

## Contents

<b>01</b>	<b>Self-diagnosis</b>	<b>Page</b>
	<b>General to self-diagnosis</b> .....	<b>01-1</b>
	– Features of self-diagnosis .....	01-1
	– Significance of EPC warning lamp (fault lamp for electronic accelerator) in dash panel insert .....	01-3
	– Significance of exhaust emissions warning lamp .....	01-4
	– Technical data of self-diagnosis .....	01-6
	– Connecting fault reader V.A.G 1551 and selecting engine control unit .....	01-9
	– Connecting vehicle diagnosis, testing and information system VAS 5051 and selecting engine control unit .....	01-14
	<b>Fault memory</b> .....	<b>01-18</b>
	– Interrogating and erasing fault memory .....	01-18
	<b>Fault table: from V.A.G code 16486 / SAE P0 codes</b> .....	<b>01-23</b>
	<b>Fault table: from V.A.G code 17510 / SAE P1 codes</b> .....	<b>01-39</b>
	<b>Final control diagnosis</b> .....	<b>01-64</b>
	– Performing final control diagnosis .....	01-64
	<b>Readiness code</b> .....	<b>01-88</b>
	– Reading readiness code .....	01-89
	– Generating readiness code .....	01-91
	<b>Measured value blocks</b> .....	<b>01-105</b>
	– Safety precautions.....	01-105
	– Read measured value block .....	01-105
	<b>Evaluating measured value blocks, display groups 0...6 -Basic functions-</b> .....	<b>01-108</b>
	<b>Evaluating measured value blocks, display groups 10...29 -Ignition-</b> .....	<b>01-119</b>
	<b>Evaluating measured value blocks, display grps. 30...33, 99 -Lambda regulation-</b> .....	<b>01-126</b>
	<b>Evaluating measured value blocks, display groups 50...69 -Speed regulation-</b> .....	<b>01-141</b>
	<b>Evaluating measured block values, display groups 91...95 -Performance improvement-</b> .....	<b>01-151</b>
	<b>Evaluating measured value block, display group 125 -Communication-</b> .....	<b>01-153</b>
<b>24</b>	<b>Mixture preparation, Injection</b>	<b>Page</b>
	<b>Servicing injection system</b> .....	<b>24-1</b>
	– Fitting locations overview .....	24-1
	– General notes on injection.....	24-6
	– Removing and installing parts of the injection system .....	24-8
	– Dismantling and assembling intake manifold .....	24-19
	– Dismantling and assembling fuel distributor .....	24-22
	– Dismantling and assembling air cleaner .....	24-24
	– Safety precautions.....	24-27
	– Rules for cleanliness.....	24-29
	– Technical data.....	24-30
	<b>Checking components</b> .....	<b>24-31</b>
	– Checking Lambda probe heating for Lambda probe before catalyst.....	24-31
	– Checking Lambda probe heating for Lambda probe after catalyst .....	24-41
	– Checking air mass meter.....	24-50
	– Checking throttle valve control part.....	24-58
	– Checking coolant temperature sender .....	24-66
	– Checking intake air temperature sender .....	24-76
	– Checking engine speed sender.....	24-86
	– Checking injectors .....	24-89
	– Checking fuel pressure regulator and holding pressure .....	24-100
	– Checking intake manifold change-over.....	24-104
	– Checking intake air system for leaks (unmetered air) .....	24-107
	<b>Checking functions</b> .....	<b>24-111</b>
	– Idling check .....	24-111
	– Checking Lambda probe and Lambda regulation before catalyst .....	24-114
	– Checking Lambda probe and Lambda regulation after catalyst .....	24-123
	– Checking Lambda probe ageing of Lambda probe 1 bank 1 .....	24-129
	– Checking Lambda probe ageing of Lambda probe 1 bank 2 .....	24-132
	– Checking Lambda probe ageing Lambda probe after catalyst (trim regulation) .....	24-134
	– Checking engine operating mode .....	24-137

<b>Engine control unit</b> .....	<b>24-141</b>
– Checking control unit voltage supply .....	24-141
– Procedure after voltage supply open circuit .....	24-144
– Replacing engine control unit.....	24-146
– Coding engine control unit .....	24-149
– Matching engine control unit to electronic immobilizer .....	24-152
– Adapting engine control unit to throttle valve control part .....	24-154
<b>Checking additional signals</b> .....	<b>24-159</b>
– Checking speed signal .....	24-159
– Checking signal from/to air conditioner .....	24-163
– Checking signal from clutch pedal switch.....	24-167
– Checking signal from brake light switch and brake pedal switch.....	24-171
– Checking cruise control system (CCS) .....	24-175
– Checking data bus .....	24-179

**28**

<b>Ignition system</b> .....	<b>Page</b>
<b>Servicing ignition system</b> .....	<b>28-1</b>
– General notes on ignition system .....	28-1
– Removing and installing parts of the ignition system.....	28-2
– Safety precautions .....	28-7
– Test data, spark plugs .....	28-8
– Checking Hall sender.....	28-9
– Checking ignition transformer .....	28-12
– Checking knock sensor.....	28-18
– Check misfiring recognition .....	28-27