



Contents

01 - Self-diagnosis	1
1 Self-diagnosis	1
1.1 Features of self-diagnosis	1
1.2 Technical data of self-diagnosis	1
1.3 Connecting fault reader V.A.G 1551 and selecting engine electronics control unit	2
1.4 Connecting vehicle diagnosis, testing and information system VAS 5051 and selecting engine electronics control unit	5
1.5 Read fault memory	7
1.6 Clear fault memory	8
2 Fault table	10
3 Final control diagnosis	23
3.1 Performing final control diagnosis	23
4 Measured value blocks	27
4.1 Safety precautions	27
4.2 Read measured value block	27
4.3 Evaluating measured value blocks	29
23 - Mixture preparation - injection	43
1 Repairing diesel direct injection system	43
1.1 Safety precautions	43
1.2 Rules for cleanliness	43
1.3 Fitting locations overview	44
1.4 Repairing injection pump	46
1.5 Removing and installing inlet connection	47
1.6 Removing and installing injection pump	48
1.7 Dynamically checking and adjusting commencement of injection	55
1.8 Checking timing	57
1.9 Removing and installing injectors	60
1.10 Checking injectors	61
1.11 Sealing injection pump	62
2 Checking components and functions	68
2.1 Checking voltage supply for diesel direct injection system	68
2.2 Checking engine speed sender G28	68
2.3 Checking coolant temperature sender G62	70
2.4 Checking intake manifold temperature sender G72	72
2.5 Checking fuel temperature sender G81	74
2.6 Checking modulating piston movement sender G149 and metering adjuster N146	76
2.7 Checking needle lift sender G80	79
2.8 Checking injection timing device control range	80
2.9 Checking intake manifold flap change-over	82
2.10 Checking variable intake manifold flap change-over valve N239	83
3 Checking additional signals	86
3.1 Checking speed signal	86
3.2 Checking signal from brake light switch F and brake pedal switch F47	88
3.3 Checking signal from clutch pedal switch F36	90
3.4 Checking speed signal	92
3.5 Checking data bus	93
4 Renewing, coding and matching engine control unit	94
4.1 Renewing engine control unit	94
4.2 Coding engine control unit	94
4.3 Adapting engine control unit to electronic immobilizer	95



28 - Glow plug system	97
1 Checking glow plug system	97
1.1 Checking glow plugs	98