



## 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 Notes on removing	3
1.2 Securing engine to assembly stand	7
1.3 Notes on installing	7
1.4 Assembly mounting	8
<b>13 - Crankshaft group</b>	<b>10</b>
<b>1 Dismantling and assembling engine</b>	<b>10</b>
1.1 Assembly overview	10
1.2 Removing and installing poly V-belt	14
<b>2 Removing and installing front sealing flange</b>	<b>17</b>
2.1 Exploded view sealing flanges and flywheel or drive plate	17
2.2 Renewing crankshaft oil seal	18
2.3 Removing and installing front sealing flange	20
<b>3 Dismantling and assembling pistons and conrods</b>	<b>24</b>
3.1 Assembly overview - Pistons and conrods	24
3.2 Checking pistons, piston rings and cylinder bores	27
3.3 Piston and cylinder dimensions	29
<b>4 Removing and installing crankshaft</b>	<b>30</b>
4.1 Exploded view crankshaft	30
4.2 Colour identification	31
4.3 Crankshaft dimensions	32
<b>15 - Cylinder head, Valve gear</b>	<b>33</b>
<b>1 Removing and installing cylinder head</b>	<b>33</b>
1.1 Exploded view cylinder head	33
1.2 Removing, installing and tensioning toothed belt	35
1.3 Checking semi-automatic toothed belt tensioning roller	39
1.4 Removing and installing cylinder head	39
1.5 Checking compression	43
<b>2 Repairing valve gear</b>	<b>46</b>
2.1 Exploded view valve gear	46
2.2 Reworking valve seats	48
2.3 Renewing camshaft oil seal	50
2.4 Removing and installing camshaft	52
2.5 Checking hydraulic bucket tappets	55
2.6 Checking valve guides	56
2.7 Renewing valve guides	56
2.8 Renewing valve stem seals	57
<b>17 - Lubrication</b>	<b>61</b>
<b>1 Removing and installing parts of lubrication system</b>	<b>61</b>
1.1 Engine oil	61
1.2 Assembly overview - Parts of lubrication system	62
1.3 Assembly overview - Oil filter bracket	64
1.4 Removing and installing sump	65



1.5	Checking oil pressure and oil pressure switch	67
<b>19</b>	<b>- Cooling system</b>	<b>70</b>
<b>1</b>	<b>Removing and installing parts of cooling system</b>	<b>70</b>
1.1	Assembly overview - parts of cooling system - engine side	70
1.2	Assembly overview - parts of cooling system - body side	73
1.3	Draining and filling coolant	74
1.4	Removing and installing coolant pump	77
1.5	Removing and installing thermostat	78
1.6	Removing and installing radiator fan V7 and radiator fan 2 V177	80
1.7	Removing and installing radiator	81
1.8	Checking cooling system for leaks	82
<b>20</b>	<b>- Fuel supply system</b>	<b>85</b>
<b>1</b>	<b>Parts of fuel system</b>	<b>85</b>
1.1	Assembly overview - fuel tank with attachments	85
1.2	Safety precautions when working on fuel supply system	88
1.3	Rules for cleanliness	89
1.4	Removing and installing fuel delivery unit	89
1.5	Removing and installing fuel gauge sender	91
1.6	Removing and installing fuel tank	91
1.7	Crash fuel shut-off	93
1.8	Checking fuel pump	93
<b>2</b>	<b>Active charcoal filter system</b>	<b>101</b>
2.1	Assembly overview - parts of active charcoal filter system	101
2.2	Checking fuel tank breather	102
<b>3</b>	<b>Electronic power control (EPC)</b>	<b>104</b>
3.1	Assembly overview	104
<b>24</b>	<b>- Mixture preparation, Injection</b>	<b>106</b>
<b>1</b>	<b>Repairing ignition system</b>	<b>106</b>
1.1	General notes on ignition system	106
1.2	Safety precautions	106
1.3	Assembly overview - ignition system	106
1.4	Spark plugs	107
<b>2</b>	<b>Engine control unit</b>	<b>108</b>
2.1	Removing and installing anti-theft engine control unit	108
2.2	Reading and erasing engine control unit fault memory	110
<b>26</b>	<b>- Exhaust system</b>	<b>111</b>
<b>1</b>	<b>Removing and installing parts of exhaust system</b>	<b>111</b>
1.1	Front exhaust pipe and catalytic converter with attachments	111
1.2	Silencer with mountings	113
1.3	Separating middle and rear silencers	113
1.4	Aligning exhaust system stress free	114
<b>28</b>	<b>- Ignition system</b>	<b>116</b>
<b>1</b>	<b>Repairing injection system</b>	<b>116</b>
1.1	General notes on injection	116
1.2	Safety precautions	117
1.3	Rules for cleanliness	117
1.4	Technical data	118
1.5	Dismantling and assembling intake manifold - upper part	118
1.6	Dismantling and assembling intake manifold - lower part	120
1.7	Fuel rail	121
1.8	Dismantling and assembling air cleaner	122



1.9	Removing and installing intake manifold .....	122
1.10	Removing and installing fuel rail with intake manifold flaps .....	123
1.11	Removing and installing injectors .....	125
1.12	Renewing Teflon seal on injector .....	127
1.13	Cleaning throttle valve module J338 .....	129