



## Contents

<b>001 - Technical data</b> .....	<b>1</b>
<b>1 Technical data</b> .....	<b>1</b>
1.1 Technical data .....	1
1.2 Engine number .....	1
1.3 Engine data .....	1
<b>1 - Removing and installing engine</b> .....	<b>3</b>
<b>1 Removing and installing engine</b> .....	<b>3</b>
1.1 Removing and installing engine .....	3
1.2 Notes on removing .....	5
1.3 Notes on installing .....	8
1.4 Tightening torques .....	9
1.5 Front engine mounting .....	10
1.6 Additional information and removal instructions for vehicles with air conditioner .....	10
<b>2 Removing and installing parts of the lubrication system</b> .....	<b>11</b>
2.1 Removing and installing parts of the lubrication system .....	11
2.2 Removing and installing sump .....	20
2.3 Checking oil pressure and oil pressure switch .....	26
<b>3 Servicing ignition system</b> .....	<b>27</b>
3.1 Servicing ignition system .....	27
3.2 General notes on ignition system .....	27
3.3 Removing and installing parts of the ignition system .....	28
3.4 Safety precautions .....	31
3.5 Test data, spark plugs .....	32
<b>4 Removing and installing cylinder head</b> .....	<b>33</b>
4.1 Removing and installing cylinder head .....	33
4.2 Removing and installing cylinder head .....	40
4.3 Removing and installing toothed belt .....	44
4.4 Checking semi-automatic toothed belt tensioning roller .....	47
4.5 Checking compression pressure .....	48
<b>13 - Crankshaft group</b> .....	<b>50</b>
<b>1 Dismantling and assembling engine</b> .....	<b>50</b>
1.1 Dismantling and assembling engine .....	50
1.2 Removing and installing ribbed belt for air conditioner compressor .....	57
1.3 Removing and installing ribbed belt .....	58
<b>2 Removing and installing sealing flanges and flywheel</b> .....	<b>59</b>
2.1 Removing and installing sealing flanges and flywheel .....	59
2.2 Renewing crankshaft oil seal -belt pulley end .....	62
2.3 Removing and installing front sealing flange .....	65
<b>3 Removing and installing crankshaft</b> .....	<b>68</b>
3.1 Removing and installing crankshaft .....	68
3.2 Colour markings .....	72
3.3 Pulling needle bearing out of crankshaft and driving in .....	73
3.4 Crankshaft dimensions .....	75
<b>4 Dismantling and assembling pistons and conrods</b> .....	<b>76</b>
4.1 Dismantling and assembling pistons and conrods .....	76
4.2 Piston and cylinder dimensions .....	81
<b>15 - Cylinder head, Valve gear</b> .....	<b>82</b>
<b>1 Servicing valve gear</b> .....	<b>82</b>
1.1 Servicing valve gear .....	82
1.2 Reworking valve seats .....	87



1.3	Replacing camshaft oil seal . . . . .	89
1.4	Removing and installing camshaft . . . . .	92
1.5	Checking valve guides . . . . .	96
1.6	Renewing valve stem seals . . . . .	97
<b>24</b>	<b>Mixture preparation, Injection . . . . .</b>	<b>100</b>
<b>1</b>	<b>Servicing injection system . . . . .</b>	<b>100</b>
1.1	Servicing injection system . . . . .	100
1.2	Fitting locations overview . . . . .	100
1.3	General notes on injection . . . . .	107
1.4	Dismantling and assembling intake manifold . . . . .	108
1.5	Dismantling and assembling air cleaner . . . . .	112
1.6	Dismantling and assembling intake hose . . . . .	114
1.7	Dismantling and assembling fuel rail with injectors . . . . .	116
1.8	Safety precautions . . . . .	117
1.9	Rules for cleanliness . . . . .	118
1.10	Technical data . . . . .	118
<b>2</b>	<b>Checking components . . . . .</b>	<b>119</b>
2.1	Checking components . . . . .	119
2.2	Checking spray pattern and checking for leaks . . . . .	119
2.3	Checking fuel pressure regulator and holding pressure . . . . .	121
2.4	Checking intake manifold change-over . . . . .	123
<b>3</b>	<b>Engine control unit . . . . .</b>	<b>124</b>
3.1	Engine control unit . . . . .	124
3.2	Replacing engine control unit . . . . .	124
3.3	Adapting functions and components . . . . .	125
3.4	Interrogating and erasing engine control unit fault memory . . . . .	126