

Contents

01 - Self-diagnosis	1
1 Self-diagnosis	1
1.1 Self-diagnosis	1
1.2 Technical data of self-diagnosis	1
1.3 Connecting fault reader V.A.G 1551 and selecting engine electronic control unit	2
1.4 Interrogating and erasing fault memory	3
1.5 Fault table	4
1.6 Final control diagnosis	13
1.7 Basic setting	16
1.8 Encoding control unit	17
1.9 Reading measured value block	18
1.10 Readout specifications for general vehicle inspection	22
1.11 Readout specified values for injection pump	23
1.12 Readout specifications for engine idling speed	25
1.13 Readout specifications for exhaust gas recirculation	27
1.14 Readout specifications for temperature senders	27
1.15 Readout specifications for vehicle performance	28
1.16 Readout specifications for boost pressure control	30
23 - Mixture preparation, Injection	31
1 Servicing diesel direct injection system	31
1.1 Servicing diesel direct injection system	31
1.2 Safety precautions	31
1.3 Rules for cleanliness	31
1.4 Fitting locations overview	32
1.5 Fitting locations overview	36
1.6 Repairing injection pump	40
1.7 Servicing fuel filter	44
1.8 Servicing accelerator mechanism	46
1.9 Removing and installing injection pump	47
1.10 Dynamically checking and adjusting commencement of injection	52
1.11 Testing fuel system for leaks	53
1.12 Removing, installing and testing injectors	54
1.13 Replacing the O-ring on the injection timing device cover	56
1.14 Wiring and component test with test box V.A.G 1598/22	57
1.15 Replacing control unit for engine electronics	57
2 Testing the boost pressure system	59
2.1 Testing the boost pressure system	59
2.2 Test boost pressure - engine code AGR	59
2.3 Checking boost pressure for engine codes ALH, AHF	60
2.4 Test boost pressure control solenoid valve	61
2.5 Checking intake manifold temperature sender	62
2.6 Checking intake manifold pressure sender and altitude sender	63
2.7 Hose connection plan for boost pressure control - engine code AGR	65
2.8 Hose connection plan for boost pressure control and exhaust gas recirculation - engine codes ALH and AHF	66
3 Testing injection control	68
3.1 Testing injection control	68
3.2 Checking the injection timing control range	68
3.3 Checking commencement of injection valve	69
3.4 Checking fuel temperature sensor	70
4 Checking exhaust gas recirculation system	71
4.1 Checking exhaust gas recirculation system	71
4.2 Checking EGR	71

4.3	Testing exhaust gas recirculation valve	72
4.4	Testing air mass meter	73
4.5	Vacuum plan for exhaust gas recirculation without intake manifold flap - engine code AGR	76
4.6	Vacuum plan for exhaust gas recirculation with intake manifold flap - engine code AGR	77
5	Testing control unit input values	78
5.1	Testing control unit input values	78
5.2	Checking power supply to diesel direct-injection system	78
5.3	Testing engine speed sender	81
5.4	Checking needle lift sensor	82
5.5	Testing coolant temperature sensor	83
5.6	Checking brake light switch and brake pedal switch	84
5.7	Testing modulating piston movement sender and quantity adjuster	85
5.8	Checking accelerator position sender	87
6	Checking auxiliary signals	89
6.1	Checking auxiliary signals	89
6.2	Test signals from and to automatic gearbox	89
6.3	Checking signals from / to air conditioner	91
6.4	Testing clutch pedal switch	92
6.5	Checking vehicle speed signal	92
6.6	Testing Cruise Control System (CCS)	93
6.7	Checking engine speed signal	95
6.8	Checking radiator fan after-run control unit -J138	96
6.9	Testing intake manifold flap changeover valve	97
6.10	Testing signal wire between engine control unit and gearbox control unit	98
6.11	Testing signal wire between engine control unit and ABS control unit	98
6.12	Checking a "two-wire bus system"	99
28	- Glow plug system	101
1	Checking glow plug system	101
1.1	Checking glow plug system	101
1.2	Checking function	101
1.3	Checking glow plugs	101
1.4	Checking glow period warning lamp	102