

Contents

00	Technical data	1
1	Safety precautions	1
1.1	Safety precautions when working on high-voltage vehicles	1
1.2	Safety precautions when working on vehicles with start/stop system	8
1.3	Safety precautions when using testers and measuring instruments during a road test	8
1.4	Safety precautions when handling gas discharge bulbs	9
2	Repair notes	11
2.1	Contact corrosion	11
2.2	Routing and attachment of lines and wiring	11
3	Battery	12
3.1	Battery - general notes	12
3.2	Battery types	12
27	Starter, current supply, CCS	13
1	Battery	13
1.1	Exploded view - battery	13
1.2	Disconnecting and connecting battery	17
1.3	Removing and installing earth cable with battery monitor control unit J367	21
1.4	Removing and installing battery	25
1.5	Checking battery	36
1.6	Charging battery	37
2	Jump-start terminal	39
2.1	Exploded view - jump-start terminal	39
2.2	Removing and installing jump-start terminal	40
3	Alternator	43
3.1	Exploded view - alternator	43
3.2	Removing and installing alternator	45
3.3	Checking alternator	60
3.4	Servicing alternator	60
4	Starter	61
4.1	Exploded view - starter	61
4.2	Removing and installing starter	63
5	Start/stop system	78
5.1	Overview of fitting locations - start/stop system	78
5.2	Removing and installing voltage stabiliser	78
6	Adaptive cruise control	80
6.1	Overview of fitting locations - adaptive cruise control	80
6.2	Removing and installing adaptive cruise control unit	81
6.3	Calibrating adaptive cruise control	84
90	Gauges, instruments	86
1	Dash panel insert	86
1.1	Exploded view - dash panel insert	86
1.2	Exploded view - head-up display	88
1.3	Removing and installing dash panel insert with control unit in dash panel insert J285	89
1.4	Pin assignment on multi-pin connectors in dash panel insert	92
1.5	Pin assignment on fuel gauge senders	93
1.6	Pin assignment on coolant temperature sender	93
1.7	Removing and installing ambient temperature sensor	94
1.8	Removing and installing control unit for head-up display	94
1.9	Calibrating control unit for head-up display	95
2	Clock	97



2.1	Removing and installing clock	97
3	Horn	98
3.1	Exploded view - horn	98
3.2	Removing and installing treble horn H2 / bass horn H7	99
3.3	Removing and installing brackets for horns	99
92	Windscreen wash/wipe system	100
1	Windscreen wiper system	100
1.1	Exploded view - windscreen wiper system	100
1.2	Moving windscreen wipers to service position	103
1.3	Removing and installing wiper blade	103
1.4	Removing and installing wiper arms	104
1.5	Adjusting wiper arms	105
1.6	Removing and installing wiper motor V	106
1.7	Renewing windscreen wiper motor	107
1.8	Removing and installing rain and light sensor	108
2	Windscreen washer system	116
2.1	Exploded view - windscreen washer system	116
2.2	Removing and installing washer fluid reservoir	117
2.3	Removing and installing windscreen washer fluid level sender	118
2.4	Removing and installing washer pump	118
2.5	Removing and installing washer jets	118
2.6	Adjusting washer jets	119
3	Headlight washer system	120
3.1	Exploded view - headlight washer system	120
3.2	Removing and installing headlight washer system pump V11	121
3.3	Removing and installing washer jets	121
3.4	Adjusting washer jets	128
4	Washer fluid hoses	129
94	Lights, bulbs, switches - exterior	130
1	Headlights	131
1.1	Exploded view - headlights	131
1.2	Removing and installing headlights	141
1.3	Adjusting headlights	148
1.4	Calibrating matrix LED headlights	166
1.5	Adapting headlights for driving on the left side of the road	174
1.6	Adapting headlights for driving on the right side of the road	174
1.7	Removing and installing front turn signal bulb M5 / M7	175
1.8	Removing and installing daytime running light bulb L174 / L175	176
1.9	Removing and installing gas discharge bulb L13 / L14	177
1.10	Removing and installing static cornering light L148 / L149	179
1.11	Removing and installing dip beam screen motor V294 / V295	180
1.12	Removing and installing gas discharge bulb control unit J343 / J344	180
1.13	Removing and installing output module for headlight J667 / J668	181
1.14	Removing and installing output module for headlight	183
1.15	Removing and installing control unit for daytime running light and side light	190
1.16	Removing and installing dynamic cornering light control motor V318 / V319	193
1.17	Removing and installing control motor sender for VARILIS headlight G695 / G696	193
1.18	Removing and installing headlight range control motor V48 / V49	193
1.19	Removing and installing headlight fan	195
1.20	Installing repair kit for headlight housing	198
2	Fog lights	199
2.1	Removing and installing fog light bulb L22 / L23	199
2.2	Adjusting fog lights	200

3	Lights in exterior mirror	201
3.1	Exploded view - lights in exterior mirror	201
3.2	Removing and installing exterior mirror turn signal bulb L131 / L132	202
4	Lights in exterior door handle	203
4.1	Exploded view - lights in exterior door handle	203
4.2	Removing and installing exterior door handle illumination bulb	203
5	Lights in sill panel trim	206
5.1	Overview - entry lights	206
5.2	Removing and installing entry light	206
6	Tail light cluster	208
6.1	Exploded view - tail light cluster on body	208
6.2	Exploded view - tail light cluster on rear lid	210
6.3	Removing and installing tail light cluster	212
6.4	Removing and installing bulb carrier	212
6.5	Removing and installing tail light cluster on rear lid	213
6.6	Correcting installation position of tail light cluster	216
7	High-level brake light	218
7.1	Exploded view - high-level brake light	218
7.2	Removing and installing high-level brake light bulb	219
8	Number plate light	220
8.1	Exploded view - number plate light	220
8.2	Removing and installing number plate light	221
8.3	Removing and installing bulb for number plate light	221
9	Entry and start authorisation	222
9.1	Overview of fitting locations - entry and start authorisation system	222
9.2	Overview of fitting locations - keyless entry system	224
9.3	Exploded view - exterior door handle for keyless entry system	226
9.4	Exploded view - rear lid power opening senders	227
9.5	Removing and installing front exterior door handle switches	227
9.6	Removing and installing rear exterior door handle switches	228
9.7	Removing and installing aerial for entry and start system	230
9.8	Removing and installing rear lid power opening control unit J938	231
9.9	Removing and installing rear lid power opening sender G750 / G760	232
10	Steering column switch module	233
10.1	Exploded view - steering column switch module	233
10.2	Removing and installing steering column switch module	234
10.3	Removing and installing steering column electronics control unit J527	235
10.4	Pin assignment on steering column electronics control unit	236
10.5	Removing and installing steering column combination switch	238
10.6	Removing and installing ignition/starter switch	238
11	Parking aid	240
11.1	Overview - parking aid	240
11.2	Removing and installing parking aid control unit J446	242
11.3	Removing and installing front parking aid warning buzzer H22	243
11.4	Removing and installing rear parking aid warning buzzer H15	243
11.5	Removing and installing front parking aid senders	243
11.6	Removing and installing rear parking aid senders	245
12	Park assist steering	247
12.1	Overview - park assist steering	247
12.2	Removing and installing park assist steering control unit J791	248
12.3	Removing and installing front sender	249
12.4	Removing and installing rear sender	250
13	Automatic headlight range control	251
13.1	Overview - automatic headlight range control	251



13.2	Removing and installing headlight range control unit	252
96	Lights, bulbs, switches - interior	254
1	Lights	255
1.1	Overview of fitting locations - lights in dash panel	256
1.2	Overview of fitting locations - lights in front doors	257
1.3	Overview of fitting locations - lights in rear doors	258
1.4	Overview of fitting locations - background lighting in doors	260
1.5	Overview of fitting locations - lights in centre console	262
1.6	Overview of fitting locations - lights in luggage compartment	265
1.7	Overview of fitting locations - lights in roof trim	266
1.8	Removing and installing dash panel vent illumination bulb	268
1.9	Removing and installing glove compartment light W6	269
1.10	Renewing bulb for glove compartment light W6	269
1.11	Removing and installing footwell illumination bulb (front) L151 / L152	270
1.12	Removing and installing central locking SAFELOCK function warning lamp K133	270
1.13	Removing and installing door opener illumination bulb L108 / L109	271
1.14	Removing and installing front entry light W31 / W32	271
1.15	Removing and installing door warning lamp W30 / W36	271
1.16	Removing and installing door opener illumination bulb L110 / L111	272
1.17	Removing and installing rear entry light W33 / W34	272
1.18	Removing and installing rear door warning lamp W37 / W38	273
1.19	Removing and installing door storage compartment illumination bulb L160 / L161	274
1.20	Removing and installing storage compartment illumination bulb L120	274
1.21	Removing and installing rear ashtray illumination bulb L48 / L49	275
1.22	Removing and installing rear door storage compartment illumination bulb L170 / L171	275
1.23	Removing and installing selector lever position display Y26	276
1.24	Removing and installing cup holder illumination bulb L121	276
1.25	Removing and installing central rear vent illumination bulb L87	276
1.26	Removing and installing footwell illumination bulb (rear) L106 / L107	277
1.27	Removing and installing luggage compartment light W3	277
1.28	Removing and installing illuminated vanity mirror	279
1.29	Removing and installing rear reading light	280
1.30	Removing and installing LED for background lighting	281
2	Controls	285
2.1	Overview of fitting locations - controls in dash panel	286
2.2	Overview of fitting locations - controls in front doors	288
2.3	Overview of fitting locations - controls in rear doors	290
2.4	Overview of fitting locations - controls in centre console	292
2.5	Overview of fitting locations - controls in luggage compartment	295
2.6	Overview of fitting locations - controls in roof trim	296
2.7	Removing and installing dash panel insert operating buttons E493	298
2.8	Removing and installing light switch E1	299
2.9	Removing and installing switch and instrument illumination regulator E20	299
2.10	Removing and installing rear fog light button E314 , fog light button E315 , button for night vision system E680	299
2.11	Removing and installing steering column adjustment switch E167 / steering wheel heater button E522	300
2.12	Removing and installing switches in dash panel	300
2.13	Removing and installing heated seat regulator E94 / E95	301
2.14	Removing and installing valet parking button E536	301
2.15	Removing and installing glove compartment light switch E26	302
2.16	Removing and installing mirror adjustment switch E43 / E168	302
2.17	Removing and installing operating unit for window regulator in driver door E512	302
2.18	Removing and installing window regulator switch in front passenger door E107	303
2.19	Removing and installing interior locking switch E150 / E198	303

2.20	Removing and installing driver seat/front passenger seat memory operating unit E97 / E277	303
2.21	Removing and installing rear lid remote release button E233	304
2.22	Removing and installing alarm system off switch E217	304
2.23	Removing and installing door contact switch F2 / F3	305
2.24	Removing and installing rear window regulator button in rear door E700 / E705	305
2.25	Removing and installing rear interior locking switch E273 / E274	305
2.26	Removing and installing operating unit for rear seat adjustment E683 / E688	306
2.27	Removing and installing door contact switch (rear) F10 / F11	306
2.28	Removing and installing electromechanical parking brake button E538 / auto-hold button E540	306
2.29	Removing and installing entry and start authorisation button E408	307
2.30	Removing and installing heated rear seat switch with regulator E128 / E129	308
2.31	Removing and installing button for air ionisation system E677 - country-specific version	309
2.32	Removing and installing switch for rear multicontour seat E660 / E661	310
2.33	Removing and installing release button for rear lid lock cylinder F248	310
2.34	Removing and installing button to close rear lid in luggage compartment E406	310
2.35	Removing and installing rear lid contact switch	311
2.36	Removing and installing contact switch for vanity mirror F147 / F148	311
2.37	Removing and installing sunroof button E325	311
2.38	Removing and installing interior light/reading light (front)	312
2.39	Removing and installing garage door operating unit E284	312
3	Further lights and controls in vehicle interior	313
3.1	Overview of fitting locations - further lights and controls in vehicle interior	313
3.2	Removing and installing humidity sender G355	314
4	Anti-theft alarm system	318
4.1	Overview - interior monitoring	318
4.2	Removing and installing alarm horn H12	319
4.3	Removing and installing anti-theft alarm sensor G578	320
5	Immobiliser	321
5.1	Removing and installing immobiliser reader coil	321
6	Lane change assist	322
6.1	Overview - lane change assist	322
6.2	Removing and installing button for lane change assist E530	323
6.3	Removing and installing lane change assist warning lamp in exterior mirror K233 / K234	323
6.4	Removing and installing lane change assist control unit J769 / J770	324
6.5	Calibrating lane change assist	324
7	Front camera for driver assist systems	331
7.1	Overview of fitting locations - front camera for driver assist systems	331
7.2	Removing and installing front camera for driver assist systems	333
7.3	Removing and installing image processing control unit J851	334
8	Towing bracket	336
8.1	Overview - trailer socket, trailer detector control unit	336
8.2	Removing and installing electric hinged tow coupling attachment button E474	337
8.3	Trailer socket	337
8.4	Removing and installing trailer detector control unit J345	337
9	Cigarette lighter, socket	339
9.1	Exploded view - cigarette lighter, 12 V socket	339
9.2	Removing and installing cigarette lighter U1	341
9.3	Removing and installing socket illumination bulb L42	342
9.4	Removing and installing cigarette lighter and socket	342
97 - Wiring		350
1	Relay carriers, fuse carriers, electronics boxes	350



1.1	Overview of fitting locations - relay carriers, fuse carriers, electronics boxes	350
1.2	Removing and installing electronics box	357
1.3	Removing and installing relay and fuse holder in electronics box	358
1.4	Removing and installing suppression filter C24	361
1.5	Removing and installing fuse holder (front end)	362
1.6	Removing and installing fuse holders in dash panel	363
1.7	Removing and installing relay and fuse carrier behind dash panel (driver side)	367
1.8	Removing and installing relay and fuse holders in luggage compartment	369
1.9	Removing and installing wiring junction TV1	377
1.10	Removing and installing vehicle starter battery switch-over relay J580	378
1.11	Removing and installing battery isolation relay J7	379
2	Control units	380
2.1	Overview of fitting locations - control units	380
2.2	Exploded view - data bus diagnostic interface	384
2.3	Removing and installing onboard supply control unit J519	384
2.4	Removing and installing convenience system central control unit 2 J773	386
2.5	Removing and installing retaining frame for control units	389
2.6	Removing and installing garage door operation control unit	394
2.7	Removing and installing data bus diagnostic interface J533	395
2.8	Connector at data bus diagnostic interface J533	398
3	Connectors	400
3.1	Overview of fitting locations - connectors	400
3.2	Removing and installing CAN separating connector	401
3.3	Unplugging door disconnecter	403
3.4	Removing and installing connector point at A-pillar (right-side)	403
3.5	Repairing electrical wiring harnesses and electrical connectors	404
4	Releasing and dismantling connector housings	405
5	Cleaning contact surfaces	406
6	Repairing aerial wires	407
7	Fibre optic cables	408
8	Vehicle diagnostic, testing and information systems	409