



Contents

00 - Technical data	1
1 Engine number	1
2 Engine data	2
10 - Removing and installing engine	3
1 Removing and installing engine	3
1.1 Removing engine	4
1.2 Installing engine	8
13 - Crankshaft group	11
1 Dismantling and assembling engine	11
1.1 Assembly overview	11
1.2 Removing and installing poly-V belt	16
2 Removing and installing sealing flanges and flywheel or drive plate	19
2.1 Assembly overview - sealing flange	19
2.2 Renewing crankshaft oil seal (belt pulley end)	20
2.3 Removing and installing sealing flange (belt pulley end)	23
2.4 Removing and installing crankshaft sealing flange (flywheel end)	25
2.5 Removing and installing flywheel	29
2.6 Removing and installing drive plate	29
3 Crankshaft	32
3.1 Assembly overview - crankshaft	32
3.2 Crankshaft dimensions	34
3.3 Renewing needle bearing in crankshaft	34
4 Dismantling and assembling pistons and conrods	37
4.1 Assembly overview - pistons and conrods	37
4.2 Checking pistons, piston rings and cylinder bores	39
4.3 Piston and cylinder dimensions	40
15 - Cylinder head, valve gear	41
1 Cylinder head	41
1.1 Assembly overview - cylinder head	41
1.2 Removing and installing cylinder head	44
1.3 Removing, installing and tensioning toothed belt	48
1.4 Checking semi-automatic toothed belt tensioner	55
1.5 Compression test	55
2 Repairing valve gear	58
2.1 Assembly overview - valve gear	58
2.2 Valve dimensions	60
2.3 Reworking valve seats	60
2.4 Checking valve guides	62
2.5 Renewing camshaft oil seal	62
2.6 Removing and installing camshaft	65
2.7 Renewing valve stem seals	70
2.8 Checking supporting elements with hydraulic clearance compensation	73
17 - Lubrication	74
1 Parts of lubrication system	74
1.1 Engine oil:	74
1.2 Assembly overview - parts of lubrication system	75
1.3 Removing and installing sump	80
1.4 Removing and installing oil pump	81



1.5	Checking oil pressure and oil pressure switch	82
19 - Cooling	84
1	Removing and installing parts of cooling system	84
1.1	Assembly overview - parts of cooling system, engine side, engine codes BGU, BSE, BSF	84
1.2	Assembly overview - parts of cooling system, engine side, engine codes CCSA, CMXA ..	86
1.3	Assembly overview - parts of cooling system, body side (radiator with 2 radiator fans) ..	87
1.4	Assembly overview - parts of cooling system, body side (radiator with one radiator fan) ..	89
1.5	Coolant hose schematic diagram - engine codes BGU, BSE and BSF	90
1.6	Coolant hose schematic diagram - engine codes CCSA, CMXA	91
1.7	Draining and adding coolant	92
1.8	Removing and installing coolant pump	97
1.9	Removing and installing thermostat	99
1.10	Removing and installing radiator fan V7 and radiator fan 2 V177	100
1.11	Removing and installing radiator	102
1.12	Checking cooling system for leaks	104
2	Assembly overview - engine preheating (engine codes CCSA, CMXA)	107
20 - Fuel supply system	108
1	Fuel	108
1.1	Safety regulations for working on fuel supply	108
1.2	Rules for cleanliness	108
1.3	Assembly overview - fuel tank	108
1.4	Emptying fuel tank	110
1.5	Removing and installing fuel tank	115
2	Repairing fuel supply	118
2.1	Safety regulations for working on fuel supply	118
2.2	Rules for cleanliness	119
2.3	Removing and installing fuel delivery unit	119
2.4	Removing and installing fuel gauge sender G	122
2.5	Assembly overview - fuel filter with attachments	123
2.6	Removing and installing fuel filter	124
2.7	Checking fuel pump	125
2.8	Bleeding fuel system	138
3	Electronic power control (EPC)	141
3.1	Function of the electronic throttle	141
3.2	Assembly overview - accelerator module	141
3.3	Removing and installing accelerator pedal module	142
4	Activated charcoal filter system	145
4.1	Function	145
4.2	Assembly overview - activated charcoal filter system	145
4.3	Checking fuel tank breather	146
24 - Mixture preparation - injection	148
1	Injection system	148
1.1	General notes on injection	148
1.2	Safety precautions	149
1.3	Rules for cleanliness	149
1.4	Technical data	150
1.5	Assembly overview - intake manifold with attachments, engine code BGU	150
1.6	Assembly overview - intake manifold with attachments, engine codes BSE, BSF, CCSA, CMXA	152
1.7	Assembly overview - fuel rail with injectors	154
1.8	Assembly overview - air filter with attachments	155
1.9	Removing and installing lower part of intake manifold, engine code BGU	155



1.10	Removing and installing intake manifold lower part, engine codes BSE, BSF, CCSA, CMXA	158
1.11	Removing and installing complete intake manifold, engine code BGU	159
1.12	Removing and installing complete intake manifold, engine codes BSE, BSF, CCSA, CMXA	164
1.13	Removing and installing injectors	167
2	Checking components	169
2.1	Checking injectors for leaks and quantity injected	169
2.2	Checking fuel pressure regulator and holding pressure	175
2.3	Checking intake manifold change-over	178
3	Engine control unit J623 (Golf 2004 ►)	181
3.1	Removing and installing engine control unit	181
3.2	Removing and installing anti-theft engine control unit	181
4	Engine control unit J623 (Golf Plus)	184
4.1	Removing and installing engine control unit	184
4.2	Removing and installing anti-theft engine control unit	185
5	Engine control unit J623 (Golf 2009 ►)	187
5.1	Removing and installing engine control unit	187
5.2	Removing and installing anti-theft engine control unit	188
26 - Exhaust system	192	
1	Exhaust system, engine codes BGU, BSE, BSF, CCSA	192
1.1	Assembly overview - exhaust system	192
1.2	Separating centre and rear silencers	195
1.3	Removing and installing front exhaust pipe with catalytic converter	196
1.4	Removing and installing exhaust manifold	197
1.5	Aligning exhaust system free of stress	199
1.6	Removing and installing Lambda probe G39	200
1.7	Removing and installing Lambda probe after catalytic converter G130	201
2	Exhaust system, engine code CMXA	203
2.1	Assembly overview - exhaust manifold and front exhaust pipe with catalytic converter ..	203
2.2	Assembly overview - exhaust system	206
2.3	Separating centre and rear silencers	206
2.4	Removing and installing front exhaust pipe with catalytic converter	208
2.5	Removing and installing exhaust manifold	210
2.6	Aligning exhaust system free of stress	211
2.7	Removing and installing Lambda probe G39	212
2.8	Removing and installing Lambda probe after catalytic converter G130	213
3	Exhaust gas recirculation system, engine code BGU	215
3.1	Assembly overview - exhaust gas recirculation system	215
4	Secondary air system, engine codes BGU, BSE, CCSA, CMXA	217
4.1	Function	217
4.2	Assembly overview - secondary air system, engine code BGU	217
4.3	Assembly overview - secondary air system, engine codes BSE, CCSA, CMXA	219
4.4	Checking combination valve	219
28 - Ignition system	221	
1	Repairing ignition	221
1.1	General notes on ignition system	221
1.2	Safety precautions	221
1.3	Assembly overview - ignition system	222
1.4	Test data, spark plugs	223