

## Contents

<b>00</b>	<b>Technical data</b> .....	<b>1</b>
1	<b>Technical data</b> .....	1
1.1	Running gear .....	1
1.2	Steering .....	2
<b>2</b>	<b>Proper disposal procedures for oil-filled and gas-filled components</b> .....	<b>3</b>
2.1	Releasing gas and draining gas-filled shock absorbers (front) .....	3
2.2	Releasing gas in gas-filled shock absorbers (rear) .....	4
2.3	Discharging front suspension strut (air suspension) .....	5
2.4	Discharging accumulator .....	5
2.5	Draining power steering rack .....	6
<b>3</b>	<b>Checking shock absorbers</b> .....	<b>7</b>
3.1	Leaks at shock absorbers .....	7
3.2	Noises from shock absorbers .....	7
3.3	Checking shock absorbers when removed .....	7
3.4	Checking shock absorbers on shock tester .....	8
<b>4</b>	<b>Positioning vehicle on lifting platform and setting down on wheels</b> .....	<b>11</b>
4.1	Raising and lowering vehicle when air spring system has been opened; raising and lowering vehicle when air spring system has not been opened .....	11
<b>40</b>	<b>Front suspension</b> .....	<b>12</b>
<b>1</b>	<b>General notes</b> .....	<b>12</b>
1.1	General notes .....	12
1.2	Contact corrosion .....	13
1.3	Repairing damaged threads in longitudinal member (subframe to body) .....	13
1.4	Lifting suspension to unladen position (vehicles with coil springs) .....	13
1.5	Lifting suspension to reference position (vehicles with air suspension) .....	15
1.6	Exploded views of front axle .....	18
<b>2</b>	<b>Subframe, console for engine mounting, anti-roll bar, cross member, coupling rod</b> .....	<b>20</b>
2.1	Subframe, console for engine mounting, anti-roll bar, cross member, coupling rod - exploded view .....	20
2.2	Removing and installing subframe .....	22
2.3	Renewing bonded rubber bushes in subframe .....	28
2.4	Removing and installing anti-roll bar .....	33
2.5	Removing and installing cross member .....	34
2.6	Removing and installing coupling rod .....	35
<b>3</b>	<b>Suspension strut (coil springs), mounting bracket, upper links</b> .....	<b>37</b>
3.1	Suspension strut (coil springs), mounting bracket, upper links - exploded view .....	37
3.2	Removing and installing suspension strut (coil springs) with mounting bracket .....	38
3.3	Servicing suspension strut (coil springs) and mounting bracket .....	43
3.4	Removing and installing upper links (coil springs) .....	48
3.5	Renewing bushes for front and rear upper links .....	49
<b>4</b>	<b>Suspension strut (air suspension), mounting bracket, upper links</b> .....	<b>52</b>
4.1	Suspension strut (air suspension), mounting bracket, upper links - exploded view .....	52
4.2	Removing and installing suspension strut (air suspension) with mounting bracket .....	54
4.3	Renewing shock absorber damper adjustment valve .....	58
4.4	Renewing boot .....	60
4.5	Charging suspension strut (air suspension) .....	62
4.6	Removing and installing upper links (air suspension) .....	64
4.7	Renewing bushes for front and rear upper links .....	65
<b>5</b>	<b>Track control link, guide link, vehicle level sender</b> .....	<b>66</b>
5.1	Exploded view of track control link, guide link, vehicle level sender .....	66
5.2	Removing and installing track control link .....	67

5.3	Renewing bush for track control link	70
5.4	Removing and installing guide link	74
5.5	Renewing guide link bush	76
5.6	Removing and installing vehicle level sender	79
<b>6</b>	<b>Wheel bearing housing, wheel bearing unit</b>	<b>80</b>
6.1	Exploded view of wheel bearing housing, wheel bearing unit	80
6.2	Removing and installing wheel bearing housing	81
6.3	Removing and installing wheel bearing unit	87
6.4	Servicing wheel bearing unit	91
<b>7</b>	<b>Tunnel cross member, body brace</b>	<b>95</b>
7.1	Tunnel cross member, body brace - exploded view	95
7.2	Removing and installing tunnel cross member	95
7.3	Removing and installing body brace	97
<b>8</b>	<b>Drive shaft</b>	<b>98</b>
8.1	Removing and installing drive shaft	98
8.2	Loosening and tightening flange bolt for outer joint on drive shaft	100
8.3	Exploded view of drive shaft with peened triple roller joint AAR 3300 i and outer constant velocity joint (100 mm dia.)	101
8.4	Dismantling and assembling peened triple roller joint AAR 3300 i	104
8.5	Servicing outer constant velocity joint (100 mm diameter)	110
8.6	Checking outer constant velocity joint	111
8.7	Tightening large and small clips on triple roller joint and outer joint	112
<b>42</b>	<b>Rear suspension</b>	<b>113</b>
<b>1</b>	<b>General notes</b>	<b>113</b>
1.1	General notes	113
1.2	Contact corrosion	114
1.3	Repairing damaged threads in longitudinal member (subframe to body)	114
1.4	Lifting suspension to unladen position (vehicles with coil springs)	114
1.5	Lifting suspension to reference position (vehicles with air suspension)	116
1.6	Rear axle - overview	120
<b>2</b>	<b>Subframe (front-wheel drive), anti-roll bar, coupling rod</b>	<b>121</b>
2.1	Subframe (front-wheel drive), anti-roll bar, coupling rod - exploded view	121
2.2	Removing and installing subframe with attachments	123
2.3	Renewing bonded rubber bushes in subframe	125
2.4	Removing and installing coupling rod and anti-roll bar	133
2.5	Renewing anti-roll bar bushes	135
<b>3</b>	<b>Subframe (four-wheel drive), anti-roll bar, coupling rod</b>	<b>137</b>
3.1	Subframe (four-wheel drive), anti-roll bar, coupling rod - exploded view	137
3.2	Removing and installing subframe with attachments	139
3.3	Renewing bonded rubber bushes in subframe	141
3.4	Renewing bonded rubber bushes for differential cross member	149
3.5	Removing and installing coupling rod and anti-roll bar	152
3.6	Renewing anti-roll bar bushes	154
<b>4</b>	<b>Trapezium link, upper transverse link, track rod, coil spring, vehicle level sender</b>	<b>155</b>
4.1	Trapezium link, upper transverse link, track rod, coil spring, vehicle level sender - exploded view	155
4.2	Removing and installing trapezium link	156
4.3	Removing and installing upper transverse link	159
4.4	Removing and installing track rod	161
4.5	Removing and installing coil spring	163
4.6	Removing and installing vehicle level sender	173
<b>5</b>	<b>Air spring, shock absorber for air suspension</b>	<b>174</b>
5.1	Air spring, shock absorber for air suspension - exploded view	174
5.2	Removing and installing air spring	175

5.3	Removing and installing boot	178
5.4	Removing and installing shock absorber for air suspension	179
5.5	Renewing shock absorber damper adjustment valve	181
5.6	Servicing shock absorber for air suspension	183
5.7	Bleeding/charging air springs of rear axle	183
<b>6</b>	<b>Wheel bearing housing, wheel bearing unit, shock absorber for coil springs</b>	<b>187</b>
6.1	Wheel bearing housing, wheel bearing unit, shock absorber for coil springs - exploded view	187
6.2	Removing and installing wheel bearing housing	189
6.3	Removing and installing wheel bearing unit	191
6.4	Servicing wheel bearing unit (only possible on four-wheel drive vehicles)	193
6.5	Removing and installing shock absorber for coil springs	197
6.6	Servicing shock absorber for coil springs	199
<b>7</b>	<b>Drive shaft</b>	<b>202</b>
7.1	Removing and installing drive shaft	202
7.2	Loosening and tightening flange bolt for outer joint on drive shaft	203
7.3	Drive shaft with 88 or 100 mm dia. outer CV joint and 108 mm dia. inner CV joint - exploded view	204
7.4	Servicing outer constant velocity joint (88 mm or 100 mm diameter)	206
7.5	Servicing inner constant velocity joint (108 mm diameter)	208
7.6	Checking outer constant velocity joint	212
7.7	Checking inner constant velocity joint	213
<b>43</b>	<b>Self-levelling suspension</b>	<b>215</b>
<b>1</b>	<b>Level settings of adaptive air suspension, connecting VAS 5051 and selecting functions</b>	<b>215</b>
1.1	Possible level settings	215
1.2	Setting vehicle level	215
1.3	Jacking mode	215
1.4	Towing mode	216
1.5	Shipping mode	216
1.6	Connecting VAS 5051 and selecting functions	217
<b>2</b>	<b>Servicing self-levelling suspension (adaptive suspension)</b>	<b>220</b>
2.1	Electrical/electronic components - overview and fitting locations	220
2.2	Removing and installing front vehicle level senders	222
2.3	Removing and installing rear vehicle level senders	223
2.4	Removing and installing front body acceleration senders G341 and G342	225
2.5	Removing and installing rear body acceleration sender G343	226
2.6	Removing and installing adaptive suspension control unit J197	227
2.7	Re-adapting adaptive suspension control unit	228
2.8	Checking body acceleration signals from front/rear body acceleration senders	229
2.9	Bleeding or charging system	229
2.10	Re-adapting reference position (default position)	229
<b>3</b>	<b>Self-levelling suspension (adaptive air suspension)</b>	<b>231</b>
3.1	Overview of air pipes	231
3.2	Servicing air pipe	233
3.3	Renewing connection piece	234
3.4	Air supply unit and solenoid valve block - exploded view	236
3.5	Removing and installing air supply unit	238
3.6	Removing and installing adaptive suspension drain valve N111	240
3.7	Removing and installing compressor temperature sender for adaptive suspension system G290	243
3.8	Removing and installing solenoid valve block	245
3.9	Removing and installing accumulator	247
<b>4</b>	<b>Dynamic Ride Control with variable damping (1 and 3-stage)</b>	<b>249</b>
4.1	General information on DRC	249



4.2	Fitting locations	250
4.3	Removing and installing electronically controlled damping control unit J250	251
4.4	Central valve and pipe connections for suspension struts	252
4.5	DRC fault-finding	254
4.6	DRC system pressure test	255
4.7	Discharging and charging Dynamic Ride Control (DRC)	259
4.8	Removing and installing central valve	268
<b>44</b>	<b>- Wheels, tyres, vehicle geometry</b>	<b>271</b>
<b>1</b>	<b>Wheels and tyres</b>	<b>271</b>
<b>2</b>	<b>Tyre Pressure Loss Indicator (TPLI+)</b>	<b>272</b>
2.1	General notes	272
2.2	Removing and installing Tyre Pressure Monitoring System control unit 2 J793	273
<b>3</b>	<b>Tyre Pressure Monitoring System</b>	<b>274</b>
3.1	General notes	274
3.2	Overview of Tyre Pressure Monitoring System	275
3.3	Removing and installing Tyre Pressure Monitoring System control unit J502	275
3.4	Removing and installing Tyre Pressure Monitoring System aerial R96	276
3.5	Operation of Tyre Pressure Monitoring System	276
3.6	Exploded view of tyre pressure sensor	277
3.7	Changing a tyre	278
3.8	Removing and installing metal valve body	279
<b>4</b>	<b>Wheel alignment</b>	<b>281</b>
4.1	General notes	281
4.2	Wheel alignment must be checked:	281
4.3	Explanatory notes on production control numbers (PR Nos.)	282
4.4	Wheel alignment specifications	283
4.5	Test requirements:	285
4.6	Preparations for measurement	285
4.7	Checking centre position of rack (mechanical method)	287
4.8	Wheel runout compensation	287
4.9	Assignment of adapters to running gear versions (for wheel alignment)	288
4.10	Sequence of operations for checking and adjusting wheel alignment	288
4.11	Checking reference position for wheel alignment (vehicles with air suspension)	289
4.12	Checking camber at front wheels and centralising if necessary	290
4.13	Adjusting camber at rear wheels	292
4.14	Adjusting toe setting at rear wheels	293
4.15	Adjusting toe-in curve at front wheels	293
4.16	Setting vehicle to initial position for wheel alignment	294
4.17	Raising vehicle with running gear 1BA, 1BE, 1BR, 1BV, 1BK, 1BB, 1BD, 1BY, 2MC, 2MS	294
4.18	Adjusting toe-constant "S"	295
4.19	Adjusting toe setting at front wheels	296
<b>5</b>	<b>Adaptive Cruise Control (ACC)</b>	<b>297</b>
5.1	Exploded view of sensor for adaptive cruise control G550	297
5.2	General information on ACC	297
5.3	Adjustment procedure using ACC setting device VAS 6190	298
5.4	Adjustment procedure using ACC setting device VAS 6430	304
5.5	Removing and installing sensor for adaptive cruise control G550	309
5.6	Dismantling and assembling sensor for adaptive cruise control G550 with frame	310
<b>6</b>	<b>Lane departure warning (Audi lane assist)</b>	<b>311</b>
6.1	General notes on lane departure warning function	311
6.2	Calibration procedure	312
6.3	Removing and installing lane departure warning control unit J759 and backlight masking screen	319

<b>48 - Steering</b> .....	<b>320</b>
<b>1 Airbag steering wheel</b> .....	<b>320</b>
1.1 Exploded view of airbag steering wheel .....	320
1.2 Removing and installing airbag steering wheel .....	320
<b>2 Steering column</b> .....	<b>322</b>
2.1 Exploded view of steering column .....	322
2.2 Handling and transporting steering column .....	323
2.3 Removing and installing steering column .....	324
2.4 Electrical adjustment of steering wheel position .....	329
2.5 Easy-entry facility for vehicles with seat memory .....	330
<b>3 Power steering rack</b> .....	<b>331</b>
3.1 Exploded view of power steering rack .....	331
3.2 Centralising steering .....	333
3.3 Removing and installing power steering rack (LHD vehicles) .....	335
3.4 Servicing power steering rack .....	344
3.5 Removing and installing servotronic solenoid valve N119 .....	347
3.6 Adjusting power steering rack .....	348
3.7 Removing and installing track rod ball joint .....	349
3.8 Removing and installing track rods .....	352
<b>4 Checking fluid level, bleeding steering system and checking for leaks</b> .....	<b>356</b>
4.1 Checking power steering fluid level (all engines except 10-cylinder TFSI) .....	356
4.2 Checking power steering fluid level (10-cylinder TFSI engine) .....	357
4.3 Bleeding steering system after repairs .....	358
4.4 Checking steering system for leaks .....	359
<b>5 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 4-cylinder diesel engine)</b> .....	<b>360</b>
5.1 Exploded view (vehicles with 4-cylinder diesel engine) .....	360
5.2 Checking delivery pressure of power steering pump up to model year 2009 (vehicles with 4-cylinder diesel engine) .....	363
5.3 Checking delivery pressure of power steering pump from model year 2009 onwards (vehicles with 4-cylinder diesel engine) .....	367
5.4 Removing and installing power steering pump (vehicles with 4-cylinder diesel engine) ..	372
<b>6 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 4-cylinder TFSI engine)</b> .....	<b>380</b>
6.1 Exploded view (vehicles with 4-cylinder TFSI engine) .....	380
6.2 Checking delivery pressure of power steering pump up to model year 2009 (vehicles with 4-cylinder TFSI engine) .....	383
6.3 Checking delivery pressure of power steering pump from model year 2009 onwards (vehicles with 4-cylinder TFSI engine) .....	386
6.4 Removing and installing power steering pump (vehicles with 4-cylinder TFSI engine) ..	391
<b>7 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder diesel engine)</b> .....	<b>398</b>
7.1 Exploded view (vehicles with 6-cylinder diesel engine) .....	398
7.2 Checking delivery pressure of power steering pump up to model year 2009 (vehicles with 6-cylinder diesel engine) .....	401
7.3 Checking delivery pressure of power steering pump from model year 2009 onwards (vehicles with 6-cylinder diesel engine) .....	404
7.4 Removing and installing power steering pump (vehicles with 6-cylinder diesel engine) ..	409
<b>8 Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder 2.4 ltr., 2.8 ltr., 3.2 ltr. petrol and 3.0 ltr. TFSI engine)</b> .....	<b>418</b>
8.1 Exploded view (vehicles with 6-cylinder 2.4 ltr., 2.8 ltr., 3.2 ltr. petrol and 3.0 ltr. TFSI engine) .....	418
8.2 Checking delivery pressure of power steering pump (vehicles with 6-cylinder 2.4 ltr., 2.8 ltr., 3.2 ltr. petrol and 3.0 ltr. TFSI engine) .....	421
8.3 Removing and installing power steering pump (vehicles with 6-cylinder 2.4 ltr., 2.8 ltr., 3.2 ltr. petrol and 3.0 ltr. TFSI engine) .....	424



<b>9</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 6-cylinder 3.0 ltr. MPI engine)</b> .....	<b>431</b>
9.1	Exploded view (vehicles with 6 cylinder 3.0 ltr. MPI engine) .....	431
9.2	Checking delivery pressure of power steering pump (vehicles with 6 cylinder 3.0 ltr. MPI engine) .....	434
9.3	Removing and installing power steering pump (vehicles with 6 cylinder 3.0 ltr. MPI engine) .....	437
<b>10</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 8-cylinder petrol engine)</b> .....	<b>444</b>
10.1	Exploded view (vehicles with 8-cylinder petrol engine) .....	444
10.2	Checking delivery pressure of power steering pump (vehicles with 8-cylinder petrol engine) .....	448
10.3	Removing and installing power steering pump (vehicles with 8-cylinder petrol engine) ..	452
<b>11</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 10-cylinder FSI engine)</b> .....	<b>459</b>
11.1	Exploded view (vehicles with 10-cylinder FSI engine) .....	459
11.2	Checking delivery pressure of power steering pump (vehicles with 10-cylinder FSI engine) .....	464
11.3	Removing and installing power steering pump (vehicles with 10-cylinder FSI engine) ....	468
<b>12</b>	<b>Power steering pump, hydraulic pipes and hoses, fluid reservoir (vehicles with 10-cylinder TFSI engine)</b> .....	<b>473</b>
12.1	Exploded view (vehicles with 10-cylinder TFSI engine) .....	473
12.2	Checking delivery pressure of power steering pump (vehicles with 10-cylinder TFSI engine) .....	477
12.3	Removing and installing power steering pump (vehicles with 10-cylinder TFSI engine) ..	480
12.4	Renewing oil seal and flat-section O-ring for power steering pump (vehicles with 10-cylinder TFSI engine) .....	485
12.5	Removing and installing hydraulic fluid cooler .....	485
<b>13</b>	<b>Suction hoses on reservoir</b> .....	<b>490</b>
13.1	Installation position of fluid reservoir, position of suction hoses on reservoir .....	490