

Contents

01 - Self-diagnosis	1
1 Multi Point Injection self-diagnosis	1
1.1 Multi Point Injection self-diagnosis	1
1.2 Control unit overview	1
1.3 Technical self-diagnosis data	1
1.4 Safety precautions	1
1.5 Connecting vehicle diagnosis, measurement 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	6
3 Final control diagnosis	15
3.1 Final control diagnosis	15
4 Basic setting	17
4.1 Basic setting	17
5 Coding control unit	20
5.1 Coding control unit	20
5.2 Table of codes for control unit nos. up to index "C":	21
5.3 Table of codes for control unit nos. up to index "D":	22
6 Reading measured value block	22
6.1 Reading measured value block	22
6.2 Display group overview	23
7 Adaptation	31
7.1 Adaptation	31
8 Testing diagnostic connector wiring connections	35
8.1 Testing diagnostic connector wiring connections	35
8.2 Checking voltage supply to "black" diagnostic connector:	36
8.3 Checking wiring connection between "white" diagnostic connector and engine control unit	36
24 - Mixture preparation, Injection	40
1 Servicing multi point fuel injection system	40
1.1 Servicing multi point fuel injection system	40
1.2 Safety precautions	40
1.3 Rules for cleanliness	40
1.4 Technical data	41
1.5 Fitting locations overview	42
1.6 Checking wiring and components with test box V.A.G 1598 A	46
1.7 Replacing engine control unit	47
1.8 Checking idling speed	50
1.9 Checking system pressure, fuel pressure regulator and holding pressure	52
1.10 Checking injectors	54
1.11 Removing and installing fuel rail with injectors and throttle valve unit	59
1.12 Removing and installing injectors	61
1.13 Testing injection quantity, leak tightness and spray pattern of injectors	63
1.14 Testing fuel pump relay -J17 and actuation	65
1.15 Checking idling stabilisation valve -N71	70
1.16 Checking intake air system for leaks (unmetered air)	73
2 Testing Lambda control	74
2.1 Testing Lambda control	74
2.2 Checking Lambda probe heater	75
2.3 Checking Lambda probe and signal wire	81
2.4 Checking function of Lambda probes	83

2.5	Removing and installing Lambda probe	84
3	Checking fuel tank breather	85
3.1	Checking fuel tank breather	85
3.2	Checking activated charcoal filter solenoid valve 1 -N80	85
4	Checking throttle valve potentiometer -G69	90
4.1	Checking throttle valve potentiometer -G69	90
4.2	Checking idling switch -F60	93
5	Checking auxiliary signals	97
5.1	Checking auxiliary signals	97
5.2	Testing air conditioner compressor signal and air conditioner compressor shut-off	97
5.3	Checking engine speed signal	100
5.4	Checking consumption signal for on-board computer	100
5.5	Checking vehicle speed signal	101
5.6	Checking output signal for throttle valve position	103
5.7	Checking gear signal	105
5.8	Checking ignition timing retardation on changing gear	108
6	Vacuum diagram	110
6.1	Vacuum diagram	110
6.2	Vehicles with manual gearbox:	110
6.3	Vehicles with automatic gearbox:	112
28	- Ignition system	114
1	Checking ignition system	114
1.1	Checking ignition system	114
1.2	Safety precautions	114
1.3	Technical data	114
1.4	Removing and installing ignition system components	115
1.5	Checking ignition coils -N, -N128, and -N158	118
1.6	Checking output stage -N122	121
1.7	Checking ignition timing -G4	124
1.8	Checking engine speed sensor -G28	126
1.9	Checking intake air temperature sensor -G42	131
1.10	Checking coolant temperature sensor -G62	135
1.11	Checking control unit power supply	138
1.12	Checking knock sensors	141
1.13	Checking Hall sensor -G40	144