



## Contents

<b>00 - Technical data</b>	<b>1</b>
<b>1 Safety and repair instructions</b>	<b>1</b>
1.1 Safety information	1
1.2 Repair instructions	1
<b>2 Identification</b>	<b>2</b>
2.1 Engine identification	2
2.2 Engine characteristics	3
<b>3 Electrical components</b>	<b>4</b>
3.1 Access to diagnoses	4
<b>4 Technical data</b>	<b>6</b>
4.1 Test and adjustment values	6
<b>10 - Removing and installing engine</b>	<b>11</b>
<b>1 Safety and repair instructions</b>	<b>11</b>
1.1 Safety information	11
1.2 Repair instructions	11
<b>2 Removing and installing engine</b>	<b>12</b>
2.1 Removing motor	12
2.2 Disconnecting engine and gearbox	23
2.3 Securing engine on engine and gearbox support	26
2.4 Installing engine	29
<b>3 Assembly bracket</b>	<b>33</b>
3.1 Summary of components - assembly bracket, Scala, Kamiq, Fabia IV	33
3.2 Assembly overview: assembly mountings, Superb IV, Kodiaq II, Octavia II, Karoq	35
3.3 Removing and installing engine mounting	37
3.4 Removing and installing gearbox mounting	39
3.5 Removing and installing pendulum support	41
3.6 Supporting the engine in its installed position, Karoq	41
3.7 Support the engine in its installed position, Scala, Kamiq, Fabia IV	44
3.8 Supporting the engine in installation position, Superb IV	48
3.9 Supporting the engine in its installation position, Kodiaq II	51
3.10 Supporting the engine in its installed position, Octavia IV	53
3.11 Checking and adjusting assembly mountings	56
<b>4 Engine trim panel</b>	<b>60</b>
4.1 Removing and installing engine cover panel	60
<b>13 - Crankshaft group</b>	<b>61</b>
<b>1 Safety and repair instructions</b>	<b>61</b>
1.1 Safety information	61
1.2 Repair instructions	61
<b>2 Cylinder block (pulley end)</b>	<b>62</b>
2.1 Overview of components: V-ribbed belt drive	62
2.2 Assembly overview - sealing flange (pulley end)	64
2.3 Removing and installing V-ribbed belt	65
2.4 Removing and installing V-ribbed belt tensioning device	70
2.5 Removing and installing vibration damper	71
2.6 Removing and installing engine support	74
2.7 Renewing crankshaft oil seal (pulley end)	76
2.8 Removing and installing sealing flange, pulley end	79
<b>3 Cylinder block on gearbox side</b>	<b>82</b>
3.1 Assembly overview – cylinder block, gearbox side	82
3.2 Removing and installing sealing flange (gearbox end)	84



3.3	Removing and installing flywheel	92
<b>4</b>	<b>Crankshaft</b>	<b>97</b>
4.1	Renewing needle bearing in crankshaft	97
4.2	Measuring axial clearance of crankshaft	98
<b>5</b>	<b>Pistons and conrods</b>	<b>100</b>
5.1	Assembly overview – pistons and conrods	100
5.2	Removing and installing pistons	101
5.3	Checking pistons and cylinder bores	104
5.4	Separating new conrod	105
5.5	Checking radial clearance of conrods	106
5.6	Removing and installing oil spray jets	107
5.7	Setting piston to TDC (top dead centre)	108
<b>15</b>	<b>- Cylinder head, valve gear</b>	<b>113</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>113</b>
1.1	Safety information	113
1.2	Repair instructions	113
<b>2</b>	<b>Cylinder head</b>	<b>114</b>
2.1	Assembly overview - cylinder head	114
2.2	Assembly overview – camshaft housing	115
2.3	Removing and installing cylinder head	117
2.4	Removing and installing camshaft housing	121
2.5	Checking compression	125
2.6	Checking cylinder head for distortion	126
<b>3</b>	<b>Toothed belt drive</b>	<b>128</b>
3.1	Assembly overview - toothed belt guard	128
3.2	Assembly overview – toothed belt	128
3.3	Removing and installing toothed belt guard	130
3.4	Removing and installing toothed belt	132
3.5	Preassembling and assembling test tool VAS 611 007	137
3.6	Checking valve timing	144
3.7	Adjusting valve timing	147
<b>4</b>	<b>Valve gear</b>	<b>157</b>
4.1	Assembly overview – valve gear	157
4.2	Removing and installing camshaft gasket ring	157
4.3	Removing and installing camshaft control	163
4.4	Removing and installing cam actuators	169
4.5	Removing and installing inlet camshaft control valve 1 N727	171
4.6	Removing and installing exhaust camshaft control valve 1 [N318]	172
4.7	Removing and installing valve stem seal	173
4.8	Removing and installing holder for oil seal	183
4.9	Checking control valve	186
4.10	Removing and installing oil seal for inlet camshaft control valve 1 N727	187
<b>5</b>	<b>Inlet and exhaust valves</b>	<b>190</b>
5.1	Checking valve guides	190
5.2	Checking valves	190
<b>17</b>	<b>- Lubrication</b>	<b>192</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>192</b>
1.1	Safety information	192
1.2	Repair instructions	192
<b>2</b>	<b>Sump, oil pump</b>	<b>193</b>
2.1	Assembly overview – sump/oil pump	193
2.2	Engine oil:	196
2.3	Removing and installing lower part of sump	196

2.4	Removing and installing upper part of sump	199
2.5	Removing and installing oil pump	203
2.6	Removing and installing oil level and oil temperature sender [G266]	204
<b>3</b>	<b>Engine oil cooler</b>	<b>206</b>
3.1	Assembly overview - engine oil cooler	206
3.2	Removing and installing engine oil cooler	206
<b>4</b>	<b>Crankcase ventilation</b>	<b>208</b>
4.1	Assembly overview - crankcase breather system	208
4.2	Removing and installing oil separator	209
<b>5</b>	<b>Oil filter, oil pressure switch</b>	<b>213</b>
5.1	Assembly overview - oil filter/oil pressure switches	213
5.2	Removing and installing oil pressure sender [G10]	213
5.3	Checking oil pressure and oil pressure switch	214
5.4	Removing and installing oil filter	214
5.5	Removing and installing oil pressure regulating valve [N428]	215
<b>19</b>	<b>Cooling</b>	<b>217</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>217</b>
1.1	Safety information	217
1.2	Repair instructions	217
<b>2</b>	<b>Cooling system, coolant</b>	<b>218</b>
2.1	Connection diagram - coolant hoses	218
2.2	Checking cooling system for leaks	220
2.3	Checking filling quality of cooling system	222
2.4	Removing and installing coolant expansion tank	225
2.5	Draining coolant	227
2.6	Filling cooling system	228
2.7	Checking coolant level and topping up	230
2.8	Removing and installing cap for cooling system in cylinder block	232
<b>3</b>	<b>Coolant pump, regulation of cooling system</b>	<b>234</b>
3.1	Assembly overview - coolant pump/thermostat	234
3.2	Assembly overview - electric coolant pump	235
3.3	Assembly overview - coolant temperature senders	235
3.4	Removing and installing electric coolant pump	236
3.5	Removing and installing coolant pump	239
3.6	Removing and installing toothed belt pulley for coolant pump	244
3.7	Removing and installing coolant temperature sender [G62]	246
3.8	Removing and installing radiator outlet coolant temperature sender [G83]	248
3.9	Removing and installing engine outlet coolant temperature sender G82	250
3.10	Removing and installing engine temperature regulation module GX33	252
3.11	Checking coolant pump	255
<b>4</b>	<b>Coolant pipes</b>	<b>259</b>
4.1	Assembly overview - coolant pipes	259
4.2	Removing and installing coolant pipes	260
<b>5</b>	<b>Radiator, radiator fan</b>	<b>265</b>
5.1	Overview of components: cooler, vehicles with built-in intercooler	265
5.2	Overview of components: cooler, vehicles with separate intercooler	267
5.3	Assembly overview - radiator cowl and radiator fan	267
5.4	Removing and installing cooler, vehicles with built-in intercooler	268
5.5	Removing and installing cooler, vehicles with separate intercooler	271
5.6	Removing and installing water radiator for charge air cooling circuit	272
5.7	Removing and installing fan shroud, Scala, Kamiq, Fabia IV	276
5.8	Removing and installing the radiator cowl, Karoq, Superb IV, Kodiaq II, Octavia IV	280
5.9	Removing and installing radiator fan VX57	282
5.10	Removing and installing radiator fan 2 [V177]	283



5.11	Removing and installing radiator blind	284
5.12	Removing and installing radiator blind control motor [V544]	285
5.13	Assembly overview - radiator blind	290
<b>21</b>	<b>Turbocharging/supercharging</b>	<b>293</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>293</b>
1.1	Safety information	293
1.2	Repair instructions	293
<b>2</b>	<b>Exhaust gas turbocharger</b>	<b>294</b>
2.1	Overview of components: exhaust gas turbocharger	294
2.2	Removing and installing turbocharger	297
2.3	Removing and installing charge pressure control module [GX34]	303
2.4	Removing and installing connection for turbocharger	303
<b>3</b>	<b>Charging system</b>	<b>306</b>
3.1	Assembly overview - charge air system	306
3.2	Removing and installing charge air cooler	308
3.3	Removing and installing charge pressure sender [GX26]	310
3.4	Checking charge air system for leaks	311
3.5	Removing and installing charge air pipe	314
3.6	Checking charge air cooler for leaks	322
<b>24</b>	<b>Mixture preparation - injection</b>	<b>327</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>327</b>
1.1	Safety information	327
1.2	Repair instructions	327
<b>2</b>	<b>Injection system</b>	<b>328</b>
2.1	Installation location overview: injection system	328
<b>3</b>	<b>Vacuum system</b>	<b>334</b>
3.1	Assembly overview - vacuum system	334
3.2	Removing and installing vacuum line	334
<b>4</b>	<b>Injection valves</b>	<b>337</b>
4.1	Assembly overview - fuel rail with injectors	337
4.2	Removing and installing fuel rail	339
4.3	Removing and installing injectors	340
4.4	Renewing seals on injectors	343
4.5	Cleaning injectors	345
<b>5</b>	<b>Air filter</b>	<b>347</b>
5.1	Assembly overview - air filter housing	347
5.2	Removing and installing air filter housing	349
5.3	Removing and installing air guide pipe on lock carrier, Scala, Kamiq, Fabia IV	351
5.4	Removing and installing air guide pipe on lock carrier, Octavia IV, Karoq, Superb IV, Kodiaq II	352
<b>6</b>	<b>Intake manifold</b>	<b>354</b>
6.1	Assembly overview - intake manifold	354
6.2	Removing and installing intake manifold	356
6.3	Removing and installing throttle valve module GX3	362
6.4	Cleaning throttle valve module [GX3]	363
<b>7</b>	<b>Senders and sensors</b>	<b>365</b>
7.1	Removing and installing fuel pressure sender [G247]	365
7.2	Checking fuel pressure sender [G247]	366
7.3	Removing and installing intake manifold sender [GX9]	367
7.4	Removing and installing exhaust gas pressure sensor 1 [G450]	369
7.5	Removing and installing air mass measurement module [GX35]	371
<b>8</b>	<b>Engine control unit</b>	<b>373</b>



8.1	Assembly overview - engine control unit	373
8.2	Removing and installing engine control unit -J623	373
<b>9</b>	<b>High pressure pump</b>	<b>378</b>
9.1	Assembly overview - high-pressure pump	378
9.2	Removing and installing high-pressure pump	379
9.3	Removing and installing high-pressure pipe	381
<b>10</b>	<b>Lambda probe</b>	<b>383</b>
10.1	Assembly overview - Lambda probe	383
10.2	Removing and installing Lambda probe	383
<b>26</b>	<b>- Exhaust system</b>	<b>387</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>387</b>
1.1	Safety information	387
1.2	Repair instructions	387
<b>2</b>	<b>Exhaust pipes/silencers</b>	<b>388</b>
2.1	Overview of components: silencer, Karoq, torsion beam rear axle	388
2.2	Overview of components: silencer, Karoq, multi-link rear axle	390
2.3	Summary of components: Silencer, Scala, Kamiq, Fabia IV	391
2.4	Summary of components: silencers, Superb IV	393
2.5	Assembly overview: silencers, Kodiaq II	394
2.6	Summary of components:silencer, Octavia IV	396
2.7	Removing and installing front exhaust pipe	398
2.8	Removing and installing front silencers	400
2.9	Separating exhaust pipes from silencers	402
2.10	Removing and installing center silencer, Karoq, torsion beam rear axle	403
2.11	Removing and installing rear silencer, Karoq, torsion beam rear axle	404
2.12	Removing and installing silencer, Karoq, multi-link rear axle	406
2.13	Removing and installing rear silencer, Scala, Kamiq, Fabia IV	408
2.14	Removing and installing the middle silencer, Superb IV	410
2.15	Removing and installing the silencers, Octavia IV	411
2.16	Removing and installing the silencer, Superb IV	413
2.17	Removing and installing the rear silencer, Kodiaq II	415
2.18	Removing and installing front exhaust pipe bracket	416
2.19	Aligning exhaust system free of stress	418
2.20	Checking exhaust system for leaks	419
2.21	Installation position of clamp	419
<b>3</b>	<b>Cleansing exhaust emissions</b>	<b>421</b>
3.1	Assembly overview – emission control	421
3.2	Assembly overview - bracket and pipes for pressure differential sender for particulate filter	423
3.3	Removing and installing emission control module	424
3.4	Removing and installing exhaust flap control unit [J883]	428
3.5	Removing and installing pressure differential sender for particulate filter G1037	429
<b>4</b>	<b>Exhaust temperature regulation</b>	<b>432</b>
4.1	Assembly overview – exhaust gas temperature regulation	432
4.2	Removing and installing dual exhaust gas temperature sensor 1	432
<b>28</b>	<b>- Ignition system</b>	<b>435</b>
<b>1</b>	<b>Safety and repair instructions</b>	<b>435</b>
1.1	Safety information	435
1.2	Repair instructions	435
<b>2</b>	<b>Ignition system</b>	<b>436</b>
2.1	Assembly overview - ignition system	436
2.2	Removing and installing ignition coil with output stage	438
2.3	Removing and installing knock sensor 1 [G61]	441
2.4	Removing and installing engine speed sender [G28]	442



2.5	Removing and installing inlet camshaft position sender [G1002] .....	444
2.6	Removing and installing exhaust camshaft position sender [G1003] .....	445