

## Contents

<b>01</b>	<b>Self-diagnosis</b>	<b>Page</b>
<b>General to self-diagnosis</b> .....		
-	Features of self-diagnosis .....	01-1
-	Technical data of self-diagnosis .....	01-1
-	Significance of EPC warning lamp (fault lamp for electronic accelerator) in dash panel insert .....	01-2
-	Connecting fault reader V.A.G 1551 and selecting engine electronics control unit .....	01-5
-	Connecting vehicle diagnosis, testing and information system VAS 5051 and selecting engine electronics control unit .....	01-6
-	.....	01-11
<b>Fault memory</b> .....		
-	Interrogating and erasing fault memory .....	01-15
<b>Fault table: SAE P0 codes</b> .....		
<b>Fault table: SAE P1 codes</b> .....		
<b>Final control diagnosis</b> .....		
-	Performing final control diagnosis .....	01-43
<b>Measured value blocks</b> .....		
-	Safety precautions .....	01-51
-	Read measured value block .....	01-51
<b>Evaluating measured value blocks, display groups 0...9 -Basic functions-</b> .....		
<b>Evaluating measured value blocks, display groups 10...29 -Ignition-</b> .....		
<b>Evaluating measured value blocks, display groups 30...49 -Lambda regulation-</b> .....		
<b>Evaluating measured value blocks, display groups 50...69 -Speed regulation-</b> .....		
<b>Evaluating measured value blocks, display groups 110...119 -Charge pressure control-</b> .....		
<b>Evaluating measured value blocks, display groups 120...129 -Communication-</b> .....		
<b>24</b>	<b>Mixture preparation, Injection</b>	<b>Page</b>
<b>Servicing injection system</b> .....		
-	Fitting locations overview .....	24-1
-	General notes on injection .....	24-4
-	Removing and installing parts of the injection system .....	24-6
-	Dismantling and assembling air cleaner .....	24-14
-	Dismantling and assembling fuel rail with injectors .....	24-15
-	Safety precautions .....	24-17
-	Rules for cleanliness .....	24-19
-	Technical data .....	24-20
<b>Checking components</b> .....		
-	Checking Lambda probe heating for Lambda probe before catalyst .....	24-21
-	Checking air mass meter .....	24-25
-	Checking throttle valve control part .....	24-30
-	Checking coolant temperature sender .....	24-36
-	Checking intake air temperature sender .....	24-44
-	Checking engine speed sender .....	24-51
-	Checking injectors .....	24-53
-	Checking fuel pressure regulator and holding pressure .....	24-62
-	Checking intake air system for leaks (unmetered air) .....	24-66
<b>Checking functions</b> .....		
-	Idling check .....	24-69
-	Adapting idling speed .....	24-73
-	Checking Lambda probe and Lambda regulation before catalyst .....	24-76
-	Checking engine operating mode .....	24-82
<b>Engine control unit</b> .....		
-	Checking control unit voltage supply .....	24-86
-	Procedure after voltage supply open circuit .....	24-89
-	Replacing engine control unit .....	24-91
-	Coding engine control unit .....	24-93
-	Coding variations of engine control unit .....	24-96
-	Adapting engine control unit to throttle valve control part .....	24-98

- Matching engine control unit to electronic immobilizer .....	24-102
<b>Checking additional signals .....</b>	<b>24-105</b>
- Checking speed signal .....	24-105
- Checking signal from/to air conditioning system .....	24-108
- Checking signal from clutch pedal switch .....	24-111
- Checking signal from brake light switch and brake pedal switch .....	24-114
- Checking signal from power steering pressure switch .....	24-118
- Checking driving range signal .....	24-122
- Checking data bus .....	24-124

**28**

## **Ignition system**

**Page**

<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 .....	28-5
- Test data, spark plugs .....	28-7
- Checking Hall sender .....	28-8
- Checking ignition coils with output stage .....	28-10
- Checking knock sensor .....	28-14