



Contents

00 - Technical data	1
1 Safety information	1
1.1 Safety measures when working on vehicles with start/stop system	1
1.2 Safety precautions when using testers and measuring instruments during a road test	1
2 Repair instructions	2
2.1 Contact corrosion	2
2.2 Routing and attachment of lines	2
3 Battery	3
3.1 Battery - general notes	3
3.2 Types of battery	3
27 - Starter, current supply, CCS	4
1 Battery	4
1.1 Assembly overview - battery	4
1.2 Removing and installing battery	7
1.3 Disconnecting and connecting battery	14
1.4 Removing and installing battery tray	17
1.5 Checking battery	18
1.6 Charging battery	18
1.7 Removing and installing earth wire with battery monitor control unit J367	18
1.8 Adapting battery monitor control unit J367	20
2 Alternator	21
2.1 Assembly overview - alternator	21
2.2 Removing and installing alternator	22
2.3 Checking alternator	26
2.4 Removing and installing poly V-belt pulley	27
2.5 Removing and installing voltage regulator	34
3 Starter motor	37
3.1 Assembly overview - starter	37
3.2 Removing and installing starter	38
4 Cruise control system (CCS)	43
5 Start/stop system	44
5.1 General description - start/stop system	44
6 Adaptive cruise control	45
6.1 Overview of fitting locations - adaptive cruise control	45
6.2 Removing and installing automatic distance control unit	45
6.3 Calibrating adaptive cruise control	46
90 - Gauges, instruments	47
1 Dash panel insert	47
1.1 Assembly overview - dash panel insert	47
1.2 Assembly overview - head-up display	50
1.3 Removing and installing dash panel insert KX2	51
1.4 Removing and installing control unit for head-up display	54
2 Clock	56
2.1 Removing and installing clock	56
3 Horn	57
3.1 Assembly overview - horn	57
3.2 Removing and installing treble horn H2 and bass horn H7	57
92 - Windscreen wash/wipe system	60



1	Windscreen wiper system	60
1.1	Assembly overview - windscreen wiper system	60
1.2	Moving wipers to service position	62
1.3	Removing and installing wiper blade	62
1.4	Removing and installing wiper arms	63
1.5	Adjusting wiper arms	65
1.6	Removing and installing wiper motor V	66
1.7	Deactivating APP function of wiper motor	67
1.8	Removing and installing rain and light sensor	68
1.9	Repairing rain and light sensor	70
2	Windscreen washer system	73
2.1	Assembly overview - windscreen washer system	73
2.2	Removing and installing washer fluid reservoir	76
2.3	Removing and installing windscreen washer fluid level sender	79
2.4	Removing and installing windscreen washer pump	80
2.5	Removing and installing washer jets	81
2.6	Adjusting spray jets	82
3	Headlight washer system	83
3.1	Assembly overview - headlight washer system	83
3.2	Removing and installing washer fluid reservoir	85
3.3	Removing and installing headlight washer system pump V11	86
3.4	Adjusting spray jets	87
3.5	Removing and installing pop-up cylinder	87
3.6	Renewing guide frame for headlight washer system	89
4	Washer fluid lines	90
4.1	Repairing washer fluid lines	90
94	Lights, bulbs, switches - exterior	91
1	Headlights	91
1.1	Assembly overview - headlight	91
1.2	Removing and installing headlight	96
1.3	Adjusting headlights	97
1.4	Adjusting headlight installation position	97
1.5	Removing and installing front turn signal bulb M5 / M7	99
1.6	Installing repair kit for headlight housing	101
1.7	Converting headlights from driving on right to driving on left	103
1.8	Converting headlights from driving on left to driving on right	103
1.9	Removing and installing headlight range control motor V48 / V49	103
1.10	Removing and installing dipped beam bulb	105
1.11	Removing and installing headlight main beam bulb M30 / M32	105
1.12	Removing and installing LED modules for daytime running light and side light L176 / L177	106
1.13	Removing and installing output module 1 for LED headlight A27 / A31	107
1.14	Removing and installing trim cover for LED headlight	108
1.15	Removing and installing retaining frame for LED headlight	109
1.16	Removing and installing trim strip for LED headlight	110
1.17	Removing and installing dynamic cornering light control motor V318 / V319	111
1.18	Removing and installing bulbs for cornering light L148 / L149	111
1.19	Removing and installing output module for headlight J667 / J668	113
2	Lights in exterior mirror	115
2.1	Assembly overview - lights in exterior mirror	115
2.2	Removing and installing turn signal	116
2.3	Removing and installing entry light in exterior mirror	118
3	Tail lights	119
3.1	Assembly overview - tail lights in body	119



3.2	Assembly overview - tail lights in rear lid	120
3.3	Removing and installing tail light in rear lid	120
3.4	Adjusting installation position of tail light	121
3.5	Removing and installing tail light cluster	122
3.6	Removing and installing tail light bulb M2 / M4	122
3.7	Removing and installing rear fog light bulb L46 / L47	122
3.8	Removing and installing brake and tail light bulb M21 / M22	123
3.9	Removing and installing reversing light bulb	123
3.10	Removing and installing turn signal bulb	123
4	High-level brake light	124
4.1	Assembly overview - high-level brake light	124
4.2	Removing and installing high-level brake light	125
5	Number plate light	127
5.1	Removing and installing number plate light X4 / X5	127
5.2	Removing and installing bulb for number plate light X4 / X5	127
6	Entry and start authorisation system	128
6.1	Overview of fitting locations - entry and start authorisation system	128
6.2	Overview of fitting locations - keyless entry system	131
6.3	Removing and installing interface for entry and start system J965	132
6.4	Removing and installing door exterior handle contact sensor G415 / G416	133
6.5	Removing and installing contact sensor for rear exterior door handle G417 / G418	133
6.6	Removing and installing interior aerial 1 for entry and start system R138	133
6.7	Removing and installing interior aerial 2 for entry and start system R139	134
6.8	Removing and installing driver side aerial for entry and start system R134	135
6.9	Removing and installing front passenger side aerial for entry and start system R135	135
6.10	Removing and installing rear entry and start authorisation aerial R165 / R166	135
6.11	Removing and installing luggage compartment aerial for entry and start system R137	135
6.12	Removing and installing rear bumper aerial for entry and start system R136	136
6.13	Removing and installing rear lid power opening control unit J938	136
6.14	Removing and installing rear lid power opening sender G750 / G760	137
7	Steering column switch module	139
7.1	Assembly overview - steering column switch module	139
7.2	Removing and installing steering column switch module	140
7.3	Removing and installing steering column electronics control unit J527	142
7.4	Removing and installing base for steering column combination switch	145
7.5	Removing and installing turn signal switch E2	146
7.6	Removing and installing cruise control system switch E45	148
7.7	Removing and installing intermittent wiper switch E22	148
7.8	Removing and installing immobiliser reader coil D2	148
8	Parking aid	149
8.1	Assembly overview – parking aid	149
8.2	Removing and installing parking aid control unit J446	151
8.3	Removing and installing front parking aid warning buzzer H22	152
8.4	Removing and installing rear parking aid warning buzzer H15	153
8.5	Removing and installing front parking aid senders	153
8.6	Removing and installing rear parking aid senders	154
9	Park assist steering	156
9.1	Assembly overview - park assist steering	156
9.2	Removing and installing park assist steering control unit J791	157
9.3	Removing and installing front senders	157
9.4	Removing and installing rear senders	158
10	Automatic headlight range control	160
10.1	Assembly overview - automatic headlight range control	160
10.2	Removing and installing cornering light and headlight range control unit J745	161



11	Towing bracket	164
11.1	Assembly overview - towing bracket socket	164
11.2	Trailer socket U10	164
11.3	Removing and installing trailer detector control unit J345	165
96	- Lights, bulbs, switches - interior	166
1	Lights	167
1.1	Overview of fitting locations - lights in dash panel	168
1.2	Overview of fitting locations - lights in front doors	169
1.3	Overview of fitting locations - lights in rear doors	170
1.4	Overview of fitting locations - lights in centre console	171
1.5	Overview of fitting locations - lights in luggage compartment	172
1.6	Overview of fitting locations - lights in roof trim	173
1.7	Removing and installing glove compartment light W6	173
1.8	Replacing bulb for glove compartment light W6	174
1.9	Removing and installing front footwell light K268 / K269	174
1.10	Removing and installing front footwell illumination bulb L151 / L152	175
1.11	Removing and installing Central locking SAFELOCK function warning lamp K133	175
1.12	Removing and installing interior door handle illumination bulb L146 / L147	176
1.13	Removing and installing reflectors in door	176
1.14	Removing and installing front entry light W31 / W32	177
1.15	Removing and installing door warning lamp W30 / W36	178
1.16	Removing and installing rear interior door handle illumination bulb L221 / L222	178
1.17	Removing and installing light for front door ambient lighting W86 / W87	179
1.18	Removing and installing light 1 for rear door ambient lighting L201 / L202	179
1.19	Removing and installing light 2 for front door ambient lighting W97 / W98	179
1.20	Removing and installing bulb for background lighting in rear door L166 / L167	180
1.21	Removing and installing lights for dashboard ambient lighting L229 / L230	180
1.22	Removing and installing selector lever position display Y26	181
1.23	Removing and installing luggage compartment light W3 / W115	181
1.24	Removing and installing illuminated vanity mirror W20 / W14	182
1.25	Removing and installing bulb for front interior light W1	182
1.26	Removing and installing bulb for rear interior light W43	185
1.27	Removing and installing bulb for front reading light W13 / W19	186
1.28	Removing and installing bulb for rear reading light W11 / W12	186
2	Controls	188
2.1	Overview of fitting locations - controls in dash panel	189
2.2	Overview of fitting locations - controls in front doors	191
2.3	Overview of fitting locations - controls in rear doors	192
2.4	Overview of fitting locations - controls in centre console	193
2.5	Overview of fitting locations - controls in luggage compartment	194
2.6	Overview of fitting locations - controls in roof trim	195
2.7	Removing and installing rotary light switch EX1	197
2.8	Removing and installing switch for Head-up Display E736	198
2.9	Removing and installing steering wheel heater button E522	198
2.10	Removing and installing driving mode selection button E735	198
2.11	Removing and installing Start/Stop operation button E693	199
2.12	Removing and installing TCS and ESP button E256	199
2.13	Removing and installing parking aid button E266	199
2.14	Removing and installing park assist steering button E581	199
2.15	Removing and installing centre switch module in dash panel EX22	199
2.16	Removing and installing switch module in centre console EX23 / EX30	199
2.17	Removing and installing hazard warning light switch EX3	201
2.18	Removing and installing buttons for seat heating E653 / E654	201
2.19	Removing and installing glove compartment light switch E26	202
2.20	Removing and installing exterior mirror adjuster EX11	203



2.21	Removing and installing operating unit for window regulator in driver door E512	203
2.22	Removing and installing front passenger side window regulator button E716	204
2.23	Removing and installing driver side interior locking button for central locking system E308	204
2.24	Removing and installing rear lid remote release button E233	205
2.25	Removing and installing button for deactivating interior monitoring and vehicle inclination sensor E616	205
2.26	Removing and installing door contact switch F2 / F3	206
2.27	Removing and installing rear window regulator button E711 / E713	207
2.28	Removing and installing rear door contact switches F10 / F11	207
2.29	Removing and installing electromechanical parking brake button E538 / auto-hold button E540	208
2.30	Removing and installing the starter button E378	208
2.31	Removing and installing electric hinged tow coupling attachment button E474	209
2.32	Removing and installing button to close rear lid in luggage compartment E406	210
2.33	Removing and installing rear lid warning buzzer H32	211
2.34	Removing and installing rear lid contact switch	211
2.35	Removing and installing vanity mirror contact switch F147 / F148	212
2.36	Removing and installing sunroof button E325	212
2.37	Removing and installing front interior light/reading light	212
2.38	Removing and installing rear interior light/reading light	215
2.39	Removing and installing front reading light button E633 / E634	216
3	Anti-theft alarm	217
3.1	Assembly overview - interior monitor	217
3.2	Assembly overview - alarm horn	218
3.3	Removing and installing alarm horn H12	219
3.4	Removing and installing alarm horn H12	219
3.5	Removing and installing alarm horn H12 NAR	220
3.6	Removing and installing anti-theft alarm sensor G578	221
4	Lane change assist	223
4.1	Assembly overview - lane change assist	223
4.2	Removing and installing lane change assist warning lamp in exterior mirror K233 / K234	224
4.3	Removing and installing lane change assist control unit J769 / J770	224
4.4	Calibrating lane change assist	225
5	Front camera for assist systems	232
5.1	Removing and installing front camera for driver assist systems	232
6	Cigarette lighter, socket	233
6.1	Assembly overview - DC/AC converter with socket, 12 V-230 V	233
6.2	Removing and installing cigarette lighter U1	234
6.3	Removing and installing socket illumination bulb L42	234
6.4	Removing and installing rear cigarette lighter illumination bulb L32	234
6.5	Removing and installing electric socket U	234
6.6	Removing and installing DC/AC converter with socket, 12 V-230 V U13	234
97 - Wiring		236
1	Relay carriers, fuse holders, electronics boxes	236
1.1	Overview of fitting locations - relay carriers, fuse holders, E-boxes	236
1.2	Removing and installing electronics box (E-box)	240
1.3	Removing and installing relay and fuse holder in electronics box	242
1.4	Removing and installing relay and fuse carrier behind dash panel	244
1.5	Removing and installing main fuse carrier	246
2	Control units	248
2.1	Overview of fitting locations - control units	248
2.2	Removing and installing onboard supply control unit J519	250
2.3	Removing and installing data bus diagnostic interface J533	254



2.4	Removing and installing bracket for onboard supply control unit J519	255
2.5	Renewing bracket for onboard supply control unit J519	257
2.6	Removing and installing parking aid control unit J446 / park assist steering control unit J791	257
3	Electrical connectors	259
3.1	Repairing electrical wiring harnesses and plug-in connections	259
4	Releasing and dismantling connector housings	260
5	Repairing aerial wires	261
6	Fibre optic cables	262
7	Vehicle diagnosis, testing and information systems	263