

Contents

23 - Mixture preparation - injection	1
1 Safety precautions and rules for cleanliness	1
1.1 Safety precautions when working on the fuel supply system	1
1.2 Safety precautions when using testers and measuring instruments during a road test	2
1.3 Safety precautions when working on the cooling system	2
1.4 Safety precautions when working on the SCR system	2
1.5 Adapting learnt values for SCR system	3
1.6 Safety precautions when working on the exhaust system	4
1.7 Rules for cleanliness	4
1.8 General notes	4
1.9 General repair instructions	5
1.10 Foreign particles in engine	6
1.11 Contact corrosion	6
1.12 Routing and attachment of pipes, hoses and wiring	6
1.13 Installing radiators and condensers	6
1.14 Checking vacuum system	6
2 Overview of fitting locations - injection system	8
3 Overview - fuel system	19
3.1 Overview - fuel system, vehicles up to autumn 2009	19
3.2 Overview - fuel system, vehicles from autumn 2009 onwards	21
4 Exploded view - fuel system	24
5 Bleeding fuel system	28
6 Air cleaner	30
6.1 Exploded view - air cleaner	30
6.2 Removing and installing engine cover panel	31
6.3 Removing and installing air filter element	31
6.4 Removing and installing air cleaner housing	33
7 Intake manifold	35
7.1 Exploded view - intake manifold	35
7.2 Removing and installing intake manifold (top section)	36
7.3 Removing and installing bottom section of intake manifold (left-side)	37
7.4 Removing and installing bottom section of intake manifold (right-side)	39
8 Toothed belt for high-pressure pump	42
8.1 Exploded view - toothed belt for high-pressure pump	42
8.2 Removing and installing toothed belt for high-pressure pump	44
9 High-pressure pump	53
9.1 Exploded view - high-pressure pump	53
9.2 Removing and installing high-pressure pump	56
9.3 Performing first fuel filling after installing high-pressure pump	58
9.4 Bleeding fuel system and checking for leaks	59
10 Injectors	60
10.1 Checking injectors	60
10.2 Adaption of injector delivery calibration values and injector voltage calibration values	60
10.3 Checking for injectors sticking open	61
10.4 Checking return flow rate of injectors with engine running	63
10.5 Checking return flow rate of injectors at starter cranking speed	66
10.6 Exploded view - injectors and high-pressure pipes	68
10.7 Removing and installing injectors	70
11 Components of injection system	77
11.1 Removing and installing air mass meter G70	77
11.2 Installing high-pressure pipes	78



11.3	Checking pressure retention valve in fuel return line	80
11.4	Checking restrictor in fuel return line	81
11.5	Checking fuel pressure regulating valve N276	82
11.6	Removing and installing fuel pressure regulating valve N276	84
11.7	Removing and installing fuel pressure sender G247	88
12	Lambda probes	90
12.1	Exploded view - Lambda probes and exhaust gas temperature control	90
12.2	Removing and installing Lambda probe G39 with Lambda probe heater Z19	92
12.3	Removing and installing NOx sender G295	93
12.4	Removing and installing NOx sender 2 G687	94
12.5	Removing and installing pressure differential sender G505	95
13	Engine control unit	96
13.1	Wiring and component check with test box V.A.G 1598/42 (154-pin) - vehicles up to model year 2010	96
13.2	Wiring and component check with isolator box VAS 6606 - vehicles from model year 2011 onwards	98
13.3	Renewing engine control unit J623	99
28	Glow plug system	103
1		103
2	Exploded view - glow plug system	104
3	Removing and installing glow plugs	105
4	Removing and installing engine speed sender G28	108
5	Removing and installing Hall sender G40	109