



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	7
1.4 Notes on installing	8
1.5 Tightening torques	11
1.6 Assembly mountings	11
1.7 Renewing bonded rubber bushes on subframe	13
1.8 Additional information and removal instructions for vehicles with air conditioner	14
13 - Crankshaft group	16
1 Dismantling and assembling engine	16
1.1 Dismantling and assembling engine	16
1.2 Removing and installing ribbed belt	26
2 Removing and installing sealing flange and pressure plate/drive plate	28
2.1 Removing and installing sealing flange and pressure plate/drive plate	28
2.2 Renewing crankshaft oil seal -belt pulley end	31
2.3 Removing and installing front sealing flange	34
2.4 Removing and installing drive plate	36
3 Removing and installing crankshaft	39
3.1 Removing and installing crankshaft	39
3.2 Colour markings	43
3.3 Crankshaft dimensions	43
4 Dismantling and assembling pistons and conrods	44
4.1 Dismantling and assembling pistons and conrods	44
4.2 Piston and cylinder dimensions	50
15 - Cylinder head, Valve gear	51
1 Removing and installing cylinder head	51
1.1 Removing and installing cylinder head	51
1.2 Removing, installing and tensioning toothed belt	55
1.3 Checking semi-automatic toothed belt tensioning roller	58
1.4 Removing and installing cylinder head	59
1.5 Checking compression pressures	63
2 Servicing valve gear	64
2.1 Servicing valve gear	64
2.2 Reworking valve seats	70
2.3 Replacing camshaft oil seal	72
2.4 Removing and installing camshaft	75
2.5 Checking hydraulic bucket tappets	78
2.6 Checking valve guides	79
2.7 Renewing valve guides	80
2.8 Renewing valve stem seals	81
17 - Lubrication	84
1 Removing and installing parts of the lubrication system	84



1.1	Removing and installing parts of the lubrication system	84
1.2	Removing and installing sump	92
1.3	Checking oil pressure and oil pressure switch	94
19	- Cooling system	97
1	Removing and installing parts of cooling system	97
1.1	Removing and installing parts of cooling system	97
1.2	Parts of cooling system body side	98
1.3	Parts of cooling system engine side	101
1.4	Coolant hose connection diagram	111
1.5	Draining and filling cooling system	114
1.6	Removing and installing radiator	117
1.7	Removing and installing coolant pump	119
1.8	Removing and installing thermostat	121
20	- Fuel supply system	123
1	Removing and installing parts of fuel supply system	123
1.1	Removing and installing parts of fuel supply system	123
1.2	Removing and installing fuel tank with its attachments and fuel filter	124
1.3	Safety precautions when working on the fuel supply system	130
1.4	Rules for cleanliness	131
1.5	Removing and installing fuel delivery unit	131
1.6	Removing and installing fuel gauge sender	133
1.7	Removing and installing fuel tank	134
1.8	Crash fuel shut-off	135
1.9	Checking fuel pump	136
2	Accelerator mechanism	144
2.1	Accelerator mechanism	144
2.2	Servicing accelerator mechanism	144
2.3	Adjusting throttle cable	145
3	Checking electronic power control (EPC)	147
3.1	Checking electronic power control (EPC)	147
3.2	Function of EPC system	148
3.3	Checking accelerator pedal position sender	149
3.4	Adjusting pedal position sender	153
4	Activated charcoal filter system	155
4.1	Activated charcoal filter system	155
4.2	Function	155
4.3	Servicing parts of the activated charcoal filter system	156
4.4	Checking fuel tank breather	158
26	- Exhaust system	160
1	Removing and installing parts of exhaust system	160
1.1	Removing and installing parts of exhaust system	160
1.2	Exhaust manifold, front exhaust pipe and catalyst with attachments	161
1.3	Checking catalyst	171
2	Secondary air system	173
2.1	Secondary air system	173
2.2	Function	173
2.3	Removing and installing parts of the secondary air system	174
2.4	Checking secondary air pump motor	178
2.5	Checking combi-valve	179
2.6	Checking secondary air inlet valve	181
3	Exhaust gas recirculation system	182
3.1	Exhaust gas recirculation system	182
3.2	Servicing parts of exhaust gas recirculation system	183



3.3	Checking exhaust gas recirculation system	186
3.4	Checking potentiometer for exhaust gas recirculation	188