Maintenance

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Maintenance

Heading

1. Engine overview
2. Service plans
3. General remarks
4. Service descriptions
5. Additional tasks due to country legislation

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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1 Engine overview

Identification letters	AQZ	BAH	BLH	CFZA
Engines →	petrol engine	petrol engine	petrol engine	petrol engine
Production	from 08.04.03	from 11.24.03	from 11.17.03	from 11.08
Limit value for exhaust gases according to	Phase 3 of resolution number 15 from CONAMA	Phase 3 of resolution number 15 from CONAMA	Tier 1	EU 2 MVEG2[3] Tier 1 ME s/OBD [4]
Exhaust gas warning light	no	no	yes	yes
Number of cylinders/Valves per cylinder	4/2	4/2	4/2	4/2
Cylinder volume l	1.0	1.6	1.6	1.6
Max. output kW/rpm	52,0/6000	74/5750	74,0/5750	74/5250
Engine torque Nm/rpm	89,0/4500	140,0/3250	140,0/3250	143,0/2500
Diameter ∅ mm	67,11	76,5	76,5	76,5
Stroke mm	70,6	87,0	87,0	87,0
Compression rate	10,8;1	10,8:1	10,8:1	10,8:1
Injection/ignition	4BV[1]	ME 7.5.10[2]	ME 7.5.10[2]	ME 07.05.30
Octane rating (ROZ) min.	95 lead-free	95 lead-free	95 lead-free	95 lead-free
Electronic accelerator	yes	yes	yes	yes
Self-diagnosis	yes	yes	yes	yes
Catalytic converter	yes	yes	yes	yes
Lambda adjustment	1 Lambda probe	1 Lambda probe	2 Lambda probes	2 Lambda probes
Recirculation of exhaust gases	no	no	no	no
Exhaust gas turbocharger	no	no	no	no

1) 4BV injection system with immobilizer

2) ME 7.5.10 injection system with immobilizer

3) Argentina from the start.

4) Mexico from the start.

Identification letters	ASY	BNM
Engines →	Diesel engine	Diesel engine
Production	from 11.24.03	from 01.24.05
Limit value for exhaust gases according to	EURO 3 diesel	EURO 3 diesel
Number of cylinders/Valves per cylinder	4/2	3/2
Cylinder volume l	1,9	1,4
Max. output kW/rpm	47,0/4000	51,0/4000
Engine torque Nm/rpm	125,0/1600	155.0/1600 to 2800
Diameter ∅ mm	79,5	79,5
Stroke mm	95,5	95,5
Compression rate	19,5:1	19,5
Injection/ignition	Direct diesel injection (SDI)	Direct diesel injection (TDI PD)
Cetane coefficient min.	49	49
Electronic accelerator	no	no

Identification letters	ASY	BNM
Self-diagnosis	yes	yes
Catalytic converter	yes	yes
Lambda adjustment	no	no
Recirculation of exhaust gases	yes	yes
Exhaust gas turbocharger	no	yes

Identification letters		BKR	BMD	CHFB
Engines →		petrol engine	petrol engine	petrol engine
Production		from 11.22.04	from 11.22.04	from 03.09
Limit value for exhaust gases according to		EURO 4	EURO 4	EURO 4
Number of cylinders/Valves per cylinder		4/2	3/2	3/2
Cylinder volume	l	1,4	1,2	1,2
Max. output	kW/rpm	55,0/5600	40,0/4750	40,0/4750
Engine torque	Nm/rpm	110,0/4000	106,0/3000	106,0/3000
Diameter	∅ mm	76,5	76,5	76,5
Stroke	mm	75,6	86,9	86,9
Compression rate		10,5	10,3	10,3
Injection/ignition		4 EV	[6] Simos 3 PG	Simos 9.1
Octane rating (ROZ)	min.	[5] 95 lead-free	[5] 95 lead-free	[5] 95 lead-free
Electronic accelerator		yes	yes	yes
Self-diagnosis		yes	yes	yes
Catalytic converter		yes	yes	yes
Lambda adjustment		yes	yes	yes
Recirculation of exhaust gases		no	no	no
Exhaust gas turbocharger		no	no	no

5) in exceptional cases, octane rating of at least 91, but with reduced power.

6) Simos 3 PG installed up to week 29, Simos 9.1 started in week 30.

2 Service plans

This chapter contains information on the following subjects:

Delivery inspection ⇒ page 5

Oil change service ⇒ page 7

Intermediate service Models ‣2010 (Europe) and Models 2009‣ (except Europe) ⇒ page 8

Intermediate service Models 2011‣ (Europe) ⇒ page 10

Inspection service ⇒ page 13

2.1 Service table

VW standards on engine oil ⇒ page 3

Replacement intervals for the filters ⇒ page 3

Replacement intervals for the timing belt ⇒ page 4

Replacement intervals for spark plugs ⇒ page 4

Service intervals - Models ‣ 2008 (except Europe) ⇒ page 4

Service intervals - Models ‣ 2007 (Europe) ⇒ page 5

Service intervals - Models 2008‣ (Europe) and Models 2009‣ (except Europe) ⇒ page 5

Service intervals – table ⇒ page 28

2.1.1 VW standards on engine oil

Petrol engines

VW standards
502 00

Diesel engines

Diesel engines	VW standards
With injector - pump	505 01
Without injector - pump	505 00

2.1.2 Replacement intervals for the filters

Replacement intervals for the filter	
ENGINE OIL FILTER	
For all countries:	every 15,000 km or 1 year
AIR FILTER	
Europe only	every 60,000 km or 4 years
Except Europe	every 18,641.14 mi or 2 years
FUEL FILTER	

Replacement intervals for the filter						
all diesel engines	Diesel complying with European Standard 590		Diesel not complying with European Standard 590		Bio-diesel (RME)	
	Change	Drain	Change	Drain	Change	Drain
	at every 37,282.27 mi	30,000 and every 60,000 km	at every 30.000 km	at every 9,320.57 mi	at every 30.000 km	at every 9,320.57 mi
Engines with identification letters AQZ, BAH, BLH, and BKR	at every 30,000 km					
DUST AND POLLEN FILTER						
All engines ‣2007 for Europe and except Europe ‣2008	at every 30,000 km					
All engines 2008‣ for Europe and 2009‣ except Europe	every 18,641.14 mi or 2 years					

2.1.3 Replacement intervals for the timing belt

Replacement intervals for the timing belt				
Diesel engines				
Engine type	MKB	Time period	Replacement interval	Tensioning roller
1.9 l SDI	ASY	-	at every 93,205.68 mi	at every 93,205.68 mi
1.4 l TDI with injector/ pump	BNM	Year model ‣2007	at every 55,923.41 mi	-
		Year Model 2008‣	at every 93,205.68 mi	-

2.1.4 Replacement intervals for spark plugs

Replacement interval for spark plugs	
All petrol engines	every 60,000 km or 4 years

2.1.5 Service intervals - Models ‣ 2008 (except Europe)

Petrol engines and diesel engines

Intervals according to the maintenance interval indicator (not flexible)	Service
– Oil change service according to the maintenance interval indicator ◆ at every 15,000 km or every 1 year, whichever occurs first, (for all countries)	7)

Intervals according to the maintenance interval indicator (not flexible)	Service
– Inspection service according to the maintenance interval indicator ♦ at every 1 year, every 30,000 km and every 60,000 km	

7) In vehicles using diesel with high sulfur content, the oil must be changed at every 7,500 km. Countries with high sulfur content in diesel, ⇒ page 28

2.1.6 Service intervals - Models ▸ 2007 (Europe)

Intervals according to the maintenance interval indicator (not flexible)	Service
– Oil change service according to the maintenance interval indicator ♦ at every 15,000 km or every 1 year, whichever occurs first, (for all countries)	8)
– Inspection Service ♦ at every 30,000 km or every 2 years, whichever occurs first.	

8) In vehicles using diesel with high sulfur content, the oil must be changed at every 7,500 km. Countries with high sulfur content in diesel, ⇒ page 28 .

2.1.7 Models 2008▸ (Europe) and Models 2009▸ (except Europe)

Intervals according to the maintenance interval indicator (not flexible)	Service
– Oil change service according to the maintenance interval indicator ♦ at every 15,000 km or every 1 year, whichever occurs first, (for all countries)	9)
– Intermediate service ♦ at every 30,000 km or every 2 years, whichever occurs first, (for all countries)	
– Inspection Service ♦ at every 60,000 km or 3 years and, then, every 2 years, whichever occurs first, (for all countries)	

9) In vehicles using diesel with high sulfur content, the oil must be changed at every 7,500 km. Countries with high sulfur content in diesel, ⇒ page 28 .

2.2 Delivery inspection

The Delivery Inspection is valid for both service plans for models ▸ 2007 and ▸ 2008 and service plans for models 2008 and 2009▸.

- The sequence of each service operation was tested and optimized. It shall be adhered to so as to prevent unnecessary service interruptions.
- For delivery inspection, it is mandatory that the vehicle is washed and has no wax residues.

- Vehicles on the yard for a long time: In vehicles with manufacturing date exceeding 5 months, the engine oil, oil filter, and oil draining plug sealing ring must be changed!
- If the battery is disconnected, the power window drive automatic closing function will not operate. Thus, this function must be reprogrammed before delivering the vehicle. The vehicle battery cannot be disconnected after reprogramming. Power window drive - reprogram ⇒ page 36

Work volume	Service
– Self-diagnosis: refer to the fault memory of all systems with the Diagnosis, measurement and information system .	⇒ page 24
– Battery - check the battery terminals for proper seating.	⇒ page 40
– Battery: check the charge capacity (the vehicle must have been turned off for at least 2 hours).	⇒ page 43
– Airbag: check turn on.	
– Ignition cables and spark plug connectors: check the condition and fastening.	
– Wheel fastening screws: apply the recommended torque.	⇒ page 39
– Switches, electric consumers, indicators and other commands: check operation.	
– Install all vehicle components (if available): mats, wipers, spoiler, roof antenna, hub caps, coverings, super hub caps and caps.	
– Rear license plate (only Fox Europe): install.	⇒ page 22
– Clock (if available): check the operation and set the time.	⇒ page 33
– Radio: activate the anti-theft code	⇒ page 36
– Reading radio code using Diagnosis, measurement and information system	⇒ page 38
– Fire extinguisher: check connection and charge and remove the plastic protection (identification letters AQZ and BAH).	⇒ page 35
– Radio tag (part of the radio's Instruction Manual): get the sticker with the serial number and the fixed code.	
– Windshield/rear window wiper and washer: check operation; if necessary, adjust the ejectors and replenish the reservoir with additive liquid up to the maximum level.	⇒ page 50
– Engine oil: complete the level (only for vehicles manufactured within the last 5 months).	⇒ page 45
– Engine oil and oil draining plug sealing ring: replace (only for vehicles manufactured within the last 5 months).	⇒ page 58
– Engine oil filter: replace (only for vehicles manufactured within the last 5 months).	⇒ page 61
– Engine and components in the engine compartment (upper section): visually check for damages and leakages.	⇒ page 65
– Cooling system coolant: replenish the level.	⇒ page 76
– ATF oil reservoir for power steering: replenish the level.	⇒ page 82
– Brake fluid level: check the level and replenish, if necessary.	⇒ page 93
– Safety devices for transport: remove	⇒ page 47
– Vehicle bottom section; engine and engine compartment components, brakes, axles, gearbox/differential shafts, steering wheel, joint bellows, flexible tubes, liquid reservoir: check visually for possible damage and leaks (without removing the lower noise insulation from the engine compartment).	⇒ page 65
– Lower body section protection - check visually for damage.	⇒ page 73
– Plastic protection for seats, on the lower section of door linings, sun visors and carpets: remove.	
– Tyres (including spare wheel): check.	⇒ page 53
– Tyre pressure (including spare wheel): calibrate	⇒ page 55

Work volume	Service
– Vehicle interior: check for cleaning and, if necessary, clean: front and back seats, internal linings, carpet/mats and windows.	
– Vehicle exterior: check and clean: paintwork, decoration elements, windows, front and rear window wipers.	
– Maintenance interval indicator (if available) : reset.	⇒ page 34
– Maintenance and Warranty book: record the delivery inspection and write the next service.	
– Service tag: write the date of the next service (including brake fluid change) and attach the tag to the left side of the command panel or to the left door pillar (B).	⇒ page 23
– Check the integrity of onboard literature and prepare for delivery to customer.	
– Perform a test run.	⇒ page 98

2.3 Oil Change Service

The oil change service is valid for both service plans for models ‣ 2007 and 2008 and service plans for models ‣ 2008 and 2009‣.

Note

- *Use oils with high lubrication performance according to specifications VW 502 00 (petrol) and VW 505 00 or 505 01 (SDI), (diesel PD) and VW 505 01 (TDI).*
- *For countries with high sulfur content in Diesel, the Engine Oil Change Service must be carried out every 7500 km. Countries where the sulfur content is higher ⇒ page 28 .*

Oil change service performed at every 15,000 km or 1 year.

Notes for carrying out tasks

The sequence of each service operation was tested and optimized. It shall be adhered to so as to prevent unnecessary service interruptions.

If the battery is disconnected, the power window drive automatic closing function will not operate. Thus, this function must be reprogrammed before delivering the vehicle. The vehicle battery cannot be disconnected after reprogramming. Power window drive - reprogram ⇒ page 36 .

Inform the customer in case of problems within a service scope that require a Repair action.

Ask the customer about installing new Windscreen wiper blades and adding window cleaning -G 052 131 A1- until 07/2005 and window cleaning -G 052 184 A2- until 08/2005 or cleaning and antifreeze product -G 052 164- to the Windscreen/rear window wiper system.

A tolerance of “up to 1,000 km” is acceptable, above or below the indicated mileage, in services based on mileage, and “one month”, after or before the indicated time, for services based on time.

Application	Windshield/rear window washer additive	Proportion
EUROPE only	-G 052 164 A1- or -G 052 164 A2-	300 ml additive to 700 ml water
Tropical climate countries	-G 052 131 A1- until 07/2005	50 ml of additive for 950 ml of water.

Application	Windshield/rear window washer additive	Proportion
	-G 052 184 A2- from 08/2005	100 ml additive for 990 ml water.

Oil Change Service	Service
Engine compartment	
– Engine oil: fill Diesel engine: Identification letter BNM, filling capacity 4,2 l; standard 505 01 (VW). Diesel engine: Identification letters ASY, 4.3-l filling volume, standard 505 00 (VW) or 505 01 (VW). Petrol engines: Identification letters AQZ, filling capacity 3.3 l; standard 502 00 (VW). Petrol engines: Identification letters BAH, BLH, and CFZA, filling capacity 4.0 l; standard 502 00 (VW). Petrol engine: Identification letter BMD, filling capacity 2.85 l; standard 502 00 (VW). Petrol engine: Identification letter BKR, filling capacity 3,3 l; standard 502 00 (VW).	⇒ page 58
– Engine oil filter: replace.	⇒ page 58
– Battery: fill the electrolyte up to the level (except for maintenance-free batteries and Europe).	
– Fuel filter: drain the water (Vehicles with diesel engine using bio-diesel according to the DIN E 51 606 or diesel vehicles that do not comply with the DIN EN 590).	⇒ page 89
– Spare wheel support stop: lubricate. ♦ CrossFox only	⇒ page 35
Vehicle on raised platform	
– Engine oil: drain or aspirate.	⇒ page 58
– Rear pads and linings: check the thickness.	⇒ page 67
– Brake disks: check the level of wear and corrosion	⇒ page 69
Concluding tasks	
– Maintenance and Warranty book: record the date and kilometers traveled for the next service.	
– Maintenance interval indicator (if available) : reset.	⇒ page 34
– Service tag: write the date of the next service (including brake fluid change) and attach the tag to the left side of the command panel or to the left door pillar (B).	⇒ page 23

2.4 Intermediate service Models ▸2010 (Europe) and Models 2009▸ (except Europe)

Service based on time or kilometers traveled

Vehicles with “Service based on time or kilometers traveled” have the PR numbers: QG0.

The Intermediate Service is performed every 30,000 km or 2 years.

Notes for carrying out tasks

The sequence of each service operation was tested and optimized. It shall be adhered to so as to prevent unnecessary service interruptions.

If the battery is disconnected, the power window drive automatic closing function will not operate. Thus, this function must be re-programmed before delivering the vehicle. The vehicle battery cannot be disconnected after reprogramming. Power window drive - reprogram ⇒ page 36 .

Note

In countries with high sulfur content on the diesel fuel, the engine oil must be changed every 7,500 km. The countries with higher sulfur content on the diesel are listed on ⇒ page 28 .

Where faults are detected during the Interval Service, take the required actions to repair them and inform the customer about the events.

Ask the customer about installing new Windshield wiper blades and adding window cleaning -G 052 131 A1- until 07/2005 and window cleaning -G 052 184 A2- until 08/2005 or cleaning and antifreeze product -G 052 164- to the Windshield/rear window wiper system.

Application	Windshield/rear window washer additive	Proportion
EUROPE only	-G 052 164 A1- or -G 052 164 A2-	300 ml additive to 700 ml water
Tropical climate countries	-G 052 131 A1- until 07/2005	1.69 fl oz additive for 32.12 fl oz water.
	-G 052 184 A2- from 08/2005	100 ml additive for 990 ml water.

Note

- *Use oils with high lubrication performance according to specifications VW 502 00 (petrol) and VW 505 00 or 505 01 (SDI), (diesel PD) and VW 505 01 (TDI).*
- *For countries with high sulfur content in Diesel, the Engine Oil Change Service must be carried out every 7500 km. Countries where the sulfur content is higher ⇒ page 28 .*

Intermediate service Models ▸2010 (Europe) and Models 2009▸ (except Europe)	Service
Tyres and wheels	
– Battery: check with Battery tester with printer -VAS 5097A- .	⇒ page 43
– Spare wheel support stop: lubricate. ♦ CrossFox only	⇒ page 35
– Spare wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Left front wheel tyre: check the state of tread, sides and depth of grooves _____ mm	⇒ page 53
– Left rear wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Right rear wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Front right wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Tyres: calibrate, including the spare wheel.	⇒ page 55
Engine compartment	

Intermediate service Models ‣2010 (Europe) and Models 2009‣ (except Europe)	Service
– Engine oil: fill Diesel engine: Identification letter BNM, filling capacity 4,2 l; standard 505 01 (VW). Diesel engine: Identification letters ASY, 4.3-l filling volume, standard 505 00 (VW) or 505 01 (VW). Petrol engines: Identification letters AQZ, filling capacity 3.3 l; standard 502 00 (VW). Petrol engines: Identification letters BAH, BLH, and CFZA, filling capacity 4.0 l; standard 502 00 (VW). Petrol engine: Identification letter BMD, filling capacity 2.85 l; standard 502 00 (VW). Petrol engine: Identification letter BKR, filling capacity 3,3 l; standard 502 00 (VW).	⇒ page 58
– Engine oil filter: replace.	⇒ page 58
– Brake fluid level: check the level and replenish, if necessary.	⇒ page 93
– Fuel filter: drain the water (Vehicles with diesel engine using bio-diesel according to the DIN E 51 606 or diesel vehicles that do not comply with the DIN EN 590).	⇒ page 89
Vehicle on raised platform	
– Engine oil: drain or aspirate.	⇒ page 58
– Brake system: perform a visual check for leaks and damage.	⇒ page 67
– Rear pads and linings: check the thickness.	⇒ page 67
– Brake discs: check the level of wear and corrosion	⇒ page 69
– Shock absorbers: verify for leaks (except Europe)	
Concluding tasks	
– Maintenance interval indicator (if available) : reset.	⇒ page 34
– Maintenance and Warranty book: record the date and kilometers traveled for the next service.	
– Service tag: write the date of the next service (including brake fluid change) and attach the tag to the left side of the command panel or to the left door pillar (B).	⇒ page 23

2.5 Intermediate service Models 2011‣ (Europe)

Service based on time or kilometers traveled

Vehicles with “Service based on time or kilometers traveled” have the PR numbers: QG0.

The Intermediate Service is performed every 30,000 km or 2 years.

Notes for carrying out tasks

The sequence of each service operation was tested and optimized. It shall be adhered to so as to prevent unnecessary service interruptions.

If the battery is disconnected, the power window drive automatic closing function will not operate. Thus, this function must be reprogrammed before delivering the vehicle. The vehicle battery cannot be disconnected after reprogramming. Power window drive - reprogram ⇒ page 36 .

Note

In countries with high sulfur content on the diesel fuel, the engine oil must be changed every 7,500 km. The countries with higher sulfur content on the diesel are listed on ⇒ page 28 .

Where faults are detected during the Interval Service, take the required actions to repair them and inform the customer about the events.

Ask the customer about installing new Windshield wiper blades and adding window cleaning -G 052 131 A1- until 07/2005 and window cleaning -G 052 184 A2- until 08/2005 or cleaning and antifreeze product -G 052 164- to the Windshield/rear window wiper system.

Application	Windshield/rear window washer additive	Proportion
EUROPE only	-G 052 164 A1- or -G 052 164 A2-	300 ml additive to 700 ml water
Tropical climate countries	-G 052 131 A1- until 07/2005	1.69 fl oz additive for 32.12 fl oz water.
	-G 052 184 A2- from 08/2005	100 ml additive for 990 ml water.

Note

- *Use oils with high lubrication performance according to specifications VW 502 00 (petrol) and VW 505 00 or 505 01 (SDI), (diesel PD) and VW 505 01 (TDI).*
- *For countries with high sulfur content in Diesel, the Engine Oil Change Service must be carried out every 7500 km. Countries where the sulfur content is higher ⇒ page 28 .*

Intermediate service Models 2011 ▸ (Europe)	Service
– Battery: check with Battery tester with printer -VAS 5097A- .	⇒ page 43
– Passenger compartment's lighting, cigarette lighter, horn and control lights: check operation.	
– Front lighting: check operation of parking lights, low beam, high beam, fog lights, indicator system and warning lights	
– Rear lighting: check operation of brake lights (including the third brake light), rear lights, reversing lights, fog light, license plate light, boot lighting, indicator lights and warning lights.	
Tyres and wheels	
– Spare wheel support stop: lubricate. ♦ CrossFox only	⇒ page 35
– Spare wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Left front wheel tyre: check the state of tread, sides and depth of grooves _____ mm	⇒ page 53
– Left rear wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Right rear wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Front right wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Tyres: calibrate, including the spare wheel.	⇒ page 55

Intermediate service Models 2011 ▸ (Europe)	Service
Vehicle exterior	
– Windshield: check for damage	
– Windshield and rear window wiper: check operation.	⇒ page 49
– Windshield/rear window washer: adjust the water jet from ejectors and replenish the reservoir additive liquid level.	⇒ page 49
– Windshield and rear window wiper blades: check the resting position and, if necessary, adjust it; for malfunctioning wiper blades: correct the sweeping angle.	⇒ page 51
Engine compartment	
– Engine oil: fill Diesel engine: Identification letter BNM, filling capacity 4,2 l; standard 505 01 (VW). Diesel engine: Identification letters ASY, 4.3-l filling volume, standard 505 00 (VW) or 505 01 (VW). Petrol engines: Identification letters AQZ, filling capacity 3.3 l; standard 502 00 (VW). Petrol engines: Identification letters BAH, BLH, and CFZA, filling capacity 4.0 l; standard 502 00 (VW). Petrol engine: Identification letter BMD, filling capacity 2.85 l; standard 502 00 (VW). Petrol engine: Identification letter BKR, filling capacity 3,3 l; standard 502 00 (VW).	⇒ page 58
– Engine and components in engine compartment (from above): check visually for damage and leakage.	⇒ page 65
– Engine cooling system fluid: correct the proportion of antifreeze and fill up to the level. Theoretical value – 25° C (in Arctic climate countries – 35° C) actual value (value measured) ____ °C.	⇒ page 76
– Engine oil filter: replace.	⇒ page 58
– Brake fluid level: check the level and replenish, if necessary.	⇒ page 93
– Fuel filter: drain the water (Vehicles with diesel engine using bio-diesel according to the DIN E 51 606 or diesel vehicles that do not comply with the DIN EN 590).	⇒ page 89
– Headlight adjustment: check.	⇒ page 94
Vehicle on raised platform	
– Engine oil: drain or aspirate.	⇒ page 58
– Engine and components in engine compartment (from below): perform a visual check for leaks and damage.	⇒ page 65
– Brake system: perform a visual check for leaks and damage.	⇒ page 67
– Rear pads and linings: check the thickness.	⇒ page 67
– Brake discs: check the level of wear and corrosion	⇒ page 69
– Shock absorbers: verify for leaks (except Europe)	
Concluding tasks	
– Maintenance interval indicator (if available) : reset.	⇒ page 34
– Maintenance and Warranty book: record the date and kilometers traveled for the next service.	
– Service tag: write the date of the next service (including brake fluid change) and attach the tag to the left side of the command panel or to the left door pillar (B).	⇒ page 23

2.6 Inspection Service

Service based on time or kilometers traveled

Vehicles with “Service based on time or kilometers traveled” have the PR numbers: QG0.

Inspection intervals

Vehicles with service depending on time or kilometers traveled, every 30,000 km or 2 years and every 60,000 km or 4 years (for Europe on vehicles model ‣2007).

Vehicles with service depending on time or kilometers traveled, every 60,000 km or 3 years and, then, every 2 years (for Europe on vehicles model 2008‣ , except Europe on vehicles 2009‣) .

Vehicles with service depending on time or kilometers traveled, every 1 year, 30,000 km, and 60,000 km (except Europe for vehicles model ‣2008).

If the vehicle runs 30.000 km, 60.000 km, etc. before elapsing 1 year, the Inspection Service for 30,000 km, 60,000 km, etc. shall be performed together with the inspection service for 1 year.

If the vehicle runs 30.000 km or 60.000 km after the performance of the Inspection Service for 1 year, perform only the items exclusive for the Inspection Service for 30,000 km or 60,000 km.

A tolerance of “up to 1,000 km” is acceptable, above or below the indicated kilometer traveled, in services based on kilometers traveled, and “one month”, after or before the indicated time, for services based on time.

Note

- *Inform the customer in case of problems within a service scope that require a Repair action.*
- *Use oils with high lubrication performance according to specifications VW 502 00 (petrol) and VW 505 00 or 505 01 (SDI), (diesel PD) and VW 505 01 (TDI).*
- *For countries with high sulfur content in Diesel, the Engine Oil Change Service must be carried out every 7500 km. Countries where the sulfur content is higher* ⇒ page 28 .

Notes for carrying out tasks

The sequence of each service operation was tested and optimized. It shall be adhered to so as to prevent unnecessary service interruptions.

If the battery is disconnected, the power window drive automatic closing function will not operate. Thus, this function must be reprogrammed before delivering the vehicle. The vehicle battery cannot be disconnected after reprogramming. Power window drive - reprogram ⇒ page 36 .

Ask the customer about installing new Windshield wiper blades and adding window cleaning -G 052 131 A1- until 07/2005 and window cleaning -G 052 184 A2- until 08/2005 or cleaning and antifreeze product -G 052 164 A1- to the Windshield/rear window wiper system.

Application	Windshield/rear window washer additive	Proportion
EUROPE only	-G 052 164 A1- or -G 052 164 A2-	300 ml of additive for 700 ml of water.
Tropical climate countries	-G 052 131 A1- until 07/2005	1.69 fl oz additive for 28.74 fl oz water.

Application	Windshield/rear window washer additive	Proportion
	-G 052 184 A2- from 08/2005	100 ml additive for 990 ml water.

Service for vehicles with “service based on time and kilometers traveled”	Service
Electrics	
– Battery: check with Battery tester with printer -VAS 5097A- . ◆ for Europe on vehicles model 2011‣	⇒ page 43
– Passenger compartment's lighting, cigarette lighter, horn and control lights: check operation.	
– Front lighting: check operation of parking lights, low beam, high beam, fog lights, indicator system and warning lights	
– Rear lighting: check operation of brake lights (including the third brake light), rear lights, reversing lights, fog light, license plate light, boot lighting, indicator lights and warning lights.	
– Driver and passenger airbag: make a visual inspection in relation to external damages. ◆ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008)	⇒ page 48
– Self-diagnosis: Refer to the failure memory of every system with the Diagnosis, Measurement and Information System . ◆ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008	⇒ page 24
– Dust and pollen filter: Replace the filter element. ◆ at every 30,000 km ◆ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008 ◆ every 18,641.14 mi or 2 years ◆ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 84
– Spare wheel support stop: lubricate. ◆ CrossFox only	⇒ page 35
Vehicle exterior	
– Windshield: check for damage ◆ for Europe on vehicles model 2011‣	
– Windshield and rear window wiper: check operation.	⇒ page 49
– Windshield and rear window wiper blades: check the resting position and, if necessary, adjust it; for malfunctioning wiper blades: correct the sweeping angle.	⇒ page 51
– Body and paintwork: check for damage. ◆ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008. ◆ every 60,000 km or 3 years and after every 2 years ◆ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	

Service for vehicles with “service based on time and kilometers traveled”	Service
– Sunroof: check operation, clean the guide rails and lubricate them with Special grease -G 000 450 02- . ♦ at every 30,000 km ♦ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008 ♦ every 60,000 km or 3 years and after every 2 years ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 46
Tyres and wheels	
– Spare wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 54
– Left front wheel tyre: check the state of tread, sides and depth of grooves _____ mm	⇒ page 53
– Left rear wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Right rear wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Front right wheel tyre: check the state of tread, sides and depth of grooves _____ mm.	⇒ page 53
– Tyres: calibrate, including the spare wheel.	⇒ page 53
Underside of the vehicle	
– Engine oil: drain or aspirate	⇒ page 58
– Engine and components in engine compartment (from below): perform a visual check for leaks and damage.	⇒ page 65
– Poly-V belt: check state. ♦ at every 37,282.27 mi ♦ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008 ♦ every 60,000 km or 3 years and after every 2 years ♦ for Europe on vehicles model 2008‣except Europe on vehicles model 2009‣.	⇒ page 65
– Transmission: check for damage and leaks, including the state of the constant velocity joint bellows.	⇒ page 66
– Mechanical transmission: check the oil level. ♦ at every 18,641.14 mi ♦ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008 ♦ every 60,000 km or 3 years and after every 2 years ♦ for Europe on vehicles model 2008‣ and except Europe on vehicles model 2009‣.	⇒ page 66
– Brake system: perform a visual check for leaks and damage.	⇒ page 67
– Rear pads and linings: check the thickness.	⇒ page 67
– Brake discs: check the level of wear and corrosion	⇒ page 69
– Lower floor protection: make a visual inspection for damage.	⇒ page 73
– Steering bar swivel tips: check the clearance, fastening and state of protection bellows.	⇒ page 73
– Front suspension arm joints: check for fastening and clearance, as well as for damage and leakages in sealing bellows.	⇒ page 76

Service for vehicles with “service based on time and kilometers traveled”	Service
– Anti-roll bar buffers and front/rear suspension arm joints rubber bushings: check for damage ◆ for Europe on vehicles model 2011‣	
– Front/rear shock absorber springs and rubber buffers ◆ for Europe on vehicles model 2011‣	
– Rear wheels: adjust roller bearing gaps. ◆ only for vehicles without ABS and with the following engines: AQZ, BAH, BLH, and CFZA from 07/01/2007.	⇒ page 74
– Exhaust system: make a visual inspection for leaks and damage.	
– Fuel filter: replace. ◆ Identification letters AQZ, BAH, BLH, and CFZA. ◆ at every 30,000 km	⇒ page 87
Engine compartment	
– Engine oil filter: replace.	⇒ page 58
– Engine oil: fill Diesel engine: Identification letter BNM, filling capacity 4,2 l; standard 505 01 (VW). Diesel engine: Identification letters ASY, 4.3-l filling volume, standard 505 00 (VW) or 505 01 (VW). Petrol engines: Identification letters AQZ, filling capacity 3.3 l; standard 502 00 (VW). Petrol engines: Identification letters BAH, BLH, and CFZA, filling capacity 4.0 l; standard 502 00 (VW). Petrol engine: Identification letter BMD, filling capacity 2.85 l; standard 502 00 (VW). Petrol engine: Identification letter BKR, filling capacity 3,3 l; standard 502 00 (VW).	⇒ page 58
– Engine and components in engine compartment (from above): check visually for damage and leakage.	⇒ page 65
– Windshield/rear window washer: adjust the water jet from ejectors and replenish the reservoir additive liquid level.	⇒ page 49
– Engine oil: replenish with oil (inspection service without oil change). ◆ for Europe on vehicles model 2008‣ and except Europe on vehicles model 2009‣.	⇒ page 45
– Engine cooling system fluid: correct the proportion of antifreeze and fill up to the level. Theoretical value – 25° C (in Arctic climate countries – 35° C) actual value (value measured) ____ °C.	⇒ page 76
– Spark plugs: replace. ◆ at every 60,000 km or every 4 years, whichever occurs first.	⇒ page 79
– Timing belt and tensioning pulley for camshaft drive: replace. Additional work with separate payment! ◆ Diesel engine: Identification letters ASY. ◆ at every 93,205.68 mi	⇒ page 85

Service for vehicles with “service based on time and kilometers traveled”	Service
– Timing belt for camshaft drive: replace. Additional work with separate payment! ◆ Diesel engine: identification letters BNM ◆ every 90,000 km. ◆ for Europe on vehicles model ‣2007 ◆ at every 93,205.68 mi ◆ for Europe on vehicles model 2008‣.	⇒ page 85
– Timing belt for camshaft drive: check state. ◆ 4-cylinder petrol engines. ◆ Identification letters AQZ, BAH, BLH, BKR, and CFZA ◆ at 90,000 km and at every 30,000 km	⇒ page 85
– Air cleaner: replace the filtering element and clean the filter case. ◆ identification letters BAH and BLH. ◆ at every 60,000 km or every 4 years, whichever occurs first.	⇒ page 86
– Air cleaner: replace the filtering element and clean the filter case. ◆ Identification letters CFZA. ◆ at every 30,000 km or every 2 years, whichever occurs first	⇒ page 87
– Air cleaner: replace the filtering element and clean the filter case. ◆ identification letters AQZ and BKR. ◆ at every 30,000 km or every 2 years, whichever occurs first	⇒ page 86
– Air cleaner: replace the filtering element and clean the filter case. ◆ Engine identification letters ASY, BKR, BNM, and BMD. ◆ at every 37,282.27 mi or every 4 years, whichever occurs first.	⇒ page 87
– Fuel filter: replace. ◆ Only for diesel engine vehicles according to DIN EN 590. ◆ at every 37,282.27 mi	⇒ page 88
– Fuel filter: replace. ◆ Only for bio diesel vehicles in compliance with DIN E 51606 and for diesel vehicles not covered by standard DIN EN 590. ◆ at every 30.000 km	⇒ page 88
– Fuel filter: drain the water ◆ Only for diesel engine vehicles according to DIN EN 590 (only for ASY engines). ◆ at 30,000 km and, then, every 60,000 km.	⇒ page 89
– Brake fluid: replace every 2 years (additional work with separate payment!) ◆ at every 2 years. ◆ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008). ◆ at 3 years and after every 2 years for Europe on vehicles model 2008‣ and except Europe on vehicles model 2009‣.	⇒ page 90
– Brake fluid: replenish to the level (depending on pad wearing). ◆ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008.	⇒ page 93
– Battery: fill the electrolyte level (except for maintenance-free batteries).	

Service for vehicles with “service based on time and kilometers traveled”	Service
– Power steering: check the oil level. ◆ at every 60,000 km (except for maintenance-free).	⇒ page 82
– Carry out an exhaust gas inspection/additional work with separate payment! ◆ 3 years after initial licensing, and then every two years.	⇒ page 99
Concluding tasks	
– Headlight adjustment: check. ◆ every 18,641.14 mi. ◆ for Europe on vehicles model ▸2007 and except Europe on vehicles model ▸2008 ◆ at every 60,000 km or 3 years and, then, every 2 years ◆ for Europe on vehicles model 2008▸ and except Europe on vehicles model 2009▸.	⇒ page 94
– Maintenance interval indicator (if available) : reset.	⇒ page 34
– Maintenance and Warranty book: record the date and kilometers traveled for the next service.	
– Service tag: write the date of the next service (including brake fluid change) and attach the tag to the left side of the command panel or to the left door pillar (B).	⇒ page 23
– Perform a test run.	⇒ page 98

2.7 Supplementary services based on time elapsed and/or kilometers traveled

Besides the oil change or inspection service — which depends on the conditions of usage and optional equipments in the vehicle — performing supplementary maintenance works is necessary.

Also, it is possible to perform additional works, by considering the records in the service plan (or on the adhesive tag: Your next service), out of the regular maintenance intervals.

At every 30,000 km

Supplementary services	Page
– Dust and pollen filter: clean case and change filter element ◆ for Europe on vehicles model ▸2007 and except Europe on vehicles model ▸2008 ◆ for vehicles with kilometers traveled over 30,000 km, within a 2-year period ◆ for Europe in model 2008▸ vehicle and in model 2009▸ vehicles elsewhere	⇒ page 84
– Headlights: adjust the beams ◆ for Europe on vehicles model ▸2007 and except Europe on vehicles model ▸2008	⇒ page 94
– Sunroof: check operation, clean the guide rails and lubricate them with Special grease -G 000 450 02- ◆ for Europe on vehicles model ▸2007 and except Europe on vehicles model ▸2008	⇒ page 46
– Mechanical transmission: check oil level. ◆ for Europe on vehicles model ▸2007 and except Europe on vehicles model ▸2008	⇒ page 66
– Fuel filter: replace (vehicles with engine AQZ, BAH, BLH, and CFZA only)	⇒ page 87
– Air cleaner: replace the filtering element and clean the filter case. ◆ identification letters AQZ and BKR. ◆ for vehicles with kilometers traveled over 30,000 km, within a 2-year period	⇒ page 86

Supplementary services	Page
– Air cleaner: replace the filtering element and clean the filter case. ♦ Identification letters CFZA. ♦ for vehicles with kilometers traveled over 30,000 km, within a 2-year period	⇒ page 87
– Fuel filter: drain the water ♦ Only for diesel engine vehicles according to DIN EN 590 (only for ASY engines). ♦ at 30,000 km and after every 60,000 km	⇒ page 89
– Fuel filter: replace ♦ Only for biodiesel vehicles in compliance with DIN E 51606 and for diesel vehicles not covered by standard DIN EN 590.	⇒ page 88

At every 37,282.27 mi

Supplementary services	Page
– Headlights: adjust the beams ♦ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 94
– Mechanical transmission: check oil level. ♦ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 66
– Air cleaner: replace the filtering element and clean the filter case. ♦ identification letters BAH and BLH. ♦ for vehicles with kilometers traveled over 37,282.27 mi, within a 4-year period	⇒ page 86
– Air cleaner: replace the filtering element and clean the filter case. ♦ Engine identification letters ASY, BKR, BNM, and BMD. ♦ for vehicles with kilometers traveled over 60,000 km, within a 4-year period.	⇒ page 87
– Spark plugs: replace ♦ for vehicles with kilometers traveled over 37,282.27 mi, within a 4-year period ♦ Checking data, spark plugs ⇒ Ignition system; Rep. Gr. 28 ; Ignition system	⇒ page 79
– Fuel filter: replace ♦ (only for diesel engine vehicles according to DIN EN 590).	⇒ page 88
– Fuel filter: drain the water ♦ Only for diesel engine vehicles according to DIN EN 590 (only for ASY engines).	⇒ page 89
– Poly-V belt: check condition: In vehicles without automatic tensioning element, adjust tension. ♦ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008 ♦ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 65
– Power steering: check the oil level.	⇒ page 82

Supplementary services	Page
– Sunroof: check operation, clean the guide rails and lubricate them with Special grease -G 000 450 02- ◆ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ◆ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 46
– Body and paintwork: check for damage. ◆ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ◆ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	

At every 55,923.41 mi

Supplementary services	Page
– Timing belt for camshaft drive: check state ◆ Diesel engine: identification letters BNM ◆ for Europe on vehicles model ‣2007	⇒ page 85

At 90,000 km and, then, at every 30,000 km)

Supplementary services	Page
– Timing belt for camshaft drive: check state ◆ 4-cylinder petrol engines: Identification letters AQZ, BAH, BLH, BKR, and CFZA	⇒ page 85

At every 93,205.68 mi

Supplementary services	Page
– Timing belt and tensioning roll for camshaft drive: replace ◆ Diesel engine: Identification letters ASY ◆ extra work to be billed separately!	⇒ page 85
– Timing belt for camshaft drive: check state ◆ Diesel engine: identification letters BNM ◆ for Europe on vehicles model 2008‣	⇒ page 85

At every 2 years

Supplementary services	Page
– Dust and pollen filter: clean case and change filter element ◆ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 84
– Air cleaner: replace the filtering element and clean the filter case. ◆ identification letters AQZ and BKR. ◆ for vehicles with kilometers traveled over 30,000 km, within a 2-year period	⇒ page 86
– Air cleaner: replace the filtering element and clean the filter case. ◆ Identification letters CFZA. ◆ for vehicles with kilometers traveled over 30,000 km, within a 2-year period	⇒ page 87

Supplementary services	Page
– Brake fluid: replace ♦ for Europe on vehicles model ‣2007 and except Europe on vehicles model ‣2008	⇒ page 90

3 years after the delivery inspection; then, every 2 years

Supplementary services	Page
– Headlights: adjust the beams ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 94
– Poly-V belt: check condition: In vehicles without automatic tensioning element, adjust tension. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 65
– Mechanical transmission: check oil level. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 66
– Brake fluid: replace ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 90
– Carry out an exhaust gas inspection/additional work with separate payment! ♦ in function of the country's legislation	⇒ page 99
– Sunroof: check operation, clean the guide rails and lubricate them with Special grease -G 000 450 02- ♦ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	⇒ page 46
– Body and paintwork: check for damage. ♦ for vehicles with kilometers traveled over 60,000 km, within a 3-year period and, then, every 2 years. ♦ for Europe in model 2008‣ vehicle and in model 2009‣ vehicles elsewhere	

At every 4 years

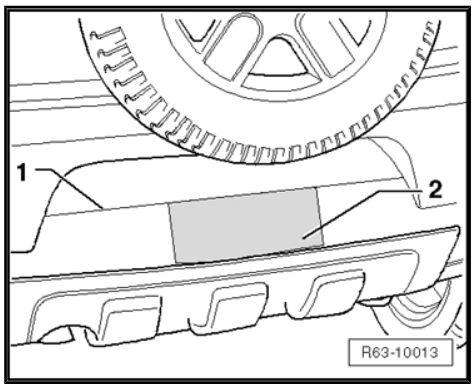
Supplementary services	Page
– Air cleaner: replace the filtering element and clean the filter case. ♦ identification letters BAH and BLH ♦ for vehicles with kilometers traveled over 60,000 km, within a 4-year period.	⇒ page 86
– Air cleaner: replace the filtering element and clean the filter case. ♦ Engine identification letters ASY, BKR, BNM, and BMD. ♦ for vehicles with kilometers traveled over 60,000 km, within a 4-year period.	⇒ page 87
– Spark plugs: replace ♦ for vehicles with kilometers traveled over 60,000 km, within a 4-year period. ♦ Checking data, spark plugs ⇒ Ignition system; Rep. Gr. 28 ; Ignition system	⇒ page 79

3 General remarks

3.1 Rear license plate (only CrossFox Europe) - install

Note

For the "CrossFox"Europe versions, position the license plate aligned with the line -1- in the rear protector and fasten the plate -2- to this position



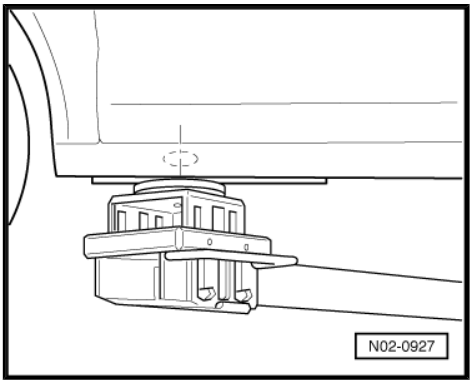
3.2 Lifting the vehicle with a workshop lift and jack

WARNING

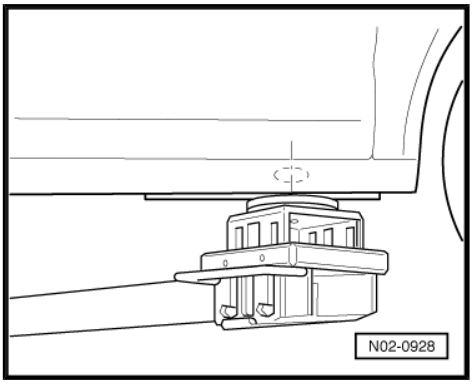
- *Before positioning the vehicle onto a lift, it is necessary to make sure that there is enough space between the lift and the lower body parts.*
- *The vehicle may only be lifted in the support points indicated in illustration, in order to avoid damaging the vehicle floor and prevent the vehicle from tipping.*
- *Never start the engine and engage a gear with the vehicle lifted, even if only one drive wheel is on the floor. If these guidelines are not followed, there will be risk of an accident!*
- *When it is necessary to work under the vehicle, it must be supported onto appropriate stands.*
- *Before placing a vehicle on an lift, make sure that the vehicle weight does not exceed the authorized load capacity of the lift.*
- *To prevent damage, always use a suitable rubber or wooden support.*
- *Under no circumstances must the vehicle be lifted by the oil crankcase, transmission, front or rear axles.*
- *The vehicle must not be lifted by the vertical reinforcement of the longitudinal member.*

3.2.1 Support points for workshop lift and jack

Front section: In the longitudinal reinforcement of the central longitudinal member.



Rear section: In the welded flange reinforcement of the lower longitudinal member.



Note

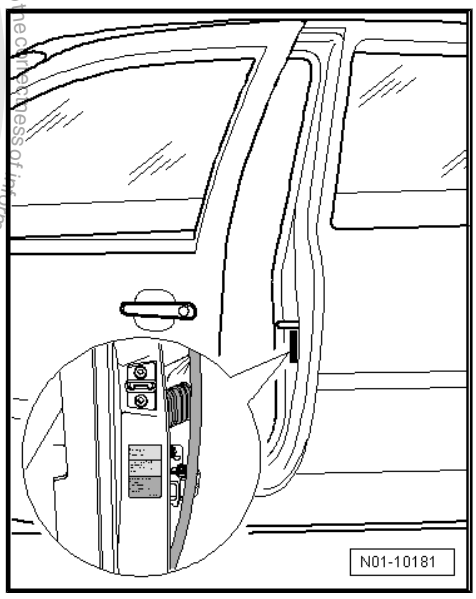
To anchor the CrossFox, using electrical-hydraulic lifts, refer to the Tools and Equipment Manual.

3.3 Service tag

3.3.1 Stick the tag “Next service” (upon Delivery inspection)

– Write on the service tag the date of the next service (including brake fluid change) and attach the tag to the left side of the command panel or to the left door pillar (B).

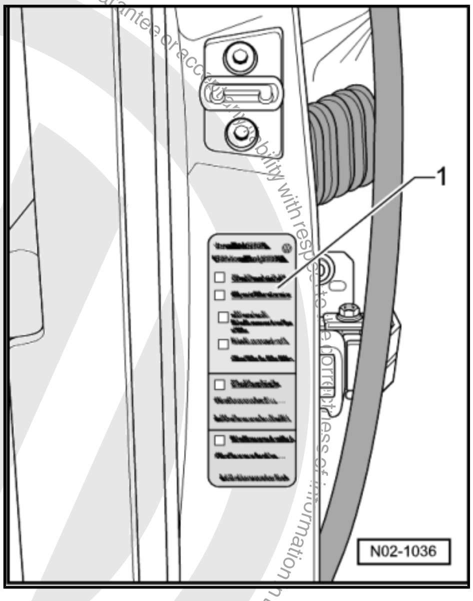
The stamp or tag may also be attached to the left lower corner (internal side) of the Windscreen, with the “FRONT” facing outside the vehicle (check instructions in the Service Organization Manual).



3.3.2 Stick the tag “Next service” (upon Oil Change Service or Inspection Service)

– On the service tag “Next service”: Mark the Oil Change Service or Inspection Service (whichever occurs first) and write down the date and mileage traveled.

– Attach the tag to the left side of the command panel or to the driver's door pillar (pillar B).



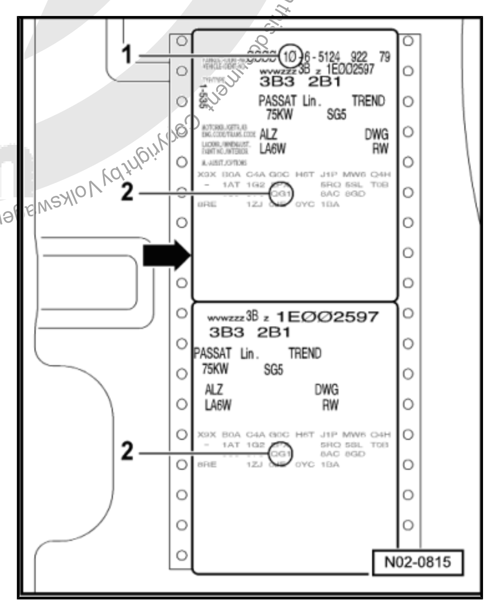
The stamp or tag may also be attached to the left lower corner (internal side) of the Windscreen, with the "FRONT" facing outside the vehicle (check instructions in the Service Organization Manual).

3.3.3 Paste the "data holder" on the customer service plan (in the delivery inspection):

– Please paste the upper data holder on both -arrow-.

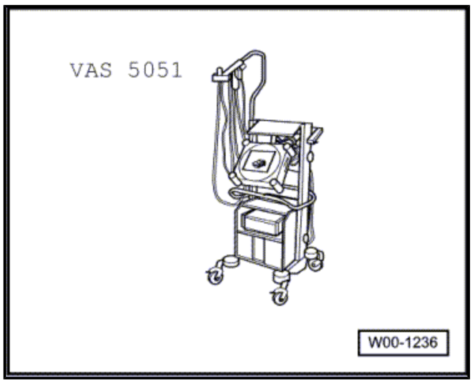
1 - planning week.

2 - PR number.



3.4 Self-diagnosis - refer to the fault memory of all systems

3.4.1 Refer to the fault memory of all systems with the Diagnosis, Measurement and Information System



Special tools and workshop equipment required

♦ Diagnosis, Measurement and Information System

♦ Diagnosis cable -VAS 5051/3- or - VAS 5051/6-

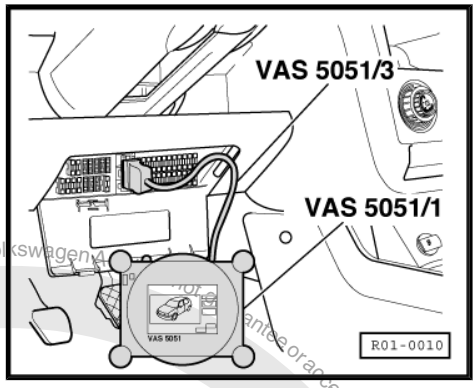
3.4.2 Connect the Diagnosis, Measurement and Information System

– Operate the parking brake.

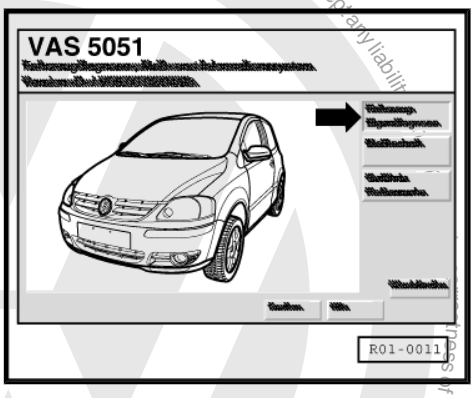
– Mechanical transmission: Selector lever in neutral gear position.

Connect the Diagnosis, Measurement and Information System to the Diagnosis cable -VAS 5051/3- or -VAS 5051/6- with the ignition turned off as follows:

– Turn the ignition on.



Indicated on display:



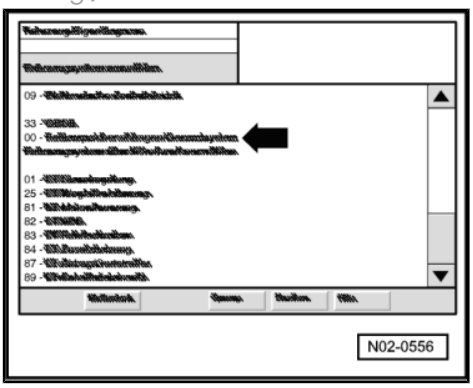
3.4.3 Select the operation mode:

– On the display, press the key for “Vehicle self-diagnosis” -arrow-.

Note

If the messages indicated with the operation sequence in the display do not appear on display: ⇒ Vehicle diagnosis, testing and information system VAS 5051.

Indicated on display:



3.4.4 Select the vehicle system:

– On the display, press “Entire system” -arrow-

– The Diagnosis, Measurement and Information System sends all known keywords in sequence.

If a command unit replies with its identification, the display informs the number of faults or “No fault detected”.

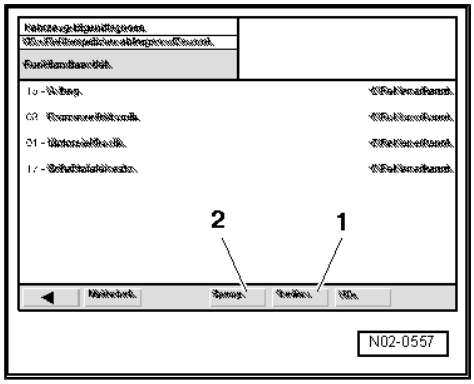
Any faults stored in a system will be listed. Then, the Diagnosis, Measurement and Information System -VAS 5051A/52- sends the next keyword.

The automatic verification process is completed when the following indication is displayed:

– On display, press the “Print” key -1- and, in the print menu, press “Screen”.

The Diagnosis, Measurement and Information System prints all faults or “0 fault(s) detected”. If there are faults stored in the system, repair measures are required. The fault protocol must be sent together for repair.

– On the display press the “Skip” key -2-.

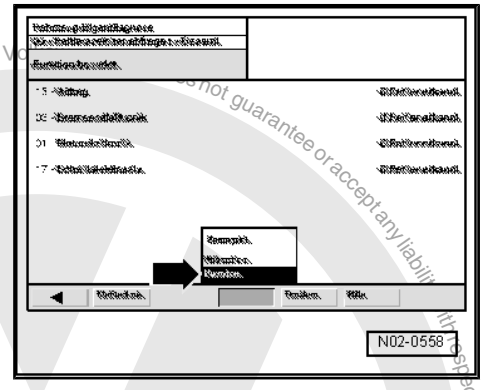


Indicated on display:

– On the display press the “End” key -arrow-.

– Press the “End” key on the conclusion menu.

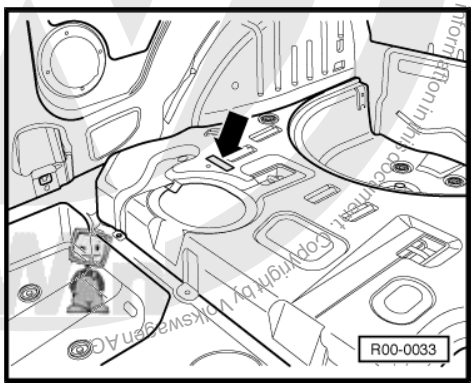
– Switch the ignition off and disconnect the diagnosis connector.



3.5 Vehicle identification data

3.5.1 Vehicle identification number“VIN”- location

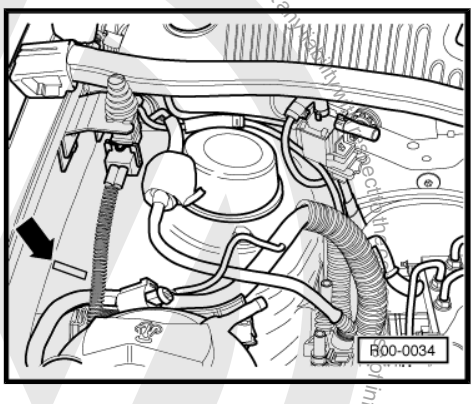
The vehicle identification number (chassis number) -arrow- is marked on the floor plate below the back seat and close to the fuel pump access cover.



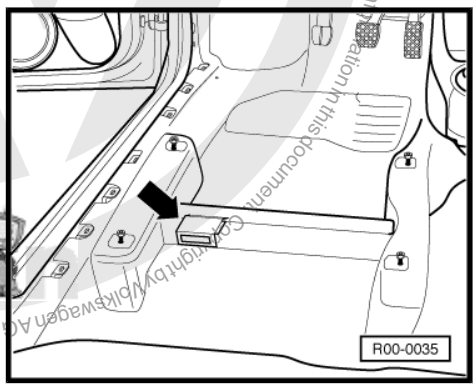
3.5.2 VIS tag - location

Destructive label with partial chassis number (VIS).

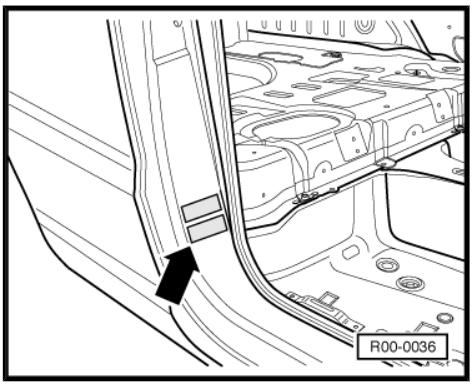
The first VIS tag -arrow- is on the right side suspension housing.



The second VIS tag -arrow- is on the left seat's cross member and is visible from the rear side through an opening in the floor carpet.



The third VIS tag -arrow- is on the right pillar B for two-door vehicles. It becomes visible with the right door opened.



Note

On four-door vehicles, the tag is on the right pillar B between the doors. It becomes visible with the right front door opened.

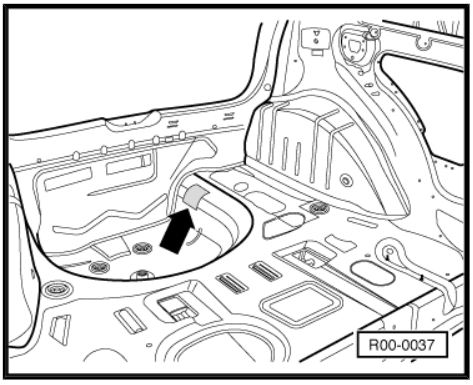
3.5.3 Identification plate

Refer to the body manual ⇒ Body Repairs; Rep. Gr. 00 ; Technical data .

3.5.4 Vehicle identification tag - location

The vehicle identification tag -arrow- is in the rear section, inside the spare wheel housing, on the left side in the vehicle motion direction.

Includes:



3.5.5 Meaning of vehicle identification number:

9BW	CA0	5z	9	4	T	000 001
Manufacturer brand	Complementary digit	Type	Complementary digit	2004 year model	Manufacturing locations	Sequential number

3.6 Service intervals

3.6.1 (The PR number is QG0)

Note

- *Use oils with high lubrication performance according to specifications VW 502 00 (petrol) and VW 505 01 (SDI), (diesel PD) and (TDI).*
- *For countries with high sulfur content in Diesel, the Engine Oil Change Service must be carried out every 7500 km. Countries with higher sulfur percentage* ⇒ page 28

Notes for performing works:

– The individual service position sequence is tested and optimized. It should be observed to prevent unnecessary work interruptions.

– If faults are found in the Inspection Service scope that require repairs, the customer must be informed.

Intervals	Service
– Oil change service performed at every 15,000 km or 1 year.	⇒ page 7
– Intermediate service every 30,000 km or 2 years Models ‣ 2010 (Europe) and Models 2009‣ (except Europe) .	⇒ page 8
– Inspection services every 30,000 km or 2 years (for Europe on vehicles model ‣2007).	⇒ page 13
– Inspection services every 60,000 km or 3 years and, then, every 2 years (for Europe on vehicles model 2008‣ and except Europe on vehicles model 2009‣).	⇒ page 13
– Inflexible inspection services every 1 year, 30,000 km, and 60,000 km (except Europe on vehicles model ‣2008).	⇒ page 13
– Brake fluid change every 2 years. ♦ at 3 years and, then, every 2 years (for Europe on vehicles model 2008‣ and except Europe on vehicles model 2009‣).	⇒ page 90

3.7 Countries with high sulfur content in diesel

Egypt	Indonesia	New Zealand	Taiwan
Argentina	Jamaica	Oman	Trinidad Tobago
Armenia	Yugoslavia[10)]	Pakistan	Turkey
Australia	Kazakhstan	Panama	Tunisia
Bolivia	Qatar	Papua-New Guinea	Ukraine

Bulgaria	Kyrgyzstan	Peru	Uruguay
Mainland China	Colombia	Philippines	Uzbekistan
Costa Rica	Croatia	Poland	United Arab Emirates
Dominican Republic	Kuwait	Russia (Eastern & Western)	Vietnam
El Salvador	Malaysia	Saudi Arabia	Zimbabwe
Ecuador	Morocco	Singapore	
Guatemala	Moldavia	South Africa	
India	Myanmar	Suriname	

10) Yugoslavia = Serbia, Montenegro, Vojvodina, Kosovo

3.8 Engine oils

3.8.1 Approved standards for automotive engine oils

Petrol engines with identification letters AQZ, BAH, BLH, BKR, BMD, and CFZA

vehicles with PR number (QG0)	
Petrol engines	VW standards
3 and 4 cylinders	502 00

Diesel engines with identification letters ASY

vehicles with PR number (QG0)	
Diesel engines	VW standards
SDI	505 00 or 505 01

Diesel engines with identification letters BNM

vehicles with PR number (QG0)	
Diesel engines	VW standards
TDI	505 01

3.8.2 Oil properties

Multipurpose oils according to VW 505 00 standard:

- It can be used throughout the year in mild climate zones.
- Excellent cleaning capability.
- Lubricating power ensured in every temperature range and engine load.
- High resistance to aging.

Multipurpose oils according to VW 502 00 standard:

- It is particularly suitable for use in severe operating conditions, for instance, in poorly maintained roads under maximum load conditions and towing, constant traveling in mountain areas and hot climate zones.

Multi-purpose oil, according to standards VW 505 01 and VW 506 01

- Engine protection between long maintenance intervals.
- Protection against residue build-up.
- High viscosity for constant fuel saving in all conditions of use.
- Everlasting stability for constant use in high rotation rates and loads through long distances.
- Reduced emission of pollutants because of lower fuel consumption.

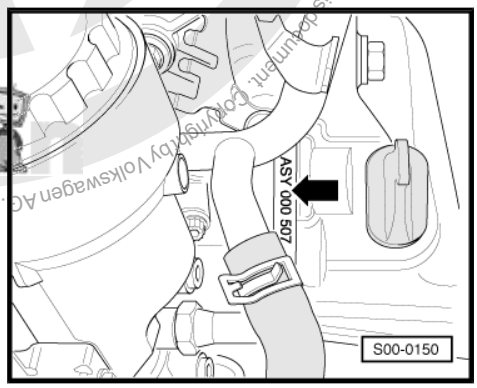
WARNING

- *Follow the rules for disposal!*

3.9 Identification letters and engine number

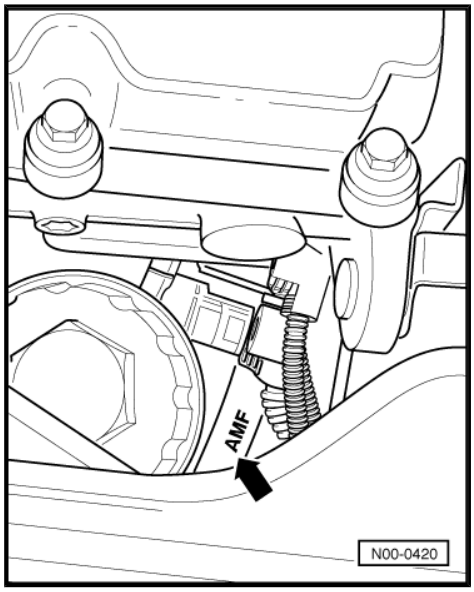
3.9.1 ASY engine

The engine identification letters and engine number are engraved on the engine block -arrow- in the engine/gearbox separation area. Additionally, the upper mechanical distribution cover has a sticker with the engine identification letters and serial number. The engine identification letters are also indicated on the vehicle identification tag.



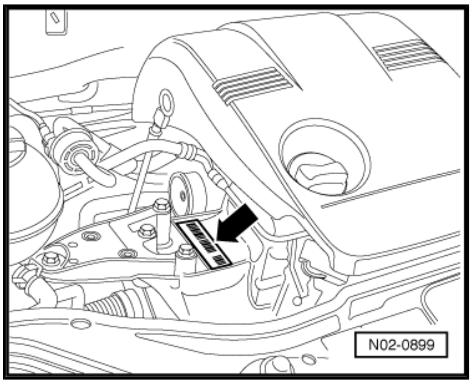
3.9.2 BNM engine

The engine identification letters and engine number -arrow- are engraved on the engine block. Additionally, the upper mechanical distribution cover has a sticker with the engine identification letters and serial number. The engine identification letters are also indicated on the vehicle identification tag.



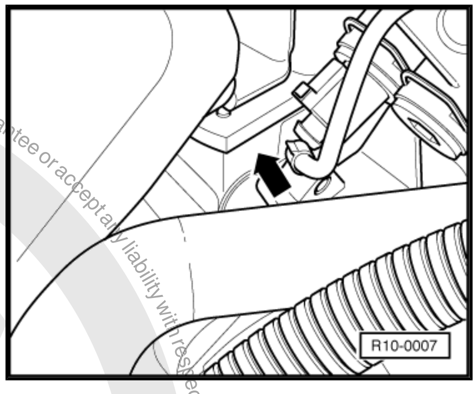
3.9.3 BMD engine

The engine identification letters and engine number are engraved on the engine block in the area between the engine and the gearbox. Additionally, there is on the right engine support side -arrow- a sticker with the engine identification letters and serial number. The engine identification letters are also indicated on the vehicle identification tag.



3.9.4 AQZ, BAH, BLH, BKR, and CFZA engines

The engine identification letters and serial number are engraved on the engine block, below the thermo valve case. Additionally, the upper mechanical distribution cover has a sticker with the engine identification letters and serial number. The engine identification letters are also indicated on the vehicle identification tag.



3.10 Push starting (pushing the vehicle to start)/towing

Push starting and towing are carried out in different ways depending on the legislation of each country.

If the vehicle is provided with a towing hook, then a tow cable or tow bar should be attached to the front or rear hook.

Note

- *The tow cable should be elastic, so both vehicles are protected. Thus, only synthetic cables or made of similar elastic materials can be used. Yet, the safest procedure is to use a tow bar!*
- *First, make sure there are no inadequate drive forces and no impact loads. On towing maneuvers on dirt roads, there is always the risk of overloading and, therefore, damaging the fastening parts.*
- *Before push starting a vehicle (pushing the vehicle), try to push start by using the battery from another vehicle.*

If the vehicle is push started or towed, please note the following:

Whenever possible, it is recommended that the vehicle is not pushed for a push start. Instead, use the auxiliary starting cables.

- The legal requirements for towing vehicles must be complied with.

- Both drivers must be experienced in towing vehicles. Inexperienced people should not try push starting or towing a vehicle.
- When using a tow cable, the driver of the towed vehicle must carefully release the clutch when starting to move and when shifting gears.
- The driver of the towed vehicle must ensure the cable is always taut.
- The warning lights of both vehicles must be turned on, and other legal requirements must also be observed, if necessary.
- The ignition must be switched on so that the steering wheel is free and the warning lights, horn, Windscreen wipers and washer are ready for use.
- Once the servo brake only operates with the engine on, it is necessary to step much harder on the brake pedal when the engine is turned off.
- Since the power steering does not work with the engine off, are much harder to execute when the engine is off.
- If there is no lubricant in the automatic transmission, the vehicle can only be towed with the drive wheels lifted.

3.10.1 If the jump starting has to be carried out against our recommendation, please note the following points for vehicles with a mechanical transmission:

– Before jump starting, press the clutch pedal and engage the 2nd or 3rd gear.

– Turn the ignition on.

– Release the clutch pedal only when both vehicles are moving.

– As soon as the engine starts, press the clutch pedal and shift to dead center to avoid a collision with the vehicle ahead (tractor).

Note

In vehicles equipped with catalytic converter, the engine should not be started by pushing the vehicle for more than 50 meters if the catalytic converter is hot. The unused fuel may get into the catalytic converter and damage it.

Over greater distances, the front vehicle section must be lifted.

With a tow car, the vehicle may only be towed with the front wheels lifted.

Reason: With the vehicle suspended by the rear wheels, the drive shafts turn backwards. This causes the planetary gears to turn at rotation rates so high that the transmission is severely damaged in a short period of time.

4 Service descriptions

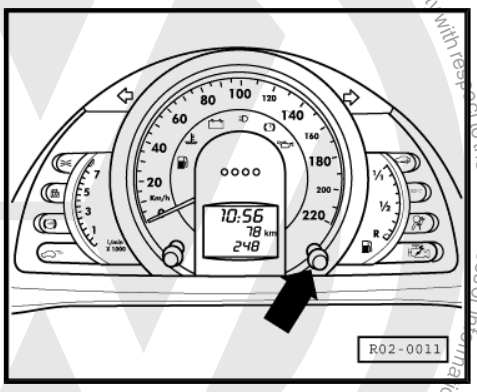
4.1 Clock - set

Set the clock as follows:

Set the hours (2-line display):

– With the ignition on, select the clock function, pressing the button -arrow- for less than 2 seconds. There will be a clock symbol beside the time.

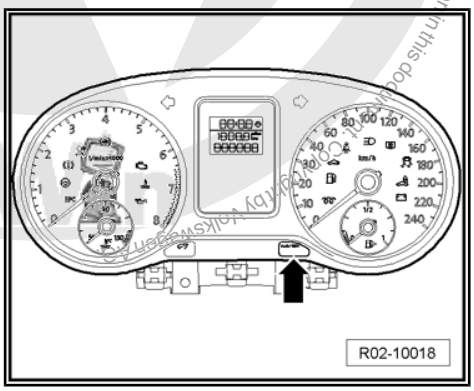
– To activate the hour set function, keep the button -arrow- pressed until the display starts flashing, then press the button -arrow- quickly, the numbers will change sequentially in ascending order.



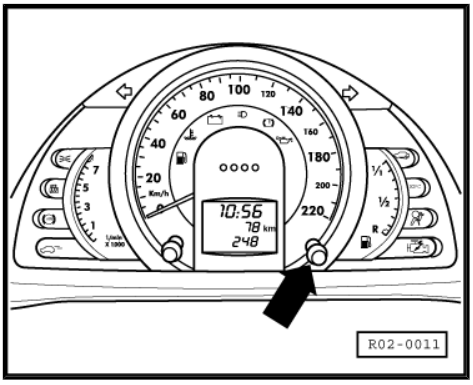
New Fox

Set the minutes:

– To activate the minute set function, keep the button -arrow- pressed until the display starts flashing, then press the button -arrow- quickly, the numbers will change sequentially in growing order.



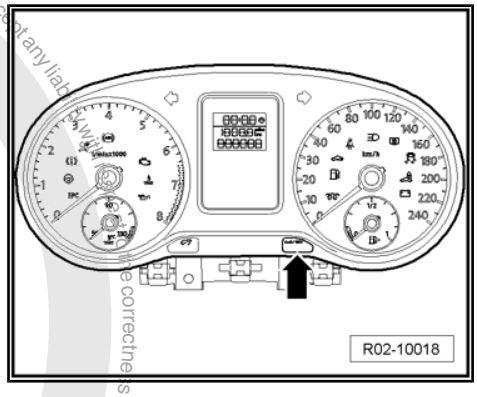
– Press the button -arrow- for more than 2 seconds to go back to partial odometer function.



New Fox

Set the hours (3-line display):

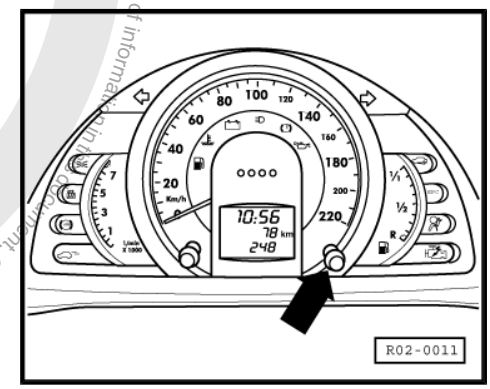
– There will be a clock symbol beside the hour.



– To set the hour, with the ignition on and without the radio information on the display, slightly turn the button -arrow- counterclockwise. To set the minutes, turn the button -arrow- clockwise.

– One small turn to the limit changes only one unit at a time. If the button is turned and kept pressed, the numbers will change sequentially in ascending order.

– To set the minutes correctly based on another clock, move the button -arrow- until it reaches one unit before the exact minute. At the moment the other clock reaches the full minute, turn the button again to the right.



4.2 Maintenance interval indicator (if available) : reset with the Vehicle Diagnosis, Measurement and Information System

♦ with the Vehicle Diagnosis, Measurement and Information System

4.2.1 Reset the service interval indicator through the partial odometer return button (vehicles 2010▸)

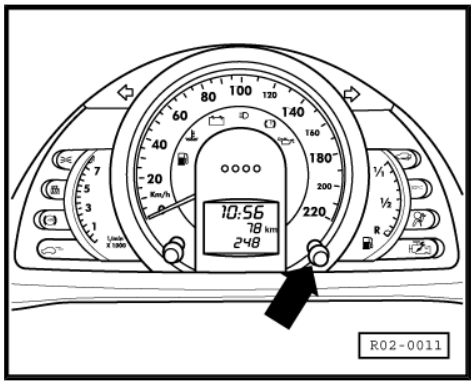
The service interval indicator must be

♦ reset at the delivery inspection, at every oil change service, and at every inspection service!

Reset the indicator as follows:

– Turn the ignition off.

– Press and hold the button -arrow- next to the speedometer.

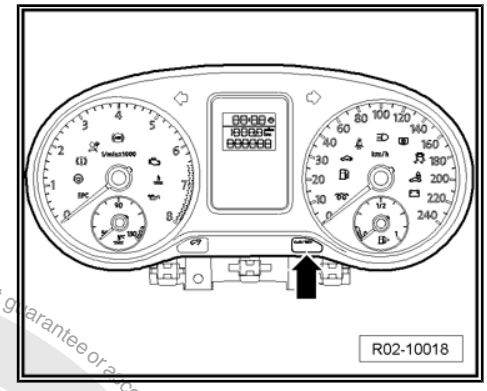


New Fox

– Turn the ignition on.

– Hold the button at the right of speedometer during approximately 10 seconds.

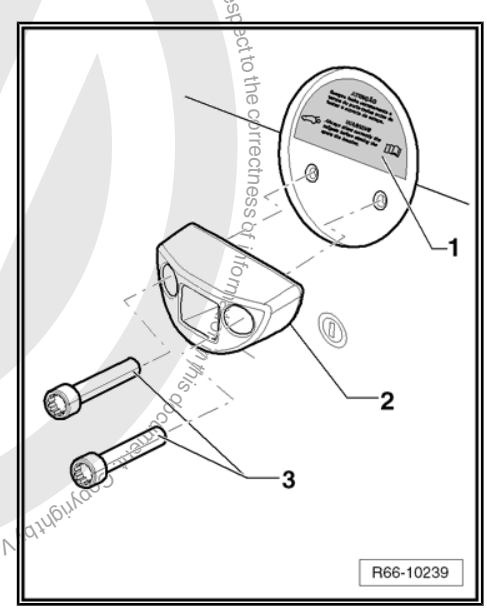
The display resumes the normal indication.



4.3 Spare wheel support stop: lubricate - (CrossFox)

– Any grease residue (contaminated grease) must be removed from the stop.

– Lubricate the stop inside -2- with Silicone grease -G000 405 A2-

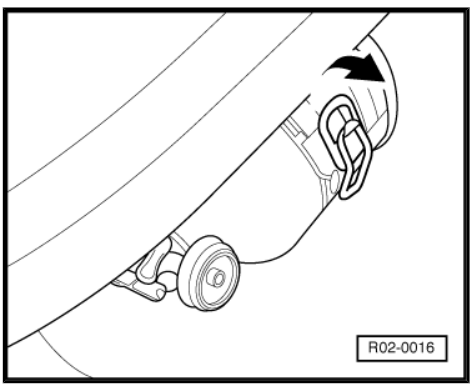


4.4 Fire extinguisher - check the charge

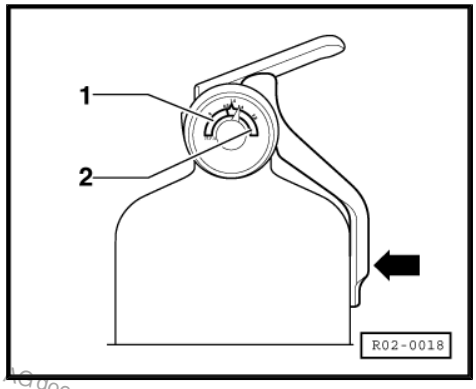
4.4.1 Engine identification letters AQZ, BAH, CFZA

Location: fastened to a support on the lower front section of the passenger's seat

The pressure gauge indicator must be on the green range -2-, check the indicator and pressure scale:



- Green range -2-= the extinguisher is charged.
- Red range -1-= the extinguisher is discharged.
- Inviolability seal -arrow-.



Note

- *Check for possible oxidation and for fastening of components.*
- *The vehicle fire extinguisher is designed to be used only once, and the expiration date is defined by law!*
- *Check the expiration date printed on the extinguisher's cylinder.*
- *The inviolability seal -arrow- ensures that the fire extinguisher has not been used.*
- *Whenever used, the extinguisher must be immediately recharged.*
- *Driving vehicles with extinguishers which are out-of-date or in poor condition of use is forbidden by law.*

4.5 Power window drive - reprogram

Note

When the battery is disconnected and then reconnected, the power window drive will not be completely operational. The window drives must be reprogrammed before the vehicle's delivery. The vehicle battery cannot be disconnected after reprogramming.

Carry out the following work sequence to start the power window drive:

– Press the key until the window is fully closed, keeping it pressed for a few more seconds.

– Repeat this operation for the other doors.

4.6 Radio - activate the anti-theft code

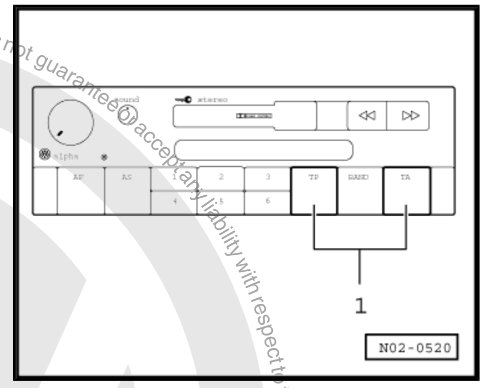
The radio equipment is supplied with a fixed code. This fixed code is not activated in the plant.

On “alpha” radios, the fixed code is activated as follows:

The security coding of the ready-to-play radio will only be activated when the fixed code is specified. The fixed code must be activated as follows:

– Turn the radio on.

– The digital display will exhibit “SAFE” and the number “1000”.



- Press the keys TP and TA -1- simultaneously until “1000” appears on the digital display. Release the keys!
- Enter the code number attached to the radio card with the help of the tuning buttons -1-. The first digit of the code number is entered with key 1, the second digit with key 2, and so forth.

If you have entered an incorrect code number, “SAFE” will start blinking for a few seconds on the digital display.

Note

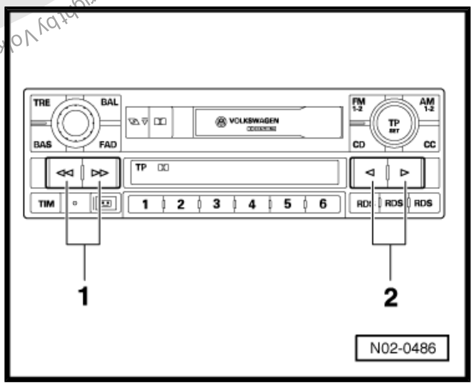
This procedure can be repeated just once.

If an incorrect code number is entered once again, the unit will remain inactive for approximately 1 hour.

- Leave the unit on and the ignition key in the switch for one hour.
- After 1 hour, enter the code number again.

On “beta and gamma” radios, the fixed code is activated as follows:

- Turn the radio on.
- The digital display will exhibit “SAFE”.
- After approximately 3 seconds “1000” will appear on display.



- Enter the code number attached to the radio card with the tuning buttons 1 to 4. The first digit of the code number is entered with the button 1, the second digit with the button 2, and so forth.
- Then, press the search button -1- or the manual tuner -2- for more than 2 seconds. Release the button!

If the correct code is entered, the current frequency is displayed after a short “adjustment phase”. During this pause, a list of the strongest regional stations is recorded and will be available for tuning. When the ignition key is removed, the LED in the radio's lower left section must blink. If the LED blinks, the radio is ready to play and the anti-theft code is activated.

On “RCD 200” radios, the fixed code is activated as follows:

- Turn the radio on
- After approximately 3 seconds “1000” will appear on display.

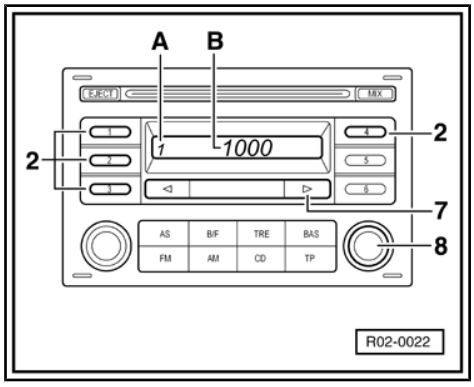
– Enter the code number attached to the radio card with the help of the pre-tuning buttons 1 to 4-2-. The first digit of the code number is entered with the key 1, the second digit with the key 2, and so forth.

If the correct code was entered, keep the button -7- or -8- pressed for 2 seconds. When the ignition key is removed, the LED in the radio's lower left section must blink. If the LED blinks, the radio is ready to play and the anti-theft code is activated.

-A-number of attempts to activate the anti-theft code.

-B-anti-theft code in activation.

If you have entered an incorrect code number, “SAFE” will start blinking for a few seconds on the digital display.



Note

This procedure can be repeated just once.

If an incorrect code number is entered once again, the unit will remain inactive for approximately 1 hour.

– Leave the unit on and the ignition key in the switch for one hour.

– After 1 hour, enter the code number again.

4.7 Reading radio code using Diagnosis, measurement and information system

Authorization prerequisites for the diagnostic tester

- The vehicle diagnostic tester is connected via the Central Partner Network (CPN) with the central database (Carport, Fazit).
- Available access for the user of the system “GeKo” (secrecy and component protection)

Note

- *The radio codes can be read in the central database and can be displayed on diagnostic tester .*
- *For radio activation the codes must be entered via radio buttons, as previously ⇒ page 36 .*

Procedure

– Connect Diagnosis, measurement and information system ⇒ page 25 .

– Switch on ignition.

– Touch the field or button on the screen for “GUIDED FUNCTIONS”.

– Confirm with [>] button.

– Select one after the other:

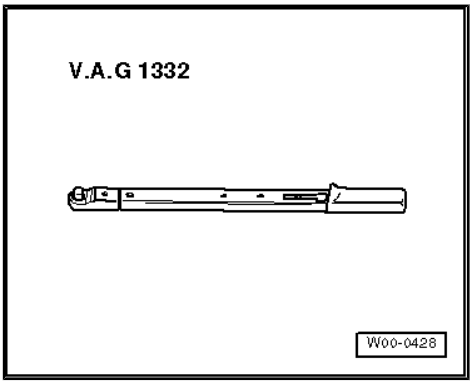
- Brand
- Type
- Model year
- Engine code

– Confirm vehicle identification.
– Select one after the other:
♦ “Radio system”.
♦ “Reading radio code”
– Read code according to the information of “GUIDED FUNCTIONS”.
– Finish code reading as follows:
– Press “GoTo” button on display.
– Press the “End” button on display.
– Press “End” button in End menu.
– Switch off ignition and separate diagnostic connections.

4.8 Wheel fastening screws - tighten to correct torque

Special tools and workshop equipment required

♦ Torque wrench - 40 to 200 Nm (enc. 1/2") -VAG 1332-



4.8.1 Hub cap/Super hub cap

The hook for removing the hub cap/ super hub cap is in the vehicle tool kit

4.8.2 Wheel bolts

Note

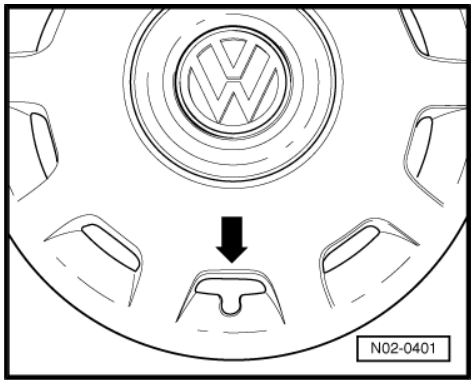
Make sure that the wheel screws are tightened in a cross pattern with the following tightening torque:

Tightening torque: 120 Nm.

– After the works are concluded, place the hook for removing the hub caps/super hub caps on the vehicle's tools.

4.8.3 Super hub cap assembly (if available)

– Install the super hub cap so that the tire inflation valve is positioned in the notch -arrow-.



4.9 Battery - check terminals for proper seating and fastening

4.9.1 Battery - check fastening

Note

Due to manufacturing reasons, different types of batteries are installed. Specific work deviations and instructions must be observed for each battery type ⇒ Electrical equipment; Rep. Gr. 27 ; Starter, generator, battery

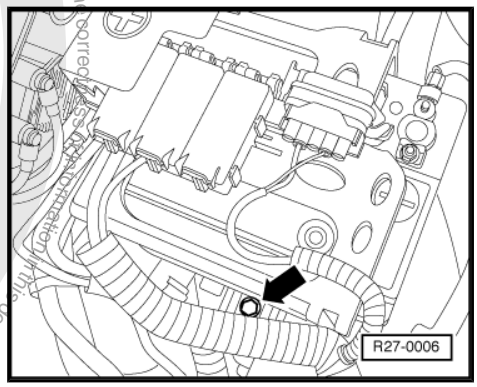
Visual inspection

Carry out work sequence as follows:

– Check the battery case for damage. If the case is damaged, battery electrolyte may leak.

– Check the battery poles (Battery cable connections) for damage. If the battery poles are damaged, this will compromise the contact with the cable connections. This may cause a fire and there may be electrical system failures.

– Check the battery fastening -arrow- and, if necessary, tighten the fastening screw to 25 Nm.



If the battery is not firmly fastened, the following may happen:

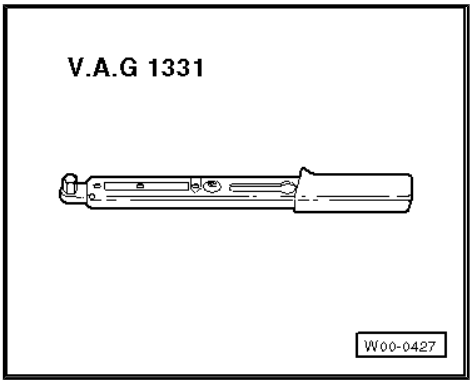
- The battery life may be reduced because of vibration.
- Damage to the battery case.
- Safety problems in case of collision.

4.9.2 Terminal seating

Properly seated battery terminals ensure the perfect operation of the electrical system and a long battery life.

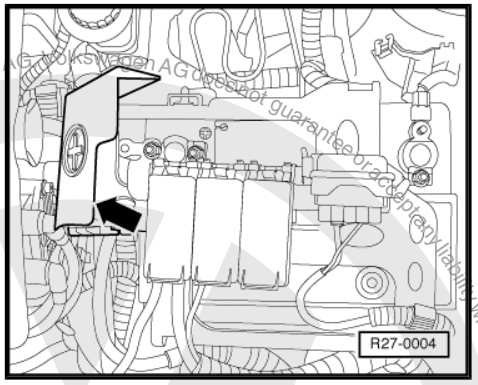
Special tools and workshop equipment required

- Torque wrench - 5 to 50 Nm (fit. 1/2") -VAG 1331-

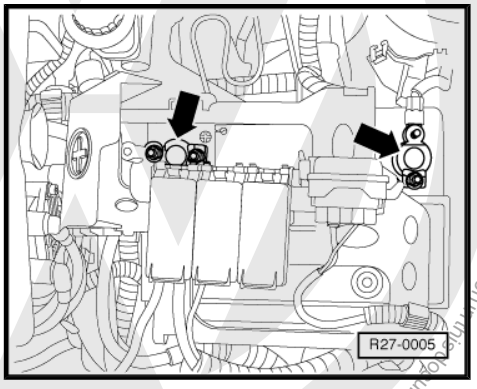


Carry out work sequence as follows:

– Press the locks and tilt the positive battery pole cover -arrow-



– With alternate movements of the positive and negative battery cables, check if the terminals -arrows- are firmly fastened to the battery poles.

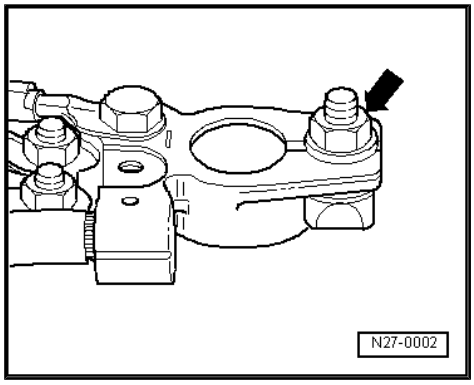


WARNING

If the terminal is not firmly fastened to the battery pole, first you must disconnect the terminal connected to the negative battery pole to avoid risk of accidents.

If the terminal is not firmly fastened to the positive battery pole:

– Tighten the terminal screws in the battery poles to a torque of 5 Nm -arrow-.



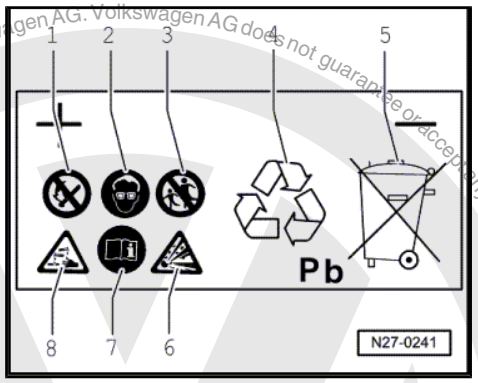
Note

- *The tightening torque for the additional battery terminals is 6 Nm.*
- *The battery poles cannot be lubricated.*
- *The battery pole terminals can only be connected manually and should not be forced, thus avoiding damage to the battery case.*
- *After reconnecting the battery, make an inspection of the vehicle equipment (radio, clock, electric convenience system, power window drive, etc.) as per the repair manual and/or instruction manual.*
- *It is essential that you make a visual inspection of the external condition and the battery connections before any measurements.*

WARNING

Please follow the warning notes and safety rules for lead and acid batteries, represented by symbols on the battery tag.

Warning notes and safety rules for lead and acid batteries



1 - Fires, sparks, open flame and smoking are prohibited:

– Avoid sparks and electrostatic discharges when handling cables and electrical devices;

– Avoid short circuits (never lay a tool on top of a battery).

2 - Please wear protective goggles.

3 - Keep children away from acid and batteries.

4 - Recycling:

– Dispose of old batteries at a battery collection center (supplier).

5 - Never discard old batteries in domestic waste!

6 - Risk of explosion:

– A highly explosive mix of oxy-hydrogen gas is produced when charging batteries.

7 - Follow the instructions mentioned on the battery, in the electrical system repair manual and in the operation manual.

8 - Danger of chemical corrosion.

– The battery acid is highly corrosive, therefore wear protection goggles and gloves;

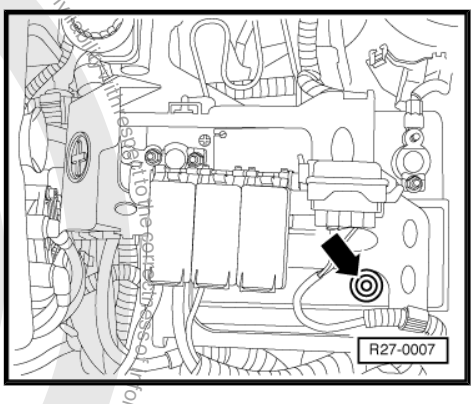
– Do not tilt the battery. Acid can leak from the degassing openings.

4.10 Battery - check the charge capacity

Note

The vehicle must have remained turned off for at least 2 hours.

4.10.1 Check the charge indicator “inspection glass” at Delivery inspection



Carry out a visual inspection on the charge indicator “inspection glass” -arrow-.

The Charge indicator “inspection glass” informs the battery charge condition.

Note

- *Since the inspection glass is located on a single battery cell, the indication only refers to this cell. A precise assessment on the battery condition is only possible through a test to check the battery charge capacity* *⇒ page 43* *.*
- *Specially when a battery is recharged, that is, even when the battery is charged during driving, air bubbles can form under the inspection viewing glass. These bubbles change the color indication in the inspection viewing glass.*
- *The inspection viewing glass may be located at various positions on the battery.*

– Before making the visual inspection, tap lightly and carefully with a screwdriver handle on the charge indicator glass -arrow- so that air bubbles do not interfere with the inspection.

This way, any air bubbles that could influence the indicator are eliminated and dissipate.

The color indication of the “inspection glass” becomes more accurate. There are three possible indications:

– Green → the battery is sufficiently charged.

– Black → no charge or insufficient charge, the battery must be charged (repair measure). For battery recharging procedures ⇒ Electrical system; Rep. Gr. 27 ; Starter, generator, battery .

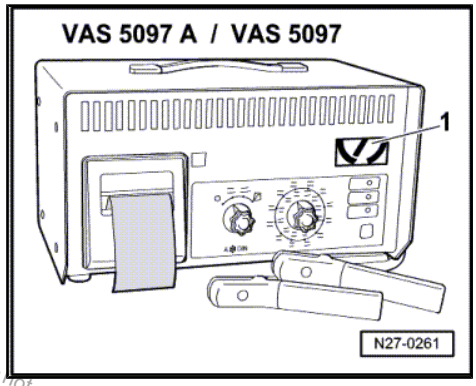
– Colorless or yellow → the battery must be replaced (repair measure).

4.10.2 Test for checking the battery charge capacity

Special tools and workshop equipment required

- Battery test device, with printer -VAS 5097A- or

- -VAS 5097- Battery test with printer, converted (modification-software recognized by logo -1-)



Note

When using the Battery test device, with printer -VAS 5097A- or -VAS 5097- , it is not necessary to remove the battery. Also, it is not necessary to disconnect the battery.

Performing battery charge test sequence:

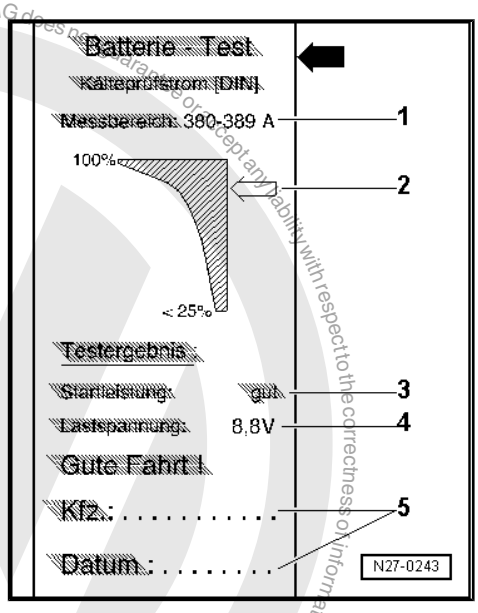
– Turn ignition off.

– Connect the claws to the battery poles. ⇒ Check the battery test device operation instructions.

The claws must have good contact with the battery poles.

– The charge current varies and the battery capacity must be adjusted on the test device. ⇒ Battery test device operation instructions.

– Carry out the battery charge test according to the instructions of use for the battery test device and compare the test printout -arrow- with the following table.



Clarifications concerning the test printout:

1 - measurement range adjusted on the test device.

2 - diagram (the arrow indicates the battery state).

3 - test result.

4 - battery voltage during the charge test.

5 - vehicle data and date (to be written by the person in charge of the test).

Note

The test printout is required for filling out the guarantee.

Battery test device printout	Measures to be taken
Very good starting power	Battery OK
Good starting power	Battery OK
Insufficient starting power	Recharge the battery[11)]
Weak starting power	Recharge the battery[11)]
Very poor starting power	Recharge the battery[11)]
Unsuitable for tests	Recharge the battery[11)]

11) After recharging the battery, its charge test must be carried out again. If after recharging the battery the following indications “insufficient starting power, poor starting power, very poor starting power or unsuitable for tests” appear, then the battery must be replaced.

Clarification for the battery charge test:

During this test, the battery voltage is reduced through excessive charge (a high current flows).

If the battery is OK, the voltage value lowers to the minimum voltage.

If the battery is damaged or has low charge, then the battery voltage will quickly drop below the minimum voltage.

After the test, this low voltage value will remain for a while; then, the voltage will slowly increase.

For battery recharging procedures ⇒ Electrical system; Rep. Gr. 27 ; Starter, generator, battery .

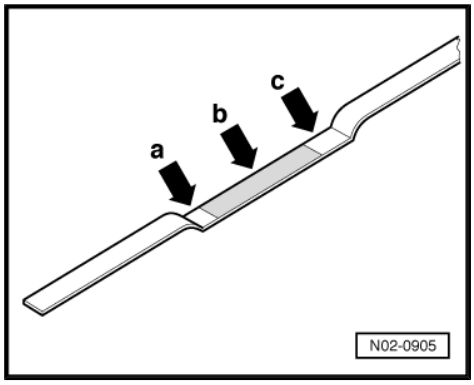
4.11 Engine oil level - check and replenish if necessary

Please note the following:

After turning the engine off, you must wait for at least 3 minutes so that the oil flows back to the crankcase.

– Pull the oil dipstick out, clean it with a clean cloth and push the oil dipstick in again up to the seat (stop).

– Pull the oil dipstick out again and check the oil level for the following conditions:



Condition 1

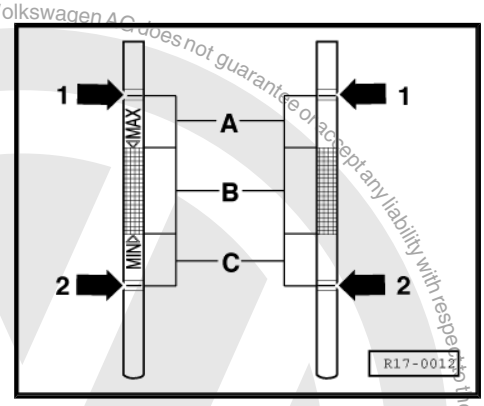
Area -a-	Minimum marking region. Replenish the oil. It is sufficient for the oil level to be anywhere within area -b-.
Area -b-	It is not necessary to replenish the oil.
Area -c-	Maximum marking region. Oil cannot be replenished.

Note

- *There is danger of damaging the catalytic converter when oil level is above area -c-*
- *The oil level must be between the minimum and maximum markings. Make sure that the oil level does not exceed the maximum marking.*

– Pull the oil dipstick out again and check the oil level.

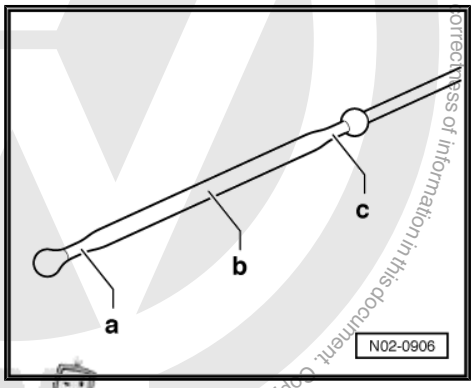
Condition 2



Area -A-	Oil must not be replenished.
Area -B-	It is not necessary to replenish the oil.
Area -C-	Replenish the oil level. It is sufficient for the oil level to be anywhere within area -B-.
Arrow -1-	Maximum marking
Arrow -2-	Minimum marking

– Pull the oil dipstick out again and check the oil level.

Condition 3



Area -a-	Replenish the oil level. It is sufficient for the oil level to be anywhere within area -b-.
Area -b-	It is not necessary to replenish the oil.
Area -c-	The oil level cannot be replenished.

Note

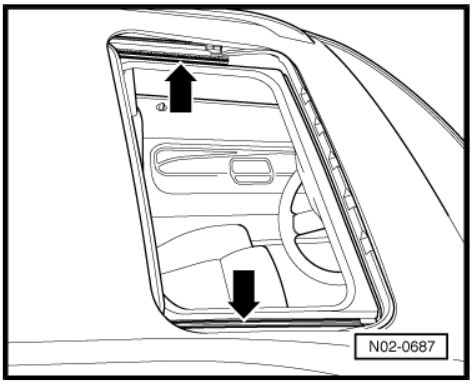
- *With the oil level below the minimum marking (area -a-), replenish the oil until it reaches (area -b-) according to the oil specification.* ⇒ page 58 .
- *With the oil level above area -c- there is the risk of damaging the catalytic converter.*
- *During oil changes, you must add oil until the maximum marking.*

4.12 Sunroof: check operation, clean and lubricate the guide rails

Carry out the following work procedures:

– Check operation of sunroof.

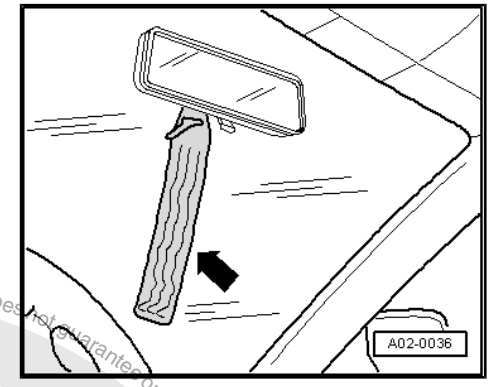
– Clean the guide rails -arrows- and lubricate with Special grease -G 000 450 02- .



4.13 Transport safety devices - remove

4.13.1 Engine identification letters ASY, BLH, BNM, BKR, BMD, and CFZA

– Some vehicle versions include front suspension blocking devices. These vehicles can be identified by a tag attached to the internal rearview mirror -arrow-.



WARNING

- ***The blocking devices must be mandatorily removed during the vehicle delivery inspection!***

Carry out the following tasks:

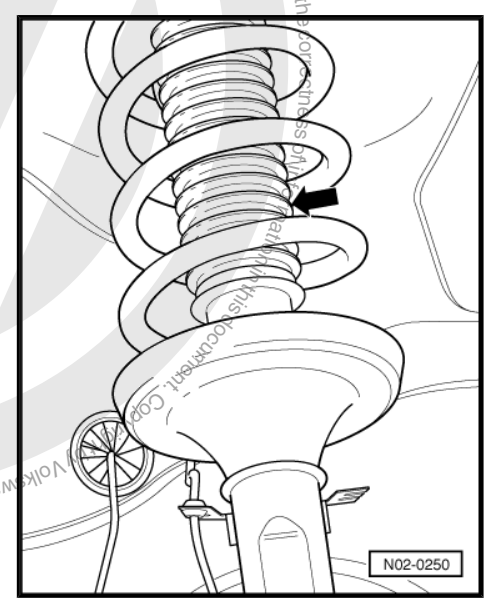
Note

It is not necessary to remove the wheels.

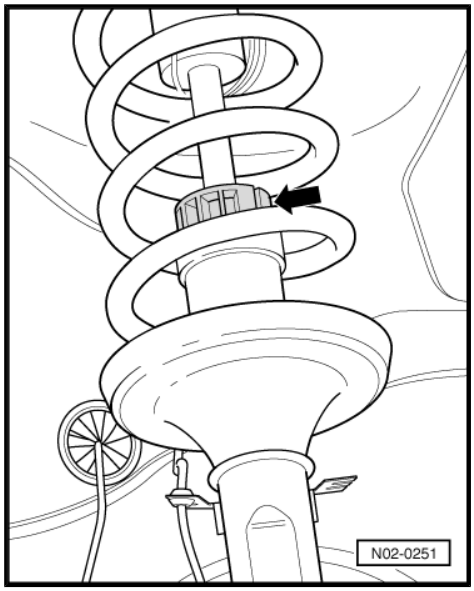
– Relieve the load form the coil springs by lifting the vehicle with the workshop lift.

– Remove the safety devices (blocking devices) from the suspension column.

– Move the shock absorber rod protection bellows -arrow- upwards.



– Remove the blocking device -arrow- from the shock absorber rod.
– Move the shock absorber rod protection bellow downwards.



4.14 Driver and passenger airbags - visual inspection of Airbag units

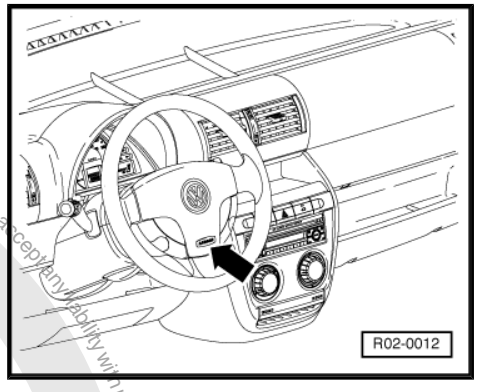
4.14.1 Driver's airbag

The identification feature of the Airbag is the “AIRBAG” inscription -arrow- on the steering wheel padded plate.

– Carry out visual inspection of the padded surface for external damage.

WARNING

- *The steering wheel padded plate must not be glued, coated, or undergo any type of rework. This information must be emphasized to the customer, to ensure the future Airbag's operation.*
- *The steering wheel's padded plate must only be cleaned with a dry cloth or a cloth moistened with water.*



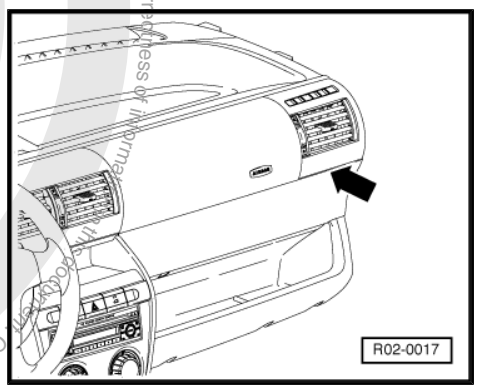
4.14.2 Passenger's airbag

The identification feature of the Airbag is the “AIRBAG” inscription -arrow- on the right side of the instrument panel.

– Carry out the visual inspection of the instrument panel surface for external damage.

WARNING

- *The plate that covers the passenger's Airbag module must never be glued, coated, or undergo any type of rework. The customer must be guided about this information to ensure the future Airbag operation.*
- *The plate that covers the Airbag module must only be cleaned with a dry cloth or a cloth moistened with water.*



4.15 Windshield and rear window wiper and washer - check the operation

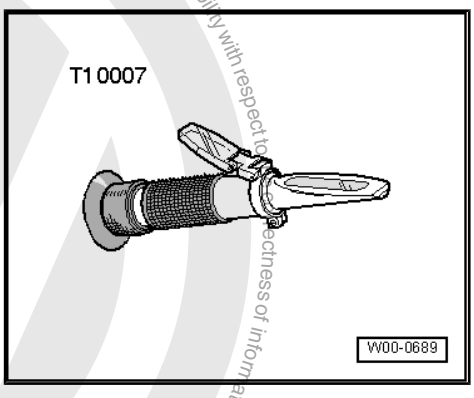
Note

If during the operating check it is verified that the wiper blades shake or make noises, you must verify the wiper blade support angle. ⇒ page 51 .

4.15.1 Replenish the reservoir level

Special tools and workshop equipment required

- Refractometer for cooling system liquid analysis -EQ 7093 (VWB) - ou - T 10007-

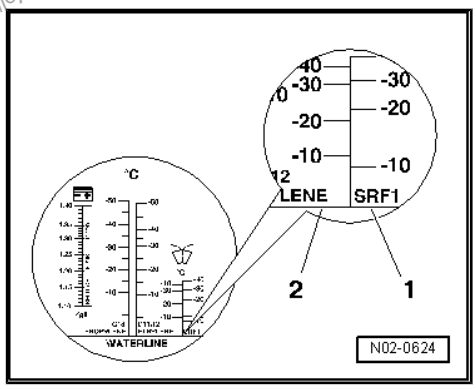


The exact value for the following checks may be read in the light-dark limit. To better see the light-dark limit, use a dropper/pipette to put a water drop on the glass. Now, the light-dark limit may be easily recognized by the "WATERLINE".

– Check the concentration of additive for front/rear window wipers with Refractometer for cooling system liquid analysis -EQ 7093 (VWB) - ou - T 10007- (follow the instruction manual).

The refractometer scale -1- is based on the original Volkswagen product according to the table: ⇒ page 49 .

The scale -2- is based on commercially available cleaning products as well as on the mix of the commercial cleaning product with the original Volkswagen product according to table: ⇒ page 49 .



4.15.2 Windshield/rear window washer additive applications

Application	Windshield/rear window washer additive
EUROPE only Tropical climate countries	-G 052 164 A1- or -G 052 164 A2- -G 052 131 A2- until 07/2005 -G 052 184 A2- from 08/2005

4.15.3 Mix ratio in arctic climate countries

Antifreeze protection up to	Windshield/rear window washer additive	Water
3.20 ?	1 part	2 parts
-22.00 ?	1 part	1 part
-40.00 ?	2 parts	1 part

4.15.4 Mix ratio in tropical countries

Until 07/2005

Antifreeze protection up to	Windshield/rear window washer additive	Water
-	1 part	19 parts

From 08/2005

Antifreeze protection up to	Windshield/rear window washer additive	Water
-	1 part	99 parts

Complete:

The Windscreen washer fluid reservoir must be replenished to the top.

Note

- *The original Volkswagen product Windscreen/rear window washer additive -G 052 164 A1- or the -G 052 164 A2- have cleaning properties that protect the ejectors, the reservoir and connection hoses against freezing.*
- *In warm seasons of the year, it is also possible to use original Volkswagen product Windshield/rear window washer additive -G 052 131 A2- until 07/2005 and Windshield/rear window washer additive -G 052 184 A2- from 08/2005, which does not have antifreeze protection, but has cleaning properties.*
- *The antifreeze protection for the Windshield washer should be guaranteed at approximately -15 °C (for Arctic climate countries, approx. -31.00 ?).*

4.15.5 Windshield washer - check and adjust the ejectors

Check the Windshield washer's system ⇒ Electrical system; Rep. Gr. 92 ; Windshield, rear window and headlight washer and wiper .

Note

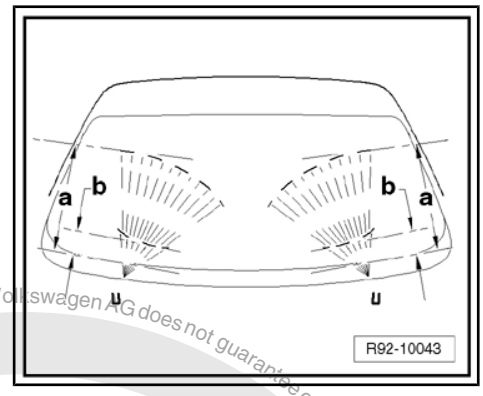
- *If the ejector does not enable adjustment, due to impurities, remove the ejector, ⇒ Electrical system; Rep. Gr. 92 ; Windshield, rear window and headlight wiper and washer and wash with water in the opposite direction of the nozzle jet direction.*
- *Under no circumstances should needles or similar objects be used, since this might damage the nozzle's water passage.*
- *Then, you can blow compressed air in the opposite direction of the nozzle jet direction.*
- *The spray ejectors are pre-adjusted. However, some minor height differences can be adjusted.*

Nozzle jet position:

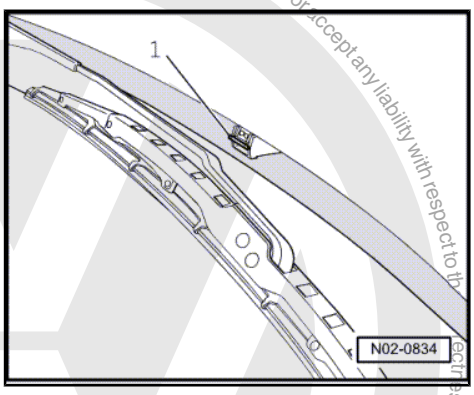
-a-: 18.90 in

-b-: 6.50 in

If the two action surfaces of the ejector jet are not according to the dimensions -a - and -b-, the jet height must be adjusted as explained below:



– Adjust the jet through the nozzle tab-1-, by moving it slightly with your hand, upward or downward, with the front bonnet closed.



Note

To perform the adjustment, support the ejector with your hand to prevent it from moving from the housing.

4.15.6 Rear window washer - check the ejector

Note

- *If the ejector jet is irregular, replace the ejector (repair measure).*
- *Under no circumstances should needles or similar objects be used, since this might damage the ejector water passage.*

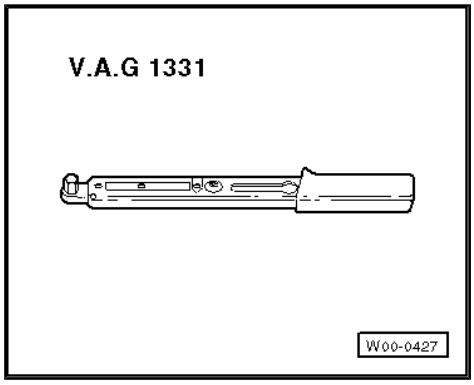
– Check the ejector projection.

The ejector jet must fall on the centre of the washer area.

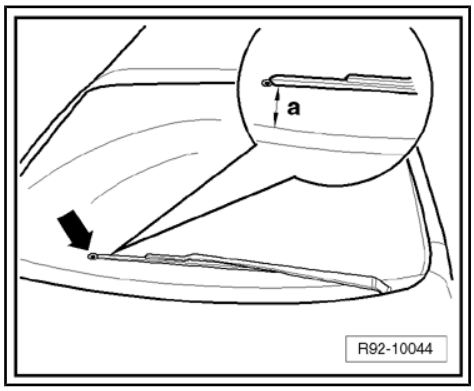
4.16 Windscreen and rear window wiper blades - check the resting position

Special tools and workshop equipment required

- Torque wrench - 5 to 50 Nm (fit. 1/2") -VAG 1331-

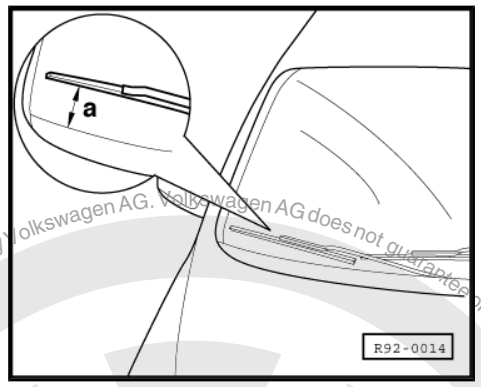


4.16.1 Windscreen wiper blades - adjust the resting position



Driver side

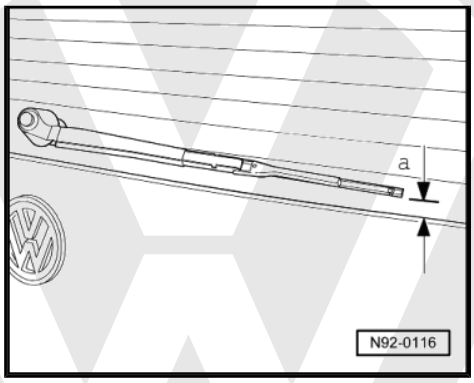
– -a- = 30 ± 5 mm (measured in the wiper blade). The adjustment can also be made by using the round marking on the glass, which corresponds to the blade installation position (only Europe)-arrow-.
– Assembly reference: wiper blade edge.
– Tightening torque of the wiper arm and blade set 15.5 Nm.



Passenger's side

– -a- = 65 ± 5 mm (measured in the wiper blade) or 3rd. serigraphy trace.
– -a- = 50 ± 5 mm (measured in the wiper blade, only Europe).
– Tightening torque of the wiper arm and blade set 15.5 Nm.

4.16.2 Rear window wiper blade - adjust the resting position



– The distance -a- between rear window wiper rubber and the lower edge of the window must be 36 to 46 mm.
– To adjust the final rear window wiper position, move the wiper rod.
– Wiper rod tightening torque 12 Nm.

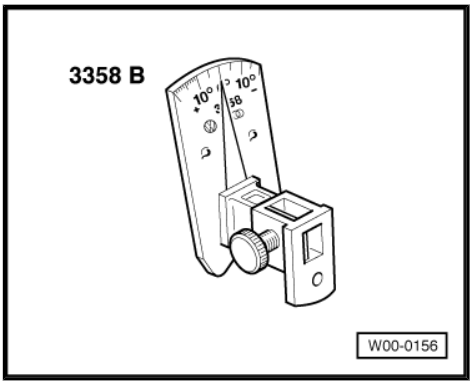
4.17 Wiper blade - check the incidence angle

Note

Check the incidence angle only when the wipers are vibrating or noisy.

Special tools and workshop equipment required

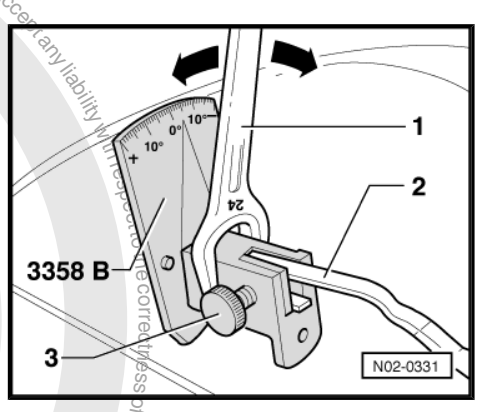
- Adjustment device -3358B-



Carry out work sequence as follows:

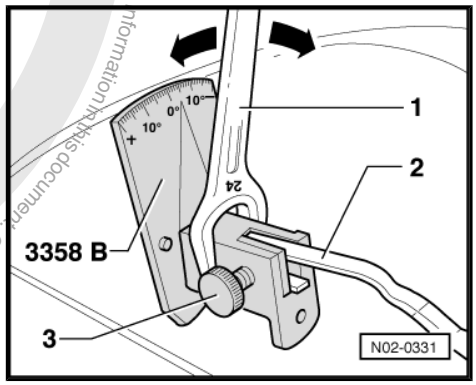
– Place the wiper arm in the resting position.
– Remove the wiper blade.
– Place the wiper arm -2- on Adjustment device -3358B- and fasten with the screw -3-.
– Check the incidence angle according to the following table:

Incidence angle (nominal values)	
Driver's side	- 5,0°
Passenger's side	-5,0°
Tolerance	± 2,0°



If necessary, adjust the incidence angle to the nominal value as follows:

– Place the Wrench -1- on the Adjustment device -3358B- and move -arrows- the wiper arm -2- to the nominal value.
– Compare the adjusted value, as per the table. If necessary, repeat the adjustment and control processes until reaching the nominal value.
– Remove the Adjusting device -3358B- and install the wiper blade.
– Check the wiper for smooth operation.



4.18 Tire pressure (including spare wheel), condition, tread, sides and groove depth - check

Note

For driving safety reasons, only tyres of the same type and profile version must be installed on a vehicle!

4.18.1 Check the condition (including spare wheel)

Carry out work sequence as follows:

Delivery inspection:

– Check the tread and sides for damage and, if necessary, remove foreign bodies, such as nails and pieces of glass, for example.

Note

In case of faults, please check if it is necessary to install a new tire.

Inspection service:

– Check the tread, sides and groove depth for damage and, if necessary, remove foreign bodies, such as nails and pieces of glass, for example.

– Check the tyres for wearing, treads worn on only one side, porosity on the toothed sides, cuts and perforations.

Note

The faults verified must be reported to the customer.

4.18.2 Check the treads (including spare wheel)

From the front tire treads it is possible to evaluate, for example, if there is the need to check the camber and convergence:

- The existence of burrs on the tire profile may be caused by convergence failure.
- Tread wear on only one side can be mostly caused by camber fault.

If there is such type of wearing, the cause must be determined by measuring the axle geometry (repair measure).

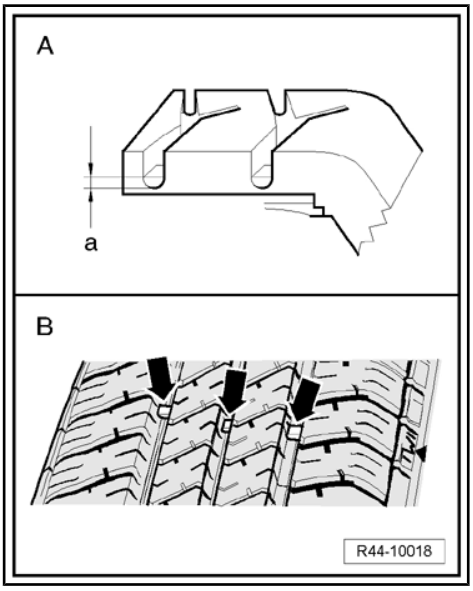
4.18.3 Check the tyre profile depth (including spare wheel)

– Check the groove's depth

A - Minimum groove depth -at-1.6 mm.

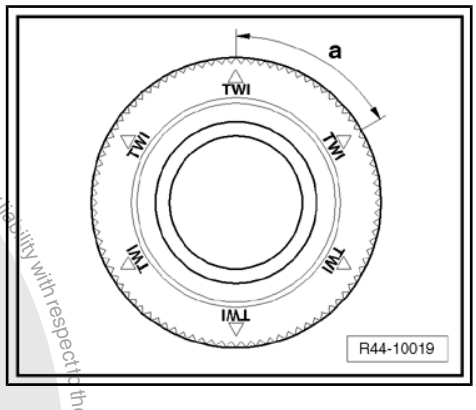
B - Tread wear indicators -arrows-.

It is necessary to replace the tyres when the tread wearing reaches the indicators -position 1- at the bottom of the grooves.



The points where tread wear indicators are found are identified by the acronym TWI (Tread Wear Indicators), distributed at every 60 degrees -a- on tire perimeter.

In this situation, the groove depth is approximately 1.6 mm. However, considering that a worn tire is more likely to skid on wet surfaces, we recommend replacing a tire when the groove depth reaches 3 mm.



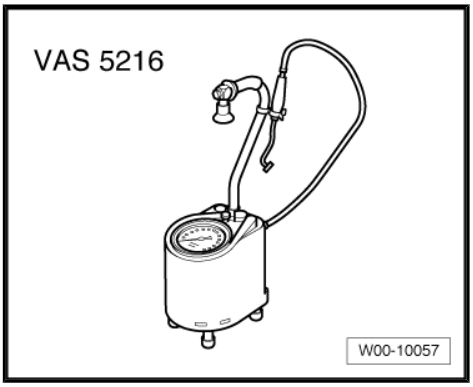
Note

- *This value may be different depending on each country's legal requirements.*
- *The minimum profile depth is reached when the wear indicator at the tread, adjusted at 1.6 mm of height, no longer displays a profile.*
- *If the profile depth is close to the legally accepted depth, the customer must be informed.*
- *The tires must also be replaced when they are cut, deformed, or display other damage.*

4.18.4 Tyre pressure (including spare wheel) - check and correct if necessary

Special tools and workshop equipment required

- Tire inflation device -VAS 5216-



Note

- *Please notice that the tire pressure values mentioned in the table are valid for cold tires. Heated tyres should not be excessively deflated.*
- *The pressure values for the respective model can also be found on an adhesive tag located inside the fuel reservoir filling nozzle compartment cover.*

Note

On the CrossFox, the spare wheel has an anti-theft screw, which socket is located on the tool bag.

4.18.5 Tyre pressure table

(for all sizes of tyres assembled in the factory)

Pressure values in PSI (pounds/sq-in)

Note

Values obtained at publishing date!

	half load front and rear		full load front and rear	
Engine identification letters AQZ, BJE, BNX, with mechanical steering				
175/65 R14 82T	31	27	33	39
Engine identification letters AQZ, BJE, BNX				
175/65 R14 82T	29	28	31	36
185/60 R14 82H	30	29	33	37
195/55 R15 85H	27	27	28	33
Engine identification letters BAH, BJA, BPA				
175/65 R14 82T	31	29	34	38
185/60 R14 82H	30	29	33	37
195/55 R15 85H	28	28	30	34
Engine identification letters BLH				
185/60 R14 82H	30	29	33	37
Engine identification letters ASY				
175/65 R14 82T	32	30	35	39
195/55 R15 85H	30	29	31	35
Engine identification letters BMD with mechanical steering				
165/70 R14 81T	35	32	35	41
Engine identification letters BMD				
165/70 R14 81T	29	28	32	38
185/60 R14 82T	29	28	32	38
195/55 R15 85V	28	28	30	36
Engine identification letters BKR				
165/70 R14 81T	32	29	35	41
175/65 R14 82T	32	30	35	39

	half load front and rear		full load front and rear	
185/60 R14 82T	32	29	35	41
195/55 R15 85V	28	28	30	36
Engine identification letters BNM				
185/60 R14 82T	33	30	36	42
195/55 R15 85V	29	28	32	38

CrossFox

Engine identification letters BKR				
205/60 R15 91V	29	32	29	38
Engine identification letters BNM				
205/60 R15 91V	29	32	29	38
Engine identification letters BAH, BJA and BPA				
205/60 R15 91V	29	32	29	38

Tyre pressure values in bar.

Note

Values obtained at publishing date!

	half load front and rear		full load front and rear	
Engine identification letters AQZ, BJE, BNX, with mechanical steering				
175/65 R14 82T	2,1	1,9	2,3	2,7
Engine identification letters AQZ, BJE, BNX				
175/65 R14 82T	2,0	1,9	2,1	2,5
185/60 R14 82H	2,1	2,0	2,3	2,6
195/55 R15 85H	1,9	1,9	1,9	2,3
Engine identification letters BAH, BJA, BPA				
175/65 R14 82T	2,1	2,0	2,3	2,6
185/60 R14 82H	2,1	2,0	2,3	2,6
195/55 R15 85H	1,9	1,9	2,1	2,3
Engine identification letters BLH				
185/60 R14 82H	2,1	2,0	2,3	2,6
Engine identification letters ASY				
175/65 R14 82T	2,2	2,1	2,4	2,7
195/55 R15 85H	2,1	2,0	2,1	2,4
Engine identification letters BMD with mechanical steering				
165/70 R14 81T	2,4	2,2	2,4	2,8
Engine identification letters BMD				
165/70 R14 81T	2,0	1,9	2,2	2,6
185/60 R14 82T	2,0	1,9	2,2	2,6
195/55 R15 85V	1,9	1,9	2,1	2,5
Engine identification letters BKR				
165/70 R14 81T	2,2	2,0	2,4	2,8
185/60 R14 82T	2,2	2,0	2,4	2,8
195/55 R15 85V	1,9	1,9	2,1	2,5

	half load front and rear		full load front and rear	
Engine identification letters BNM				
165/70 R14 81T	2,3	2,1	2,5	2,9
185/60 R14 82T	2,3	2,1	2,5	2,9
195/55 R15 85V	2,0	1,9	2,2	2,6

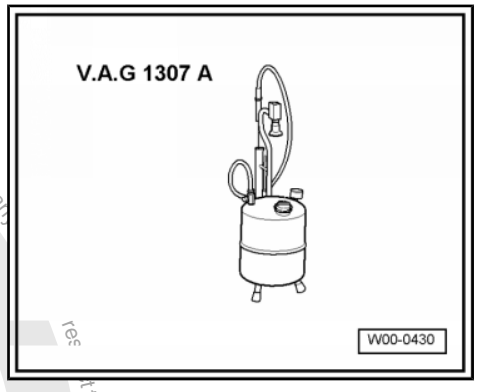
CrossFox

Engine identification letters BKR				
205/60 R15 91V	2,0	2,2	2,0	2,6
Engine identification letters BNM				
205/60 R15 91V	2,0	2,2	2,0	2,6
Engine identification letters BAH, BJA and BPA				
205/60 R15 91V	2,0	2,2	2,0	2,6

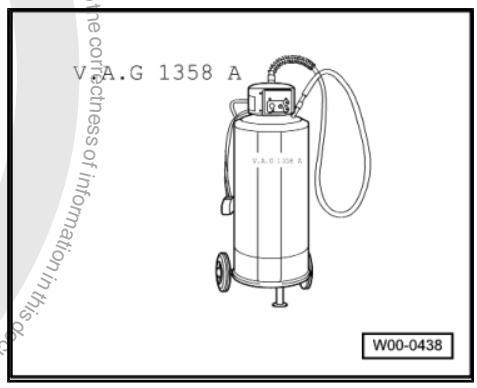
4.19 Engine oil - drain and fill; change the oil filter

Special tools and workshop equipment required

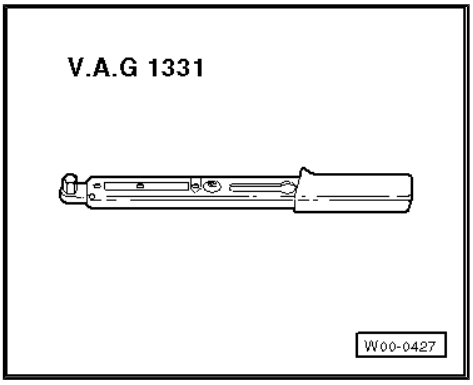
- Oil aspirator -VAG 1307 A-



- Oil aspirator -V.A.G 1358 A-



- Torque wrench - 5 to 50 Nm (fit. 1/2") -VAG 1331-



Carry out work sequence as follows:

Engine identification letters BAH, BLH, and CFZA

– Aspirate the engine oil with the Oil aspirator -VAG 1307 A- or Oil aspirator -VAG 1358 A-

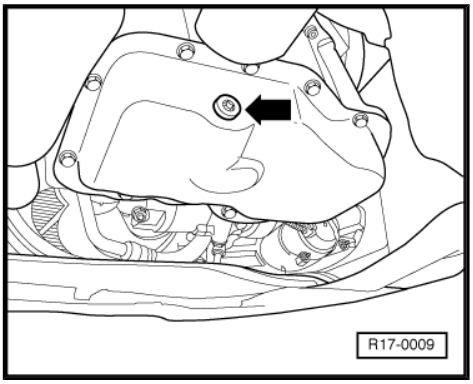
– Remove the oil draining plug -arrow-.

– Remove the sealing ring from the oil draining plug and cut if necessary.

– Drain the engine oil.

– Tightening torque for the draining plug:

seta - 4-cylinder engines 30 Nm.



Note

- *Please note that the tightening torque must not be exceeded. A very high tightening torque may lead to damage or even leaks in the oil draining plug area.*
- *Install a new sealing ring in the oil draining plug.*

WARNING

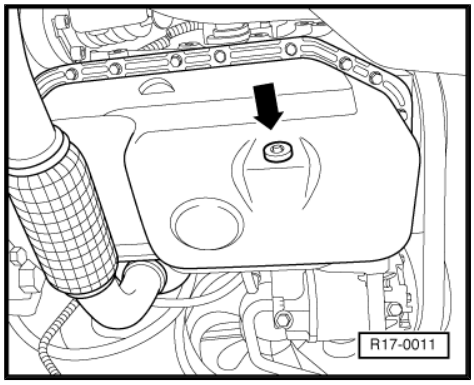
- *Follow the rules for disposal!*

Engine identification letters AQZ, BKR, and BMD

– Aspirate the engine oil with the Oil aspirator - VAG 1307 A- or Oil aspirator -VAG 1358 A-

– Remove the oil draining plug -arrow-.
– Remove the sealing ring from the oil draining plug and cut if necessary.
– Drain the engine oil.
– Tightening torque for the draining plug:

seta - 3- and 4-cylinder engines 30 Nm.



WARNING

- *In 3-cylinder petrol engines an oil drain plug with hexagonal interior and a oil drain plug sealing ring are used. With this type of plug, replace only the oil drain plug sealing ring⇒ Etka .*

Note

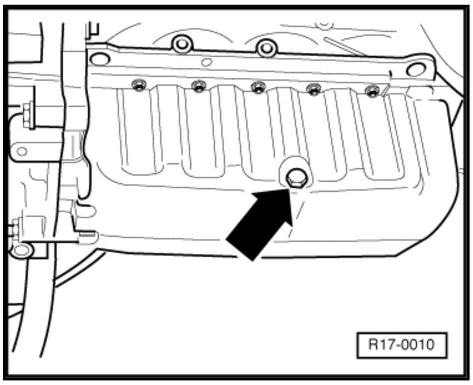
- *Please note that the tightening torque must not be exceeded. A very high tightening torque may lead to damage or even leaks in the oil draining plug area.*
- *Install a new sealing ring in the oil draining plug.*

WARNING

- *Follow the rules for disposal!*

Engine identification letters ASY

– Aspirate the engine oil with the Oil aspirator - VAG 1307 A- or Oil aspirator -VAG 1358 A-



– Remove the oil draining plug -arrow-.
– Remove the sealing ring from the oil draining plug and cut if necessary.
– Drain the engine oil.
– Tightening torque for the draining plug:

seta - 4-cylinder engines 30 Nm.

Note

♦ *Please note that the tightening torque must not be exceeded. A very high tightening torque may lead to damage or even leaks in the oil draining plug area.*

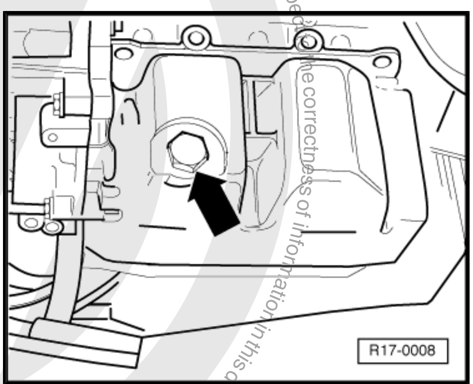
♦ *Install a new sealing ring in the oil drainage plug*

WARNING

♦ *Follow the rules for disposal!*

Engine identification letters BNM

– Aspirate the engine oil with the Oil aspirator - VAG 1307 A- or Oil aspirator -VAG 1358 A-



– Remove the oil draining plug -arrow-.
– Remove the sealing ring from the oil draining plug and cut if necessary.
– Drain the engine oil.
– Tightening torque for the draining plug:

seta - 3-cylinder engines 30 Nm.

Note

♦ *Please note that the tightening torque must not be exceeded. A very high tightening torque may lead to damage or even leaks in the oil draining plug area.*

♦ *Install a new sealing ring in the oil drainage plug*

WARNING

♦ *Follow the rules for disposal!*

4.19.1 Replace the oil filter

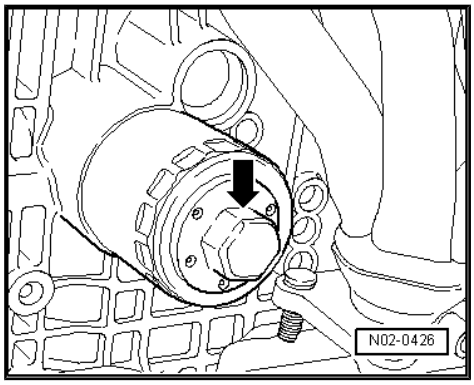
Special tools and workshop equipment required

♦ Screwdriver -SW 30-
♦ Screwdriver -SW 36-

Carry out work sequence as follows:

Engine identification letters AQZ, BAH, BLH, BKR, and CFZA

– Loosen the filter through the hex section -arrow- with a Wrench -SW 30- and remove it.



WARNING

- *Follow the rules for disposal!*

– Clean the engine sealing surface.

– Lightly lubricate the new filter rubber sealing. With this, the filter is better seated and ideal sealing condition is achieved.

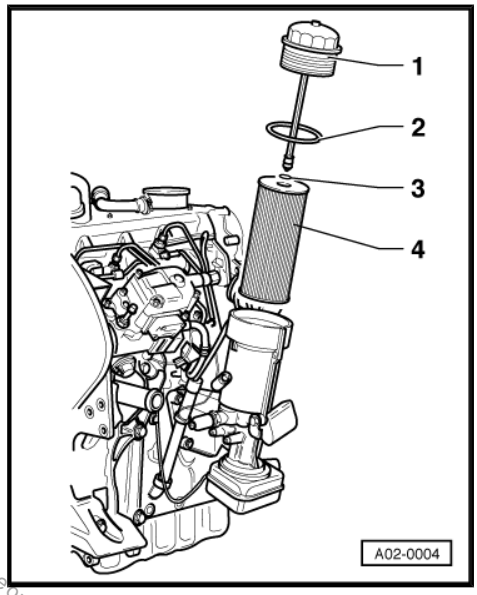
– Install the filter and tighten it manually.

Engine identification letters ASY

Carry out work sequence as follows:

– Unscrew the sealing cover -1- with the Wrench -SW 36- and remove the cover with the filter.

– Remove the old filter from the fastening cover.



Note

Make sure that no foreign object enters the filter case.

WARNING

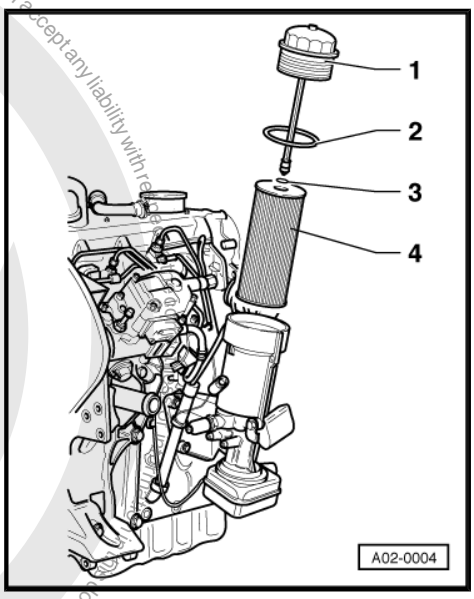
- *Follow the rules for disposal!*

– Replace the cover sealing ring -2-.

– Install the new filter.

– Install the fastening cover -1-.

Tightening torque in the fastening cover: 25 Nm.

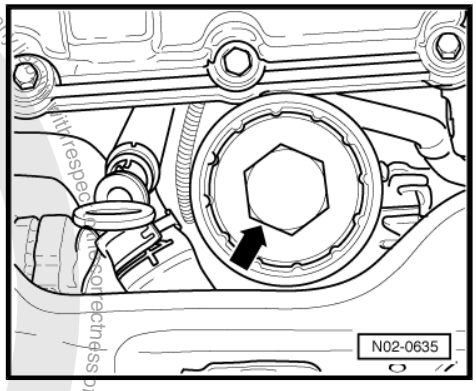


Engine identification letters BNM

Special tools and workshop equipment required

- 36 mm wrench

– Loosen the filter through the hex section -arrow- with a 36 mm Wrench .



WARNING

- *Follow the rules for disposal!*

– Clean the engine sealing surface.

– Replace the sealing ring.

– Lightly lubricate the new filter rubber sealing. With this, the filter is better seated and ideal sealing condition is achieved.

Tightening torque for the filter: 25 Nm.

Engine identification letters BMD

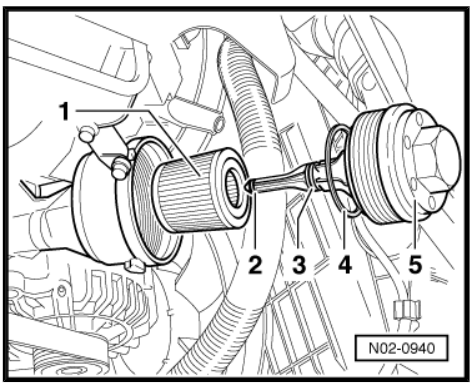
Carry out the following work sequence:

– Loosen the cover -5- with a Wrench -SW 36- and remove the cover with the filter.

– Remove the filter -1-.

– Replace the cover sealing ring -4-.

– Replace the sealing rings -2- and -3-.



WARNING

- *Follow the rules for disposal!*

– Clean the engine sealing surface.

– Lightly lubricate the new filter rubber sealing. With this, the filter is better seated and ideal sealing condition is achieved.

Tightening torque: 25 Nm.

4.19.2 Replenish the engine with oil

Based on the oil properties ⇒ page 29 , use only the following approved engine oils:

4.19.3 Oil specification for engine identification letters AQZ, BAH, BLH, BKR, BMD

– Vehicles with “service based on time and kilometers traveled” (QG0): VW 502 00.

4.19.4 Oil specification for diesel engines with identification letters ASY

– Vehicles with “service based on time and kilometers traveled” (QG0): VW 505 00 or VW 505 01.

4.19.5 Oil specification for diesel engines with identification letters BNM

– Vehicles with “service based on time and kilometers traveled” (QG0): VW 505 01.

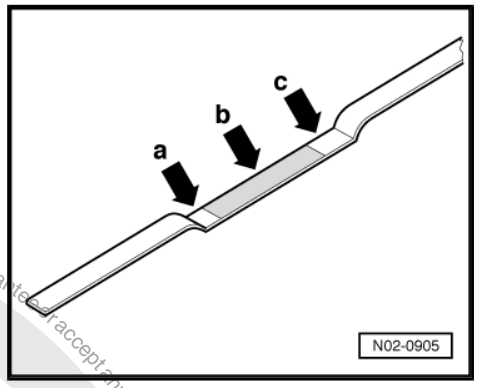
WARNING

- *Follow the rules for disposal!*

– After replenishing the engine with oil, wait for at least 3 minutes and then check the level.

– Pull the oil dipstick out, clean it with a clean cloth, and then push the oil dipstick in again up to the seat (stop).

– Pull the oil dipstick out again and check the oil level for the following conditions:



Condition 1

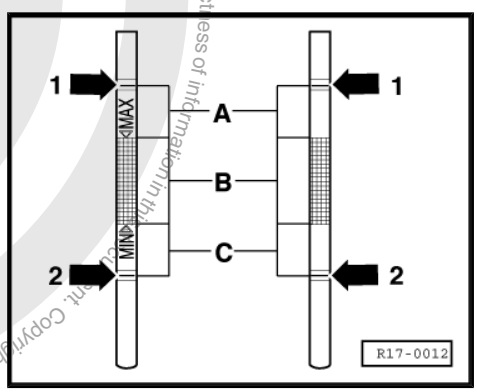
Area -a-	Minimum marking region. Replenish the oil. It is sufficient for the oil level to be anywhere within area -b-.
Area -b-	It is not necessary to replenish the oil.
Area -c-	Maximum marking region. Oil cannot be replenished.

Note

- *There is danger of damaging the catalytic converter when oil level is above area -c-*
- *The oil level must be between the minimum and maximum markings. Make sure that the oil level does not exceed the maximum marking.*

– Pull the oil dipstick out again and check the oil level.

Condition 2

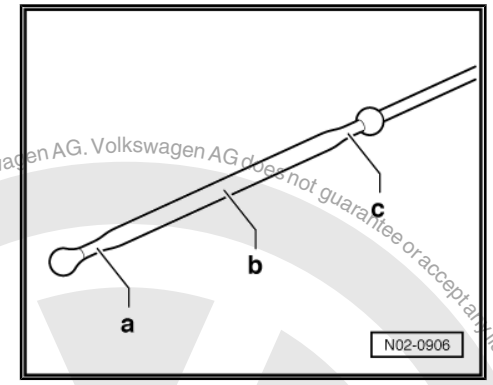


Area -A-	Oil must not be replenished.
Area -B-	It is not necessary to replenish the oil.
Area -C-	Replenish the oil level. It is sufficient for the oil level to be anywhere within area -B-.
Arrow -1-	Maximum marking
Arrow -2-	Minimum marking

– Pull the oil dipstick out again and check the oil level.

Condition 3

Area -a-	Replenish the oil level. It is sufficient for the oil level to be anywhere within area -b-.
Area -b-	It is not necessary to replenish the oil.
Area -c-	The oil cannot be replenished



Note

- *With the oil level below the minimum marking (area -a-), you must replenish the oil until it reaches the (area -b-) according to the oil specification.* *⇒ page 58*
- *With the oil level above area -c- there is the risk of damaging the catalytic converter.*
- *During oil changes, you must add oil until the maximum marking.*

4.20 Engine and components in engine compartment (from above and below) - make a visual inspection for leaks and damage

The visual inspection must be carried out as follows:

– Check the engine and components in the engine compartment for leaks and damage.

– Check the cables, hoses and connections of the following systems for leaks, wearing, porosity and brittleness:

- fuel supply system.
- cooling and heating system.
- brake system.

Note

- *Make sure that all existing faults are properly eliminated during repair.*
- *In case of movement of brake fluid not caused by pad wearing, you must determine and eliminate the cause (repair measure).*

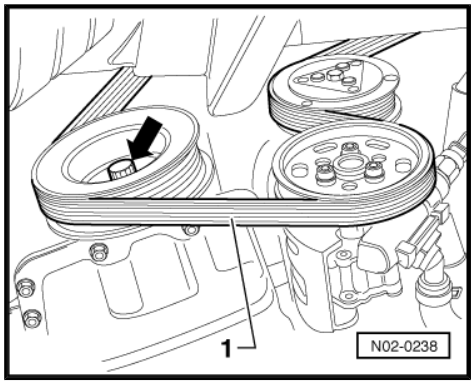
4.21 Poly-V belt - check the condition

Carry out work sequence as follows:

– Lift the vehicle.

– Turn the engine at the belt shock absorber/pulley -arrow- with a socket wrench.
– Check the Poly-V belt from below for:

- Tears in the lower section (internal fractures, section fractures).
- Layer separation (upper layer, cord strands).
- Fracture at the lower section.
- Unthreaded cord strands.
- Worn toothed sides (material wearing, unthreaded toothed sides, toothed side hardening -glassy toothed sides-, surface tears).
- Oil and grease residues.



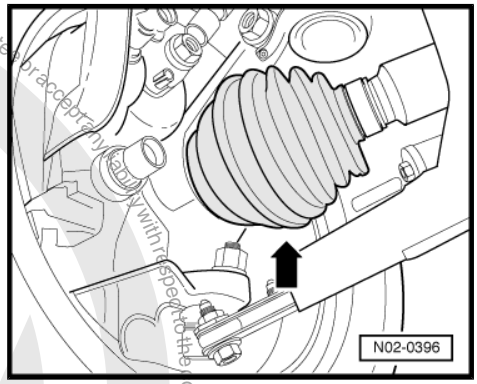
Note

If faults are verified, the Poly-V belt must be replaced. This will avoid failures and faults during operation. The Poly-V belt replacement is a repair measure.

4.22 Constant velocity joint bellows - visual inspection

Carry out work sequence as follows:

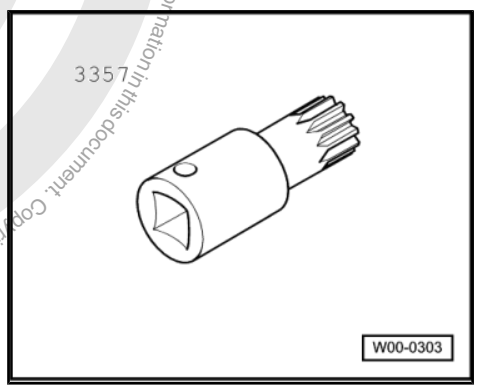
– Check the external joint bellows -arrow- and the internal joint bellows (not seen in the illustration) for leaks and damage.



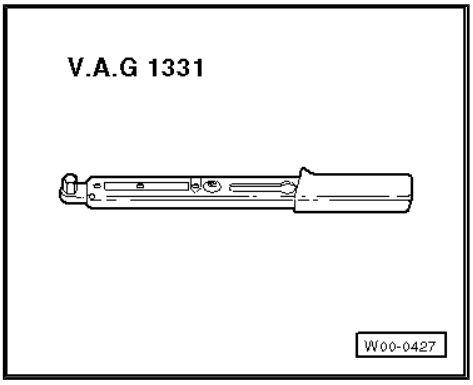
4.23 Gearbox - check the oil level and replenish if necessary

Special tools and workshop equipment required

- Multi-teeth socket SW 27 -3357-

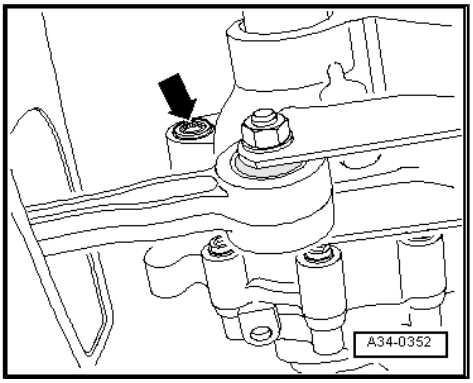


- Torque wrench - 5 to 50 Nm (fit. 1/2") -VAG 1331-



4.23.1 02T 5-gear transmission

– Remove the transmission oil filling plug -arrow-.
– The oil level is correct when the transmission is full up to the lower edge of the oil filling hole.
– Reinstall the plug and tighten it to 25 Nm.



4.24 Brake system - visual inspection for damage and leaks

Check the following components for damage and leaks:

- Brake cylinder.
- Brake cylinder (in anti-blocking systems: Hydraulic unit).
- Braking force adjustment.
- Brake cylinder.

– Make sure that the brake system hoses are not twisted.
– Additionally, you must make sure that the brake system hoses do not touch vehicle components when the steering wheel is fully turned.
– Check the hoses for porosity and brittleness.
– Check the brake system hoses and pipes for wearing points.
– Also check the brake system connections and fastenings for proper seating, leaks and corrosion.

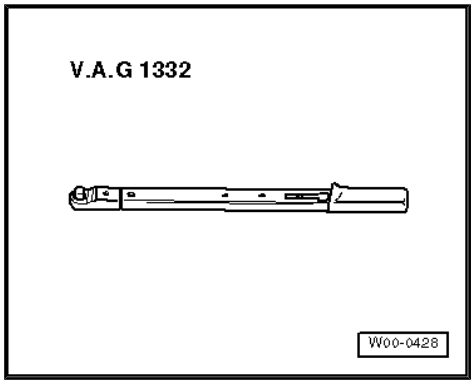
WARNING

The existing faults must be eliminated (repair measure).

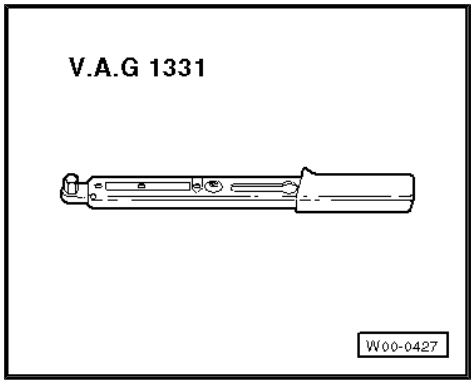
4.25 Front brake pads - check the thickness

Special tools and workshop equipment required

- Torque wrench - 40 to 200 Nm (enc. 1/2") -VAG 1332-



- Torque wrench - 5 to 50Nm (fit. 1/2") -VAG 1331-



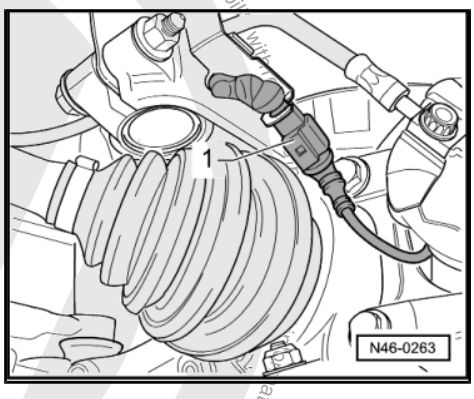
4.25.1 Brake cylinder

Carry out work sequence as follows:

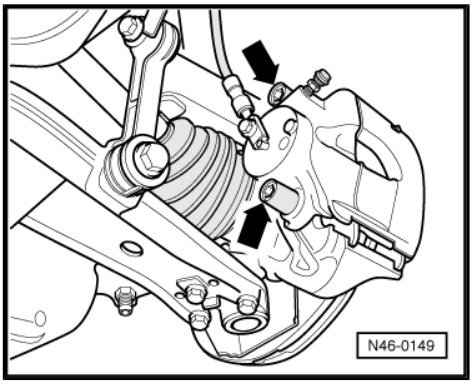
– For better evaluation of the remaining pad thickness, remove the driver side wheel (the wear is more intense than on the passenger side).
– Remove the hub cap/super hub cap.

The hook for removing the hub cap is in the tool kit.

– Loosen the wheel fastening screws and remove the wheel.
– For vehicles with brake pad wear indicator, disconnect the connector -1-.



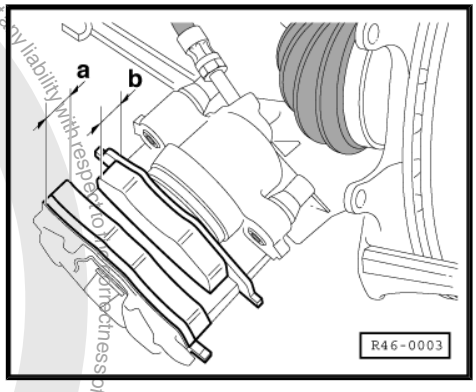
– Loosen the two screws -arrows- and remove the brake cylinder.



WARNING

Remove the brake cylinder and fasten it with wire so that its weight does not stress and damage the flexible brake pipe.

– Measure the internal and external pad thickness.
– External pad thickness including rear plate-a-.
– Internal pad thickness including rear plate-b-.
– Wear limit: 7 mm with the rear plate.

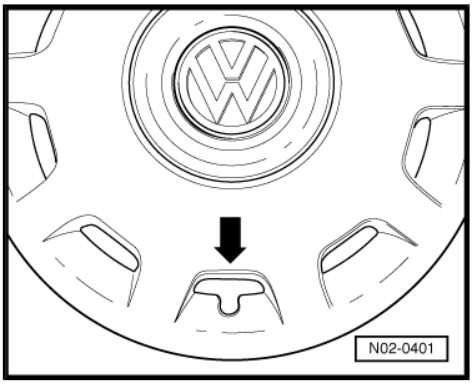


Note

- *For a pad thickness of 7 mm (including the rear plate), the brake pads have reached their wear limit and must be replaced (repair measure). The customer must be informed*
- *If the disc brake pads are replaced, you must also check the brake discs for wear! Checking and occasionally replacing the brake discs is a repair measure.*

– Installation is performed in the reverse process to the removal.
– The larger brake pad is installed on the outside! (FS II brake system).
– Torque the brake cylinder fastening screws to 25 Nm (FS II brake system).
– Torque the brake cylinder fastening screws to 30 Nm (FS III brake system).
– When installing the wheel, screw in the indicated position.
– Install the wheel fastening screws in a cross pattern and tighten them to 120 Nm.
– After completing the tasks, keep the hub cap/super hub cap removal hook with the tools.

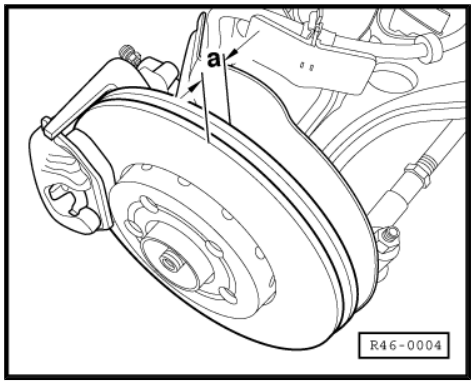
– Install the super hub cap so that the tire inflation valve passes through the opening -arrow- for this purpose.



4.25.2 Brake disc - check the thickness

Please check the following:

- Brake disc thickness: 18 mm for FSII and 22 mm for FSIII-a-.
- Wear limit: 16 mm for FSII and 19 mm for FSIII.



Note

Always replace both discs from the same axle.

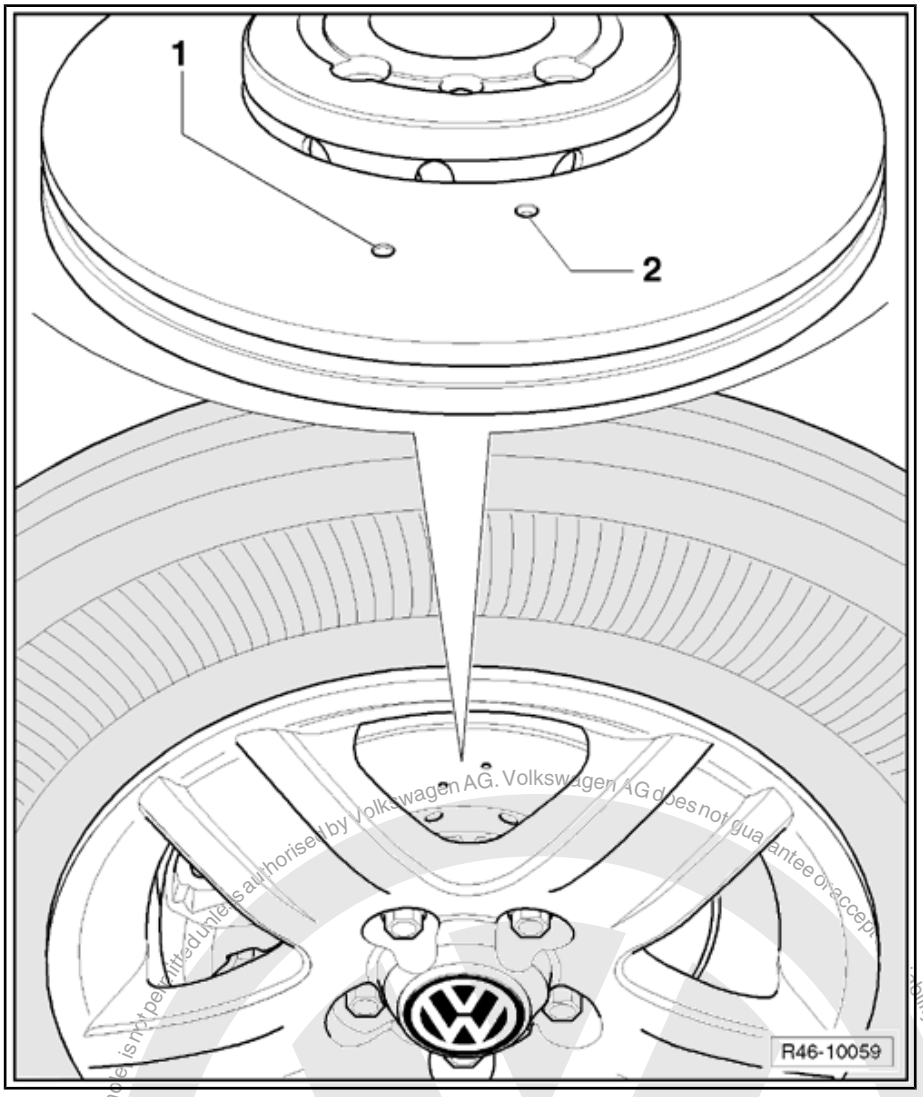
4.25.3 Brake disc with visual check - check

Note

- *The wear indicators on the front brake discs (visual check) indicate when the brake discs must be changed. This check is made by using the marks on the contact surface of the brake discs.*
- *Always check both discs on the same axle and, if necessary, replace them.*

4.25.4 ?Vehicles with light-alloy wheel

Position the wheel so that the brake disc wear indicators (visual check) can be visualized.



- Wear indicator -1- is located on the centre of the brake disc contact area.
- Wear indicator -2- is located close to the internal edge of the brake disc.

Note

- *If the front brake disc wear indicator markings (visual check) cannot be visualized due to wheel design, the wheels must be removed.*
- *If the front wheels must be removed to check the brake discs, after reinstalling them, tighten the screws to 120 Nm.*

Checking conditions of front brake disc wear:

1 - Wear indicators -1- and -2- are visible:

The brake discs need not be replaced.

2 - Only wear indicator -2- is visible:

The brake discs do not require replacement, but be aware if the next change is close.

3 - No brake disc wear indicator is visible.

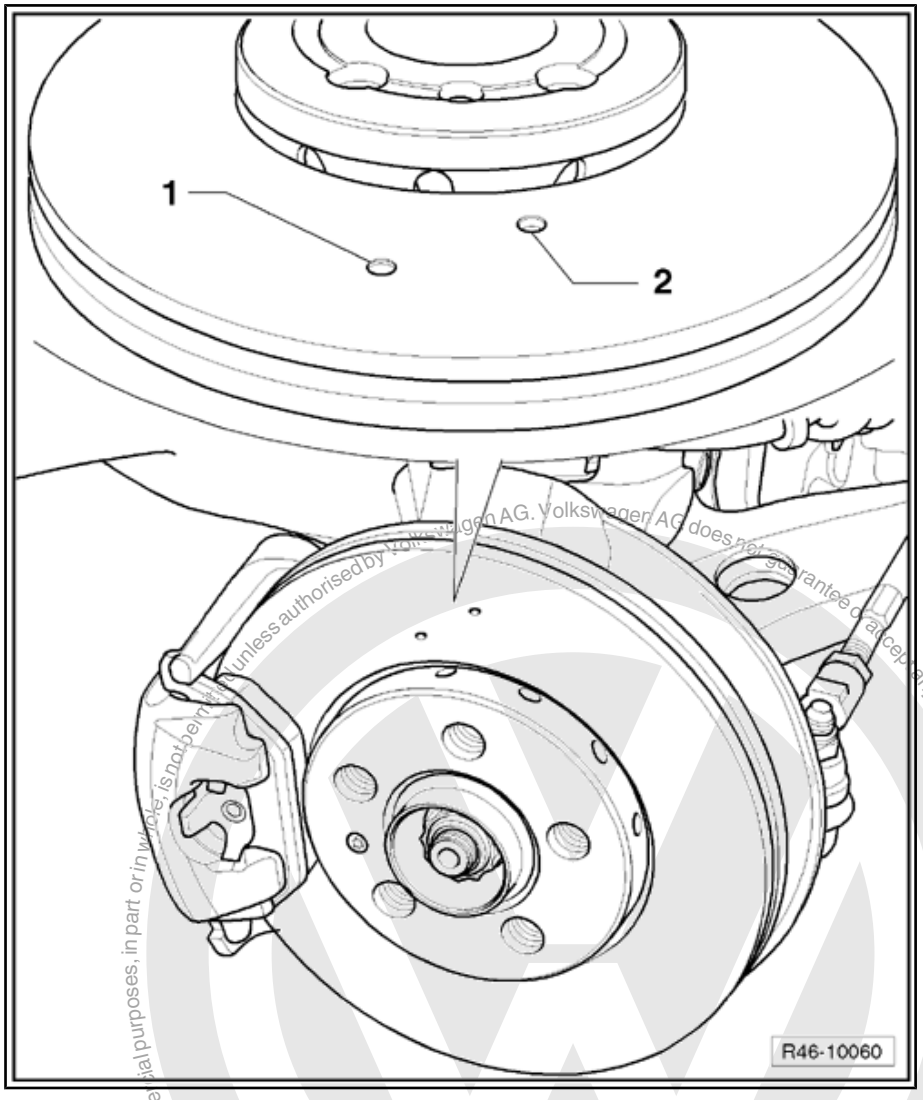
Replace the brake discs.

Remove and install the front brake discs.

4.25.5 Vehicles with steel wheel

Note

- *In order to visualize the brake disc wear indicators (visual check) in vehicles with steel wheels, the front wheels must be removed.*
- *After checking the brake discs, install the wheels and tighten fastening screws to 120 Nm.*



- Wear indicator -1- is located on the centre of the brake disc contact area.
- Wear indicator -2- is located close to the internal edge of the brake disc.

Checking conditions of front brake disc wear:

1 - Wear indicators -1- and -2- are visible:

The brake discs need not be replaced.

2 - Only wear indicator -2- is visible:

The brake discs do not require replacement, but pay attention on the next change.

3 - No brake disc wear indicator is visible.

Replace the brake discs.

Remove and install the front brake discs.

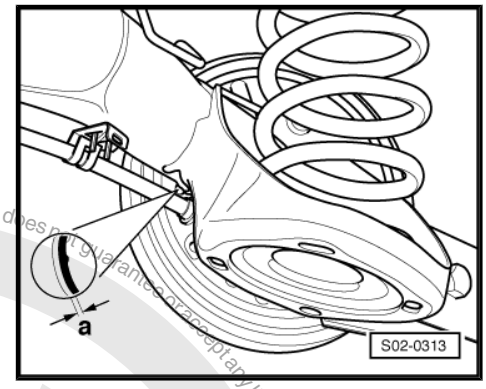
4.25.6 Rear brake lining: check thickness

– Check the brake lining thickness through the inspection eyelet-a- or, for clearer verification, remove the rear brake drum⇒ Brake system; Rep. Gr. 46 ; Brakes - Mechanical systems .

Wear limit: 2.5 mm (lining thickness only) or rivet height.

WARNING

If the wear limit has been reached, replace the linings (replacement measure). The client should be informed!⇒ Brake system; Rep. Gr. 46 ; Brakes - Mechanical systems



4.26 Lower body section protection - make a visual inspection for damage

During a visual inspection, you must check the floor, the wheel housing and the lower longitudinal members!

Note

The existing faults must be eliminated (repair measure). This may prevent oxidation and perforating corrosion.

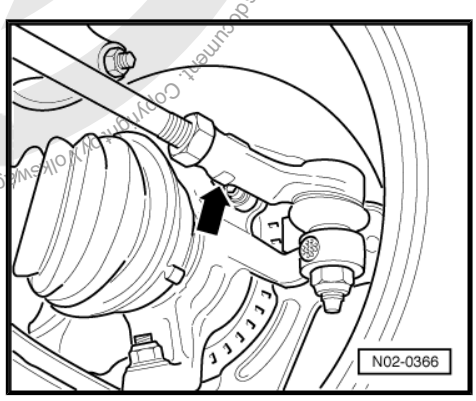
4.27 Steering bar tips - check clearance, fastening and sealing bellows

Carry out work sequence as follows:

– With the vehicle lifted (with wheels hanging freely), check the bars' side movements for clearances -arrow-.

– Check the fastening.

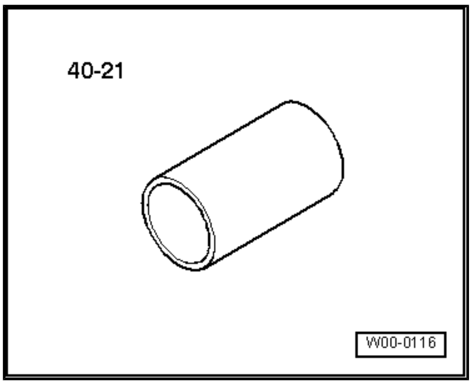
– Check the sealing bellows for damage and proper adjustment.



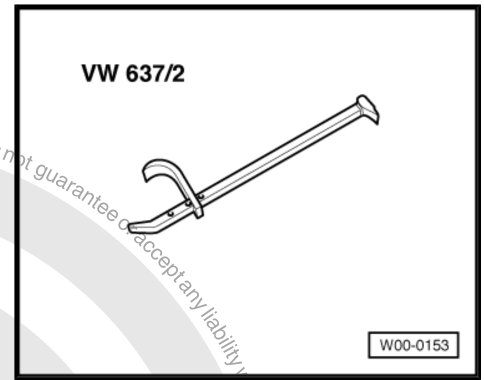
4.28 Rear wheels: adjust the roller bearing clearance (only for vehicles without ABS and equipped with the engines: AQZ, BAH, ASY, BLH, and CFZA from 07/01/2007.

Special tools and workshop equipment required

♦ Supporting tube -40-21-



♦ Hub nut protector puller -VW 637/2- .



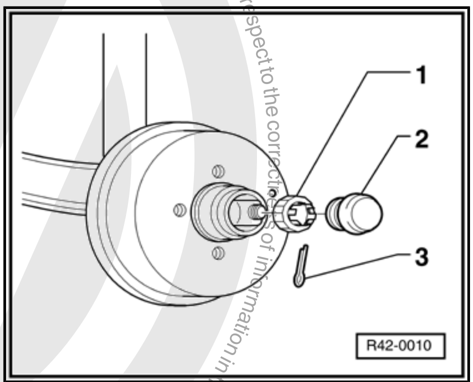
Rear wheel hub

1 - Ring gear.

2 - Wheel hub protector, must be replaced after removal.

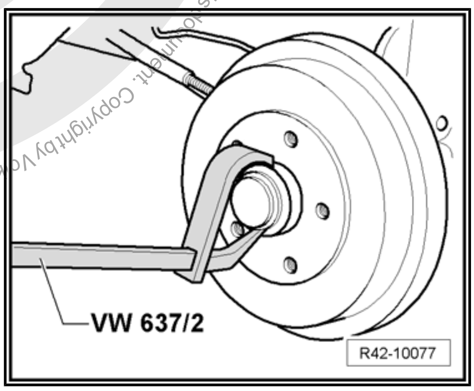
3 - Cotter pin, must be replaced after removal.

Removal of the wheel is necessary only for vehicles with alloy rims.



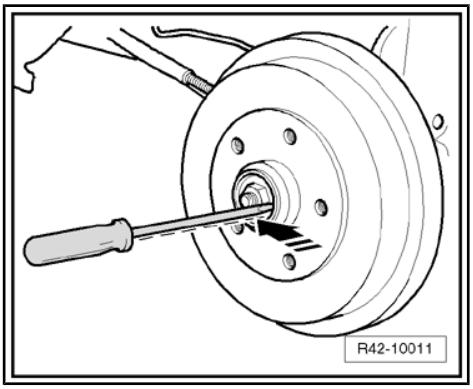
– Remove wheel hub protector -2-, with the extractor of the hub nut protectors -VW 637/2- .

– Remove cotter pin -3- and ring gear -1-.

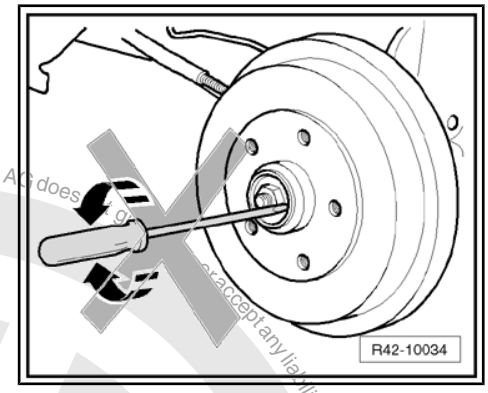


> ⚠ Caution
>
> *It is necessary that the washer presents a radial motion exactly according to the following procedure.*

– Release or tighten nut by applying less or more pressure on the washer -arrow-, and simultaneously check its radial movement with light pressure of your index applied on a screwdriver.



– Never turn -arrows- or leverage the screwdriver.



WARNING

The screwdriver should touch only the washer and never the outer roller bearing of the wheel.

Never rotate or leverage with the screwdriver, assuring that the screwdriver does not touch the brake drum hub on no account.

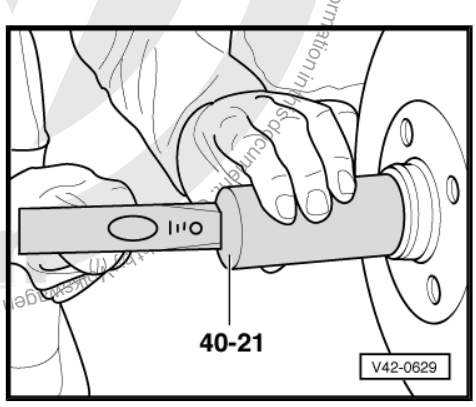
If the notes above are not strictly followed, the adjustment of bearing end clearance will be jeopardized (it can lead to noises and breakage of bearings).

– Install the ring gear in order to allow assembling the cotter pin.
– Check the regulation again.
– The washer must move radially with a slight pressure of your index applied on a screwdriver.

Note

After removed, the cotter pin must be replaced.

– Install wheel hub protector with the Support tube -40-21-

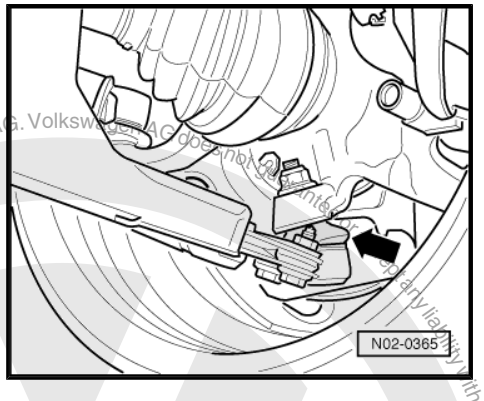


Note

The wheel hub cover must be replaced with every removal

4.29 Suspension arm joints - visual inspection

– Check the sealing bellows in the suspension arm joints -arrow- for damage and leaks.



4.30 Cooling system - check the antifreeze additive and the coolant level

Note

- *All engines are supplied with radiator antifreeze additive and anti-corrosion G 12 - according to TL VW 774 F (lilac color). Make sure that only G 12 is replenished.*
- *Do not mix with the G 11 antifreeze additive, blue or green colors.*

WARNING

The coolant additive G 12 cannot be mixed with other additives. When they are mixed, severe damage is caused to the engine. If a mix is detected (brown color), the coolant must be immediately replaced (repair measure).

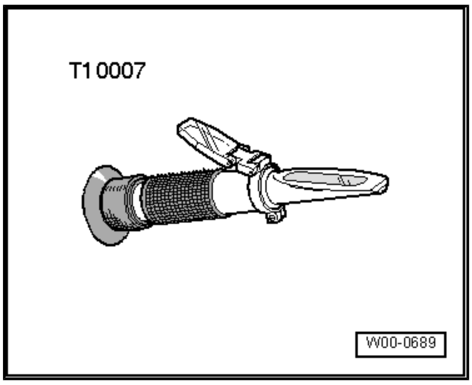
Note

- *The G 12 as permanent filling (does not require replacement) is adequate for cast iron and aluminum engines, and protects the engine against freezing, damage from corrosion, limestone build-up and overheating.*
- *The G 12 raises the boiling point to 275°F and provides better heat dissipation.*
- *The coolant ratio must be at least 40% (antifreeze protection to - 77ºF) and it must not exceed 60% (antifreeze protection to - 104ºF), otherwise the antifreeze protection is reduced and also the cooling operation is worsened.*

4.30.1 Check the antifreeze protection and replenish the cooling system, if necessary

Special tools and workshop equipment required

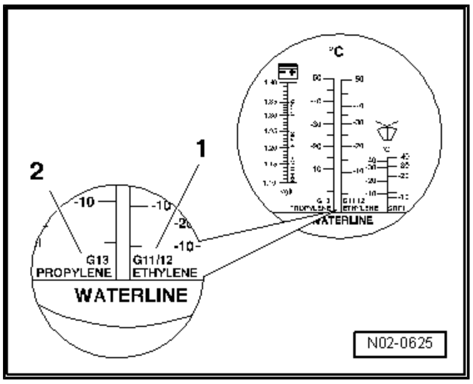
- Refractometer for cooling system liquid analysis -EQ 7093 (VWB) - ou - T 10007-



Note

The exact value for the following checks may be read in the light-dark limit. To better see the light-dark limit, use a dropper/pipette to put a water drop on the glass. Now the light-dark limit may be easily recognized by the “WATERLINE”.

– Check the concentration of antifreeze additive with the Refractometer for cooling system fluid analysis -EQ 7093 (VWB) - ou - T 10007- (follow the instruction manual).



The scale -1- of the refractometer is related to coolant additives -G 12- and -G 11-.

The scale -2- is related to the cooling additive -G 13-.

Note

- *The antifreeze protection must be guaranteed in approximately -13 ° F (in Arctic climate countries in approximately -31.00 ?).*
- *Due to climatic reasons, a higher antifreeze protection is necessary, so the percentage of G 12 may be increased, but only up to 60% (antifreeze protection to approximately - 40º F), because the antifreeze protection can be reduced again and, additionally, the cooling action is worsened.*

– When the antifreeze protection is too weak, drain the difference volume mentioned in the antifreeze protection table ⇒ page 77 and replace with the cooling additive -G 12- according to TL VW 774 F.

WARNING

- *Follow the rules for disposal!*

4.30.2 Antifreeze table

Antifreeze protection up to ° F		Difference quantity in liters[14]
Actual value[12]	Nominal value[13]	
0	-25	3,0
	-35	3,5
-5	-25	2,5
	-35	3,5

Antifreeze protection up to ° F		Difference quantity in liters[14]
Actual value[12]	Nominal value[13]	
-10	-25	2,0
	-35	3,0
-15	-25	1,5
	-35	2,5
-20	-25	1,0
	-35	2,5
-25	-35	2,0
-30	-35	1,0
-35	-40	0,5

12) Actual value: it is the result achieved when measuring the concentration of coolant on the measured vehicle.

13) Nominal value: is the value applied to the locality where the vehicle is being used. For example, in Brazil, the nominal value is -25° C; in arctic countries, the value is -35° C.

14) Difference quantity in liters: is the amount removed from the cooling system and replenished in the same quantity only with additive.

– After the test run, you must check the antifreeze additive concentration in the cooling system again.

4.30.3 Check the coolant level and, if necessary, replenish the cooling system

– Check the coolant level in the reservoir with the cold engine.

♦ Delivery inspection: With cold engine, the coolant level must be in the middle area between the maximum and minimum reservoir markings. If it is above the middle area, remove the excess until it reaches the level in the middle area between the maximum and minimum reservoir markings. With the heated engine, the coolant may reach the maximum reservoir marking.

♦ Inspection service: With cold engine, the coolant level can be between the reservoir maximum marking and middle area. If it is above the middle area, remove the excess until it reaches the level in the middle area between the maximum and minimum reservoir markings. With the heated engine, the coolant may reach the maximum reservoir marking.

– If during the inspection service the coolant level is below the minimum level marking, it is necessary to replenish the system according to the specified mixture ratio until the middle area between the maximum and minimum reservoir markings.

Note

In case of loss of fluid not caused by consumption, you must determine and eliminate the cause (repair measure).

4.30.4 Mixture ratio

Antifreeze protection up to	Coolant additive	Water
-13.00 ?	approx. 40%	approx. 60 %
-31.00 ?	approx. 50 %	approx. 50 %
-40.00 ?	approx. 60 %	approx. 40%

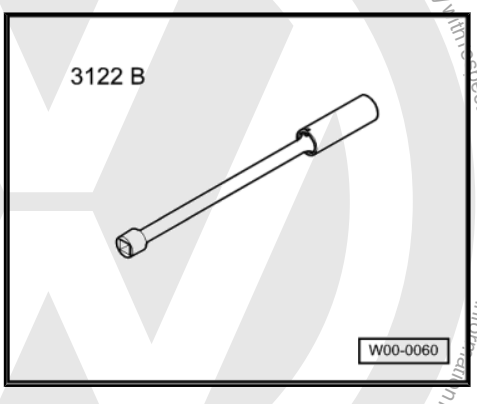
Note

- *The coolant additive -G12- prevents damage from corrosion and freezing, limestone build-up and also increases the boiling point. For these reasons, the cooling system must always be replenished with antifreeze and anti-corrosion agent throughout the year.*
- *Specially in tropical countries, the coolant ensures the engine operation by increasing the boiling point under high engine charges.*
- *The concentration of coolant cannot be diluted in water, even during hot seasons or in hot countries. The cooling additive percentage must be at least 40%.*

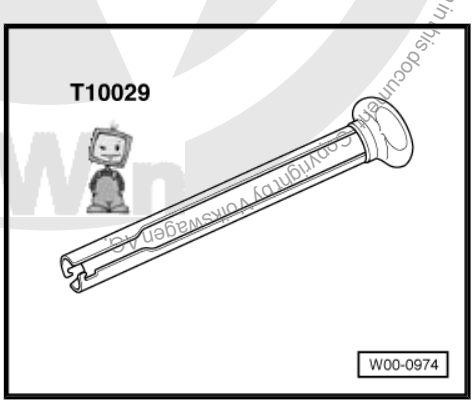
4.31 Spark plugs - replace

Special tools and workshop equipment required

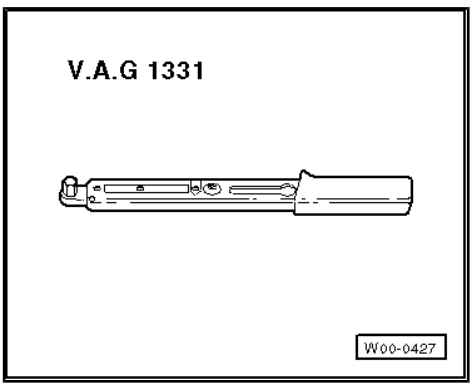
- Spark plug wrench -3122B-



- Assembly tool -T10029-



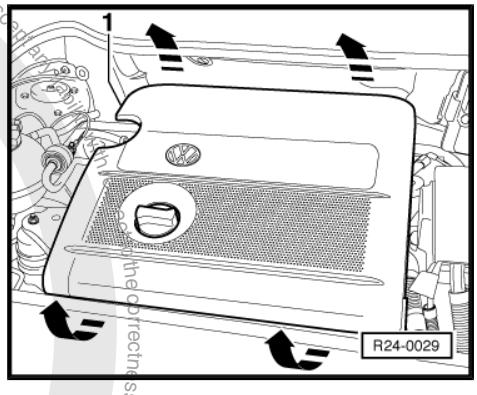
- Torque wrench - 5 to 50 Nm (fit. 1/2") -VAG 1331-



4.31.1 Engine identification letters BAH and BLH

– Remove the crankcase air vent hose -1- from the air filter case.

– Remove the air filter case from the supports and the butterfly valve command unit -arrows- and remove the air filter case.

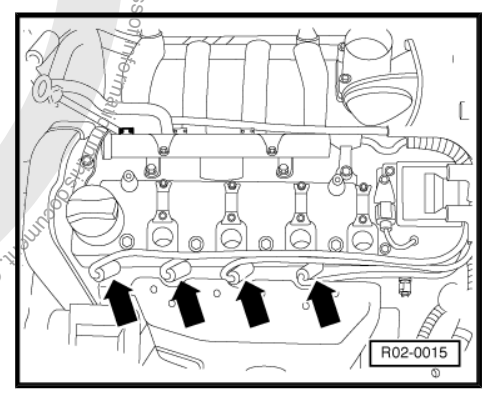


Carry out work sequence as follows:

– Loosen the spark plug connectors -arrows- with the Assembly tool -T10029- .

– Remove the spark plugs with the Spark plug wrench -3122B- .

– Install the new spark plugs with the Spark plug wrench -3122B- and the Torque wrench - 5 to 50 Nm (enc. 1/2") -VAG 1331- .



Tightening torque: 30 Nm.

Note

- *The air filter case assembly is initially carried out by fitting the butterfly valve command unit nozzle, side supports, and then the front supports.*
- *Apply neutral soap or coolant additive to the fastening bearings and to the butterfly valve control unit nozzle packing for easier installation.*

WARNING

- ***Follow the rules for disposal!***

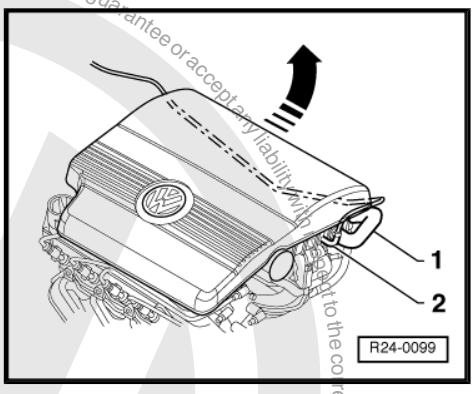
– Connect the spark plug connectors.

– Install the air filter case.

4.31.2 Engine identification letters AQZ and BKR

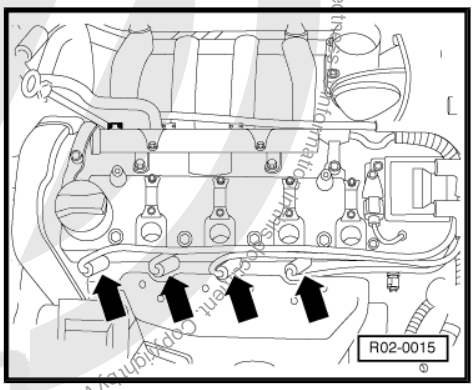
– Remove the crankcase venting hose -1- from the air filter case.

– First, remove the air filter case from its supports and the butterfly valve command unit and, then, from the front supports -arrow-.



Carry out work sequence as follows:

– Remove the spark plug connectors -arrows- with the Assembly tool -T10029- .
– Remove the spark plugs with the Spark plug wrench -3122B- .
– Install the new spark plugs with the Spark plug wrench -3122B- and the Torque wrench - 5 to 50 Nm (enc. 1/2") -VAG 1331- .



Tightening torque: 30 Nm.

Note

- *The air filter case assembly is initially carried out by fitting the butterfly valve command unit nozzle, side supports, and then the front supports.*
- *Apply neutral soap or coolant additive to the fastening bearings and to the butterfly valve control unit nozzle packing for easier installation.*

WARNING

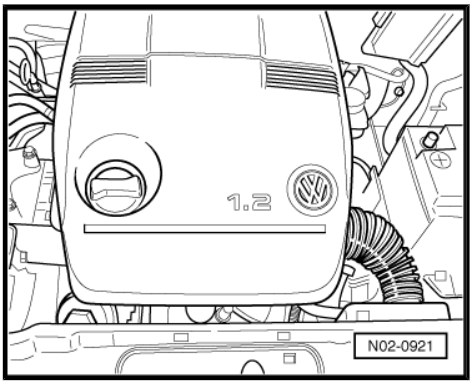
- ***Follow the rules for disposal!***

– Connect the spark plug connectors.
– Install the engine cover.

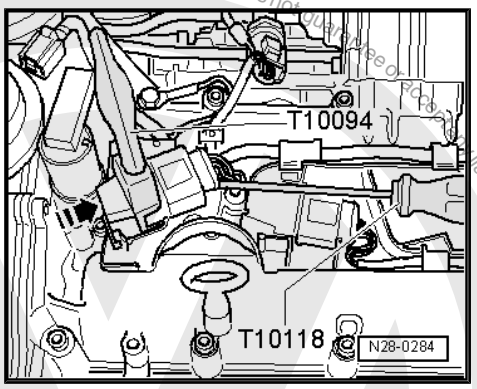
4.31.3 Engine identification letters BMD

Carry out work sequence as follows:

– Disengage and pull the engine cover up, when applicable.



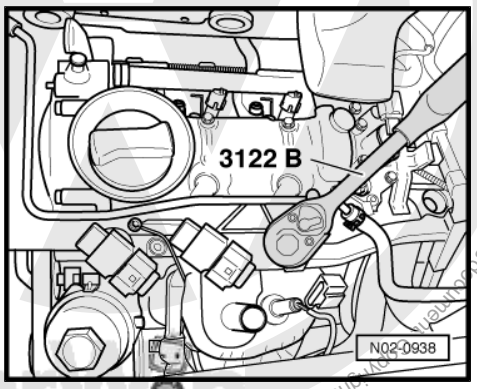
– Install the Extractor -T10094- over the ignition coil with final power stage.-arrow-
– Remove the ignition coil with the final power stage a little outwards.
– Install the Hook -T10118- as illustrated.
– Unlock the connector block carefully and remove the connector.



– Remove the spark plugs with the Spark plug wrench -3122B- .
– Install the new spark plugs with the Spark plug wrench -3122B- and the Torque wrench - 5 to 50 Nm (enc. 1/2") -VAG 1331- .

Tightening torque: 30 Nm.

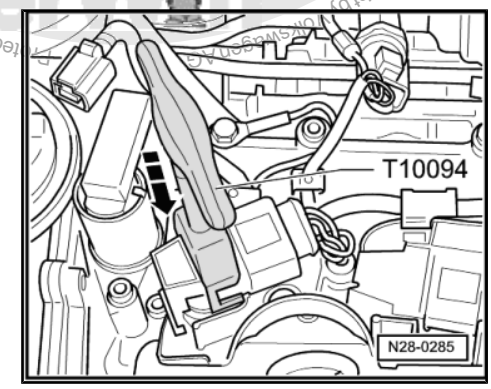
– Install the Extractor -T10094- over the ignition coil with final power stage.
– Connect the connector to the ignition coil with final power stage until fitting it audibly.



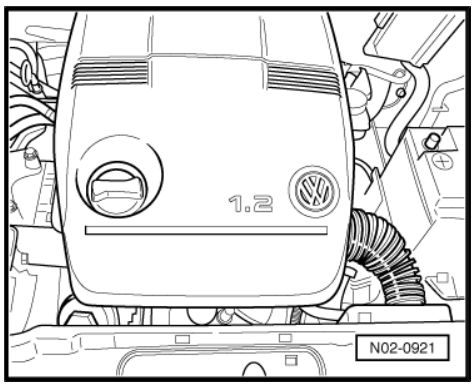
– Install the ignition coil with final power stage in the -arrow- direction on the engine cylinder head.

WARNING

- *Follow the rules for disposal!*



– Install the engine cover, when applicable.



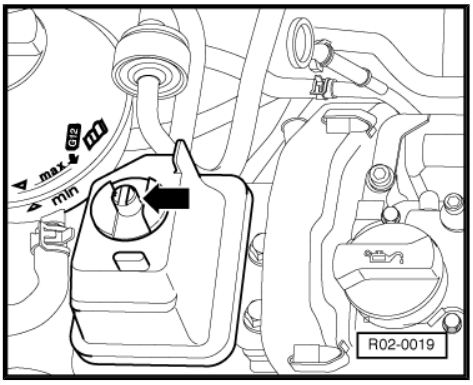
4.32 ATF oil reservoir for power steering - replenish the level

Carry out work sequence as follows:

Oil in cold condition:

– The engine must be turned off and the front wheels, aligned.

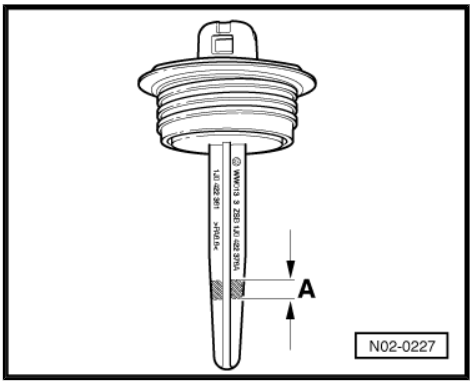
– Remove the cover with a screwdriver -arrow-.
– Clean the oil dipstick with a clean cloth.
– Manually install the cover and remove it again.



Note

The oil level inspection must only be considered in the second measurement.

– Check oil level: the level must be in region -A-.



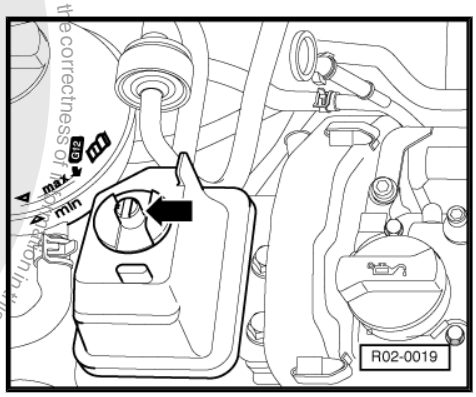
Note

- *If the oil level is above region -A-, drain the exceeding oil.*
- *If the oil level is below region -A-, you must check the hydraulic system for possible leaks (repair measure), it is not enough to just replenish the level.*
- *If the hydraulic system is leak proof, for Brazil, fill only with oil -325 029 901 1- . For other countries, when filling, you must pay attention to the oil color, red oil -325 029 901 1- or yellow oil -G 002 000- .*

– Install the cover with a screwdriver.

Oil at service temperature (from approximately 50°C):

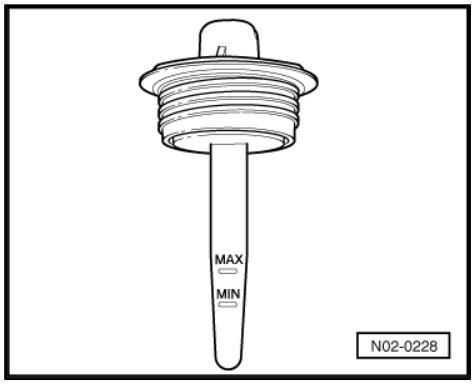
– The engine must be turned off and the front wheels, aligned.
– Remove the cover with a screwdriver -arrow-.
– Clean the oil dipstick with a clean cloth.
– Manually install the cover and remove it again.



Note

The oil level inspection must only be considered in the second measurement.

– Check oil level: the oil level must be between the -MIN- and -MAX- marks.



Note

- *If the oil level is above the -MAX- mark, you must drain the oil.*
- *If the oil level is below the -MIN- mark, you must check the hydraulic system for possible leaks (repair measure), it is not enough to just replenish with oil.*
- *If the hydraulic system is leak proof, for Brazil, fill only with oil -325 029 901 1- . For other countries, when filling, you must pay attention to the oil color, red oil -325 029 901 1- or yellow oil -G 002 000- .*

– Install the cover with a screwdriver.

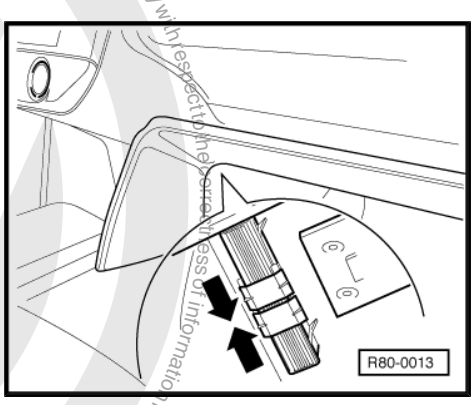
4.33 Dust and pollen filter - replace the filter element

The filter is in the ventilation case, at the right of the instrument panel, below the glove compartment.

4.33.1 Behr box

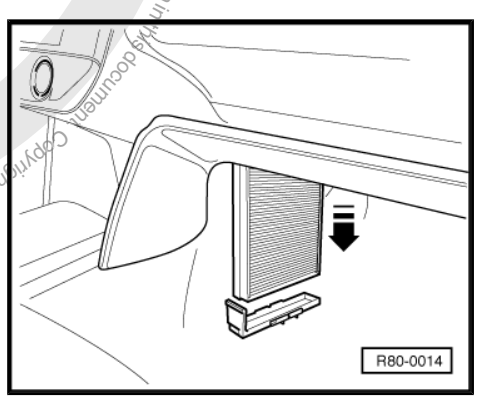
Carry out the following work sequence:

– Join the two sliding locks -arrows- up to the centre.



– Remove the dust and pollen filter -arrow- with the filter support.

– Separate the filter from its support.



WARNING

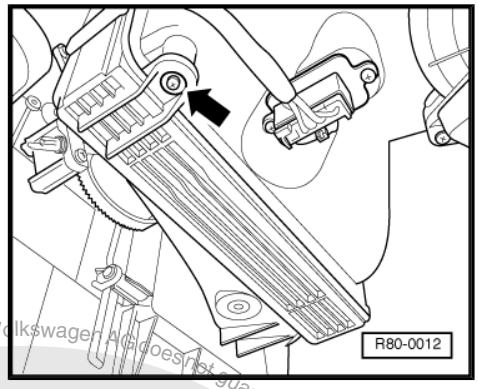
- ***Follow the rules for disposal!***

– Installation is performed in the reverse sequence to the removal.

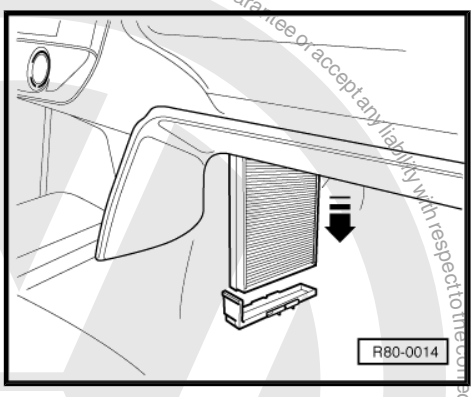
4.33.2 Denso box

Carry out the following work sequence:

– Loosen the filter compartment cover screw-arrow-.



– Remove the dust and pollen filter -arrow- with the filter support.
– Separate the filter from its support.



WARNING

♦ *Follow the rules for disposal!*

– Installation is performed in the reverse sequence to the removal.

4.34 Timing belt - replace; Semi-automatic camshaft tensioning pulley - check

4.34.1 Engine identification letters ASY

– Carry out the work sequence ⇒ Engine; Rep. Gr. 15 ; Cylinder head, camshaft mechanism .

4.34.2 Engine identification letters BNM

– Carry out the work sequence ⇒ Engine; Rep. Gr. 15 ; Cylinder head, camshaft mechanism .

4.35 Camshaft activation timing belt - check

4.35.1 Engine identification letters AQZ, BAH, BLH, BKR, BMD, and CFZA

– Remove the upper mechanical distribution cover.
– Check the timing belt condition for:

♦ Tears, section fractures.
♦ Layer separation (timing belt body, cord strands).
♦ Fracture in the timing belt body.
♦ Unthreaded cord strands.
♦ Surface tears (plastic coating).
♦ Oil and grease residues.

Note

If there are faults, you must replace the timing belt. This will avoid failures and faults during operation.

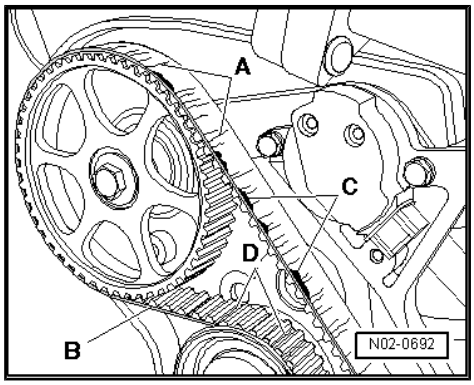
When checking the timing belt condition, pay special attention to the following damage:

A - Tears (on the cover side).

B - Side wearing.

C - Unthreading.

D - Tears (at the teeth base)



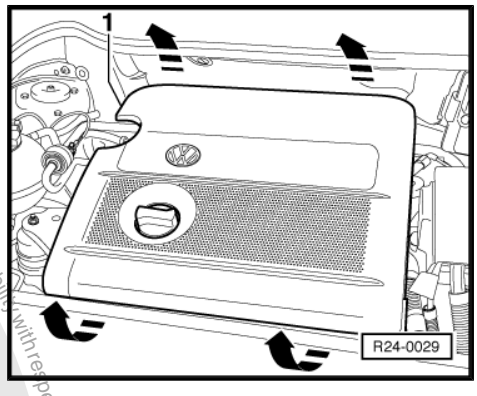
4.36 Air filter - clean the case and replace the filter element

4.36.1 Engine identification letters BAH and BLH

Carry out work sequence as follows:

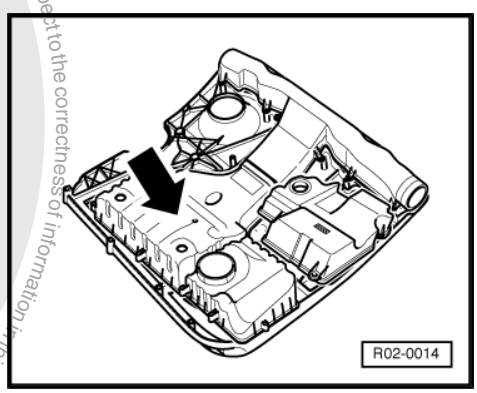
– Remove the crankcase air vent hose -1- from the air filter case.

– Remove the air filter case from the supports and the Butterfly valve command unit from the accelerator -J338- -arrows- and remove the air filter case.



– Remove the air filter case fastening screws -arrow-.

– Remove the filtering element.



WARNING

- *Follow the rules for disposal!*

– Clean the filter's case and install a new filtering element.

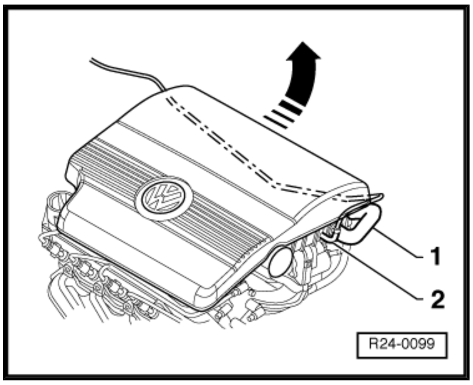
– The installation is performed in the reverse order from removal.

4.36.2 Engine identification letters AQZ and BKR

Carry out work sequence as follows:

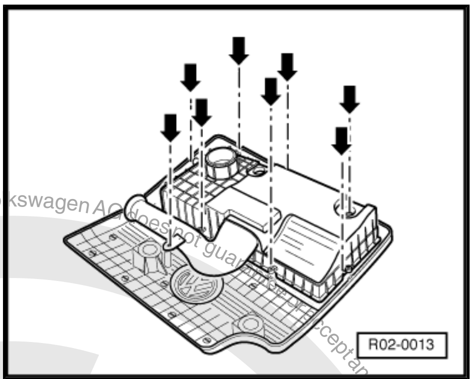
Remove the crankcase venting hose -1- from the air filter case.

First, remove the air filter case from its supports and the butterfly valve command unit and, then, from the front supports -arrow-.



– Remove the air filter case fastening screws -arrows-.
– Remove the filtering element.

> ⚠ WARNING
>
> ♦ *Follow the rules for disposal!*

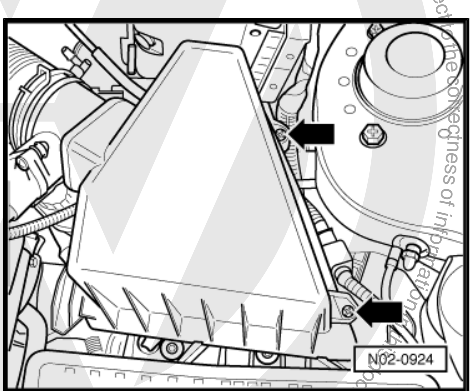


– Clean the filter's case and install a new filtering element.
– The installation is performed in the reverse order from removal.

4.36.3 Engine identification letters ASY, BNM, BMD, and CFZA

Carry out work sequence as follows:

– Loosen the screws -arrows- and remove the air filter cover.
– Clean the filter's case and install a new filtering element.
– The installation is performed in the reverse order from removal.



4.37 Fuel filter - replace

4.37.1 Engine identification letters AQZ, BAH, BLH, and CFZA

⇒ Engine - Supply and ignition system; Rep. Gr. 20 ; Supply system - reservoir, fuel pump

4.37.2 Engine identification letters ASY

Note

- *Make sure that the fuel does not reach the cooling system hoses. If necessary, clean the hoses immediately!*
- *Do not dispose of the fuel filter with fuel inside.*
- *Comply with the waste disposal standards!*

Carry out work sequence as follows:

Removal

– Remove the fastening clip -3- and remove the regulating valve -4- with the fuel ducts connected.

– Disconnect the fuel hoses -1- and -2-.

– Unlock the -arrows- hooks.

– Remove the fuel filter cover upwards.

Installing

– Fill the new filter with new diesel fuel. Thus, the engine works faster.

– Install the new sealing ring to seal the regulating valve.

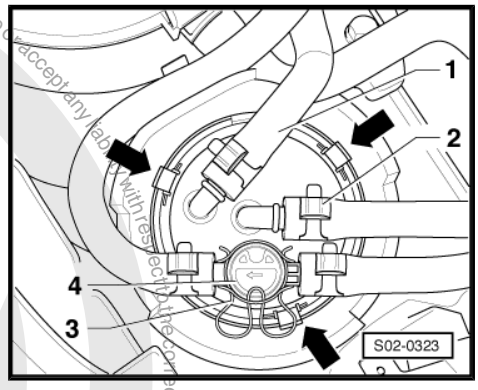
– Install the filter.

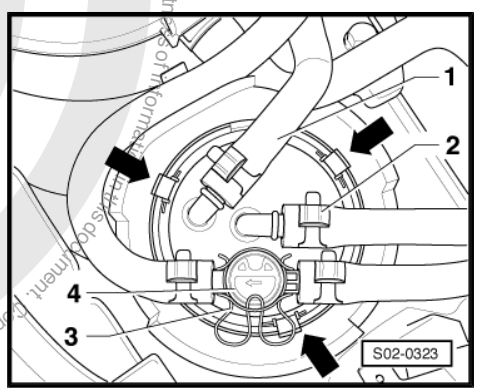
– Lock the -arrows- small hooks.

– Assemble the regulating valve -4- with the ducts connected.

– Install the fastening hook -3-.

– Install the fuel hoses -1- and -2- and lock with hose clamps.





Note

The fuel flow direction is marked by -arrows-: (Do not invert the connections).

4.37.3 Engine identification letters BNM

Note

- *Make sure that the fuel does not reach the cooling system hoses. If necessary, clean the hoses immediately!*
- *Do not dispose of the fuel filter with fuel inside.*
- *Comply with the waste disposal standards!*

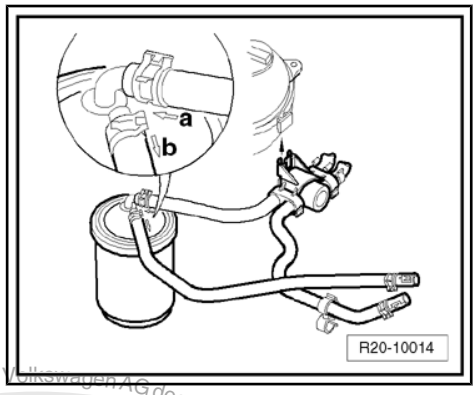
Carry out work sequence as follows:

Removal

– Remove the intake-a- and outlet -b- hose clamps from the filter with the Spring clamp pliers -VAS 5024 A- .

– Remove the hoses.

– Move the filter up and remove it.



Installing

– Fill the new filter with new diesel fuel. Thus, the engine works faster.

– Install the filter.

– Install the filter intake -a- and outlet-b- hoses and, then, the clamps with the help of the Spring clamp pliers -VAS 5024 A-

4.38 Fuel filter - drain

4.38.1 Engine identification letters ASY

Note

Make sure that no diesel fuel reaches the coolant hoses. If necessary, clean the hoses immediately!

WARNING

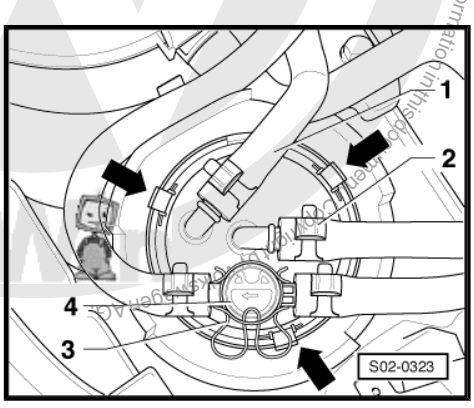
- *Follow the rules for disposal!*

Carry out work sequence as follows:

– Remove the fastening clip -3- and remove the regulating valve -4- with the fuel ducts connected.

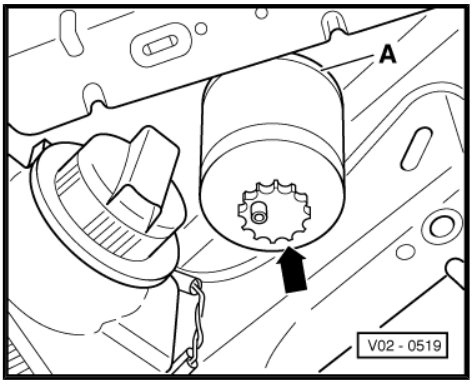
– Install the hose to the draining screw connection coupling -arrow-, open the screw and drain approximately 0.1 liter.

– Tighten the draining screw -arrow- and remove the hose.

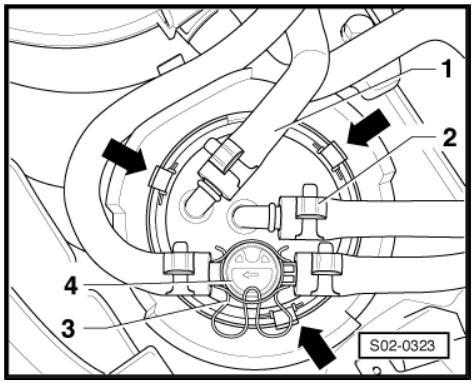


– Install the new sealing ring to seal the regulating valve.

– Install the regulating valve -4- and put the fastening clip -3-



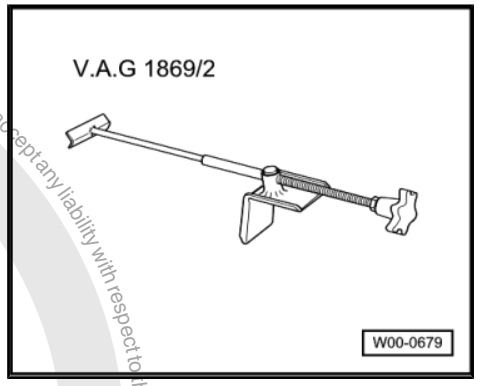
– Check the fuel system tightness (visual inspection).



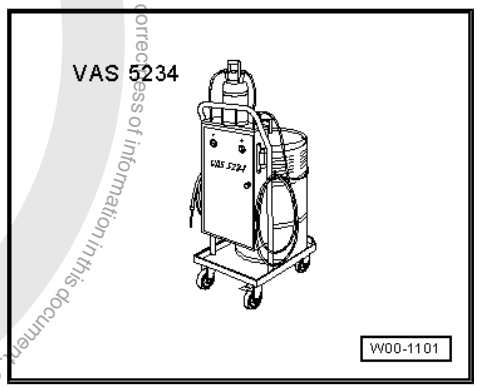
4.39 Brake fluid - replace

Special tools and workshop equipment required

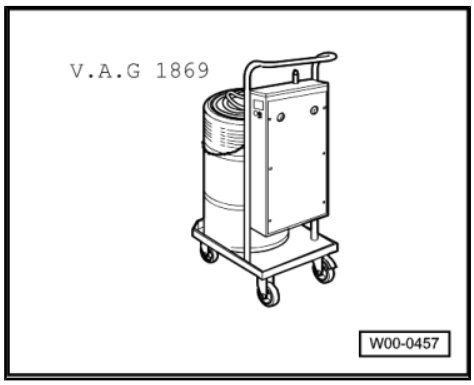
♦ Brake pedal pressing device -VAG 1869/2-



♦ Brake filler and bleeder -VAS 5234-



♦ Brake bleeding device -VAG 1869-



♦ Brake bleeding device -V.A.G 1869- with Adapter -V.A.G 1869/4-

Use new brake fluid only (which corresponds to the American US FMVSS 116 DOT 4 standard).

Authorized brake fluid specifications in vehicles from model until year 2005:

- Brake fluid corresponds to the USA rule FMVSS 116 DOT 4 (brake fluid used up to the date)
- Brake fluid corresponds to the VW rule, VW 501 14 (new brake fluid).

Authorized brake fluid specification in vehicles from model after year 2006:

- Brake fluid corresponds to the VW rule, VW 501 14 (new brake fluid).

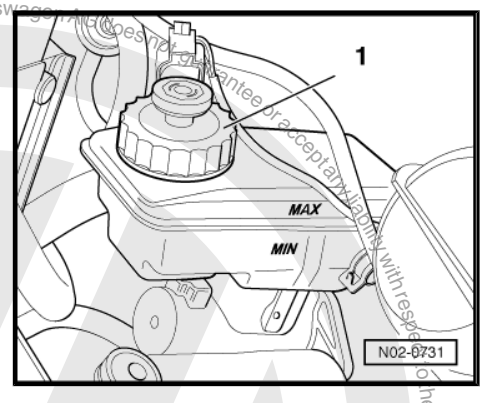
WARNING

- *Do not let the brake fluid contact fluids containing mineral oils (oil, petrol, cleaning materials). Mineral oils damage the sealing and the brake system hoses.*
- *The brake fluid is toxic. Due to its acidic properties it should not come into contact with painted surfaces.*
- *The brake fluid is hygroscopic, that is, it absorbs the local air humidity and, for this reason, it is stored in airtight packages.*
- *Wash off any brake fluid spillage with plenty of water.*
- *Follow the rules for disposal!*

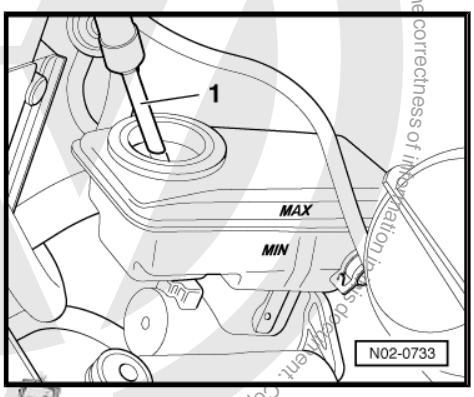
Carry out the following work sequence:

Observe the work instructions for Brake filler and bleeder -VAS 5234- and Brake bleeding device - VAG 1869- .

– Remove the cover -1- from the brake fluid reservoir.



– Aspirate with a hose from the Brake filler and bleeder -VAS 5234- -1-, or Brake bleeding device -VAG 1869- or with an aspiration bottle with filter, removing as much brake fluid as possible.

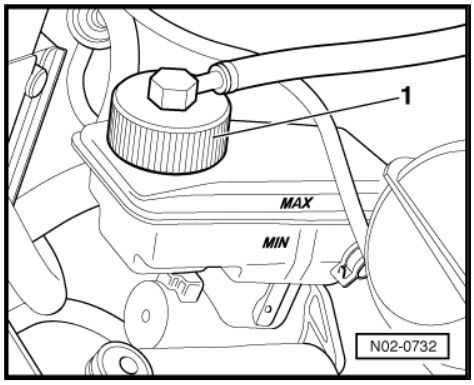


Note

Do not reuse the (used) aspired brake fluid.

– Install the Brake pedal's tensioning element -VAG 1869/2- between the driver's seat and the brake pedal, pressing it.

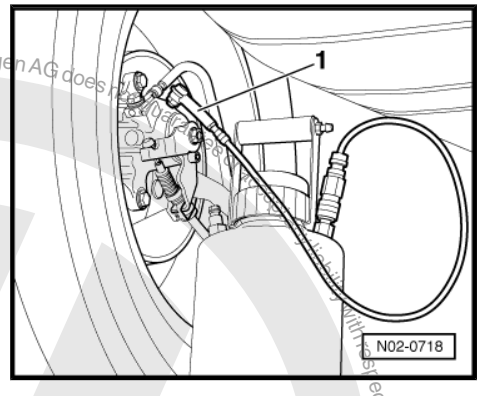
– Connect the adapter -1- to the brake fluid reservoir.
– Connect the hose from the Brake filler and bleeder -VAS 5234- or the Brake bleeding device - VAG 1869- to the adapter.
– Remove the protection covers in the bleeding screws.
– Position the venting hose -1- of the draining bottle in the rear section of the bleeding screw, loosen the bleeding screw and drain a corresponding quantity of brake fluid (check the table below).



– Tighten the bleeding screw.

For vehicles with steering wheel to the left, start bleeding in the right rear wheel; with the steering wheel to the right, start bleeding in the left rear wheel, because it is farther from the brake cylinder.

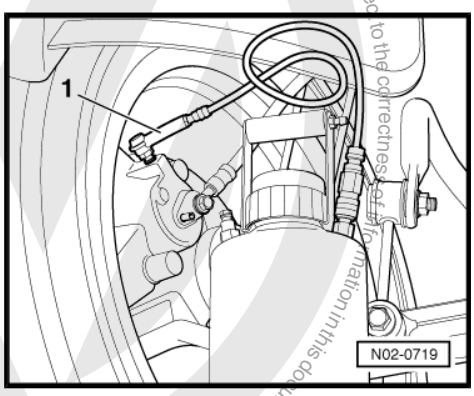
– Repeat the work procedure on the other rear side of the vehicle.
– Install the venting hose -1- of the draining bottle in the rear section of the bleeding screw, loosen the bleeding screw and drain a corresponding quantity of brake fluid (check the table below).



– Tighten the bleeding screw.

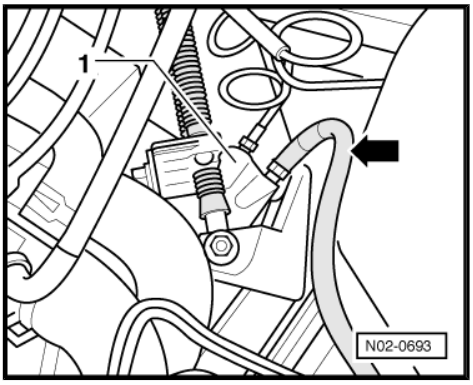
For vehicles with steering wheel to the left, start bleeding in the right rear wheel; with the steering wheel to the right, start bleeding in the left rear wheel.

– Repeat the work procedure on the other rear side of the vehicle.



Vehicles with 5-gear mechanical transmission.

– Remove the protection cover from the clutch drive piston bleeding screw
– Couple the hose from -VAG 1793- -arrow- to the clutch drive piston -1-, loosen the bleeding screw and drain approximately 0.1 liter.



– Tighten the bleeding screw.
– Press the clutch pedal several times.

Sequence Wheel brake cylinder brake shoes	Amount of brake fluid that must be drained from the wheel brake cylinders, that is, from the brake fittings:
right rear	0.25 litre
left rear	0.25 litre
right front	0.25 litre
left front	0.25 litre

Total quantity: 1 litre [15)]

15) of brake fluid drained from the brake fluid reservoir and from quantity changed in the hydraulic clutch drive.

– Put the protection covers in the bleeding screws.
– Change the position of the passage lever on the Brake filler and bleeder -VAS 5234- or on the Brake bleeding device -VAG 1869- to position -B- (check the operating instructions).
– Remove the passage hose from the adapter.
– Remove the brake fluid reservoir adaptor.
– Install the brake fluid reservoir cover.
– Remove the Brake pedal's tensioning element -VAG 1869/2- between the driver's seat and the brake pedal, by pressing it.
– Check the brake pedal's pressure and its free clearance. Max. clearance 1/3 of the pedal stroke.

WARNING

Do not forget to always correct the brake fluid's level in the reservoir.

Never let it reach the minimum level, otherwise air may enter the system.

Do not reuse the (used) aspirated brake fluid!

4.40 Brake fluid level (depending on brake pad/lining wear) - check

Use only new, original VW brake fluid.

WARNING

- ***Do not let the brake fluid contact fluids containing mineral oils (oil, petrol, cleaning products). Mineral oils damage the seals and brake system hoses.***
- ***The brake fluid is toxic. Additionally, due to its corrosive effect, it must not come into contact with painted surfaces.***
- ***The brake fluid is hygroscopic, that is, it absorbs the local air humidity and, for this reason, it is stored in airtight packages.***
- ***Wash off any brake fluid spillage with plenty of water.***
- ***Follow the rules for disposal!***

Please note the following:

Delivery inspection:

In the delivery inspection, the fluid level must be at the maximum marking.

Note

In order to prevent the brake fluid from overflowing, the maximum marking must not be exceeded.

Inspection service:

– The fluid level must always be assessed, based on the brake pad wear. With the vehicle in operation, the fluid level lowers due to wear and the automatic seating of the brake pads.
– With the fluid level at the minimum marking and slightly above it, it becomes necessary to replenish the fluid when the brake pad wear limit has almost been reached.
– If the pads are new, or far from their wear limit, the fluid level must be within the minimum and maximum markings.
– If the fluid level drops below the minimum marking, check the brake system (repair measure) before replenishing the brake fluid.

4.41 Headlight adjustment - check and adjust headlights if necessary

Special tools and workshop equipment required

♦ Headlight aligner -VAS 5046- or -VAS 5047-

In principle, the following checking and adjustment description is valid for every country. However, it is necessary to consider the guidelines and standards of each country.

Checking and adjustment conditions:

- Tyre inflation pressure OK.
- The headlight lenses must never be damaged or dirty.
- Reflectors and lamps OK.
- The vehicle load must be known.

Load: With a person or 75 kg on the driver's seat of empty vehicles (empty weight):

The weight of an empty vehicle is the weight of the vehicle ready for operation and with a full fuel tank (at least 90%), including the weight of every component required to operation (e.g: spare wheel, tools, towing hook, fire extinguisher, etc).

If the fuel tank is not at least 90% full, then simulate the load as follows:

– Check the tank level on the fuel gauge. Establish the additional weight according to the table below and put this weight in the luggage compartment.

4.41.1 Filling quantities table

Fuel reservoir indicator filling level	Additional weight in kg
1/4	30
1/2	20

Fuel reservoir indicator filling level	Additional weight in kg
3/4	10
full	0

Example:

If the fuel reservoir is half full, you must put an additional weight of 20 kg in the boot.

Note

As additional weight, it is preferable to use fuel containers filled with water (one fuel container with a 5-liter capacity corresponds to a weight of approximately 5 kg).

The vehicle should be moved for a few meters and dampened several times both at the front and at the rear so that the shock absorbers are properly settled.

- The vehicle and the headlight adjusting device must be on a level surface. ⇒ Instruction manual for the headlight adjusting device.
- The vehicle and the headlight adjusting device must be aligned.
- Tilting must be adjusted.

The frame above the headlight has the tilt values engraved in "%". The headlights must be adjusted according to the following data. The percentage is related to a projection distance of 10 meters. For instance, a 1.0% tilting value corresponds to 10 cm.

- The knurled wheel for adjusting the headlight reach must be in position (-).

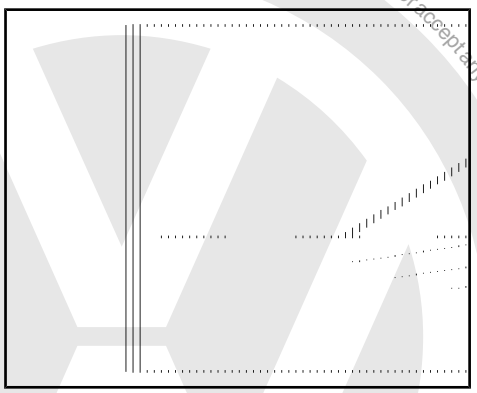
4.41.2 Check the headlight adjustment (with the new inspection display without 15º adjustment line).

Main headlights:

Please check the following:

– Check if, with the low beam on, the horizontal light-dark limit contacts the separation limit -1- of the test surface.

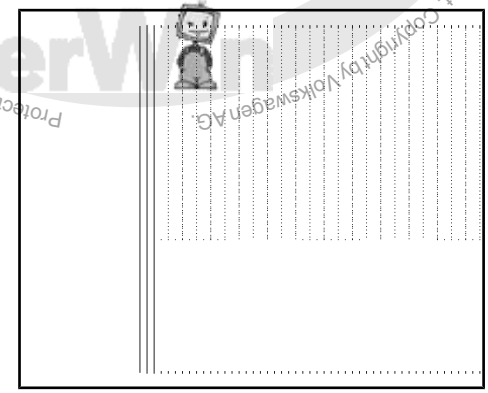
– Check if the point of inflexion -2- between the left horizontal part and the right ascending part of the light-dark limit runs vertically through the central mark -3-. In this case, the light core of the light beam is at the right of the vertical line.



Note

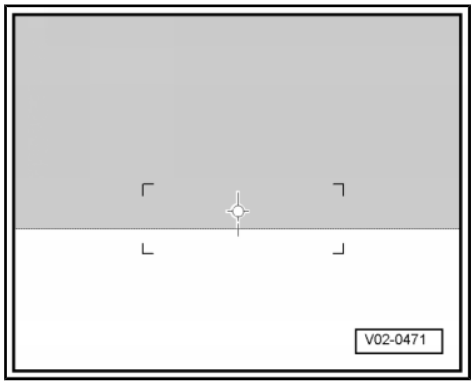
- *Line -1- is the measurement from the ground to the centre of the headlight minus 4.72 in for a distance of 10.94 yd.*
- *Line -1- is the measurement from the ground to the centre of the headlight minus 60 mm for a distance of 5 m.*
- *For an easier determination of the breaking point -2-, cover and then release the left half of the headlight (seen from the driver's side). Then, test the low beam once more.*
- *After correctly adjusting the low beam, the high beam is automatically adjusted. This means that the high beam centre must be on the headlight central mark -3-. A 200-mm deviation to the right or to the left, 150 mm upwards and 100 mm downwards is acceptable.*

– For the current checking viewer with an adjustment line of 15º, the same adjustment as for new checking viewer applies. To avoid incorrect adjustments, the 15º line will no longer be considered.



Fog lights

– Check if the light-dark limit reaches the adjustment line and runs vertically over the entire measuring device line.

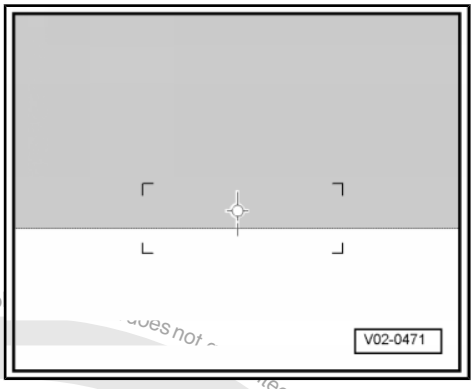


Note

- *The light-dark separation mark is the measurement from the ground to the centre of the headlight minus 7.87 in in for 10.94 yd of distance.*
- *The light-dark separation mark is the measurement from the ground to the centre of the headlight minus 100 mm in for 5 m of distance.*

Long reach headlights (CrossFox)

– Check if the light-dark limit reaches the adjustment line and runs vertically over the entire measuring device line.



Note

- *The light-dark separation mark is the measurement from the ground to the centre of the headlight minus 5.00 cm in for 10.94 yd of distance.*
- *The light-dark separation mark is the measurement from the ground to the centre of the headlight minus 0.98 in in for 5 m of distance.*

Additional headlights:

– Additional headlights from other systems, installed afterwards, must be installed according to their instructions.

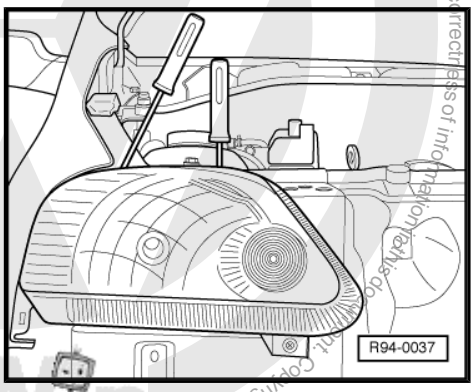
4.41.3 Adjust the headlights

Main headlights

Main right headlight (the left headlight adjustment screws are positioned symmetrically).

– Adjust the headlights from the front, with a suitable Philips wrench.

On the left headlight, both set screws are arranged symmetrically.



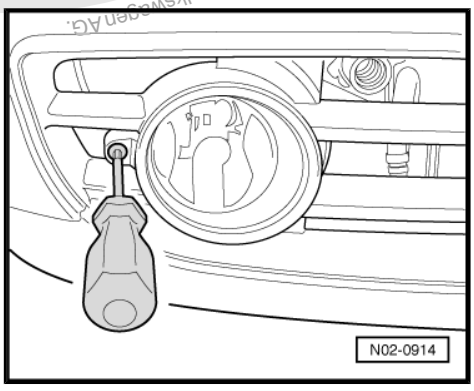
Note

Please check also if both headlights move symmetrically when positioning the light range.

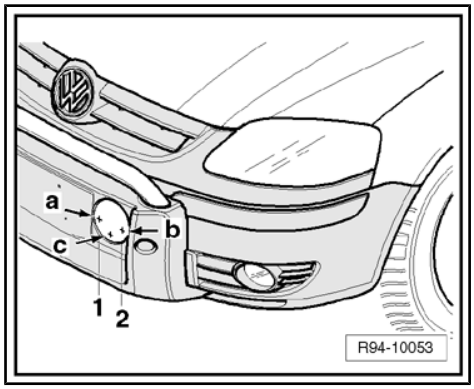
Fog lights

– To reduce the beam focus, turn the setscrew to the right. A side adjustment is not expected.

On the left headlight, the setscrew is arranged symmetrically.



Long reach headlights (CrossFox)



- Release the screws-1- and -2-only enough to slightly move the headlight.
- Press the headlight or move it forward -c- to the vertical adjustment (height).
- Press the headlight in -a- or -b- for horizontal adjustment (right and left).

4.42 Perform a test run

The following items depend on the vehicle equipment and local conditions (city/country).

During a test run, evaluate the following items:

- Engine: Power, ignition failures, idle speed behavior, acceleration.
- Clutch: Starting performance, pedal force, smell.
- Transmission: Mobility, position of the selection lever.
- ABS operation: During an ABS-controlled braking, a slight pulsing on the brake pedal should be noticed.
- Service brake and parking brake: Operation, idle stroke and action, one-side pulls, trepidations, noises.
- Steering wheel: Operation, steering wheel play, steering wheel in intermediate position with front wheels in straight position.
- Radio: Reception, interference noises.
- Air conditioning: Operation.
- Vehicle: Offsets on a straight run (level road).
- Balancing: Wheels, drive shafts.
- Wheel roller bearing: Noises.
- Engine: Hot start behaviour.

5 Additional tasks due to country legislation

Note

The exhaust gas tests are valid only for countries that do not have specific guidelines for the exhaust gas test.

5.1 Exhaust gas test

Note

- *Follow the specific rules for the country.*
- *The exhaust gas tests described below were performed in compliance with the rules in force in Germany.*

Intervals for the exhaust gas test in Germany:

Vehicles with catalytic converter adjusted or vehicles with diesel engines:

- 3 years after the first approval and, then, every 2 years.
- Vehicles for commercial transport of people, such as, for example, taxis: at every 1 year.

Exhaust gas test for diesel engines ⇒ page 113 .

Exhaust gas test for petrol engines ⇒ page 99 .

5.1.1 Exhaust gas test for petrol engines

Exhaust gas test for petrol engines without OBD

Exhaust gas test for petrol engines with OBD

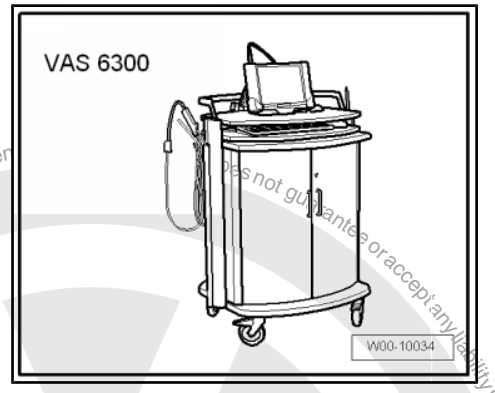
The test sequence was prepared for the test execution with the combination of test devices for analyzing exhaust gases, comprised of:

Note

- *The description below refers to vehicles equipped with "On-Board Diagnosis", OBD, with catalytic converter adjusted.*
- *The OBD checks all components and systems that influence the quality of the exhaust gases.*

Special tools and workshop equipment required

- Gas tester - 4 components (CO, CO2, HC and O2) or GAS TESTER -VAS 6300-



- OBD adapter cable -VAS 5052/16-

Note

- *It is only possible to perform an exhaust gas test when all devices from the Gas tester - 4 components (CO, CO2, HC and O2) or GAS TESTER -VAS 6300- are working and connected with one another, according to the operation instructions.*
- *All works to be performed are indicated by the Gas tester - 4 components (CO, CO2, HC and O2) or GAS TESTER -VAS 6300- .*

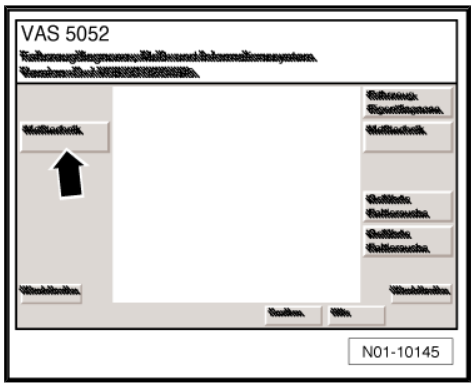
Prior conditions for inspection:

- All conditions for inspection and data necessary for the exhaust gas test are available on the exhaust gas test datasheet for the respective engine ⇒ Data sheets for exhaust emission test.
- The exhaust gas test datasheet must be printed to enable the barcode reading.
- Automatic gearbox: selector level in position “P” or “N”.
- Mechanical transmission: selector lever in “neutral gear”.
- Handbrake operated.

– Perform the exhaust gas test according to the instructions on the screen.

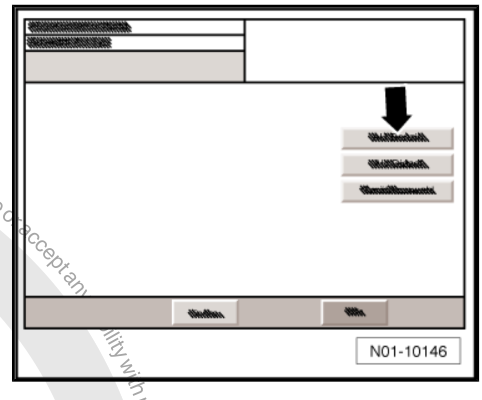
Startup screen:

– Select the function-arrow-, “Exhaust gas test”.

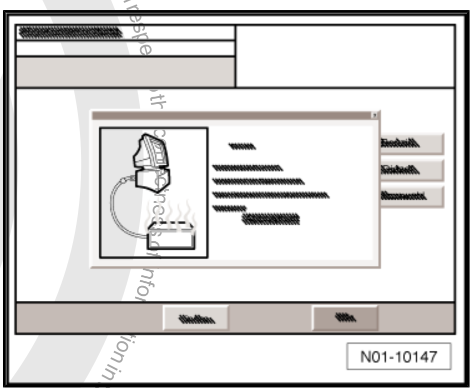


The general view for selecting the respective type of exhaust gas test is displayed.

– Select “Petrol exhaust gas test” -arrow-.



The indication for the heating period is displayed.



– Continue the exhaust gas test according to the instructions on the screen.

– When the selection of the theoretical value of exhaust gases is displayed, select “Selection of theoretical value of exhaust gases”, -arrow-.

♦ Select “Pre-defined value” when it is related to the first exhaust gas test,

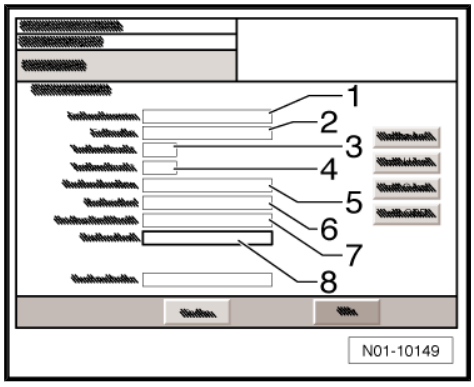
♦ Or, when it is necessary to perform an exhaust gas test again, select “last vehicle”.

– Press the indication “Continue, ” -1-.

Vehicle's data entering:

When the vehicle data entering menu is displayed:

– Enter in positions -1...7- the vehicle's data included on the vehicle's documentation.



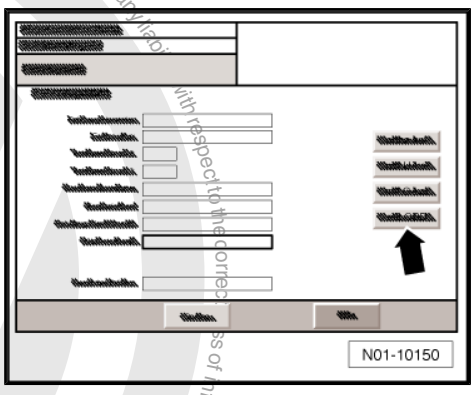
- -1- Vehicle's manufacturer: “for example VOLKSWAGEN — VW”
- -2- Type of vehicle: “for example, 1J”
- -3- Code number for 2: “z.B. 0603”
- -4- Code number for 3: “for example 358”
- -5- Engine identification letters “for example, AQY”
- -6- License plate: “for example WOB-HH 1234”
- -7- Vehicle identification number: “for example WVWZZZ9NZYW123456”

– Enter in position- 8 - the kilometers traveled “for example, 32000”.

Note

- *Other functions can be optioned with the Skip key.*
- *You can interrupt the test with the Skip key.*

– Select “with OBD”, -arrow-.



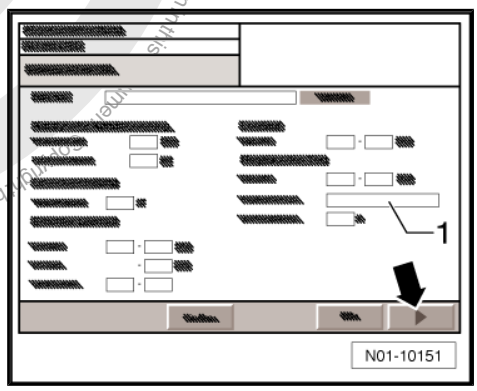
Entering nominal data for the exhaust gas test:

Note

- *If the nominal values do not exist as barcode, they must be entered manually.*
- *All conditions for test and data necessary for the exhaust gas test are included on the exhaust gas test datasheet for the respective engine.*

– Follow the indications on the screen during the manual data entering.

– With “Inspection values for the exhaust gas test” on the screen, enter successively the values displayed on the exhaust gas test datasheet:



1 - Test rotation (idle speed rotation)

2 - Period of catalytic converter heating

3 - Engine temperature

4 - High idle speed rotation

5 - Content of CO with high idle speed rotation

6 - Lambda probe with high idle speed rotation

7 - Idle speed rotation

8 - Select the type of adjustment probe, enter “Enrichment probe” or “Broad range probe” -1-.

9 - Lambda probe value

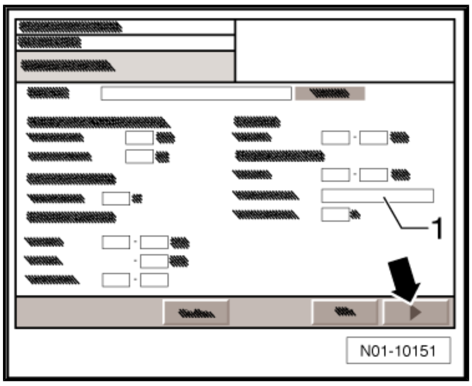
– After entering all data correctly, press the “Continue” key -arrow-.

Entering nominal data for the exhaust gas test with the barcode:

– If the nominal data for the exhaust gas test is available with the barcode, read the barcode in the exhaust gas test data-sheet with the reading pencil.

The screen displays the indication with all necessary data.

– Press the key -arrow- to continue the process.

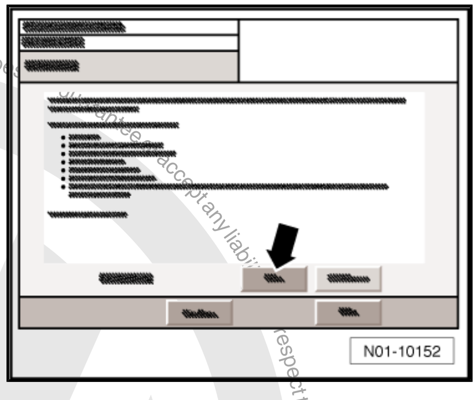


Visual inspection:

– Follow the indications on the screen.

– Perform the visual inspections.

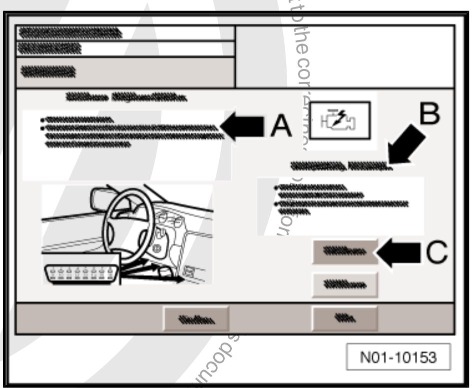
– If there are no problems, press “OK” on the screen -arrow-.



Note

When the Not OK button is pushed, you start a new test.

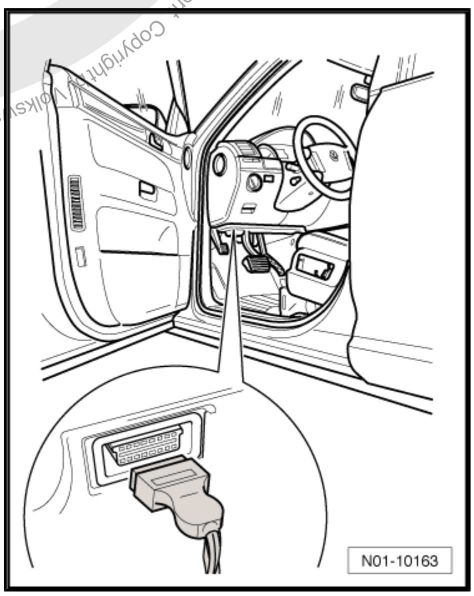
You can see beside the test inspection indicator, where it is nec-essary to connect the diagnosis connector -A -, as well as check the MI lamp - B -.



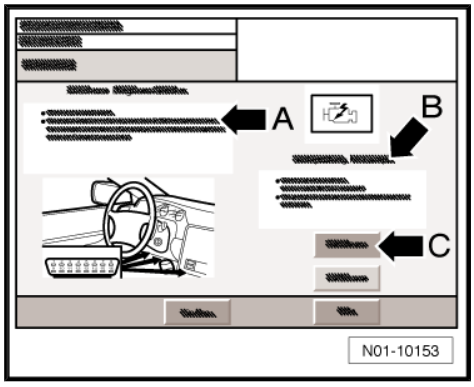
– Follow the indications on the screen.

– Turn ignition off.

– Connect the diagnosis cable to the EOBD socket.



– Turn the ignition on.
– Perform the visual inspection of the “MI Lamp”.
– When the light is turned on, press on the screen “Light on” - arrow C -.



– Follow the indications on the screen, - arrow C - and -arrow A -.
♦ Start the engine.
♦ Perform an inspection with the MI lamp.
– Insert the exhaust gas probe in the exhaust gas exit tube.

Note

The exhaust gas test process continues if the measuring probe is in the exhaust gas exit tube.

It automatically switches to readiness code.

The readiness code checks if all control devices work.

Note

♦ *If all indication values are at zero, no probe inspection test is performed.*
♦ *If not all indication values are at zero, a probe inspection test is further performed.*

– Confirm the condition of the “MI lamp” -arrow B-.

Condition of the catalytic converter:

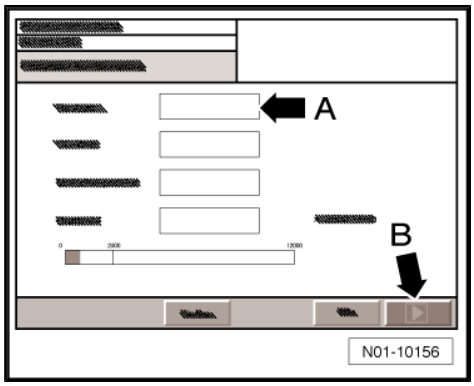
It switches automatically to the catalytic converter heating phase.

– Follow the indications on the screen.

The measurement starts as soon as the engine rotation reaches the necessary level.

– Keep the engine rotation on the necessary level.

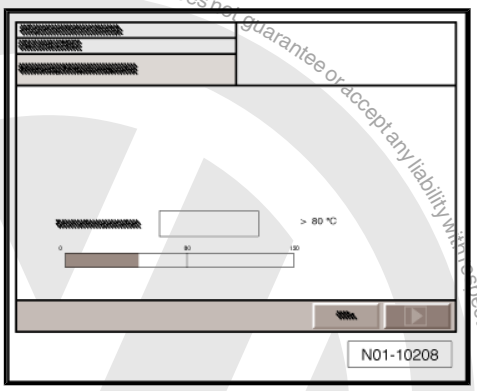
The remaining time for performing the heating phase is indicated -arrow A-.



Heating period:

It automatically switches to the engine temperature measurement indication.

– Follow the indications on the screen.



Note

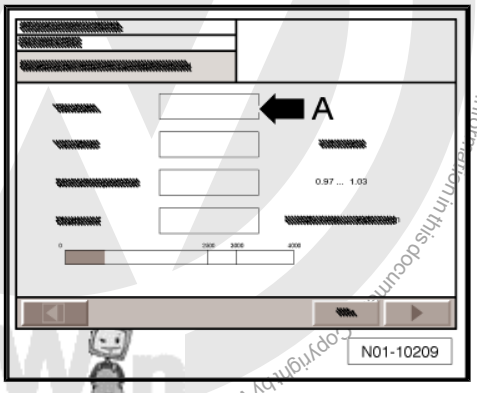
This indication appears just before the engine temperature reaches 80 degrees Celsius.

– The engine temperature must reach the necessary level.

Measurement in high idle speed rotation:

It switches automatically to the high idle speed rotation measurement indication.

– Follow the indications on the screen.



The measurement starts as soon as the engine rotation reaches the necessary level.

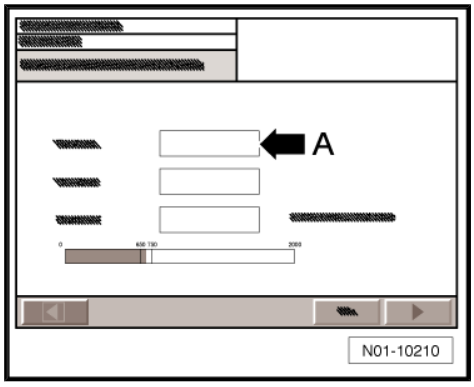
Note

- *With the key [→] — it is possible to cancel the measurement, that is, not perform the exhaust gas test.*
- *With the key [←] — the measurement values are reset and the test can be repeated.*

– Keep the engine rotation on the necessary level.

The remaining time for performing the measurement is indicated on the space -arrow A-.

Idle speed rotation measurement and content of CO:



It automatically switches to the indication of idle speed rotation measurement and content of CO.

The measurement starts as soon as the engine rotation reaches the necessary level.

The remaining time for performing the measurement is indicated on the space -arrow A-.

Probe inspection test:

Note

The probe inspection test is not performed when all readiness code values are at zero.

It switches automatically to the probe inspection test indication.

Note

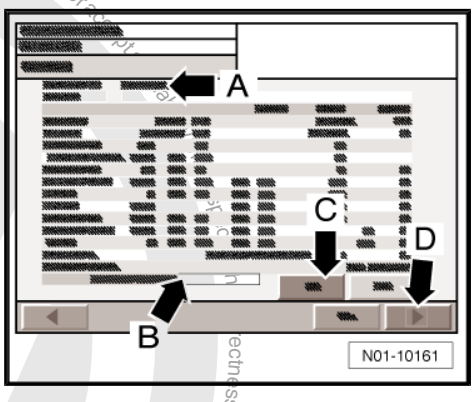
The probe inspection test is performed individually for each Lambda Probe .

The measurement starts as soon as the engine rotation reaches the necessary level.

– Keep the engine rotation on the necessary level.

The remaining time for performing the measurement is indicated on the space -arrow A-.

Assessment:



After the exhaust gas test, the report will be displayed on the screen.

The test result is indicated.

In this location, remarks about the exhaust gas test can be entered -arrow A-. They are included on the test report.

– After successfully performing the exhaust gas test, select on the hanging menu - arrow B - “Assigned exhaust gas test plate” and the date.
– Confirm with “Yes” - arrow C -.
– Then, press it.

After the confirmation, two “TEST CERTIFICATES” are automatically printed.

– To get other certificates, press the -arrow A - “Print” button.

– Follow the indications on the screen.

– Remove the exhaust gas probe from the final exhaust gas tube.

– Then, press [→] - arrow B-.

The exhaust gas test is concluded. It is possible to perform a new exhaust gas test.

Exhaust gas test for petrol engines without OBD

Note

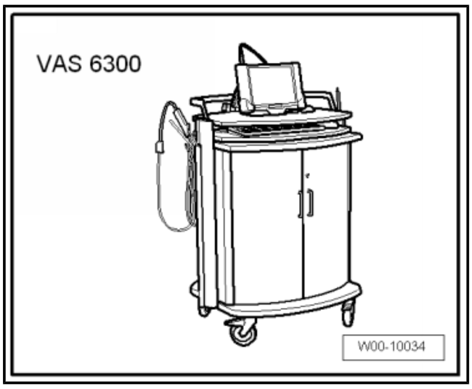
- *All test conditions and data necessary for the exhaust gas test: ⇒ "Exhaust gas test"*
- *The ignition point is determined by the Engine control unit -J623- and will not be indicated. It is not possible to make an adjustment.*
- *The idle speed rotation and the content of CO cannot be adjusted (just checked). If there are divergences between the actual and the theoretical values: perform a Repair Measure!*
- *The content of CO is adjusted to the theoretical value by the lambda probe adjustment. The defects in the lambda probe inspections are processed by the Diagnosis, Measurement and Information System -VAS 5051A /52- and stored in the fault memory.*
- *When consulting the fault memory, the faults detected (electronic engine system) must be eliminated and deleted from the fault memory.*
- *To avoid injuries in people and/or destruction of ignition and injection systems, the ignition system cables (also high voltage cables) must be turned on and off only with the ignition turned off.*

Note

The following description refers to vehicles without OBD with catalytic converter adjusted.

Special tools and workshop equipment required

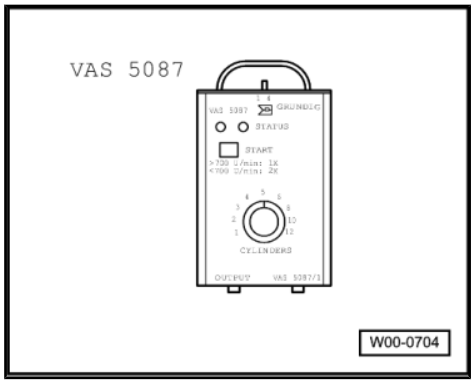
- Gas tester - 4 components (CO, CO2, HC and O2) or GAS TESTER -VAS 6300-



- Adapter for older vehicles -VAS 5051/2-

or

- Rotation adapter -VAS 5087/ A-
- Exhaust gas test requester



Note

- *It is only possible to perform an exhaust gas test when all devices from the Gas tester - 4 components (CO, CO2, HC and O2) or GAS TESTER -VAS 6300- are working and connected with one another, according to the operation instructions.*
- *All works to be performed are indicated by the Gas tester - 4 components (CO, CO2, HC and O2) or GAS TESTER -VAS 6300- .*

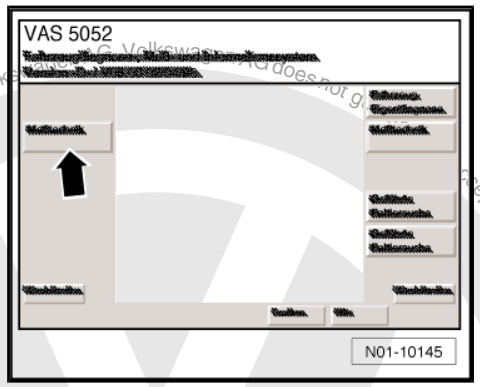
Prior conditions for inspection:

- All conditions for inspection and data necessary for the exhaust gas test are available on the exhaust gas test datasheet for the respective engine⇒ Data sheets for exhaust emission test.
- The exhaust gas test datasheet must be printed to enable the barcode reading.
- Automatic gearbox: selector level in position “P” or “N”.
- Mechanical transmission: selector lever in “neutral gear”.
- Handbrake operated.

– Perform the exhaust gas test according to the instructions on the screen.

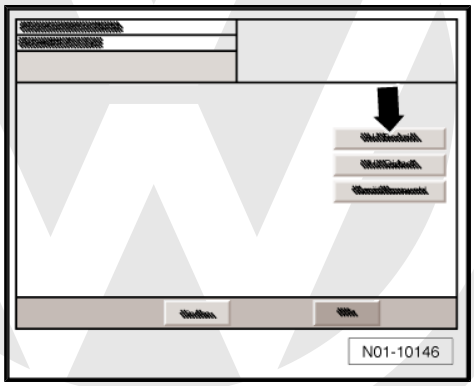
Startup screen:

– Select the function-arrow-, “Exhaust gas test”.

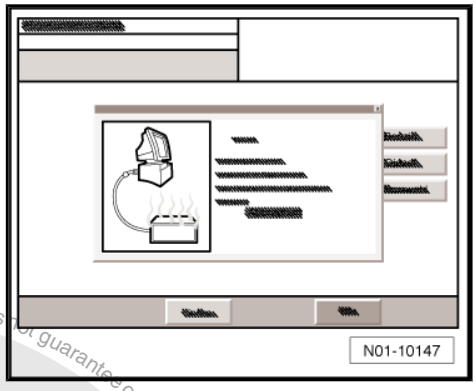


The general view for selecting the respective type of exhaust gas test will be displayed.

– Select “Petrol exhaust gas test” -arrow-.



The indication for the heating period will be displayed.



– Continue the exhaust gas test according to the instructions on the screen.
– When the selection of the theoretical value of exhaust gases is displayed, select the respective “Selection of theoretical value of exhaust gases”, -arrow-.

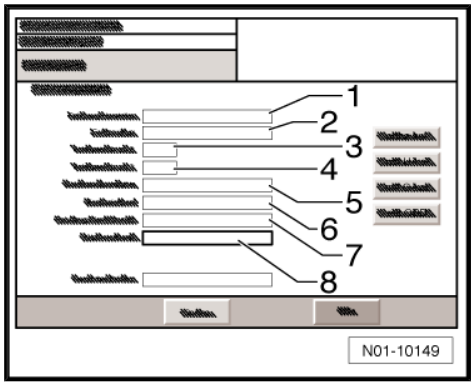
♦ Select “Pre-defined value” when it is related to the first exhaust gas test,
♦ Or, when it is necessary to perform an exhaust gas test again, select “last vehicle”.

– Charge in the indication “Continue, ” inquire -1-.

Vehicle's data entering:

The vehicle's data entering menu will be displayed.

– Enter in positions -1...7- the vehicle's data included on the vehicle's documentation.



- -1- Vehicle's manufacturer: “for example VOLKSWAGEN — VW”
- -2- Type of vehicle: “for example, 1J”
- -3- Code number for 2: “z.B. 0603”
- -4- Code number for 3: “for example 358”
- -5- Engine identification letters “for example, AQY”
- -6- License plate: “for example WOB-HH 1234”
- -7- Vehicle identification number: “for example WVWZZZ1JZYW123456”

– Enter in the space - 8 - the kilometers traveled “for example, 32000”.

Note

- *With the Skip key, it is possible to call new functions.*
- *With the Skip key, it is possible to interrupt the test.*

Entering nominal data for the exhaust gas test:

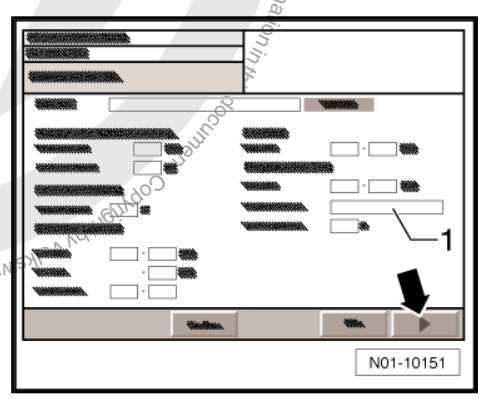
Note

- *If the nominal values do not exist as barcode, they must be entered manually.*
- *All conditions for test and data necessary for the exhaust gas test are included on the exhaust gas test datasheet for the respective engine.*

Manually entering nominal data for the exhaust gas test:

– Follow the indications on the display during the manual data entering.

– With “Inspection values for the exhaust gas test” on the screen, enter successively the values displayed on the exhaust gas test datasheet:



1 - Test rotation (idle speed rotation)

2 - Period of catalytic converter heating

3 - Engine temperature

4 - Increased idle speed rotation

5 - Content of CO with high idle speed rotation

6 - Lambda with high idle speed rotation

7 - Idle speed operation

8 - Select the type of probe adjustment: “Enrichment probe” or “Broad range probe” - 1 -.

9 - Lambda probe value

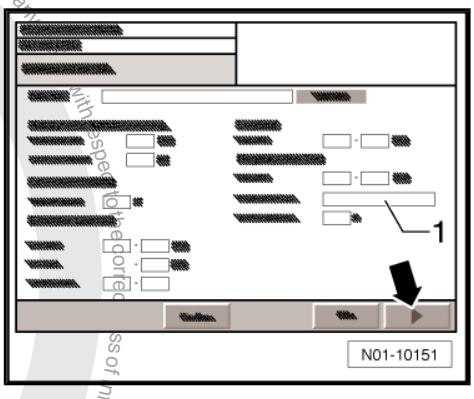
– After entering all data correctly, press the “Continue” key -arrow-.

Entering nominal data for the exhaust gas test with the barcode:

– If the nominal data for the exhaust gas test is available with the barcode, read the barcode in the exhaust gas test data-sheet with the reading pencil.

The screen displays the indication with all necessary data.

– Press the key □ -arrow- to continue the process.



Visual inspection:

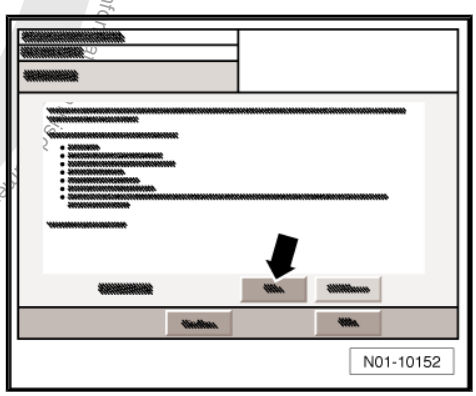
– Follow the indications on the screen.

– Perform the visual inspections.

– If there are no problems, press the “in order” key -arrow-.

Note

When the Not OK key is pressed, a test is originated.



Here you find the indication of visual inspection with the instruction to connect the cable to the vehicle.

– Follow the indications on the screen.

– Turn ignition off.

– Connect the adapter for old vehicles -VAS 5051/2- or rotation number adapter -VAS 5087/- or the Diagnosis cable -VAS 5051/6A- to the vehicle.

Note

- *In some engines, it is not possible to connect the inductive sensor to cylinder 1.*
- *In these engines, you can use the rotation number adapter -VAS 5087/- .*
- *In some engines, you must use the rotation number adapter -VAS 5087/- .*

– Turn the ignition on.

– Insert the exhaust gas probe in the exhaust gas exit tube.

Note

The exhaust gas test process continues if the measuring probe is in the exhaust gas exit tube.

It automatically switches to the readiness code

Condition of the catalytic converter:

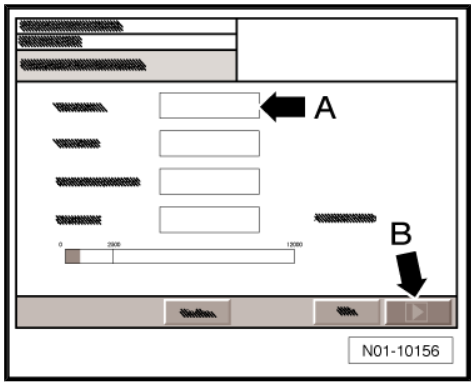
It automatically switches to the catalytic converter's heating phase.

– Follow the indications on the screen.

The measurement starts as soon as the engine rotation reaches the necessary level.

– Keep the engine rotation on the necessary level.

The remaining time for performing the heating phase is indicated -arrow A-.



Heating period:

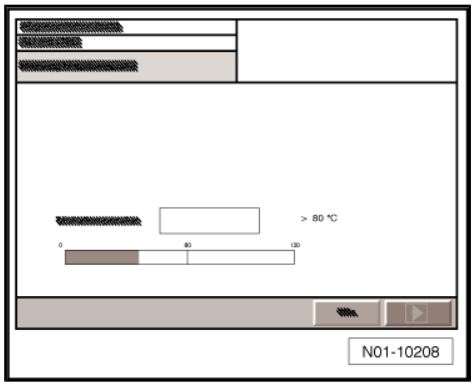
It automatically switches to the engine temperature measurement indication.

– Follow the indications on the screen.

Note

This indication appears just before the engine temperature reaches 80 degrees Celsius.

– The engine temperature must reach the necessary level.



Measurement in high idle speed rotation:

It switches automatically to the high idle speed rotation measurement indication.

– Follow the indications on the screen.

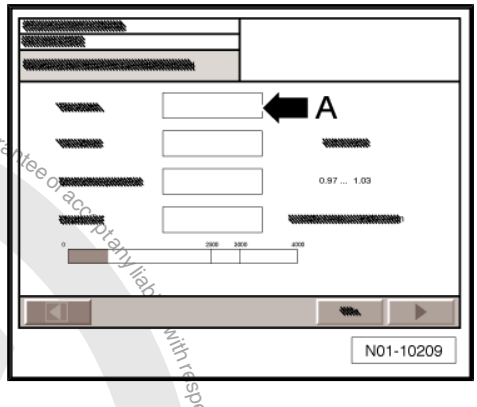
The measurement starts as soon as the engine rotation reaches the necessary level.

Note

- *With the key, ☐ it is possible to void the measurement, that is, not perform the exhaust gas test.*
- *With the key, ↵ the measurement values are reset and the test can be repeated.*

– Keep the engine rotation on the necessary level.

The remaining time for performing the measurement is displayed -arrow A-.

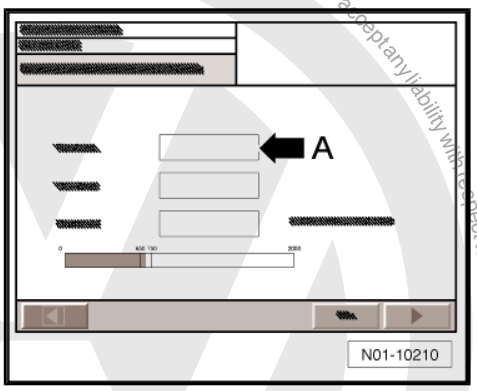


Idle speed rotation measurement and content of CO:

It switches automatically to the indication of idle speed rotation measurement and content of CO.

The measurement starts as soon as the engine rotation reaches the necessary level.

The remaining time for performing the measurement is displayed -arrow A-.



Probe adjustment test:

It automatically switches to the probe adjustment test indication.

The measurement starts as soon as the engine rotation reaches the necessary level.

– Keep the engine rotation on the necessary level.

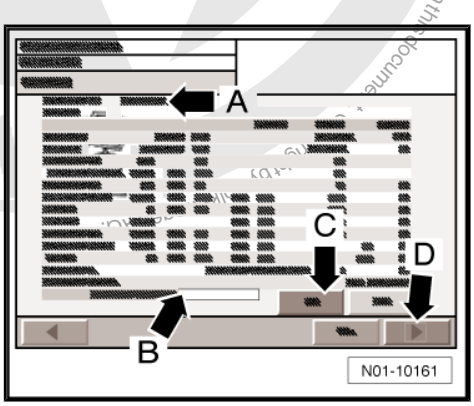
The remaining time for performing the measurement is displayed -arrow A -.

Assessment:

After the exhaust gas test, the report will be displayed on the screen.

The test result is indicated.

In this location, remarks about the exhaust gas test can be entered -arrow A-. They are included on the test report.



– After successfully performing the exhaust gas test, select on the hanging menu - arrow B - “Assigned exhaust gas test plate” and the date.
– Confirm with “Yes”, inquire - arrow C -.

After the confirmation, two “TEST CERTIFICATES” are automatically printed.

– To get other certificates, press the - arrow A - “Print” key.
– Follow the indications on the screen.
– Remove the exhaust gas probe from the final exhaust gas tube.
– Then, press the □ key -arrow B-

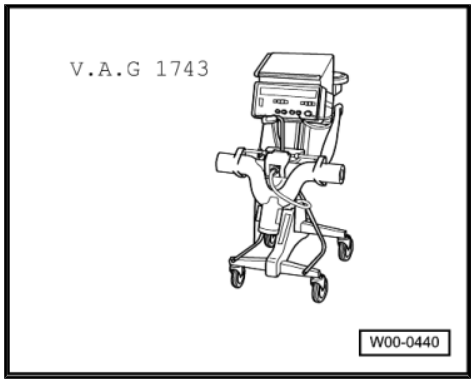
The exhaust gas test is finished. It is possible to perform a new exhaust gas test.

5.1.2 Exhaust gas test for diesel engines

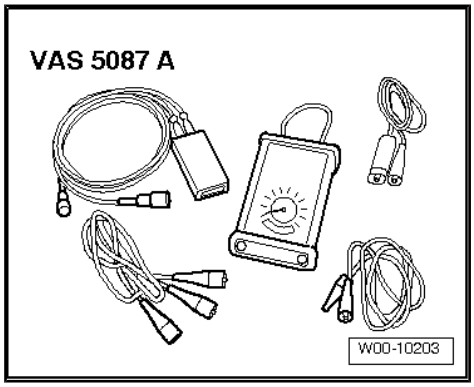
The test sequence was prepared for its execution with the combination of test devices for analyzing exhaust gases.

Special tools and workshop equipment required

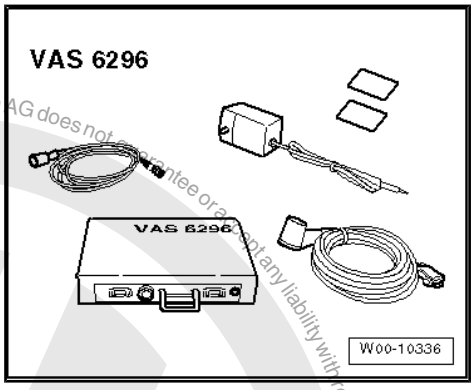
- Diesel engine test device -V.A.G 1743-



- Rotation adapter -VAS 5087 A-



- or
- Rotation adapter -VAS 6296-



- Data reading device -V.A.G 1798-
- or
- Data reading device -V.A.G 1799-
- ⇒ Data sheets for exhaust emission test

Note

- *All test conditions and data necessary for the exhaust gas test:⇒ Data sheets for exhaust emission test*
- *If there is the possibility, the test must be performed after a test drive. If, for any reason (atmospheric conditions, inadmissible noise level in residential areas), it is not possible, the test can also be performed on the workshop.*
- *During the measurement, the engine bonnet must be closed until the first clutch, due to the noise.*

Perform a visual inspection of the components that influence the exhaust gases

– Perform the visual inspection in relation to:

♦ Existence time

♦ Integrity

♦ Tightness

♦ Damage

Note

When finding defects, they must be eliminated.

Test conditions

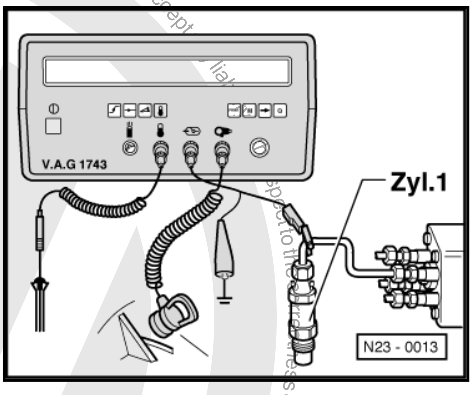
• Minimum engine temperature of 80 ºC

• No fault in the memory

Turn the test devices on

Connect the Diesel engine test device -V.A.G 1743 - according to the operation instructions.

Description, measurement process, device operation, start-up and operation ⇒ Operation instructions V.A.G 1743

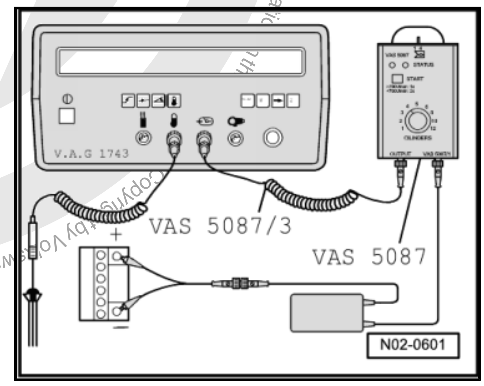


Note

♦ *In engines where the hole for the PMS sensor is not accessible, has difficult access or is large, you can use the Rotation adapter -VAS 5087 A- or the Rotation adapter -VAS 6296- instead of the PMS sensor.*

♦ *It is not possible to use the terminal transmitter (for cylinder 1) from the Diesel engine test device -V.A.G 1743- .*

– Connect the Rotation adapter -VAS 5087 A- with the ignition turned off, as follows.



Note

♦ *Follow the operation instructions for the Rotation adapter VAS 5087 A- !*

♦ *You must mandatorily follow the safety indications in the operation instructions!*

– Connect the Adapter cable -VAS 1587/3- from the output connection of the Rotation adapter -VAS 5087 A- to the terminal transmitter input from the Diesel engine test device -V.A.G 1743-

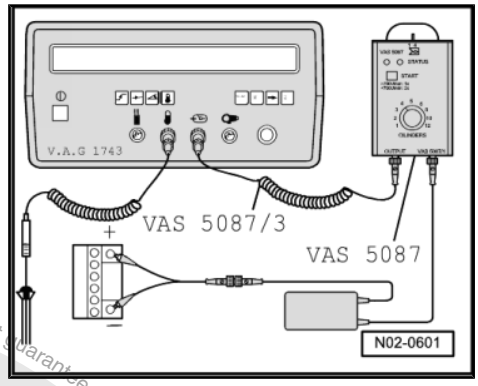
– Turn the cylinder number switch to “4” (4-cylinder engine).

– Connect an Adapter -VAS 5087/1- cable to the Rotation adapter -VAS 5087 A- (VAS 5087/1 socket).

– With the other Adapter -VAS 5087/1- cable, make a connection to the vehicle's battery. For this purpose:

♦ red terminal on positive

♦ black terminal on negative.



Note

♦ *When you use the Rotation adapter -VAS 5087 A- , press the "Start" key. The red signaling lamp must be turned on for approx. 10 seconds. Then, the green signaling lamp must turn on.*

♦ *In the Diesel engine test device -V.A.G 1743- , the engine rotation must be indicated now.*

♦ *If the engine rotation is indicated incorrectly or not indicated at all: ⇒ Operation instructions from VAS 5087*

Test sequence

– Start the engine and let it run only in idle speed.

– Press on the data reading device F2 the key for "AU diesel".

Upon indication on display:

```
Insert vehicle identification card!!
Manual inputting with the -
> Key
```

– Through the data reading device keyboard, enter the following vehicle identification data:

♦ License plate

♦ Vehicle manufacturer = "Number 2"

♦ Code = "for Number 2"

♦ Type of vehicle = "Number 3"

♦ Code = "for Number 3" (the first three digits)

♦ Vehicle identification number = "Number 4"

♦ Engine identification letters

♦ Kilometers traveled

– Confirm the vehicle identification data provided through the Q key.

```
Check input with -> Key
Continue with the - Q key
```

– Confirm the vehicle identification data through the Q key.

Upon indication on display:

```
Select barcode
Manual inputting with the -> Key
```

– Enter the theoretical values with the data reading device reader, sliding it over the respective code in the datasheet on the "Exhaust gas analysis" folder.

or

– With the → key, make manual inputs according to instructions on the data reading device display.

Upon indication on display:

```
Check input with -> Key
Continue with the - Q key
```

– Confirm the vehicle data entered or read through the Q key.

Upon indication on display:

```
Visual inspection Ok = j      not Ok =
```

– Enter the visual inspection result.

Upon indication on display:

```
F1 temperature measurement with sen-
sor
F2 enter manually the temperature meas-
urement
```

– Press the F1 key for “temperature measurement with sensor”.

– When the engine oil temperature reaches 80° C, remove the sensor and insert the oil dipstick up to the stop.

– Proceed with the test by pressing the Q key.

Upon indication on display:

```
Idle speed rotation                    -
>
ACTUAL rotation xxxx/
min       THEORETICAL xxxx/min
```

– Press the key →.

Idle speed rotation out of the theoretical value field:

Note

The idle speed rotation and the maximum rotation can be tested, but cannot be adjusted.

– If the values are not in the theoretical value field, a Repair Measure must be performed.

– Proceed with the test by pressing the Q key.

Upon indication on display:

```
Engine cutting rotation
5 sec.
ACTUAL rotation xxxx/
min THEORETICAL xxxx...xxxx/min
```

– Press the accelerator pedal up to the end for the time required, and keep it pressed.

WARNING

If the engine cutting rotation is exceeded, release the accelerator pedal immediately and perform a Repair measure.

Upon indication on display:

```
Engine cutting rota-
tion                    ->
ACTUAL rotation xxxx/
min THEORETICAL xxxx...xxxx/min
```

– Release the pedal.

– Check the actual value; for this purpose, continue the actual value indication with the key →.

Engine cutting rotation out of the theoretical value field:

– If the values are not in the theoretical value field, a Repair Measure must be performed.

– Proceed with the test by pressing the Q key.

Upon indication on display:

```
Idle speed rotation 1ª measurement 15 sec
ACTUAL rotation xxxx/
min THEORETICAL xxx...xxxx/min
```

– The data reading device assumes actual values in 15 seconds.

Upon indication on display:

```
Data transmission for the gas oil test de-
vice
          Quickly press the pedal
```

– Press the accelerator pedal up to the end and keep it pressed.

With the indication on display:

```
Data transmission for the gas oil test de-
vice
            Free acceleration in movement
```

– Keep pressing the accelerator pedal.

Upon indication on display:

```
Idle speed rotation 2ª measurement 15 sec
ACTUAL rotation xxxx/
min THEORETICAL xxx...xxxx/min
```

– Release the pedal.

The data reading device assumes actual values in 15 seconds.

Upon indication on display:

```
Data transmission for the gas oil test de-
vice
          Quickly press the pedal
```

– Press the accelerator pedal up to the end and keep it pressed.

With the indication on display:

```
Data transmission for the gas oil test de-
vice
            Free acceleration in movement
```

– Keep pressing the accelerator pedal.

Upon indication on display:

```
Idle speed rotation 3ª measurement 15 sec
ACTUAL rotation xxxx/
min THEORETICAL xxx...xxxx/min
```

– Release the pedal.

The data reading device assumes actual values in 15 seconds.

Upon indication on display:

```
Data transmission for the gas oil test de-
vice
          Quickly press the pedal
```

– Press the accelerator pedal up to the end and keep it pressed.

With the indication on display:

```
Data transmission for the gas oil test de-
vice
            Free acceleration in movement
```

– Keep pressing the accelerator pedal.

Upon indication on display:

```
Idle speed rotation 4ª measurement 15 sec
ACTUAL rotation xxxx/
min THEORETICAL xxx...xxxx/min
```

– Release the pedal.

The data reading device assumes actual values in 15 seconds.

Upon indication on display:

```
Data transmission for the gas oil test de-
vice
          Quickly press the pedal
```

– Press the accelerator pedal up to the end and keep it pressed.

With the indication on display:

```
Data transmission for the gas oil test de-
vice
            Free acceleration in movement
```

– Keep pressing the accelerator pedal.

Upon indication on display:

```
Peak turbidness value -                  -
>
ACTUAL x.xx/
m               THEORETICAL x...x.xx/m
```

– Release the pedal.

– Press the key →.

Upon indication on display:

```
Average turbidness value -               -
>
ACTUAL x.xx/
m               THEORETICAL x...x.xx/m
```

– Press the key →.

Upon indication on display:

```
Turbidness range width -                 -
>
ACTUAL x.xx/
m               THEORETICAL x...x.xx/m
```

– Press the key →.

Upon indication on display:

```
Test Ok continue with the Q key
Repeat the test with the F1 key
```

– Press the key Q .

Note

- *Upon indication on display:*
- *Press the F1 key and repeat the test or perform a Repair Measure.*

```
Test not Ok continue with the - Q key
Repeat the test with the - F1 key
```

Upon indication on display:

```
Input of clarifications with -> Taste
Continue with the - Q key
```

– If necessary, enter clarifications by pressing the key →.

– Press the key Q .

Upon indication on display:

```
Select tester/manual input with F3
F1 XXXXX                    F2 XXXXX
```

– With keys F1 to F3 select the tester or enter the name.

– Press the Q, wait for the protocol.

– Press the key →.

– Finish the test by pressing the F2 key.

5.2 Glossary

These explanations refer only to the “Maintenance Cares”. They are not intended to be universal!

Concept	Explanation
AU	Exhaust gas test.
ABS	(anti-blocking system), the ABS is a brake system adjustment that prevents the wheels from blocking while braking. Thus, the stability and the steering control are maintained.
ATF	(Automatic Transmission Fluid) gear oil for automatic gearboxes.
ATF level	"Level" of the gear oil for automatic gearboxes.
Cetane rate	(level of cetane) dimension of diesel's flammability.
DIN	Deutsches Institut für Normung e.V (German Institute for Standardisation).
EN	Europe Norm

Concept	Explanation
EOBD	European On-Board Diagnosis
FAME	Fatty Acid Methyl Ester
FSI	Fuel Stratified Injection
TFSI	Turbo Fuel Stratified Injection
MIL	(Malfunction Indicator Light) American designation for exhaust gas light K83
NO_X	Nitric oxide

Concept	Explanation
OBD	On-Board Diagnosis; the OBD checks all components that influence the quality of the exhaust gases
OBD-II	American On-Board Diagnosis
PD	Unit of pump - nozzle injection in diesel engines
PR number	Abbreviation for production control number. They identify, among others, additional equipment, specific differences of each country and data about the movement steering
PM	(English: particulate matter) particulate material in diesel engine exhaust gases
QG0.	Vehicles “not” equipped in the factory with components for the LongLife service. For maintenance, the intervals that depend on time or kilometers traveled are applied (fixed intervals).

Concept	Explanation
QG1	Vehicles equipped in the factory with the active LongLife service. It means that the vehicles have a flexible service interval indicator and are equipped with the following components: ♦ Flexible service interval indicator in the combined instrument ♦ Engine oil's level sensor ♦ Brake pad's wearing indicator
QG2	The LongLife service is not active from the factory. It means that the vehicles have a fixed service interval indicator (maintenance intervals dependent on time or kilometers traveled) and are equipped with the following components: ♦ Fixed service interval indicator in the combined instrument ♦ Engine oil's level sensor ♦ Brake pad's wearing indicator
Readiness code	Binary 8-digit code that indicates if all relevant engine diagnoses were made in terms of exhaust gases
Octane rating	(level of octane researched) dimension of petrol resistance to detonation
SAE	(Society of Automotive Engineers) Association that provides recommendations/guidelines about transposing legal requirements (for example, rules)
SD	Aspirated diesel engine
SDI	Aspirated diesel engine with direct injection
SIA	Service interval indicator
SW	Acronym for the key size
RR	Turbo Diesel Engine
TDI	Turbo diesel engine with direct injection
VEP	Distributor injection pump
ULEV	Ultra Low Emission Vehicles

Concept	Explanation
WIV	Extension of maintenance interval
Common - Rail	Term that designates a general injection control by high pressure, which injects fuel in all seat cylinders
DPF	Diesel particle filter; this filter is assembled after the catalytic converter and filters particles from the exhaust gases
V engines	The V engine has cylinders arranged in an angle from 60° to 120°

Concept	Explanation
LongLife service	The LongLife service enables extremely long inspection and oil change intervals, depending on the driving mode and the conditions of use for each one. A special engine oil is necessary for the Long-Life service
Enrichment probe	Also named (LSH- heated lambda probe), (LSF- flat lambda probe) or oxygen sensor. The emission of the lambda value is made through a tension curve with discontinuous growth. The lambda value is determined based on a change of tension. The probe is used as a post-catalytic converter probe.
Broad range probe	Also named (LSU probe) universal lambda probe. The emission of the lambda value is made through a tension curve with an apparently linear current intensity growth. The lambda value is determined based on a change of current intensity. Thus, the lambda value can be measured on a large measurement field (broad range). The probe is used as a pre-catalytic converter probe.
Balance of ash mass	The balance of ash mass informs about the level of the particle filter volume filling.
RDK, RKA	Control of tire pressure, indicator of tire control.

07.10