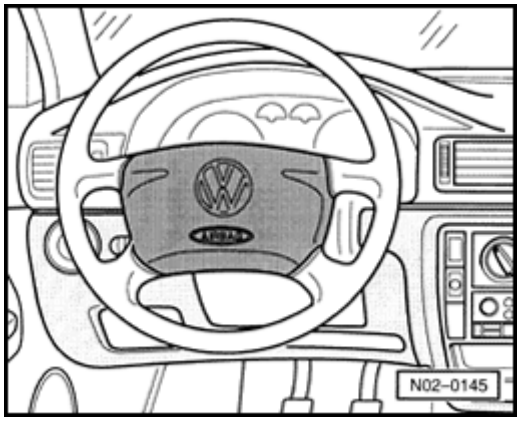
Description of work

Airbag for driver and passenger, visually checking airbag units

Driver side airbag:



The airbag is indicated by the word "AIRBAG" embossed on the upholstered cover of the steering wheel.

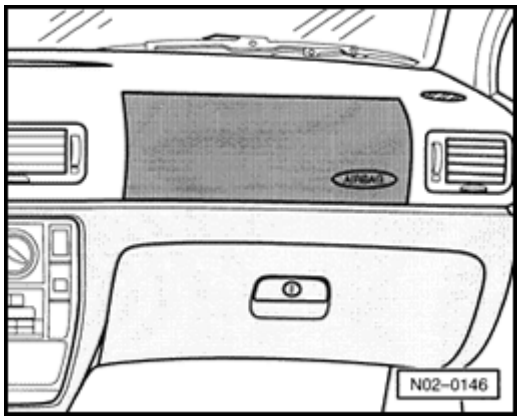
- Perform a visual inspection for any damages to the upholstered cover.

Warning!

Adhesive from tape, stickers, etc. and other residues or unauthorized work on airbag units can affect airbag function. Ensure that customer is aware of this.

The upholstered cover of the steering wheel may only be cleaned with a dry or damp cloth.

Front passenger side airbag:



The airbag is indicated by the word "AIRBAG" embossed on the right side of the instrument panel.

- Perform a visual inspection for any damage to the surface of the instrument panel.

Warning!

Adhesive from tape, stickers, etc. and other residues or unauthorized work on airbag units can affect airbag function. Ensure that customer is aware of this.

The surface of the airbag module may only be cleaned with a dry or damp cloth.

8-way seat with memory, perform initialization (activation)

Note:

- *After disconnecting and reconnecting the vehicle battery, the memory system for the electric seat adjustment will not function. Therefore, the seats must be initialized again immediately, before a new vehicle is delivered. Thereafter, the vehicle battery should not be disconnected again.*

Perform the following work procedure to initialize the memory system for the electric seat adjustment:

- Open drivers door.

- Switch ignition on.

- Adjust seat surface forward and upward until stop.

- Adjust seatback forward until stop.

Final drive rear, check transmission fluid level

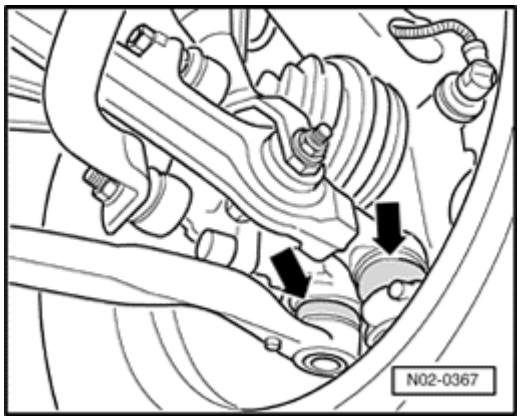
- Passat 4Motion

Transmission fluid in rear final drive, checking

⇒ *Repair Manual, Transmission, Repair Group 39,*

.

Ball joints, visual inspection



- Check ball joint boots **- arrows -** for leaks and damage.

Automatic transmission, front final drive, checking fluid level

- Work procedure,

⇒ *Repair Manual, Automatic Transmission , Repair Group 39,*

.

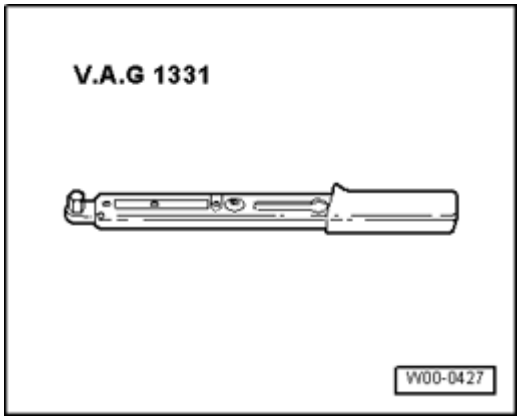
Automatic transmission, ATF level, checking

⇒ *Repair Manual, Automatic Transmission , Repair Group 37,*

.

Battery, check battery terminals for secure seating

Special tools, testers and auxiliary items required

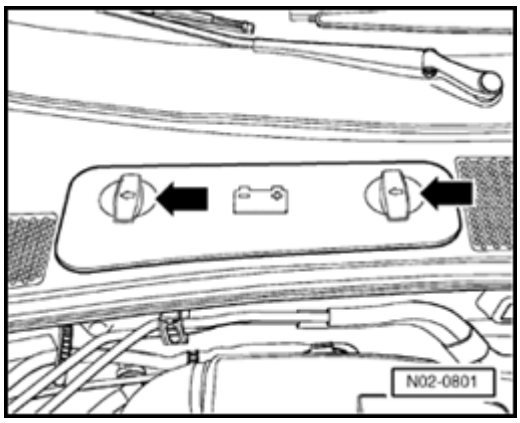


- Torque wrench V.A.G 1331

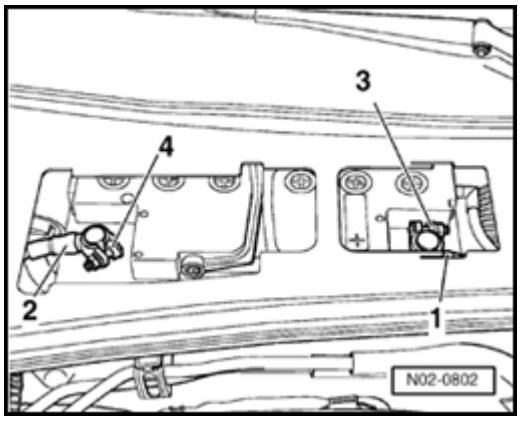
Note:

- *Tight battery connections assure trouble-free battery function and long service life.*

Perform the following work procedure:



- Push battery cover toward left **- arrows -** and remove cover upward.



- Check whether battery terminal clamps **- 3 -** and **- 4 -** are seated securely on the battery terminals by moving the battery positive wire **- 1 -** and the battery Ground (GND) wire **- 2 -** back and forth by hand.

Warning!

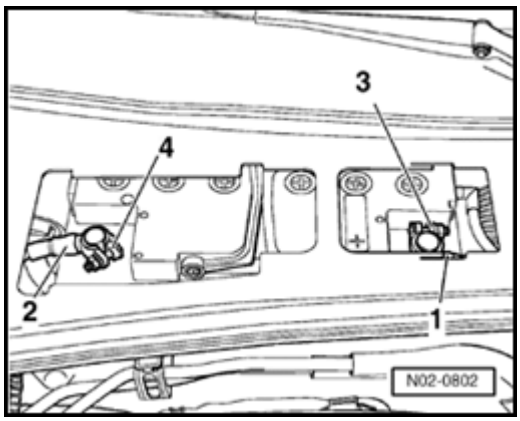
If the battery clamp is not seated securely on the positive terminal, disconnect battery Ground (GND) clamp on battery negative terminal first, to prevent possible accidents.

If the battery clamp on positive terminal is not seated securely:

Note:

- *Before disconnecting battery, obtain radio anti-theft code.*

- *When the battery is re-attached, remember to check the vehicle accessories (radio, clock, electric window regulators, etc.) according to the repair manual and/or the operators manual.*



- First disconnect battery clamp **- 4 -** at battery negitive (-) pole.

- Tighten battery clamp **- 3 -** on battery positive terminal to 5 Nm.

- Re-connect battery clamp **- 4 -** on battery negative terminal and tighten to 5 Nm.

If the battery clamp on negative terminal is not seated securely:

- Tighten ground connection **- 4 -** on battery to 5 Nm.

Battery, check

- Check battery as described in the following

⇒ *Repair Manual, Electrical Equipment, Repair Group 27,*

.

Brake fluid, changing

Notes on application and safety ⇒ 01-4, Notes on application and safety precaution .

Brake fluid specification ⇒ 01-4, Specification of brake fluid .

Work procedure, change brake fluid ⇒ 01-4, Work procedure, changing brake fluid .

Notes on application and safety precaution

Note:

- *From model year 2006, a new brake fluid is introduced.*
- *The new brake fluid can also be used for older vehicles.*
- *New brake fluid can be mixed with previous brake fluid.*

Warning!

- ***Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Oils containing minerals damage seals and sleeves on brake systems.***
- ***Brake fluid is poisonous. Due to its caustic nature, it must also never be brought into contact with paint.***
- ***Brake fluid is hygroscopic, which means that it absorbs moisture from the air. Always store brake fluid in air-tight containers.***
- ***Wash off brake fluid spillage using plenty of water.***
- ***Do not reuse, (used) extracted brake fluid.***
- ***Observe waste disposal regulations!***

Specification of brake fluid

Permissible specifications of brake fluid for vehicles up to model year 2005:

- Brake fluid corresponding to US standard FMVSS 116 DOT 4 (previous brake fluid).

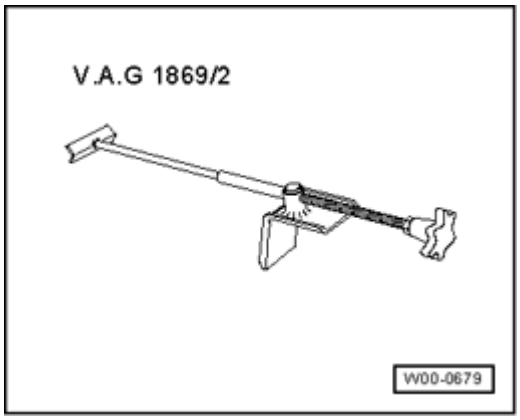
- Brake fluid corresponding to VW standard, VW 501 14 (new brake fluid).

Permissible specifications of brake fluid for vehicles from model year 2006:

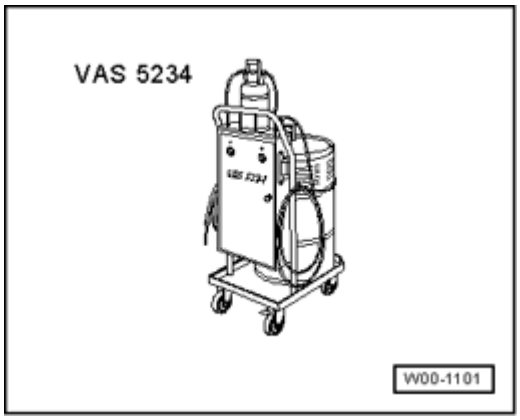
- Brake fluid corresponding to VW standard, VW 501 14 (new brake fluid).

Work procedure, changing brake fluid

Special tools, testers and auxiliary items required



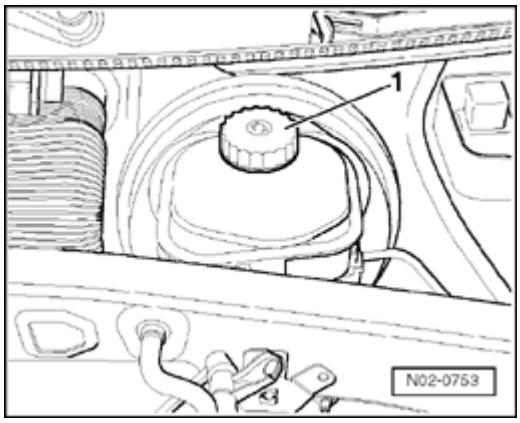
- Brake pedal depressor V.A.G 1869/2



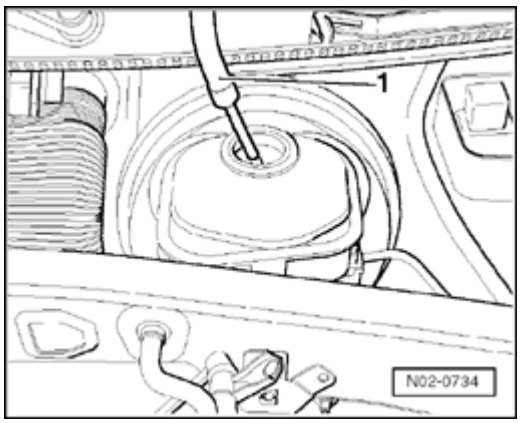
- Brake filling and bleeding tool VAS 5234

Vehicles ➢ 1999 (➢ X)

Observe operating instructions for brake charger/bleeder unit VAS 5234 !



- Remove cap from brake fluid reservoir **- 1 -** .



- Extract as much brake fluid as possible from brake fluid reservoir using suction hose of brake charger/bleeder unit VAS 5234 **- 1 -** .

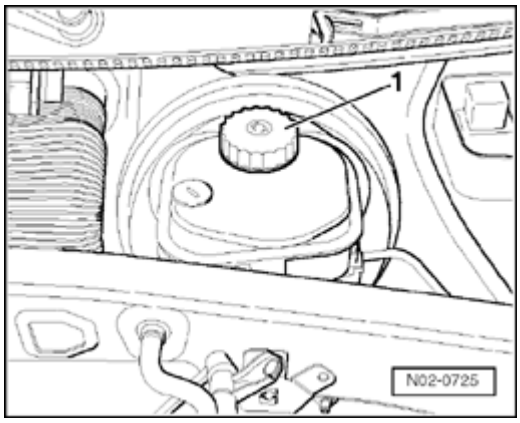
- Alternatively, extract as much brake fluid as possible using a suction bottle with built-in strainer.

Note:

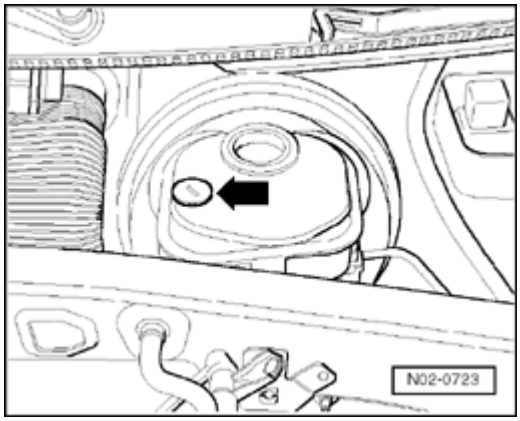
- *After extracting, observe that no further brake fluid runs into the reservoir (the brake fluid level in the reservoir must align with the lower edge of the strainer).*

Vehicles 2000 ➢ (Y ➢)

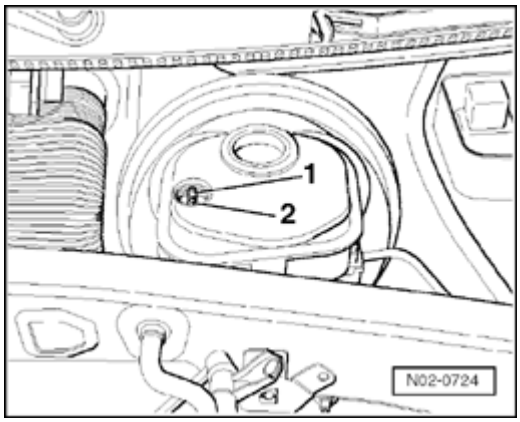
Observe operating instructions for brake charger/bleeder unit VAS 5234 !



- Remove cap from brake fluid reservoir **- 1 -** .



- Remove locking bolt **- arrow -** of brake fluid reservoir.



- Connect suction hose of brake charger/bleeder unit VAS 5234 to tube **- 1 -** of brake fluid reservoir.

- Extract as much brake fluid as possible from brake fluid reservoir using suction hose of brake charger/bleeder unit VAS 5234 .

- Disconnect suction hose.

- Connect suction hose of brake charger/bleeder unit VAS 5234 to tube **- 2 -** of brake fluid reservoir.

- Extract as much brake fluid as possible from brake fluid

reservoir using suction hose of brake charger/bleeder unit VAS 5234 .

- Disconnect suction hose.

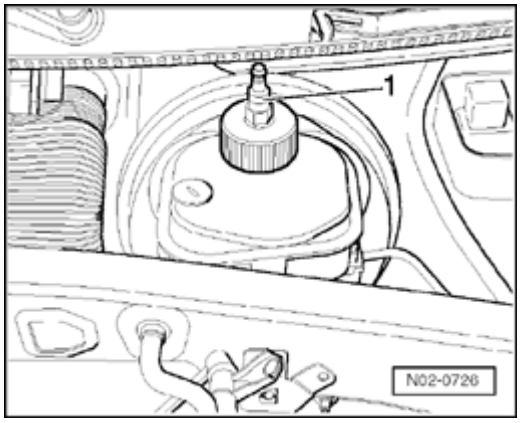
- Screw locking bolt onto brake fluid reservoir.

Continued for all vehicles:

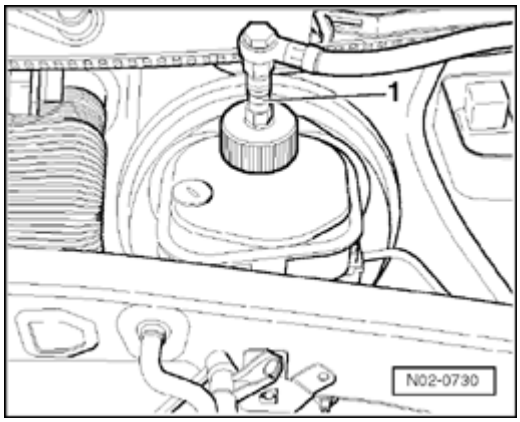
Warning!

Do not reuse, (used) extracted brake fluid.

- Install brake pedal depressor V.A.G 1869/2 between drivers seat and brake pedal and apply tension.



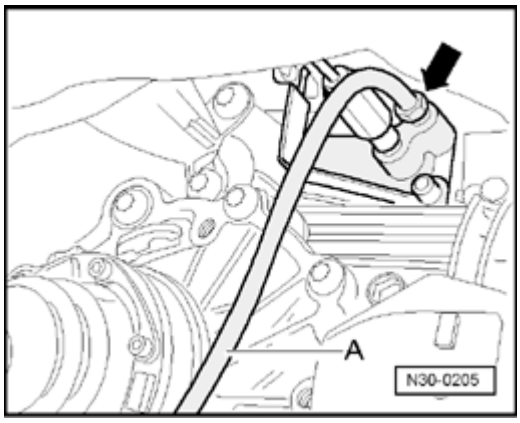
- Screw adapter **- 1 -** onto brake fluid reservoir.



- Connect filler hose **- 1 -** of brake charger/bleeder unit VAS 5234 to the adapter.

Vehicles with manual transmission:

- Pull cover cap off clutch slave cylinder bleed screw.

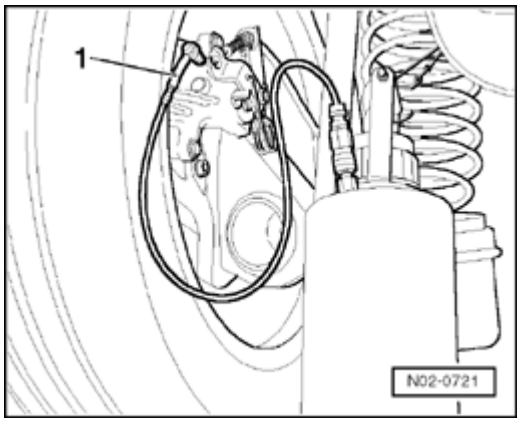


- Connect bleeder hose **- A -** of collector bottle on bleeder screw of the clutch slave cylinder **- arrow -** , open the bleeder screw, and allow approx. 0.1 liters to flow out. Close bleeder screw and install cover cap.

- Operate clutch pedal several times.

Continued for all vehicles:

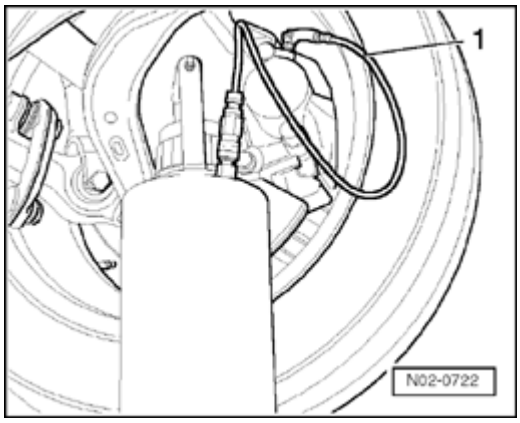
- Pull cover caps off bleeder screws of brake calipers.



- Connect bleeder hose **- 1 -** of collector bottle to a rear bleeder screw) , open bleeder screw and allow the corresponding brake fluid quantity to flow out (see table below). Close bleeder screw.

) Bleed right rear first.

Repeat work sequence on other side of vehicle at rear.



- Connect bleeder hose **- 1 -** of collector bottle to a front bleeder screw) , open bleeder screw and allow the corresponding brake fluid quantity to flow out (see table below). Close bleeder screw.

) Bleed right front first.

Repeat work sequence on other side of vehicle at front.

Table - Sequence / quantity of brake fluid

Sequence: Brake caliper	Brake fluid quantity which must flow out of brake calipers:	
	Vehicles ➢ 1999 (➢ X)	Vehicles 2000 (Y ➢)
Right rear	0.4 to 0.5 liter	0.2 liter
Left rear	0.4 to 0.5 liter	0.2 liter
Right front	0.4 to 0.5 liter	0.2 liter
Left front	0.4 to 0.5 liter	0.2 liter
Total amount 1)	2 liter	1 liter

1) Including brake fluid extracted from brake fluid reservoir and quantity from clutch slave cylinder.

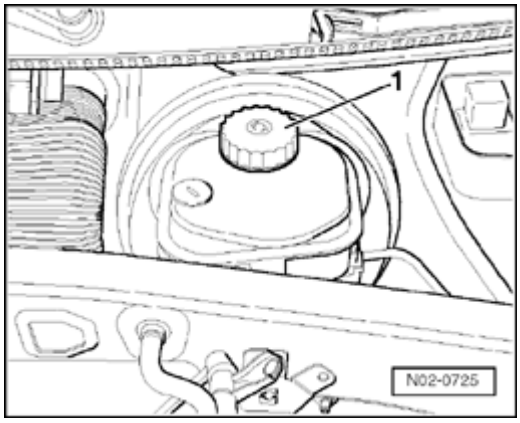
- Fit cover caps to brake caliper bleed screws.

- Move filler lever on brake charger/bleeder unit VAS 5234 to position **- B -** (see operating instructions).

- Take filler hose off adapter.

- Unscrew adapter from brake fluid reservoir.

- Check brake fluid level and correct if necessary.



- Screw in cap **- 1 -** of brake fluid reservoir.

- Remove brake pedal depressor.

- Check pedal pressure and brake pedal free play. Free play: Max. $^{1}/_{3}$ of pedal travel

Brake fluid level, checking

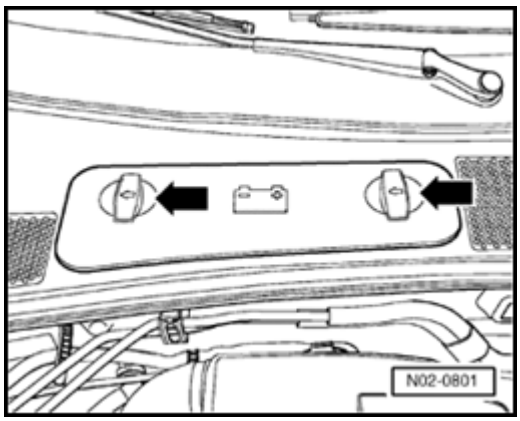
Notes on application and safety ⇒ 01-4, Notes on application and safety precaution .

Brake fluid specification ⇒ 01-4, Specification of brake fluid .

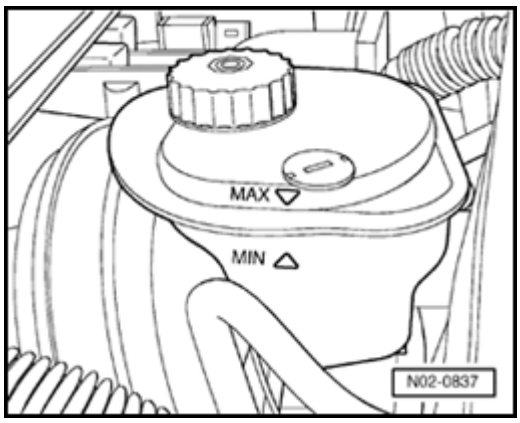
Work procedure, brake fluid level (depending on brake pad wear): Checking ⇒ 01-4, Work procedure, brake fluid level (depending on brake pad wear), check .

Work procedure, brake fluid level (depending on brake pad wear), check

Brake fluid level at delivery inspection:



- On vehicles 10.00 ➢ , push battery cover toward left **- arrows -** and remove cover upward.



The brake fluid level on the reservoir can be checked through a hole in the battery cover, using a flashlight. For delivery inspection, the fluid level must be at the max.-marking.

Note:

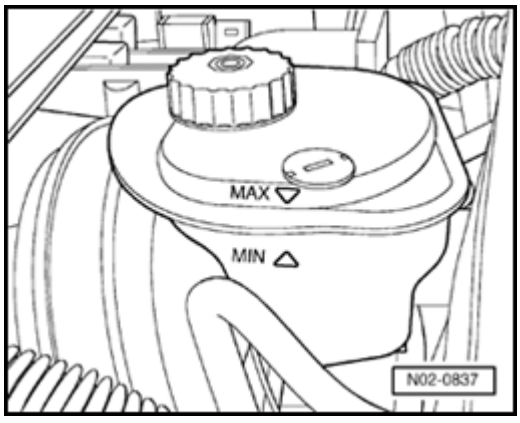
- *To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark.*

Brake fluid level at Inspection Service:

The fluid level must always be judged in conjunction with brake pad wear.

When vehicle is in use, the fluid level tends to drop slightly due to brake pad wear and automatic adjustment.

- Recommended brake fluid level when brake pad wear limit has almost been reached:



"At MIN-marking and slightly above it" , "NO TOPPING OFF REQUIRED" .

- Recommended brake fluid level when brake pads are new or are far removed from the brake pad wear limit:

"Between MIN- and MAX-Marking" .

Warning!

If fluid level is below MIN. marking, brake system must be checked before brake fluid is added.

Checking tires, tire condition, wear pattern, inflation pressure and tread depth

Checking condition of tires ⇒ 01-4, Tire condition, checking .

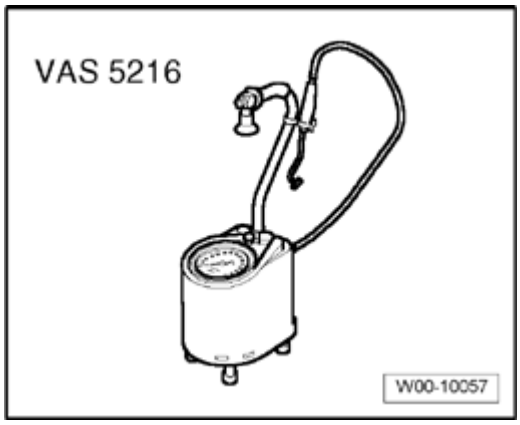
Checking tread wear ⇒ 01-4, Checking tire wear pattern .

Depth of tire tread (including spare wheel): Checking ⇒ 01-4, Depth of tire tread: Checking and noting .

General notes ⇒ 01-4, General notes .

Tire pressure: Checking, correcting inflation pressures if necessary ⇒ 01-4, Tire pressure: Checking, correcting inflation pressures if necessary .

Special tools, testers and auxiliary items required



- Tire filling unit VAS 5216

Tire condition, checking

Warning!

If damage is discovered, the tire must be examined to determine whether a new one must be installed.

Tests during delivery inspection:

- Check tires (tread and side walls) for damage and remove foreign material for example nails and glass splinters if necessary.

Tests during inspection service

- Check tires (tread and side walls) for damage and remove foreign material for example nails and glass splinters if necessary.

- Check tires for scuffing, one sided wear, porous side walls, cuts and fractures.

Checking tire wear pattern

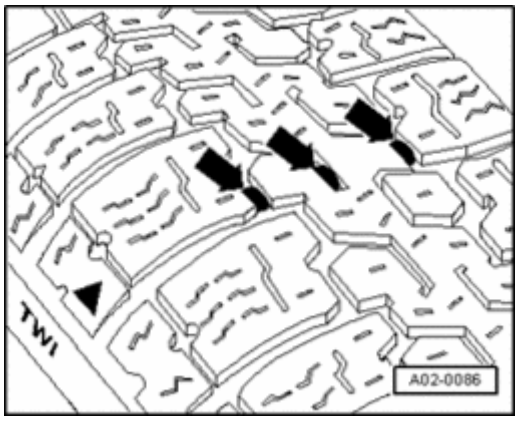
The tread wear on the front tires will help determine whether toe or camber need to be checked.

- Feathered edges of the treads may indicate faulty toe adjustment.

- One-sided tread wear is mainly attributed to incorrect camber.

When wear of this nature is noticed determine cause by performing alignment checks (repair measure).

Depth of tire tread: Checking and noting



- Check tire tread depth

Minimum depth: 1.6 mm

Note:

- *This value may vary for individual countries due to different legislative regulations.*

- *The minimum tread depth is reached when the tires have worn down level with the 1.6 mm high tread wear indicators* ***- arrows -*** *positioned at intervals around the tire.*

- *If the tread depth is approaching the legal minimum permissible depth, the customer must be informed.*

General notes

Warning!

- ***For reasons of safety only tires of same type and tread pattern should be fitted on a vehicle!***

- ***On All Wheel Drive vehicle tires of the same type and tread pattern must be used. Otherwise the center differential may be damaged.***

Note:

- *"Check tire inflation pressure" applies also to the spare wheel in case the vehicle is equipped with a regular spare tire or mini-spare tire.*

- *Tire inflation pressure table applies to normal tires, for all tire sizes installed at factory.*

- *Observe that the inflation pressure specifications refer to the air pressure of cold tires. Do not reduce increased pressures on warm tires.*

- *Tires pressures for the relevant model are on a sticker attached to the inside of fuel tank flap.*

- *Adapt tire pressure corresponding to load.*

- *The spare wheel receives the highest tire pressure designated for the vehicle.*

- *Utility vehicles are predominantly driven with the tire pressure specified for full load.*

- *The specified tire inflation pressures include a trailer up to a speed of 80 mph (130 km/h).*

Winter tires

Note:

- *Important information on the recommended winter tires can be found in ⇒ ElsaWin ; Technical Information; Wheels/tires guidebook.*

- *For winter tires, tire inflation pressure must be increased approx. 0.2 bar.*

Meaning of speed indexes in the table:

- Q - up to 100 mph (160 km/h)
- T: up to 118 mph (190 km/h)
- H: up to 130 mph (210 km/h)
- W: up to 167 mph (270 km/h)
- Y: up to 186 mph (300 km/h)

Tire pressure: Checking, correcting inflation pressures if necessary

Tire pressure values (for all tire sizes installed by the factory):

Tire pressure value table for summer tires or all-season tires

Sedan with gasoline engine ⇒ Topic 01-4 .

Sedan with diesel engine ⇒ Topic 01-4 .

Sedan with gasoline engine and All Wheel Drive (AWD) ⇒ Topic 01-4 .

Sedan with diesel engine and all-wheel drive ⇒ Topic 01-4 .

Wagon with gasoline engine ⇒ Topic 01-4 .

Wagon with diesel engine ⇒ Topic 01-4 .

Wagon with gasoline engine and all-wheel drive ⇒ Topic 01-4 .

Wagon with diesel engine and all-wheel drive ⇒ Topic 01-4 .

Sedan with gasoline engine:

Displacement / output				
		1.8l / 110 KW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.3	2.1	2.5	3.1
205/60 R 15	2.3	2.1	2.5	3.1
205/55 R 16	2.3	2.1	2.5	3.1

Displacement / output				
		1.8l / 110 KW , 10.00 ➢		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.4	2.2	2.6	3.2
205/60 R 15	2.4	2.2	2.6	3.2
205/55 R 16	2.4	2.2	2.6	3.2
225/45 R 17	2.4	2.2	2.6	3.2

Displacement / output				
		2.8l / 142 kW, ➢ 09.00		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.6	2.4	2.7	3.1
205/60 R 15	2.6	2.4	2.7	3.1
205/55 R 16	2.6	2.4	2.7	3.1

Displacement / output				
		2.8l / 142 kW, 10.00 ➢		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
205/55 R 16	2.6	2.4	2.9	3.4
225/45 R 17	2.6	2.4	2.9	3.4

Sedan with diesel engine:

Displacement / output				
		2.0 L / 100kW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.3	2.1	2.5	3.1

205/60 R 15	2.3	2.1	2.5	3.1
205/55 R 16	2.3	2.1	2.5	3.1
225/45 R 17	2.3	2.1	2.5	3.1

Sedan with gasoline engine and all-wheel drive:

Displacement / output				
		2.8l / 142 kW, ➢ 09.00		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.5	2.3	2.7	3.1
205/60 R 15	2.5	2.3	2.7	3.1
205/55 R 16	2.5	2.3	2.7	3.1
Displacement / output				
		2.8l / 142 kW, 10.00 ➢		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
205/55 R 16	2.6	2.4	2.8	3.2
225/45 R 17	2.6	2.4	2.8	3.2

Displacement / output				
		4.0l / 206kW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
215/55 R 16	2.8	2.6	3.0	3.4
225/45 R 17	2.8	2.6	3.0	3.4

Sedan with diesel engine and all-wheel drive:

Displacement / output				
		2.0 L / 100 kW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.2	2.0	2.4	3.0
205/60 R 15	2.2	2.0	2.4	3.0
205/55 R 16	2.2	2.0	2.4	3.0
225/45 R 17	2.2	2.0	2.4	3.0

Wagon with gasoline engine:

	Displacement / output			
		1.8 L / 110 kW, ➢ 09.00		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.3	2.1	2.5	3.1
205/60 R 15	2.3	2.1	2.5	3.1
205/55 R 16	2.3	2.1	2.5	3.1
	Displacement / output			
		1.8 L / 110 kW, 10.00 ➢		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.4	2.2	2.6	3.2
205/60 R 15	2.4	2.2	2.6	3.2
205/55 R 16	2.4	2.2	2.6	3.2
225/45 R 17	2.4	2.2	2.6	3.2
	Displacement / output			
		2.8l / 142 kW, ➢ 09.00		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.6	2.4	2.7	3,1
205/60 R 15	2.6	2.4	2.7	3,1
205/55 R 16	2.6	2.4	27	3,1
	Displacement / output			
		2.8l / 142 kW, 10.00 ➢		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
205/55 R 16	2,6	2,4	2,9	3,4
225/45 R 17	2,6	2,4	2,9	3,4

Wagon with diesel engine:

	Displacement / output			
		2.0 L / 100 kW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2,3	2,1	2,5	3.1

205/60 R 15	2,3	2,1	2,5	3.1
205/55 R 16	2,3	2,1	2,5	3.1
225/45 R 17	2,3	2,1	2.,5	3.1

Wagon with gasoline engine and all-wheel drive:

Displacement / output				
		1.8 L / 92 kW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.0	2.0	2.2	3.0
205/60 R 15	2.0	2.0	2.2	3.0
205/55 R 16	2.0	2.0	2.2	3.0

Displacement / output				
		2.8l / 142 kW, 10.00 ➢		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
205/55 R 16	2.6	2.4	2.8	3.4
225/45 R 17	2.6	2.4	2.8	3.4

Displacement / output				
		2.8l / 142 kW, ➢ 09.00		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.5	2.3	2.7	3.3
205/60 R 15	2.5	2.3	2.7	3.3
205/55 R 16	2.5	2.3	2.7	3.3

Wagon with diesel engine and all-wheel drive:

Displacement / output				
		2.0 L / 100 kW		
Tire sizes	half load		full load	
	front (bar)	rear (bar)	front (bar)	rear (bar)
195/65 R 15	2.2	2.0	2.4	3.2
205/60 R 15	2.2	2.0	2.4	3.2
205/55 R 16	2.2	2.0	2.4	3.2
225/45 R 17	2.2	2.0	2.4	3.2

Spare wheel with standard tire

The spare wheel receives the highest tire pressure designated for the vehicle.

Brake system, visual check for leaks and damage

Check the following components for leaks and damage:

- Brake master cylinder
- Brake booster (on anti-lock braking system: Hydraulic unit)
- Brake pressure regulator and
- Brake calipers

- Check that brake hoses are not twisted.

- Turn steering to left stop and to right stop. During this operation no brake hose must touch any vehicle components.

- Check brake hoses are not porous or brittle.

- Check brake hoses and pipes for chafing.

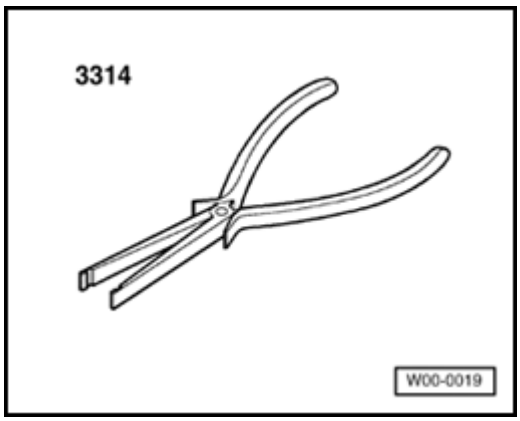
- Check brake connections and methods of securing for correct seating, leaks and corrosion.

Warning!

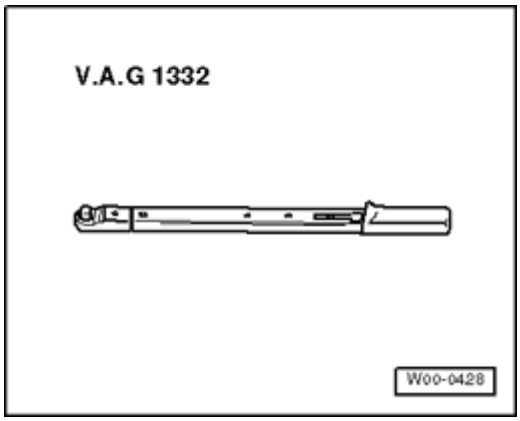
Malfunctions found must be repaired (repair measure).

Front and rear brake pads, checking thickness

Special tools, testers and auxiliary items required



- Pliers 3314



- Torque wrench V.A.G 1332

- Electric flashlight and mirror

Perform the following work procedure:

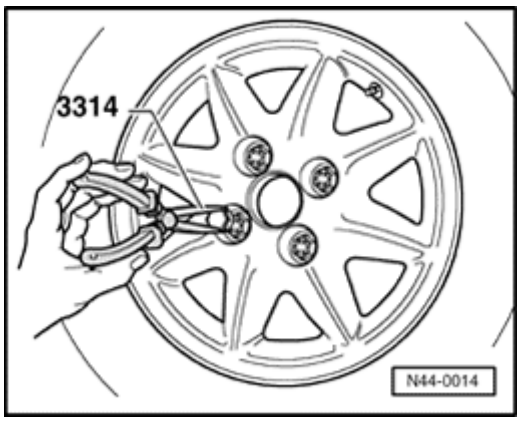
Remove full wheel cover

The removal hook for removing the wheel cover is located in the vehicles tool kit.

Wheel bolts

The adapter to loosen/tighten the anti-theft wheel bolts is located with the vehicle tool kit.

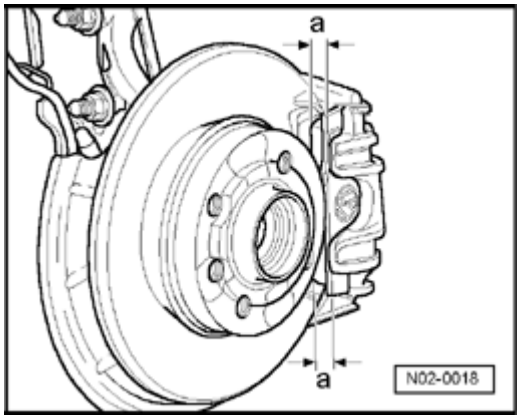
Front disc brake pads:



- If necessary, remove wheel bolt caps using pliers 3314 or remove wheel trim.

- Mark position of wheel in relation to brake disc.

- Unbolt wheel securing bolts and remove wheel.



- Measure inner and outer pad thickness.

a - Pad thickness, not including backing plate

Wear limit: 2 mm

With pad thickness (not including backing plate) of 2 mm, the brake pads have reached their wear limit and must be replaced (repair procedure). Inform customer!

Note:

- *When replacing brake pads, it is absolutely necessary to check brake discs for wear! Checking and if necessary replacing brake discs is a repair measure.*

- Check brake disc for wear

⇒ *Repair Manual, Brake System, Repair Group 46,*

- Install wheel to marked position.

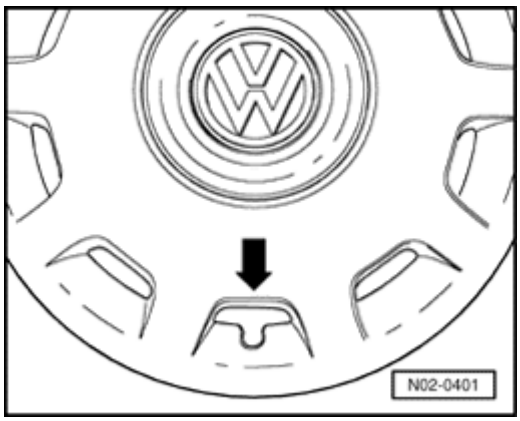
- Tighten wheel securing bolts, using diagonal sequence to following tightening torque:

Tightening torque: 120 Nm

- Place adapter with vehicle tool kit after completing work.

- Reinstall wheel bolt covers if necessary.

Full wheel cover, installing

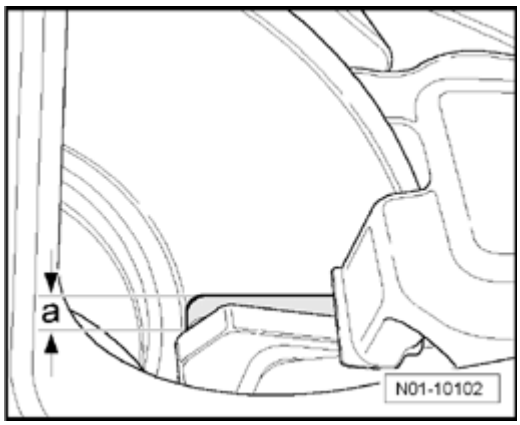


- Install wheel cover by guiding the tire inflating valve through the designated recess **- arrow -** .

Rear disc brake pads:

- If necessary, remove wheel covers.

- Illuminate area behind hole in wheel using an electric flashlight.



- Determine thickness of outer pad by checking visually.

- Illuminate inner pad using an electric flashlight and mirror.

- Determine thickness of inner pad by checking visually.

a - Pad thickness inner and outer, not including backing plate

Wear limit: 2 mm

With pad thickness (not including backing plate) of 2 mm, the brake pads have reached their wear limit and must be replaced (repair procedure). Inform customer!

Note:

- *When replacing brake pads, it is absolutely necessary to check brake discs for wear! Checking*

and if necessary replacing brake discs is a repair measure.

- Check brake disc for wear

⇒ *Repair Manual, Brake System, Repair Group 46,*

- If necessary, install wheel trim.

Electric windows, perform initialization (activation)

Note:

- *After disconnecting and connecting the vehicle battery the automatic opening and closing features for the electric windows do not function. Therefore, the electric window regulators must be initialized from now on before the new vehicle is delivered. Thereafter, the vehicle battery should not be disconnected again.*

Warning!

After disconnecting and connecting the battery the excess force limitation function of the electric windows does not function. This can cause serious injuries if e.g. fingers are caught in the window!

Perform the following work procedure to initialize the electric window regulators:

- Close all doors and windows completely.

- Lock the vehicle doors from the outside, either at the driver or passenger front door..

- Unlock vehicle.

- Lock vehicle anew from outside using drivers or front passengers door. Hold key a minimum of 1 second in locking position when doing this.

Perform vehicle system test

- Connect the diagnostic unit, ⇒ 01-3, Diagnostic testing unit, connecting .

- Switch ignition on.

- Select operating mode "Guided Fault Finding" on the display.

- Then perform vehicle identification on tester.

Program now performs a vehicle system test automatically and checks for all possible control modules for this vehicle type.

- Press Continue > button.

Now all DTCs will be listed.

Note:

- *At this point it makes sense to switch into operating mode Guided Functions in order to perform further work using VAS 5051 and to prevent a second vehicle identification on the tester.*
- *To do so, press operating mode button and then Guided Functions.*
- *Refer to the corresponding work descriptions for the continued sequence.*
- *In order to return to Guided Fault Finding, press the operating mode button and then Guided Fault Finding.*

Caution!

In any case, the vehicle must be returned to the customer with DTC memory erased.

Static malfunction

If one or more static malfunctions are stored in data memory, it is recommended to arrange with the customer to repair this malfunction via Guided Fault Finding.

Sporadic malfunctions

In the event only sporadic malfunctions or notes are stored in DTC memory and the customer has made registered no complaint in conjunction with an electronic vehicle system, erase DTC memory.

- Press the Continue > button again to enter the test plan.

- Now end Guided Fault Finding via Go to button and then End.

All DTC memories will be checked now once more.

The window that now appears confirms that all sporadic faults were cleared.

Then the diagnostic protocol is sent "online" or stored on the tester.

Note:

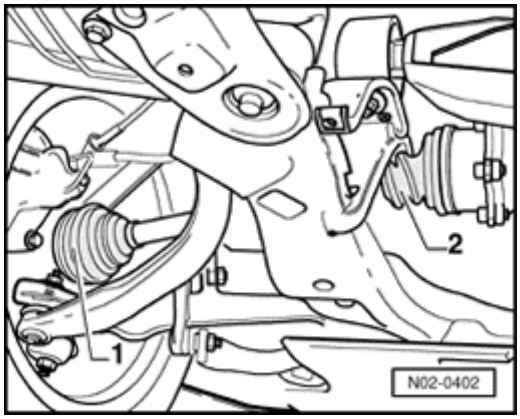
- *If tester is not connected to the network, diagnostic protocol is stored and the transmission follows as soon as tester is connected to the network.*

- *Protocols that have been stored and are older than four days are erased automatically.*

Vehicle system test is completed.

CV joint boots, visual inspection

Perform the following work procedure:



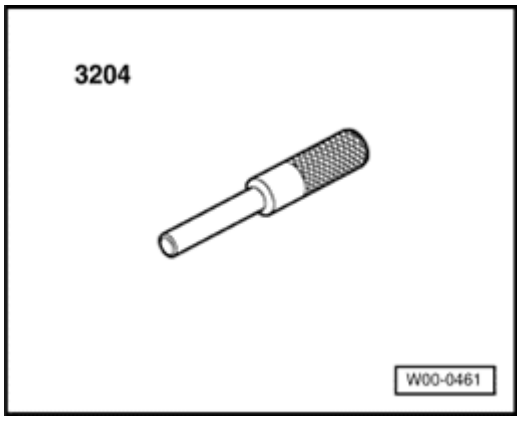
- Visually inspect outside CV joint boots **- 1 -** and inside CV joint boots **- 2 -** for leaks and damage.

Note:

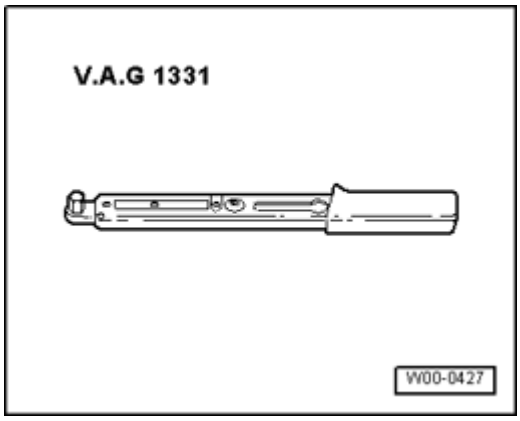
- *For vehicles with All Wheel Drive (AWD), also check joint bellows at rear axle.*

Ribbed belts, replacing (4 cyl. gasoline engines)

Special tools, testers and auxiliary items required



- Drift 3204



- Torque wrench V.A.G 1331

- Drift ∅ 5 mm

Perform the following work procedure:

Removing:

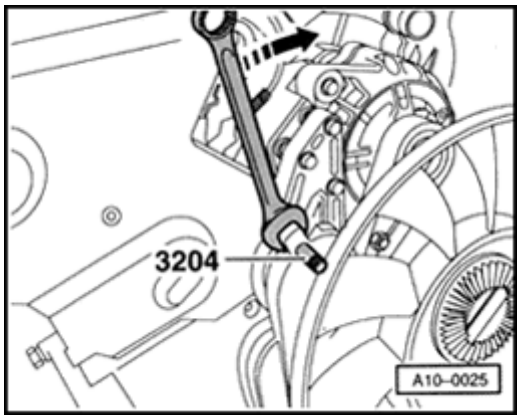
- Set the lock carrier to service position:

⇒ *Repair Manual, Body Exterior, Repair Group 50,*

- Mark rotational direction of ribbed belt if to be reused.

Caution!

When installing, pay attention to correct rotational direction. If installed against the running direction, the belt will be damaged.

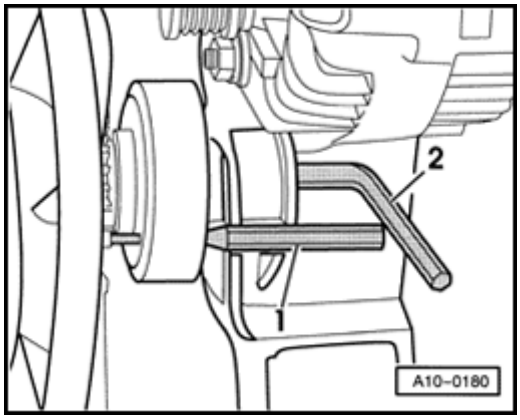


- Move tensioner in **- direction of arrow -** to release tension on ribbed belt.

- Lock tensioning device using drift 3204 .

- Remove ribbed belt.

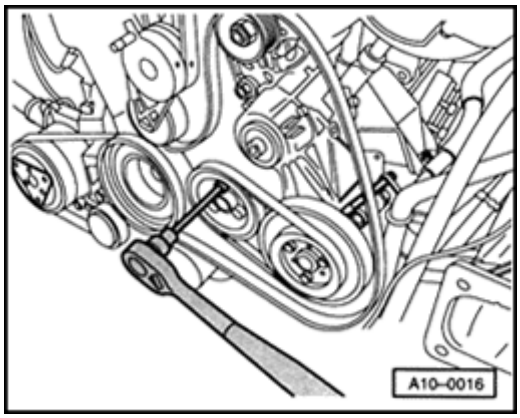
- Remove fan from viscous fan pulley.



- Lock belt pulley to viscous fan pulley using drift (∅ 5 mm) **- 1 -** .

- Remove bolt for viscous fan pulley (with 8 mm socket-head wrench **- 2 -**) and remove viscous fan pulley together with belt pulley.

- Mark installation position of 2-part belt pulley for coolant pump.



- Lock belt pulley of power steering pump with drift.

- Unbolt 2-part belt pulley for coolant and remove ribbed belt.

Installing:

- Attach 2-part belt pulley to coolant pump and install new belt between coolant pump and power steering pump.

- Tighten belt pulley evenly until belt has moved to outside of its running surface. If necessary turn power steering pulley or coolant pump pulley.

- Lock power steering pump with drift.

- Tighten belt pulley with 25 Nm to coolant pump.

Note:

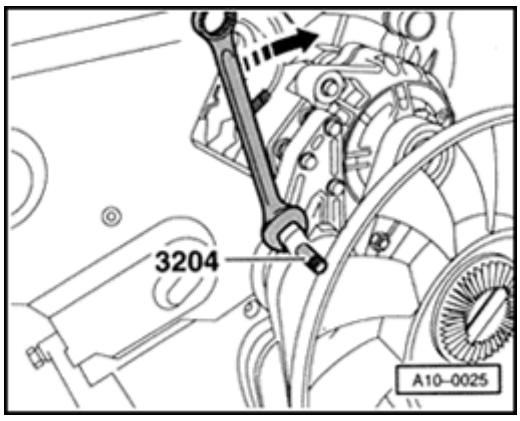
- *It is not necessary to adjust the ribbed belt tension via shims or similar.*

- Slide viscous fan in and install ribbed belt at viscous fan.

- Tighten belt pulley with 30 Nm to viscous fan pulley.

- Tighten viscous fan pulley to 45 Nm.

- Install ribbed belt.



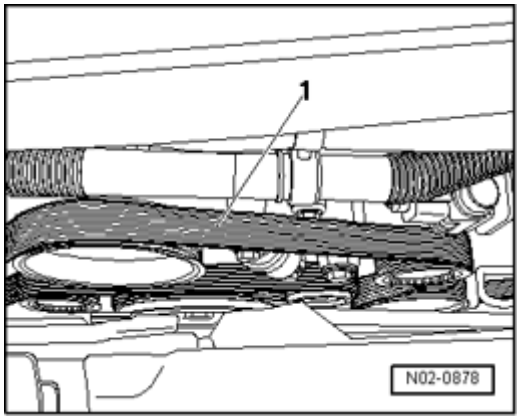
- Tension ribbed belt, remove drift 3204 to do so.

Note:

- *When installing ribbed belt be sure it fits properly in pulleys.*

- Start engine and check belt performance.

Ribbed belt, checking condition



- Crank engine at vibration damper/belt pulley.
- Check ribbed belt **- 1 -** for:
  - Sub-surface cracks (cracks, core ruptures, cross sectional breaks)
  - Layer separation (top layer, cord strands)
  - Base break-up
  - Fraying of cord strands
  - Flank wear (material wear, frayed flanks, flank

brittleness -glassy flanks-, surface cracks)

- Traces of oil and grease

Note:

- *Replace the belt if any damage is found. This will avoid possible break-downs or operating problems. The replacement of a ribbed belt is a repair measure.*

Fuel filter, replacing (diesel engine)

Note:

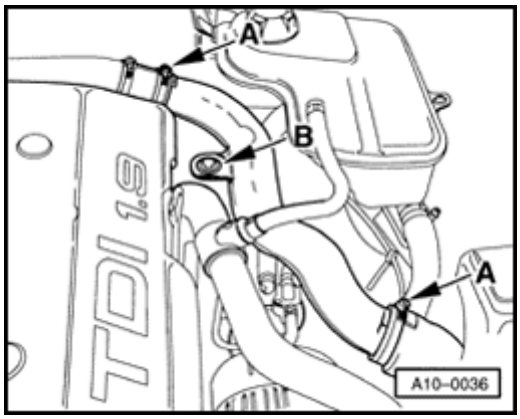
- *When installing, make sure water drain bolt of fuel filter does not make contact with oil filter bracket. The bolt could be loosened and get leaky.*

- *Install fuel filter so that water drain bolt is accessible.*

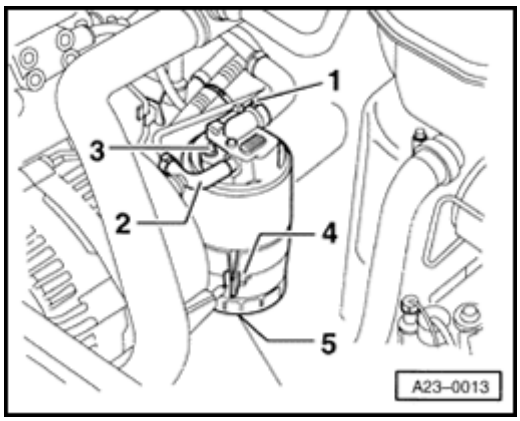
4-cyl. TDI engines

Remove engine cover ⇒ 01-4, Upper engine cover, removing and installing .

Removing:



- Remove pressure line from charge air cooler, loosen clamps **- A -** and bolt **- B -** to do so.



- Remove fuel line from hose connections **- 1 -** and **- 2 -** .

Note:

- *Make sure that no diesel fuel gets onto the coolant hoses. If necessary, clean hoses immediately!*
- *Observe waste disposal regulations!*

Warning!

Do not use a pliers at filter head for loosening.

- To apply a counter torque when loosening the filter from the filter head, attach a 17 mm open-end wrench at the water drain bolt **- 3 -** .

- Loosen clamp **- 4 -** at bracket and remove filter from bracket.

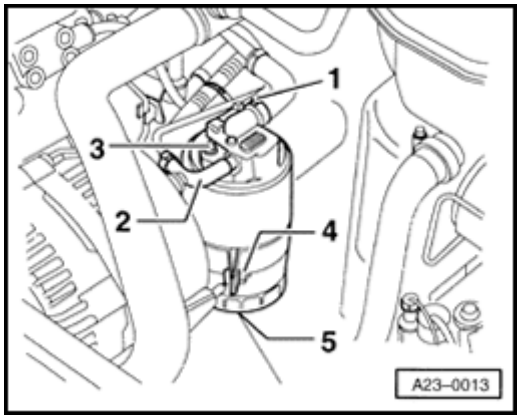
- Remove filter from upper part of fuel filter.

Install a new filter:

- Lightly lubricate new sealing and new rubber seal with diesel fuel.

- Fill new filter with diesel fuel. This way the engine can be started faster.

- Hand-tighten filter at upper part.

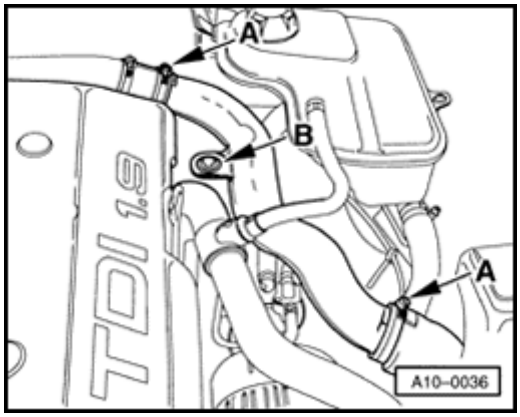


- Insert fuel filter into bracket and tighten using a clamp screw **- 4 -** .

Note:

- *Direction of flow is marked with arrows. Do not interchange connections!*

- Install the fuel lines to the hose connections **- 1 -** and **- 2 -** and secure hoses with hose clamps.



- Install pressure line and secure using clamps **- A -** and bolt **- B -** .

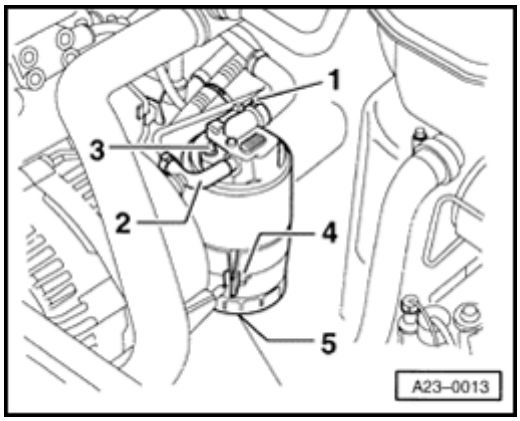
- Start the engine and perform a visual inspection of the fuel system for leaks.

- Depress accelerator pedal several times to bleed fuel system.

Fuel filter, draining (diesel engine)

4-cyl. TDI engines

Perform the following work procedure:



- Loosen ventilation screw **- 3 -** .

- Connect hose at connection of water drain bolt **- 5 -** , loosen bolt and drain approx. 0.1L of fluid.

Note:

- *Make sure that no diesel fuel gets onto the coolant hoses. If necessary, clean hoses immediately!*

- *Observe waste disposal regulations!*

- Tighten water drain bolt **- 5 -** and disconnect hose.

- Close ventilation screw **- 3 -** .

- Start the engine and perform a visual inspection of the fuel system for leaks.

- Depress accelerator pedal several times to bleed fuel system.

Cooling system, freeze protection and coolant level, checking

Note:

- *All engines are filled with freeze and corrosion protection additives G 12 Plus according to TL VW 774 F (purple color). Be sure to use only G 12 Plus.*

- *Purple G 12 Plus is compatible with the red G 12 coolant additive!*

Note:

- *G 12 Plus is suitable as a filled-for-life filling for cast iron and all-aluminum engines and gives optimum*

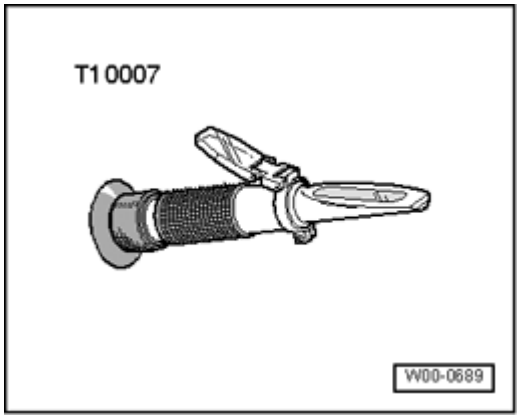
protection against freezing, corrosion damage, scaling and over-heating.

- *G 12 Plus increases the boiling point to 275 ° F (135 ° C) and ensures for a better heat dissipation.*

- *The coolant portion of the mixture must amount to at least 40% (freeze protection to -13 ° F [-25 ° C]) and should not exceed 60% (freeze protection to -40 ° F [-40 ° C]). Otherwise the freeze protection will be reduced and the cooling efficiency will be worsened.*

Checking freeze protection and adding coolant additive if necessary

Special tools, testers and auxiliary items required

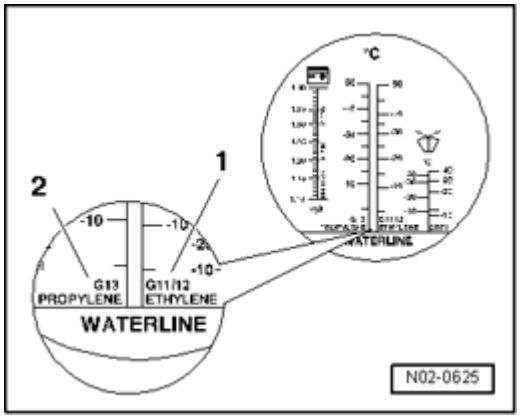


- Refractometer T10007

Note:

- *Read the bright/dark boundary to obtain an accurate reading for the following tests. Place a drop of water on the glass to improve the readability of the bright/dark boundary. The bright/dark boundary can be clearly recognized on the "WATERLINE" .*

- Check the concentration of the coolant additive using refractometer T10007 (operating instructions).



The scale **- 1 -** of the refractometer is designed for coolant additives G 12 according to TL VW 774 D, G 11 according to TL VW 774 C and G 12 Plus according to TL VW 774 F.

The scale **- 2 -** is designed for coolant additive G 13.

Note:

- *The coolant additive G 13 is currently used only in vehicles of type "L 80" .*
- *Freeze protection must be guaranteed to approx.-13 ° F (-25 ° C) (approx.-31 ° F (-35 ° C) in countries with an arctic climate).*
- *If climate conditions make greater freeze protection necessary, the amount of G 12 can be increased up to 60% (Freeze protection to approx. -40 ° F (-40 ° C). Adding more coolant reduces the freeze protection and reduces the cooling efficiency.*

- If freeze protection is insufficient, drain off required quantity shown in freeze protection table and add coolant additive G12 Plus which corresponds to TL VW 774 F.

Note:

- *Observe waste disposal regulations!*

Freeze protection table

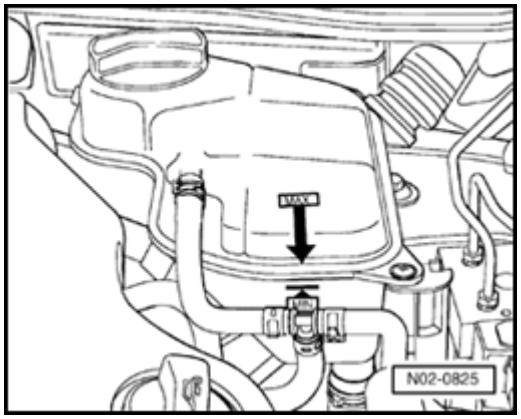
Freeze protection to ° C		Difference amount in liters		
Actual value	Specified value	4-cyl. engine	6-cyl. engine	8-cyl. engine
0	-25	3.5	5.0	5.0
	-35	4.0	6.0	6.0

-5	-25	3.0	4.5	4.5
	-35	3.5	5.5	5.5
-10	-25	2.0	3.5	3.5
	-35	3.0	4.5	4.5
-15	-25	1.5	2.5	2.5
	-35	2.0	3.5	3.5
-20	-25	1.0	1.5	1.5
	-35	1.5	2.5	2.5
-25	-35	1.0	1.5	1.5
-30	-35	0.5	1.0	1.0
-35	-40	0.5	0.5	0.5

- Check coolant additive concentration after test drive again.

Checking coolant level and adding coolant if necessary

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



- Delivery inspection: Coolant level at max. marking.
- Inspection service: Coolant level between min. and max. marking.

- If coolant is too low, add required amount according to mixture ratio.

Note:

- *Determine cause of fluid loss which cannot be attributed to normal use and rectify (repair measure).*

Mixture ratio:

Freeze protection to	Coolant additive G 12 Plus according to TL VW 774 F	Water
-25 ° C	approx. 40%	approx. 60 %
-35 ° C	approx. 50 %	approx. 50 %
-40 ° C	approx. 60 %	approx. 40%

Note:

- *Coolant additive G 12 Plus prevents freezing and corrosion damage, scaling and also raises boiling point of coolant. For these reasons, the cooling system must be filled with radiator freeze and corrosion protection fluid all year round.*

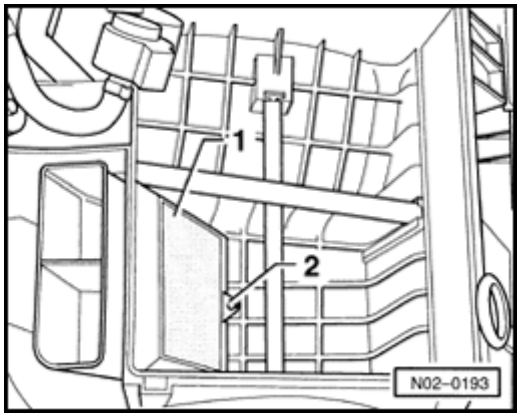
- *Especially in countries with tropical climates or when vehicle is driven under heavy load, the coolant improves the engine reliability by its increased boiling point.*

- *The coolant concentration must not be reduced by adding water, even during the warmer season. The coolant additive ratio must be at least 40%.*

Air cleaner, cleaning housing and replacing filter element

Air filter housing with snow strainer

Note:



- *Depending on equipment, a strainer **- 1 -** is installed in lower section of filter housing in area of air intake channel.*

This screen has the function of catching snow and ice in

winter months, thus preventing blockage of the air filter element.

When filter element is removed and strainer **- 1 -** gets visible, proceed as follows:

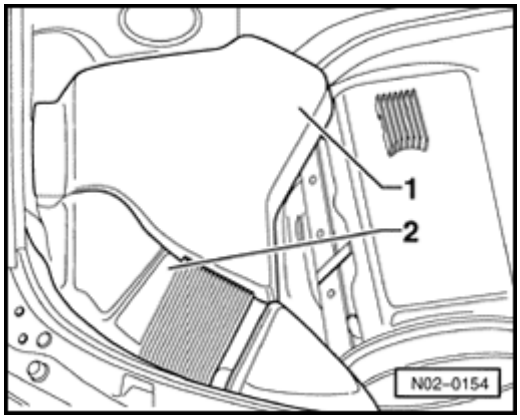
- Unscrew mounting bolt **- 2 -** .

- Remove strainer **- 1 -** upward from guide.

- Tap on screen and blow out with compressed air.

- Install screen, press downward and secure using mounting bolt.

Air cleaner: Cleaning housing and replacing filter element

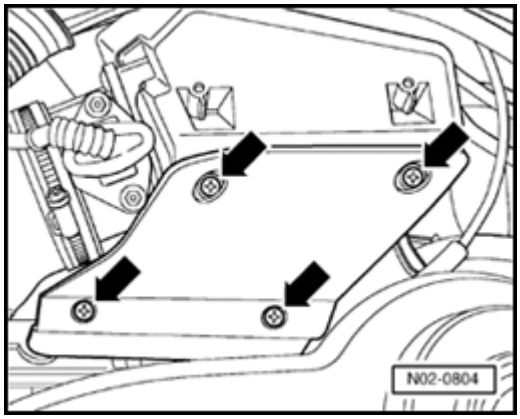


- If present, remove cover **- 1 -** upward.

Note:

- *On some vehicles, cover **- 1 -** is secured with bolts.*

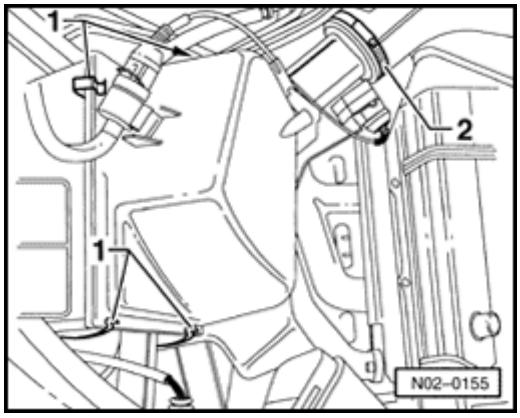
- Remove intake air hose **- 2 -** .



- Remove screws **- arrows -** and remove heat shield.

Note:

- *The heat shield is not installed on all vehicles.*



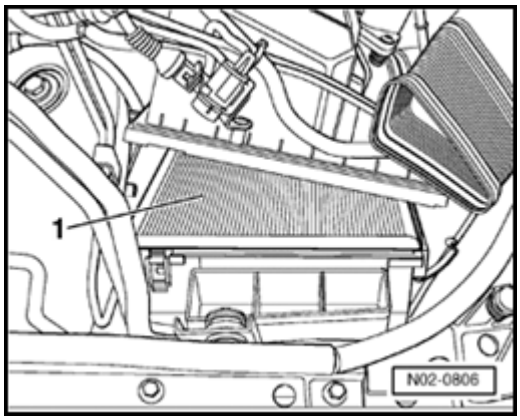
- Open fasteners **- 1 -** .

- Remove hose clamp **- 2 -** and remove air intake hose.

Note:

- *On some vehicles, the air intake tube does not need to be removed.*

- Lift upper filter housing and remove upward or lay aside.



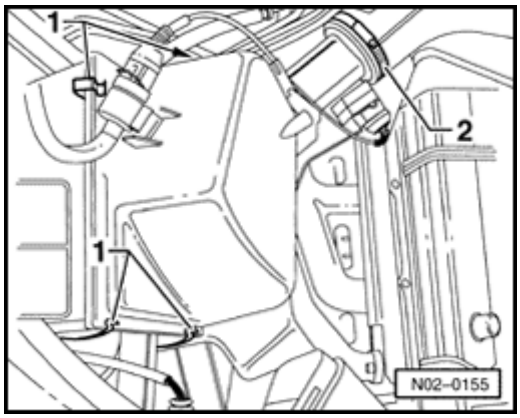
- Remove old filter element **- 1 -** .

- Check whether a snow screen is present ⇒ Topic 01-4 .

Note:

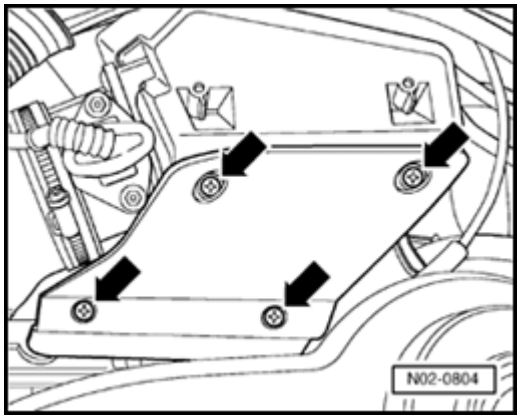
- *Observe waste disposal regulations!*

- Clean filter housing and install new air filter element.

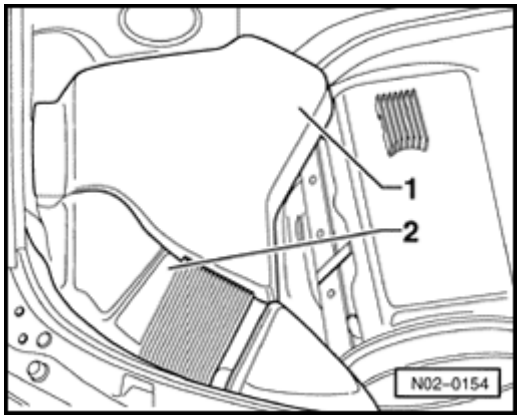


- Insert upper section of filter housing and secure using fasteners **- 1 -** .

- If necessary, connect air intake hose and secure using hose clamp **- 2 -** .



- If necessary, install heat shield, and fasten with screws **- arrows -** .



- Install air intake hose **- 2 -** .

- If necessary, install cover **- 1 -** and clip into guides or bolt on.

Engine oil level, check

Note the following:

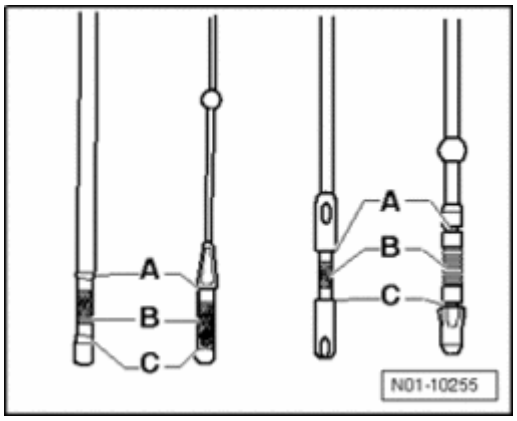
After stopping engine, wait at least 3 minutes to allow oil to flow back into oil pan.

- Pull out oil dipstick and wipe with clean rag. Replace dipstick and push down to stop.

Note:

- *Observe waste disposal regulations!*

- Pull out dipstick again and read oil level.



If the dipstick appears as illustrated:

- A -	Oil must not be topped off.
- B -	Oil can be topped off. This will cause the oil level to be in area **- A -** .
- C -	Oil must be topped off. It is sufficient when oil level is in area **- B -** (grooved field).

If oil level is above area **- A -** , the catalytic converter can be damaged.

- When oil level is below marking **- C -** , top off with oil to marking **- A -** . Oil specification ⇒ 01-2, Service tables .

Applying data sticker in service schedule, ⇒ 01-3, Sticker .

Engine oil, draining or extracting and filling; replacing oil filter

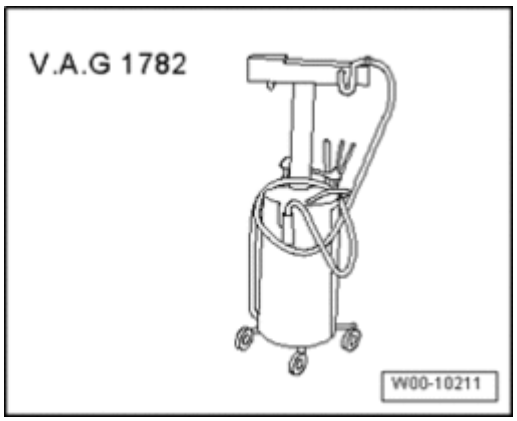
Engine oil: Draining or extracting and filling ⇒ 01-4, Engine oil, draining or extracting .

Oil filter, replacing ⇒ 01-4, Oil filter, replacing .

Engine oil, filling ⇒ 01-4, Filling engine oil .

Engine oil, draining or extracting

Special tools, testers and auxiliary items required



- Oil extractor V.A.G 1782

- Oil absorbent towel VAS 6204/1

Engine oil, draining or extracting

Perform the following work procedure:

Note:

- *In engines with standing oil filter module, oil filter should be changed before changing engine oil ⇒ 01-4, Engine oil, draining or extracting and filling; replacing oil filter . Removing the filter element will open a valve and oil in the filter housing will flow automatically into the crankshaft housing.*

- *If engine oil is drained and not extracted using old oil extraction unit, replace oil drain plug. This prevents leaks.*

- *Observe waste disposal regulations!*

- Extract engine oil using old oil collecting and extracting unit V.A.G 1782 .

or

- Remove oil drain plug

- Drain engine oil.

Note:

- *The oil drain plug is equipped with a permanent seal, therefore the oil drain plug must always be replaced.*

- *Observe waste disposal regulations!*

- Screw in new oil drain plug with sealing ring hand-tight.

- Fill up with engine oil, specification ⇒ 01-2, Service tables .

Engine oil capacity

⇒ *Repair Manual, Engine Mechanical, Repair Group 17,*

or ⇒ *Fluid Capacity Chart for appropriate Model and Year* .

Torque specifications for oil drain plug:

- 4-cyl. Engines: Sheet metal oil pan 50 Nm, aluminum oil pan 30 Nm
- 6-cyl. gasoline engines 30 Nm
- 8-cyl. gasoline engines 30 Nm

Warning!

- ***Torque settings must not be exceeded***
- ***A torque figure that is too high may lead to leaks or even damage the oil pan.***

Oil filter, replacing

Replacing oil filter, 4-cyl. Gasoline and TDI diesel engines, 6-cyl. gasoline engine ⇒ Topic 01-4 .

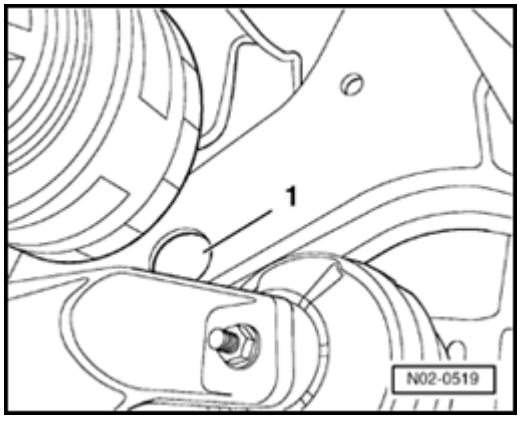
Replacing oil filter, 8-cyl. Gasoline engine ⇒ Topic 01-4 .

Note:

- *Avoid engine oil drips on components in engine compartment.*
- *Oil new O-rings before installation.*
- *Observe waste disposal regulations!*

4-cyl. Gasoline and diesel engines as well as 6-cyl. Gasoline engine

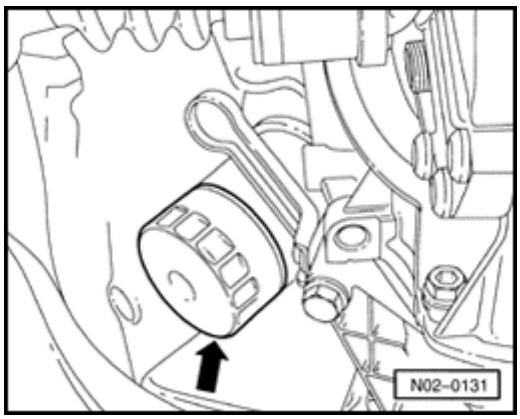
Perform the following work procedure:



- Cover subframe hole **- 1 -** using a cloth. This measure prevents used oil from dripping into the carrier.

Note:

- *Observe waste disposal regulations!*



- Loosen oil filter **- arrow -** with oil filter wrench or oil filter strap wrench and remove oil filter.

- Thoroughly wipe oil filter flange using a cloth. This prevents used oil from dripping onto the subframe.

Note:

- *Observe waste disposal regulations!*

- Clean engine sealing surface.

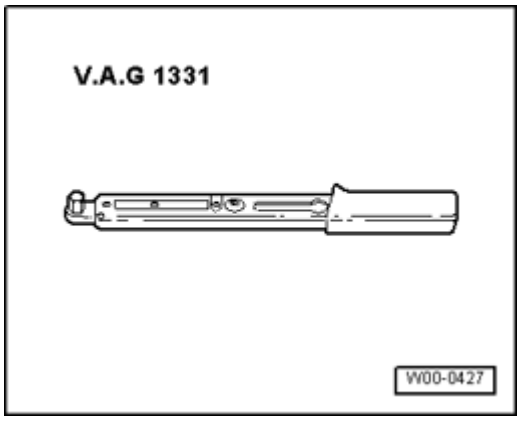
- Lightly coat oil filter seal with oil. The oil filter can adhere better when tightening, which allows for best possible

sealing.

- Screw on new filter and hand-tighten.

8-cylinder gasoline engine:

Special tools, testers and auxiliary items required

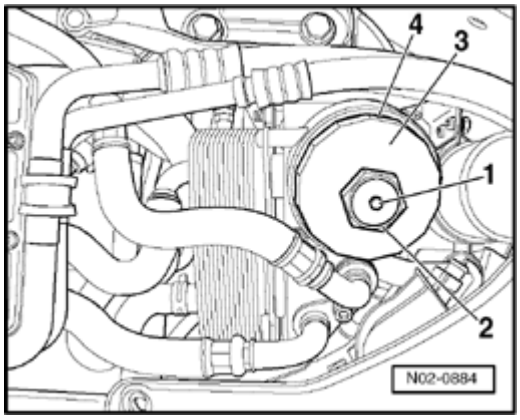


- Torque wrench (5 - 50 Nm) V.A.G 1331

Removing

Note:

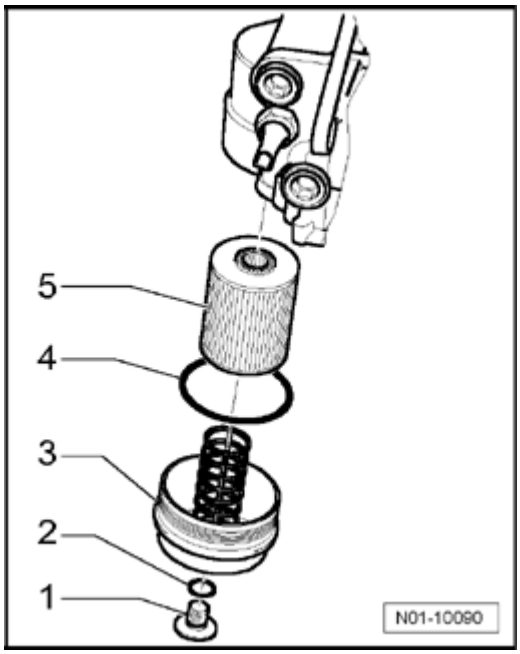
- *Observe waste disposal regulations!*
- *Oil new O-rings before installation.*
- *Avoid engine oil drips on components in engine compartment.*



- Unscrew oil drain plug **- 1 -** of screw cap and drain oil.

- Loosen screw cap **- 3 -** on hex head **- 2 -** or on circumference and remove.

- Clean sealing surfaces at cap and at oil filter housing.



Installing

- Install oil filter **- 5 -**

- Install cap **- 3 -** with new O-ring **- 4 -** and tighten to 25 Nm.

- Install new sealing ring **- 2 -** for oil drain plug **- 1 -** and tighten to 10 Nm.

Installation is reverse of removal.

Filling engine oil

Oil specifications ⇒ 01-2, Service tables .

Engine oil capacities

⇒ *Repair Manual, Engine Mechanical, Repair Group 17,*

or ⇒ *Fluid Capacity Chart for appropriate Model and Year* .

General notes

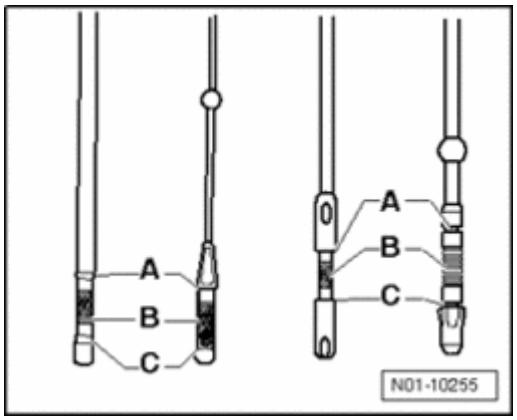
Note:

- *Observe waste disposal regulations!*

- After topping off with oil wait at least 3 minutes then check oil level.

- Pull out oil dipstick and wipe with clean rag. Replace dipstick and push down to stop.

- Pull out dipstick again and read oil level.



If the dipstick appears as illustrated:

A - Oil must not be topped off.

B - Oil can be topped off. After topping off, oil may be in range A .

C - Oil must be topped off. It is sufficient when oil level is in area B (grooved field).

If oil level is above area **- A -** , the catalytic converter can be damaged.

- At an oil level below marking **- C -** , fill up with oil up to marking **- A -** .

Engine and components in engine compartment (from above and below), visual check for leaks and damage

Perform visual check as follows:

- Check engine and components in engine compartment for leaks and damage.

- Check hoses, pipes and connections of

  - Fuel system
  - Cooling and heating system
  - and brake system

for leaks, abrasions, porosity and brittleness.

Note:

- *Ensure that all malfunctions detected are repaired within repair measures.*

- *If fluid losses are greater than can be reasonably expected, determine cause and repair (repair measure)*

Upper engine cover, removing and installing

4-cyl. TDI engines ⇒ Topic 01-4 .

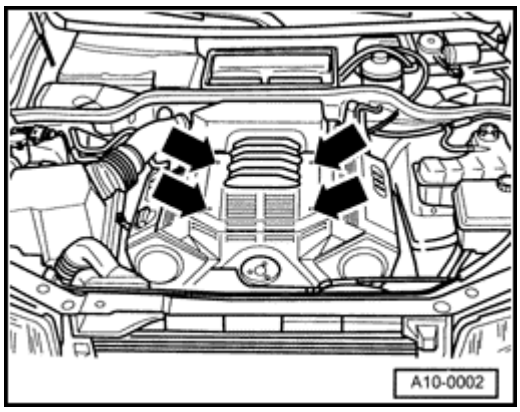
1.8 L engines, (without intermediate shaft) ⇒ Topic 01-4 .

1.8 L 5-valve engines ⇒ Topic 01-4 .

V6 gasoline engines ⇒ Topic 01-4 .

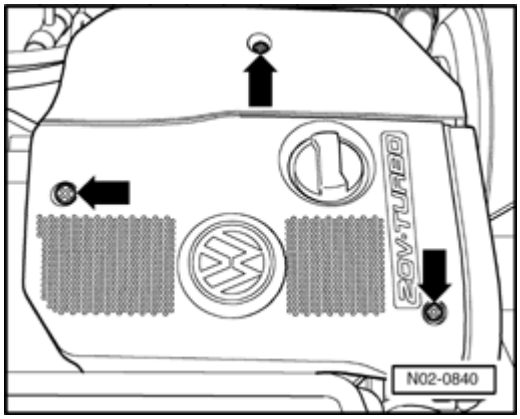
W8- engines ⇒ Topic 01-4 .

V6- gasoline engines



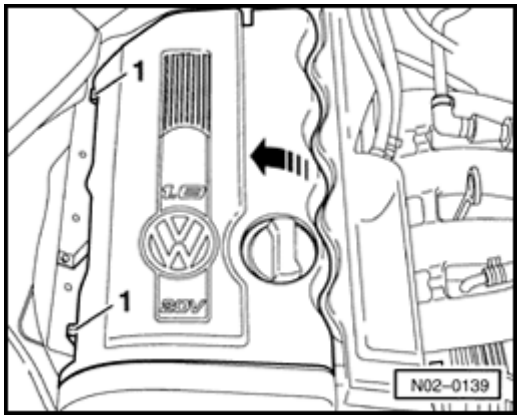
- Remove screws **- arrows -** and remove engine cover upward.

1.8L- engine (without intermediate shaft)



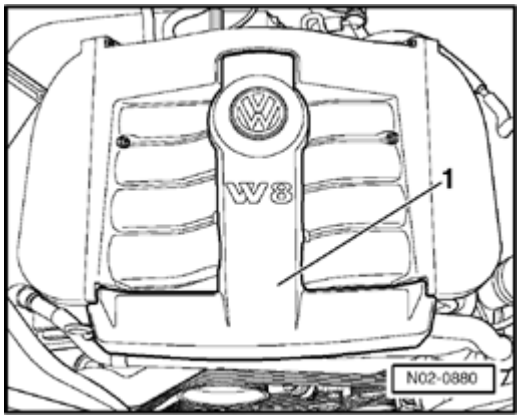
- Remove screws **- arrows -** and remove engine cover upward.

1.8 L 5-valve engines



- Loosen clamps **- 1 -** and remove engine cover upward.

W8 engines



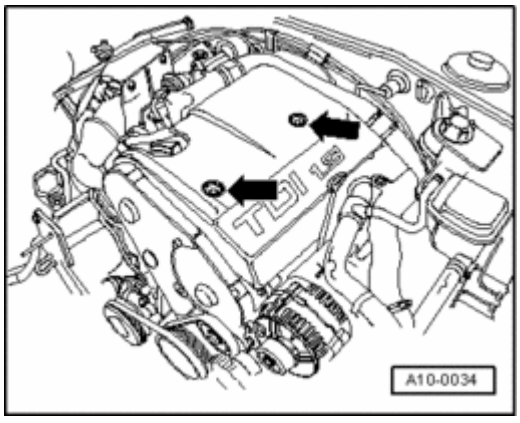
- Remove cover **- 1 -** upward.

4-cylinder TDI engines

Removing:

- Pull out oil dipstick from guide tube.

- Pry out covers **- arrows -** using a screwdriver.

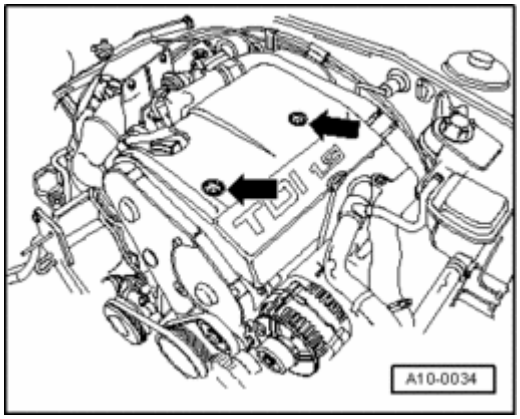


- Remove hex nuts located underneath and remove engine

cover.

- Remove noise insulation lying beneath.

Installing:

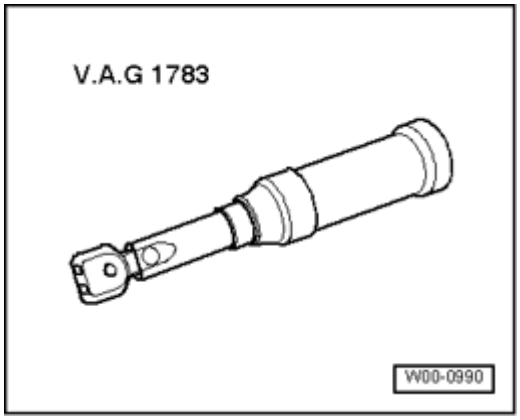


- Install the engine cover, fasten with hex nuts, and clip in the caps **- arrows -** .

- Reinsert oil dipstick into guide tube.

Lower engine cover (noise insulation), removing and installing

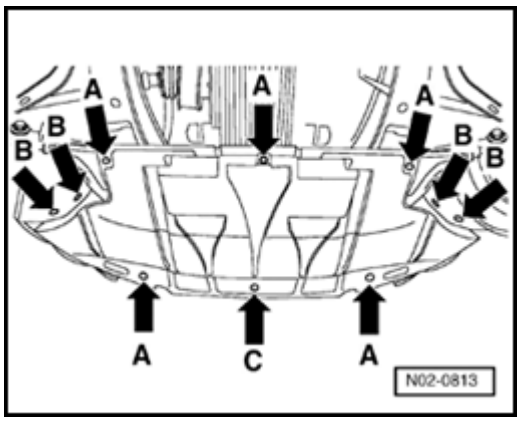
Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1783

Perform the following work procedure:

Removing

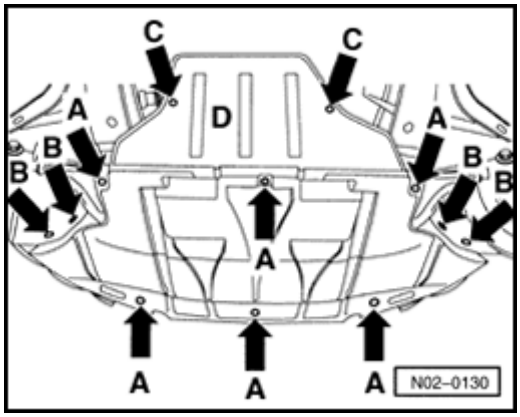


- Remove quick-release screws **- A -** .

- Pull off clamping pins **- B -** by slightly rotating them.

- Slightly rotate hex nut **- C -** or clamping pin **- C -** when removing.

Note:



- *On vehicles with noise insulation **- D -** , two quick-release screws **- C -** must also be removed.*

- Pull noise insulation from bumper cover toward rear and remove.

Installing

- Install front sound insulation by pushing forward over bumper cover.

- Attach clamping pins and tighten with a slight turning motion.

- Install all quick-release screws and tighten to 2 Nm.

Perform test drive

To what extent the following can be checked is dependent upon the vehicle equipment and local conditions

(urban/country).

The following should be checked by means of a road test:

- Engine: Output, misfiring, idling speed, acceleration

- Clutch: Pulling away, pedal pressure, odors

- Gear selection: Ease of operation, shift lever position

- Automatic transmission: Selector lever position, shift lock / ignition key interlock, shift behavior, display in instrument cluster

- Foot and parking brake: Function, free travel and effectiveness, pulling to one side, juddering, squeal

- ABS function: When braking with activated ABS, the brake pedal must pulse noticeably.

- Steering: Function, steering free play, steering wheel centralized when wheels are in straight ahead position

- Sunroof: Function

- Radio, Radio/Navigation system: Function, Reception, SCV, interference

- Multifunction indicator (MFI): Functions

- A/C system: Function

- Vehicle: Moving off line when traveling straight ahead (level road)

- Imbalance: Wheels, drive shafts, prop shafts

- Wheel bearings: Noises

- Engine: Hot starting behavior

Wheel bolts, tighten to correct torque setting

Removing and installing wheel bolt covers

Note:

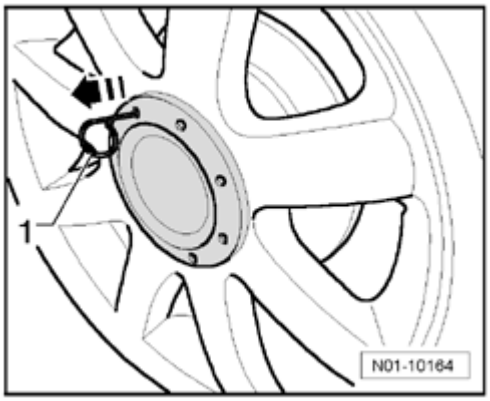
- *Depending on vehicle equipment, wheel bolts can be covered by the following components:*
  - Covers for wheel bolts
  - Wheel center cover

- Full wheel cover

- If present, remove respective wheel bolt cover

Note:

- *The pulling hook for removing the cover caps or wheel center cap can be found in the vehicle tool kit.*



Removing wheel center cover (example)

- Insert removal hook into one of the holes of the wheel center cap and pull in **- direction of arrow -** .

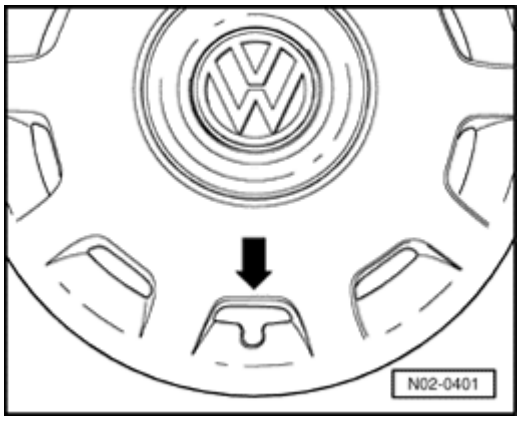
Installation notes

Note:

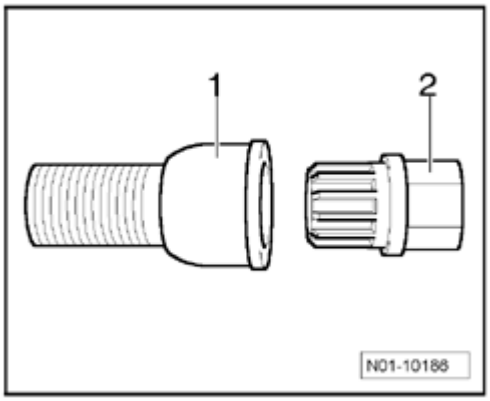
- *The covers protect the wheel bolts and should be reinstalled after retightening the wheel mounting bolts.*

- *Note that the center wheel cover tab must engage into rim recess for some rims.*

- *After completing work, place adapter and pulling hook with vehicle tool kit.*



- On vehicles with full wheel cover, install cover so that tire inflating valve is guided through the designated recess **- arrow -** .

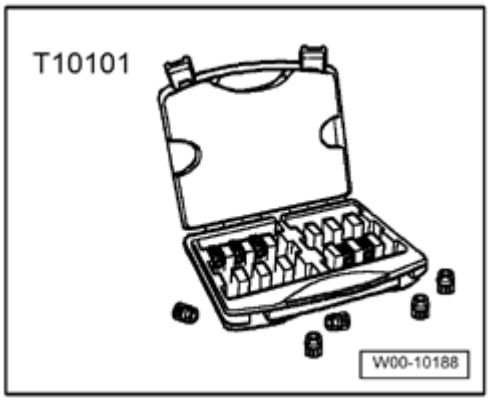


Loosen anti-theft wheel bolts and tighten

Note:

- *The adapter to loosen/tighten the anti-theft wheel bolts is located with the vehicle tool kit.*
- *If there is no adapter installed in the vehicle for loosening/tightening the anti-theft wheel bolts, use master wheel bolt key set T10101 .*
- *In case of losing the adapter, a replacement adapter can only be obtained via the code number.*
- *The adapters code number for loosening/tightening the anti-theft wheel bolts is stamped at the face of the adapter.*

Special tools, testers and auxiliary items required



- Master wheel bolt key set T10101

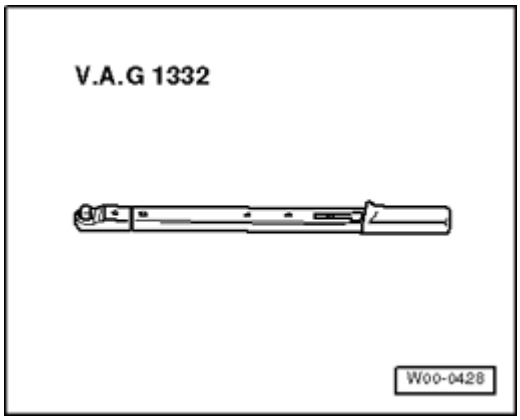
- Slide adapter into anti-theft wheel bolt until it stops.

- Slide wheel wrench onto adapter until it stops.

- Retighten wheel securing bolts to the correct tightening torque.

Retighten wheel securing bolts

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1332

Note:

- *Ensure wheel bolts are retightened alternately.*

Tightening torque: 120 Nm

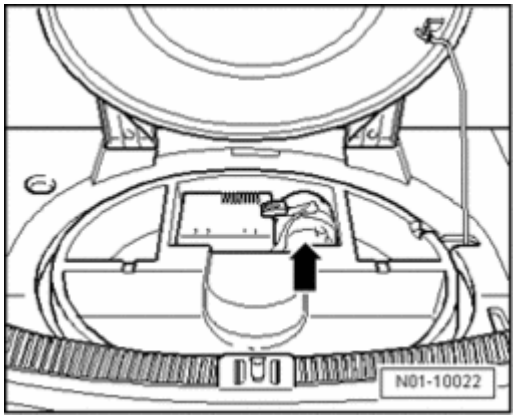
Radio, Radio/Navigation system, activating anti-theft coding

Radios and radio/navigation systems are delivered with a security code. Fixed code means that every unit with anti-

theft coding has been programmed with its own code. This code is not active from the factory.

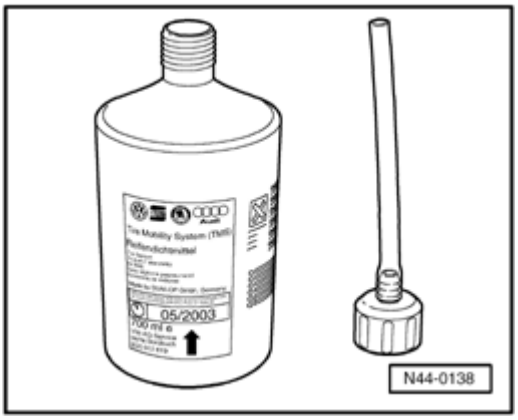
Refer to

⇒ *Repair Manual, Communication, Repair Group 91,*



Tire repair kit

The tire repair kit is located in the spare wheel well **- arrow -**



In addition to the compressor, the tire repair kit contains a tire inflation cylinder with sealant.

Note:

- *The tire sealant in the bottle has a limited shelf-life.*
- *Therefore, on the bottle, the expiration date* ***- arrow -*** *is displayed.*

In this example, the expiration date 05/2003 has passed, and the bottle must then be replaced.

- Check the expiration date and enter in maintenance tables.

- Replace tire sealant, if expiration date has been reached.

Caution!

- ***Tire sealant must not be older than 4 years.***

- ***If the bottle was opened, e.g. if a tire went flat, is must be replaced.***

Note:

- *Residual tire sealant or full bottles, which have expired, must be disposed of.*

- *Old tire sealant or remainder of it must not be mixed with other fluids and must be disposed of.*

Observe waste disposal regulations!

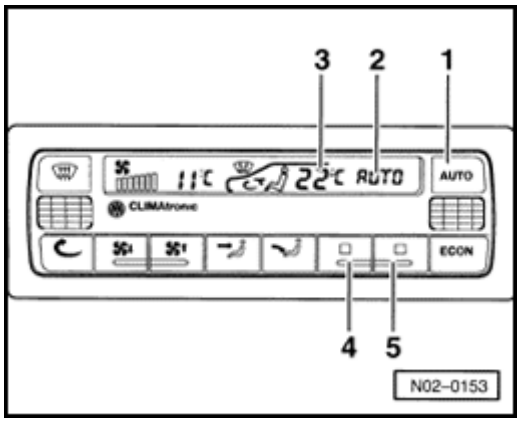
Climatronic, setting temperature to 72 ° F (22 ° C)

Note:

- *A comfortable vehicle climate can be achieved the fastest with a temperature setting of 72 ° F (22 ° C) .*

- *Therefore, this setting should only be adjusted when it is personally preferred.*

- Switch ignition on



- Check to see if 72 ° F (22 ° C) is set **- 3 -** in the

display.

If necessary, perform the temperature setting as follows:

- Press button **- 1 -** for automatic operation. The display **- 2 -** will indicate "AUTO" .

- Adjust temperature to 72 ° F (22 ° C) by pressing button **- 4 -** for "cooler" or button **- 5 -** for "warmer" .

Instrument panel cluster, adapting language

Note:

- *The language variations for driver information can only be adapted for midline and highline instrument panel clusters.*

- Connect the diagnostic unit, ⇒ 01-3, Diagnostic testing unit, connecting .

- To perform the work procedure, use the Vehicle Diagnosis, Testing and Information System VAS 5051 A in the "Guided Fault Finding" function.

Front manual transmission/final drive, fluid level, checking

⇒ *Repair Manual, Manual Transmission , Repair Group 34,*

Windshield wash/wipe system and headlight wash system, checking function

Check freeze protection content of windshield cleanser concentrate G 052 164 ⇒ 01-4, Checking windshield wash/wipe system freeze protection concentration, add fluid if necessary .

Windshield wipe-/wash system: Checking spray nozzle adjustment ⇒ 01-4, Windshield washer system, checking nozzle setting, adjusting nozzles if necessary .

Headlight wash system: Checking spray nozzle adjustment ⇒ 01-4, Headlight wash system, checking nozzle setting, adjusting nozzles if necessary .

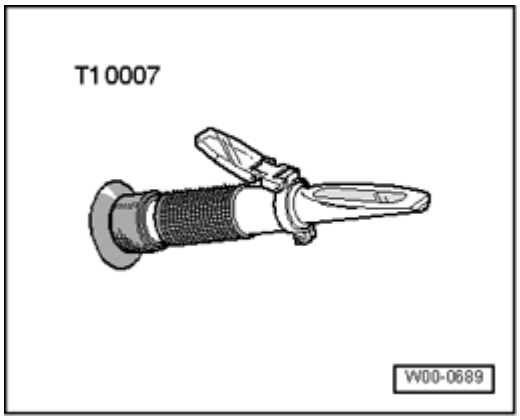
Note:

- *If during the function test it is determined that the*

wiper blades are "juddering" or making noises, check the pitch angle of the wiper blades ⇒ 01-4, Windshield wiper blades, rest position, checking if windshield wiper blades are juddering , pitch angle, checking .

Checking windshield wash/wipe system freeze protection concentration, add fluid if necessary

Special tools, testers and auxiliary items required

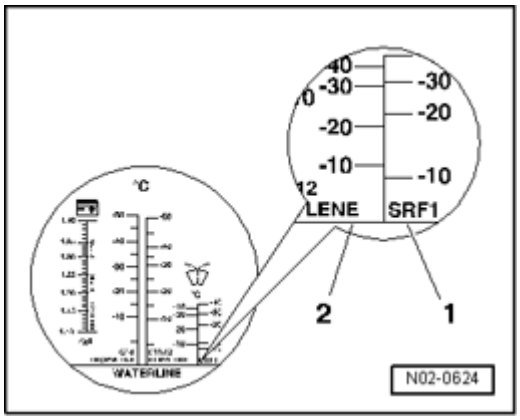


- Refractometer T10007

Note:

- *Read the bright/dark boundary to obtain an accurate reading for the following tests. Place a drop of water on the glass to improve the readability of the bright/dark boundary. The bright/dark boundary can be clearly recognized on the "WATERLINE" .*

- Check the concentration of the anti-freeze additive using refractometer T10007 (operating instructions).



The scale **- 1 -** of the refractometer is designed specifically for genuine Volkswagen Windshield Cleaner G 052 164 .

The scale **- 2 -** is designed for commercially available windshield cleaner as well as a mixture of commercially available windshield cleaner and windshield cleanser concentrate G 052 164 .

Filling-up with fluid:

The windshield wash/wipe system fluid reservoir must be filled up fully.

Use only windshield cleanser concentrate G 052 164 all-year-round when topping-off the windshield wash/wipe system.

Mixture ratio:

Freeze protection to	Windshield Clear G 052 164	Water
in summer	1 part	4 parts
-16 ° C	1 part	2 parts
-35 ° C	1 part	1 part
-40 ° C	2 parts	1 part

Note:

- *Windshield cleaner G 052 164 protects spray nozzles, fluid reservoir and hoses from freezing.*
- *All vehicles with fan type spray nozzles must always be filled with Windshield Cleaner G 052 164 as this fluid has a low viscosity at minus temperatures. The complicated spray jet system could otherwise become blocked due to crystallized washer fluid and adversely affect the fan pattern of the spray jet. Windshield cleanser concentrate G 052 164 assures that the fan type spray jets remain functional even at low temperatures.*
- *Fill also with Windshield Clear G 052 164 in the warmer season. The powerful cleanser removes wax and oil deposits from the windows.*
- *Freeze protection (anti-freeze) must be guaranteed to approx.-13 F (-25 ° C) (approx -31 ° F (-35 ° C) in countries with an arctic climate) in the washer system.*

Windshield washer system, checking nozzle setting, adjusting nozzles if necessary

Note:

- *In the event contamination in spray nozzle produces an uneven spray pattern, remove spray nozzle*

  ⇒ *Repair Manual, Electrical Equipment, Repair Group 92,*

  , and rinse it with water in the opposite direction of spray.

- *Subsequently blowing through in the opposite direction of the spray flow with compressed air is permitted.*

Caution!

- ***Do not use solid objects to clean the spray nozzles!***

- ***Do not use a needle or similar under any circumstance to adjust spray nozzles, otherwise the water hoses in the spray nozzles may be damaged!***

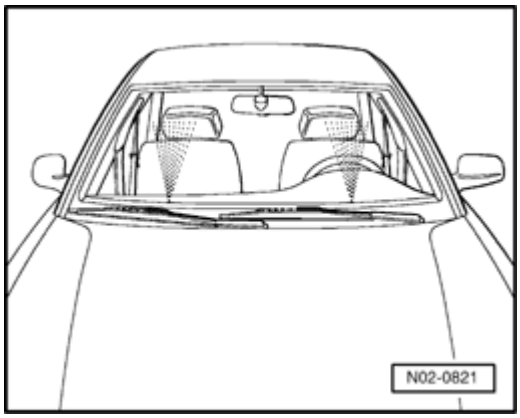
Spray nozzles for windshield washer system without presetting ⇒ Topic 01-4 .

Pre-adjusted spray jets for front windshield washer system ⇒ Topic 01-4 .

Rear window washer system spray nozzle ⇒ Topic 01-4 .

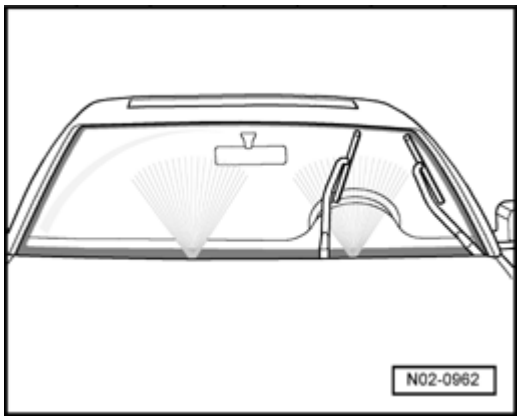
Spray nozzles for windshield washer system without presetting

The spray nozzles are preset and cannot be adjusted afterwards since there is no vertical adjuster.



In case both spray areas are not at the same height:

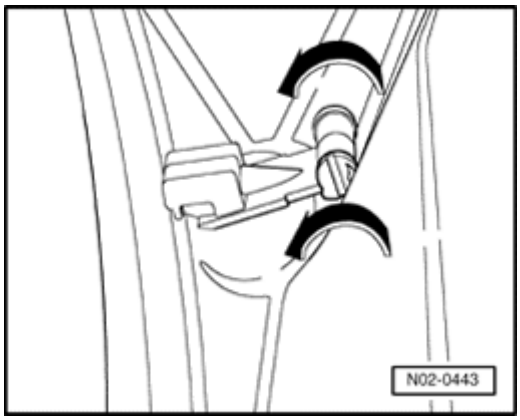
- Remove spray nozzle with lower spray area and install spray nozzle with vertical adjuster (repair measure).



Preset spray nozzles for windshield washer system

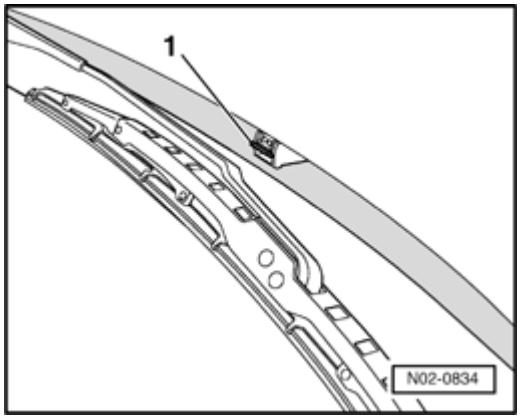
The washer nozzles are preset. Small height adjustments can be made.

- If both spray fields are not at same height, adjust spray direction upward or downward as follows:



- Rotate eccentric on spray nozzle in **- direction of arrow** **-** using a screwdriver in order to adjust the spray jet upward.

- To adjust spray jet downward, rotate eccentric on spray nozzle against **- direction of arrow -** .

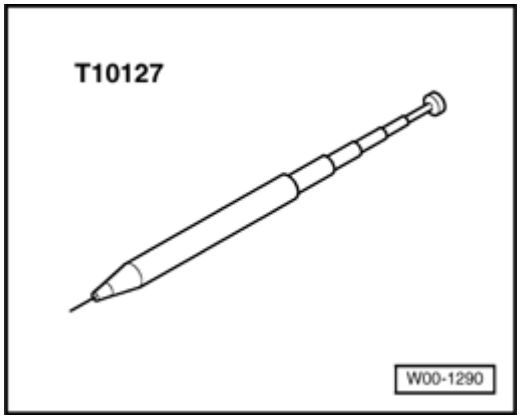


or

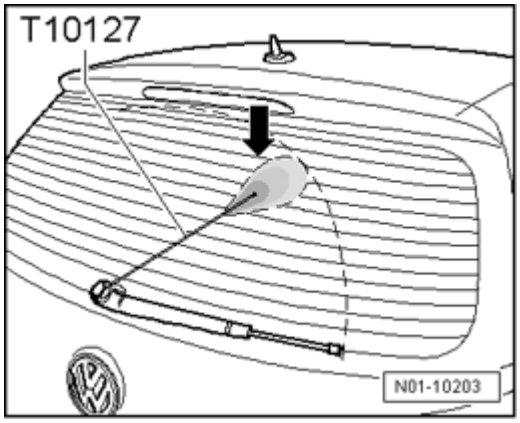
- Adjust spray jet on adjuster **- 1 -** by hand upward or downward.

Spray nozzle for rear window washer system

Special tools, testers and auxiliary items required



- Windshield washer aiming tool T10127



- Check nozzle adjustment.

The spray jet must encounter wiper area at center.

- If necessary, adjust spray nozzle using windshield washer aiming tool T10127 .

Headlight wash system, checking nozzle setting, adjusting nozzles if necessary

Note:

- *In the event contamination in spray nozzle produces an uneven spray pattern, remove spray nozzle*

  ⇒ *Repair Manual, Electrical Equipment, Repair Group 92,*

  , and rinse it with water in the opposite direction of spray.

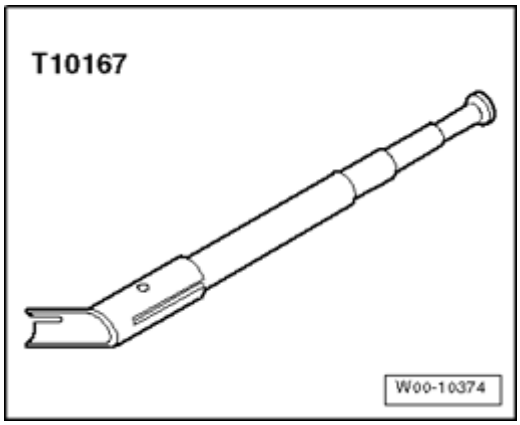
- *Subsequently blowing through in the opposite direction of the spray flow with compressed air is permitted.*

Caution!

- ***Do not use solid objects to clean the spray nozzles!***

- ***Do not use a needle or similar under any circumstance to adjust spray nozzles, otherwise the water hoses in the spray nozzles may be damaged!***

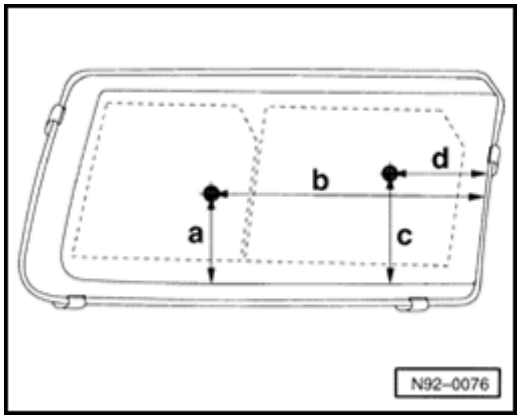
Special tools, testers and auxiliary items required



- Adjustment device T10167

Headlight wash system: Checking nozzle setting and adjusting, vehicles ➢ 09.00

Perform the following work procedure:



Spray jet adjustment for left headlight (right headlight is identical but reversed):

- Check nozzle adjustment.

a - 60 mm

b - 205 mm

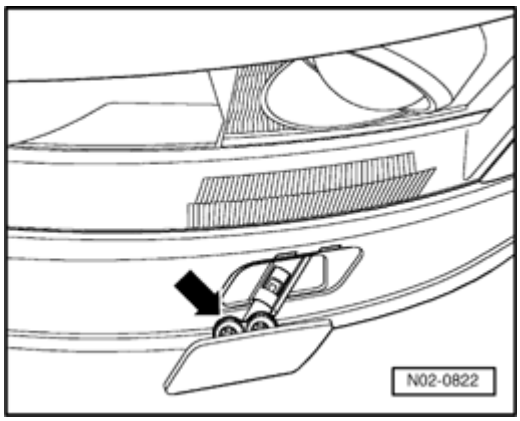
c - 75 mm

d - 80 mm

- If necessary, adjust spray jets as follows:

Note:

- *Mark the four mentioned points on windshield using a water soluble marker.*

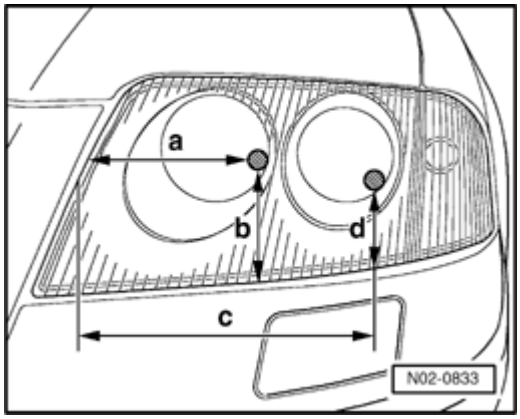


- Pull out spray nozzle **- arrow -** up to stop and align to the respective spray points using headlight washer adjusting tool T10167 .

Headlight wash system: Checking nozzle setting and

adjusting, vehicles 10.00

Perform the following work procedure:



Spray jet adjustment for left headlight (right headlight is identical but reversed):

- Check nozzle adjustment.

a - 110 mm

b - 75 mm

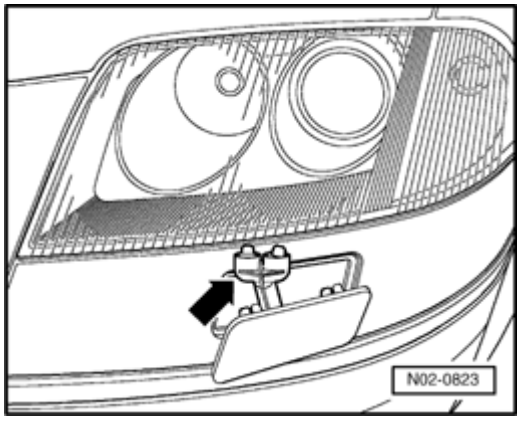
c - 230 mm

d - 50 mm

Note:

- *Mark the four mentioned points on windshield using a water soluble marker.*

- If necessary, adjust spray jets as follows:



- Pull out spray nozzle **- arrow -** up to stop and align to the respective spray points using headlight washer adjusting tool T10167 .

Telematics Transport Mode, deactivating

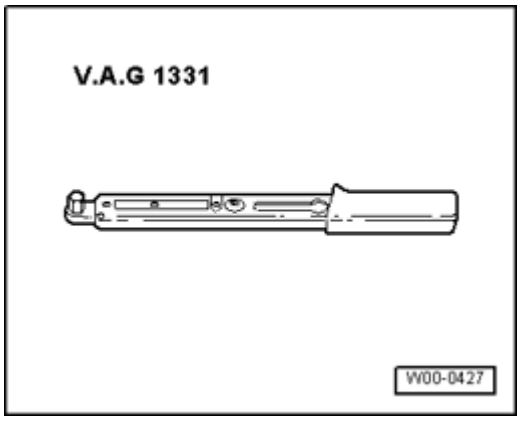
For deactivating procedures see

⇒ *Repair Manual, Communication, Repair Group 91,*

Windshield wiper blades, rest position, checking if windshield wiper blades are "juddering" , pitch angle, checking

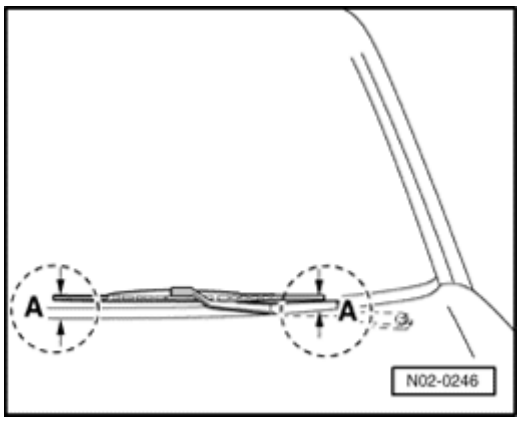
Windshield wiper blades, checking rest position, adjusting if necessary

Special tools, testers and auxiliary items required



- Torque wrench V.A.G 1331

- Check the park position.

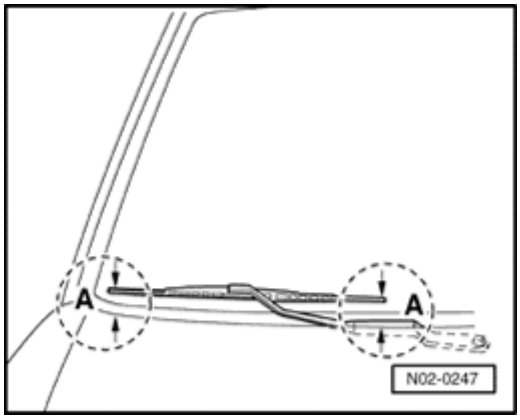


Driver side:

The space **- A -** between the wiper rubber and bottom edge of windshield must be 20 mm.

- If necessary, adjust the park position by relocating the wiper arm.

Torque wiper arm: 20 Nm



Passenger side:

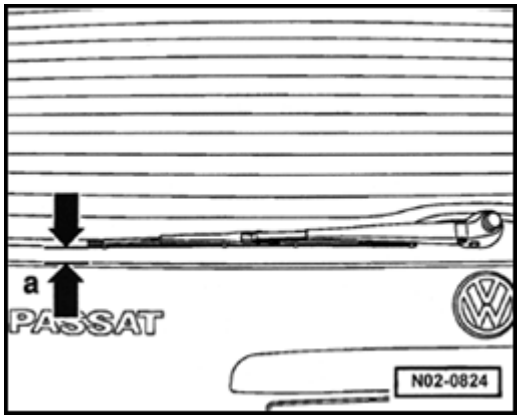
The space **- A -** between the wiper rubber and bottom edge of windshield must be 20 mm.

- If necessary, adjust the park position by relocating the wiper arm.

Torque wiper arm: 20 Nm

Rear window (wagon):

- Check the park position.



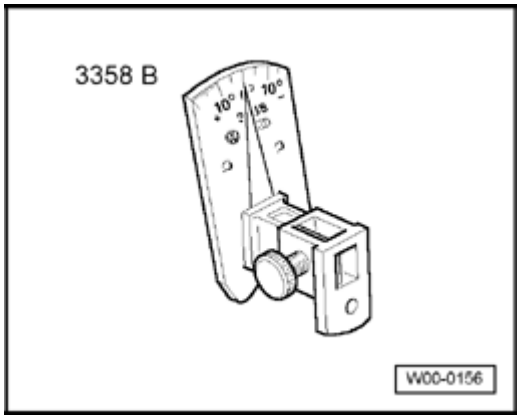
The distance **- a -** between wiper blade and lower edge of windshield must be 25 mm (measured from lower edge of glass).

- If necessary, adjust the park position by relocating the wiper arm.

Torque wiper arm: 15 Nm

Windshield wiper blades, checking pitch angle, adjusting if necessary (vehicles without aero-wipers only)

Note:



- *Check the angle setting only if the wiper blades "pulsate" or make noise.*

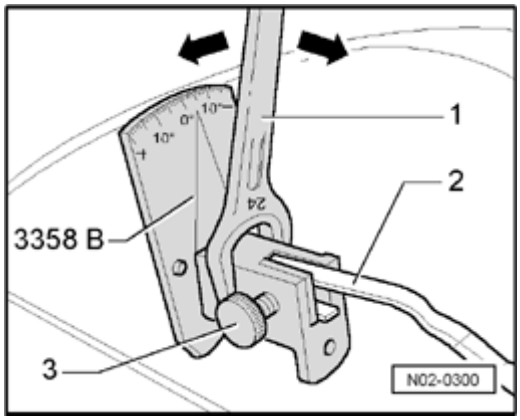
Special tools, testers and auxiliary items required

- Wiper blade adjuster 3358 B

Perform the following work procedure:

- Park windshield wiper arms.

- Remove windshield wiper.



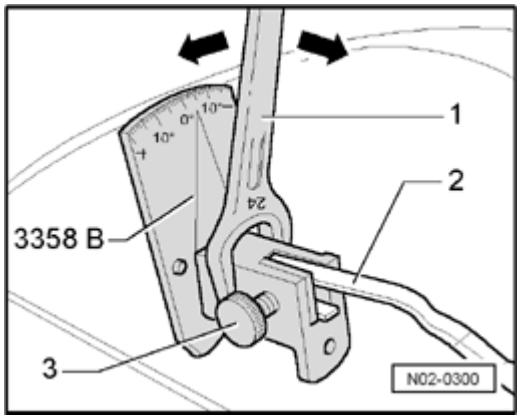
- Set windshield wiper arm **- 2 -** in the wiper blade adjuster 3358 B and secure with the locking screw **- 3 -** .

- Check the angle setting.

Angle setting (specified values) for	
Drivers side	- 3 °
Passenger side	- 5 °
Rear wiper	0 °
Tolerance	± 2 °

If necessary, adjust angle setting to specified value as

follows:



- Place open-end spanner (24 mm) **- 1 -** onto adjustment device and set windshield wiper arm **- 2 -** to specified value **- arrows -** .

- Release wiper arm **- 2 -** from adjustment fixture and again tighten lock screw **- 3 -** .

- Compare adjusted value with specified value. If necessary repeat procedure until specified value is reached.

- Remove adjustment fixture and reinstall wiper blade.

- Check wiper blade for pulsation-free operation.

Transportation wiper blades, removing

Service

For all Models arriving at your dealership with transportation wiper blades:

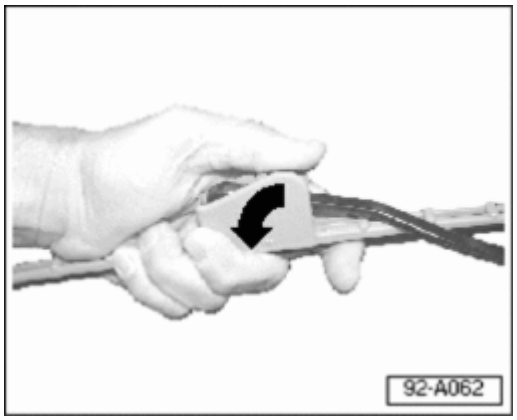
Transportation wiper blades are shorter than original equipment wiper blades and colored blue or yellow.

Original equipment blades are temporarily installed during Perfect Delivery Inspection to check wiper blade park position.

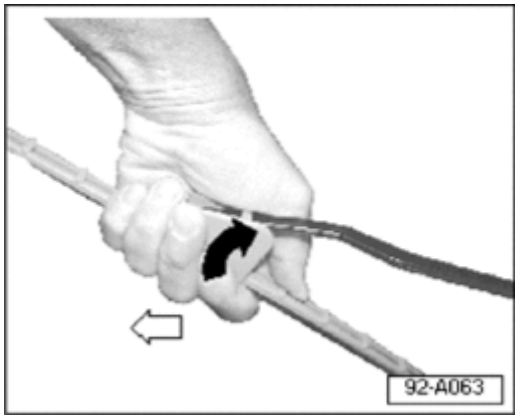
To ensure customer satisfaction, leave transportation wiper blades on vehicle until time of retail vehicle delivery.

Removing

Transportation blades can easily be removed as follows:



- Grasp blade as shown and rotate in direction of **- arrow -** (toward windshield)



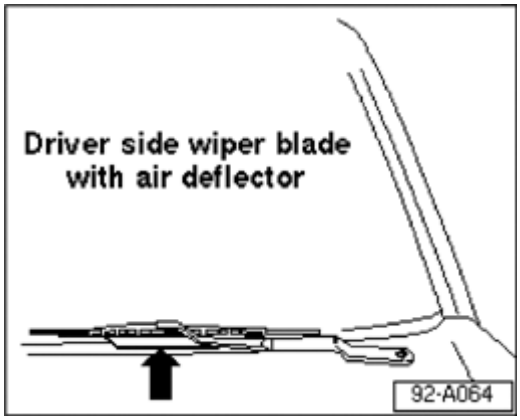
- Rotate blade in opposite direction **- arrow -** then, carefully slide blade off wiper arm.

Note:

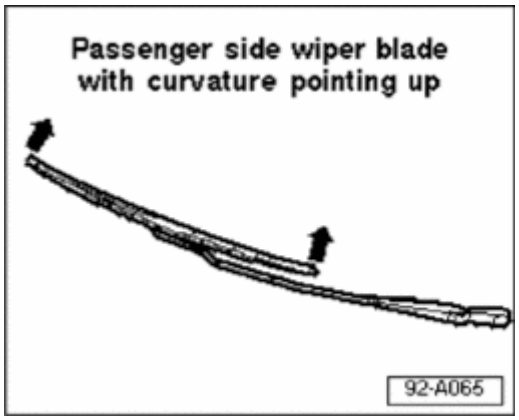
- *Wiper arm/blade alignment has been preset at factory, then checked and adjusted (if necessary) during PDI.*
- *DO NOT twist or bend wiper arm. If wiper arm/blade alignment is incorrect, chattering and/or streaking will occur.*
- *If arm has been bent:*

⇒ *Repair Manual, Electrical Equipment, Repair Group 92,*

- Install original equipment wiper blades (located in trunk) at time of retail vehicle delivery.



- Wiper blade with air deflector **- arrow -** must be installed on drivers side with deflector on bottom of wiper blade.



- Passengers side wiper blade may be curved, install with curved ends of blade pointing up.

Headlight adjustment, check

Headlight adjustment: Checking on headlights with gas discharge lamps ⇒ 01-4, Headlight with gas discharge lamps .

Special tools, testers and auxiliary items required

- Headlight adjuster VAS 5046
- or
- Headlight adjuster VAS 5047

The following test- and adjustment instructions are applicable to all countries. But national legislation and regulations of the respective country is to be adhered to.

Test- and adjustment requirements:

- Tire pressure OK.
- Lenses must not be damaged or dirty.
- Reflectors and bulbs OK.
- Vehicle must be properly loaded.

Load: Vehicle must be loaded with one person on the drivers seat, weighing 75 kg, otherwise vehicle must be empty (curb weight).

The curb weight is the weight of the vehicle ready to be operated with filled fuel tank (at least 90% filled), including the weight of all equipment usually carried in the car such as spare wheel, tools, car jack, fire extinguisher, etc.

If the fuel tank is not at least 90% full, adjust the weight as follows:

- Read fuel level from fuel gauge. Calculate additional weight needed using the following table. Place extra weight in luggage compartment.

Tank filling table

Fuel level according to fuel gauge	Additional weight in luggage compartment
1/4	45
1/2	30
3/4	15
full	0

Example:

If the fuel tank is half full, place a weight of 30 kg in the luggage compartment.

Note:

- *For additional weight use containers filled with water. A container filled with 5 liters of water weighs approx. 5kg.*

Move vehicle back and forth for 1 meter (3 to 4 feet) or bounce front and rear of vehicle several times up and down to settle suspension.

- Vehicle and headlight adjuster must be on a level surface. ⇒ *User manual for headlight adjuster.*
- Vehicle and headlight adjuster must be aligned.
- Inclination must be set.

Inclination figures:

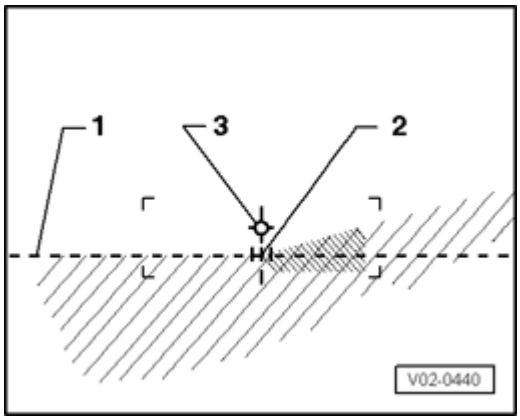
The inclination figure in "%" is embossed on the top of the headlight housing. The headlights must be set to this figure. Percentage information is based on a projection distance of 10 meters. For example: inclination of 1.2 % converts to approx. 12 cm.

- The headlight range adjuster thumb wheel must be in basic setting **- 0 -** .

Checking headlight setting (with new test screen without 15 ° - setting line)

Headlights:

Check the following:



- With the low beam switched on check whether the horizontal light-dark border of the setting line **- 1 -** contacts the test surface.

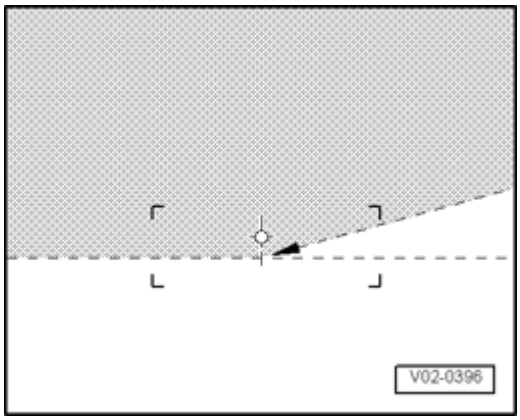
- Check whether the break-away point **- 2 -** between the left horizontal part and the rising part on the right of the light-dark border runs vertically through the center point **- 3 -** . The bright core of the light beam must be on the right of the vertical line.

Note:

- *To make it easier to find break-away point **- 2 -** cover and uncover left half of headlight (as viewed*

when looking forward) a few times. Then check low beam again.

- *After correct adjustment of low beams the center point of the main beam must lie on the center mark* ***- 3 -*** *.*



- *For the previous test screens with 15 ° setting line, adjust for new test screen. But to avoid incorrect settings ignore 15 ° -setting line.*

Fog lights (vehicles 10.00 ➢):

Note:

- *On vehicles ➢ 09.00, adjustment of fog lights occurs automatically with adjustment of headlights.*

- Check whether the upper light-dark border touches the setting line horizontally over the complete test screen width.

Headlights, adjusting (vehicles ➢ 09.00)

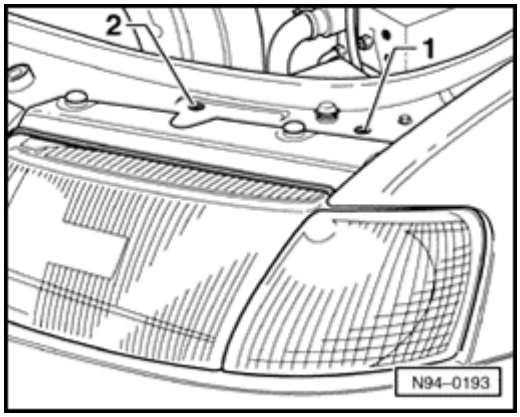
Headlights, adjusting (vehicles 10.00 ➢) ⇒ 01-4,

Headlights, adjusting (vehicles 10.00)

Adjusting headlights with gas-discharge lamps ⇒ 01-4, Headlight with gas discharge lamps

Note:

- *When adjusting low beam, high- beam headlights are also adjusted at the same time.*



Headlight (left):

1 - Lateral adjustment

2 - Height adjustment

Both adjustment screws on right-hand headlight are similar.

- Guide a Phillips-head screwdriver or socket head wrench through holes in lock carrier.

- Turn the adjusting screws for lateral adjustment **- 1 -** and for height adjustment **- 2 -** until the specified setting is achieved.

Note:

- *Also check whether both headlights work evenly when operating the headlight range adjuster.*

- *The adjustment of fog lights is performed automatically when adjusting headlights.*

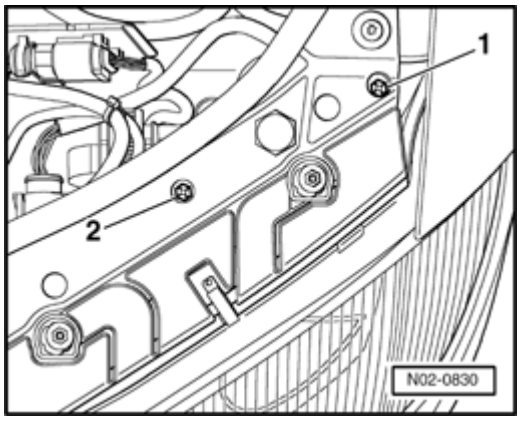
Other additional lights:

Accessory auxiliary light systems must be checked and adjusted according to the guidelines valid for them.

Headlights, adjusting (vehicles 10.00 ➢)

Note:

- *When adjusting low beam, high- beam headlights are also adjusted at the same time.*



Headlight (left):

1 - Lateral adjustment

2 - Height adjustment

Both adjustment screws on right-hand headlight are similar.

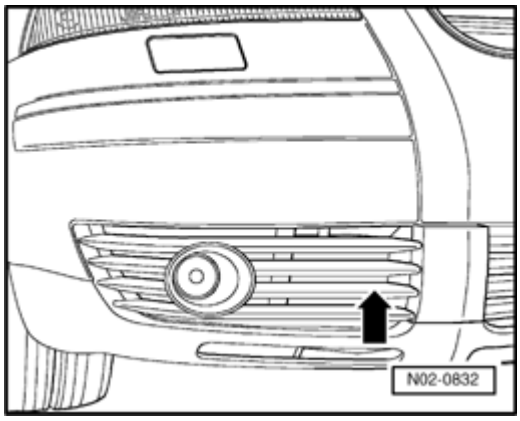
- Guide a Phillips-head screwdriver or socket head wrench through holes in lock carrier.

- Turn the adjusting screws for lateral adjustment **- 1 -** and for height adjustment **- 2 -** until the specified setting is achieved.

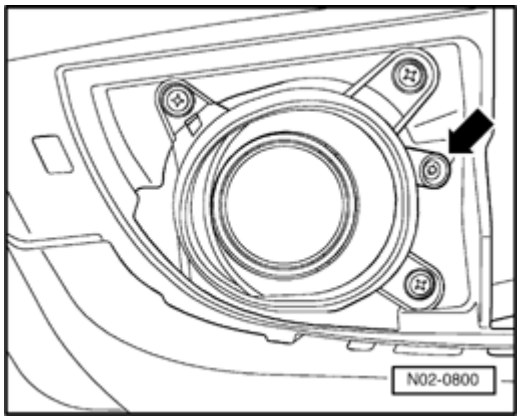
Note:

- *Also check whether both headlights work evenly when operating the headlight range adjuster.*

Right fog light:



- Unclip cover **- arrow -** in lower part of bumper from center of vehicle in order to adjust the fog lights.



- Turn adjustment screw **- 1 -** toward right to lower beam range. Lateral adjustment is not possible.

The left fog lamp adjustment is in the same location, but reversed.

Other additional lights:

Accessory auxiliary light systems must be checked and adjusted according to the guidelines valid for them.

Headlight with gas discharge lamps

Note:

- *Vehicles with gas discharge lamps are equipped with an automatic headlight range control. For these vehicles the "Basic Setting" sequence must be performed to adjust the headlights.*

The following test- and adjustment instructions are applicable to all countries. But national legislation and regulations of the respective country is to be adhered to.

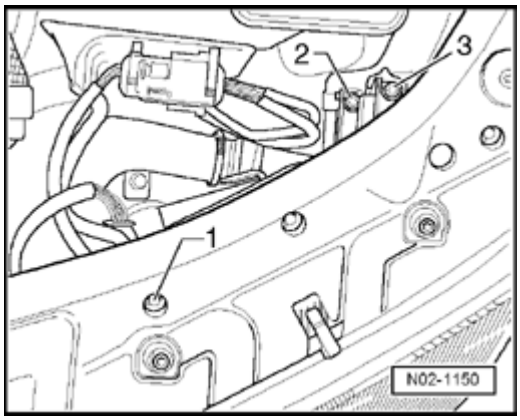
The following are prerequisites when adjusting headlights with gas discharge system:

- Tire pressure OK.
- Lenses must not be damaged or dirty.
- Reflectors and bulbs OK.
- Parking brake must be released and no gears selected.

- The steering wheel must be in straight-ahead position.
- The vehicle must not be moved during basic setting (do not "open/close" doors, lean on vehicle or exit/enter vehicle).
- Nobody may be in the vehicle and the vehicle must not be loaded.
- Move vehicle back and forth for 1 meter (3 to 4 feet) or bounce front and rear of vehicle several times up and down to settle suspension.
- Vehicle and headlight adjuster must be on a level surface. ⇒ *User manual for headlight adjuster.*
- Vehicle and headlight adjuster must be aligned.
- Inclination must be set.

In the trim above the headlight, inclination measurements are stamped in "%" . The headlights must be adjusted according to these measurements. Percentage information is based on a projection distance of 10 meters. For example: inclination of 1.2 % converts to approx. 12 cm.

Headlights with gas discharge lamps, adjusting



Headlight (left):

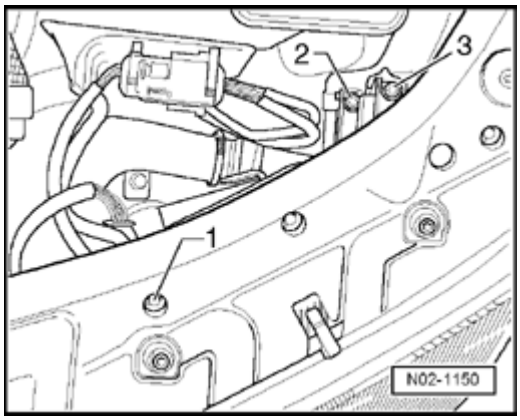
2 - Lateral adjustment

3 - Height adjustment

Both adjustment screws on right-hand headlight are

similar.

- Turn lateral adjustment screw **- 2 -** and vertical adjustment screw **- 3 -** respectively until the correct settings are achieved.



High-beam headlight (left):

1 - Height adjustment

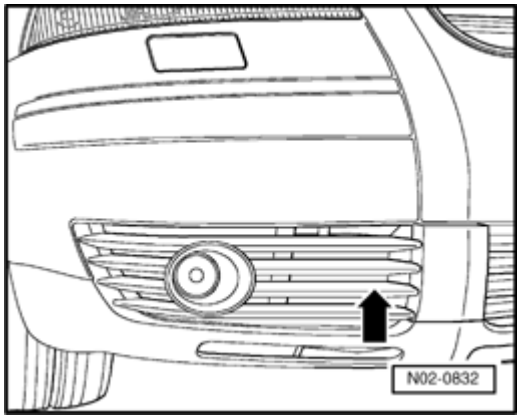
Adjusting screw on right headlight is allocated symmetrically.

Note:

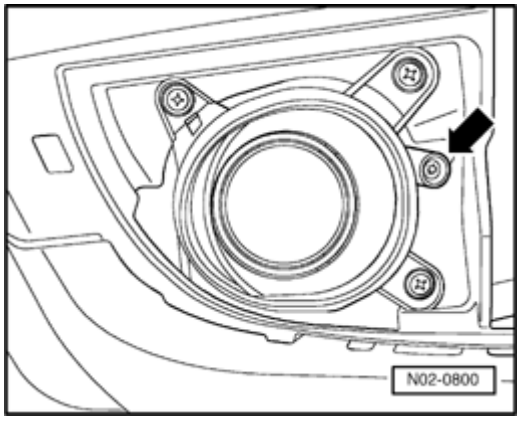
- *The high-beam headlight can only be adjusted vertically. Lateral adjustment is pre-adjusted and must not be changed.*

- Turn the adjustment screw for height adjustment **- 1 -** until the correct setting is achieved.

Right fog light:



- Unclip cover **- arrow -** in lower part of bumper from center of vehicle in order to adjust the fog lights.



- Turn adjustment screw **- 1 -** toward right to lower beam range. Lateral adjustment is not possible.

The left fog lamp adjustment is in the same location, but reversed.

Other additional headlights:

Accessory auxiliary light systems must be checked and adjusted according to the guidelines valid for them.

Basic setting

Since the automatic Headlamp Range Control does not have a manual adjustment, the basic setting procedure must be performed to adjust the headlights.

The adjusting mechanism in the headlight housing will be damaged if the automatic Headlamp Range Control Basic Settings are not performed.

After the headlights are adjusted, the DTC memory must be checked. For that reason, this procedure must be strictly adhered to.

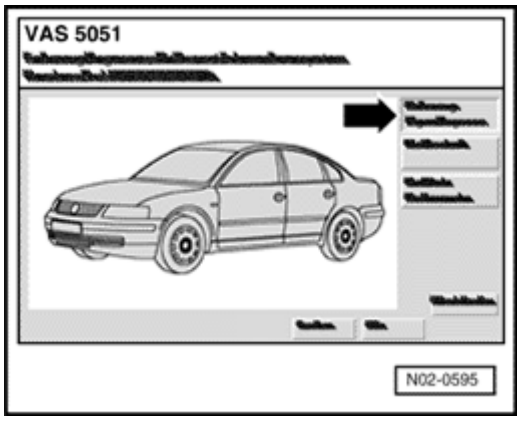
- Press → button.

- Turn off ignition and disconnect diagnostic connection.

Perform basic setting:

- Connect the Vehicle Diagnosis, Testing and Information System VAS 5051 A ⇒ 01-3, Diagnostic testing unit, connecting .

- Switch ignition on.



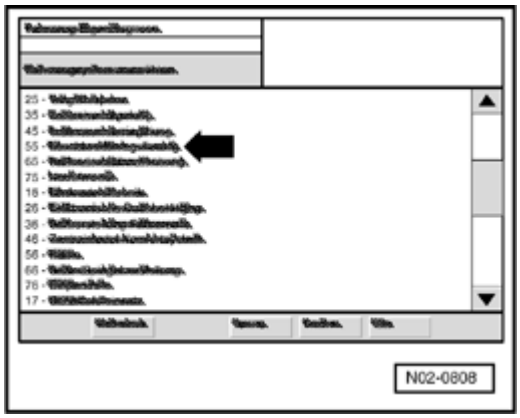
Indicated on display:

Select mode of operation:

- On the display, press the button for "Vehicle On-Board Diagnostics" **- arrow -** .

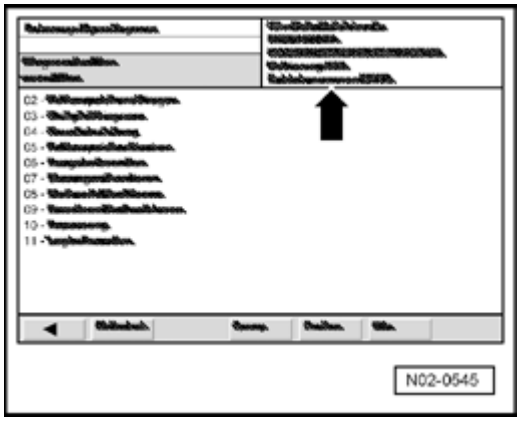
Note:

- *If the indications shown in the work procedure are not indicated on the display: ⇒ User manual for VAS5051 tester*



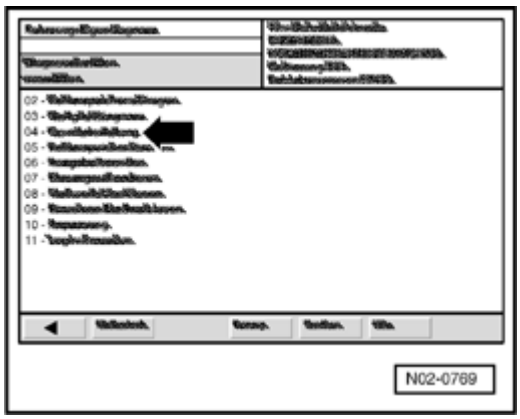
Indicated on display:

- Press "55 - headlight range adjuster" **- arrow -** on the display.



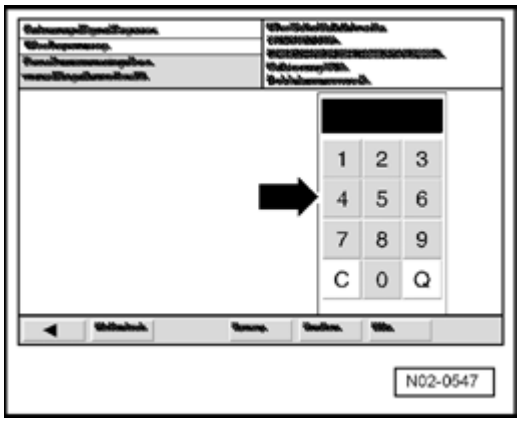
Indicated on display:

Control module identification and the coding will be displayed **- arrow -** .



Indicated on display:

- Press "04 - Begin basic setting" **- arrow -** on the display.

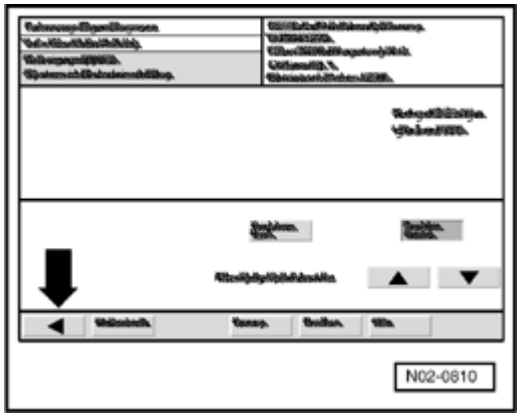


Indicated on display:

- Press 001 on the display number block **- arrow -** (001 selects "display group number 001").

- Confirm entry with Q button on display number block.

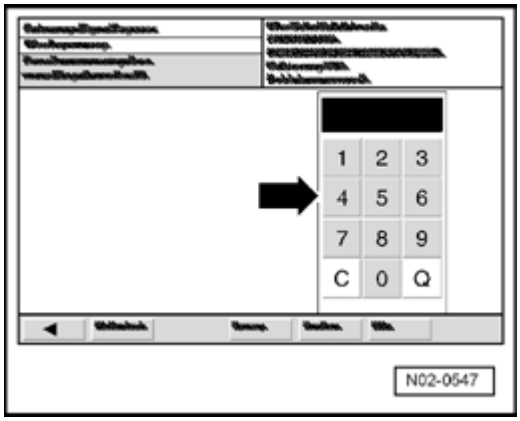
After "wait" , the following display appears:



Indicated on display:

- Adjust headlights now (vehicles ➢ 09.00 ⇒ 01-4, Headlights, adjusting (vehicles 09.00) , vehicles 10.00 ➢ ⇒ 01-4, Headlights, adjusting (vehicles 10.00) , vehicles with gas discharge lamps ⇒ 01-4, Headlights with gas discharge lamps, adjusting)

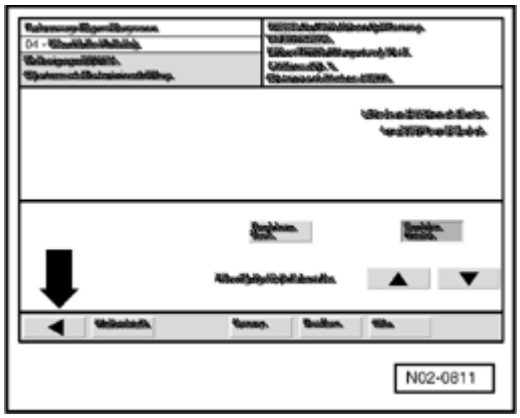
- After adjusting the headlights, press the **- arrow -** button on the display.



Indicated on display:

- Press 002 on the display number block **- arrow -** (002 selects "display group number 002").

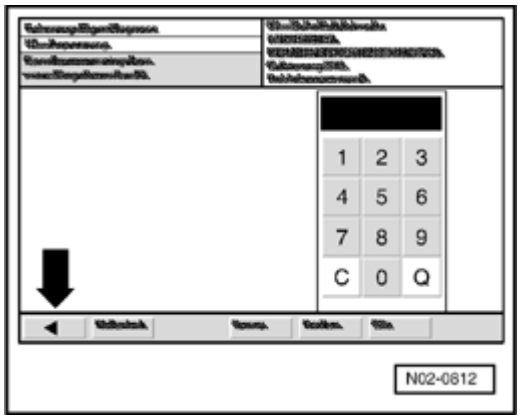
- Confirm entry with Q button on display number block.



Indicated on display:

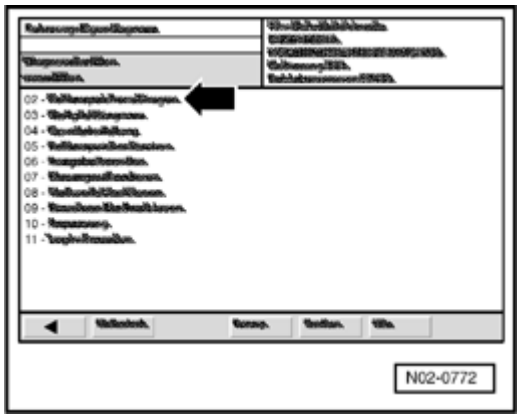
The control position of the headlights is now "learned" by the control module.

- Press the **- arrow -** button on the screen display.



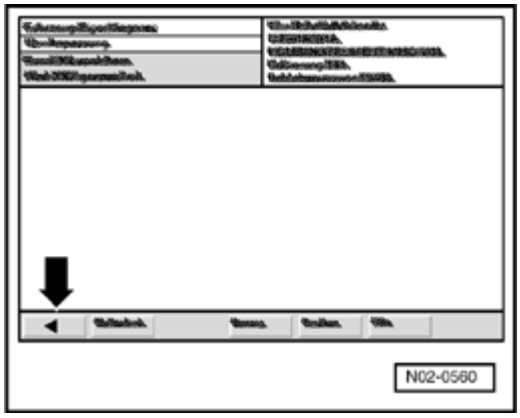
Indicated on display:

- Press the **- arrow -** button on the screen display.



Indicated on display:

- Press "02 - Check DTC memory" **- arrow -** on the display.

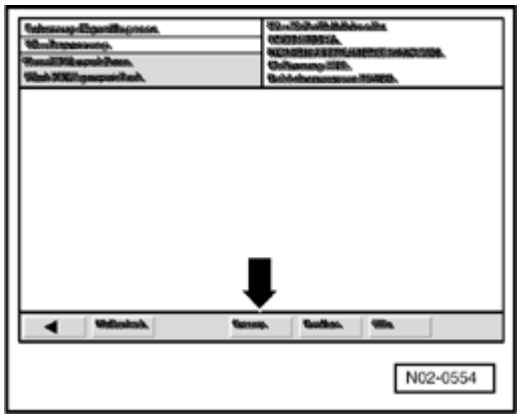


Indicated on display:

Any system malfunctions that are stored will be displayed.

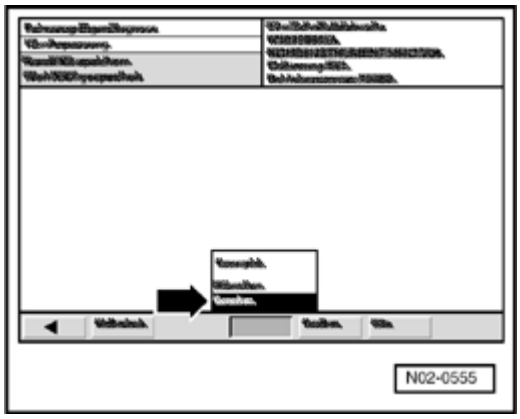
If malfunctions are stored then a repair measure is required. Pass malfunction protocol on for repair.

- Press the **- arrow -** button on the screen display.



Indicated on display:

- Press the Go to **- arrow -** button on the display.



Indicated on display:

- Press the Exit **- arrow -** button on the display.

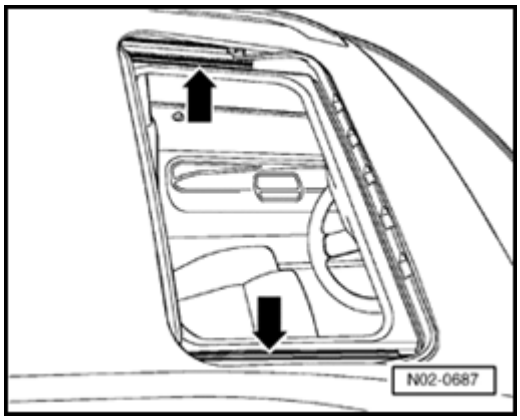
- Press the Exit button in the exit menu.

- Turn off ignition and disconnect diagnostic connection.

Sunroof, checking function, cleaning and lubricating guide rails

Perform the following work procedure:

- Check function of sunroof.



- Clean guide rails **- arrows -** and lubricate with special grease G 000 450 02 .

Note:

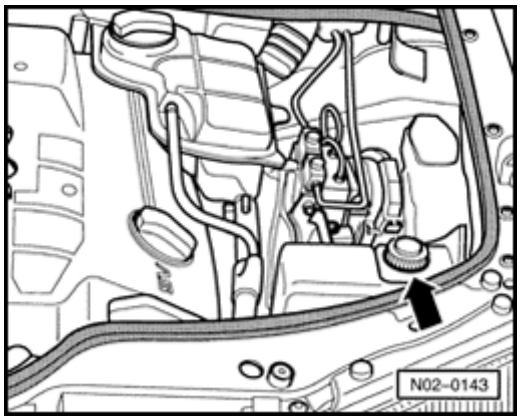
- *Part numbers are for reference only. Always check with your Parts Department for the latest part number information*

Power assisted steering fluid level, checking

Fluid, when cold:

Perform the following work procedure:

- With engine not running, move front wheels in straight-ahead position.



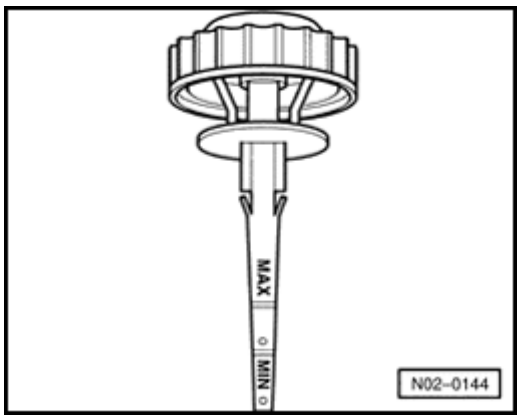
- Unscrew reservoir cap **- arrow -** with fitted dipstick.

- Clean dipstick with clean cloth.

- Screw cap on hand-tight and remove again.

Note:

- *Screw cap fully in to get an accurate fluid level reading.*



- Check fluid level: Fluid level must be in area of MIN mark (up to 2 mm above or below mark).

Note:

- *If fluid level is above specified range, fluid must be extracted off.*

- *If the fluid level is below the specified level, check the hydraulic system for leaks (repair measure). It is not enough to simply top off with fluid.*

- *If power steering system is properly sealed, fill with fluid G 002 000 .*

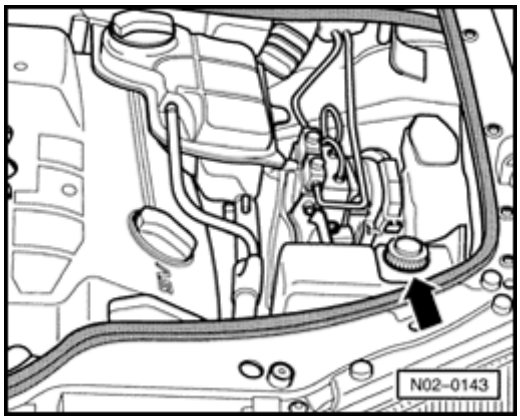
- *Part numbers are for reference only. Always check with your Parts Department for the latest part number information*

- Screw in cap hand tight.

Warm fluid (at approx. 122 ° F (50 ° C)):

Perform the following work procedure:

- With engine not running, move front wheels in straight-ahead position.



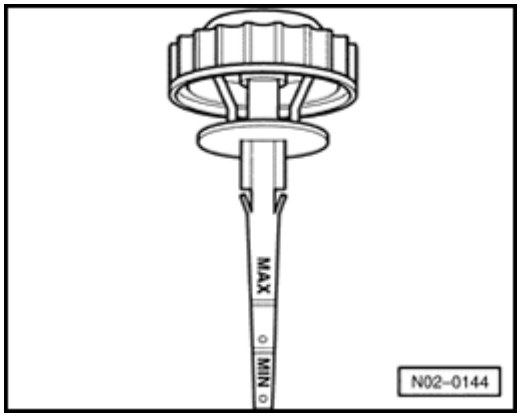
- Unscrew reservoir cap **- arrow -** with fitted dipstick.

- Clean dipstick with clean cloth.

- Screw cap on hand-tight and remove again.

Note:

- *Screw cap in fully to get an accurate fluid level reading.*



- Check fluid level: Check fluid level. It must be between MIN and MAX markings.

Note:

- *If the fluid level is above the MAX mark, extract fluid.*

- *If the fluid level is below the MIN mark, check the power steering system for leaks (repair procedure). It is not enough to simply top off with fluid. If power steering system is properly sealed, fill with fluid G 002 000 .*

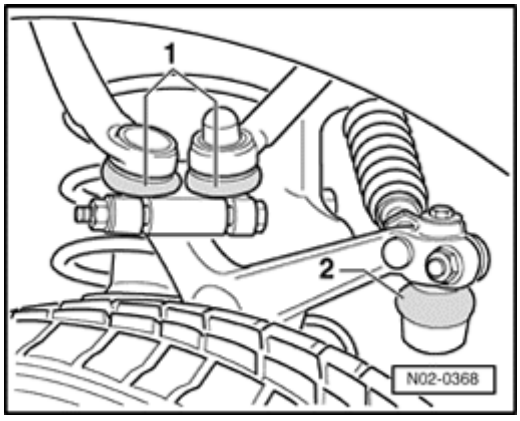
- Screw in cap hand tight.

Tie rod ends, check play, security and joint boots

Perform the following work procedure:

- With vehicle raised (wheels hanging free), check play by moving tie rods and wheels. Play: zero play

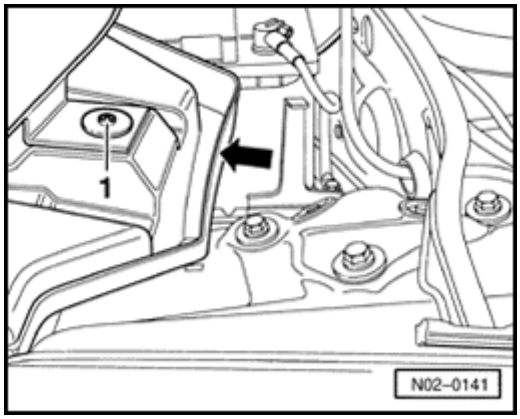
- Check mountings.



- Check joint boots **- 1 -** of control arms and joint boots **- 2 -** of tie rods for damage and proper seating.

Dust and pollen filter, replace filter element

Vehicles ➢ 09.00

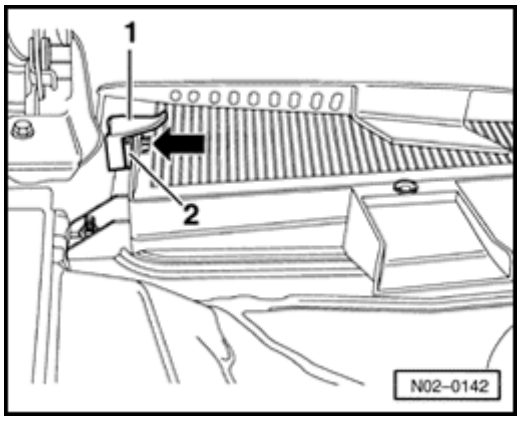


The filter is located in the plenum chamber, right side, below the cover **- arrow -** .

Perform the following work procedure:

Removing:

- Remove bolt **- 1 -** and remove cover **- arrow -** .



- Remove retainer **- 1 -** upward.
- Press filter element upward and remove toward front.

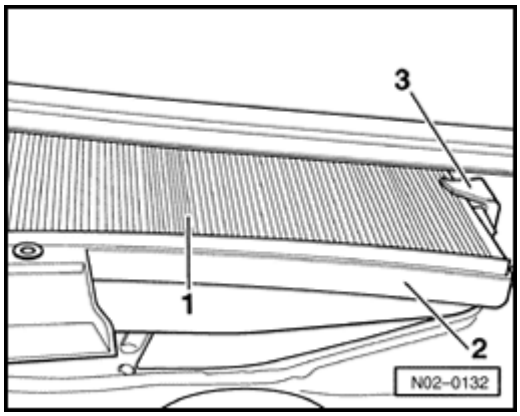
Note:

- *Observe waste disposal regulations!*

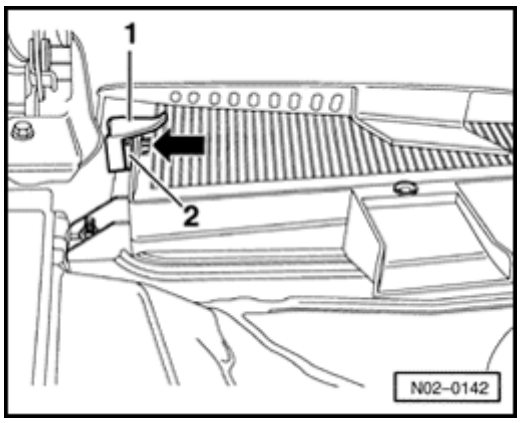
Installing:

Note:

- *When installing the new filter element, make sure the message "TOP-OBEN" on the element points upward.*



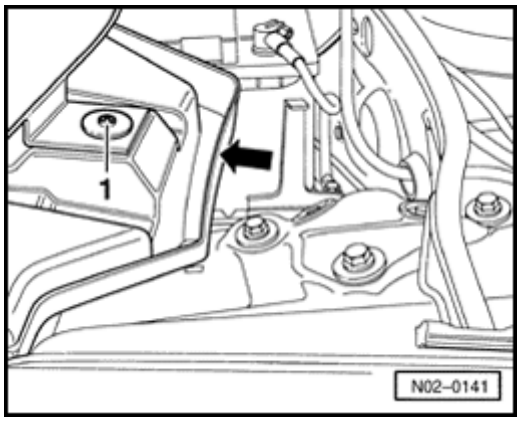
- Insert new filter element **- 1 -** into frame **- 2 -** .
- Slide in filter element beneath retainer **- 3 -** until stop.



- Press retainer **- 1 -** in spring clip **- 2 -** .

Note:

- *Both retainers secure the filter element in the frame.*



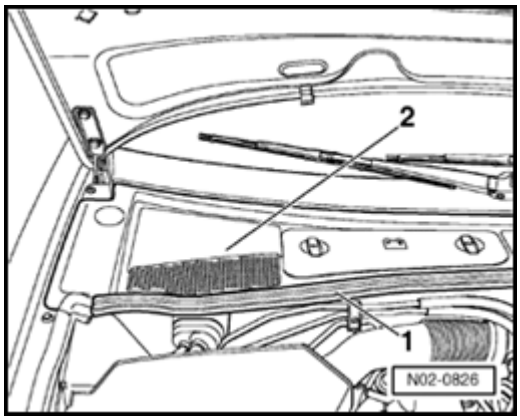
- Secure the cover **- arrow -** using the bolt **- 1 -** .

Vehicles 10.00

Filter is located on right side in plenum chamber under cover.

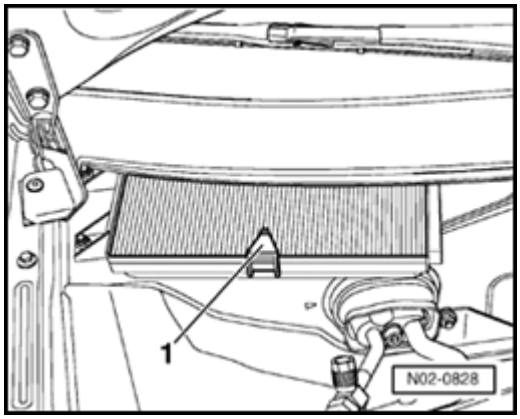
Perform the following work procedure:

Removing



- Remove rubber seal **- 1 -** on plenum chamber cover toward front.

- Carefully remove plenum chamber cover **- 2 -** upward.



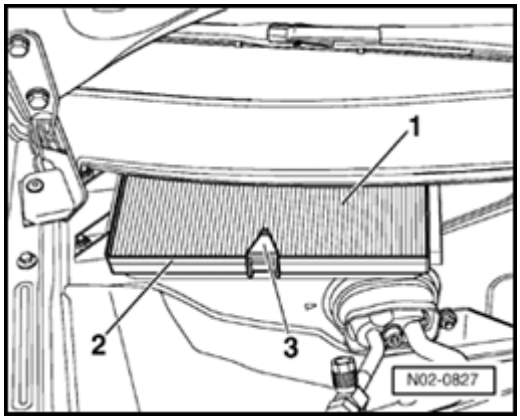
- Remove retainer **- 1 -** upward.

- Press filter element upward and remove toward front.

Note:

- *Observe waste disposal regulations!*

Installing

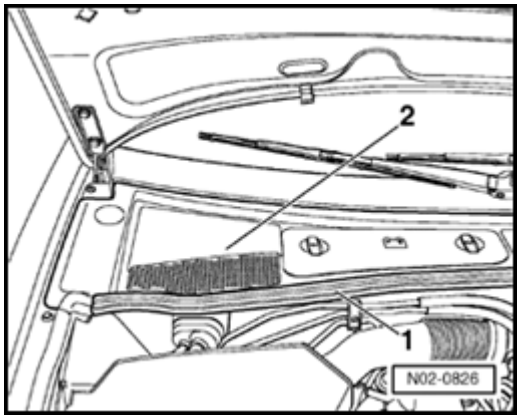


- Insert new filter element **- 1 -** into frame **- 2 -** .

Note:

- *When installing the new filter element observe installation position.*

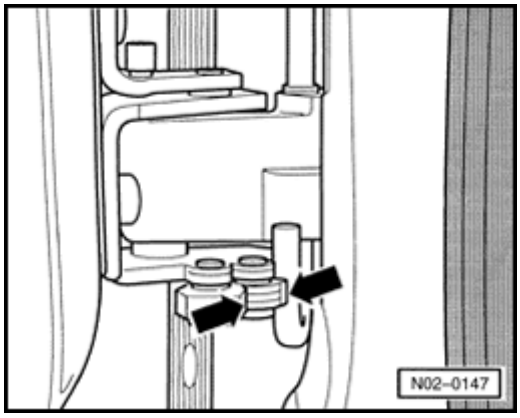
- Insert retainer **- 3 -** and push downward until stop.



- Install plenum chamber cover **- 2 -** .
- Install rubber seal **- 1 -** on plenum chamber cover.

Door arrester, lubricate

Perform the following work procedure:



- Lubricate door arrester at points shown **- arrows -** .

Use lubricant G000150 .

Note:

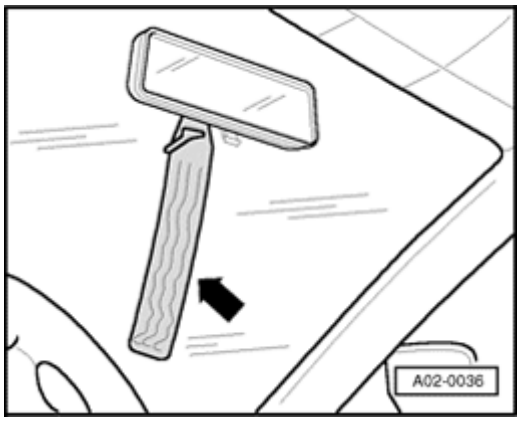
- *Part numbers are for reference only. Always check with your Parts Department for the latest part number information*

Front axle control arm, checking

Work procedure

⇒ *Repair Manual, Suspension, Wheels, Brakes, Steering , Repair Group 40,*

Transport protection, removing locking pieces from front axle struts (if present)



For some models the front suspension struts have transportation protection devices installed. These models can be identified by a tag attached at the mirror **- arrow -** .

Note:

- *Locking pieces should prevent vehicle from bouncing when being driven on to an automobile transport or railroad car and thereby become damaged.*

Warning!

Locking pieces must always be removed before delivering the vehicle! An "Attention!" hanging tag is secured to interior mirror to make this point absolutely clear.

Perform the following work procedure:

Note:

- *It is not necessary to remove the wheels.*

- Relieve load on coil spring by raising vehicle on lifting platform.

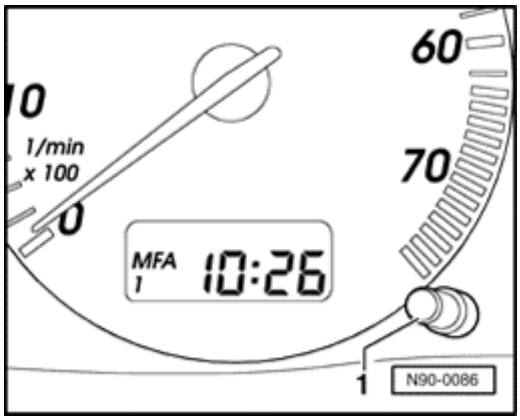
- Remove transport locks (locking pieces) from suspension struts.

Clock, setting

Digital clock

Please perform adjustment as follows:

Hour setting:



- Turn the adjusting button **- 1 -** (to the lower right of the tachometer) counterclockwise.

With every brief turn of the adjusting button, the setting changes by one hour. When turning and holding the adjusting button, the setting continually adjusts.

Minute setting:

- Turn the adjusting button **- 1 -** clockwise.

With every brief turn of the adjusting button, the setting changes by one minute. When turning and holding the adjusting button, the setting continually adjusts.

The clock can be set accurately to the second using the adjustment button **- 1 -** as follows:

- Turn the adjusting button to the right until the clock is one minute less than the time that is to be set.

- Briefly turn the adjusting button to the right as soon as the second indicator of the reference clock reaches the full minute mark.

Analog clock

Please perform adjustment as follows:

Note:

- *There is an adjusting button in the instrument cluster at the lower right next to the tachometer. By pulling on this button, the time is set.*

To move the indicator in minute mode:

- Briefly pull adjusting button.

To move the indicator slowly at first, and then faster:

- Pull and hold adjusting button.

Underbody protection, perform visual check for damage

During visual check, observe floor pan, wheel housings and sills!

Note:

- *Malfunctions found must be repaired (repair measure). This inhibits corrosion and rusting through.*

Plenum chamber, cleaning

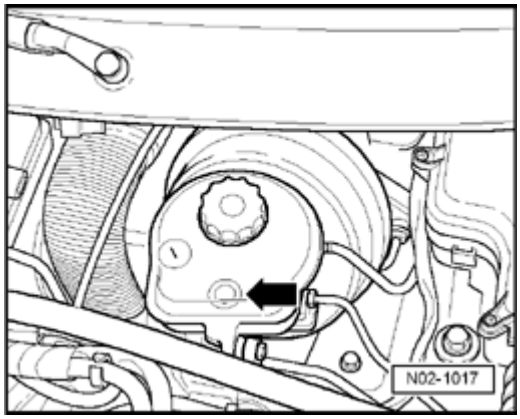
Special tools, testers and auxiliary items required

- Wet and dry vacuum cleaner VAS 5128

Note:

- *On vehicles 1997 ➢ 2000 (V ➢ Y), the plenum chamber must be cleaned as part of an inspection service.*

- Thoroughly clean plenum chamber using a wet and dry vacuum cleaner.



- Always make sure the water drain **- arrow -** below the brake booster is free of debris.

Camshaft drive toothed belt, replacing (4-cyl. TDI engines)

Note:

- *Generally, it is not necessary to replace the belt before reaching the next replacement interval. In particular, cracks on the back side of the belt do not affect service life and cannot be claimed as goodwill or warranty measures.*

⇒ *Repair Manual, 2.0 Liter 4-Cyl. 2V TDI PD Engine Mechanical, Fuel Injection Glow Plug, Engine Code(s): BHW, Repair Group 13,*

.

Camshaft drive toothed belt and toothed belt tensioner, replacing (V6 gasoline engine)

-

⇒ *Repair Manual, 2.8 Liter V6 5V Engine Mechanical, Fuel Injection Ignition, Engine Code(s): AHA, ATQ , Repair Group 15,*

.

Camshaft drive toothed belt, replacing (1.8L 4 cyl. 5-valve gasoline engines)

-

⇒ *Repair Manual, 1.8 Liter 4-Cyl. 5V Turbo Engine Mechanical, Fuel Injection Ignition, Engine Code(s): AEB, ATW, Repair Group 15,*

.

Camshaft drive toothed belt, checking (4-cyl. gasoline engine)

Condition of toothed belt, checking

- Open fasteners of upper toothed belt cover and remove cover.

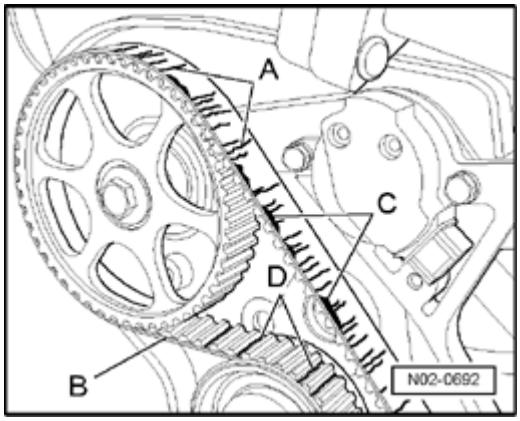
- Check condition of toothed belt for:

  - Cracks, cross-sectional breaks
  - Separation (cover layer, belt cords)
  - Wear-through on cover layer

- Fraying of cord strands
- Surface cracks (plastic shroud)
- Traces of oil and grease

Note:

- *It is essential to replace toothed belt if malfunctions are found. This will avoid possible break-downs or operating problems. Replacing the belt is a repair procedure.*



While checking the condition, take notice of the following defects:

A - Tears (cover side)

B - Lateral movement

C - Fraying

D - Tears (in teeth)

Spark plugs, replacing

Caution!

- ***Malfunctions are stored by disconnecting the harness connectors.***
- ***Checking all DTC memories:*** ⇒ *01-4, Perform vehicle system test* ***.***

Warning!

Switch off ignition before performing this work step.

- ***Safety precautions for the ignition system,***

  ⇒ ***Repair Manual, Engine Mechanical, Repair Group 28,***

  , ignition system, checking; safety precautions.

Technical data, engine specifications ⇒ 01-1, Engine characteristics .

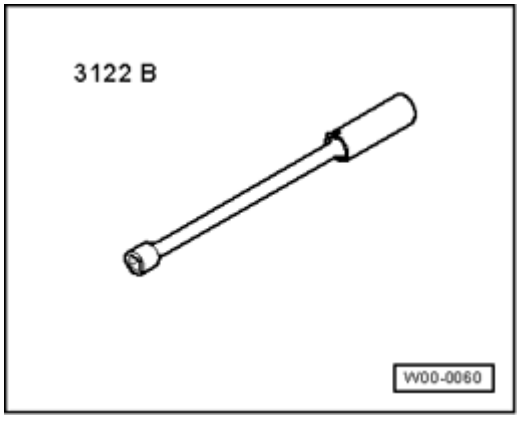
Spark plugs, 1.8L 5-valve engines, replacing ⇒ 01-4, Spark plugs, 1.8L 5-valve engines, replacing .

Replacing spark plugs, 1.8L 5-valve engines (without intermediate shaft) ⇒ 01-4, Spark plugs, 1.8L 5-valve engines (without intermediate shaft), replacing .

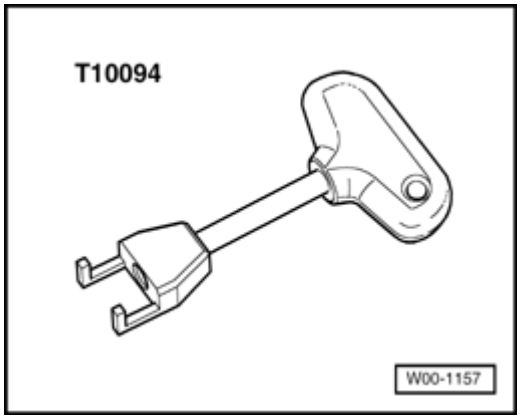
Spark plugs, V6- engines, replacing ⇒ 01-4, Spark plugs, V6-cyl. 5-valve engines, replacing .

Spark plugs, W8 engines, replacing ⇒ 01-4, Spark plugs, W8- engines, replacing .

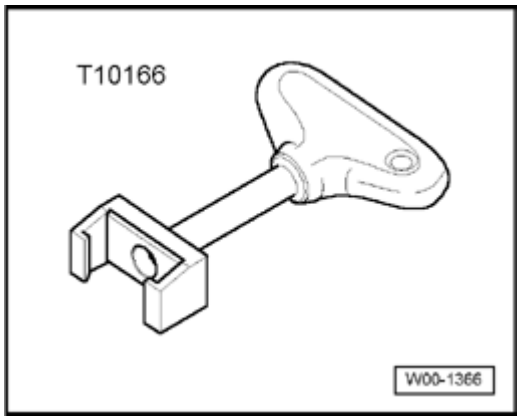
Special tools, testers and auxiliary items required



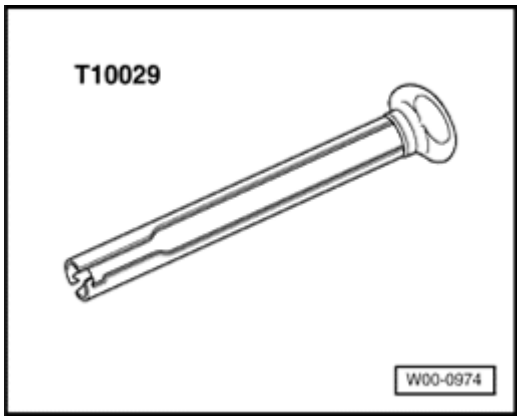
- Spark plug wrench 3122 B



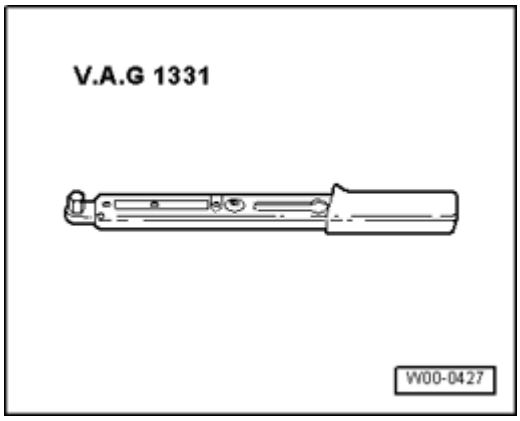
- Puller T10094



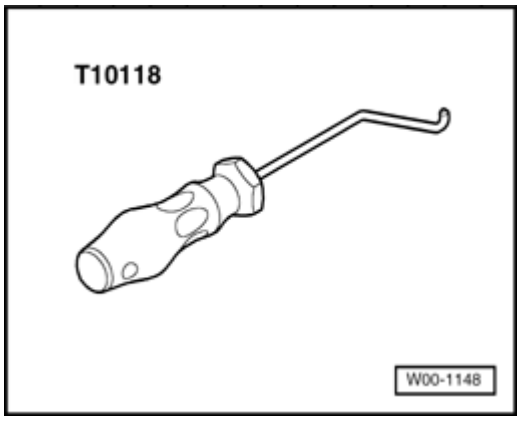
- Puller T10166



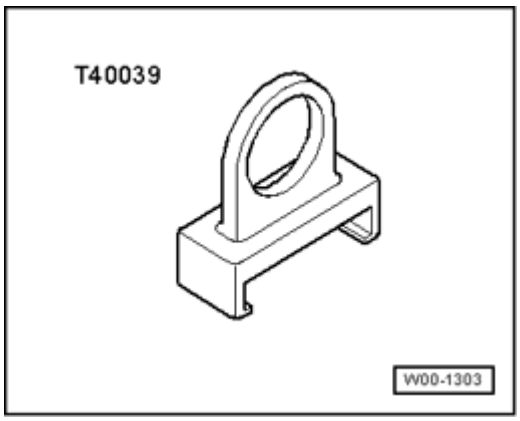
- Removal/installation tool T10029



- Torque wrench V.A.G 1331



- Removal/installation tool T10118



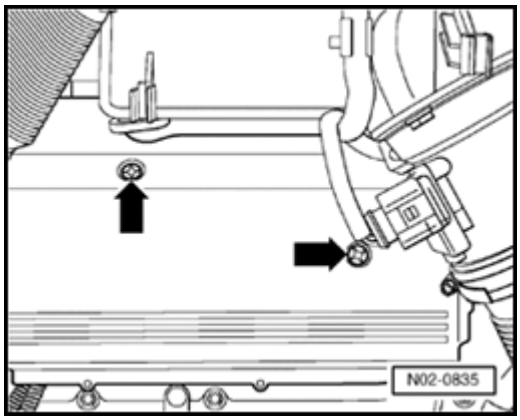
- Puller T40039

Spark plugs, V6-cyl. 5-valve engines, replacing

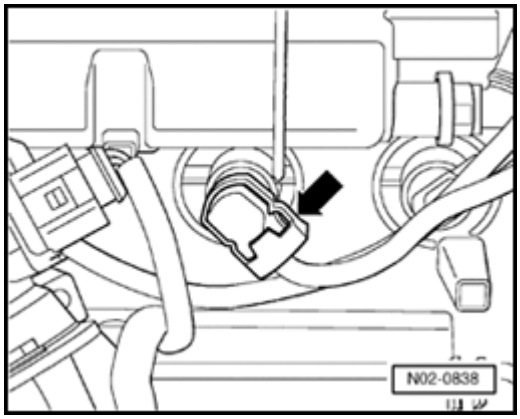
Technical data, engine specifications, ⇒ 01-1, Engine characteristics .

Removing:

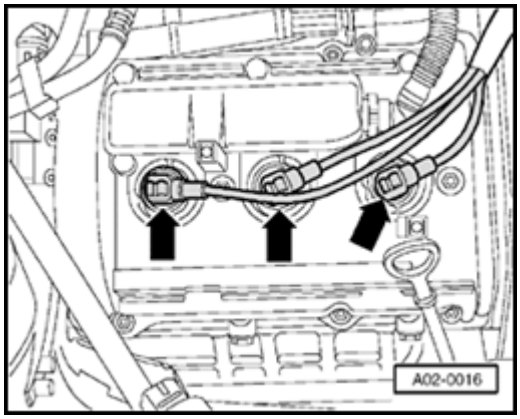
Removing and installing top engine cover ⇒ 01-4, Upper engine cover, removing and installing .



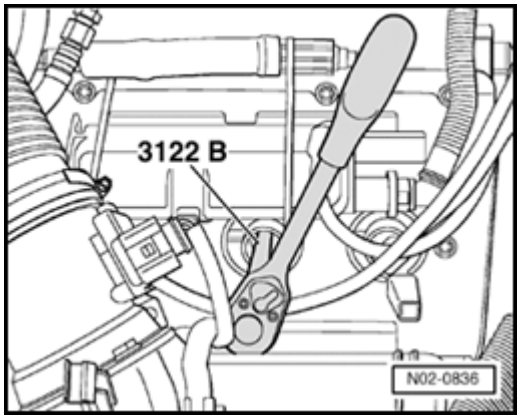
- If a cover for the cylinder heads is present, loosen clamp screws **- arrows -** and remove cover upward.



- If a tool **- arrow -** for pulling off the spark plug connectors is attached to one of the plug connectors, remove tool from spark plug connector.



- Pull off spark plug connectors using spark plug connector tool **- arrows -** . If there is no spark plug connector tool, pull spark plug connectors off using spark plug connector tool T10029 .



- Remove spark plugs using spark plug wrench 3122 B .

Installing:

Note:

- *Spark plug identification and tightening torque*

  ⇒ *Repair Manual, 2.8 Liter V6 5V Engine Mechanical, Fuel Injection Ignition, Engine Code(s): AHA, ATQ , Repair Group 28,*

  Ignition, servicing, test data, spark plugs.

- *Observe waste disposal regulations!*

- Screw in new spark plugs using spark plug removal tool 3122 B and tighten to correct tightening torque.

- Connect spark plug connectors.

- Check ignition cables and connectors for proper connections.

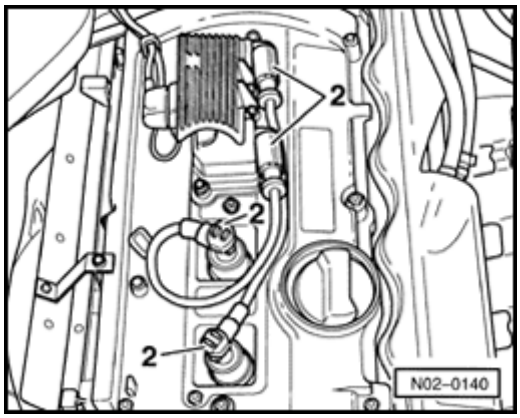
- Install engine covers.

Spark plugs, 1.8L 5-valve engines, replacing

Technical data, engine specifications, ⇒ 01-1, Engine characteristics .

Removing:

Removing and installing top engine cover ⇒ 01-4, Upper engine cover, removing and installing .



- Remove ignition coils with spark plug connectors **- 2 -** and carefully remove upward. Disconnect spark plug connectors **- 2 (center and bottom) -** using spark plug connector tool T10029 .

- Remove spark plugs using spark plug wrench 3122 B .

Note:

- *Spark plug identification and tightening torque*

  ⇒ *Repair Manual, Engine Mechanical, Repair Group 28,*

  Ignition, servicing, test data, spark plugs.

- *Observe waste disposal regulations!*

Installing:

- Screw in new spark plugs using spark plug removal tool 3122 B and tighten to correct tightening torque.

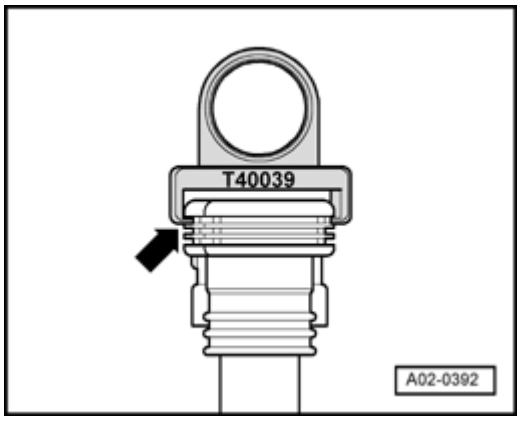
- Connect ignition coils **- 2 -** with spark plug connector and tighten. Connect spark plug connectors **- 2 -** using spark plug connector tool T10029 .

- Check ignition cables and connectors for proper connections.

- Install engine cover.

Spark plugs, 1.8L 5-valve engines (without intermediate shaft), replacing

Engines (without intermediate shaft), ⇒ Topic 01-1 , ⇒ Topic 01-1 , ⇒ Topic 01-1 .



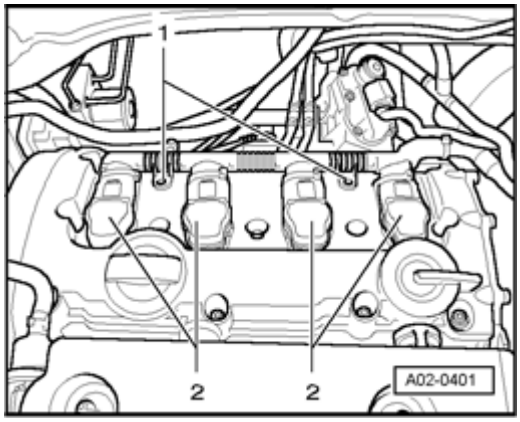
Technical data, engine specifications, ⇒ 01-1, Engine characteristics .

Removing:

Note:

- *To pull off spark plugs, place ignition coil puller T40039 on topmost thick rib* ***- arrow -*** *of ignition coils with power output stages.*

- *If lower ribs are used, these can be damaged*

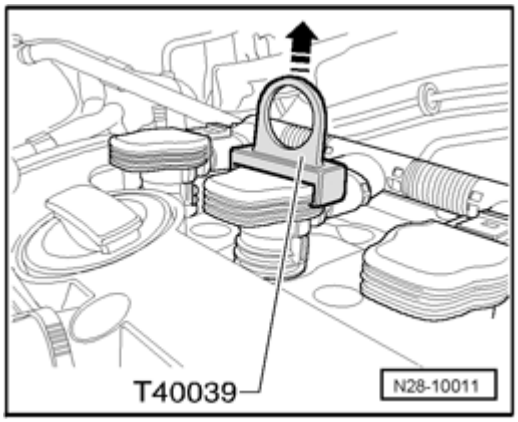


Removing and installing top engine cover ⇒ 01-4, Upper engine cover, removing and installing .

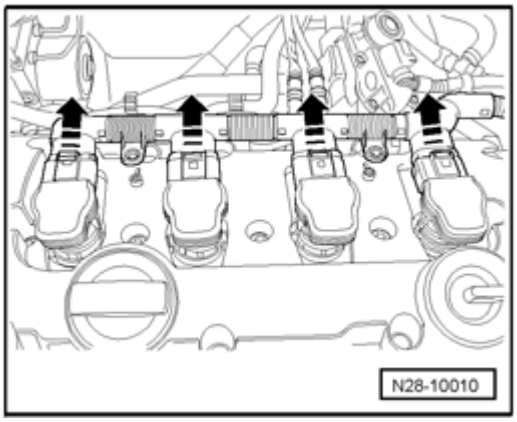
Spark plugs are located under ignition coils with power output stages **- 2 -** .

Note:

- *Note installation position of ignition coils with power output stages!*

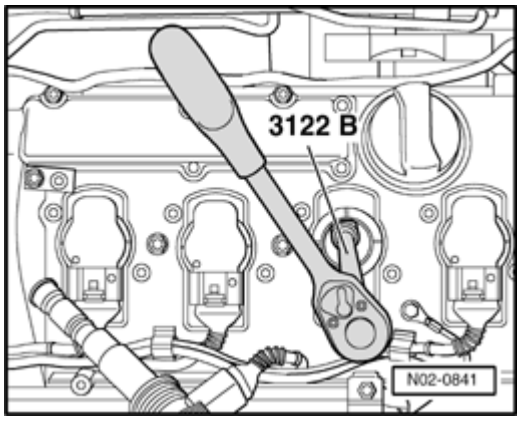


- Remove both bolts **- 1 -** .



- Pull all ignition coils approx. 30 mm out of cylinder head in **- direction of arrow -** using ignition coil puller T40039 .

- Push connector in direction of ignition coils with power output stages, press catch down by hand and disconnect connectors **- arrows -** .



- Remove spark plugs using spark plug wrench 3122 B .

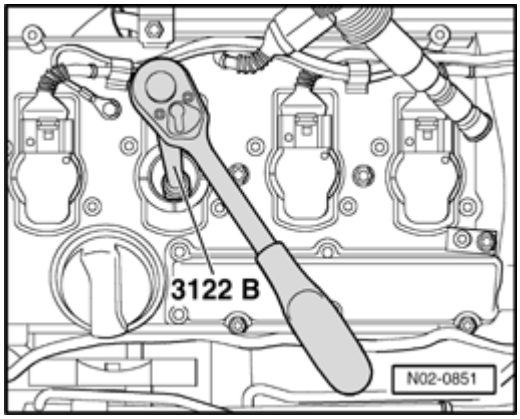
Note:

- *Spark plug identification and tightening torque*

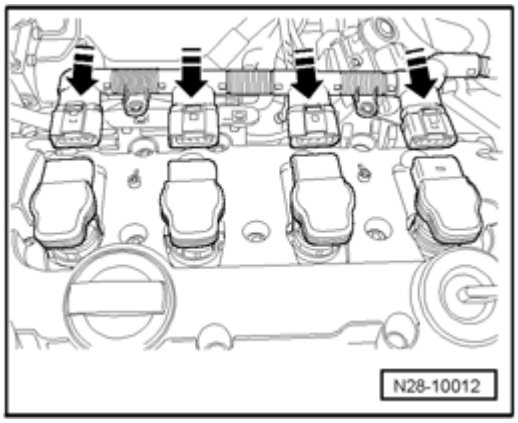
⇒ *Repair Manual, Engine Mechanical, Repair Group 28, Ignition, servicing, test data, spark plugs.*

- *Observe waste disposal regulations!*

Installing



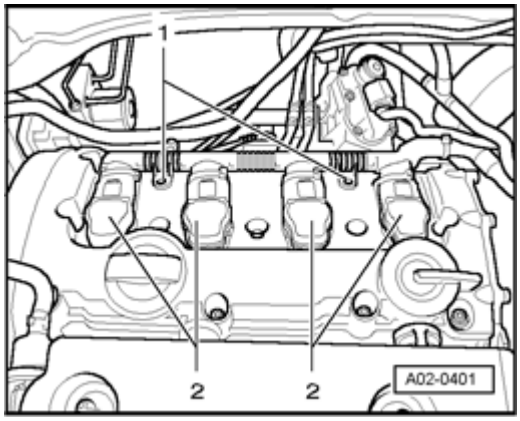
- Screw in new spark plugs using spark plug removal tool 3122 B and tighten to correct tightening torque.



- Guide ignition coils with power output stages into cylinder head.

- Align ignition coils with power output stages into designated recesses of cylinder head cover.

- Connect all connectors to ignition coils **- arrows -** .



- Press ignition coils with power output stages onto spark plugs by hand until stop. They must engage audibly.

- Secure wiring using bolts **- 1 -** .

- Install engine cover.

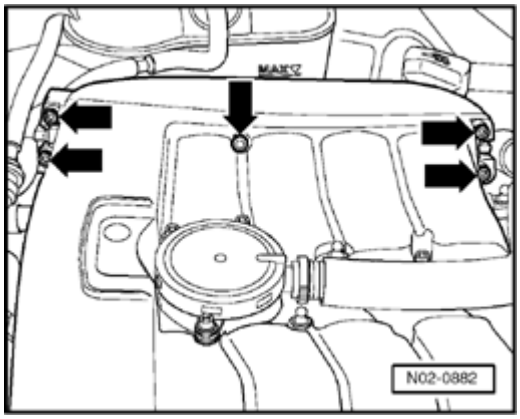
Spark plugs, W8- engines, replacing

Technical data, engine specifications, ⇒ 01-1, Engine characteristics .

Removing:

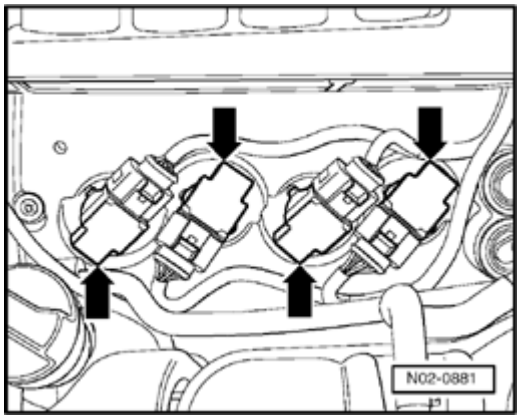
Removing and installing top engine cover ⇒ 01-4, Upper engine cover, removing and installing .

- Remove both side parts of intake manifold as follows:

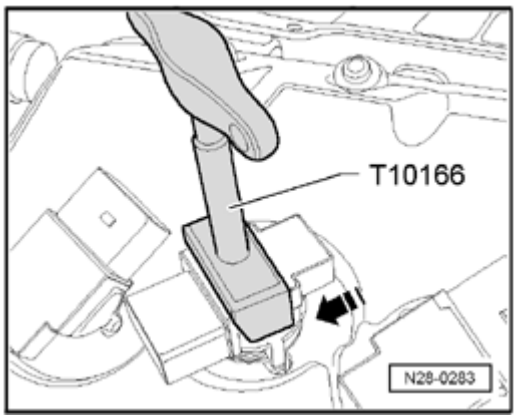


- Remove bolts **- arrows -** and carefully remove side part of intake manifold.

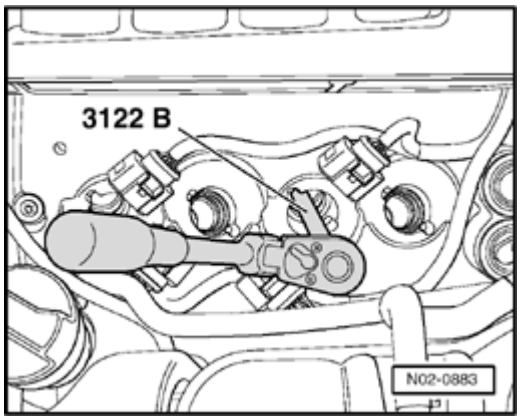
- Remove rubber/metal seal.



- Disconnect connector from ignition coils 1 to 8 **- arrows -** .



- In order to be able to release the connector, use the Puller T10166 .



- Remove spark plugs using spark plug wrench 3122 B .

Note:

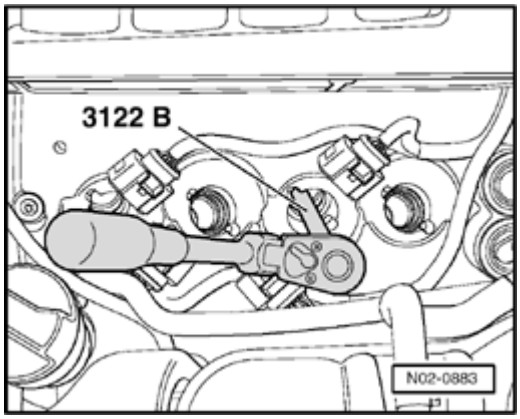
- *Spark plug identification and tightening torque*

  ⇒ Repair Manual, 4.0 Liter 8-Cyl. 4V Engine Mechanical, Fuel Injection Ignition, Engine Code(s): BDP , Repair

Group 28,

Ignition, servicing, test data, spark plugs.

- *Observe waste disposal regulations!*



Installing:

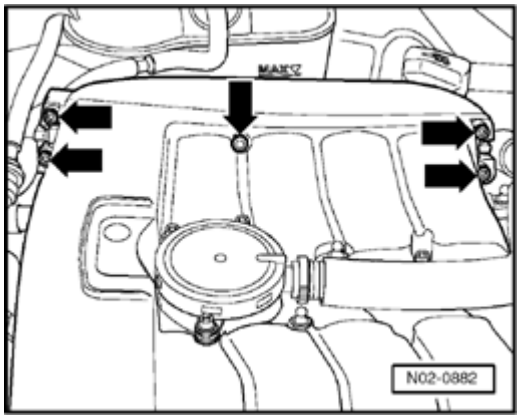
- Screw in new spark plugs using spark plug removal tool 3122 B and tighten to correct tightening torque.

- Insert ignition coil with power output stage into respective spark plug shaft so that the connector connections make no contact with the cylinder head cover.

- Push ignition coil with power output stage onto spark plug by hand.

- They must engage audibly.

- Install rubber/metal seal.



- Carefully install side part of intake manifold and tighten bolts **- arrows -** to 8 Nm.

- Install engine cover.

Rear lid, lubricate left and right multi-joint hinge

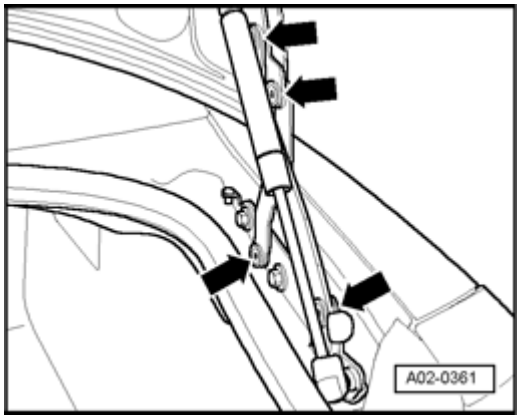
Note:

- *This maintenance point only applies to the sedan and not the wagon.*
- *Lubricant specification: G 000 115 A2 (200 ml spray can)*
- *Part numbers are for reference only. Always check with your Parts Department for the latest part number information*

Corrosion protection measures:

- Open rear lid.

- Remove left/right lid hinge cover if present.



- Spray each of the four hinge joints on both rear lid hinges **- arrows -** .

Note:

- *Included spray tube must be inserted in sprayer head to aim spray.*
- *Shake spray can about five times.*
- *Spray must not be shaken too long or hard because otherwise spray oil will foam up and its lubricating ability is reduced.*

- Completely open and close rear lid several times.

- Reassemble vehicle.

- Clean excess oil from body and joints.

Additional steps for stiff hinges:

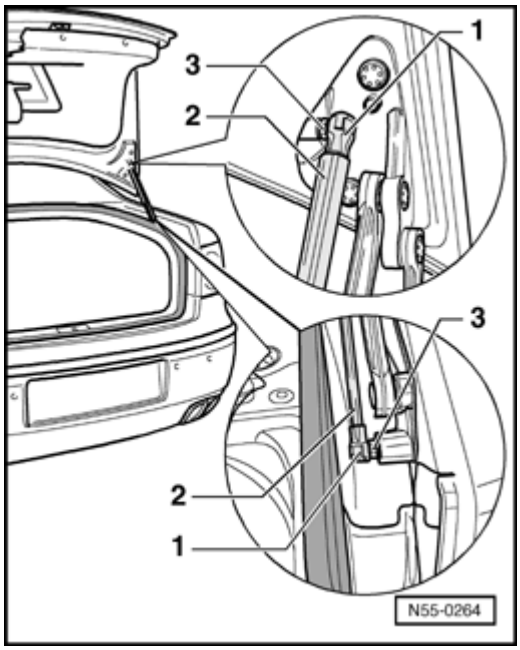
Note:

- *These additional steps do not belong to the service scope and should be handled as repair measures.*

- *In order to make hinges move more easily again and to protect them from corrosion, perform the following procedure:*

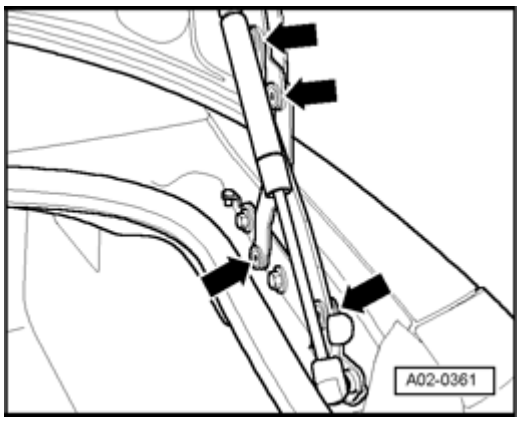
- Open rear lid.

- Remove left/right lid hinge cover if present.



- Remove gas-filled strut **- 2 -**

⇒ *Repair Manual, Body Exterior, Repair Group 55,*



- Spray each of the four hinge joints on both rear lid hinges **- arrows -** .

Note:

- *Included spray tube must be inserted in sprayer head to aim spray.*
- *Shake spray can about five times.*
- *Spray must not be shaken too long or hard because otherwise spray oil will foam up and its lubricating ability is reduced.*

In order for the universal oil to move into the hinge joints, the hinges in the joint area must have a temperature at least 86 ° F (30 ° C).

In cold exterior temperatures, the hinges must be warmed up in the joint area with a hot air gun to approximately 86 - 104 ° F (30 - 40 ° C) before spraying.

- Completely open and close rear lid about 15 times.

Note:

- *This entire hinge treatment procedure must be performed at least 3 times in order to keep the hinges moving easily and to protect against further corrosion.*

- Clean excess oil from body and joints.

- Reassemble vehicle.