
3.3	Assembly overview: power steering, right-hand drive vehicle	247
3.4	Removing and installing power steering box, right-hand drive vehicle	249
4	Repairing power steering box	253
4.1	Assembly overview: steering box	253
4.2	Removing and installing track rod	254
5	Vane pump, 5-cylinder diesel engine	257
5.1	Checking vane pump delivery pressure, 5-cylinder diesel engine	257
5.2	Assembly overview: vane pump, 5-cylinder diesel engine	259
5.3	Removing and installing vane pump, 5-cylinder diesel engine	260
6	Vane pump, 6-cylinder diesel engine to model year 2008	265
6.1	Checking delivery pressure of vane pump, 6-cylinder diesel engine to model year 2008	265
6.2	Assembly overview: vane pump, 6-cylinder diesel engine to model year 2008	268
6.3	Removing and installing vane pump, 6-cylinder diesel engine to model year 2008	269
7	Vane pump, 6-cylinder diesel engine from model year 2009	272



7.1	Checking delivery pressure of vane pump, 6-cylinder diesel engine from model year 2009	272
7.2	Assembly overview: vane pump, 6-cylinder diesel engine from model year 2009	276
7.3	Removing and installing vane pump, 6-cylinder diesel engine from model year 2009	277
8	Vane pump, 6-cylinder petrol engine	281
8.1	Checking vane pump delivery pressure, 6-cylinder petrol engine	281
8.2	Assembly overview: vane pump, 6-cylinder petrol engine	283
8.3	Removing and installing vane pump, 6-cylinder petrol engine	284
9	Vane pump, 8-cylinder petrol engine	287
9.1	Checking vane pump delivery pressure, 8-cylinder petrol engine	287
9.2	Assembly overview: vane pump, 8-cylinder petrol engine	289
9.3	Removing and installing vane pump, 8-cylinder petrol engine	290
10	Vane pump, V8 FSI engine	294
10.1	Checking vane pump delivery pressure, V8 FSI engine	294
10.2	Assembly overview - V8 FSI engine	297
10.3	Removing and installing vane pump, V8 FSI engine	299
11	Vane pump, 10-cylinder diesel engine	304
11.1	Checking vane pump delivery pressure, 10-cylinder diesel engine	304
11.2	Assembly overview: vane pump, 10-cylinder diesel engine	307
11.3	Removing and installing vane pump, 10-cylinder diesel engine	309
12	Vane pump, W12 petrol engine	311
12.1	Checking vane pump delivery pressure, W12 petrol engine	311
12.2	Assembly overview - vane pump, W12 petrol engine	313
12.3	Removing and installing vane pump, W12 petrol engine	314
13	Removing and installing oil cooler	319
14	Bleeding steering system and checking for leaks	321
14.1	Bleeding steering system	321
14.2	Checking steering system for leaks	321