Contents

01 - Self-diagnosis 1
1 Self-diagnosis of Motronic system 1
1.1 Self-diagnosis of Motronic system 1
1.2 Technical data for self-diagnosis 1
1.3 Safety precautions 1
1.4 Connecting vehicle diagnostic, testing and information system VAS 5051 or fault reader V.A.G 1551 and selecting functions 1
2 Interrogating and erasing fault memory 4
2.1 Interrogating and erasing fault memory 4
2.2 Fault table 5
3 Final control diagnosis 13
3.1 Final control diagnosis 13
4 Basic setting 16
4.1 Basic setting 16
5 Coding control unit 18
5.1 Coding control unit 18
5.2 Coding table 19
6 Reading measured value block 19
6.1 Reading measured value block 19
24 - Mixture preparation, Injection 21
1 Servicing Motronic injection system 21
1.1 Servicing Motronic injection system 21
1.2 Safety precautions 21
1.3 Rules for cleanliness 21
1.4 Technical data 22
1.5 Fitting locations overview 23
1.6 Dismantling and assembling air cleaner 31
1.7 Wiring and component check with test box V.A.G 1598/31 32
1.8 Renewing engine control unit 34
1.9 Testing idling speed 35
1.10 Checking system pressure, fuel pressure regulator and holding pressure 37
1.11 Testing injectors 40
1.12 Dismantling and assembling fuel rail with injectors 44
1.13 Removing and installing injectors 48
1.14 Checking injection quantity, leak-tightness and spray pattern of injectors 49
1.15 Testing fuel pump relay -J17 and activation 51
1.16 Testing air mass meter -G70 55
1.17 Checking intake air system for leaks (unmetered air) 59
2 Testing lambda control 61
2.1 Testing lambda control 61
2.2 Operation of lambda control 61
2.3 Testing lambda probe and lambda control 62
2.4 Testing lambda probe heating 67
2.5 Removing and installing lambda probe 70
3 Testing secondary air system 71
3.1 Testing secondary air system 71
3.2 Testing secondary air inlet valve -N112 75
3.3 Testing secondary air pump relay -J299 and activation 79
4 Testing fuel tank breather 82
4.1 Testing fuel tank breather 82
4.2 Testing solenoid valve 1 for activated charcoal filter -N80 82

5 Testing electronic engine power control (electronic throttle) 85
5.1 Testing electronic engine power control (electronic throttle) 85
5.2 Operation of electronic throttle system 85
5.3 Notes on EPC warning lamp (fault warning lamp for electronic throttle) in dash panel insert 86
5.4 Testing electronic throttle warning lamp -K132 86
5.5 Testing throttle valve control part -J338 88
5.6 Performing adaption of throttle valve control part 88
5.7 Checking throttle valve for dirt 91
5.8 Cleaning throttle valve control part 94
5.9 Testing angle senders for throttle valve drive 94
5.10 Testing accelerator position senders 97
6 Vacuum system layout 102
6.1 Vacuum system layout 102
7 Testing auxiliary signals 106
7.1 Testing auxiliary signals 106
7.2 Checking engine speed signal 106
7.3 Testing fuel consumption signal for on-board computer 106
7.4 Testing road speed signal 107
7.5 Testing air conditioner compressor shut-off 109
7.6 Testing brake light switch and brake pedal switch 111
7.7 Testing clutch pedal switch -F36 115
7.8 Testing power steering pressure switch -F88 118
7.9 Testing data exchange between Motronic system and ABS (CAN bus) 121

28 - Ignition system 123
1 Testing ignition system 123
1.1 Testing ignition system 123
1.2 General notes on ignition system 123
1.3 Safety precautions 123
1.4 Technical data 123
1.5 Testing ignition coils with output stages 124
1.6 Testing intake air temperature sender -G42 128
1.7 Testing engine speed sender -G28 131
1.8 Testing coolant temperature sender -G62 133
1.9 Testing voltage supply for control unit 136
1.10 Testing knock sensor control limit 137
1.11 Testing knock sensors 138
1.12 Testing Hall sender -G163 140