



Contents

00 - Technical data	1
1 Technical data	1
1.1 Engine number	1
1.2 Engine data	1
10 - Removing and installing engine	3
1 Removing and installing engine	3
1.1 Removing engine	3
1.2 Separating gearbox from engine and assembling	16
1.3 Securing engine on engine and gearbox support VAS 6095	19
1.4 Notes on installing	20
2 Assembly mounting, except Jetta 2011 ▶	24
2.1 Assembly overview - assembly mountings	24
2.2 Checking adjustment of engine assembly mountings	27
2.3 Adjusting assembly mountings	27
3 Assembly mounting, Jetta 2011 ▶	33
3.1 Assembly overview - assembly mountings	33
3.2 Removing and installing engine mounting	35
3.3 Removing and installing gearbox mounting	40
3.4 Removing and installing pendulum support	42
3.5 Supporting engine in installation position	43
3.6 Adjusting assembly mountings	48
3.7 Checking adjustment of assembly mountings	49
13 - Crankshaft group	51
1 Dismantling and assembling engine	51
1.1 Assembly overview - poly V-belt drive	51
1.2 Removing and installing poly-V belt	52
1.3 Removing and installing poly V-belt tensioner	54
1.4 Removing and installing bracket for ancillaries	56
1.5 Assembly overview - toothed belt drive	57
1.6 Removing and installing engine bracket	60
1.7 Assembly overview - cylinder block	63
2 Removing and installing sealing flange and flywheel	66
2.1 Renewing crankshaft sealing flange - flywheel end	67
2.2 Renewing crankshaft oil seal - pulley end	78
2.3 Removing and installing sealing flange - pulley end	81
2.4 Removing and installing engine speed sender G28	85
3 Pistons and conrods	88
3.1 Assembly overview - pistons and conrods	88
3.2 Removing and installing pistons	92
3.3 Separating new conrods	93
3.4 Bearing shells - installation position	94
3.5 Piston and cylinder dimensions	95
3.6 Checking piston projection at TDC	95
4 Crankshaft	97
4.1 Assembly overview - crankshaft	97
4.2 Crankshaft dimensions	98
4.3 Pulling needle bearing out of and driving into crankshaft	99
15 - Cylinder head, valve gear	102
1 Cylinder head	102



1.1	Assembly overview - cylinder head cover	102
1.2	Removing and installing Hall sender G40	104
1.3	Removing and installing engine cover	107
1.4	Removing and installing cylinder head cover	108
1.5	Assembly overview - cylinder head	114
1.6	Removing, installing and tensioning toothed belt	117
1.7	Removing and installing cylinder head	126
1.8	Removing and installing vacuum pump	151
1.9	Checking compression	153
2	Valve gear	155
2.1	Assembly overview - valve gear	155
2.2	Removing and installing camshafts	157
2.3	Removing and installing camshaft oil seal	166
2.4	Renewing valve stem seals (with cylinder head installed)	168
2.5	Checking valve guides	172
17	Lubrication	174
1	Engine oil:	174
1.1	Oil capacities	174
1.2	Checking engine oil level	174
2	Parts of lubrication system (engine codes CBEA)	176
2.1	Assembly overview - oil pump, sump, balance shaft module	176
2.2	Removing and installing oil sump	179
2.3	Removing and installing oil pump	183
2.4	Removing and installing balance shaft module	184
2.5	Pulling spur gear off crankshaft and shrink-fitting new spur gear	192
3	Parts of lubrication system (engine codes CBDA, CBDB, CEGA, CJAA)	196
3.1	Assembly overview - oil pump, sump	196
3.2	Removing and installing oil sump	198
3.3	Removing and installing oil pump	203
4	Oil filter bracket, oil cooler, oil pressure and oil supply line	204
4.1	Assembly overview - oil filter bracket and oil cooler	204
4.2	Removing and installing oil filter bracket together with oil cooler	206
4.3	Removing and installing oil supply line to turbocharger	209
4.4	Checking oil pressure and oil pressure switch F1	212
19	Cooling	216
1	Parts of cooling system	216
1.1	Assembly overview - parts of cooling system, body side	217
1.2	Parts of cooling system - engine side	219
1.3	Coolant hose connection diagram	225
1.4	Removing and installing cowling together with radiator fan V7 and radiator fan on right of radiator V35	229
1.5	Removing and installing radiator	231
1.6	Removing and installing coolant pump	232
1.7	Removing and installing thermostat	234
1.8	Removing and installing 4/2-way valve with thermostat	235
1.9	Draining and adding coolant	238
1.10	Checking cooling system for leaks	243
1.11	Checking oil cooler for leaks	245
1.12	Engine preheater (engine codes CBEA, CJAA)	248
20	Fuel supply system	251
1	Safety regulations for working on fuel supply	251
2	Rules for cleanliness	252



3	Procedure in event of misfuelling	253
3.1	Step 1 (Engine was started with incorrect fuel)	253
3.2	Step 2 (Engine was not started with incorrect fuel)	254
3.3	Step 3 (There are filings in fuel delivery unit and fuel tank)	256
3.4	Step 4 (There are no filings in fuel delivery unit and fuel tank)	256
3.5	Step 5 (There are filings in high-pressure pump)	257
3.6	Step 6 (There are no filings in high-pressure pump)	257
4	Parts of fuel supply system	259
4.1	Assembly overview - fuel tank, all vehicles apart from Jetta from MY 2011	260
4.2	Assembly overview - fuel tank, only Jetta from MY 2011	262
4.3	Emptying fuel tank	264
4.4	Removing and installing fuel tank	268
4.5	Removing and installing fuel delivery unit	273
4.6	Removing and installing fuel gauge sender G	277
5	Separating plug-in connectors	279
6	Repairing fuel supply	285
6.1	Assembly overview - fuel filter	285
6.2	Removing and installing fuel filter	286
6.3	Checking fuel system pressurisation pump G6	288
6.4	Checking supplementary fuel pump V393 (inline electronic fuel pump)	294
6.5	Removing and installing supplementary fuel pump V393 (inline electronic fuel pump)	297
7	Electronic power control (EPC)	300
7.1	Function of EPC system	300
7.2	Assembly overview - accelerator module	300
7.3	Removing and installing accelerator pedal module	301
21	Turbocharging/supercharging	304
1	Safety precautions when working on charge air system and turbocharger	304
2	Rules for cleanliness	305
3	Turbocharger	306
3.1	Assembly overview - turbocharger with exhaust manifold and attachments	306
3.2	Removing and installing turbocharger with exhaust manifold (engine codes CBEA, CJAA)	312
3.3	Removing and installing turbocharger with exhaust manifold (engine codes CBDA, CBDB, CEGA)	315
3.4	Changing vacuum unit with position sender for charge pressure positioner G581.	318
3.5	Removing and installing exhaust gas temperature sender G235	326
4	Charge air system	330
4.1	Assembly overview - parts of charge air cooling	331
4.2	Dismantling and assembling plug-in connector between charge air cooler and connecting hose	333
4.3	Checking charge air system for leaks	335
4.4	Vacuum hose schematic diagram (engine codes CBEA, CJAA)	338
4.5	Vacuum hose schematic diagram, (engine codes CBDA, CBDB, CEGA)	339
4.6	Checking vacuum system	340
23	Mixture preparation - injection	345
1	Observe safety precautions when working on diesel direct injection fuel system	345
2	Rules for cleanliness	347
3	Diesel direct injection system	348
3.1	System layout	349
3.2	Assembly overview - fuel system	352
3.3	Removing and installing injector (piezo injector)	355
3.4	Checking fuel pressure regulating valve N276	362
3.5	Removing and installing fuel pressure regulating valve N276	363



3.6	Removing and installing fuel pressure sender G247	365
3.7	Removing and installing fuel system high-pressure pump	367
3.8	Filling/bleeding fuel system	372
3.9	Checking for leaks in the fuel system	373
3.10	Checking pressure retention valve in fuel return line	373
3.11	Assembly overview - intake manifold with attachments	375
3.12	Removing and installing intake manifold	376
3.13	Assembly overview - air filter	380
3.14	Removing and installing air filter housing	383
3.15	Removing and installing air filter element	384
3.16	Checking changeover flap for intake air preheating	386
3.17	Removing and installing changeover flap for intake air preheating	388
3.18	Removing and installing air mass meter G70	390
4	Engine control unit (engine codes CBEA, CJAA)	392
4.1	Removing and installing engine control unit J623 with no anti-theft device, all vehicles apart from Jetta from MY 2011	392
4.2	Removing and installing engine control unit J623 with anti-theft device, all vehicles apart from Jetta from MY 2011	394
4.3	Removing and installing engine control unit J623, only Jetta from MY 2011	398
5	Engine control unit (engine codes CBDA, CBDB, CEGA)	401
5.1	Removing and installing engine control unit J623 with no theft protection	401
5.2	Removing and installing engine control unit J623 with theft protection	403
26	- Exhaust system	407
1	Exhaust system (engine codes CBEA, CJAA)	407
1.1	Assembly overview – particulate filter with NOx storage catalytic converter	407
1.2	Note installation position of securing clamps and exhaust gas temperature sender	413
1.3	Removing and installing particulate filter with NOx storage catalytic converter	415
1.4	Removing and installing NOx storage catalytic converter	427
1.5	Assembly overview - exhaust flap control unit J883 with SCR catalytic converter	428
1.6	Routing cables/lines of components for exhaust system	430
1.7	Assembly overview - silencers	432
1.8	Separating and joining exhaust system	436
1.9	Aligning exhaust system free of stress	438
1.10	Checking exhaust system for leaks	440
1.11	Installation position of clamp	440
2	Exhaust system (engine codes CBDA, CBDB, CEGA)	443
2.1	Assembly overview - front exhaust pipe with particulate filter	443
2.2	Removing and installing particulate filter	446
2.3	Assembly overview - silencers	452
2.4	Cutting exhaust pipe	452
2.5	Aligning exhaust system free of stress	453
3	Exhaust gas recirculation	455
3.1	Assembly overview – exhaust gas recirculation	455
3.2	Removing and installing exhaust gas recirculation filter	459
3.3	Removing and installing exhaust gas recirculation cooler, engine codes CBDA, CBDB, CEGA	461
3.4	Removing and installing exhaust gas recirculation cooler, engine code CJAA	466
3.5	Checking exhaust gas recirculation cooler for leaks	468
3.6	Removing and installing temperature sensor for exhaust gas recirculation	473
3.7	Cleaning exhaust gas recirculation system	478
28	- Glow plug system	486
1	Glow plugs	486
1.1	Removing and installing glow plug	486
1.2	Removing and installing connectors for glow pin plugs	490