



## Contents

<b>00 - Technical data</b> .....	<b>1</b>
<b>1 Technical data</b> .....	<b>1</b>
1.1 Engine number .....	1
1.2 Engine data .....	1
<b>10 - Removing and installing engine</b> .....	<b>2</b>
<b>1 Removing and installing engine</b> .....	<b>2</b>
1.1 Removing and installing engine cover .....	2
1.2 Removing engine .....	3
1.3 Separating gearbox from engine and assembling .....	11
1.4 Securing engine on engine and gearbox support VAS 6095 .....	12
1.5 Notes on installing .....	14
<b>2 Assembly mounting, except Jetta 2011 ►</b> .....	<b>17</b>
2.1 Assembly mountings .....	17
2.2 Checking adjustment of engine assembly mountings .....	19
2.3 Adjusting assembly mountings .....	19
<b>3 Assembly mounting, Jetta 2011 ►</b> .....	<b>23</b>
3.1 Assembly overview - assembly mountings .....	23
3.2 Removing and installing engine mounting .....	24
3.3 Removing and installing gearbox mounting .....	27
3.4 Removing and installing pendulum support .....	29
3.5 Supporting engine in installation position .....	30
3.6 Adjusting assembly mountings .....	34
3.7 Checking adjustment of assembly mountings (engine and gearbox mountings) .....	35
<b>13 - Crankshaft group</b> .....	<b>36</b>
<b>1 Dismantling and assembling engine</b> .....	<b>36</b>
1.1 Assembly overview - poly V-belt drive .....	36
1.2 Removing and installing poly V-belt without air conditioner compressor .....	39
1.3 Removing and installing poly V-belt with idler roller and air conditioner compressor .....	40
1.4 Removing and installing poly V-belt with tensioning element .....	41
1.5 Removing and installing tensioning element for poly V-belt .....	42
1.6 Removing and installing vibration damper .....	44
1.7 Removing and installing bracket for ancillaries .....	44
1.8 Assembly overview - toothed belt drive .....	46
1.9 Removing and installing engine bracket .....	48
1.10 Assembly overview - crankcase .....	51
<b>2 Removing and installing sealing flange and flywheel</b> .....	<b>53</b>
2.1 Assembly overview - cylinder block, gearbox end .....	53
2.2 Removing and installing dual-mass flywheel .....	55
2.3 Renewing crankshaft sealing flange, flywheel end .....	56
2.4 Renewing crankshaft oil seal, pulley end .....	64
2.5 Removing and installing sealing flange - pulley end .....	66
2.6 Removing and installing engine speed sender G28 .....	69
<b>3 Pistons and conrods</b> .....	<b>71</b>
3.1 Assembly overview - pistons and conrods .....	71
3.2 Separating new conrod .....	74
3.3 Piston and cylinder dimensions .....	74
3.4 Checking piston projection at TDC .....	74
<b>4 Crankshaft</b> .....	<b>77</b>
4.1 Assembly overview - crankshaft .....	77
4.2 Renewing needle bearing in crankshaft, vehicles with dual clutch gearbox only .....	78



4.3	Crankshaft dimensions	79
<b>15</b>	<b>- Cylinder head, valve gear</b>	<b>80</b>
<b>1</b>	<b>Cylinder head</b>	<b>80</b>
1.1	Assembly overview - cylinder head cover	80
1.2	Removing and installing Hall sender G40	81
1.3	Removing and installing cylinder head cover	83
1.4	Removing and installing injector seals	89
1.5	Assembly overview - cylinder head	89
1.6	Removing, installing and tensioning toothed belt	92
1.7	Removing and installing cylinder head	106
1.8	Removing and installing vacuum pump	118
1.9	Checking compression	118
<b>2</b>	<b>Valve gear</b>	<b>120</b>
2.1	Assembly overview - valve gear	120
2.2	Checking valve guides	121
2.3	Renewing valve stem seals	122
2.4	Removing and installing camshafts	126
2.5	Checking hydraulic compensation elements	133
2.6	Removing and installing camshaft oil seal	133
<b>17</b>	<b>- Lubrication</b>	<b>136</b>
<b>1</b>	<b>Engine oil:</b>	<b>136</b>
1.1	Oil capacities	136
1.2	Checking engine oil level	136
<b>2</b>	<b>Parts of lubrication system</b>	<b>137</b>
2.1	Assembly overview - oil pump, sump	137
2.2	Removing and installing sump	139
<b>3</b>	<b>Oil filter bracket, oil pressure, engine oil cooler and oil supply line</b>	<b>143</b>
3.1	Assembly overview - oil filter bracket and engine oil cooler	143
3.2	Checking oil pressure and oil pressure switch	144
<b>4</b>	<b>Oil supply line and turbocharger support</b>	<b>147</b>
4.1	Assembly overview - oil supply line and turbocharger support	147
4.2	Removing and installing oil supply line and turbocharger support	147
<b>19</b>	<b>- Cooling</b>	<b>153</b>
<b>1</b>	<b>Parts of cooling system</b>	<b>153</b>
1.1	Assembly overview - parts of cooling system, body side	154
1.2	Assembly overview - parts of cooling system, engine side	156
1.3	Connection diagram for coolant hoses - not for Jetta from MY 2011	158
1.4	Connection diagram for coolant hoses (vehicles with 4/2-way valve) - not for Jetta from MY 2011	159
1.5	Connection diagram for coolant hoses (vehicles with 4/2-way valve) - only for Jetta from MY 2011	159
1.6	Assembly overview - coolant pump and thermostat	161
1.7	Assembly overview - coolant pump and 4/2-way valve with thermostat	162
<b>2</b>	<b>Repairing cooling system</b>	<b>163</b>
2.1	Removing and installing cowling with radiator fan V7 and radiator fan 2 V177	163
2.2	Draining and adding coolant	164
2.3	Removing and installing radiator	169
2.4	Removing and installing coolant pump	171
2.5	Removing and installing thermostat	172
2.6	Checking thermostat	174
2.7	Removing and installing 4/2-way valve with thermostat	174
2.8	Checking cooling system for leaks	180



2.9	Checking engine oil cooler for leaks	182
<b>20</b>	<b>Fuel supply system</b>	<b>184</b>
1	Safety measures when working on fuel supply	184
2	Rules for cleanliness	185
3	Procedure should vehicle be misfueled	186
3.1	Step 1 (Engine was started with incorrect fuel)	186
3.2	Step 2 (Engine was not started with incorrect fuel)	187
3.3	Step 3 (There are filings in fuel delivery unit and fuel tank)	188
3.4	Step 4 (There are no filings in fuel delivery unit and fuel tank)	189
3.5	Step 5 (There are filings in high-pressure pump)	189
3.6	Step 6 (There are no filings in high-pressure pump)	189
4	Parts of fuel supply system	190
4.1	Assembly overview - fuel tank, all vehicles apart from Jetta from MY 2011	190
4.2	Assembly overview - fuel tank, only Jetta from MY 2011	192
4.3	Emptying fuel tank	194
4.4	Removing and installing fuel tank	197
4.5	Removing and installing fuel delivery unit	200
4.6	Removing and installing fuel gauge sender	204
5	Repairing fuel supply	206
5.1	Assembly overview - fuel filter, all vehicles but Jetta from MY 2011	206
5.2	Assembly overview - fuel filter, only Jetta from MY 2011	208
5.3	Removing and installing fuel filter	208
5.4	Removing and replacing fuel hoses in engine compartment, 6.0 bar low pressure fuel system	211
5.5	Assembly overview - fuel filter, 6.0 bar low pressure fuel system	212
5.6	Removing and installing fuel filter, 6.0 bar low pressure fuel system	213
5.7	Checking fuel pump (pressurisation pump) G6 / fuel pump 2 V277	214
5.8	Checking fuel pump - vehicles with 6.0 bar low pressure fuel system	220
6	Electronic power control (EPC)	232
6.1	Function of EPC system	232
6.2	Assembly overview - accelerator module	232
6.3	Removing and installing accelerator pedal module	233
<b>21</b>	<b>Turbocharging/supercharging</b>	<b>236</b>
1	Safety precautions when working on charge air system and turbocharger	236
2	Rules for cleanliness	237
3	Turbocharger	238
3.1	Assembly overview - turbocharger	238
3.2	Tightening exhaust gas temperature sender 1 G235	241
3.3	Removing and installing turbocharger	242
4	Charge air system	250
4.1	Assembly overview - charge air system	250
4.2	Removing and installing charge air cooler	251
4.3	Assembly overview - charge-air hose connections	253
4.4	Vacuum hose connection diagram	256
4.5	Checking charge air system for leaks	257
4.6	Checking vacuum system	260
<b>23</b>	<b>Mixture preparation - injection</b>	<b>263</b>
1	Observe safety precautions when working on diesel direct injection fuel system	263
2	Rules for cleanliness	264
3	Instructions for working on fuel system	265
4	Diesel direct injection system	267



4.1	System layout	268
4.2	Assembly overview - fuel system	270
4.3	Assembly overview - installation position of clamp	275
4.4	Removing and installing injectors (piezo injectors)	276
4.5	Removing and installing fuel rail	280
4.6	Removing and installing high-pressure lines	284
4.7	Checking fuel pressure regulating valve N276	289
4.8	Removing and installing fuel pressure regulating valve N 276	290
4.9	Removing and installing fuel pressure sender G247	292
4.10	Removing and installing high-pressure pump	294
4.11	Filling/bleeding high-pressure pump/fuel system	300
4.12	Checking for leaks in the fuel system	301
4.13	Check pressure retention valve in fuel return line	302
4.14	Checking injectors (piezo injectors) with vacuum	303
4.15	Assembly overview - intake manifold with attachments (vehicles with intake manifold flap V157 )	305
4.16	Assembly overview - intake manifold with attachments, vehicles without intake manifold flap	307
4.17	Removing and installing intake manifold (vehicle with intake manifold flap V157 )	308
4.18	Removing and installing throttle valve module J338	311
4.19	Assembly overview - air filter	312
4.20	Removing and installing air filter housing	314
4.21	Removing and installing air filter element	315
4.22	Removing and installing air mass meter G70	317
<b>5</b>	<b>Engine control unit</b>	<b>319</b>
5.1	Removing and installing engine control unit J623 with no anti-theft device, all vehicles apart from Jetta from MY 2011	319
5.2	Removing and installing engine control unit J623 with anti-theft device, all vehicles apart from Jetta from MY 2011	321
5.3	Removing and installing engine control unit J623 , only Jetta from MY 2011	324
<b>26</b>	<b>- Exhaust system</b>	<b>327</b>
<b>1</b>	<b>Exhaust system</b>	<b>327</b>
1.1	Assembly overview - particulate filter, all vehicles apart from Jetta from MY 2011	327
1.2	Assembly overview - particulate filter, only Jetta from MY 2011	330
1.3	Tightening exhaust gas temperature sender 3 G495	331
1.4	Removing and installing pressure differential sender G 505	332
1.5	Assembly overview - front exhaust pipe with catalytic converter	335
1.6	Removing and installing particulate filter	337
1.7	Assembly overview - silencers	345
1.8	Separating exhaust system	345
1.9	Aligning exhaust system free of stress	347
1.10	Installation position of clamp	348
<b>2</b>	<b>Exhaust gas recirculation</b>	<b>349</b>
2.1	Assembly overview - exhaust gas recirculation	349
2.2	Checking changeover for exhaust gas recirculation cooler	350
2.3	Removing and installing exhaust gas recirculation cooler	351
2.4	Checking exhaust gas recirculation cooler for leaks	354
2.5	Cleaning exhaust gas recirculation system	357
<b>28</b>	<b>- Glow plug system</b>	<b>364</b>
<b>1</b>	<b>Glow plug system</b>	<b>364</b>
1.1	Removing and installing glow plug	364
1.2	Checking glow plugs	366