



## Contents

<b>00 - Technical data</b>	<b>1</b>
<b>1 Safety information</b>	<b>1</b>
1.1 Safety precautions when working on air conditioning systems	1
1.2 Safety measures when working on vehicles with a start/stop system	1
1.3 Safety precautions when using testers and measuring instruments during a road test	2
1.4 Safety precautions when working on the cooling system	2
1.5 Safety precautions for working on vehicles with auxiliary heater	2
<b>2 Repair instructions</b>	<b>4</b>
2.1 Contact corrosion	4
2.2 Routing and attachment of lines	4
<b>3 Battery</b>	<b>5</b>
3.1 Types of battery	5
3.2 Battery - general notes	5
<b>27 - Starter, current supply, CCS</b>	<b>6</b>
<b>1 Battery</b>	<b>6</b>
1.1 Assembly overview - battery	6
1.2 Removing and installing battery	8
1.3 Disconnecting and connecting battery	11
1.4 Checking battery	13
1.5 Charging battery	13
1.6 Removing and installing earth wire with battery monitor control unit J367	14
1.7 Adapting battery monitor control unit J367	15
<b>2 Alternator</b>	<b>16</b>
2.1 Assembly overview - alternator	16
2.2 Removing and installing alternator	17
2.3 Checking alternator	25
2.4 Repairing alternator	25
2.5 Checking poly V-belt	30
<b>3 Starter motor</b>	<b>31</b>
3.1 Assembly overview - starter	31
3.2 Removing and installing starter motor	32
3.3 Checking starter	41
<b>4 Start/stop system</b>	<b>42</b>
4.1 General description - start/stop system	42
4.2 Assembly overview - start/stop system	43
4.3 Removing and installing start-stop operation button	46
4.4 Removing and installing voltage stabiliser	46
<b>90 - Gauges, instruments</b>	<b>49</b>
<b>1 Dash panel insert</b>	<b>49</b>
1.1 General description - dash panel insert KX2	49
1.2 Renewing dash panel insert KX2	50
1.3 Removing and installing dash panel insert KX2	50
1.4 Coding dash panel insert KX2	54
<b>2 Horn</b>	<b>55</b>
2.1 Removing and installing treble horn and bass horn	55
2.2 Checking treble horn and bass horn	56
<b>92 - Windscreen wash/wipe system</b>	<b>57</b>
<b>1 windscreen wiper system.</b>	<b>57</b>
1.1 Moving wipers to service position	57



1.2	Removing and installing wiper arms	57
1.3	Removing and installing wiper frame with linkage and wiper motor	59
1.4	Removing and installing wiper motor	61
1.5	Removing and installing wiper blades	64
1.6	Checking and adjusting angle of incidence of wiper blades, vehicles without joint-free windscreen wipers	66
1.7	Adjusting wiper blade park position	67
1.8	Removing and installing rain and light sensor G397	67
1.9	Repairing rain and light sensor G397 (made by TRW)	72
1.10	Coding rain and light sensor G397	73
<b>2</b>	<b>Windscreen washer system</b>	<b>74</b>
2.1	Assembly overview - windscreen washer system	74
2.2	Removing and installing filler pipe for washer fluid reservoir	75
2.3	Removing and installing washer fluid reservoir	75
2.4	Removing and installing windscreen washer fluid level sender	77
2.5	Removing and installing windscreen wash pump	78
2.6	Removing and installing windscreen washer system spray jets	79
2.7	Adjusting windscreen washer system spray jets	80
<b>3</b>	<b>Washer fluid line hose couplings</b>	<b>82</b>
<b>4</b>	<b>Hose repair</b>	<b>83</b>
<b>94</b>	<b>Lights, bulbs, switches - exterior</b>	<b>84</b>
<b>1</b>	<b>Headlights</b>	<b>84</b>
1.1	Operation and safety notes for gas discharge lamps	84
1.2	Assembly overview - headlight	86
1.3	Removing and installing headlight	95
1.4	Adjusting headlights	99
1.5	Removing and installing front turn signal bulb	100
1.6	Removing and installing side light bulb	104
1.7	Removing and installing dipped beam bulb	108
1.8	Removing and installing main beam bulb	112
1.9	Removing and installing daytime running light and main beam bulb	116
1.10	Removing and installing gas discharge bulb L13 / L14	119
1.11	Removing and installing LED module for daytime running light and side light L176 / L177	121
1.12	Removing and installing control unit for daytime running light and side light J860 / J861	121
1.13	Removing and installing gas discharge bulb control unit J343 / J344	122
1.14	Headlight conversion for left-hand/right-hand traffic	123
1.15	Removing and installing headlight range control motor	128
<b>2</b>	<b>Main beam headlights on roof</b>	<b>131</b>
2.1	Removing and installing main beam headlights on roof	131
2.2	Removing and installing bulb for main beam headlights on roof	132
2.3	Adjusting main beam headlights on roof	133
<b>3</b>	<b>Fog lights</b>	<b>135</b>
3.1	Assembly overview - fog lights	135
3.2	Removing and installing fog light	136
3.3	Removing and installing fog light bulb	137
3.4	Adjusting fog lights	138
<b>4</b>	<b>Side turn signals</b>	<b>139</b>
4.1	Removing and installing turn signal repeater	139
4.2	Removing turn signal repeater bulb	140
<b>5</b>	<b>Tail lights</b>	<b>141</b>
5.1	Assembly overview - tail light	141
5.2	Removing and installing tail light	142



5.3	Removing and installing tail light bulb	143
5.4	Removing and installing brake light bulb	143
5.5	Removing and installing rear fog light bulb	144
5.6	Removing and installing reversing light bulb	145
5.7	Removing and installing turn signal bulb	146
<b>6</b>	<b>High-level brake light</b>	<b>147</b>
6.1	Removing and installing additional brake light	147
6.2	Removing and installing high-level brake light	149
<b>7</b>	<b>Number plate light</b>	<b>150</b>
7.1	Removing and installing number plate light	150
7.2	Removing and installing bulb for number plate light	150
<b>8</b>	<b>Load area light</b>	<b>152</b>
8.1	Removing and installing load area light	152
8.2	Removing and installing bulb for load area light	153
<b>9</b>	<b>Steering column switch module (SCSM)</b>	<b>155</b>
9.1	Removing and installing steering column switch module (SCSM)	155
9.2	Removing and installing airbag coil connector and return ring with slip ring	157
<b>10</b>	<b>Parking aid</b>	<b>160</b>
10.1	Assembly overview – parking aid	160
10.2	Removing and installing parking aid control unit	162
10.3	Adapting rear parking aid control unit	163
10.4	Removing and installing rear parking aid warning buzzer	164
10.5	Removing and installing front parking aid warning buzzer	165
10.6	Removing and installing rear parking aid senders	166
10.7	Removing and installing front parking aid senders	168
<b>11</b>	<b>Towing bracket</b>	<b>170</b>
11.1	Removing and installing trailer detector control unit	170
11.2	Connector pin assignment for trailer socket	171
<b>96</b>	<b>Lights, bulbs, switches - interior</b>	<b>172</b>
<b>1</b>	<b>Lights and controls in the dash panel</b>	<b>172</b>
1.1	Overview of fitting locations - switches in centre of dash panel	172
1.2	Removing and installing light switch	174
1.3	Removing and installing headlight range control regulator with switches and instruments illumination regulator	175
1.4	Removing and installing buttons in dash panel	177
1.5	Removing and installing key-operated switch to deactivate front passenger side airbag	179
<b>2</b>	<b>Lights and controls in front doors</b>	<b>181</b>
2.1	Removing and installing window regulator switches in driver door	181
2.2	Removing and installing window regulator switches in front passenger door	182
2.3	Removing and installing mirror adjuster switch	182
2.4	Removing and installing driver side interior locking button for central locking system	183
<b>3</b>	<b>Lights and controls in rear doors</b>	<b>185</b>
3.1	Removing and installing window regulator switch in rear doors	185
<b>4</b>	<b>Lights and controls in the centre console</b>	<b>187</b>
4.1	Removing and installing buttons in centre console	187
<b>5</b>	<b>Lights and controls in the roof trim</b>	<b>189</b>
5.1	Removing and installing front interior light	189
5.2	Removing and installing bulb of front interior light	190
5.3	Removing and installing centre interior light	191
5.4	Removing and installing bulb of centre interior light	191
<b>6</b>	<b>Other interior lights and controls</b>	<b>193</b>
6.1	Removing and installing interior monitoring deactivation switch	193
<b>7</b>	<b>Cigarette lighter and 12-V socket</b>	<b>195</b>



7.1	Removing and installing cigarette lighter U1	195
7.2	Removing and installing 12-V socket	195
<b>8</b>	<b>Immobiliser</b>	<b>201</b>
8.1	General description - immobiliser	201
8.2	Removing and installing immobiliser control unit	202
8.3	Adapting immobiliser control unit	202
8.4	Adaptation of the engine control unit	202
8.5	Removing and installing immobiliser reader coil	203
8.6	Removing and installing ignition key variable code transponder	203
8.7	Adapting ignition keys to the immobiliser	203
8.8	New identity on renewing all components	203
8.9	Online system test	204
<b>9</b>	<b>Anti-theft alarm (ATA)</b>	<b>205</b>
9.1	General description - anti-theft alarm system	205
9.2	Assembly overview - anti-theft alarm system	208
9.3	Removing and installing interior monitoring deactivation switch	209
9.4	Removing and installing alarm horn H12	209
9.5	Removing and installing anti-theft alarm sensor G578	211
9.6	Adapting the anti-theft alarm system	212
<b>10</b>	<b>Ignition/starter switch and lock cylinder.</b>	<b>215</b>
10.1	Removing and installing ignition/starter switch	215
10.2	Removing and installing lock cylinder	216
10.3	Removing and installing steering lock housing	218
<b>97 - Wiring</b>		<b>220</b>
<b>1</b>	<b>Relay carriers, fuse holders, electronics boxes</b>	<b>220</b>
1.1	Overview of fitting locations - relay carriers, fuse holders, E-boxes	220
1.2	Removing and installing relay carrier	221
1.3	Removing and installing fuse holder	224
1.4	Electric interface for external use	226
<b>2</b>	<b>Select Control units</b>	<b>230</b>
2.1	Removing and installing onboard supply control unit	230
2.2	Flashing, commissioning and coding onboard supply control unit	231
2.3	Removing and installing data bus diagnostic interface J533	232
<b>3</b>	<b>Connectors</b>	<b>234</b>
3.1	Repairing electrical wiring harnesses and plug-in connections	234
<b>4</b>	<b>Vehicle diagnosis, testing and information systems</b>	<b>235</b>