



Contents

01 - Self-diagnosis, Electrical check	1
1 Self-diagnosis	1
1.1 Self-diagnosis	1
1.2 Function	1
1.3 Technical data of self-diagnosis	1
1.4 Connecting fault reader V.A.G 1551 and selecting engine electronics control unit	2
2 Fault memory	4
2.1 Fault memory	4
2.2 Interrogating fault memory	4
2.3 Fault table	5
2.4 Erasing fault memory	14
3 Final control diagnosis	16
3.1 Final control diagnosis	16
3.2 Performing final control diagnosis	16
4 Measured value blocks	20
4.1 Measured value blocks	20
4.2 Safety precautions	20
4.3 Reading measured value block	20
4.4 Evaluating measured value blocks, at idling speed	21
4.5 Evaluating read measured value block, at full throttle	28
23 - Mixture preparation, Injection	33
1 Servicing Diesel direct injection system	33
1.1 Servicing Diesel direct injection system	33
1.2 Safety precautions	33
1.3 Rules for cleanliness	33
1.4 Fitting locations overview	34
1.5 Servicing injection pump	38
1.6 Servicing intake manifold flap	43
1.7 Removing and installing injection pump	45
1.8 Dynamically checking and adjusting commencement of injection	51
1.9 Removing and installing injectors	53
1.10 Checking injectors	55
1.11 Renewing gasket on metering unit cover	55
2 Checking components and functions	56
2.1 Checking components and functions	56
2.2 Checking Diesel direct injection system voltage supply	56
2.3 Checking engine speed sender	57
2.4 Checking intake manifold pressure sender and altitude sender	58
2.5 Checking coolant temperature sender	60
2.6 Checking brake light switch and brake pedal switch	62
2.7 Checking clutch pedal switch	63
2.8 Checking intake manifold sender	65
2.9 Checking fuel temperature sender	67
2.10 Checking modulating piston movement sender and quantity adjuster	69
2.11 Checking needle lift sender	72
2.12 Checking injection timing control range	73
2.13 Checking charge pressure control	75
2.14 Checking air mass meter	78
2.15 Checking intake manifold change-over	80
3 Checking additional signals	82
3.1 Checking additional signals	82
3.2 Checking speed signal	82



3.3	Checking accelerator position sender	84
3.4	Additional signals	85
3.5	Checking accelerator pedal position sender	85
3.6	Checking gear change signal from automatic gearbox	86
3.7	Checking signals from/to air conditioning system	87
3.8	Checking cruise control system (CCS)	89
4	Replacing, coding and matching engine control unit	91
4.1	Replacing, coding and matching engine control unit	91
4.2	Replacing engine control unit	91
4.3	Coding engine control unit	92
4.4	Matching engine control unit to electronic immobilizer	93
4.5	Checking data bus	94
28	Glow plug system	101
1	Checking glow plug system	101
1.1	Checking glow plug system	101
1.2	Checking glow plugs	101