



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	4
2 Fault memory	7
2.1 Read fault memory	7
2.2 Fault table	8
2.3 Clear fault memory	29
3 Final control diagnosis	30
3.1 Performing final control diagnosis	30
4 Measured value blocks	34
4.1 Safety precautions	34
4.2 Read measured value block	34
4.3 Evaluating measured value blocks	35
23 - Mixture preparation - injection	53
1 Repairing diesel direct injection system	53
1.1 Safety precautions	53
1.2 Rules for cleanliness	53
1.3 Fitting locations overview	54
1.4 Repairing injection pump	57
1.5 Repairing intake manifold flap	58
1.6 Removing and installing intake manifold flap motor	59
1.7 Removing and installing injection pump	61
1.8 Dynamically checking and adjusting commencement of injection	65
1.9 Removing and installing injectors	67
1.10 Repairing injectors	69
1.11 Sealing injection pump	69
2 Checking components and functions	75
2.1 Checking voltage supply for diesel direct injection system	75
2.2 Checking engine speed sender G28	75
2.3 Checking intake manifold pressure sender G71 and altitude sender F96	76
2.4 Checking coolant temperature sender G62	77
2.5 Checking brake light switch F and brake pedal switch F47	79
2.6 Checking clutch pedal switch F36	80
2.7 Checking intake manifold temperature sender G72	81
2.8 Checking fuel temperature sender G81	84
2.9 Checking modulating piston travel sender G149 and quantity adjuster N146	86
2.10 Check needle lift sender G80	88
2.11 Checking injection timing control range	89
2.12 Checking air mass meter G70	91
2.13 Checking intake manifold flap change-over	94
2.14 Checking intake manifold flap motor V157	95
3 Checking additional signals	98
3.1 Checking speed signal	98
3.2 Checking gear change signal from automatic gearbox	99
3.3 Checking signal from/to air conditioning system	100
3.4 Checking speed signal	102
3.5 Checking cruise control system (CCS)	103



4	Renewing, coding and matching engine control unit	105
4.1	Renewing engine control unit	105
4.2	Coding engine control unit	105
4.3	Adapting engine control unit to electronic immobilizer	106
28 -	Glow plug system	108
1	Checking glow plug system	108
1.1	Checking glow plugs	108