



Contents

00 - Technical data	1
1 Technical data	1
1.1 Technical data	1
1.2 Engine number	1
1.3 Engine data	1
10 - Removing and installing engine	3
1 Removing and installing engine	3
1.1 Removing and installing engine	3
1.2 Notes on removing	4
1.3 Securing engine to assembly stand	8
1.4 Notes on installing	10
1.5 Tightening torques	11
1.6 Additional information and work instructions for vehicles with air conditioner	12
13 - Crankshaft group	13
1 Dismantling and assembling engine	13
1.1 Dismantling and assembling engine	13
1.2 Adjusting alternator V-belt tension	35
1.3 Removing and installing ribbed belt	36
1.4 Removing and installing ribbed belt tensioning device	39
1.5 Removing, installing and tensioning camshaft toothed belt (>01.95)	42
1.6 Removing, installing and tensioning camshaft toothed belt (02.95 >)	49
1.7 Removing, installing and tensioning injection pump toothed belt (engine codes AAB, AJA)	55
1.8 Removing, installing and tensioning injection pump toothed belt (engine codes ACV, AHY, AJT, AUF, AXG, AXL, AYC)	60
2 Removing and installing sealing flange and flywheel	66
2.1 Removing and installing sealing flange and flywheel	66
2.2 Removing and installing drive plate	71
2.3 Removing and installing dual mass flywheel	73
2.4 Renewing crankshaft oil seal - pulley end -	74
3 Removing and installing crankshaft	77
3.1 Removing and installing crankshaft	77
3.2 Crankshaft dimensions	79
4 Dismantling and assembling pistons and conrods	80
4.1 Dismantling and assembling pistons and conrods	80
4.2 Checking piston projection at TDC	87
4.3 Piston and cylinder dimensions	89
15 - Cylinder head, Valve gear	90
1 Removing and installing cylinder head	90
1.1 Removing and installing cylinder head	90
1.2 Removing and installing cylinder head	99
1.3 Checking compression pressures	101
2 Servicing valve gear	104
2.1 Servicing valve gear	104
2.2 Reworking valve seats	113
2.3 Checking valve guides	115
2.4 Renewing valve guides	115
2.5 Renewing valve stem seals	117
2.6 Removing and installing camshaft	119
2.7 Checking hydraulic bucket tappets	120
2.8 Replacing swirl chambers (engine codes AAB, AJA)	121



17 - Lubrication	123
1 Removing and installing parts of the lubrication system	123
1.1 Removing and installing parts of the lubrication system	123
1.2 Checking oil pressure and oil pressure switch	138
19 - Cooling system	141
1 Removing and installing parts of cooling system	141
1.1 Removing and installing parts of cooling system	141
1.2 Parts of cooling system, body side	142
1.3 Parts of cooling system - engine side	150
1.4 Coolant hose connection diagram	154
1.5 Draining and filling coolant	158
1.6 Removing and installing radiator and fan	161
1.7 Checking thermo switch and coolant circulation pump or continued coolant circulation pump	164
20 - Fuel supply system	167
1 Removing and installing parts of fuel supply system	167
1.1 Removing and installing parts of fuel supply system	167
1.2 Removing and installing fuel tank with its attachments	168
1.3 Safety precautions when working on the fuel supply system	170
1.4 Rules for cleanliness	171
1.5 Removing and installing fuel gauge sender	171
1.6 Removing and installing fuel tank	173
1.7 Servicing accelerator mechanism (engine codes AAB, AJA)	174
1.8 Adjusting accelerator cable	176
1.9 Servicing cold start accelerator (CSA) operating cable (engine codes AAB, AJA)	177
1.10 Adjusting CSA operating cable	178
21 - Charging	179
1 Charge air system with turbocharger	179
1.1 Charge air system with turbocharger	179
1.2 Removing and installing turbocharger with attachments	179
1.3 Removing and installing air cooling parts	188
1.4 Turbocharger hose/pipe connections	193
1.5 Rules for cleanliness	194
1.6 Removing and installing exhaust turbocharger	195
2 Checking charge pressure system	199
2.1 Checking charge pressure system	199
2.2 Checking turbocharger	199
26 - Exhaust system	205
1 Removing and installing parts of exhaust system	205
1.1 Removing and installing parts of exhaust system	205
1.2 Removing and installing clamping springs	210
1.3 Tensioning and relieving tension on clamping springs	211
2 Exhaust gas recirculation system	214
2.1 Exhaust gas recirculation system	214
2.2 Removing and installing parts of exhaust gas recirculation system	214
2.3 Vacuum hose connection diagram	221
2.4 Checking exhaust gas recirculation valve	223