



# Repair Manual

**2.0 I 16 V engine**

**Letters: ABF**

Index	Page
<b>Characteristics and data</b> .....	1
<b>Tightening torque</b> .....	1
<b>10. Engine unit: removal and refitting: 2.0 I 16 V engine</b>	
— Engine unit assembly. Removal and refitting .....	1
— Rubber-metal bushing. Removal and refitting	
• Rear rubber-metal bush, engine side .....	10
• Front rubber-metal bush, engine side .....	11
• Rear rubber-metal bush, gearbox side .....	12
<b>13. Crankshaft assembly: 2.0 I 16 V engine</b>	
— Engine: Exploded view .....	1
— Engine: Exploded view .....	2
— Engine: Exploded view .....	3
— Timing belt drive. Removal and refitting .....	4
— Timing belt. Tightening .....	9
— Poly-V belt. Removal and refitting .....	10
— Cylinder block, seals and engine flywheel: Exploded view .....	11
— Crankshaft seal, flywheel side. Replacement .....	12
— Crankshaft assembly: Exploded view .....	14
— Crankshaft seal, timing side. Replacement .....	15
— Intermediate shaft seal. Replacement .....	16
— Intermediate shaft. Removal and fitting .....	17
— Crankshaft. Measurements .....	18
— Crankshaft bearing cap fitting and tightening .....	18
— Crankshaft radial play. Checking .....	18
— Crankshaft axial play. Checking .....	19
— Axial half bearings. Fitting .....	19
— Pistons and piston pins: Exploded view .....	20
— Connecting rod, gudgeon pin and piston assembly. Removal, checking and fitting	
• Disassembly .....	21
• Checking the pistons .....	21
• Piston ring end play checking .....	22
• Piston ring-piston groove play checking .....	22
• Checking the cylinder bore .....	23

Index	Page
● Piston and cylinder bore dimensions .....	23
● Reassembly .....	23
● Connecting rod radial play checking .....	24
● Connecting rod axial play checking .....	25
— Compression ratio .....	25
<b>15. Cylinder head: valve operation. 2.0 I 16 V engine</b>	
— Cylinder head: Exploded view .....	1
— Cylinder head. Removal and replacement. (On the vehicle) .....	2
● Metal cylinder head gasket .....	5
● Notes for tightening the cylinder head bolts .....	6
— Valve operation: Exploded view .....	7
— Camshaft oil seal. Replacement. (Cylinder head fitted to the vehicle) .....	8
— Distributor shafts. Removal and refitting	
● Removal .....	11
● Refitting .....	14
● Camshaft code .....	15
● Distribution timing .....	15
● Radial play in camshaft. Checking .....	15
● Axial play in camshaft. Checking .....	16
— Hydraulic tappets. Checking, removal and refitting .....	17
— Cylinder head. Removal and refitting	
● Disassembly .....	18
● Checking .....	18
● Checking the distortion .....	19
● Reassembly .....	19
— Valves. Checking and dimensions .....	19
— Valve seats	
● Grinding .....	20
● Intake valve seat grinding .....	20
● Exhaust valve seat grinding .....	20
— Valve guide seal. Replacement .....	21
— Valve guides	
● Checking the play between valve and guide .....	21
● Valve guide replacement .....	21

Index	Page
<b>17. Lubrication: 2.0 I 16 V engine</b>	
— Lubrication system: Exploded view .....	1
— Lubrication system: Exploded view .....	2
— Engine oil specifications	
• Temperature range .....	3
• Lubrication system: capacity .....	3
• Checking the oil level .....	3
— Oil pump. Removal and fitting .....	4
— Backlash. Checking .....	5
— Axial play. Checking .....	5
— Oil pump drive shaft bushings. Replacement .....	6
— Oil cooler. Replacement .....	6
— Oil pressure switch. Checking .....	7
— Engine oil pressure. Checking .....	7
— Oil filter. Replacement .....	7
— Oil-pressure gauge. Checking .....	8
<b>19. Cooling: 2.0 I 16 V engine</b>	
— Cooling system: Exploded view .....	1
— Cooling system: Exploded view .....	2
— Cooling liquid pump: Exploded view .....	3
— Coolant. Draining and refilling	
• Recommended mixture ratio .....	4
• Draining .....	4
• Refilling .....	4
— Coolant pump. Removal and fitting .....	5
— Cooling system. Water-tightness test .....	8
— Expansion tank cap. Checking .....	9
— Thermostat. Checking .....	9
— Fan control thermo-switch. Checking .....	10
— Electric fan 3rd speed thermal control switch. Checking .....	10
— Radiator-fan assembly. Removal and fitting .....	11
— Indications to be taken into account when working on the cooling circuit .....	12
— Cleaning of circuit and coolant replacement in case of mixture .....	12

Index	Page
<b>20. Fuel feed: 2.0 I 16 V engine</b>	
— Fuel feed system: Exploded view .....	1
— Fuel feed system: Exploded view .....	2
— Cleaning and safety precautions .....	3
— Fuel tank. Removal and fitting .....	3
— Fuel level sender unit and fuel pump. Removal and refitting .....	5
— Fuel filter. Replacement .....	6
— Ventilation valve. Checking .....	7
— Gravity valve. Checking .....	7
— Fuel pump	
• Checking the power supply .....	8
• Checking the fuel flow .....	9
— Fuel pump non-return valve. Checking .....	11
— Accelerator cable adjustment .....	12
— Accelerator pedal. Removal and refitting .....	12
— Activated carbon tank system: Exploded view .....	13
— Bleeding the fuel system. Checking	
• Checking the active carbon tank .....	14
• Checking the fuel tank and filling top .....	15
• Checking the safety valve and assembly position .....	15
<b>24. Fuel preparation: 2.0 I 16 V engine</b>	
— Digifant 2.0 I 16 V injection installation. Location of components .....	1
— Digifant 2.0 I 16 V injection system: Disassembly .....	2
— Upper part of inlet manifold: Disassembly .....	3
— Fuel distributor: Exploded view .....	4
— Air filter and case: Exploded view .....	5
— Safety precautions to be taken into account when handling the injection and ignition system .....	6
— Rules for cleaning .....	6
— Important considerations regarding the injection system .....	6
— Carry out basic adjustment .....	7
— Checking the No. 1 cylinder identification transmitter/Hall transmitter .....	9
— Checking the lambda probe and adjustment .....	10
— Check lambda probe heating .....	11
— Testing the engine load states .....	12

Index	Page
— Checking the throttle valve potentiometer .....	12
— Checking the coolant liquid temperature transmitter .....	14
— Checking the inlet air temperature transmitter .....	15
— Checking the engine speed transmitter .....	17
— Replace the engine revolutions transmitter .....	17
— Checking the engine speed transmitter .....	17
— Checking the inlet manifold pressure transmitter .....	18
— Checking the idling switch .....	18
• Changing the idling switch .....	19
• Adjust the idling switch .....	20
— Checking the injection control unit power supply .....	20
— Check the signal of the starter engine .....	21
— Adaptation of the immobilizer system to the engine control unit .....	21
— Check the fuel pressure regulator and the retention pressure .....	22
— Fuel distributor with injectors	
• Removal, replacement and checking .....	23
• Removal and replacement of injectors .....	26
• Injector power supply voltage .....	27
• Check the injector resistance .....	27
• Check the spray shape and sealing of the injectors .....	27
— Inlet system. Checking for leaks .....	28
— Summary table of display groups in function 08, "Read measurement values block" .....	30
• Table for values for group 00 in function 08, "Read measurement values block" .....	31
— Autodiagnosis with the fault detector VAG 1551	
• Read the fault memory .....	32
• Erase the faults memory .....	32
• Selectable functions with the fault detector VAG 1551 .....	33
• Actuator diagnostic with the fault detector VAG 1551 .....	33
— Pinking sensors	
• Right sensor tightening torque .....	35
• Left sensor tightening torque .....	36
• Replacement .....	36
— Fault-finding table using the VAG 1551 .....	36
— Checking the injection system with the VAG 1598/18 .....	40
— Fault table for fault detector VAG 1598/18 .....	41

Index	Page
<b>26. Exhaust system: 2.0 I 16 V engine</b>	
— Exhaust system: 2.0 I 16 V Digifant engine. Exploded view .....	1
— Final exhaust stage: Replacement .....	2
— Indications for tightening exhaust pipe to inlet .....	2
<b>28. Ignition system: 2.0 I 16 V engine</b>	
— Digifant 2.0 I 16 V ignition system: Exploded view .....	1
— Ignition distributor: Exploded view .....	2
— Safety measures regarding the Digifant injection and ignition system .....	3
— Spark plug adjustment data .....	3
— Ignition distributor rotor. Replacement .....	3
— Ignition timing. Checking .....	3
— Ignition timing adjustment checking .....	4
— Checking the Hall pulse generator .....	4
• Checking the power supply .....	5
— Checking the ignition transformer .....	5
— Checking the ignition transformer final stage .....	5
• Checking the power supply .....	6
• Operation checking .....	6
<b>List of tools: 2.0 I 16 V engine .....</b>	<b>1</b>
<b>List of equipment: 2.0 I 16 V engine .....</b>	<b>1</b>

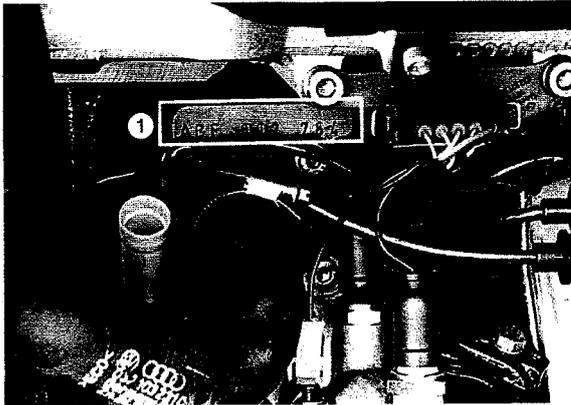
---

<b>26. Exhaust system: 2.0 I 16 V engine</b>	
— Exhaust system: 2.0 I 16 V Digifant engine. Exploded view .....	1
— Final exhaust stage: Replacement .....	2
— Indications for tightening exhaust pipe to inlet .....	2
<b>28. Ignition system: 2.0 I 16 V engine</b>	
— Digifant 2.0 I 16 V ignition system: Exploded view .....	1
— Ignition distributor: Exploded view .....	2
— Safety measures regarding the Digifant injection and ignition system .....	3
— Spark plug adjustment data .....	3
— Ignition distributor rotor. Replacement .....	3
— Ignition timing. Checking .....	3
— Ignition timing adjustment checking .....	4
— Checking the Hall pulse generator .....	4
• Checking the power supply .....	5
— Checking the ignition transformer .....	5
— Checking the ignition transformer final stage .....	5
• Checking the power supply .....	6
• Operation checking .....	6
<b>List of tools: 2.0 I 16 V engine</b> .....	1
<b>List of equipment: 2.0 I 16 V engine</b> .....	1

# Engine

## Characteristics and data: 2.0 I 16 V engine

### IDENTIFICATION LETTER AND ENGINE NUMBER



01A024



01A025

- (1) The identification letters and the engine serial number are engraved on the cylinder block above the oil filter.  
 (2) There is also a sticker with the identification letters and serial number on the upper timing belt cover.

### ENGINE DATA

ENGINE CODE LETTERS		ABF
Cycle		OTTO/ATMOSPHERIC 4 stroke
Number of cylinders		4
Number of valves		16
Cylinder bore	mm	82.5
Stroke	mm	92.8
Swept volume	l	2.0
	cm <sup>3</sup>	1984
Compression ratio		10.5 : 1
Maximum horsepower	kW	110
	rpm	6000
Maximum torque	Nm	180
	rpm	4500