



Contents

00 - Technical data	1
1 Safety and repair instructions	1
1.1 Safety information	1
1.2 Repair instructions	1
2 Identification	2
2.1 Engine identification	2
2.2 Engine characteristics	2
3 Technical data	10
3.1 Test and adjustment values	10
4 Electrical components	14
4.1 Access to diagnoses	14
10 - Removing and installing engine	16
1 Safety and repair instructions	16
1.1 Safety information	16
1.2 Repair instructions	16
2 Removing and installing engine	17
2.1 Removing motor	17
2.2 Disconnecting engine and gearbox	26
2.3 Securing engine on engine and gearbox support	30
2.4 Installing motor	33
3 Assembly bracket	38
3.1 Assembly overview – assembly mountings	38
3.2 Removing and installing engine mounting	40
3.3 Removing and installing gearbox mounting	42
3.4 Removing and installing pendulum support	43
3.5 Supporting the engine in installation position, Superb III	44
3.6 Supporting the engine in installation position, Superb IV	47
3.7 Supporting the engine in its installed position, Octavia IV	50
3.8 Supporting the engine in its installed position, Kodiaq	53
3.9 Supporting the engine in its installation position, Kodiaq II	56
3.10 Supporting the engine in its installed position, Karoq	59
3.11 Checking and adjusting assembly mountings	61
4 Engine trim panel	64
4.1 Removing and installing engine cover	64
13 - Crankshaft group	65
1 Safety and repair instructions	65
1.1 Safety information	65
1.2 Repair instructions	65
2 Cylinder block (pulley end)	66
2.1 Assembly overview – cylinder block, pulley end	66
2.2 Assembly overview – sealing flange, pulley end	68
2.3 Removing and installing poly-V belt	69
2.4 Removing and installing poly V-belt tensioner	71
2.5 Removing and installing vibration damper	71
2.6 Removing and installing bracket for ancillaries	73
2.7 Removing and installing engine support	74
2.8 Removing and installing sealing flange, pulley end	75
2.9 Renewing caps in cylinder block, pulley end	77
3 Cylinder block, gearbox end	79
3.1 Assembly overview – cylinder block, gearbox end	79



3.2	Removing and installing flywheel	81
3.3	Removing and installing sealing flange on gearbox side	84
3.4	Renewing caps in cylinder block (gearbox end)	93
3.5	Removing and installing intermediate plate	94
3.6	Removing and installing intermediate plate	94
4	Crankshaft	96
4.1	Assembly overview - crankshaft	96
4.2	Renewing needle bearing in crankshaft	98
4.3	Measuring axial clearance of crankshaft	99
4.4	Measuring radial clearance of crankshaft	100
4.5	Removing and installing crankshaft	101
5	Pistons and conrods	103
5.1	Assembly overview – pistons and conrods	103
5.2	Removing and installing pistons	105
5.3	Measuring piston projection at TDC	109
5.4	Checking pistons and cylinder bores	110
5.5	Separating new conrod	111
5.6	Checking radial clearance of conrods	112
15 - Cylinder head, valve gear	114	
1	Safety and repair instructions	114
1.1	Safety information	114
1.2	Repair instructions	114
2	Cylinder head	115
2.1	Assembly overview – cylinder head	115
2.2	Assembly overview - cylinder head cover	116
2.3	Removing and installing cylinder head	118
2.4	Removing and installing cylinder head cover	126
2.5	Removing and installing injector seals	128
2.6	Removing and installing camshaft housing	129
2.7	Checking compression	135
2.8	Checking cylinder head for distortion	136
3	Toothed belt drive	138
3.1	Assembly overview – toothed belt cover	138
3.2	Assembly overview – toothed belt	138
3.3	Removing and installing toothed belt guard	140
3.4	Removing and installing toothed belt	144
3.5	Checking valve timing	150
3.6	Adjusting valve timing	154
3.7	Removing toothed belt from camshaft	156
4	Valve gear	163
4.1	Assembly overview – valve gear	163
4.2	Measuring axial play of camshaft	165
4.3	Removing and installing camshaft oil seal	165
4.4	Checking hydraulic compensation elements	167
4.5	Removing and installing valve stem seal	168
5	Inlet and exhaust valves	179
5.1	Checking valve guides	179
5.2	Checking valves	179
17 - Lubrication	181	
1	Safety and repair instructions	181
1.1	Safety information	181
1.2	Repair instructions	181
2	Sump, oil pump	182



2.1	Assembly overview – sump/oil pump	182
2.2	Engine oil:	184
2.3	Removing and installing upper part of sump	185
2.4	Removing and installing lower part of sump	190
2.5	Removing and installing oil pump	195
2.6	Removing and installing oil level and oil temperature sender [G266]	195
3	Engine oil cooler	197
3.1	Removing and installing engine oil cooler	197
4	Oil filter, oil pressure switch	198
4.1	Assembly overview - oil filter housing, oil pressure switch	198
4.2	Assembly overview - oil pressure switches/oil pressure control	200
4.3	Removing and installing oil pressure sender [G10]	201
4.4	Checking oil pressure	202
4.5	Checking oil pressure sender [G10]	203
4.6	Removing and installing oil filter housing	203
4.7	Removing and installing oil pressure regulating valve [N428]	205
4.8	Removing and installing piston cooling jet control valve [N522]	206
5	Oil circuit	207
5.1	Removing and installing oil supply line	207
5.2	Removing and installing oil return line for turbocharger	210
19 - Cooling	213	
1	Safety and repair instructions	213
1.1	Safety information	213
1.2	Repair instructions	213
2	Cooling system, coolant	214
2.1	Connection diagram for coolant hoses	214
2.2	Checking cooling system for leaks	219
2.3	Checking filling quality of cooling system	221
2.4	Removing and installing coolant expansion tank	224
2.5	Draining coolant	226
2.6	Fill the cooling system	228
2.7	Flushing cooling system	237
2.8	Checking coolant level and topping up	250
2.9	Removing and installing cap for cooling system in cylinder block	251
3	Coolant pump, regulation of cooling system	253
3.1	Summary of components: coolant pump/thermostat	253
3.2	Summary of components: coolant pump/thermostat, engine code DTUA	254
3.3	Summary of components - electric coolant pump	256
3.4	Assembly overview – coolant temperature sender	258
3.5	Removing and installing electric coolant pump	259
3.6	Removing and installing coolant pump	266
3.7	Removing and installing coolant distributor	267
3.8	Removing and installing coolant regulating valve [N515]	269
3.9	Removing and installing coolant temperature sender [G62]	270
3.10	Removing and installing engine outlet coolant temperature sender [G82]	272
3.11	Removing and installing coolant temperature sender for charge air cooler [G1130]	273
4	Coolant pipes	275
4.1	Assembly overview – coolant pipes	275
4.2	Removing and installing coolant pipes	275
4.3	Removing and installing upper coolant pipes	280
5	Radiator, radiator fan	282
5.1	Summary of components: radiator	282
5.2	Assembly overview - radiator cowl and radiator fan	286
5.3	Removing and installing radiator	286



5.4	Removing and installing charge air cooling circuit radiator, Superb III	291
5.5	Removing and installing the charge air cooling circuit radiator	297
5.6	Removing and installing charge air cooling circuit radiator, Kodiaq	303
5.7	Removing and installing charge air cooling circuit radiator, Karoq	308
5.8	Removing and installing radiator cowl	312
5.9	Removing and installing radiator fan 2 [V177]	314
5.10	Removing and installing radiator fan VX57	314
5.11	Removing and installing radiator blind	315
5.12	Removing and installing radiator blind control motor [V544]	317
5.13	Assembly overview - radiator blind	322
21	- Turbocharging/supercharging	324
1	Safety and repair instructions	324
1.1	Safety information	324
1.2	Repair instructions	324
2	Exhaust gas turbocharger	325
2.1	Overview of components: exhaust gas turbocharger	325
2.2	Removing and installing turbocharger	331
2.3	Removing and installing charge pressure regulator -V465, engine codes DSUD, DTRA, DTRB, DTRD, DXRC	335
2.4	Removing and installing charge pressure regulator -V465, engine codes DXNB, DTUA	339
2.5	Removing and installing charge pressure regulator -V465, engine codes DSRA, DSRB, DTSA, DTSB, DTTA, DTTC, DXPA, DXRB	343
2.6	Removing and installing connection for turbocharger	346
3	Charging system	348
3.1	Assembly overview – charge air system	348
3.2	Removing and installing charge pressure sender [GX26]	348
3.3	Checking charge air system for leaks	348
3.4	Checking charge air cooler for leaks	351
3.5	Removing and installing air intake pipe	354
3.6	Charge air hose connections	356
23	- Mixture preparation - injection	357
1	Safety and repair instructions	357
1.1	Safety information	357
1.2	Repair instructions	357
2	Injection system	358
2.1	Schematic overview - fuel system	358
2.2	Installation location overview: injection system	359
2.3	Filling/bleeding fuel system	369
2.4	Checking fuel system for leaks	370
3	Injection units/high pressure reservoir (rail)	371
3.1	Assembly overview – injectors	371
3.2	Assembly overview - fuel rail	371
3.3	Adapting correction values for injectors	373
3.4	Testing injectors	374
3.5	Checking return flow rate of injectors with engine running	374
3.6	Checking return flow rate of injectors at starter speed	376
3.7	Checking open injectors	378
3.8	Removing and installing injectors	380
3.9	Removing and installing high pressure lines	383
3.10	Removing and installing fuel rail	389
4	Air filter	392
4.1	Assembly overview – air filter housing	392
4.2	Removing and installing air filter housing	394



4.3	Removing and installing air guide on lock carrier	396
5	Intake manifold	398
5.1	Assembly overview – intake manifold	398
5.2	Removing and installing intake manifold	402
5.3	Removing and installing throttle valve module [GX3]	406
6	Senders and sensors	409
6.1	Actuator for structure-borne noise and control unit for structure-borne noise	409
6.2	Removing and installing fuel pressure regulating valve [N276]	412
6.3	Checking fuel pressure regulating valve N276	414
6.4	Removing and installing fuel pressure sender [G247]	414
6.5	Removing and installing air mass measurement module [GX35]	416
6.6	Removing and installing pressure differential sender [G505]	417
6.7	Removing and installing NOx sender 2 [G687]	419
6.8	Removing and installing NOx sender 3 G932	421
6.9	Removing and installing NOx sender [G295]	422
6.10	Removing and installing charge air temperature sender before charge air cooler [G810] ..	424
6.11	Removing and installing charge air temperature sender after charge air cooler [G811] ..	424
6.12	Removing and installing particulate sensor G784	425
6.13	Removing and installing temperature and pressure sender for low-pressure fuel system [GX20]	426
7	Engine control unit	428
7.1	Assembly overview – motor control unit	428
7.2	Removing and installing engine control unit -J623	428
8	High pressure pump	433
8.1	Assembly overview – high-pressure pump	433
8.2	Removing and installing high-pressure pump	433
9	Lambda probe	437
9.1	Assembly overview – lambda probe	437
9.2	Removing and installing lambda probe	438
26 - Exhaust system	440	
1	Safety and repair instructions	440
1.1	Safety information	440
1.2	Repair instructions	440
2	Exhaust pipes/silencers	441
2.1	Summary of components: silencer, Superb III, Superb IV	441
2.2	Summary of components: silencers, Superb III, DTUA	441
2.3	Summary of components: silencers, Octavia IV	442
2.4	Summary of components: silencers, Octavia IV, DTUA	443
2.5	Summary of components: silencers, Kodiaq	444
2.6	Assembly overview: silencers, Kodiaq II	445
2.7	Summary of components: silencer, Karoq	446
2.8	Summary of components: pre-exhaust pipe, vehicles with four-wheel drive	447
2.9	Summary of components: pre-exhaust pipe, vehicles with front-wheel drive	449
2.10	Separating exhaust pipes from silencers	451
2.11	Removing and installing silencers, Superb III, Superb IV	452
2.12	Removing and installing silencers, vehicles with front wheel drive, Octavia IV	454
2.13	Removing and installing silencers, vehicles with four-wheel drive, Octavia IV	457
2.14	Removing and installing silencers, Kodiaq	459
2.15	Removing and installing silencers, vehicles with four-wheel drive, Karoq	460
2.16	Removing and installing silencers, vehicles with four-wheel drive, Karoq	462
2.17	Aligning exhaust system free of stress	463
2.18	Checking exhaust system for leaks	464
2.19	Removing and installing ammonia traps	464
2.20	Installation position of clamp	467



3	Cleansing exhaust emissions	469
3.1	Assembly overview – emission control	469
3.2	Assembly overview – exhaust flap control unit	472
3.3	Removing and installing emission control module	473
3.4	Removing and installing exhaust flap control unit [J883]	480
4	SCR system (Selective Catalytic Reduction)	482
4.1	Installation location overview: SCR system (Selective Catalytic Reduction), vehicles with four-wheel drive	482
4.2	Installation location overview - SCR system (Selective Catalytic Reduction), vehicles with front-wheel drive and multi-link rear axle	483
4.3	Installation location overview - SCR system (Selective Catalytic Reduction), vehicles with torsion beam axle	484
4.4	Summary of components: reduction agent tank, Superb II	485
4.5	Summary of components: reduction agent tank, Superb IV	487
4.6	Summary of components: reduction agent tank, Octavia IV	488
4.7	Summary of components: reduction agent tank, Kodiaq, Kodiaq II	490
4.8	Summary of components: reduction agent tank, vehicles with front-wheel drive, Karoq	492
4.9	Summary of components: reduction agent tank, vehicles with four-wheel drive, Karoq	494
4.10	Assembly overview - reducing agent supply line, front part	496
4.11	Summary of components: delivery line for reduction agent, centre part	498
4.12	Summary of components: delivery line for reduction agent, rear part	500
4.13	Assembly overview - delivery module for reducing agent	500
4.14	Assembly overview – injector for reducing agent [N474]	502
4.15	Assembly overview – injector 2 for reducing agent [N758]	503
4.16	Removing and installing the reduction agent tank, Superb III	504
4.17	Removing and installing the reduction agent tank, Superb IV	506
4.18	Removing and installing the reduction agent tank, Octavia IV	509
4.19	Removing and installing reduction agent tank, Kodiaq, Kodiaq II	512
4.20	Removing and installing reduction agent tank, Karoq	514
4.21	Removing and installing delivery module for reducing agent	516
4.22	Removing and installing injector for reduction agent [N474]	518
4.23	Removing and installing injector 2 for reducing agent [N758]	520
4.24	Removing and installing the control unit for the reduction agent heating system -J891, Superb III	521
4.25	Removing and installing the control unit for the reduction agent heating system -J891, Superb IV	522
4.26	Removing and installing the control unit for the reduction agent heating system -J891, Octavia IV	523
4.27	Removing and installing the control unit for the reduction agent heating system -J891, Kodiaq	524
4.28	Removing and installing the control unit for the reduction agent heating system -J891, Kodiaq II	525
4.29	Removing and installing the control unit for the reduction agent heating system -J891, vehicles with four-wheel drive, Karoq	525
4.30	Removing and installing the control unit for the reduction agent heating system -J891, vehicles with front-wheel drive, Karoq	526
4.31	Draining reducing agent tank	528
4.32	Removing and installing front section of reducing agent supply line	530
4.33	Removing and installing the centre part of the delivery line for reduction agent	535
4.34	Removing and installing the centre part of the delivery line for reduction agent	537
4.35	Removing and installing the filler pipe for the reduction agent tank, Superb III, Superb IV	539
4.36	Removing and installing the filler pipe for the reduction agent tank, Octavia IV	541
4.37	Removing and installing the filler tube for reduction agent tank, Kodiaq	544
4.38	Removing and installing filler tube for reduction agent tank, vehicles with four-wheel drive, Karoq	546
4.39	Removing and installing filler tube for reduction agent tank, vehicles with front-wheel drive, Karoq	549
4.40	Disconnecting reducing agent supply line	552



5	Exhaust temperature regulation	557
5.1	Specified torque actual dimension	557
5.2	Assembly overview – exhaust gas temperature regulation	557
5.3	Removing and installing exhaust gas temperature sender 1 [G235]	558
5.4	Removing and installing exhaust gas temperature sender 2 [G448]	560
5.5	Removing and installing exhaust gas temperature sender 3 [G495]	561
5.6	Removing and installing exhaust gas temperature sender 4 [G648]	563
6	Exhaust gas recirculation	566
6.1	Summary of components: exhaust gas recirculation	566
6.2	Removing and installing exhaust gas recirculation cooler	568
6.3	Removing and installing exhaust gas recirculation valve 1 [GX5]	570
6.4	Removing and installing exhaust gas recirculation valve 2 [GX6]	570
6.5	Removing and installing exhaust gas recirculation temperature sensor [G98]/[G690]	572
6.6	Checking exhaust gas recirculation cooler for leaks	574
28 - Ignition system	579	
1	Safety and repair instructions	579
1.1	Safety information	579
1.2	Repair instructions	579
2	Glow Plug System	580
2.1	Assembly overview – glow plug system	580
2.2	Removing and installing glow plug	581
2.3	Removing and installing automatic glow period control unit [J179]	584
2.4	Removing and installing Hall sender [G40]	585
2.5	Removing and installing engine speed sender [G28]	585