

Contents

00 - Technical data	1
1 Identification	1
2 Safety precautions	2
3 Repair instructions	3
10 - Removing and installing engine	4
1 Removing and installing engine	4
1.1 Removing engine	4
1.2 Separating engine and gearbox	16
1.3 Securing engine to engine and gearbox support	16
1.4 Installing engine	16
2 Assembly mountings	20
2.1 Exploded view - assembly mountings	20
2.2 Supporting engine in installation position	22
2.3 Removing and installing engine mountings	25
2.4 Removing and installing gearbox mounting	29
2.5 Removing and installing pendulum support	32
2.6 Checking adjustment of assembly mountings (engine/gearbox mountings)	32
2.7 Adjusting assembly mountings	33
3 Engine cover panel	36
13 - Crankshaft group	37
1 Cylinder block (pulley end)	37
1.1 Exploded view - poly V-belt drive	37
1.2 Exploded view - sealing flange (pulley end)	37
1.3 Removing and installing poly V-belt	37
1.4 Removing and installing poly V-belt tensioner	37
1.5 Removing and installing vibration damper	37
1.6 Removing and installing bracket for ancillaries	38
1.7 Removing and installing sealing flange (pulley end)	38
2 Cylinder block (gearbox end)	39
3 Crankshaft	40
4 Pistons and conrods	41
15 - Cylinder head, valve gear	42
1 Timing chain cover	42
2 Chain drive	43
3 Cylinder head	44
4 Valve gear	45
5 Inlet and exhaust valves	46
17 - Lubrication	47
1 Sump/oil pump	47
1.1 Exploded view - sump/oil pump	47
1.2 Engine oil	47
1.3 Removing and installing sump (bottom section)	47
1.4 Removing and installing sump (top section)	47
1.5 Removing and installing oil pump	47
1.6 Removing and installing oil level and oil temperature sender G266	47
2 Engine oil cooler	48
2.1 Exploded view - engine oil cooler	48



2.2	Removing and installing engine oil cooler	48
3	Oil filter/oil pressure switch	50
4	Crankcase breather	51
19	Cooling	52
1	Cooling system/coolant	52
1.1	Connection diagram - coolant hoses	52
1.2	Checking cooling system for leaks	53
1.3	Draining and filling cooling system	53
2	Coolant pump/thermostat assembly	60
2.1	Exploded view - coolant pump/thermostat	60
2.2	Exploded view - electric coolant pump	60
2.3	Exploded view - coolant temperature senders	60
2.4	Removing and installing electric coolant pump	60
2.5	Removing and installing coolant pump	61
2.6	Removing and installing thermostat	64
2.7	Removing and installing coolant distributor housing	64
2.8	Removing and installing coolant temperature sender G62	64
2.9	Removing and installing temperature sender for engine temperature regulation G694	64
2.10	Removing and installing coolant valves	64
3	Coolant pipes	65
3.1	Exploded view - coolant pipes	65
3.2	Removing and installing coolant pipes	65
4	Radiator/radiator fans	66
4.1	Exploded view - radiator/radiator fans	66
4.2	Exploded view - auxiliary radiator	68
4.3	Removing and installing radiator	69
4.4	Removing and installing radiator cowl	72
4.5	Removing and installing radiator fan V7	75
4.6	Removing and installing auxiliary radiator	75
21	Turbocharging/supercharging	78
1	Turbocharger	78
1.1	Exploded view - turbocharger	78
1.2	Removing and installing turbocharger	78
1.3	Removing and installing turbocharger air recirculation valve N249	78
2	Charge air system	79
2.1	Exploded view - charge air system	79
2.2	Exploded view - hose connections for charge air system	82
2.3	Removing and installing charge air cooler	82
2.4	Removing and installing charge pressure sender G31	83
2.5	Checking charge air system for leaks	83
24	Mixture preparation - injection	84
1	Injection system	84
1.1	Overview of fitting locations - injection system	84
2	Air cleaner	92
2.1	Exploded view - air cleaner housing	92
2.2	Removing and installing air cleaner housing	93
3	Intake manifold	95
3.1	Exploded view - intake manifold	95
3.2	Removing and installing intake manifold (top section)	95
3.3	Removing and installing intake manifold (bottom section)	95
3.4	Removing and installing throttle valve module J338	95

4	Injectors	96
5	Senders and sensors	97
6	High-pressure pump	98
7	Lambda probe	99
8	Engine control unit	100
8.1	Removing and installing engine control unit J623	100
26	- Exhaust system	102
1	Exhaust pipes/silencers	102
1.1	Exploded view - silencers	102
1.2	Removing and installing silencers	102
1.3	Stress-free alignment of exhaust system	104
1.4	Checking exhaust system for leaks	105
2	Emission control system	106
2.1	Exploded view - emission control system	106
2.2	Removing and installing catalytic converter	106
2.3	Removing and installing secondary catalytic converters/exhaust pipes	106
2.4	Removing and installing exhaust flap control unit J883	107
3	Exhaust gas temperature control	109
28	- Ignition system	110
1	Ignition system	110