

Contents

01 - Self-diagnosis	1
1 Self-diagnosis	1
1.1 Self-diagnosis	1
1.2 Technical data of self-diagnosis	1
1.3 Safety precautions	1
1.4 Connecting up vehicle diagnostic, testing and information system VAS 5051 and selecting functions	1
2 Interrogating and erasing fault memory	5
2.1 Interrogating and erasing fault memory	5
2.2 Interrogating fault memory	5
2.3 Erasing fault memory	6
2.4 End of output	7
2.5 Fault table	8
2.6 Fault codes 16485 - 17948	8
2.7 Fault codes 17954 - 19561	16
3 Final control diagnosis	23
3.1 Final control diagnosis	23
4 Basic setting	31
4.1 Basic setting	31
5 Encoding control unit	33
5.1 Encoding control unit	33
6 Reading measured value block	35
6.1 Reading measured value block	35
6.2 Performing test drive at full throttle	37
6.3 List of display groups	37
6.4 Display specifications for general vehicle checking	40
6.5 Display specifications for UIS solenoid valves	42
6.6 Engine idling display specifications	43
6.7 EGR display specifications	45
6.8 Temperature sender display specifications	45
6.9 Vehicle performance display specifications	46
6.10 Charge pressure control display specifications	47
6.11 Data bus display specifications	48
23 - Mixture preparation, Injection	49
1 Servicing diesel direct-injection system	49
1.1 Servicing diesel direct-injection system	49
1.2 Safety precautions	49
1.3 Rules for cleanliness	49
1.4 Exploded view of fitting locations - engine code letters AJM	50
1.5 Exploded view of fitting locations - engine code letters AVF, AWX	56
1.6 Servicing intake manifold flap	64
1.7 Checking intake manifold flap switching action	66
1.8 Servicing unit injector system	72
1.9 Checking UIS solenoid valves	75
1.10 Removing and installing unit injector system	79
1.11 Removing and installing O-rings for unit injector system	83
1.12 Wiring and component check using test box V.A.G 1598/31	85
1.13 Replacing engine control unit	86
1.14 Checking power supply for diesel direct injection system	92
2 Checking control-unit input variables	97
2.1 Checking control-unit input variables	97
2.2 Checking engine speed sender -G28	97

2.3	Checking intake manifold pressure sender -G71 and elevation sender -F96	99
2.4	Checking coolant temperature sender -G62	101
2.5	Checking intake manifold temperature sender -G72	103
2.6	Checking fuel-temperature sender -G81	105
2.7	Checking air-mass meter -G70	107
2.8	Checking camshaft position Hall sender -G40	110
2.9	Checking brake light switch -F and brake pedal switch -F47	112
2.10	Checking clutch pedal switch -F36	115
3	Checking additional signals	118
3.1	Checking additional signals	118
3.2	Checking air-conditioner compressor signal and air-conditioner compressor shutoff	118
3.3	Checking vehicle-speed signal	120
3.4	Checking crash signal wire	121
3.5	Checking cruise control system (CCS)	122
3.6	Checking engine-speed signal	124
4	Checking signals from/to ABS control unit	124
4.1	Checking signals from/to ABS control unit	124
4.2	Checking data wire (CAN bus) between engine control unit and ABS control unit	124
5	Checking signals from/to dash panel insert	125
5.1	Checking signals from/to dash panel insert	125
5.2	Checking data wire (CAN bus) between engine control unit and dash panel insert	125
6	Checking signals from/to air conditioner	125
6.1	Checking signals from/to air conditioner	125
6.2	Checking data wire (CAN bus) between engine control unit and air conditioner	125
7	Testing two-wire bus system (CAN bus)	126
7.1	Testing two-wire bus system (CAN bus)	126
7.2	Checking data exchange between engine control unit and control units with CAN capability	126
28 - Glow plug system	130	
1	Checking glow plug system	130
1.1	Checking glow plug system	130
1.2	Checking operation	130
1.3	Checking glow plug relay -J52 and actuation	133
1.4	Checking glow plugs	136