Maintenance
Touareg 2018 ➤
Edition 01.2019

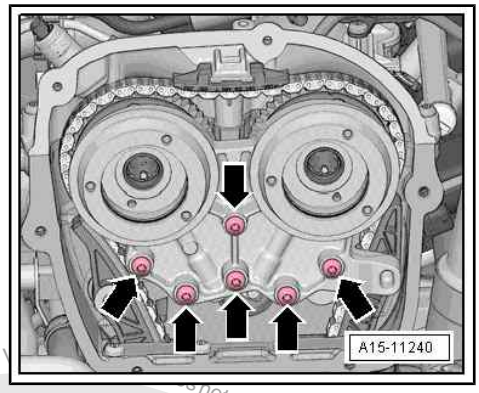
Vehicles with dual clutch gearbox							
	Output in kW	Displacement/l	Annotations	unbraked	12%	8%	Drawbar load in kg
Petrol engine	77	1.2	-	620[1)]	1300	1500	80
	81	1.0	-	610[2)]	1300	1500	
	81	1.2	-	610[2)]	1300	1500	
	81	1.4	EcoFuel (natural gas CNG)	660	1400	1700	
	92	1.4	-	630[1)]	1400	1700	
	96	1.5	-	660[1)]	1400	1700	
	96	1.5	EcoFuel (natural gas CNG)	680	1400	1700	
	103	1.4	Without Active Cylinder Management	640[1)]	1500	1700	
	103	1.4	With Active Cylinder Management	650[1)]	1500	1700	
	110	1.4	-	630[1)]	1500	1700	
	110	1.4	Regenerative braking and start/stop function	640[1)]	1500	1700	
	110	1.4	Hybrid	750	1500	1700	
	110	1.5	-	650[1)]	1500	1700	
	155	2.0	-	690[1)]	1600	1800	
	162	2.0	-	700	1600	1800	
	169	2.0	-	690[1)]	1600	1800	
	180	2.0	-	700[2)]	1600	1800	
	213	2.0	4MOTION	-	-	-	
	215	2.0	4MOTION	-	-	-	
	221	2.0	4MOTION	-	-	-	
	228	2.0	4MOTION	-	-	-	
Diesel engine	85	1.6	-	660[2)]	1500	1800	
	81	2.0	Emission standards in accordance with EU4	670[1)]	1500	1800	
	81	2.0	-	710[1)]	1500	1800	
	105	2.0	-	690[1)]	1600	1800	
	110	2.0	7-speed dual clutch gearbox	680/700[2)]	1600	1800	
	110	2.0	6-speed dual clutch gearbox	700[2)]	1600	1800	
	110	2.0	4MOTION	750	1700	1900	

– Unscrew bolts -arrows-.

• Pull off bearing saddle carefully. Do not cant.

– Remove bearing saddle.

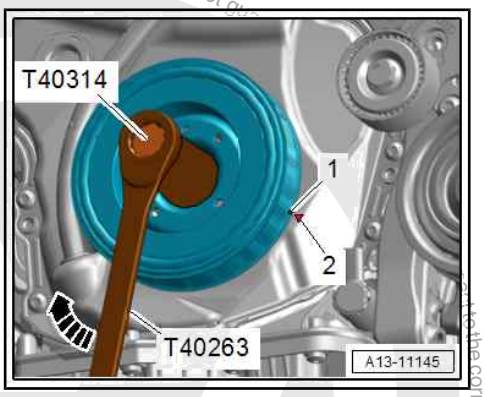
– Turn vibration damper to “TDC” position.



NOTICE

Risk of damage to engine when the drive chain slips.

– Only turn engine in engine direction of rotation.



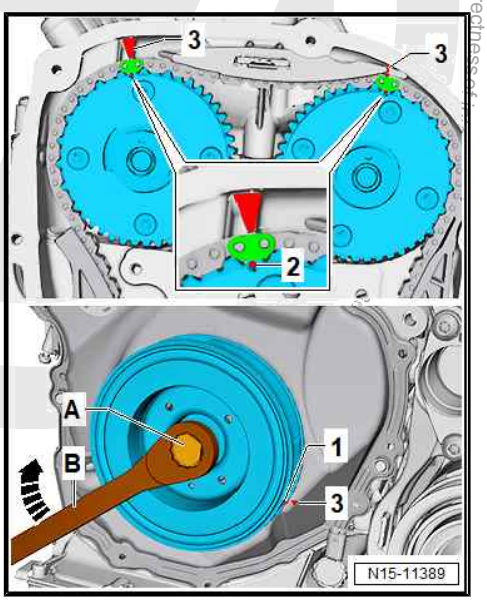
– Turn crankshaft with wrench AF 21 - T40263- , adapter - T40314- and socket AF 24 in direction of engine rotation -arrow- until vibration damper is at “TDC”.

• Notch on vibration damper -1- must align with arrow marking on lower timing chain cover -3-.

• Markings -2- on camshaft sprockets must align with markings -3- on cylinder head.

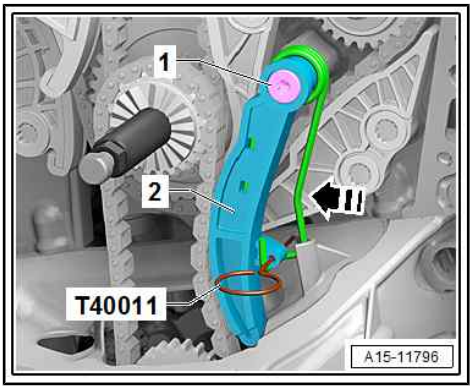
– Remove lower timing chain cover ⇒ page 91 .

– Check “TDC position” again.



– Press tensioning bar of oil pump chain tensioner in direction of -arrow- and lock it with locking pin - T40011- .

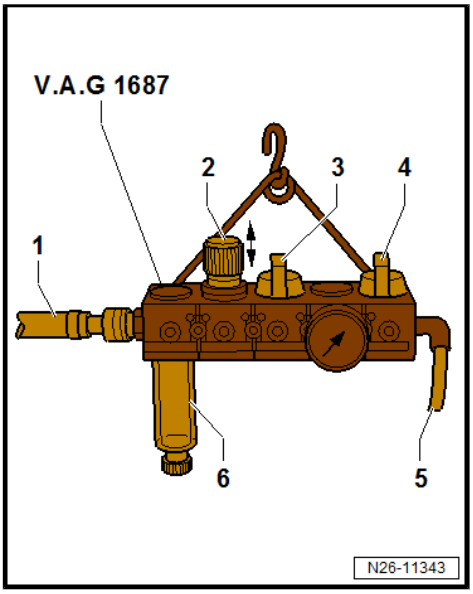
– Unscrew guide pins -1- and remove chain tensioner -2-.



Prepare charge air system tester - V.A.G 1687- as follows:

– Pull pressure control valve -2- upwards, unscrew it completely, and close valves -3- and -4-.

– Connect charge air system tester - V.A.G 1687- to compressed air -1- via commercial adapter.



Note

If there is water in the inspection glass -6-, drain it via the drain plug.

– Open valve -3-.

– Adjust pressure to 0.5 bar with pressure control valve -2-.

– Open valve -4- and wait until test circuit is full. If necessary, adjust pressure to 0.5 bar.

– Check charge air system for leaks by listening, touching, with commercially available leak detector spray or using ultrasonic tester - V.A.G 1842- .

Note

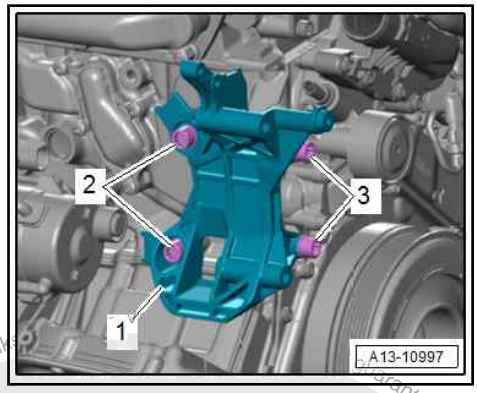
- *A small amount of air escapes through the valves and enters the engine. Therefore a holding pressure test is not possible.*
- *Ultrasonic tester - V.A.G 1842- ⇒ operating instructions*
- *Before removing the adapters, depressurise the test circuit by detaching the hose coupling.*

Installing

Assemble in reverse order of dismantling.

– Move electrical lines free.

– Unscrew bolts -2, 3- and remove bracket -1-.



Installing

Install in reverse order of removal, observing the following:

– Install poly V-belt
⇒ “1.3 Removing and installing poly-V belt”, page 55 .

Torque settings

- ⇒ Fig. ““Bracket for alternator -1- - specified torques and tightening sequence”“ , page 53
- ⇒ Electrical system; Rep. gr. 27 ; Alternator; Assembly overview - alternator

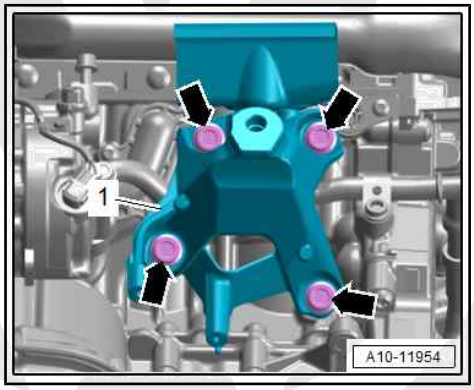
1.7 Removing and installing engine support

Removing

– Removing engine mounting
⇒ “2.2 Removing and installing engine mounting”, page 40 .

Left engine support:

– Unscrew bolts -arrows- and remove engine support -1-.

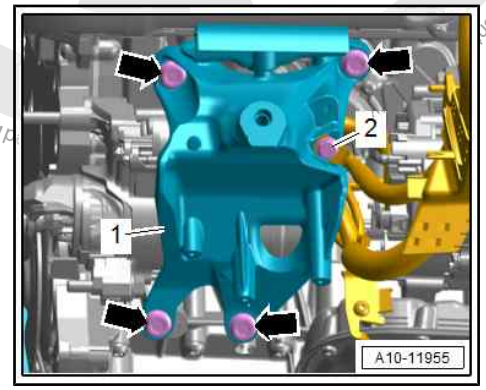


Right engine support:

– Remove right drive shaft cover ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Assembly overview - front wheel housing liner .

– Unscrew bolt -2- for earth line.

– Unscrew bolts -arrows- and remove engine support -1-.



Installing

Install in reverse order of removal, observing the following:

– Install engine mounting
⇒ “2.2 Removing and installing engine mounting”, page 40 .

– Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

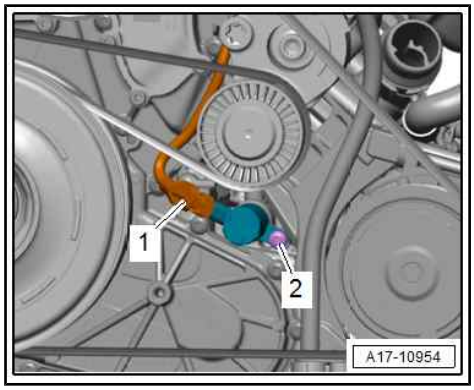
Torque settings

- ⇒ “2.1 Assembly overview - assembly mountings”, page 38
- ⇒ “3.1 Assembly overview - coolant pipes”, page 242

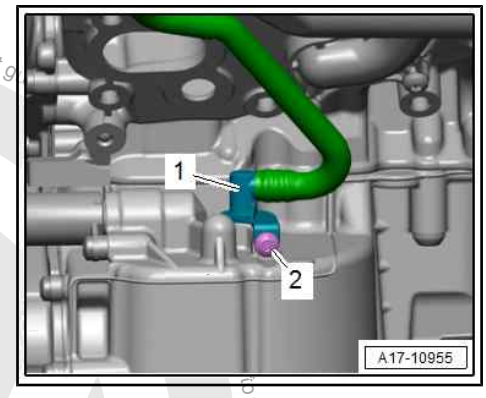
1.8 Renewing crankshaft oil seal - belt pulley end

Special tools and workshop equipment required

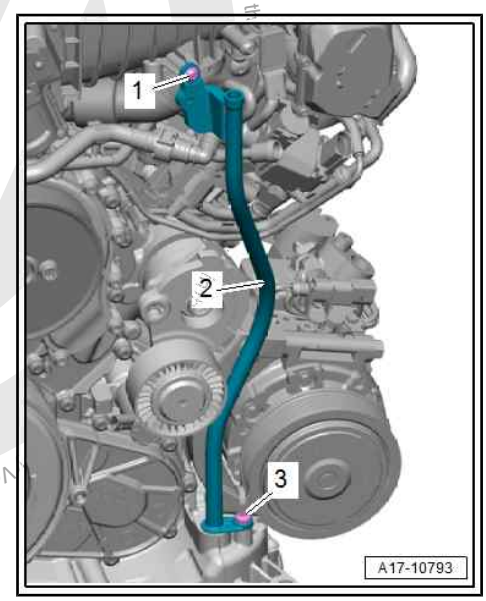
– Separate electrical connector -1- for valve for oil pressure control - N428- .



– Remove bolt -2- and disconnect vacuum hose -1-.



– Unscrew bolts -1, 3- and pull off dipstick guide tube -2-.

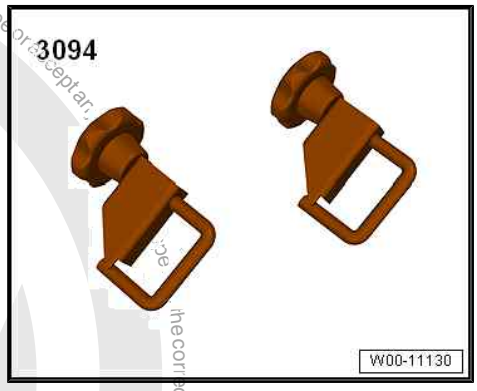


6 Senders and sensors

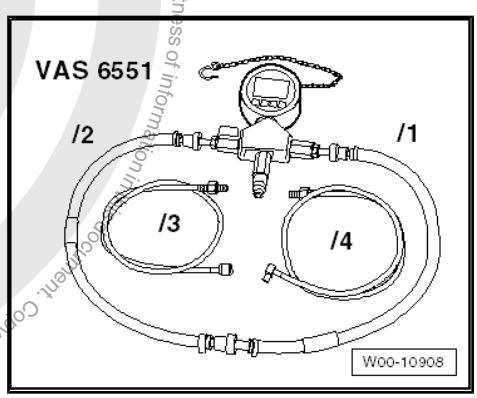
6.1 Checking fuel pressure regulating valve - N276-

Special tools and workshop equipment required

- Hose clamps to 25 mm - 3094-



- Test lead - VAS 6551/3- from pressure gauge (diesel) - VAS 6551-



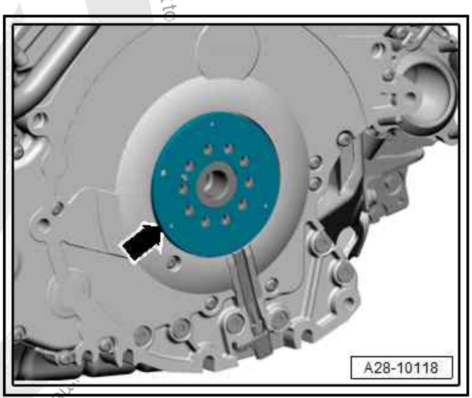
- Measuring container, fuel-resistant
- Auxiliary hose for return connection

NOTICE

Risk of damage to sender wheel due to magnetism.

– Never bring the sender wheel close to magnets (e.g. base of torch light, loudspeaker).

– Remove sender wheel -arrow-.



Installing

Installation is carried out in the reverse order; note the following:

– Install drive plate ⇒ “2.2 Removing and installing drive plate”, page 60 .

3.7 Checking sender wheel

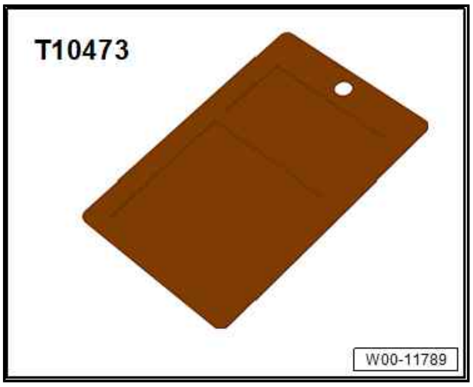
NOTICE

Risk of damage to sender wheel due to magnetism.

– Never bring the sender wheel close to magnets (e.g. base of torch light, loudspeaker).

Special tools and workshop equipment required

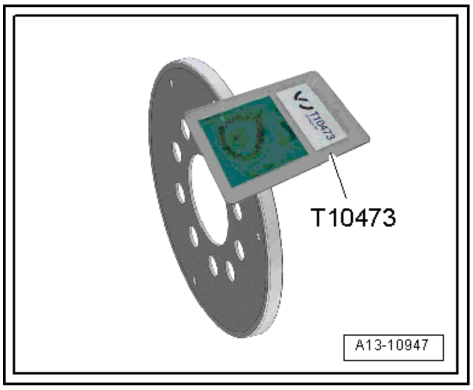
♦ Sensor gauge - T10473-



Procedure

• Sender wheel removed ⇒ “3.6 Removing and installing sender wheel”, page 68 .

– Check sender wheel all-round with sensor gauge - T10473- , as shown in illustration.

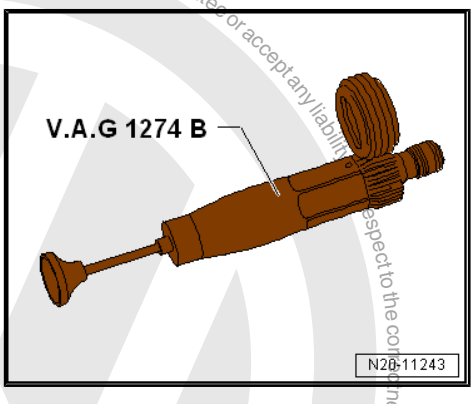


Note

To perform the leakage test correctly, first run a self-test on the cooling system tester - V.A.G 1274 B- .

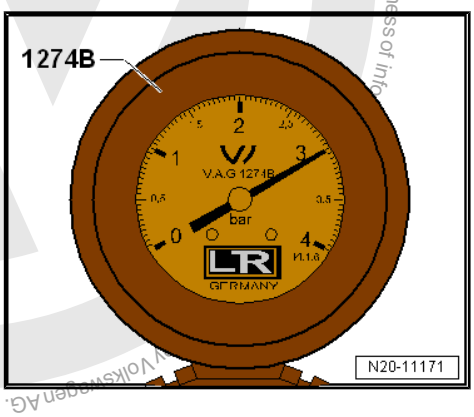
Self-test of cooling system tester - V.A.G 1274 B-

– Operate cooling system tester - V.A.G 1274 B- several times.



– Build up a pressure of 3.0 bar on cooling system tester .

– Observe pressure on pressure gauge of cooling system tester for 30 seconds.



If no pressure builds up or if the pressure drops again:

The cooling system tester - V.A.G 1274 B- is leaking and should not be used.

Checking cooling system for leaks

• Engine at operating temperature.

CAUTION

On a warm engine, the cooling system is under high pressure. Danger of scalding by steam and hot coolant.

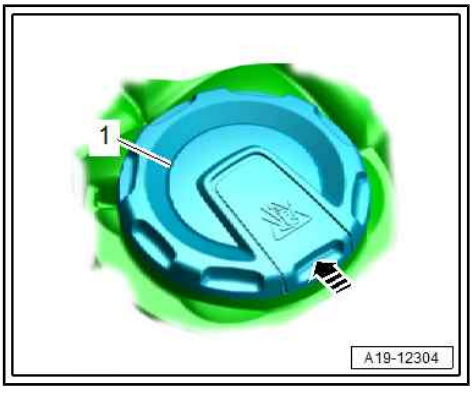
Skin and other parts of the body may be scalded.

– **Wear protective gloves.**

– **Wear protective goggles.**

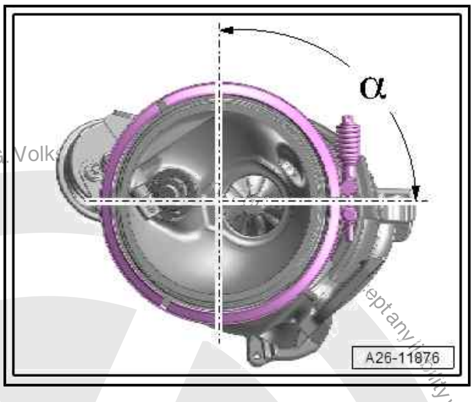
– **Reduce excess pressure by covering cap of coolant expansion tank with cloths and opening it carefully.**

– Open cap -1- for coolant expansion tank. To do this, release fastener -arrow-.

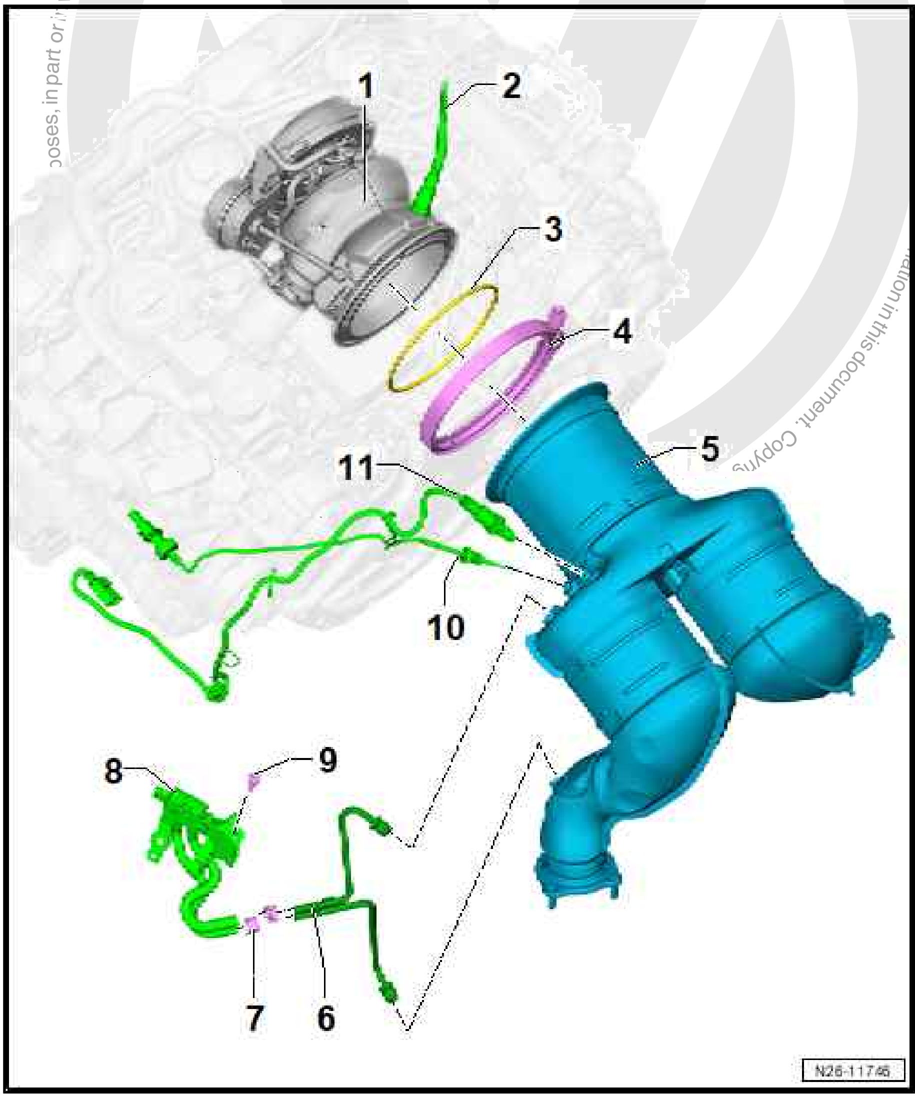


Installation position of screw-type clip for catalytic converter

- Angle -α- = 90° ±15°.



2.1.2 Assembly overview - emission control with diesel particulate filter



1 - Turbocharger

❑ Assembly overview ⇒ “1.1 Assembly overview - turbocharger”, page 246

2 - Lambda probe - G39-

❑ Assembly overview ⇒ “9.1 Assembly overview - Lambda probe”, page 319

3 - Seal

❑ Renew after removal

4 - Screw-type clamp

❑ Renew after removal

❑ Fitting position ⇒ Fig. ““Installation position of screw-type clip for catalytic converter”“ , page 337

❑ 7 Nm

5 - Catalytic converter with particulate filter

❑ Removing and installing ⇒ “2.2 Removing and installing catalytic converter”, page 338

6 - Pipes for pressure differential sender for particulate filter - G1037-

7 - Spring-type clip

8 - Pressure differential sender for particulate filter - G1037-

❑ Removing and installing ⇒ page 306

9 - Bolt

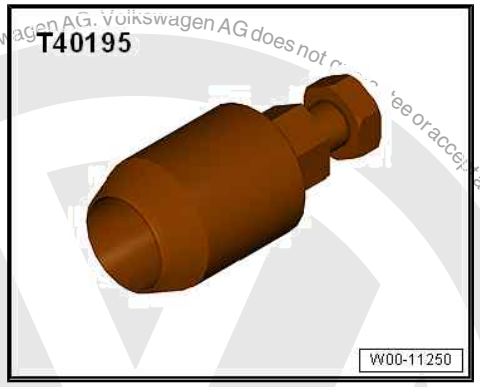
❑ ⇒ “6.2 Assembly overview - pressure differential sender, models with particulate filter”, page 302

10 - Exhaust gas temperature sender 3 - G495-

❑ 45 Nm

❑ Removing and installing ⇒ page 341

- Seal puller - T40195-

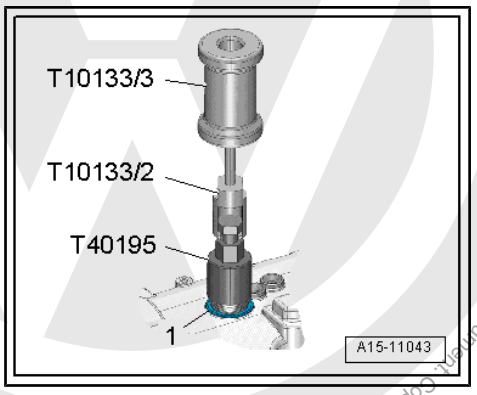


Sequence of operations

– Remove corresponding injector
⇒ “3.8 Removing and installing injectors”, page 318 .

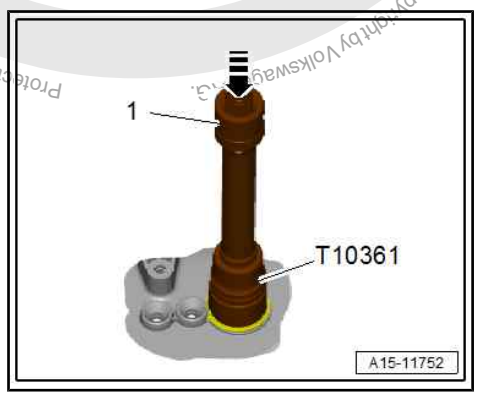
– Screw oil seal extractor - T40195- into seal -1-. If necessary, counterhold seal with pliers.

– Place impact hammer -T10133/3- together with adapter - T10133/2- in position on oil seal extractor as shown in the illustration and then pull out upwards using tapping movements.



– Drive in new oil seal for injector as far as the stop, using socket 24 mm - T10361- and short extension -1-.

– Install injector
⇒ “3.8 Removing and installing injectors”, page 318 .



1.6 Checking compression

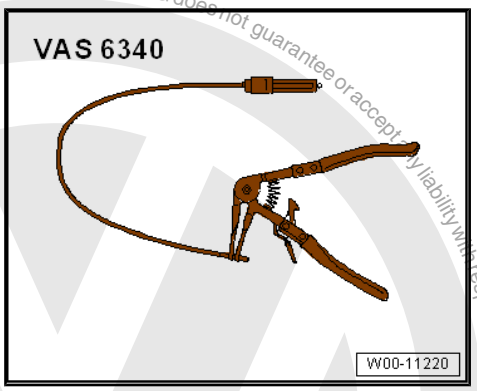
Special tools and workshop equipment required

- Compression tester - V.A.G 1763- with adapter - V.A.G 1763/8-

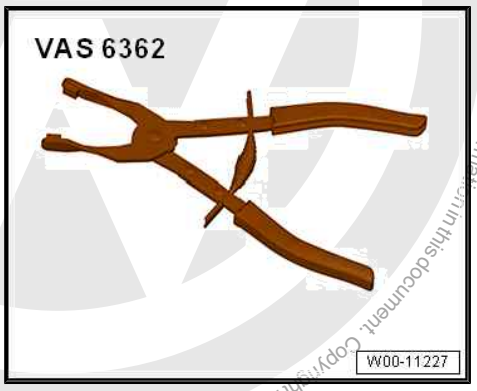
Sequence of operations

- Engine oil temperature approx. 30°C.
- Battery voltage at least 12.5 V.

- Hose clamp pliers - VAS 6340-



- Spring-type clip pliers - VAS 6362-



Sequence of operations

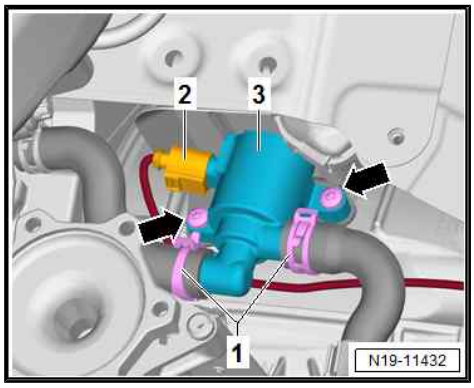
– Detach rear exhaust gas recirculation cooler ⇒ “5.2.2 Removing and installing rear exhaust gas recirculation cooler”, page 412 .

– Disconnect electrical connector -2-.

– Clamp off coolant hoses with hose clamps up to 25 mm - 3094- , and remove them. To do this, loosen hose clips -1-.

– Unscrew bolts -arrows- and remove gearbox oil cooling valve - N509- -3-.

– To avoid loss of coolant, insert new gearbox oil cooling valve - N509- immediately.



Installing

Further installation is carried out in reverse order of removal, observing the following:

• Secure all hose connections with hose clips corresponding to the series equipment ⇒ Electronic parts catalogue .

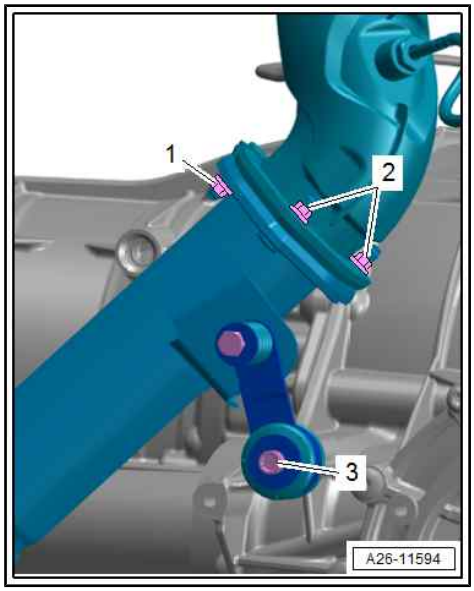
– Secure rear exhaust gas recirculation cooler ⇒ “5.2.2 Removing and installing rear exhaust gas recirculation cooler”, page 412 .

– Check coolant level ⇒ page 232 .

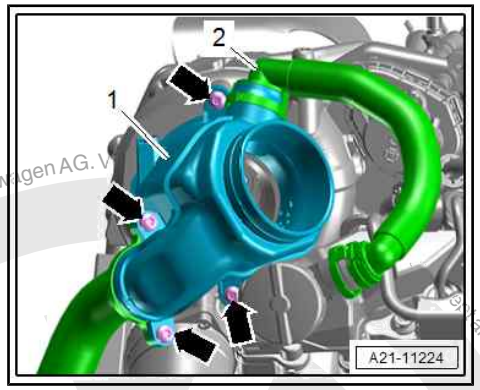
Specified torques

- ⇒ “2.2 Assembly overview - electric coolant pump”, page 235

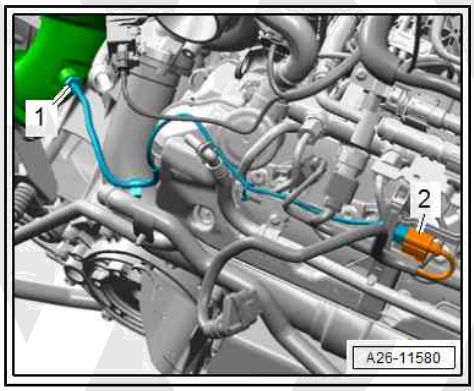
– Remove nuts -1-. (Do not remove nuts -2- yet.)



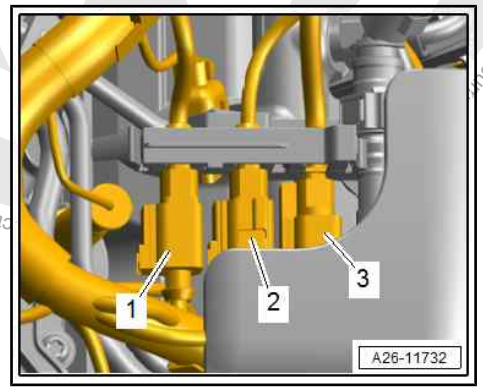
– Remove crankcase breather hose -2- from resonator -1-. To do this, press release buttons on both sides.
– Unscrew bolts -arrows- and remove resonator -1-.
– Remove plenum chamber bulkhead ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber bulkhead .



– If fitted, unscrew exhaust temperature sender 4 - G648- -item 1-.



– Detach electrical connectors -1, 2, 3- from bracket, unplug connectors and free off electrical wires.



5 - Connecting rod

- ❑ With industrially cracked conrod bearing cap
- ❑ Mark cylinder allocation in colour -B-.
- ❑ Axial clearance for each conrod pair (when new): 0.20 … 0.44 mm
- ❑ Measuring radial clearance ⇒ page 88
- ❑ Renew as set only.
- ❑ When fitting, note the following: wide contact shoulder -A- must point to the same side on the conrod and conrod bearing cap.
- ❑ Note, when installing, that wide contact shoulder -A- of conrod point towards adjacent crankshaft bearing

6 - Bolt

- ❑ 9 Nm

7 - Oil spray jet

- ❑ With spray nozzle valve
- ❑ Removing and installing ⇒ page 88

8 - Retaining ring

- ❑ Renew after removal

9 - Piston

- ❑ Measuring piston projection at “TDC” ⇒ page 84
- ❑ Mark installation position and cylinder number ⇒ page 81 .
- ❑ Renew piston if cracks are visible on piston crown or piston skirt
- ❑ Removing and installing ⇒ page 81
- ❑ Checking piston and cylinder bore ⇒ page 87

10 - Piston pin

- ❑ Removing and installing ⇒ “5.2 Removing and installing pistons”, page 81

11 - Retaining ring

- ❑ Renew after removal

12 - Piston rings

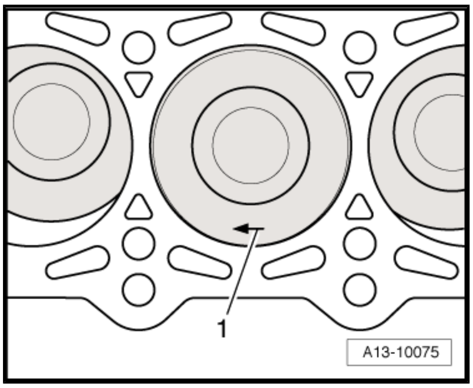
- ❑ Measuring ring gap ⇒ page 87
- ❑ Measuring ring-to-groove clearance ⇒ page 88
- ❑ Use commercially available piston ring pliers to remove and install.
- ❑ Installation position: marking “TOP” or side with lettering towards piston crown
- ❑ Offset gaps by 120°

Installation position of pistons

Note

- ♦ *Risk of damage to piston crown.*
- ♦ *If worn pistons are to be reinstalled, use paint to mark their allocation to cylinder on piston crown. Do not use indentation, scratches, notches, or similar to mark piston crown.*

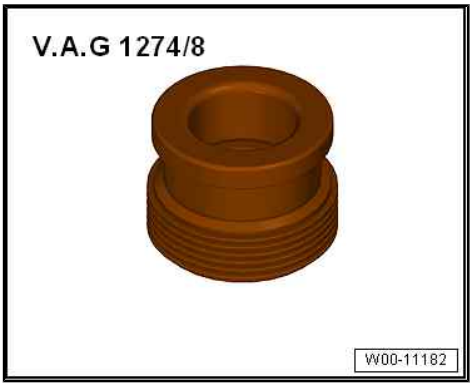
- Installation position: arrow -1- on piston crown points to belt pulley end.



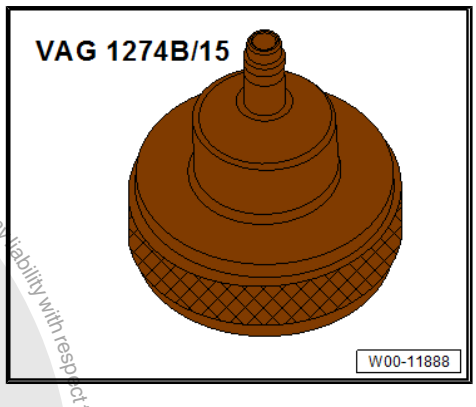
5.2 Removing and installing pistons

Special tools and workshop equipment required

- Adapter for cooling system tester - V.A.G 1274/8-



- Adapter for cooling system tester - V.A.G 1274 B/15-



- Safety goggles
- Safety gloves

CAUTION

On a warm engine, the cooling system is under high pressure. Danger of scalding by steam and hot coolant.

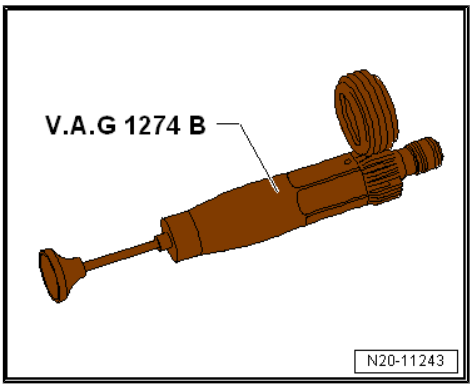
Skin and other parts of the body may be scalded.

- **Wear protective gloves.**
- **Wear protective goggles.**
- **Reduce excess pressure by covering cap of coolant expansion tank with cloths and opening it carefully.**

Procedure

Note

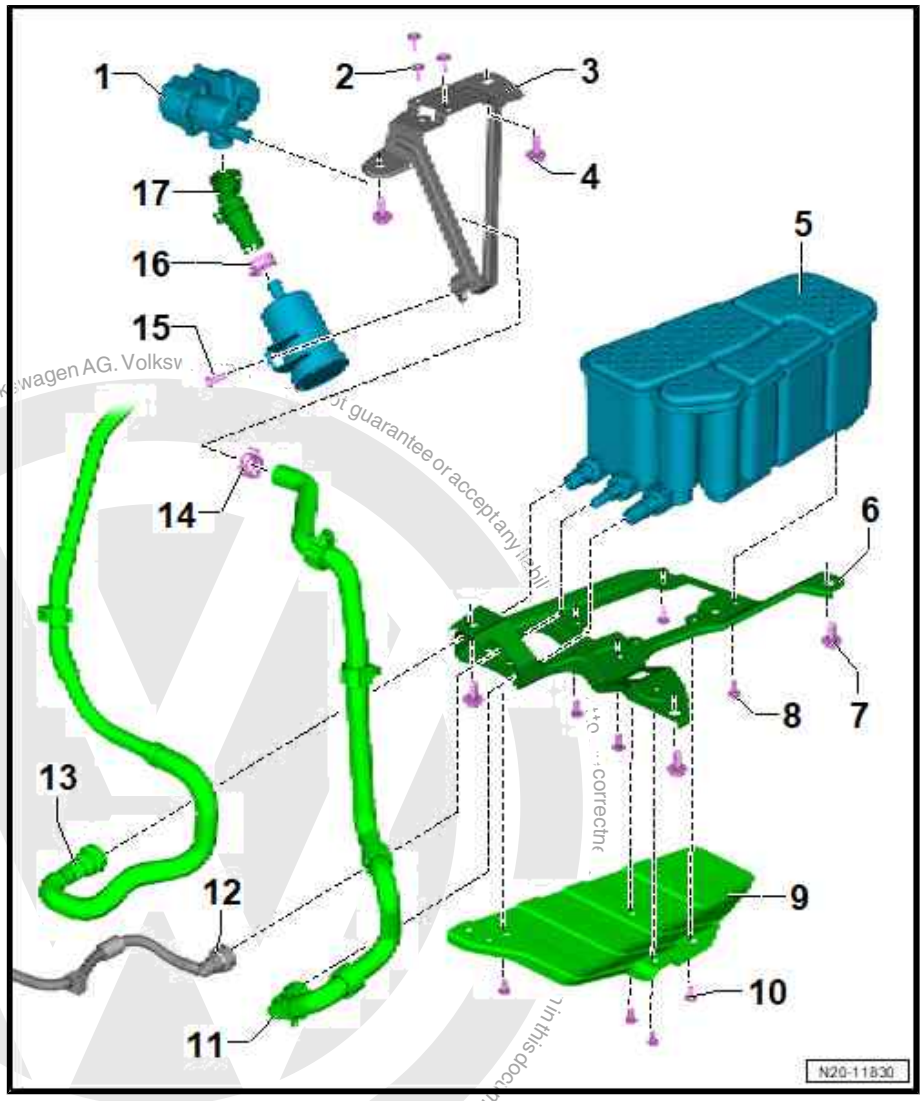
To perform the leakage test correctly, first run a self-test on the cooling system tester - V.A.G 1274 B- .



6 Senders and sensors

6.1 Assembly overview - actuator for structure-borne sound and control unit for structure-borne sound

4.2.2 Assembly overview – activated charcoal filter system, vehicles with fuel tank leak detection



1 - Fuel tank leak detection module - GX36-

- ❑ With fuel system diagnostic pump - V144-
- ❑ Fitting location: rear right
- ❑ Removing and installing ⇒ page 45

2 - Bolt

- ❑ 1.5 Nm

3 - Bracket

4 - Bolt

- ❑ 20 Nm

5 - Activated charcoal filter

- ❑ Fitting location: rear right
- ❑ Removing and installing ⇒ page 44
- ❑ Checking fuel system for leaks ⇒ page 46

6 - Bracket

- ❑ For activated charcoal filter

7 - Bolt

- ❑ 20 Nm

8 - Bolt

- ❑ 1.5 Nm

9 - Heat shield

10 - Bolt

- ❑ 8 Nm

11 - Breather line

- ❑ To fuel system diagnostic pump - V144-

12 - Breather line

- ❑ To activated charcoal filter solenoid valve 1 - N80-

13 - Breather line

- ❑ From fuel tank
- ❑ Vehicles with high-voltage system: from fuel tank shut-off valve - N288-

14 - Hose clamp

15 - Bolt

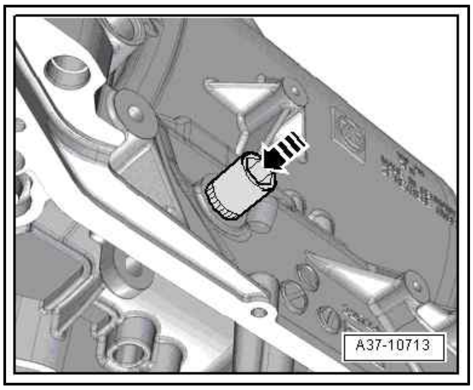
- ❑ 8 Nm

16 - Hose clamp

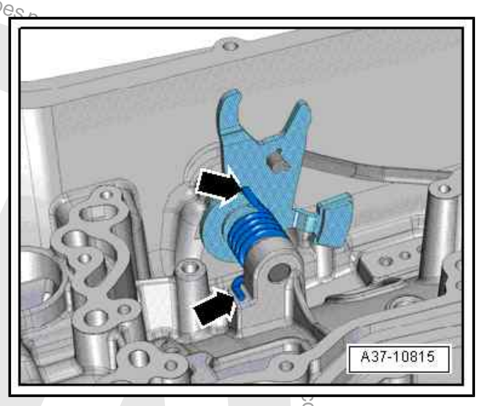
17 - Vent line with filter

- ❑ Fitting location: rear right
- ❑ Removing and installing ⇒ page 45

– Position seal on gearbox housing, and press it in as far as stop using suitable socket -arrow-.

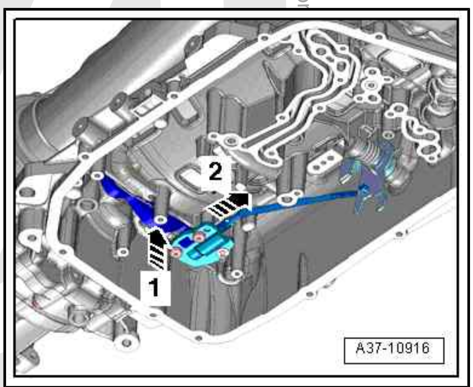


– Insert gearbox selector lever with shaft, and at the same time attach return spring to stop lever and to gearbox housing -arrows-.



Note

If the operating rod for the locking pawl has slipped too far towards the rear, it can only be pulled back forwards -arrow 1- with the locking pawl pressed -arrow 2-.

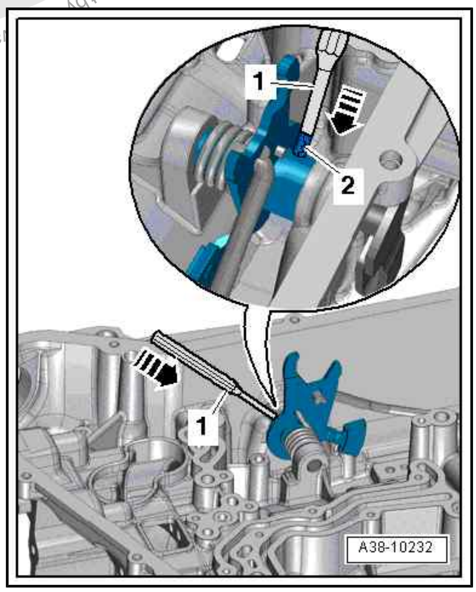


– Drive in hold-down pin -2- on shaft of gearbox selector lever using pin drift -1-. Observe installation position while doing so ⇒ page 101 .

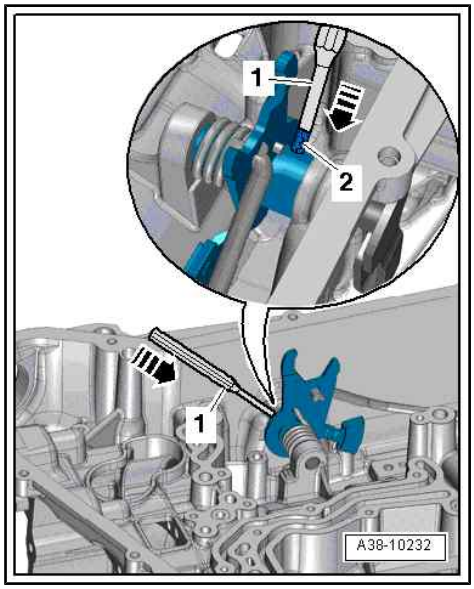
– Installing mechatronic unit ⇒ page 94 .

– Fill ATF ⇒ page 80 .

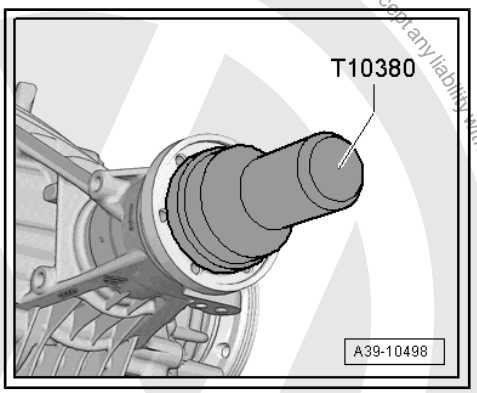
– Check manual release mechanism of parking lock ⇒ page 24 .



– Drive in hold-down pin -2- on shaft of emergency parking lock release lever using drift -1-. Observe installation position while doing so ⇒ page 85 .
– Installing mechatronic unit ⇒ page 74 .
– Fill ATF ⇒ page 57 .
– Check manual release mechanism of parking lock ⇒ page 23 .



– Drive on flange/propshaft to stop with thrust piece - T10380- .

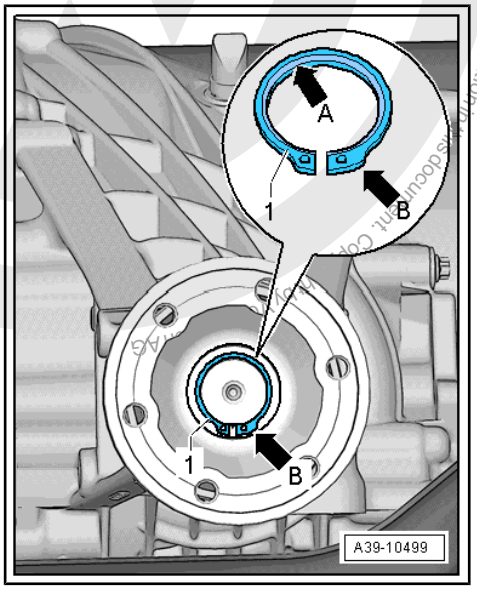


Mount retaining ring -1- as follows:

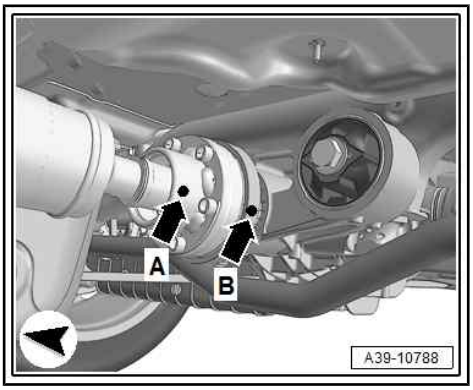
- Always renew retaining ring -1-.
- Chamfer on inner diameter of retaining ring -arrow A- points outwards in direction of propshaft.
- Wide tab on retaining ring -arrow B- must be on right as shown in diagram.

When renewing flange for propshaft, please note:

- Retaining ring -1- must be re-calculated.
- To do this, determine thickest retaining ring -1- that can just be inserted in groove and insert; part number ⇒ Electronic parts catalogue .



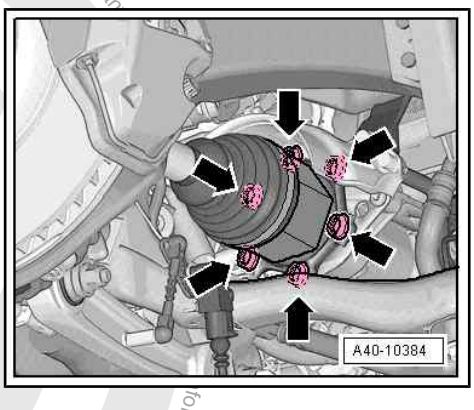
– Attach propshaft to rear final drive ⇒ page 53 .
– Top up gear oil in rear final drive and check oil level ⇒ page 19 .



4.4.2 Renewing input shaft seal, 0DG

Special tools and workshop equipment required

– Loosen wheel bolts.
– Raise vehicle.
– Remove wheel.
– Remove shield or upper part subframe shield ⇒ page 41 .
– Remove heat shield for drive shaft ⇒ page 108 .
– Unscrew bolts -arrows- securing drive shaft to flange shaft.
– Remove drive shaft, make sure not to damage the bellows and drive shaft coating.



Installing

Install in reverse order of removal, observing the following:

– Tighten drive shaft threaded connection on wheel hub ⇒ page 107 .

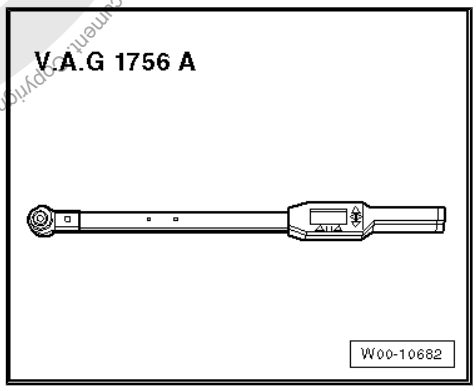
Specified torques

♦ ⇒ “6.1 Assembly overview - drive shaft”, page 105

6.3 Loosening and tightening threaded connections of drive shaft

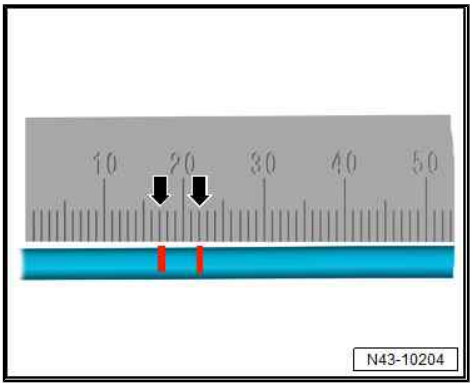
Special tools and workshop equipment required

♦ Torque angle wrench - V.A.G 1756 A-



♦ AF 19 hexagon socket, commercially available

– Unscrew connection piece and remove air pipe.
– Use waterproof pen to mark end of air pipe in vehicle and both ends of new air pipe.
• Use “17 mm” or “22 mm” marks to check whether air pipe has been properly inserted in connection piece.
– Fit sponge rubber on both pipes.
– Install new connectors.

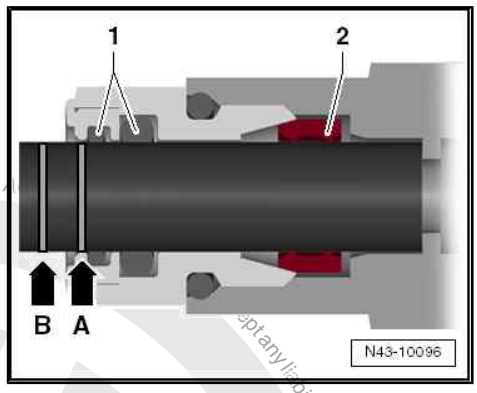


Note

The connection pieces in the pipe connector are already tightened to torque. The air pipes only need to be pushed in.

– Remove transport protection cap.

– Push the old air pipe through the sealing rings -1-.
– Then, applying a little pressure, push the air pipe through the cutting ring -2- and into the line connectors as far as to stop.



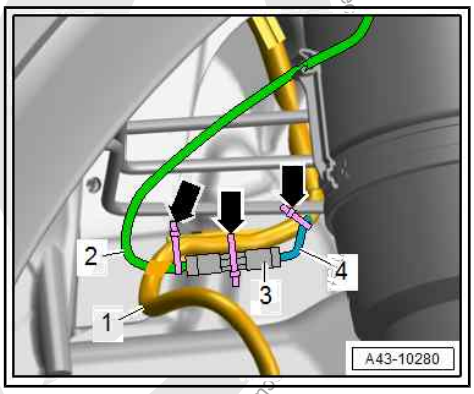
Note

♦ *The air lines have been pushed in far enough when the first colour marking -arrow A- is no longer visible.*
♦ *The second colour marking -arrow B- must remain visible.*

– Fit sponge rubber on the connection pieces.
– Repeat the steps with the new air pipe.
– Renew connection piece ⇒ page 242 .

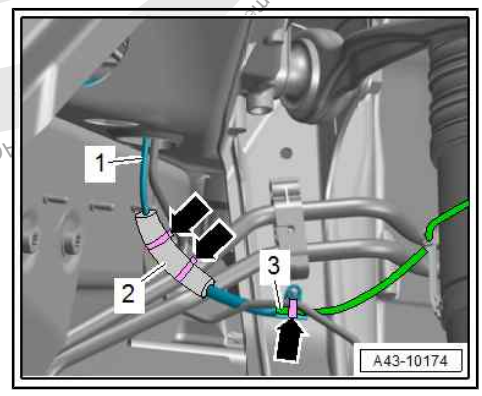
Coupling point of air pipe for front left air spring

– Detach genuine air pipe -4- from wiring harness -1-.
– Properly encase wiring harness again.
– Repair air pipe ⇒ page 239 .
– Attach encased connector -3- and new air pipe -2- to wiring harness using cable ties -arrows-.

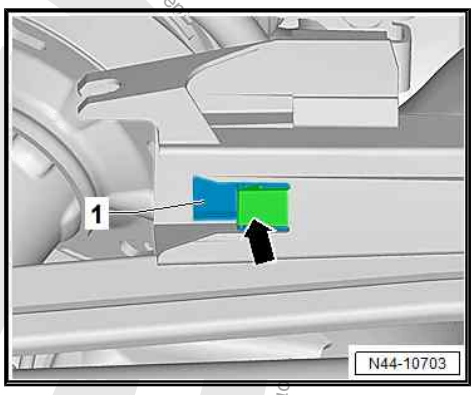


Coupling point of air pipe for front right air spring

– Repair air pipe -1- ⇒ page 240 .
– Attach encased connector -2- and new air pipe -3- to wiring harness using cable ties -arrows- to brake line.



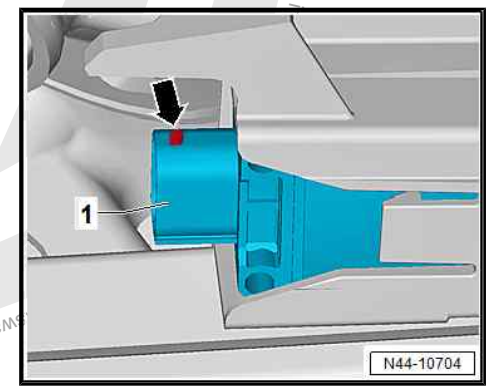
– Press lug -arrow- slightly downwards, and pull tyre pressure monitoring control unit - J502- -1- out of bracket.



Installing

Install in reverse order. The following should be observed:

– Insert Tyre Pressure Monitoring System control unit - J502- into bracket with the lug -arrow- facing upwards.



5.5.10 Removing and installing Tyre Pressure Monitoring System control unit, Touareg 2018

Fitting location

The Tyre Pressure Monitoring System control unit - J502- is fitted on the rear subframe.

Removing

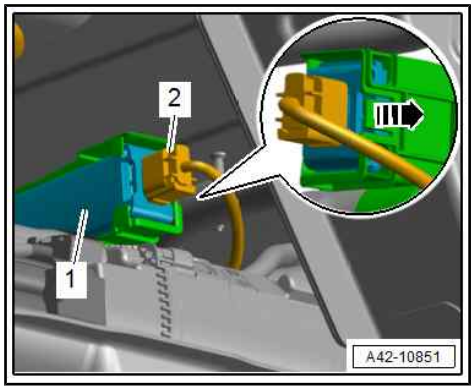
– Switch off ignition.

– If fitted, remove underbody claddings ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody cladding; Removing and installing underbody cladding .

– Separate electrical connector -2-.

– Release catch -arrow-.

– Pull off Tyre Pressure Monitoring System control unit - J502- -1- towards rear.



Installing

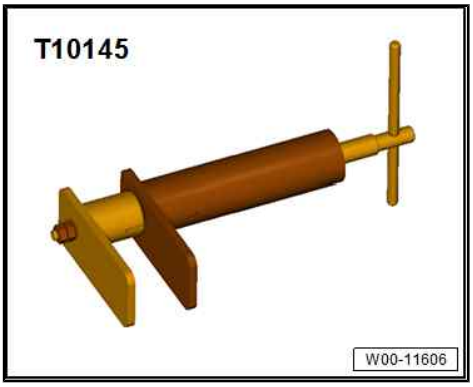
Install in reverse order.

5.5.11 Removing and installing bracket for Tyre Pressure Monitoring System control unit, Touareg 2015

Removing

– Remove Tyre Pressure Monitoring System control unit - J502- ⇒ page 61 .

♦ Piston resetting appliance - T10145-



♦ Lithium grease - G 052 150 A2- ⇒ Electronic parts catalogue

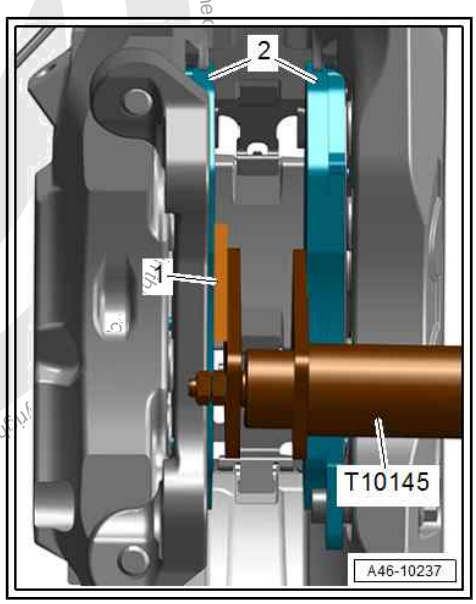
Removing

– Carefully lever pad wear indicator wire off brake pad, and pull it off
⇒ “1.6 Removing and installing pad wear indicator wire”, page 42 .

– Remove brake caliper
⇒ “1.3.1 Removing brake caliper with brake hose connected”, page 35 .

– Remove brake caliper and secure with wire so that weight of brake caliper does not strain or damage brake hose.

– Fit piston resetting appliance - T10145- with an inserted piece of wood -1- to old brake pads. Push brake caliper piston completely back into brake caliper.

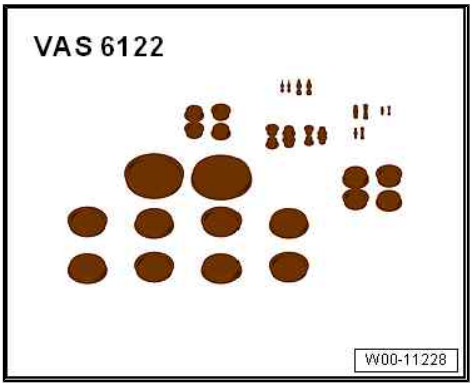


Note

♦ *Mark brake pads or linings when removing if they are to be reused. Fit in same position when installing, or braking will be uneven.*

♦ *Before pushing back the piston, extract brake fluid from the brake fluid reservoir. Otherwise, particularly if reservoir has been topped up, fluid will overflow and cause damage.*

♦ Engine bung set - VAS 6122-



Removing

– Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .

– Remove lower left longitudinal member ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier, Assembly overview - lock carrier .

Vehicles with R134a refrigerant

– Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

– Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

⚠ CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear protective goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

– For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .

7 Operating and display unit

⇒ “7.1 Overview of operating and display unit”, page 179

⇒ “7.2 Removing and installing operating and display unit”, page 182

7.1 Overview of operating and display unit

⇒ “7.1.1 Overview of operating and display unit, operating and display unit for air conditioning system at front E87 ”, page 179

⇒ “7.1.2 Overview of operating and display unit, operating and display unit for air conditioning system at rear E265 ”, page 181

7.1.1 Overview of operating and display unit, operating and display unit for air conditioning system at front - E87-

Note

A warning lamp in the instrument panel controls will indicate that the selected function is active.

1 - Button to regulate temperature, warm

- ❑ Driver side
- ❑ Set temperature is indicated in display.

2 - Left temperature indicator

- ❑ Indicates temperature setting on driver side.

3 - SYNC button

- ❑ Synchronisation of climate zones to driver value

4 - AUTO function button

- ❑ In automatic mode, the Climatronic maintains the selected interior temperature automatically

5 - Menu button

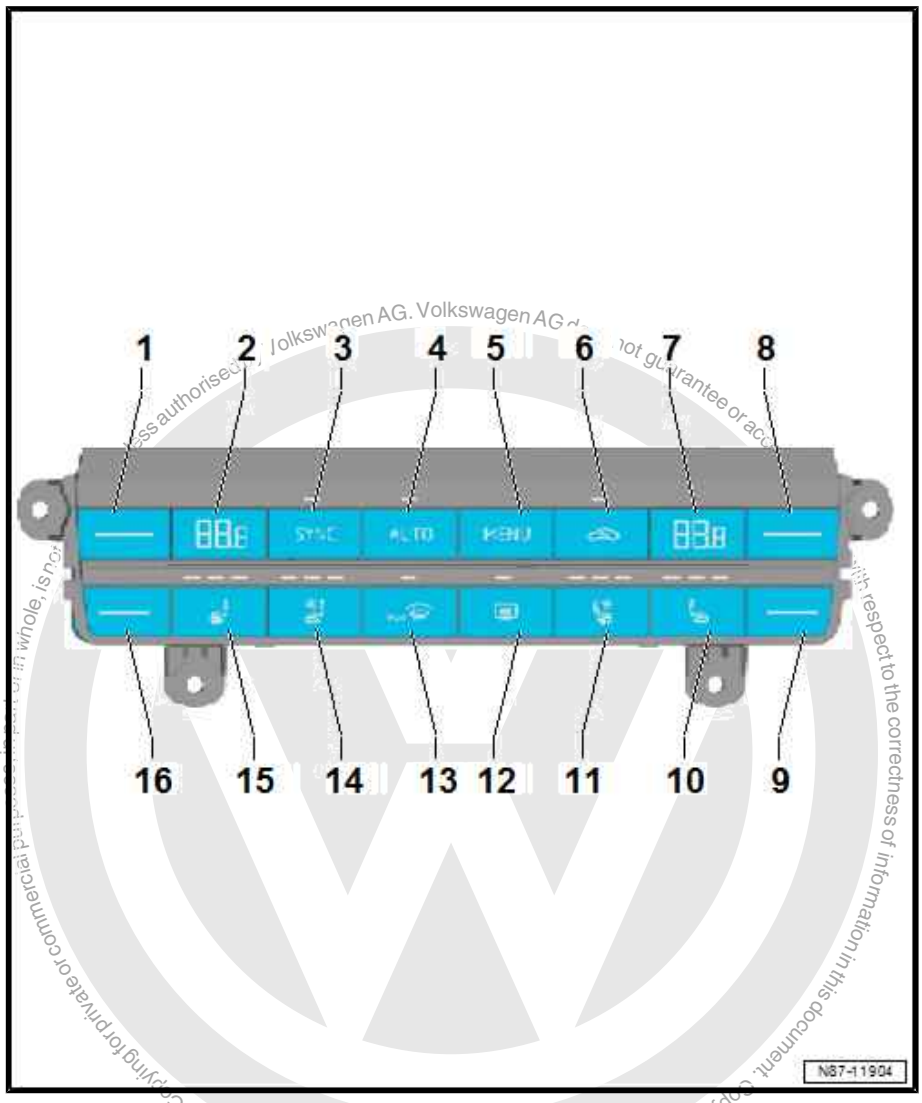
- ❑ Pressing Menu button will open the air conditioning menu

6 - Fresh air and air recirculation switch - E184-

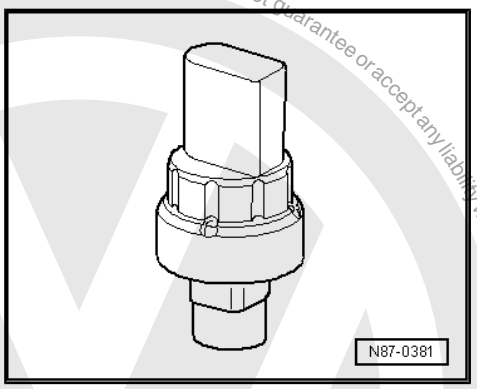
- ❑ Pressing the air recirculation button will prevent polluted air from entering the interior.

7 - Right temperature indicator

- ❑ Indicates temperature setting on front passenger side.



Senders for connection to a refrigerant circuit with valve



Note

- *Refer to vehicle-specific refrigerant circuit for switching pressures, removing and installing switches and location/design of switches ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).*
- *These senders come in different versions, with different functions and different designations. The refrigerant pressure and temperature sender - G395- shown as follows is installed e.g. in the Golf GTE, Audi A4, Audi Q5 and Audi Q5 Hybrid ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit; System overview - refrigerant circuit .*
- *Before loosening the threaded connection of the sender, check which version of sender it is ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit; System overview - refrigerant circuit .*
- *For senders designed for connection to a refrigerant circuit without valve. The refrigerant must be extracted before the threaded connection is loosened. If the sender is not removed within 10 minutes after the system has been evacuated, pressure may develop in the refrigerant circuit due to re-evaporation. Extract refrigerant again.*
- *Different designations depending on the function and vehicle ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit; System overview - refrigerant circuit .*

- The sender for refrigerant pressure and refrigerant temperature is installed e.g. in place of the high pressure sender or pressure sender for refrigerant circuit ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual)
- The sender for refrigerant pressure and refrigerant temperature, the pressure sender for refrigerant circuit and high pressure sender come in different versions. Depending on the version, they can currently only be distinguished externally by the part number, which is why attention should be paid during renewal to their correct allocation (part number ⇒ Electronic parts catalogue). Reason: These senders emit different signals, and the relevant control units can only evaluate the signal to which they have been matched ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode - air conditioning system and ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).
- The sender for refrigerant pressure and refrigerant temperature (and the pressure sender for refrigerant circuit) exchange information with the respective control unit via the data bus (e.g. “LIN bus”) when voltage is applied. The respective control units use this information to calculate the pressure and temperature in the refrigerant circuit. Any faults detected in this way are passed on to the control unit ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode.
- The sender for refrigerant pressure and refrigerant temperature transmits the measured valve for the pressure in the refrigerant circuit and the measured temperature to the connected control unit. The pressure sender for refrigerant circuit only transmits the measured value for the pressure in the refrigerant circuit to the connected control unit. Even though on most vehicles only the pressure signal is evaluated, no other pressure sender may be installed in a vehicle for which provision is made for a refrigerant pressure and refrigerant temperature sender ⇒ Electronic parts catalogue .

Possible deviation from specification during pressure test
♦ The requisite cooling output is reached. ♦ The high pressure equates to the specification ♦ The low pressure is too low (lower than the specification)
Possible causes for deviation from specification and rectification
♦ Measured value of evaporator output temperature sender - G263- faulty. – Check measured value and installation of -G263- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” function - air conditioning system and ⇒ Heating, air conditioning; Rep. gr. 87 ; Overview of fitting locations - air conditioning system (vehicle-specific workshop manual). ♦ Actuation of the air conditioner compressor regulating valve - N280- is defective. ♦ If a shut-off valve is installed in the refrigerant circuit and it does not open correctly or at all ⇒ Heating, air conditioning; Rep. gr. 87 ; Overview of fitting locations - air conditioning system (vehicle-specific workshop manual) and ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual). – Check actuation of the air conditioner compressor regulating valve - N280- and repair if necessary ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode - air conditioning system. – If fitted, check the function of the installed shut-off valve ⇒ Heating, air conditioning; Rep. gr. 87 ; Overview of fitting locations - air conditioning system and ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit . ♦ Air conditioner compressor regulating valve - N280- or air conditioner compressor defective – Check function of -N280- ; if necessary remove -N280- and check for dirt ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode - air conditioning system and ⇒ “1.5 Renewing components”, page 78 – -N280- or renew the air conditioner compressor ⇒ “1.5 Renewing components”, page 78 – If dirt is found in the refrigerant circuit, clean the refrigerant circuit (flush with R1234yf refrigerant) and renew the expansion valve and desiccant bag/desiccant cartridge (or renew the receiver/reservoir) ⇒ “1.6 Cleaning refrigerant circuit”, page 91 , ⇒ “1.5 Renewing components”, page 78 and ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).
Final measures
– Recharge the refrigerant circuit ⇒ “2.6 Charging refrigerant circuit”, page 140 – Repeat the test ⇒ “2.14.4 Checking pressures with air conditioning system switched on - vehicles with mechanical air conditioning compressor”, page 177

List of Workshop Manual Repair Groups

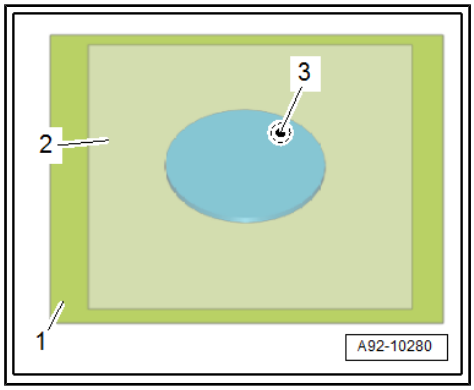
Repair Group

00 - Technical data

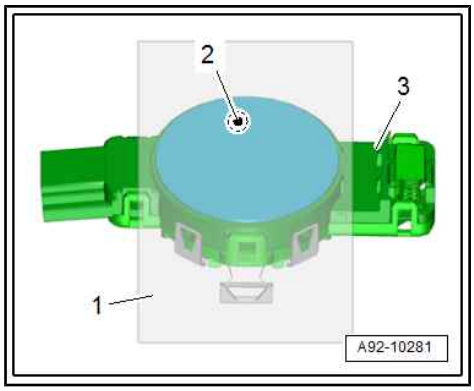
91 - Communication

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

– Pull silicone paper -1- off coupling pad -3-.
– The transparent protective film -2- remains on the coupling pad as an assembly aid.



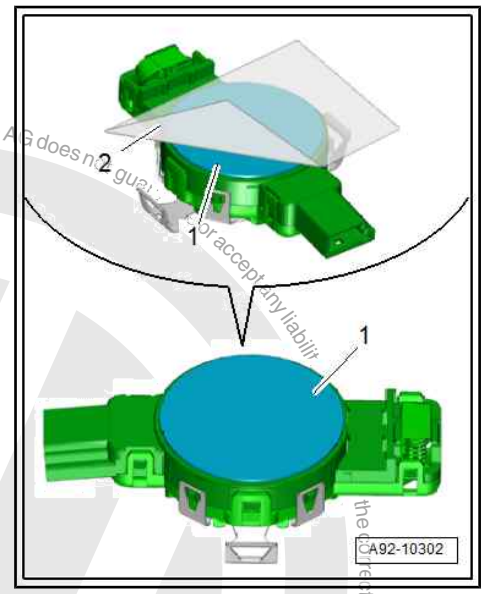
– With the aid of transparent protective film -1-, position coupling pad -2- centrally on rain and light sensor - G397- -3-.
– Press coupling pad -2- via protective film -1- onto rain and light sensor - G397- -3-, avoiding any bubbles.



– Pull protective film -2- off coupling pad -1-.

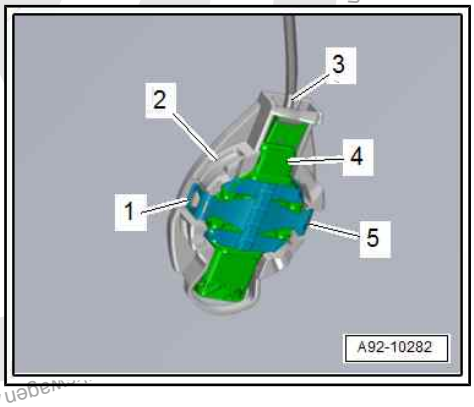
Note

To prevent the coupling pad from being soiled, only remove the protective film immediately before installing the sensor.



Continued for all versions

– Insert rain and light sensor - G397- -4- in mounting -2-.
• To ensure proper operation the rain and light sensor - G397- -4- must rest against the windscreen without any inclusions or bubbles.
– Press on retaining clips -1- and -5- until they can be heard to engage.
– Connect connector -3-.
– If the rain and light sensor - G397- was renewed, perform coding ⇒ Vehicle diagnostic tester.



1.1.4 Overview of fitting locations - relay carriers, fuse carriers, electronics boxes, right footwell

1 - Wiring junction - TV1-
- ❑ Removing and installing ⇒ page 210

2 - Nut
- ❑ 7.5 Nm

3 - Nut
- ❑ Qty. 2
- ❑ 3 Nm

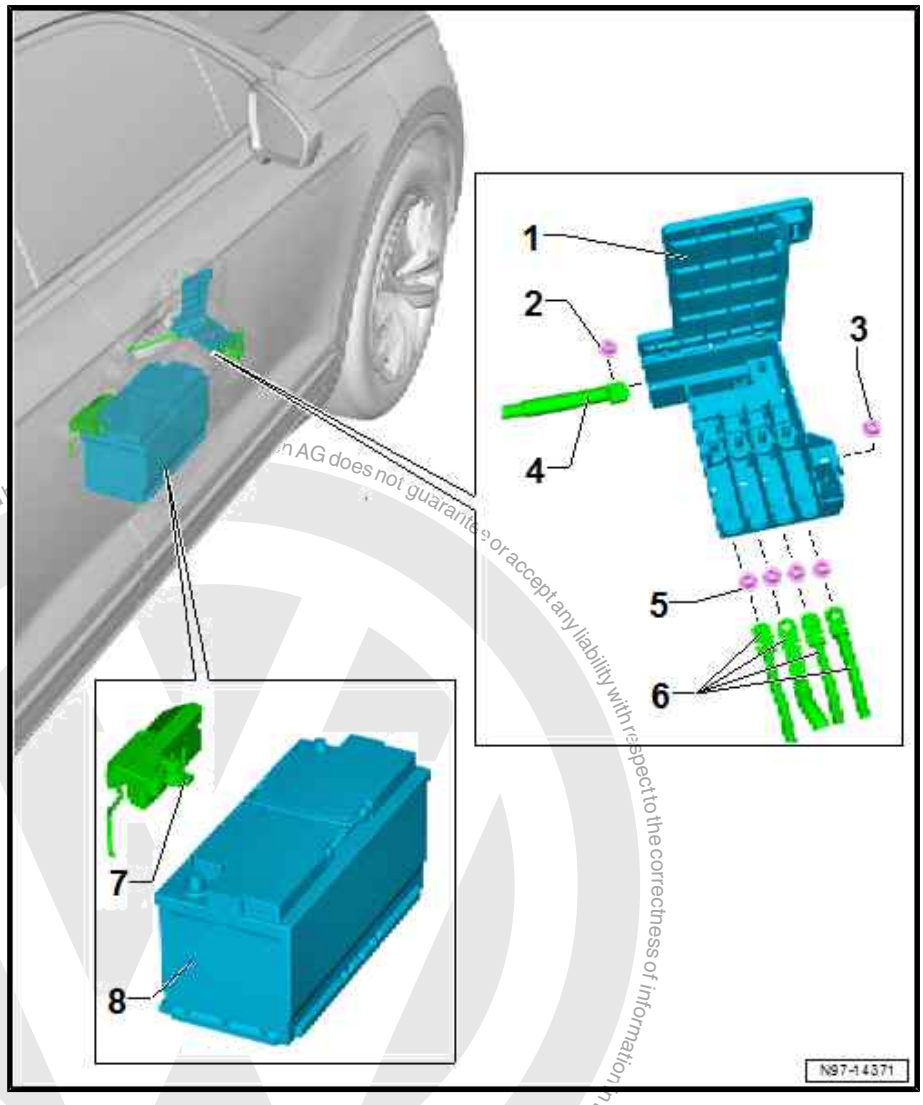
4 - Positive cable
- ❑ From battery

5 - Nut
- ❑ Qty. 4
- ❑ 7.5 Nm

6 - Line
- ❑ Allocation ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

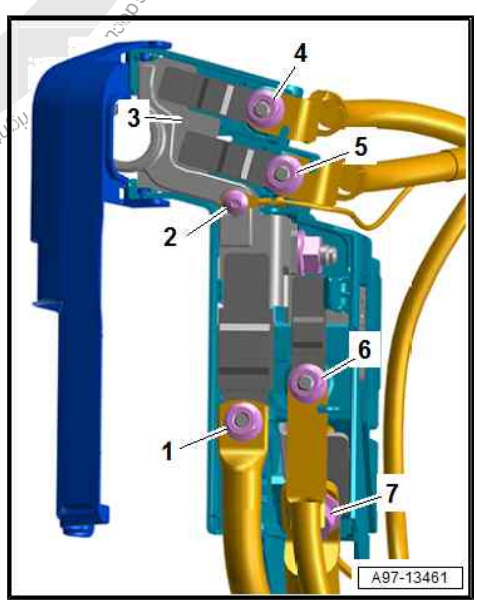
7 - Main fuse carrier
- ❑ Specified torques for electrical wires ⇒ page 202
- ❑ Removing and installing ⇒ page 218

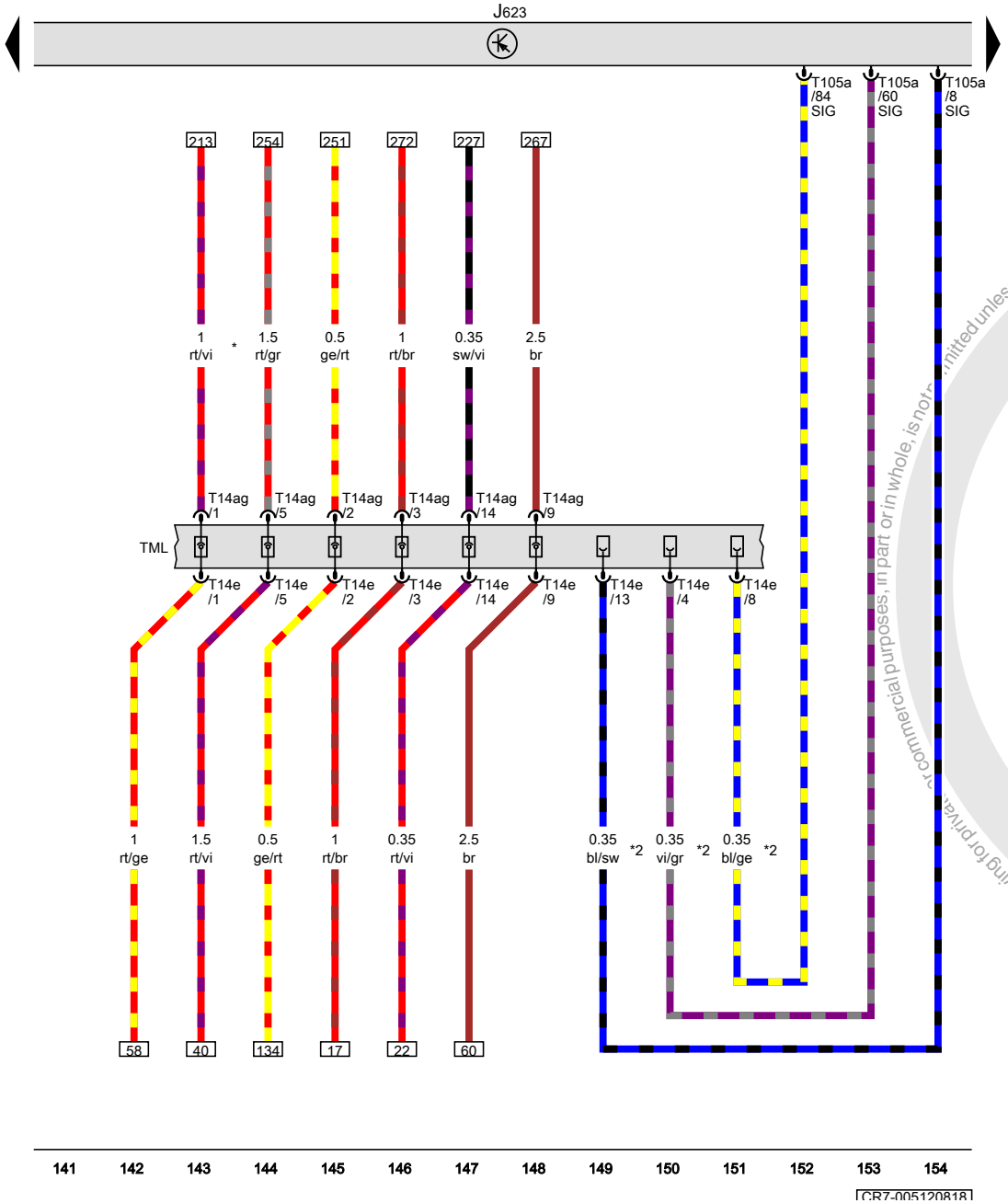
8 - Battery



Specified torque for main fuse carrier

1 - Nut, 7.5 Nm
2 - Bolt, 3.5 Nm
3 - Main fuse holder to battery
4 - Nut, 7.5 Nm
5 - Nut, 7.5 Nm
6 - Nut, 7.5 Nm
7 - Electrical wire, 18 Nm

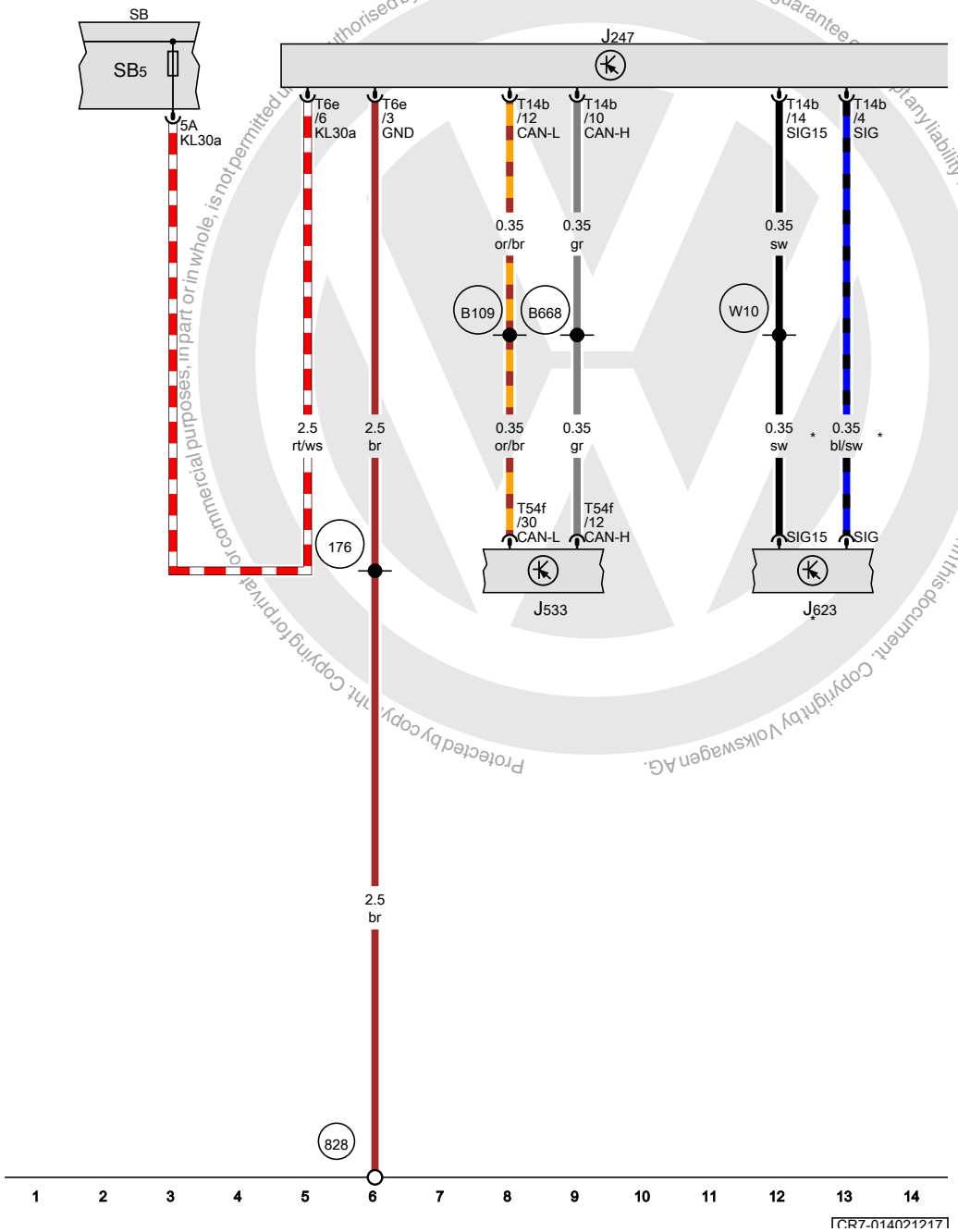




Engine/motor control unit

J623	Engine/motor control unit
T14ag	14-pin connector, black
T14e	14-pin connector, black
T105a	105-pin connector, black
TML	Coupling point in engine compartment, left
*	Not for C6 emission standard
*2	From July 2018

ws	=	white
sw	=	black
ro	=	red
rt	=	red
br	=	brown
gn	=	green
bl	=	blue
gr	=	grey
li	=	purple
vi	=	purple
ge	=	yellow
or	=	orange
rs	=	pink



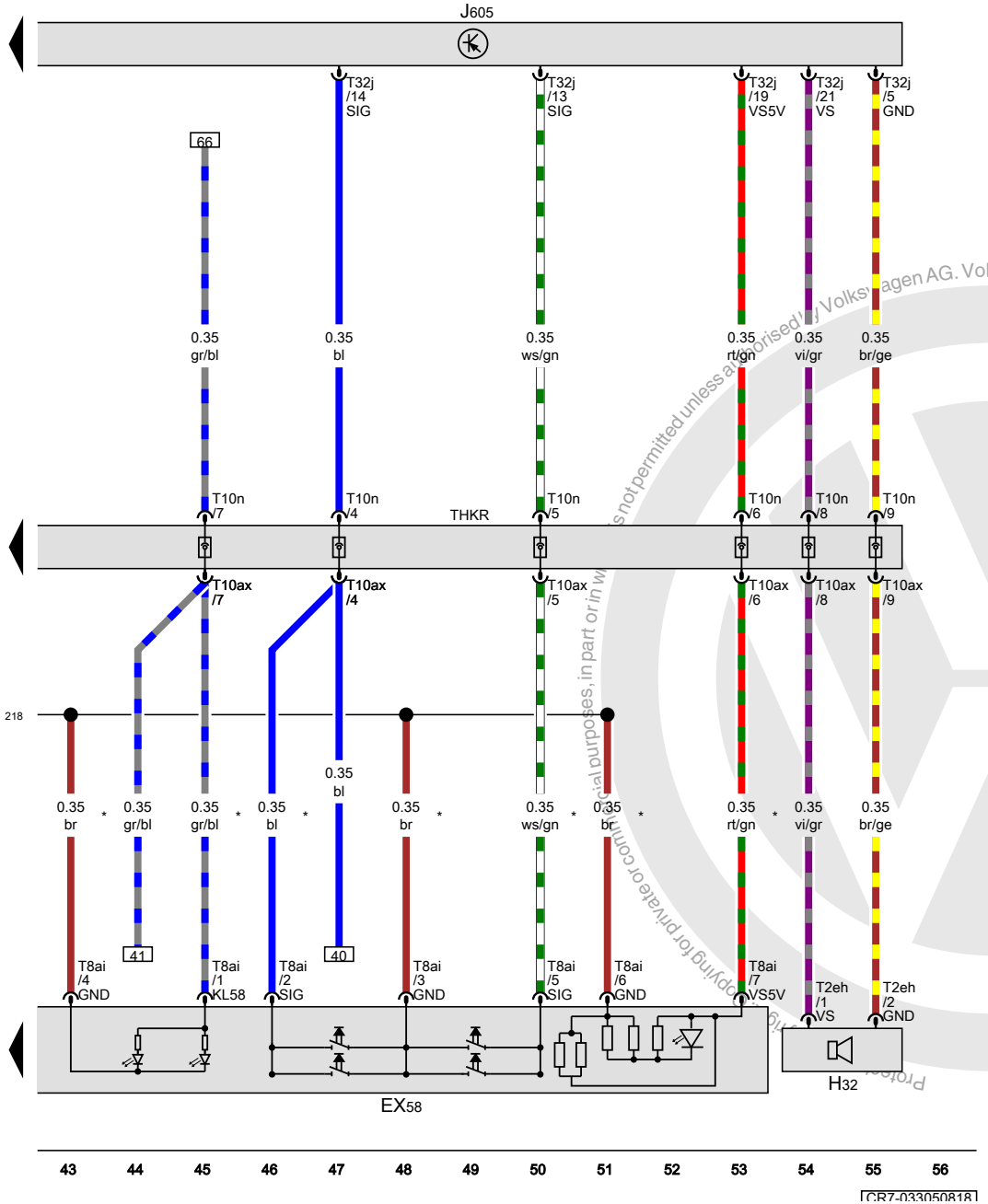
Electrohydraulic engine mounting control unit, Data bus diagnostic interface, Engine/motor control unit, Fuse holder B

J247	Electrohydraulic engine mounting control unit
J533	Data bus diagnostic interface
J623	Engine/motor control unit
SB	Fuse holder B
SB5	Fuse 5 on fuse holder B
T6e	6-pin connector, black
T14b	14-pin connector, black
T54f	54-pin connector, black
176	Earth connection, in right headlight wiring harness
828	Earth point on right suspension turret
B109	Connection 1 (CAN bus extended low), in main wiring harness
B668	Connection 2 (CAN bus extended high), in main wiring harness
W10	Positive connection (15), in interior light wiring harness
*	see applicable current flow diagram for engine

ws	=	white
sw	=	black
ro	=	red
rt	=	red
br	=	brown
gn	=	green
bl	=	blue
gr	=	grey
li	=	purple
vi	=	purple
ge	=	yellow
or	=	orange
rs	=	pink

Operating unit for rear lid control, Rear lid warning buzzer, Rear lid control unit

EX58	Operating unit for rear lid control
H32	Rear lid warning buzzer
J605	Rear lid control unit
T2eh	2-pin connector, black
T8ai	8-pin connector, black
T10ax	10-pin connector, black
T10n	10-pin connector, black
T32j	32-pin connector, colourless
THKR	Coupling point on rear lid, right
218	Earth connection 1, in rear lid wiring harness
*	For models with sensor-controlled rear lid opener



ws	=	white
sw	=	black
ro	=	red
rt	=	red
br	=	brown
gn	=	green
bl	=	blue
gr	=	grey
li	=	purple
vi	=	purple
ge	=	yellow
or	=	orange
rs	=	pink

Dash panel insert

From November 2017

1.2.2 Front right of interior

624 - Earth point, starter battery
- ❑ Torque 20 Nm

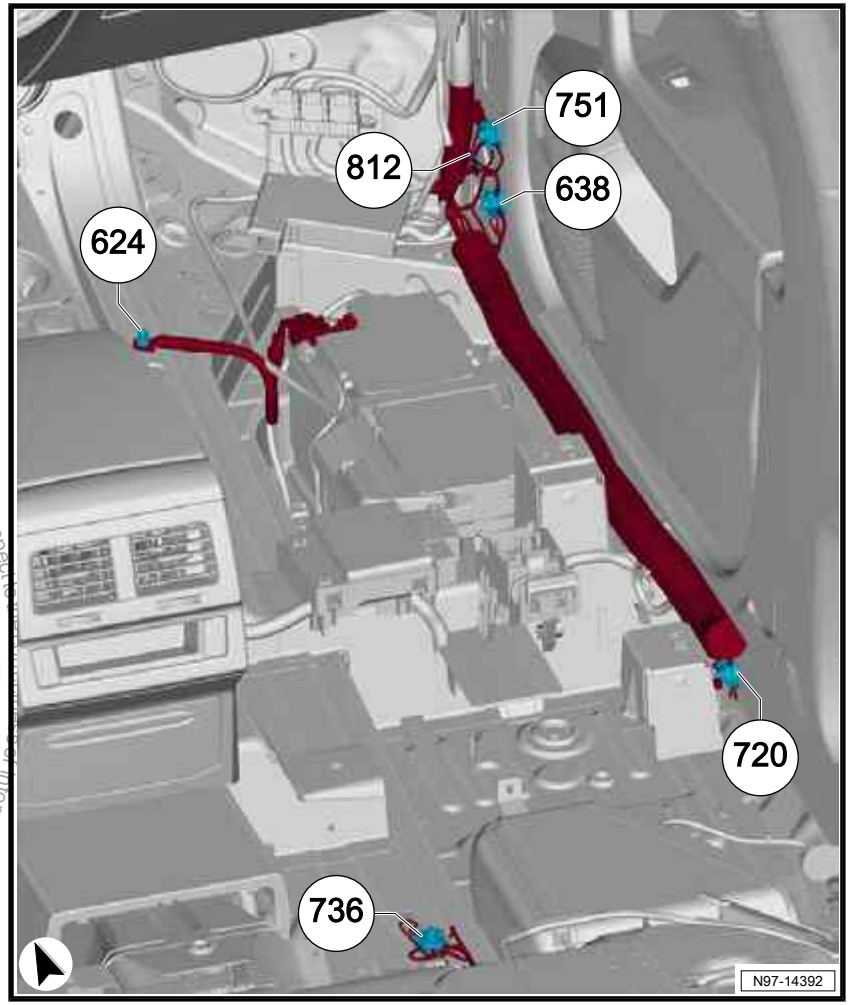
638 - Earth point, on right A-pillar
- ❑ Torque 9 Nm

720 - Earth point on right B-pillar
- ❑ Torque 9 Nm

736 - Earth point in rear right footwell
- ❑ Torque 9 Nm

751 - Earth point 2, on right A-pillar
- ❑ Torque 9 Nm

812 - Earth point on heater element for auxiliary air heating
- ❑ Torque 9 Nm



A - Fuse 1 on fuse holder S -SS1-

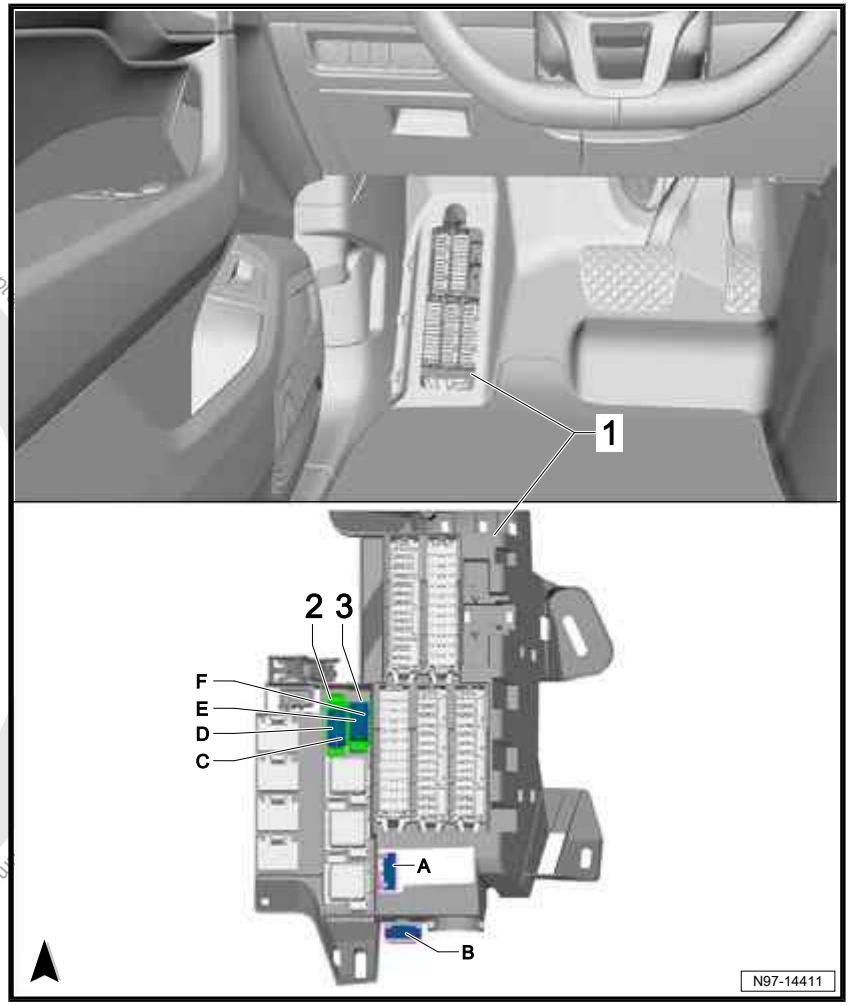
B - Fuse 1 on fuse holder Z -SZ1-

- ❑ For left-hand drive models

1 - Holder

2 - Fuse carrier 7 -ST7-

3 - Fuse carrier 6 -ST6-



Back to overview ⇒ page 1

1.2.3 Rear centre console

1 - Centre console rear storage compartment illumination bulb -L159-

2 - USB connection 2 -U42-

3 - Rear right seat heating switch -E78-

4 - DC/AC converter with socket, 12 V - 230 V -U13-

5 - USB charging socket 1 -U37-

6 - Not installed

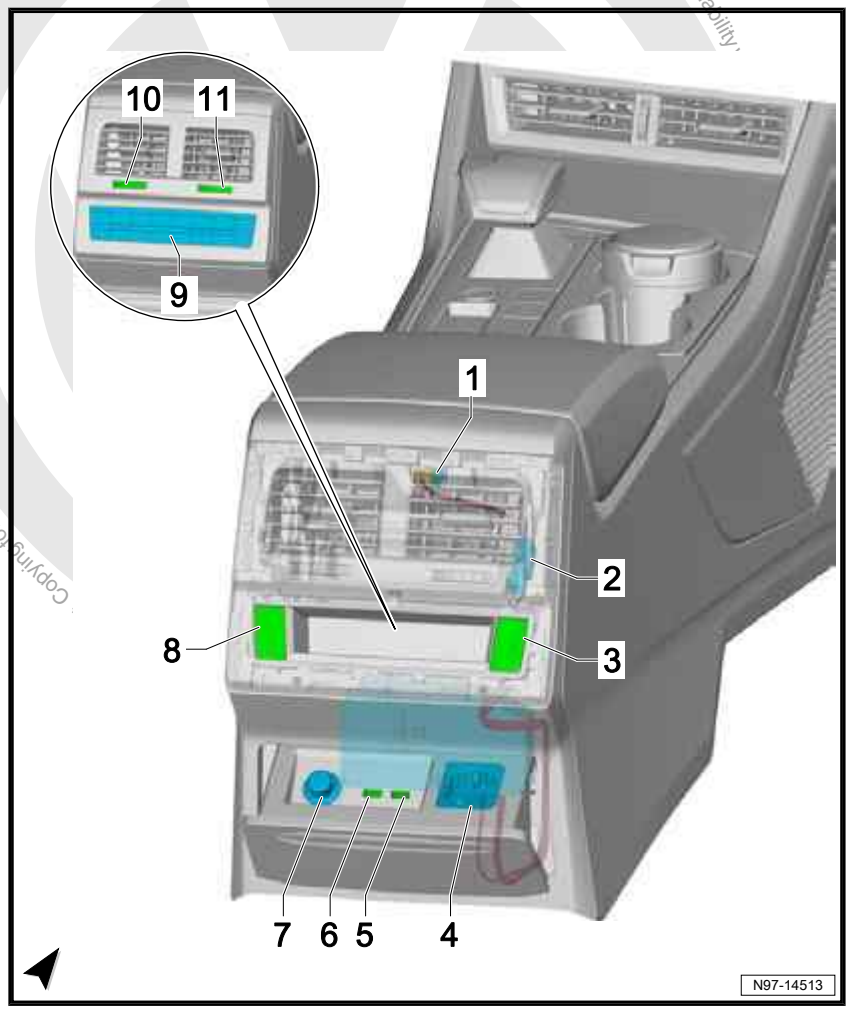
7 - 12 V socket 2 -U18-

8 - Rear left seat heating switch -E77-

9 - Operating and display unit for rear air conditioning system -E265-

10 - Rear centre vent -VX80-

11 - Not installed



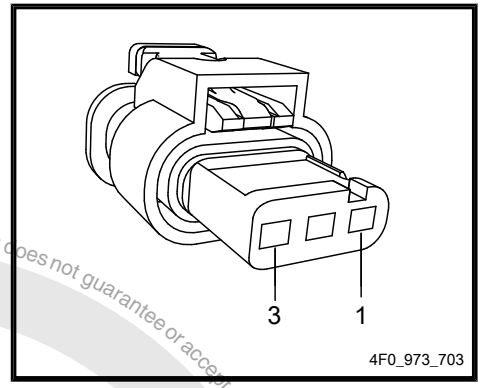
Back to overview ⇒ page 1

1.3 Roof

◆ ⇒ "1.3.1 Roof, part 1", page 57

1.71.1 Connector -T3cq-

Connector -T3cq-

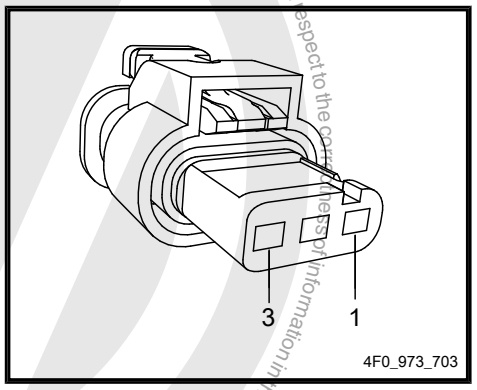


1.72 Rear right park assist steering sender -G717-

- ⇒ “1.72.1 Connector T3cu ”, page 45

1.72.1 Connector -T3cu-

Connector -T3cu-

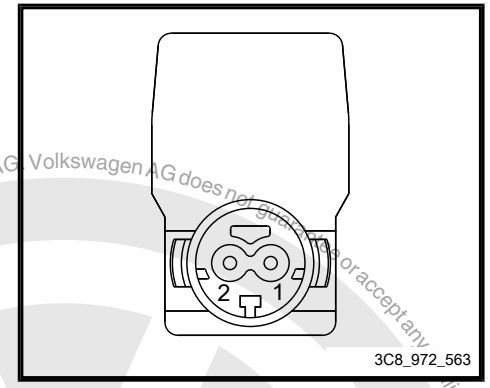


1.73 Rear lid power opening sender -G750-

- ⇒ “1.73.1 Connector T4ff ”, page 46

1.18.1 Connector -T3a-

Connector -T3a-

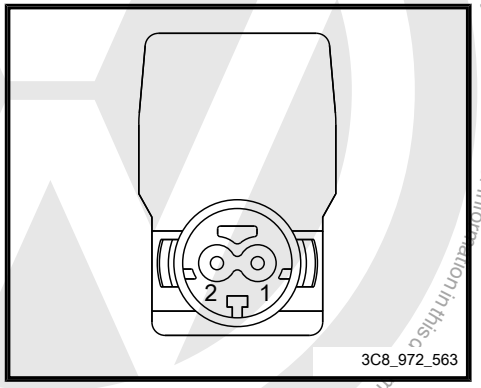


1.19 Rear side airbag igniter on driver side -N201-

- ⇒ “1.19.1 Connector T3fi ”, page 16

1.19.1 Connector -T3fi-

Connector -T3fi-



1.20 Rear side airbag igniter on passenger side -N202-

- ⇒ “1.20.1 Connector T3fj ”, page 17

– Drill 8 mm ∅ holes for SG plug weld seam or stamp.
– Sand welding surfaces down to bare metal.
– Sand bonding surfaces down to bare metal.

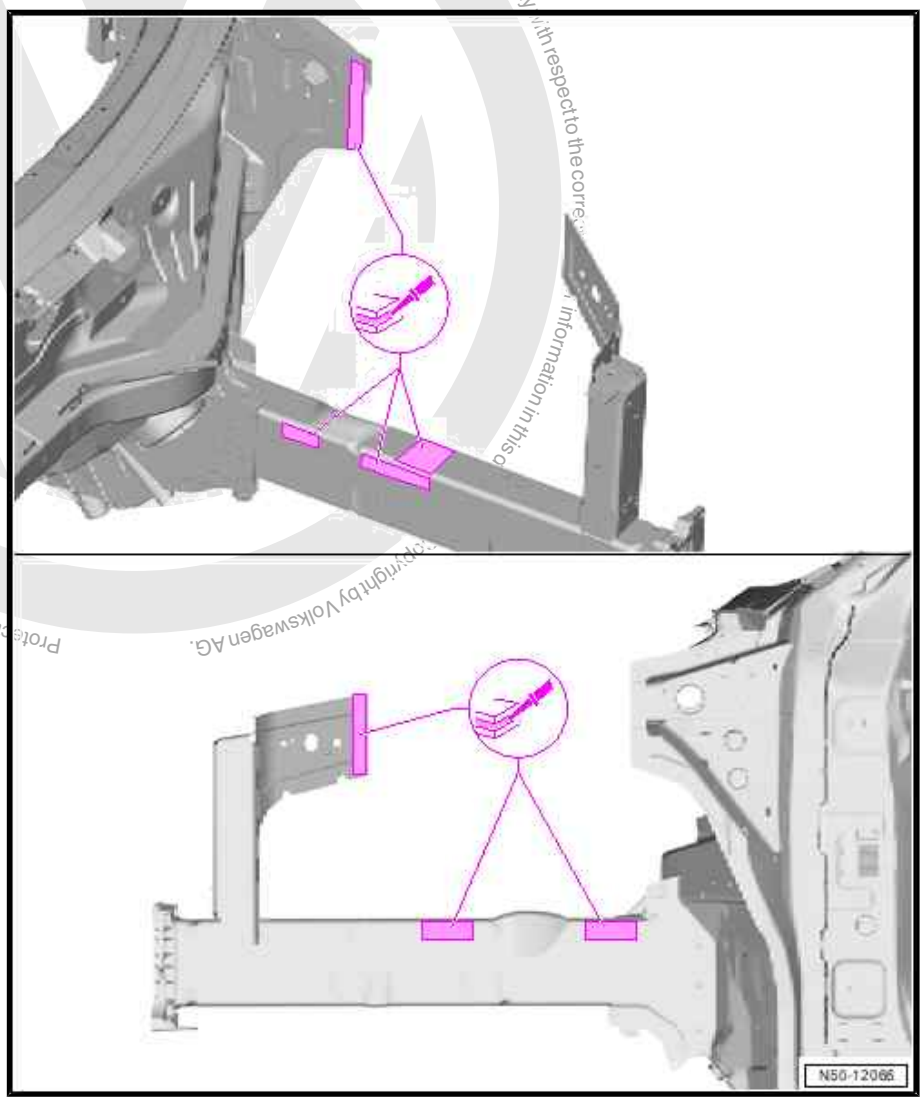
Note

- *If not already present, drill holes for flow drill joint (∅ 7 mm).*
- *To do this, use hole detector ⇒ page 34 .*
- *If the longitudinal member is renewed, the flow-drill screws are replaced by pop rivets .*

3.3.2 Joining

Note

New part must be joined within 90 minutes or adhesion properties of adhesive will be impaired.



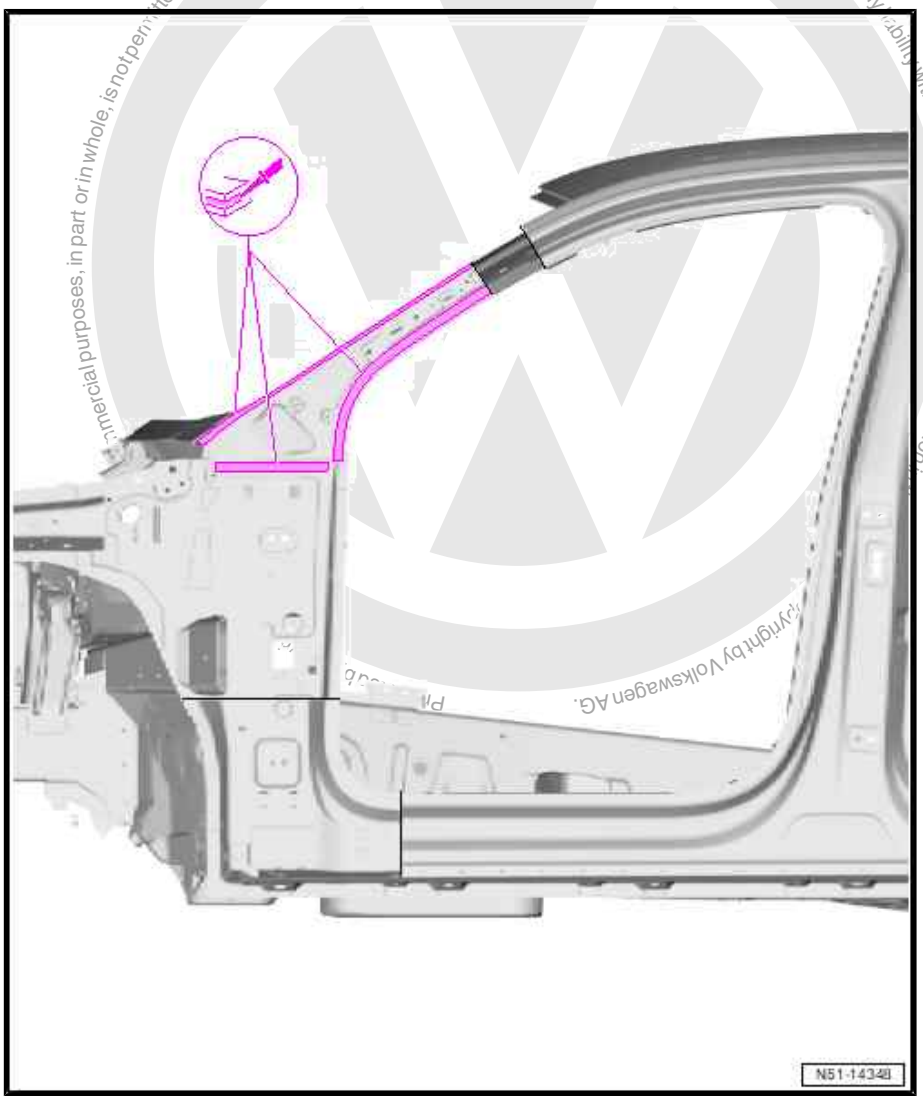
– Apply 2-component body adhesive to entire bonding surface of new part and in areas indicated.

Note

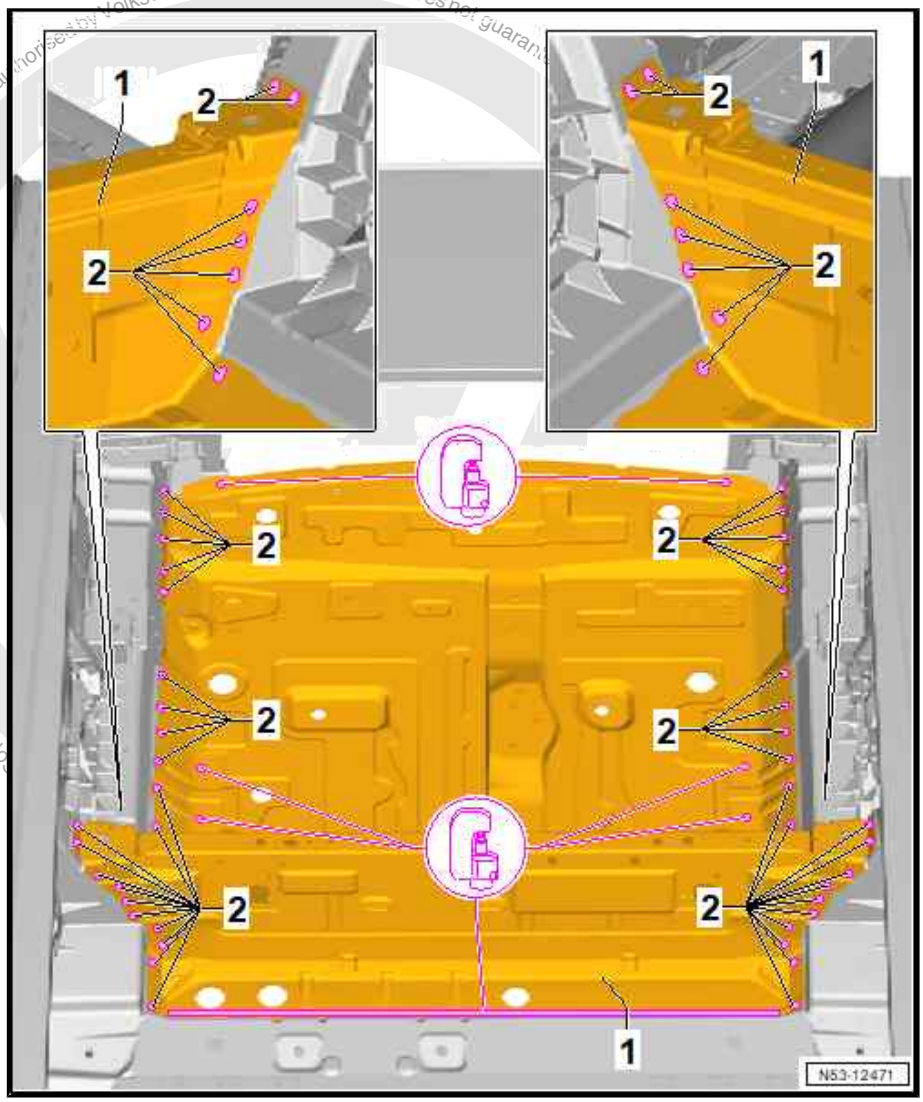
Grinding on the weld seam may only be carried out in the area of the contact surfaces of the upper A-pillar reinforcement as otherwise the strength of the weld seam will be compromised.

Note

New part must be welded in within 90 minutes or adhesion of adhesive will be impaired.



– Apply 2-component body adhesive to entire area as indicated.



– Unscrew flow-drill screws in area -2- using socket for flow-drill screws .
– Separate original joint using compact booster . To do this, use press tool insert ⇒ page 37 .
– Detach luggage compartment floor -1- from body.

– Release Bowden cable coupling -1- -arrow a- and remove from lock carrier -arrow b-.
– Unclip Bowden cable -4- from Bowden cable coupling -1- and detach.

Installing

– Engage Bowden cable -4- from Bowden cable coupling and clip into place.
– Engage Bowden cable coupling -1- in lock carrier.
– Hook in Bowden cables -2 and 3- on bonnet locks -5 and 8- and clip into place.
– Guide bonnet locks -5 and 8- into lock carrier -arrows c-.
– Screw in new bolts.
– Adjust bonnet locks via adjusting threads -9- to ensure synchronous operation -arrow d-.
– Before closing the bonnet, perform functional test.

Specified torques

◆ Lid lock
⇒ “1.2 Assembly overview - Bowden cable”, page 31 .

1.12 Removing and installing bonnet release lever

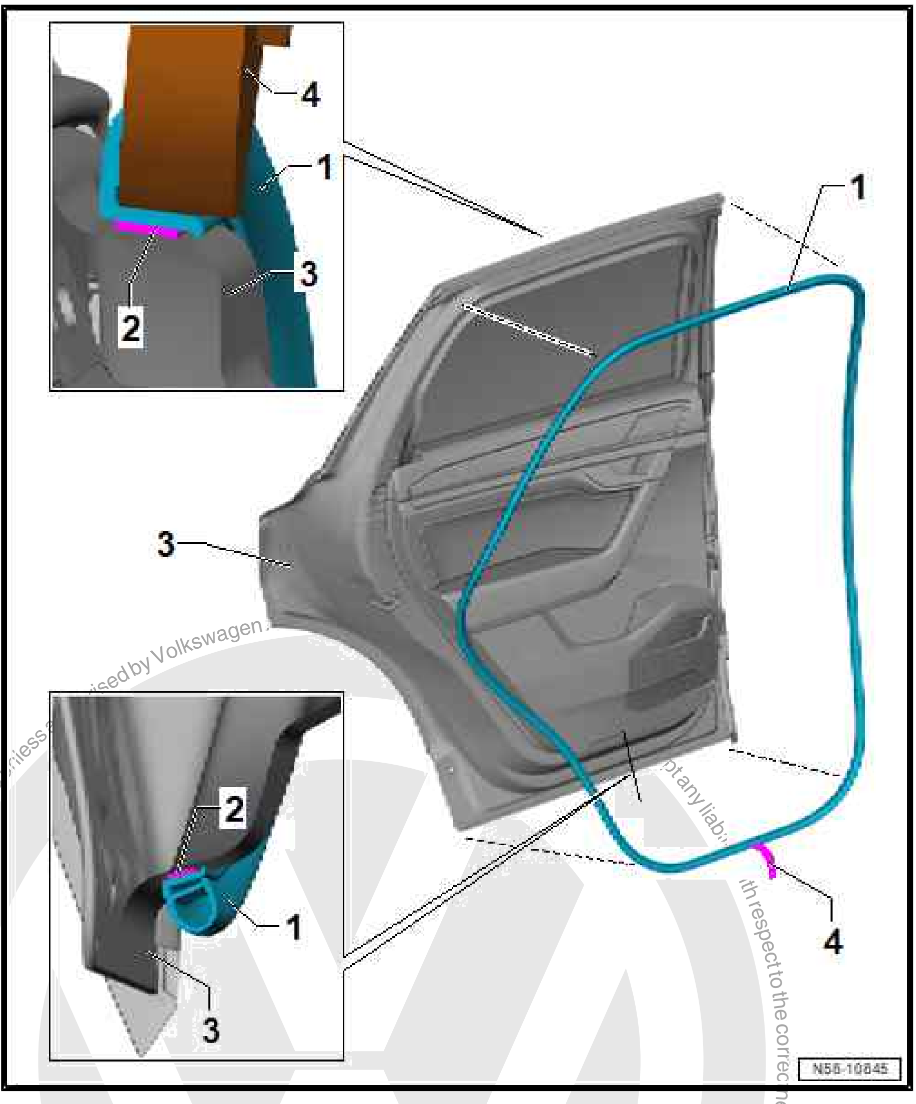
⇒ “1.12.1 Removing and installing bonnet release lever”, page 63

⇒ “1.12.2 Removing and installing operating lever on lock cylinder”, page 66

⇒ “1.12.3 Removing and installing operating lever mounting”, page 67

1.12.1 Removing and installing bonnet release lever

Removing

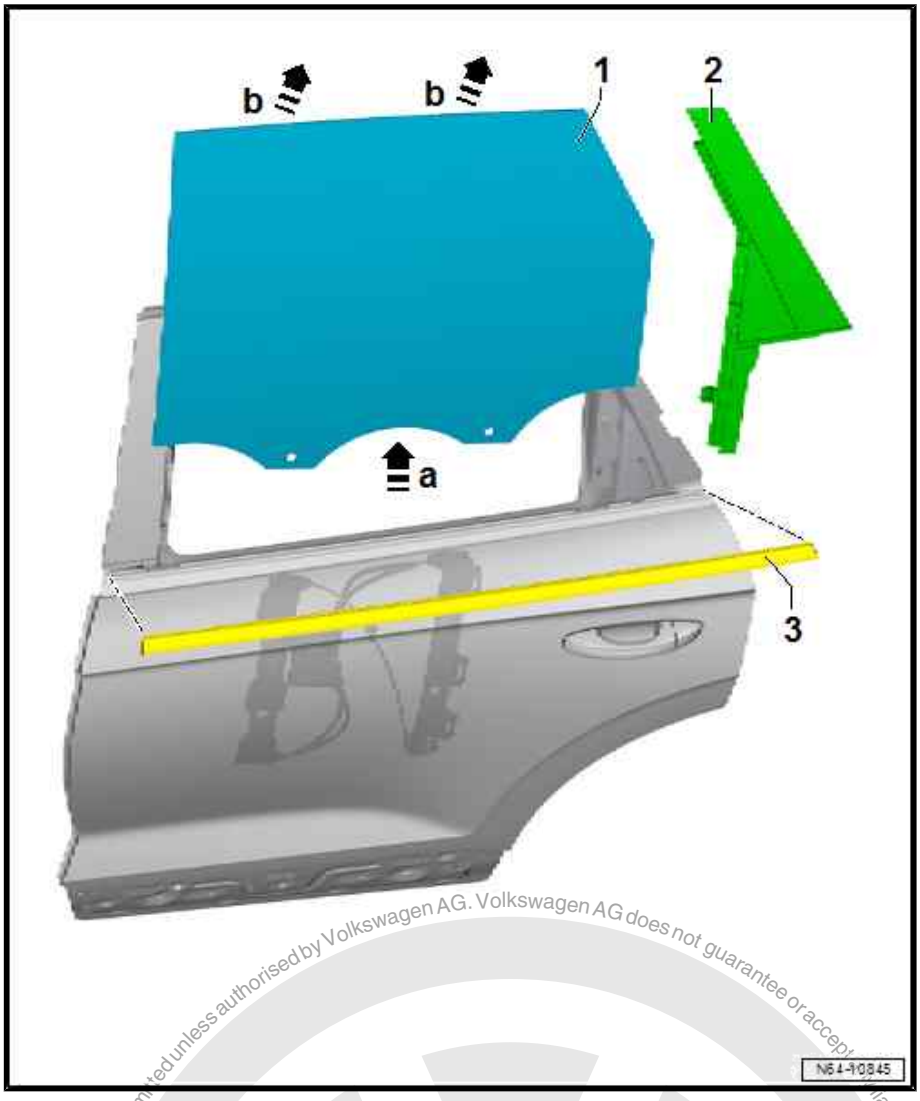


– Follow installation instructions ⇒ page 195 .
– Loosen bolt of door arrester on B-pillar ⇒ page 190 .
– Guide in door seal -1- around door arrester.
– Align door seal -1- to door -3- with vulcanised point downwards.
– Pull off backing -4- from adhesive tape -2- in increments.
– After lightly pressing on seal all around, roll it on firmly using roller - 3356- -4-.
– Fold down round profile when doing this, so that pressure of roller is exerted directly on adhesive tape -2-.

1.7.3 Removing and installing side panel seal

Note

Removal and installation are described only for the left door seal. Removal and installation of the right door seal are analogous.



– Pull door window -1- initially in a straight line -arrow a- and then upwards at an angle -arrows b- towards vehicle exterior out of window slot.

Installing

1 - Dash panel

- ❑ Assembly overview ⇒ page 177

2 - Glove compartment

- ❑ Assembly overview ⇒ page 20

3 - Front passenger side footwell cover

- ❑ Removing and installing ⇒ page 31

4 - Centre console with centre armrest

- ❑ Assembly overview centre console ⇒ page 46
- ❑ Assembly overview centre armrest ⇒ page 60

5 - Lower steering column trim

- ❑ Assembly overview ⇒ page 19

6 - Driver side dash panel cover

- ❑ Assembly overview ⇒ page 18

7 - Dash panel cover on driver side footwell

- ❑ Removing and installing ⇒ page 21

8 - Storage compartment

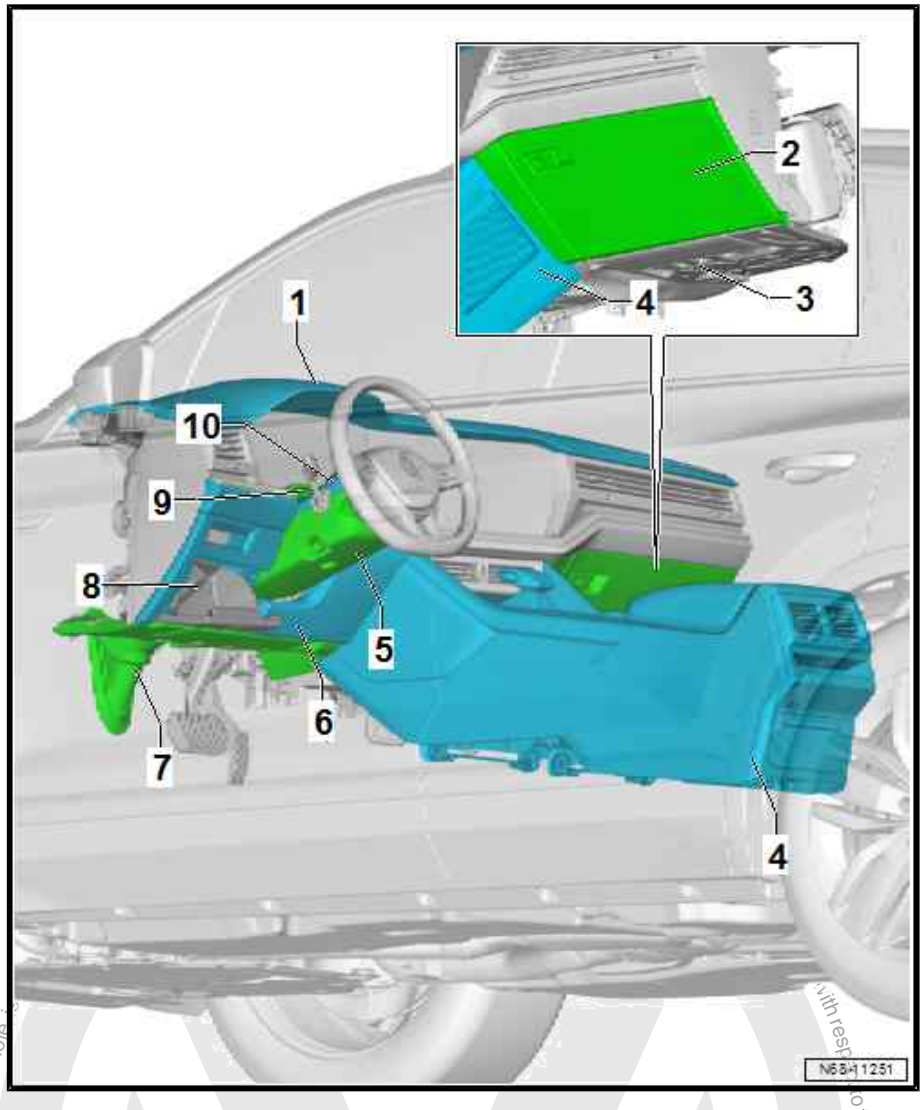
- ❑ Assembly overview ⇒ “1.2 Assembly overview - driver side dash panel cover”, page 18

9 - Gap cover for dash panel insert

- ❑ Assembly overview ⇒ page 19

10 - Upper steering column trim

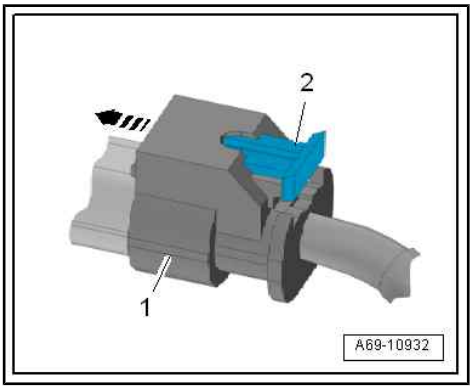
- ❑ Assembly overview ⇒ page 19



Continue installation in reverse order of removal. Observe the following when doing this:

– Push connector -1- onto crash sensor until it engages audibly -arrow-.

– Press in connector lock -2- to lock the connector.



Note

- *Ensure that the electrical connectors are pushed fully onto stop and engage audibly.*
- *Ensure that no wires are trapped.*

– Connect battery earth cable with ignition switched on ⇒ Electrical system; Rep. gr. 27 ; Battery; Connecting and disconnecting battery .

WARNING

Danger of airbag being triggered.

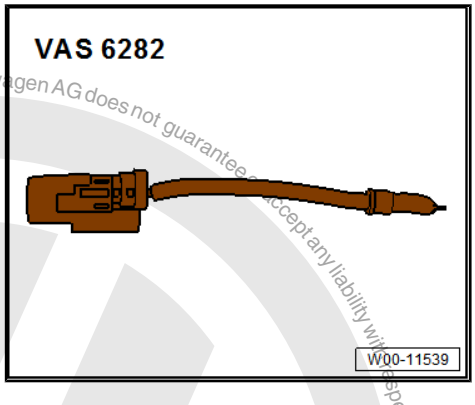
Danger of injury.

– **Switching on the ignition (key/button) after assembly may only be carried out on the driver seat in the rearmost position.**

Note

If airbag warning lamp - K75- indicates an event following installation, event memory must be read, deleted and read again ⇒ Vehicle diagnostic tester.

- Airbag adapter - VAS 6282-



Checking seat longitudinal adjustment motor -V28- / -V31-

– Move front seat to highest position.

Note

To prevent unnecessary repair costs check seat longitudinal adjustment motor -V28- / -V31- prior to removing front seat.

– Check seat longitudinal adjustment motor -V28- / -V31- ⇒ Vehicle diagnostic tester.

Removing if seat longitudinal adjustment motor is defective - V28- / -V31-

– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

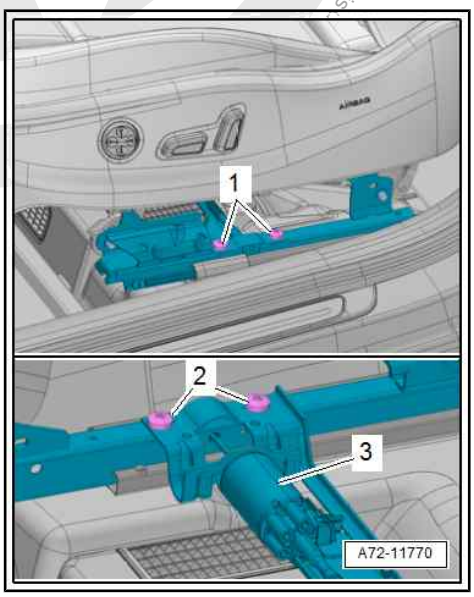
Note

- *Do not loosen bolts -1- and -2- until after having checked the longitudinal adjustment motor -V28- / -V31- .*
- *Once bolts have been loosened, the lower seat pan frame must be renewed together with longitudinal adjustment motor -3-.*

– Unscrew bolts -1- and -2-.

Note

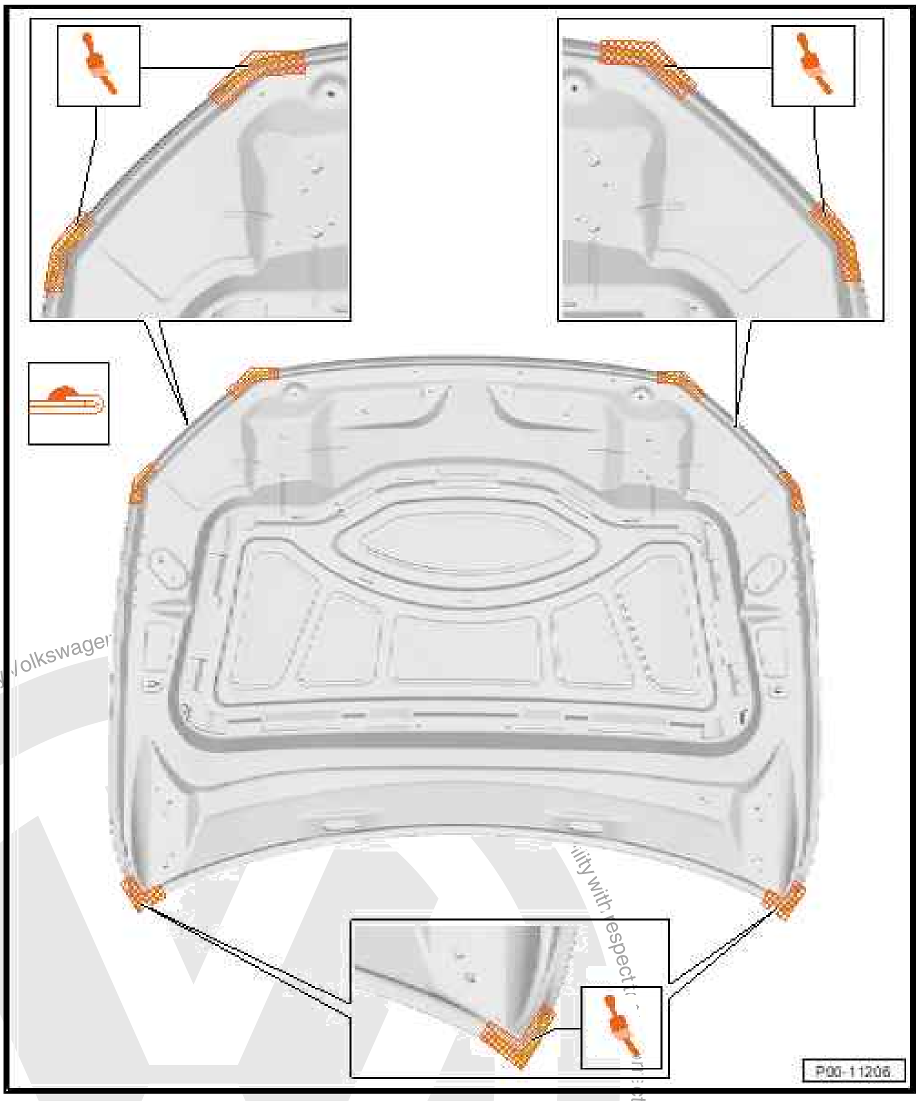
Access tunnel-side bolts for removal by reaching under seat from in front.



5.1.4 Seam seals, bonnet inside view

Bonnet inside view

- Fine seam sealing
  - ❑ Fine seam seals require that the sealant extend at least 3 mm from the seam in each direction and must have a height of 0.5 mm.
- Brushing seals
  - ❑ Sealant in the marked areas must be brushed following application.

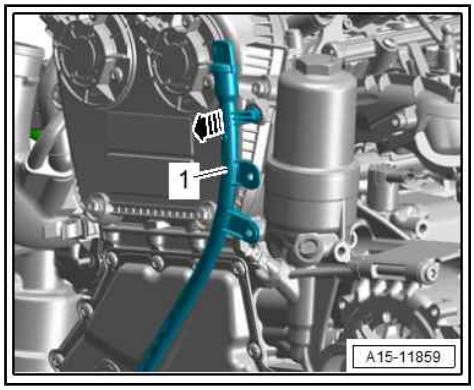


Note

When brushing the sealant seam, ensure that the sheet metal edges which are to be protected are not exposed. The metal must be covered with a sufficiently thick layer of PVC.

Term	Explanation
SAE	Society of Automotive Engineers. Association which creates proposals/guidelines for implementing legal requirements (e.g. standards).
SCR	With the SCR process (selective catalytic reduction) the noxious nitrogen oxides emissions are reduced to a great extent and are converted to steam and nitrogen by the urea solution. A special urea solution (AdBlue®) is injected into the exhaust system upstream of a special catalytic converter.
PFI	Intake manifold injection system (indirect injection system)
SULEV	Super Ultra Low Emission Vehicle
TSI	TSI turbocharger. Charging with turbocharger only.
	TSI twincharger. Charging with turbocharger and compressor
TGI	Charging with turbocharger and natural gas injection system
TDI	Turbo diesel engine - direct injection
ULEV	Ultra low emission vehicle
VDA	German association of the automotive industry
VW	Volkswagen
ESI	Extended servicing interval
ZEV	Zero Emission Vehicle
ASSY	Assembly

– Unclip dipstick guide tube -1- from upper timing chain cover -arrow- and pull out from lower timing chain cover.
– Remove tensioner for poly V-belt ⇒ page 37 .
– Remove vibration damper ⇒ page 37 .

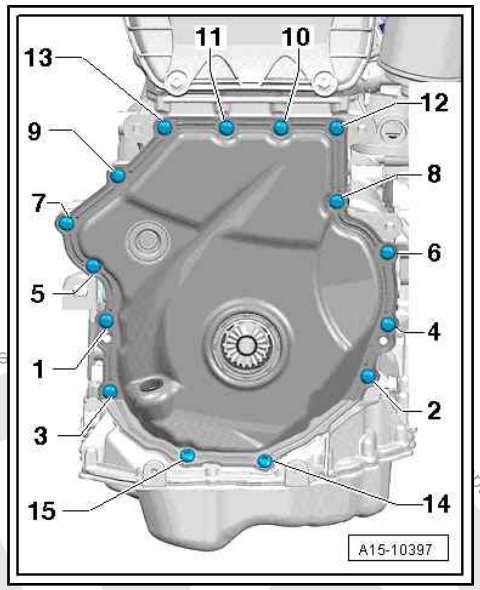


– Unscrew bolts -1 to 15-.

Note

Depending on version, the cover may be secured with only 8 bolts.

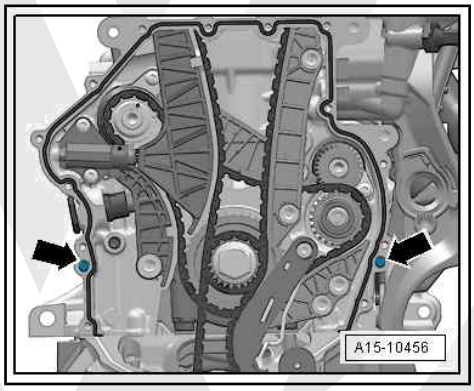
– Detach lower timing chain cover from adhesive bond.



Installing

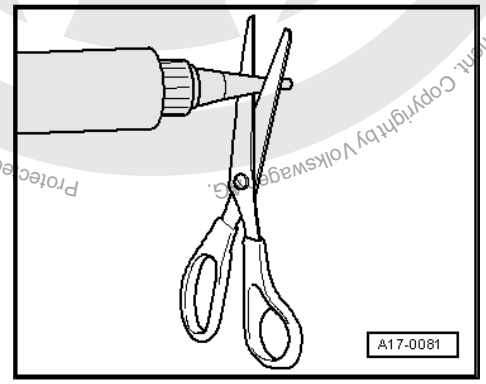
- Renew bolts that are tightened with turning further angle after each removal.
- Renew lower timing chain cover and seal after removal.

– Cover open parts of engine.
– Remove sealant residues from cylinder block with a flat scraper.
– Remove any oil and grease from sealing surfaces.
– Check that both dowel pins for centring the cover -arrows- are fitted.



- Observe use-by-date of sealant.

– Cut off nozzle of tube at front marking (∅ of nozzle approx. 3 mm).



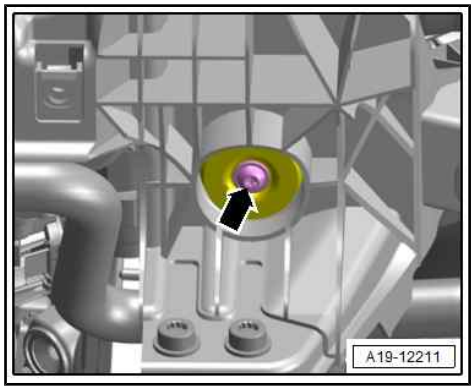
NOTICE

Risk of damage to engine due to excess sealant in lubrication system.

– Do not apply sealant bead thicker than specified.

– Unscrew bolt -arrow- on left and right.

– Remove radiator along with radiator cowl and charge air cooler forwards and downwards.



Installing

Install in reverse order of removal, observing the following:

Note

If there are minor dents in the fins, refer to ⇒ page 5 .

– Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Connect coolant hose with plug-in connector ⇒ page 222

– Install air filter housing
⇒ “3.2 Removing and installing air filter housing”, page 261 .

– Add coolant ⇒ page 186 .

Torque settings

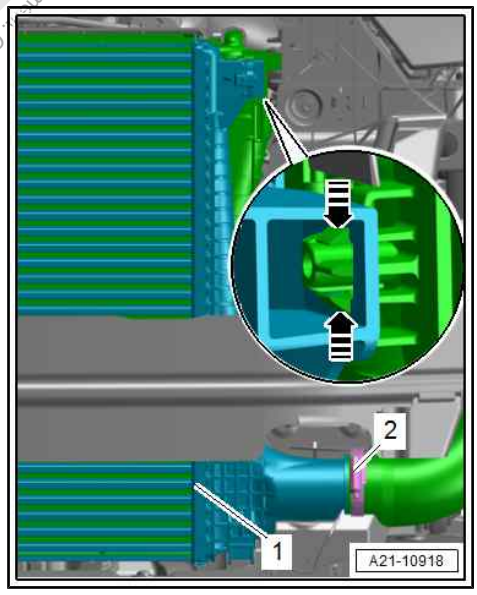
- ⇒ “2.1 Assembly overview - charge air system”, page 236
- ⇒ “4.1 Assembly overview - radiator/radiator fan”, page 221
- ⇒ “2.2 Assembly overview - charge-air hose connections”, page 237
- ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Assembly overview - lock carrier
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation

4.3 Dismantling cooler module

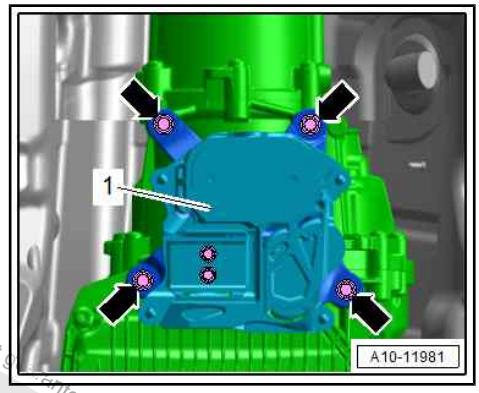
Condition

- Radiator module (charge air cooler, radiator for engine coolant and radiator cowl) is removed.

– Detach charge air cooler -1- from radiator. To do this, release fasteners on left and right -arrows-.



– Unscrew bolts -arrows- and remove gearbox support with gearbox mounting -1- from gearbox.



Installing

Install in reverse order of removal.

Torque settings

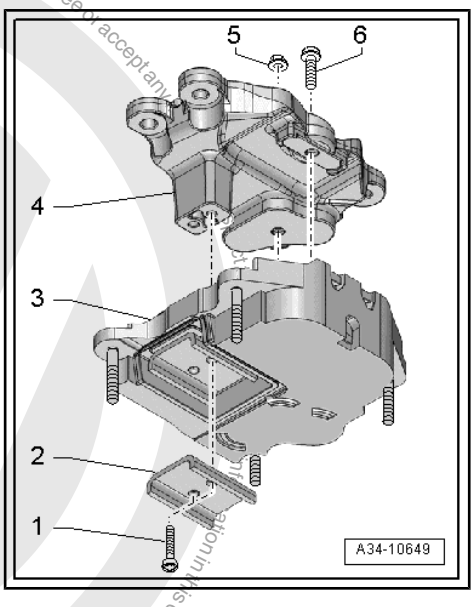
♦ ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Assembly overview - assembly mountings

Removing and installing gearbox mounting

– Remove gearbox support with rear gearbox mountings ⇒ page 44 .

– Unscrew bolts -1-, remove stop -2- for gearbox mounting.

– Unscrew nut -5- and bolt -6-, remove gearbox mounting -3- from gearbox support -4-.



Installing

Install in reverse order of removal, observing the following:

– Tighten nut -5- and bolt -6- by hand first.

– Tighten bolts and nuts in the sequence -1, 5, 6-.

– Install gearbox support with rear gearbox mountings ⇒ page 44 .

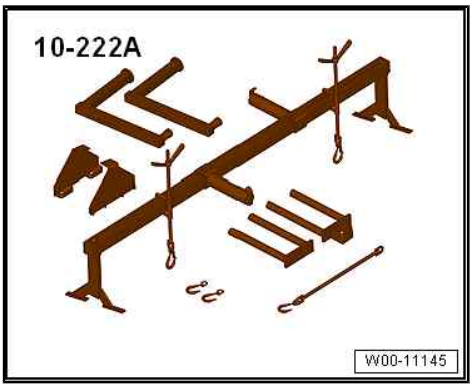
Torque settings

♦ ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Assembly overview - assembly mountings

2.4 Supporting engine in installation position

Special tools and workshop equipment required

♦ Support - 10-222A-



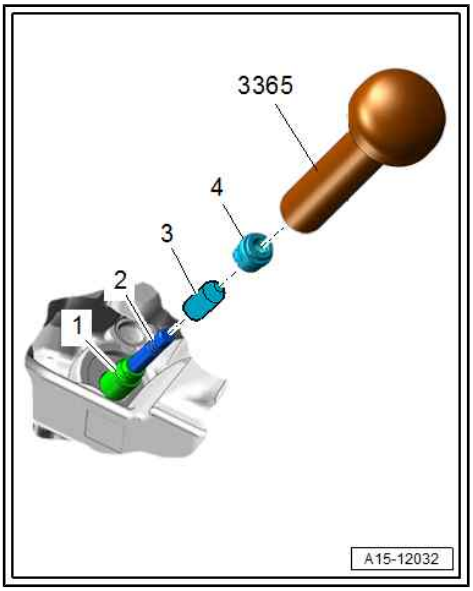
♦ Adapter - 10-222A/34- , not illustrated

- To prevent damage to new valve stem oil seal -4- during installation, fit assembly sleeve -item 3- on valve stem -2-.

– Lightly oil sealing lip of valve stem seal.

– Insert valve stem oil seal in valve shaft seal fitting tool - 3365- and carefully push onto valve guide -1- via assembly sleeve as far as stop.

– Remove assembly sleeve .

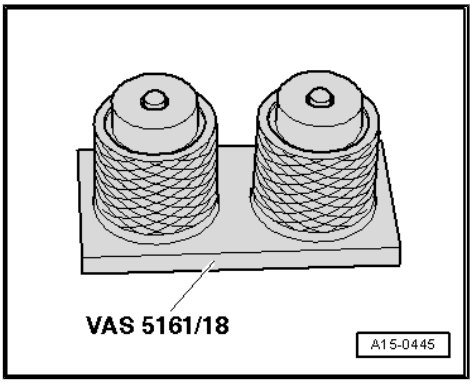


If the valve cotters have been removed from the assembly cartridge, they must first be inserted into the insert tool - VAS 5161/18- .

- Larger diameter of valve cotters faces upwards.

– Insert valve spring and valve spring plate.

– Press assembly cartridge onto insertion device from above and pick up valve cotters.

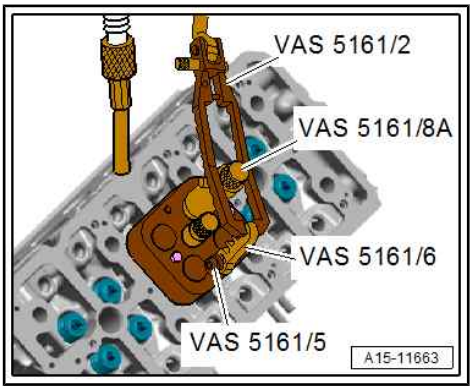


– Insert assembly cartridge into guide plate -VAS 5161 A/34- again.

– Press pressure fork downwards and pull knurled screw upwards, turning it clockwise and anticlockwise. This inserts the valve cotters.

– Reduce pressure on pressure fork whilst pulling on knurled screw.

– Repeat procedure on each valve.



Installing

Assembly is carried out in reverse sequence; note the following:

– Install camshafts
⇒ “4.4 Removing and installing camshaft”, page 162 .

– Install glow plugs
⇒ “1.2 Removing and installing glow plug”, page 382 .

4.6.2 Removing and installing valve stem seals (cylinder head removed)

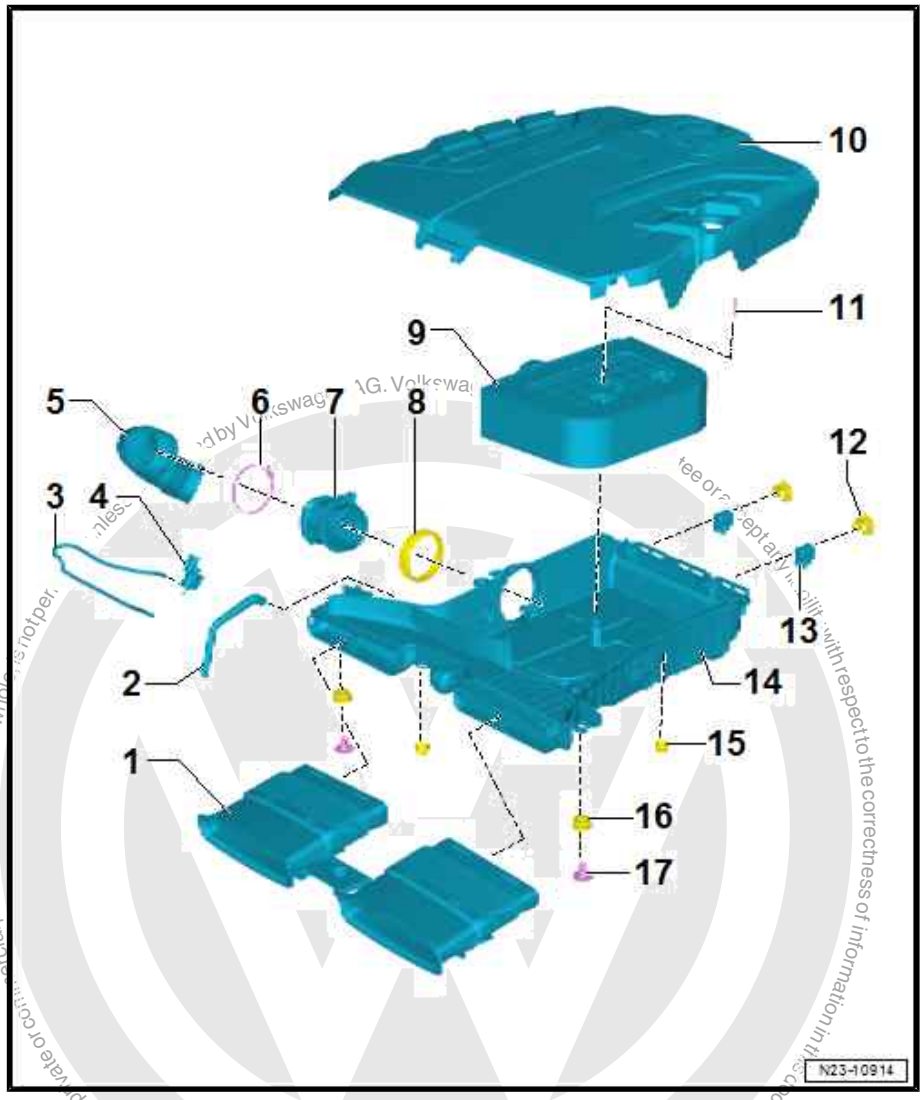
Special tools and workshop equipment required

4 Air filter

⇒ “4.1 Assembly overview - air filter housing”, page 313

⇒ “4.2 Removing and installing air filter housing”, page 314

4.1 Assembly overview - air filter housing



1 - Air duct

- ❑ On lock carrier.
- ❑ Remove salt residues, dirt and leaves.

2 - Water drain hose

- ❑ Cleaning

3 - Vacuum hose

- ❑ From air filter bypass flap valve - N275- to air filter bypass flap

4 - Air filter bypass flap valve - N275-

- ❑ Clipped onto lower part of air filter

5 - Air intake pipe

- ❑ Specified torque for hose clips ⇒ “2.2 Assembly overview - charge-air hose connections”, page 271

6 - Screw-type clamp

- ❑ Torque 3.5 Nm.

7 - Air mass meter - G70-

- ❑ Removing and installing ⇒ “6.4 Removing and installing air mass meter G70 ”, page 335

8 - Seal

- ❑ Renew if damaged

9 - Air filter element

- ❑ Use only genuine air filter elements ⇒ Electronic Parts Catalogue
- ❑ For change intervals refer to ⇒ Maintenance tables
- ❑ Removing and installing ⇒ Maintenance ; Booklet 413

10 - Air filter upper part

- ❑ Clean by removing salt residue and dirt
- ❑ Removing and installing ⇒ “4.2 Removing and installing air filter housing”, page 314

11 - Bolt

- ❑ 3.5 Nm

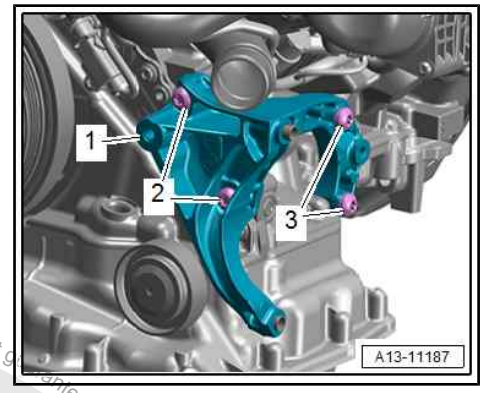
12 - Buffer stop

- ❑ Renew if damaged

13 - Support bearing

- ❑ For air filter housing

– Unscrew bolts -2, 3- and remove bracket -1- for air conditioner compressor.



Installing

Install in reverse order of removal, observing the following:

- Renew bolts that are tightened with turning further angle after each removal.

– Install tensioning device for air conditioner compressor poly V-belt
⇒ “1.4.2 Removing and installing tensioner for air conditioner compressor poly V-belt”, page 50 .

Specified torques

♦ ⇒ Fig. ““Air conditioner compressor bracket - specified torques and tightening sequence”“ , page 46

♦ ⇒ Electrical system; Rep. gr. 27 ; Alternator; Assembly overview - alternator

♦ ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Assembly overview - drive unit of air conditioner compressor

♦ ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Assembly overview - lock carrier

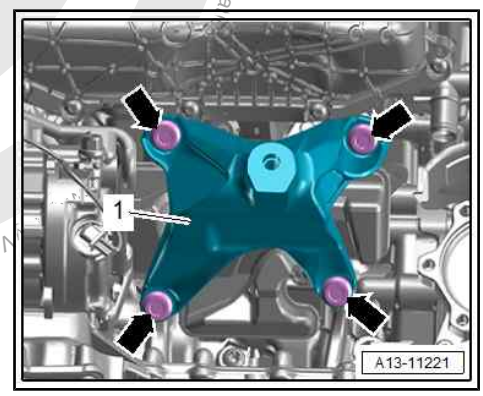
1.7 Removing and installing engine support

Removing

– Removing engine mounting
⇒ “2.3 Removing and installing engine mounting”, page 37 .

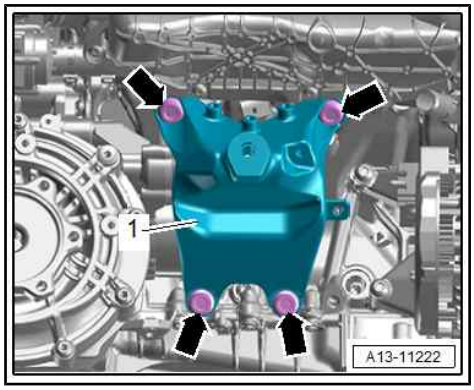
Left engine support:

– Unscrew bolts -arrows- and remove engine support -1-.



Right engine support:

– Unscrew bolts -arrows- and remove engine support -1-.



Installing

Install in reverse order of removal, observing the following:

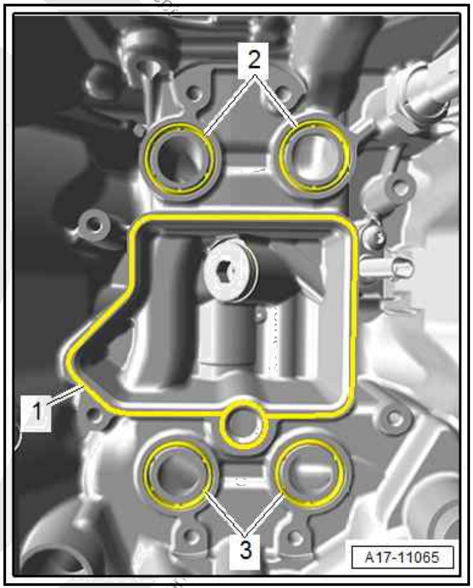
– Install engine mounting
⇒ “2.3 Removing and installing engine mounting”, page 37 .

Specified torques

♦ ⇒ “2.1 Assembly overview - assembly mountings”, page 34

1.8 Renewing crankshaft oil seal - belt pulley end

Special tools and workshop equipment required



Note

- *Danger of blocking lubrication system with excess sealant.*
- *Do not apply sealant bead thicker than specified.*

– Insert seals -2, 3-.

– Apply bead of sealant -1- to clean sealing surface of cylinder block.

• Width of sealant bead: 3.0 mm.

• Install engine oil cooler within 5 minutes of applying sealant.

• Never reuse old coolant.

– Fit engine oil cooler and tighten bolts.

Further installation is carried out in reverse order of removal, observing the following:

– Install turbocharger ⇒ “1.2 Removing and installing turbocharger”, page 250 .

– Check oil level ⇒ “1.2 Engine oil:”, page 172 .

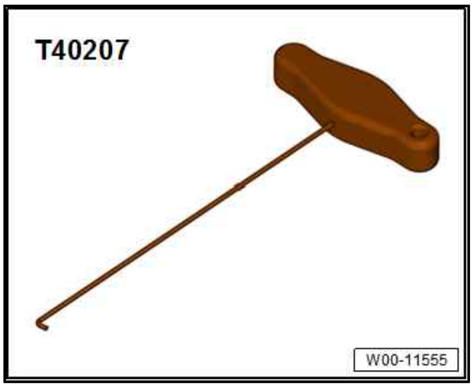
Specified torques

- ⇒ “2.1 Assembly overview - engine oil cooler”, page 186

2.3 Removing and installing spray nozzle valve

Special tools and workshop equipment required

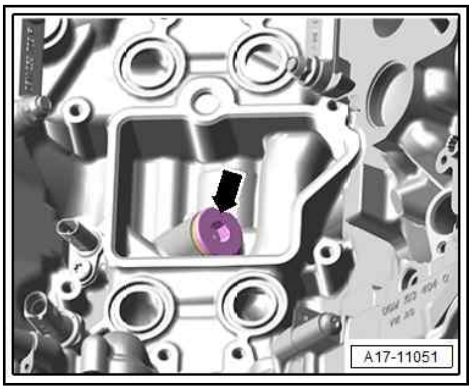
- Hook - T40207-



Removing

– Remove engine oil cooler ⇒ “2.2 Removing and installing engine oil cooler”, page 186 .

– Unscrew plug -arrow-.

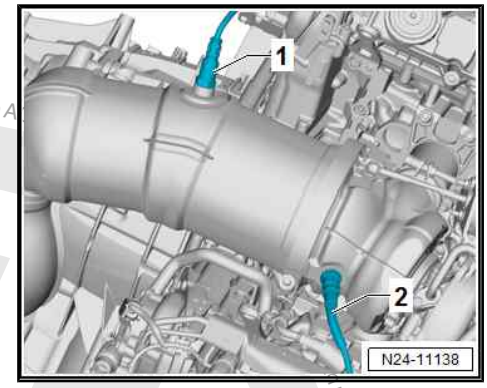


Continuation for all

– Unscrew lambda probes with spanner -3337/7- .

1 - Lambda probe after catalytic converter - G130-

2 - Lambda probe - G39-



Installing

Install in reverse order of removal, observing the following:

- New Lambda probes are coated with an assembly paste; the paste must not get into the slots in the Lambda probe.
- In the case of a used Lambda probe, grease only the thread with high-temperature paste. This paste must not get into the slots on the Lambda probe body. High-temperature paste ⇒ Electronic parts catalogue .
- When installing, electrical wiring of lambda probe must always be re-attached at same locations to prevent contact with exhaust pipe.

– Install air filter housing
⇒ “4.2 Removing and installing air filter housing”, page 292 .

Specified torques

♦ ⇒ “9.1 Assembly overview - Lambda probe”, page 319

9.2.2 Removing and installing Lambda probe, models without particulate filter

Special tools and workshop equipment required

♦ Lambda probe open ring spanner set - 3337-

Removing

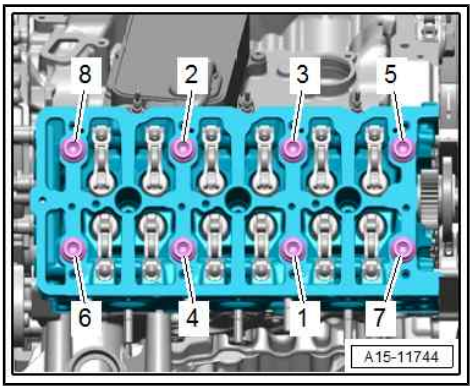
– Remove air filter housing
⇒ “4.2 Removing and installing air filter housing”, page 292 .

- Fit all cable ties in the original position when installing.

Cylinder head - specified torque and sequence

– Tighten bolts in stages in the sequence shown.

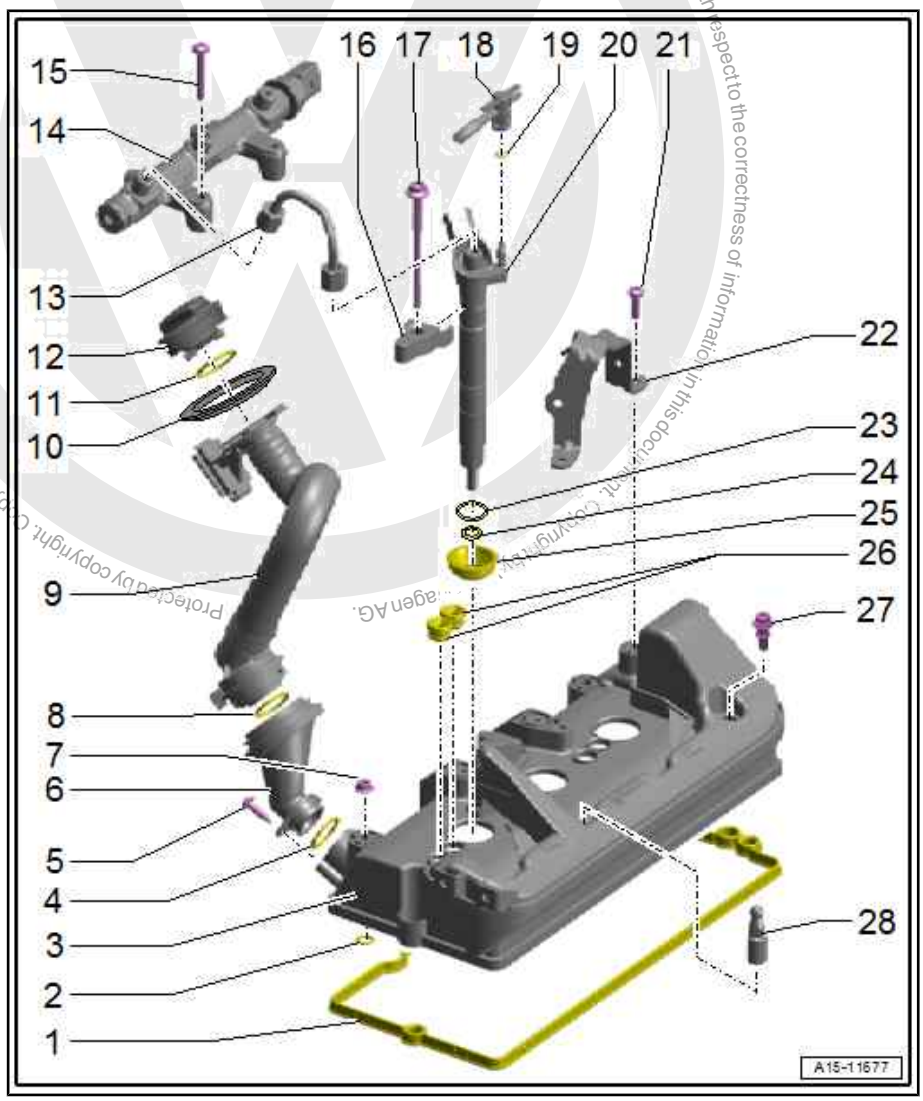
Stage	Bolts	Specified torque/turning further angle
1)	-1 … 8-	Screw in by hand as far as stop
2)	-1 … 8-	35 Nm
3)	-1 … 8-	50 Nm
4)	-1 … 8-	Turn 90° further
5)	-1 … 8-	Turn 90° further
6)	-1 … 8-	Turn 90° further



1.2 Assembly overview - cylinder head cover

Note

Cylinder head cover on cylinder bank 2 (left side) shown representatively.



1 - Seal

- ❑ for cylinder head cover
- ❑ Renew if damaged or leaking

2 - O-ring

- ❑ Qty. 8
- ❑ Renew after removal

3 - Cylinder head cover

- ❑ Shown for cylinder bank 2 (left side)
- ❑ Removing and installing:

◆ ⇒ “1.4.1 Removing and installing cylinder head cover, bank 1 (right side)”, page 108

◆ ⇒ “1.4.2 Removing and installing cylinder head cover, bank 2 (left side)”, page 111

4 - O-ring

- ❑ Renew after removal

5 - Bolt

- ❑ Qty. 2
- ❑ Thread-cutting
- ❑ Fit and screw in bolt by hand to ensure it is screwed into old thread. Then tighten bolt to specified torque.
- ❑ 7.5 Nm

6 - Oil filler neck

7 - Nut

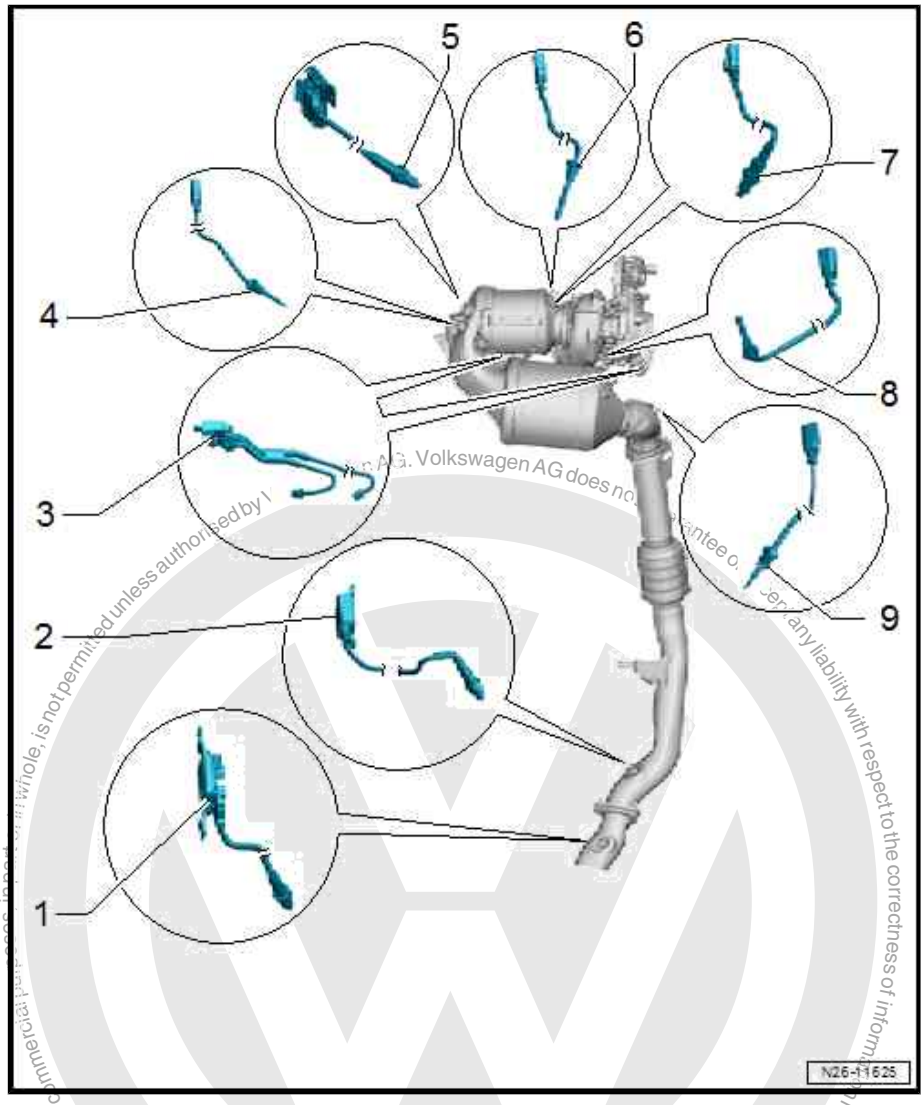
- ❑ Specified torque and tightening sequence:

2 Coolant pump, regulation of cooling system

2.1 Assembly overview - coolant pump

9 Lambda probe

9.1 Assembly overview - Lambda probe



1 - NOx sender 2 - G687- with control unit for NOx sender 2 - J881-

- ❑ Removing and installing ⇒ “6.8 Removing and installing NOx sender 2 G687 ”, page 354
- ❑ 52 Nm

2 - Particle sensor - G784-

- ❑ Removing and installing ⇒ “6.9 Removing and installing particle sensor G784 ”, page 355
- ❑ 52 Nm
- ❑ Specified torques of control unit ⇒ page 368 and ⇒ page 368

3 - Pressure differential sender - G505-

- ❑ Removing and installing ⇒ “6.5 Removing and installing pressure differential sender G505 ”, page 350
- ❑ After renewal, perform adaption ⇒ Vehicle diagnostic tester
- ❑ Tighten pressure line to 45 Nm

4 - Exhaust gas temperature sender 3 - G495-

- ❑ Removing and installing ⇒ “4.4 Removing and installing exhaust gas temperature sender 3 G495 ”, page 404

5 - NOx sender - G295- with control unit for NOx sender - J583-

- ❑ Removing and installing ⇒ “6.7 Removing and installing NOx sender G295 ”, page 353
- ❑ 52 Nm

6 - Exhaust gas temperature sender 2 - G448-

- ❑ Removing and installing ⇒ “4.3 Removing and installing exhaust gas temperature sender 2 G448 ”, page 403

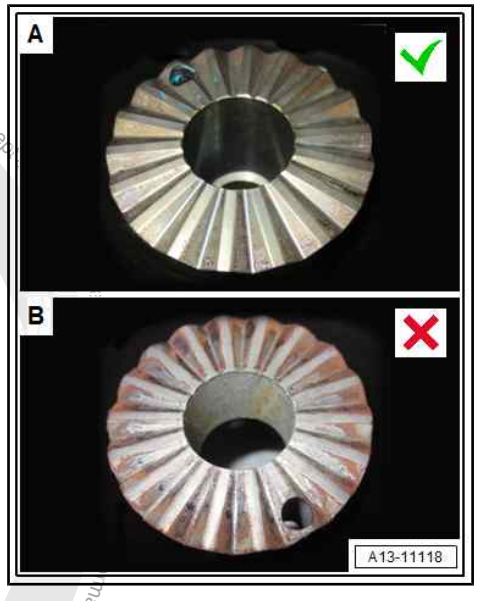
7 - Lambda probe 1 before catalytic converter - GX10-

- ❑ Consists of lambda probe - G39- and lambda probe heater - Z19-
- ❑ Removing and installing ⇒ “9.2 Removing and installing Lambda probe”, page 368
- ❑ Follow installation instructions ⇒ page 369
- ❑ 52 Nm

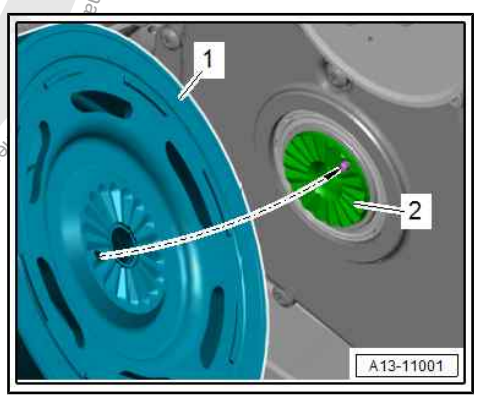
Installing

Note

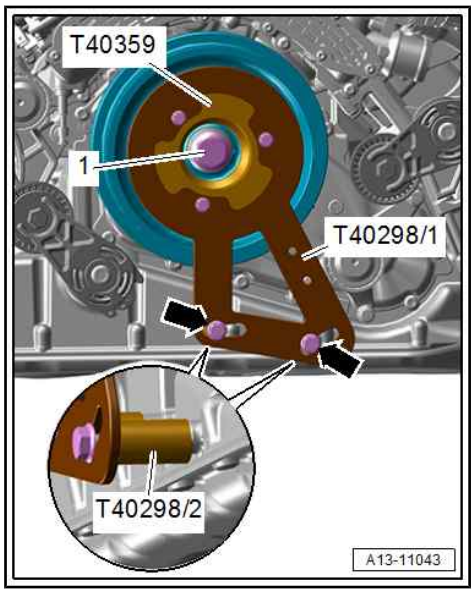
- *Renew bolts that are tightened with turning further angle after each removal.*
- *Check Hirth splines for deformation, cracks, damage, scoring or corrosion before re-installing.*
- *If the Hirth splines are damaged or heavily corroded, renew the pulley.*



– Position pulley -1- on crankshaft -2-, being mindful of dowel sleeve -arrow- when doing so.
– Screw in new bolt and spacer onto stop by hand.



– Mount counterhold tool - T40359- on pulley and secure with bolts -arrows- (23 Nm). Use spacer sleeves - T40298/2- underneath to do this.
– Tighten bolt -1- for pulley.
– Remove counterhold - T40359- .
– Install poly V-belt ⇒ page 60 .
– Installing radiator ⇒ page 262 .



Specified torques

- ⇒ “1.1 Assembly overview - cylinder block (pulley end)”, page 56

1.8 Renewing crankshaft oil seal - belt pulley end

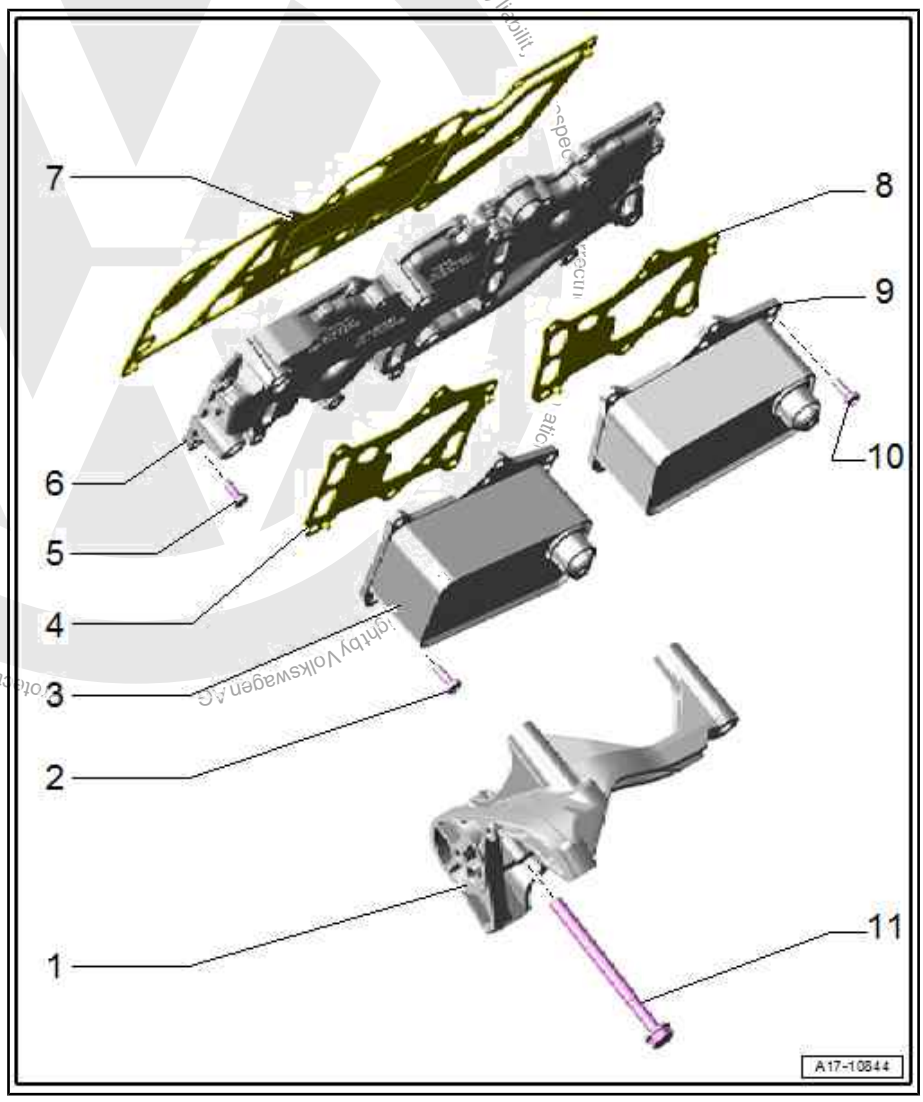
Special tools and workshop equipment required

2 Engine oil cooler

⇒ “2.1 Assembly overview - engine oil cooler”, page 200

⇒ “2.2 Removing and installing engine oil cooler”, page 202

2.1 Assembly overview - engine oil cooler



1 - Bracket

- ❑ for air conditioner compressor
- ❑ Assembly overview ⇒ page 56

2 - Bolt

- ❑ Specified torques and tightening sequence ⇒ page 201

3 - Engine oil cooler, front

- ❑ Observe notes ⇒ page 188
- ❑ Removing and installing ⇒ page 202

4 - Seal

- ❑ Renew after removal

5 - Bolt

- ❑ Specified torques and tightening sequence ⇒ page 201

6 - Carrier plate

- ❑ for engine oil cooler

7 - Seal

- ❑ Renew after removal

8 - Seal

- ❑ Renew after removal

9 - Engine oil cooler, rear

- ❑ Observe notes ⇒ page 188
- ❑ Removing and installing ⇒ page 203

10 - Bolt

- ❑ Specified torques and tightening sequence ⇒ page 201

11 - Bolt

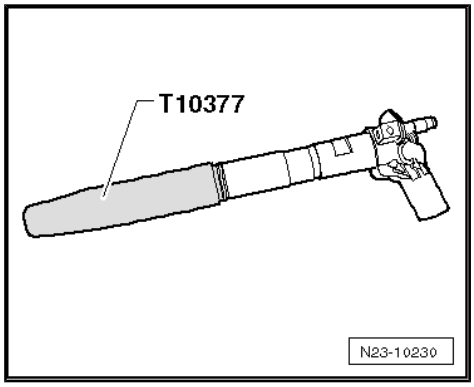
- ❑ Specified torques and tightening sequence ⇒ page 59

– Renew O-ring for injector shaft. Use assembly sleeve - T10377- to do this.

– Install injectors.

Further installation is carried out in reverse order of removal, observing the following:

– Install high-pressure lines ⇒ page 334 .



Note

Lubricate all O-rings with engine oil or assembly oil before installing.

– Push the return line connections carefully over the new seals and onto the injectors.

• An audible click should be heard to confirm engagement.

– Press the release pin downwards carefully.

Note

After renewing one or more injectors, the "injector delivery calibration values" and "injector voltage calibration values" for the new injectors must be written into the engine control unit - J623- ⇒ page 317 .

– Connect fuel hoses ⇒ Rep. gr. 20 ; Plug-in connectors; Separating plug-in connectors .

– Install engine control unit - J623- ⇒ page 364 .

– Install coolant expansion tank ⇒ page 244 .

– Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– Fit engine cover panel ⇒ page 54 .

Specified torques

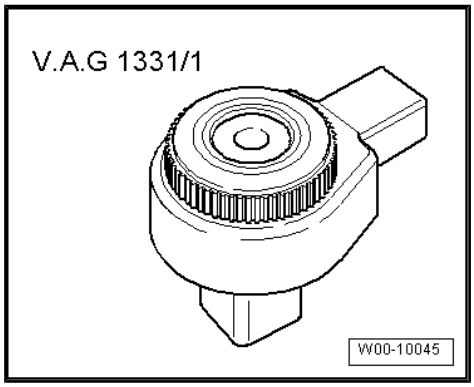
◆ ⇒ "3.1 Assembly overview - injectors", page 313

◆ ⇒ "2.2 Assembly overview - charge-air hose connections", page 291

3.9 Removing and installing high-pressure lines

Special tools and workshop equipment required

◆ Ratchet wrench - V.A.G 1331/1-



2 Fuel delivery unit, fuel gauge sender

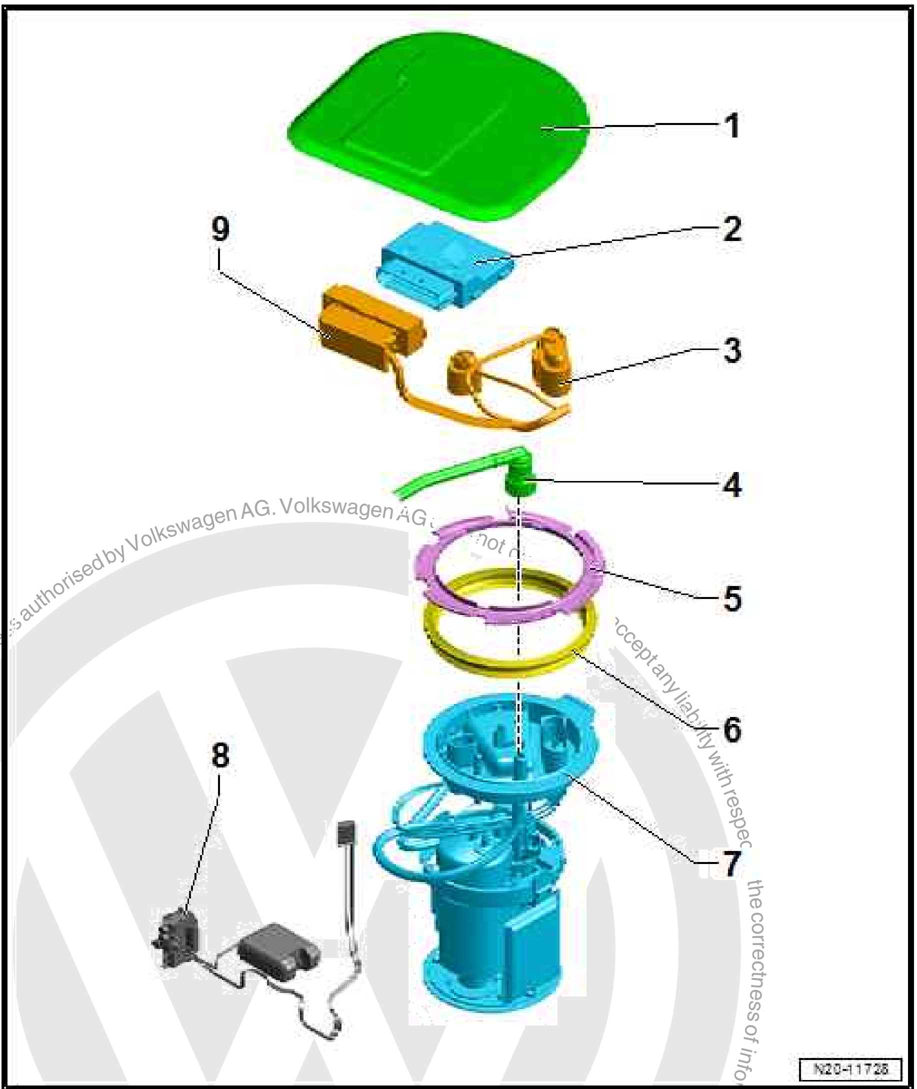
⇒ “2.1 Assembly overview - fuel delivery unit/fuel gauge sender”, page 28

⇒ “2.2 Removing and installing fuel delivery unit, fuel gauge sender”, page 28

⇒ “2.3 Removing and installing fuel gauge sender G ”, page 31

⇒ “2.4 Removing and installing assembly opening cover”, page 32

2.1 Assembly overview - fuel delivery unit/fuel gauge sender



1 - Cover

- ❑ For assembly opening
- ❑ Removing and installing ⇒ page 32

2 - Fuel pump control unit - J538-

- ❑ Removing and installing ⇒ page 71

3 - Electrical connector

- ❑ For fuel delivery unit

4 - Fuel supply line

- ❑ To fuel filter
- ❑ Separating and connecting plug-in connectors ⇒ page 34

5 - Locking ring

- ❑ 110 Nm

6 - Seal

- ❑ Renew after removal

7 - Fuel delivery unit

- ❑ With fuel system pressurisation pump - G6-
- ❑ Removing and installing ⇒ page 28

8 - Fuel gauge sender - G-

- ❑ Removing and installing ⇒ page 28

9 - Electrical connector

- ❑ For fuel pump control unit - J538-

2.2 Removing and installing fuel delivery unit, fuel gauge sender

Special tools and workshop equipment required

- Selector lever - E313-
- Selector lever position sender - G727-
- Transverse selector lever lock sensor - G868-
- Selector lever sensors control unit - J587-
- Selector lever lock solenoid - N110-
- Transverse selector lever lock motor - V577-
  - Components cannot be renewed individually when defective
  - Removing and installing ⇒ page 26

1.2 Assembly overview - manual release mechanism for parking lock

1 - Rear emergency release cable
- For parking lock
- Do not bend or kink
- Removing and installing ⇒ page 30

2 - Nut
- Qty. 2
- 4 Nm

3 - Cover

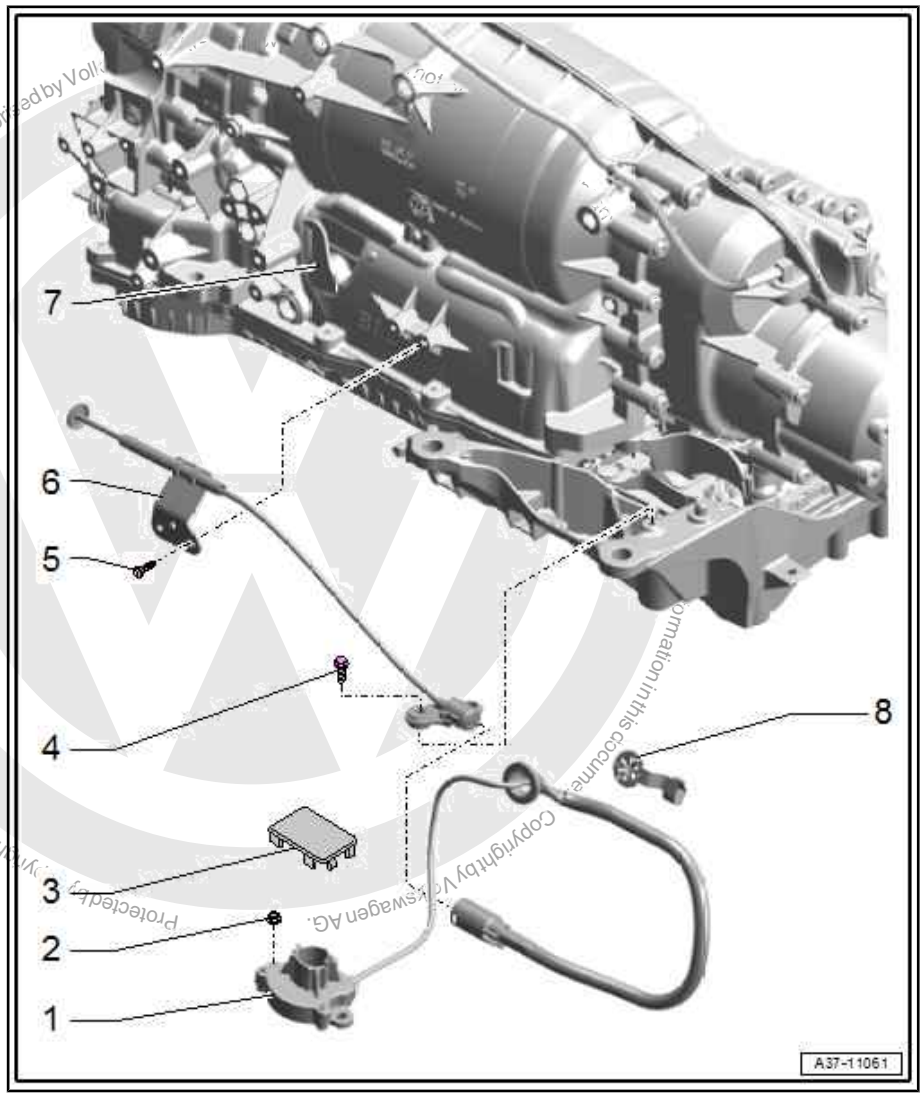
4 - Bolt
- 9 Nm

5 - Bolt
- Qty. 2
- 9 Nm

6 - Front emergency release cable
- For parking lock
- Do not bend or kink
- Removing and installing ⇒ page 27

7 - Gearbox selector lever
- For manual release of parking lock

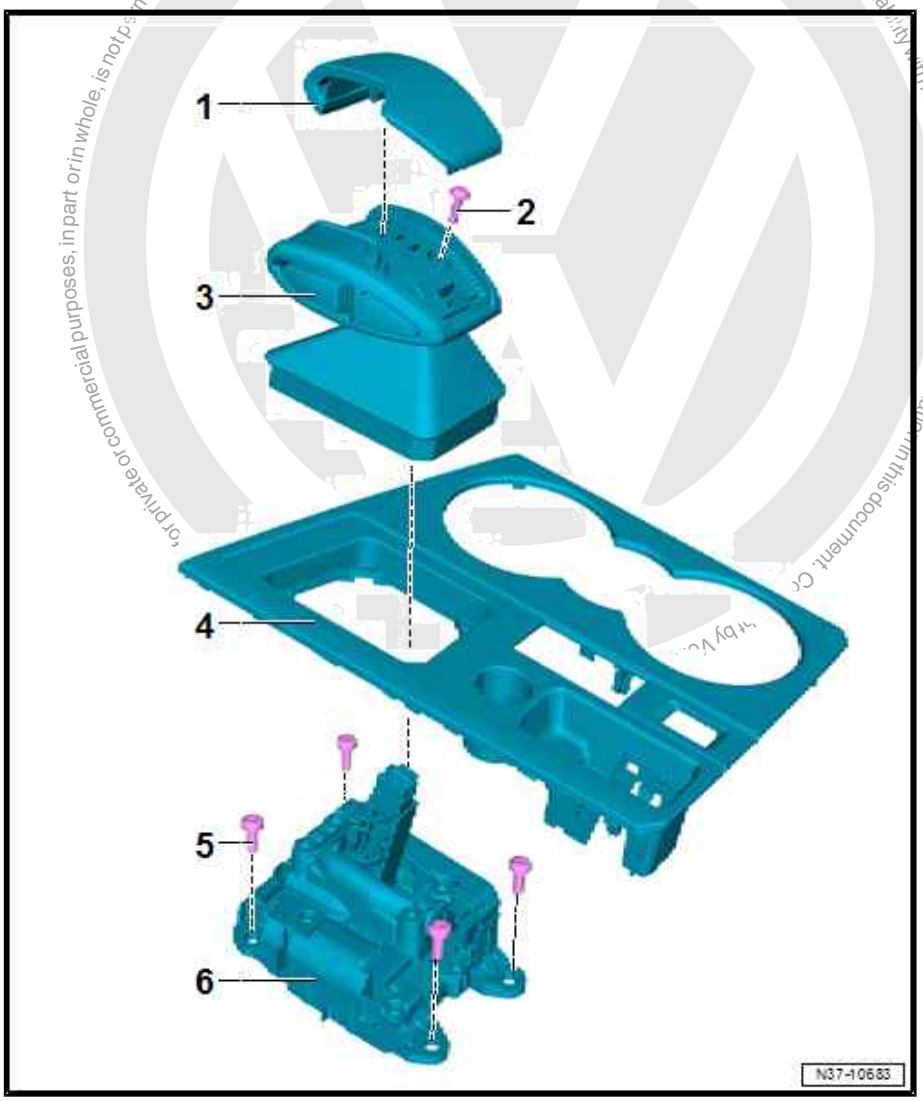
8 - Securing clip
- For selector lever cable
- Renew



37 – Controls, housing

1 Selector mechanism

1.1 Assembly overview - selector mechanism



1 - Selector lever handle, upper section

- ❑ Removing and installing ⇒ page 24

2 - Bolt

- ❑ Cannot be supplied separately
- ❑ 3.2 Nm

3 - Lower section of selector lever handle with gaiter

- ❑ With following integrated components:

- ♦ Button for selector lever release - E681-
- ♦ Parking lock button - E816-
- ♦ Selector lever position display - Y5-

- ❑ Components cannot be renewed individually when defective
- ❑ Removing and installing ⇒ page 24

4 - Insert for centre console

- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console

5 - Bolt

- ❑ 8 Nm

6 - Selector mechanism

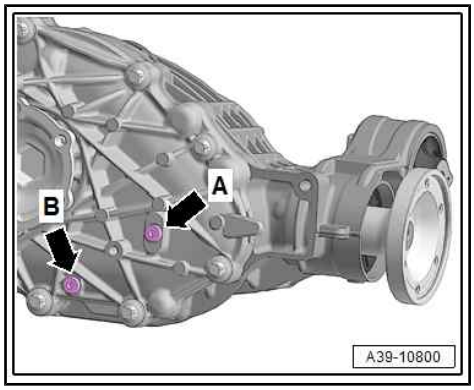
- ❑ With following integrated components:

– Unscrew oil filler plug -arrow A- for checking gear oil.

The oil level is correct, if the rear final drive is filled up to lower edge of filler plug drilling.

- Gear oil specification: ⇒ Electronic parts catalogue (ETKA) .

– Screw in plug -arrow A- and tighten. Specified torque ⇒ page 19 .



3.2.2 Checking gear oil level, bevel box 0DG

Special tools and workshop equipment required

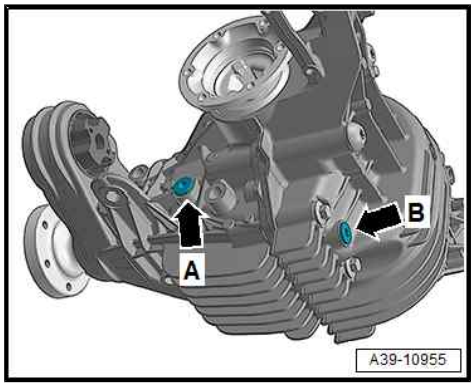
♦ Drip tray

– Unscrew oil filler plug -arrow A- for checking gear oil.

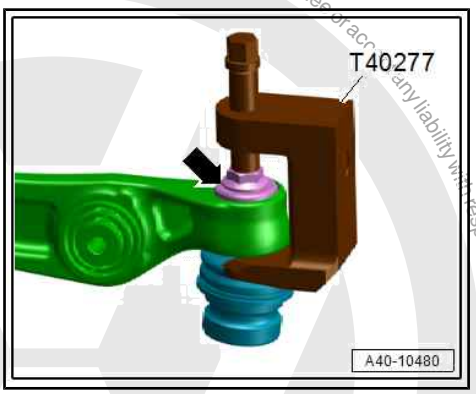
The oil level is correct, if the rear final drive is filled up to lower edge of filler plug drilling.

- Gear oil specification: ⇒ Electronic parts catalogue (ETKA) .

– Screw in plug -arrow A- and tighten. Specified torque ⇒ page 19 .



– Unscrew nut -arrow- on joint pin of swivel joint for protection of thread until flush with thread of joint pin.
– Press off swivel joint from track control link using ball joint puller - T40277- .



Note

Do not damage drive shaft boot

– Unscrew nut -arrow- and remove swivel joint.

Installing

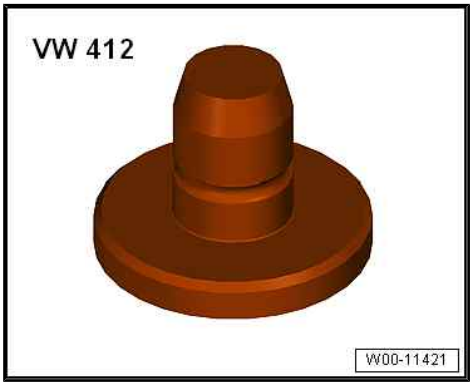
Install in reverse order.

4.6 Removing and installing bonded rubber bush for guide link

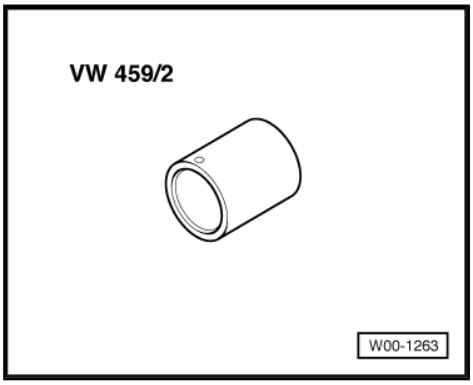
Special tools and workshop equipment required

♦ Thrust plate - VW 402-

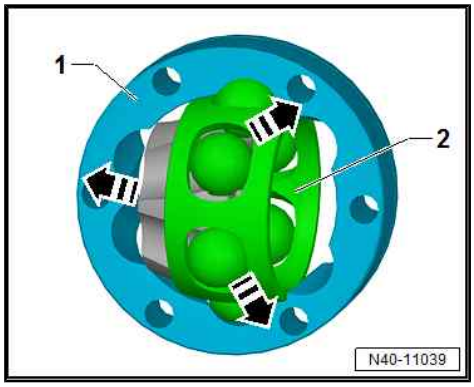
♦ Press tool - VW 412-



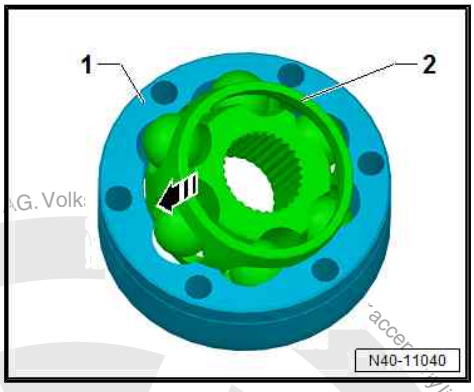
♦ Removing tool -VW 459/2-



– Swivel the hub into the joint body; at the same time the hub must be swivelled out of the cage -arrows- far enough to allow the balls to fit into the ball tracks.



– By applying firm pressure on cage in direction of -arrow-, swivel hub with balls -2- in joint body -1-.



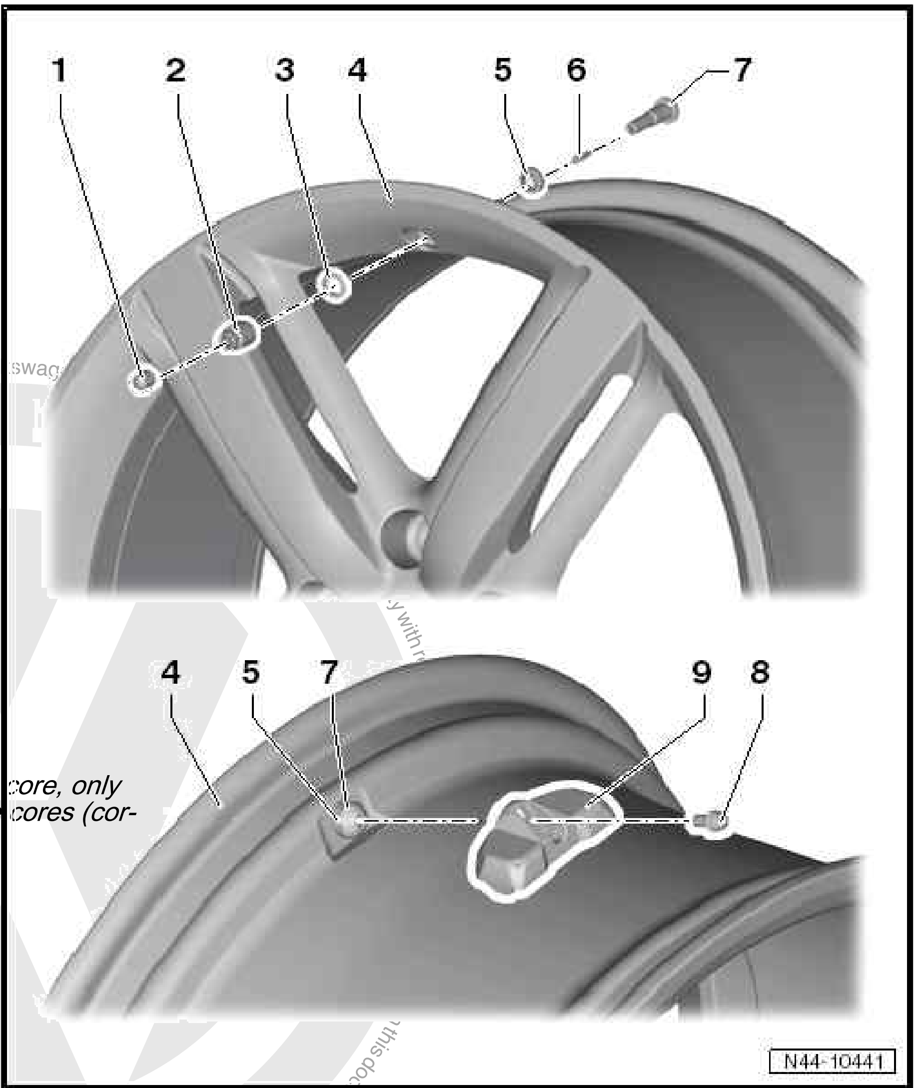
Checking function of constant velocity joint

The constant velocity joint is correctly assembled if the ball hub can be moved by hand backwards and forwards over its entire range of axial movement.

– Pack half of total grease quantity (40 g) into joint body.

– Distribute remaining grease in boot.

5.3.2 Assembly overview - tyre pressure sensor, tyre pressure sensor without valve, version 1



1 - Valve cap

2 - Nut

- Separate part of ⇒ Item 7 (page 47) .
- 4 Nm
- Renew after each removal

3 - Washer

- Separate part of ⇒ Item 7 (page 47) .

4 - Wheel

- Fitting tyre ⇒ page 101 .

5 - Seal

- Separate part of ⇒ Item 7 (page 47) .

6 - Valve insert

- Always renew when changing tyre

Note

Do not use brass valve core, only use nickel (silver) valve cores (corrosion).

7 - Metal valve

- Supplied as spare part complete with bolt ⇒ Item 8 (page 47)
- Removing and installing ⇒ page 102

8 - Bolt

- Torx bolt (service dept. variant)
- Separate part of ⇒ Item 7 (page 47) .
- 4 Nm
- Square-head bolt with flat head (production variant)

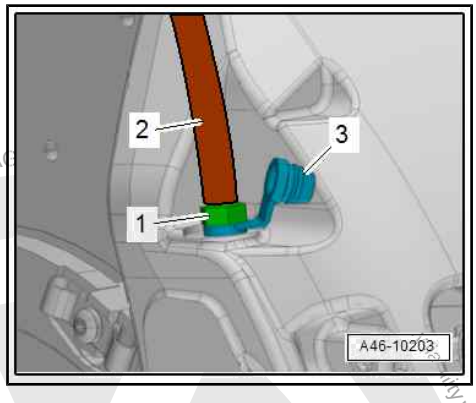
9 - Tyre pressure sensor

- Front left tyre pressure sensor - G222-
- Front right tyre pressure sensor - G223-
- Rear left tyre pressure sensor - G224-
- Rear right tyre pressure sensor - G225-
- Removing and installing, service dept. variant ⇒ page 50
- Removing and installing, production variant ⇒ page 51

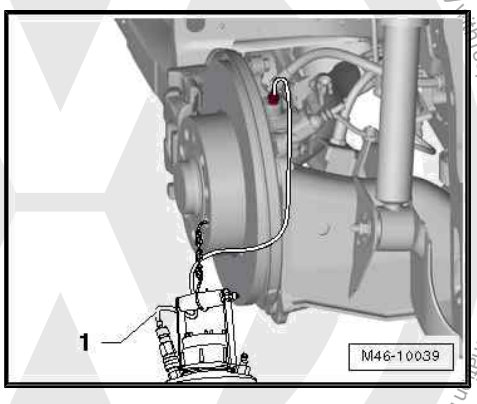
Note

Tyre pressure sensors have service life of approx. 10 years.

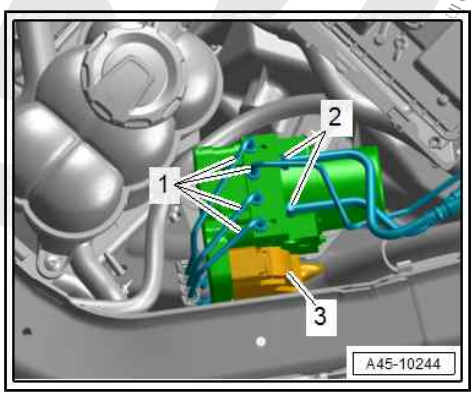
– Pull protective cap -3- off bleeder screw -1- on respective brake caliper.
– Connect bleeder hose -2- of bleeder bottle to bleeder screw of front left brake caliper.
– Open bleeder screw.



– Connect hose of bleeder bottle -1- to bleeder valve of rear left brake caliper.
– Open bleeder screw.
– Depress brake pedal at least 60 mm using brake pedal depressor - V.A.G 1869/2- .
– Close front left and rear left bleeder valve.
– Do not remove brake pedal actuator - V.A.G 1869/2- .
– Place sufficiently lint-free cloths under ABS control unit - J104- and ABS hydraulic unit - N55- .

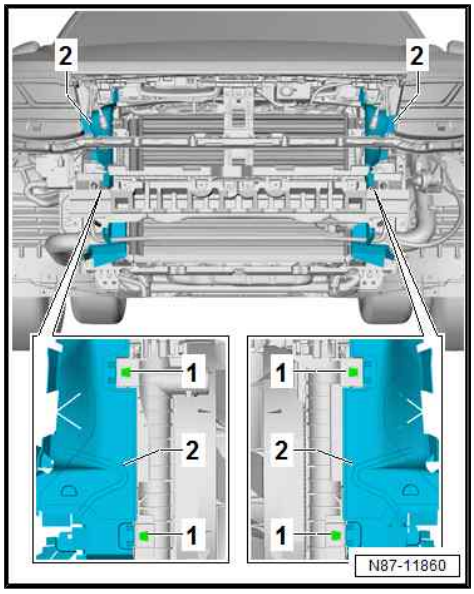


– First mark both brake lines -2- from brake master cylinder, and unscrew them from hydraulic unit.
– Seal threaded holes immediately using sealing plugs 5Q0 698 311.
– Use suitable plugs from engine bung set - VAS 6122- or dust caps of bleeder screws to seal brake lines.
– Mark and unscrew remaining brake lines -1-.
– Use suitable plugs from engine bung set - VAS 6122- or dust caps of bleeder screws to seal brake lines.
– Release and pull off electrical connector -3-.
– Make sure that no brake fluid gets into connector housing of control unit.
– Move aside electrical wire.



Continued for all vehicles

– Release locking lugs -1- using assembly tool - T10118- . Remove air ducts -2- when doing so.



Vehicles with R134a refrigerant

– Drain refrigerant circuit ⇒ Air conditioning system with R134a refrigerant; Rep. gr. 00 ; Working with air conditioner service station .

Vehicles with R1234yf refrigerant

– Drain refrigerant circuit ⇒ Air conditioning systems with refrigerant R1234yf - general information; Rep. gr. 87 ; Working with air conditioner service station; Draining refrigerant circuit .

Continued for all vehicles

CAUTION

Risk of freezing injury caused by escaping pressurised refrigerant.

There is a risk of injury to the skin and parts of the body due to freezing.

- **Wear protective gloves.**
- **Wear protective goggles.**
- **Extract refrigerant and open the refrigerant circuit immediately afterwards.**
- **If more than 10 minutes have passed since the refrigerant was extracted, repeat the extraction process before opening the refrigerant circuit. Pressure could build up in the refrigerant circuit from continued evaporation.**

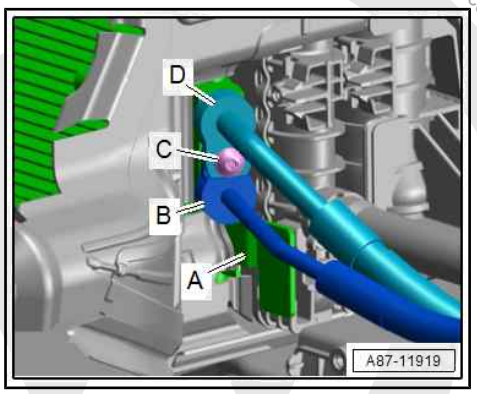
– For any further work, immediately seal open lines and connections with clean plugs from engine bung set - VAS 6122- .

Note

Disregard item -A-.

– Unscrew bolt -C-.

– Remove refrigerant lines -B- and -D-.



NOTICE

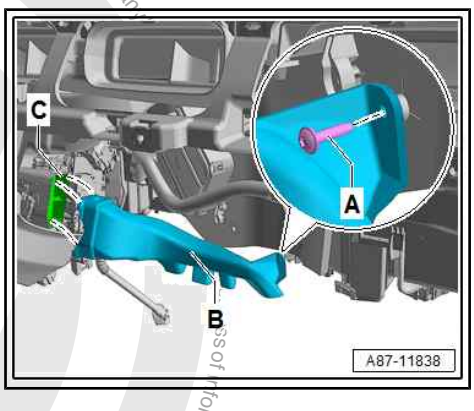
Risk of damage to the refrigerant lines due to rupture of the inner foil.

- **Never bend refrigerant lines to a radius less than 100 mm.**

Continued for all vehicles

– Unscrew bolt -A-.

– Swivel down front passenger side footwell vent -B- from air distribution housing -C-.



Installing

Install in reverse order of removal, observing the following:

Specified torques

Component	Specified torque
Bolt -A-	1.5 Nm

6.6 Removing and installing air ducts

⇒ “6.6.1 Removing and installing dash panel air duct, left part on driver side”, page 164

⇒ “6.6.2 Removing and installing dash panel air duct, right part on driver side”, page 165

⇒ “6.6.3 Removing and installing dash panel air duct, left part on front passenger side”, page 166

⇒ “6.6.4 Removing and installing dash panel air duct, right part on front passenger side”, page 166

⇒ “6.6.5 Removing and installing top centre dash panel air duct”, page 166

⇒ “6.6.6 Removing and installing intermediate piece”, page 167

⇒ “6.6.7 Removing and installing rear air duct”, page 168

⇒ “6.6.8 Removing and installing intermediate piece between heater and air conditioning unit and air duct”, page 169

⇒ “6.6.10 Removing and installing air duct from intermediate piece to air distribution housing”, page 170

⇒ “6.6.11 Removing and installing air duct from air duct outlet or air distribution housing outlet to floor vent”, page 170

⇒ “6.6.12 Removing and installing floor vent”, page 170

⇒ “6.6.13 Removing and installing air duct from outlet of air distribution housing to air duct on floor up to B-pillar”, page 171

⇒ “6.6.14 Removing and installing air duct from air duct on floor to B-pillar up to air duct in B-pillar”, page 171

⇒ “6.6.15 Removing and installing B-pillar air duct”, page 172

⇒ “6.6.16 Removing and installing air duct from outlet of air distribution housing to rear vent in centre console”, page 172

6.6.1 Removing and installing dash panel air duct, left part on driver side

Special tools and workshop equipment required

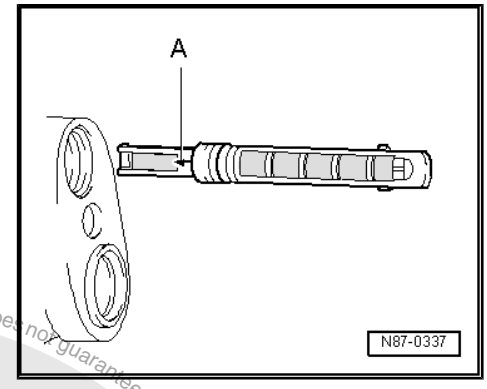
1.2.9 Restrictor

Restrictor in front of evaporator

Note

Currently, there is no air conditioning system with a restrictor installed in front of the evaporator.

- The restrictor creates a constriction. This restriction limits the flow, separating the high pressure and low pressure sides in the refrigerant circuit. Upstream of the restrictor, the refrigerant is warm due to the high pressure. Downstream of the restrictor, the refrigerant is cold due to the low pressure. Upstream of the constriction is a strainer to catch dirt and downstream of the constriction is a strainer to atomise the refrigerant before it enters the evaporator.

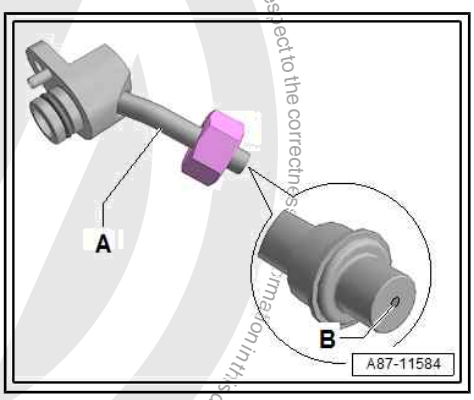


Note

- *Arrow -A- on the restrictor points to the evaporator.*
- *Renew every time the refrigerant circuit is opened.*
- *Note different versions; refer to the various customer service information ⇒ Electronic parts catalogue .*

Restrictor in front of heat exchanger for high-voltage battery (chiller)

The restrictor creates a constriction. This restriction limits the flow, separating the high pressure and low pressure sides in the refrigerant circuit. Upstream of the restrictor, the refrigerant is warm due to the high pressure. Downstream of the restrictor, the refrigerant is cold due to the low pressure.



Note

- *The illustration shows a refrigerant line -A- with a permanently installed restrictor -B- (without strainer).*
- *The diameter of the shown restrictor hole -B- is approx. 0.7 mm. Depending on the refrigerant line version, this restrictor is permanently installed or it can be removed. For the removable version a strainer may be fitted to prevent the restrictor hole from being blocked by suspended particles.*
- *Check for soiling before installing and clean or renew as necessary.*
- *Observe different versions.*

– If fitted, check the voltage supply for the air conditioning system magnetic clutch - N25- . If this is OK, repair the magnetic clutch ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).

– Check actuation of the air conditioner compressor regulating valve - N280- ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode - air conditioning system.

Note

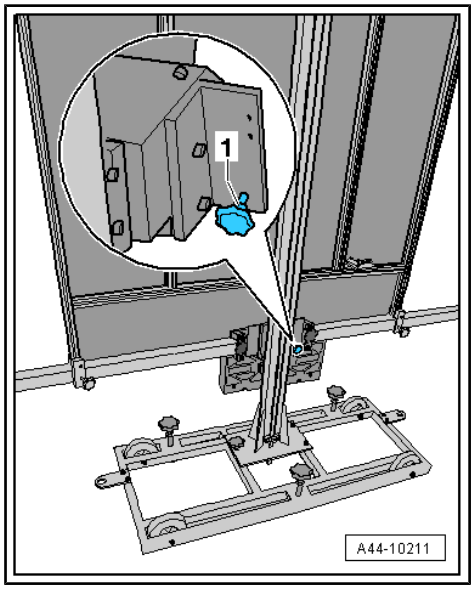
♦ *On air conditioner compressors with an air conditioning system magnetic clutch - N25- , the air conditioner compressor only works (delivers refrigerant) if in addition to the air conditioner compressor regulating valve - N280- , -N25- is actuated ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode - air conditioning system.*

♦ *-N280- (and -N25-) is actuated by the air conditioning system control unit - J301- , the operating and display unit for front air conditioning system - E87- and the Climatronic control unit - J255- or a downstream control unit ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode - air conditioning system and ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).*

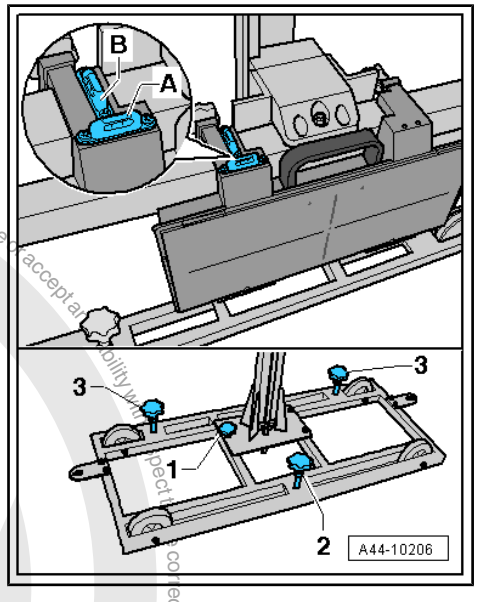
♦ *All of the conditions for testing marked with * are pertinent to a certain vehicle and are described in the vehicle-specific workshop manual ⇒ Heating, air conditioning; Rep. gr. 00 ; Repair instructions (vehicle-specific workshop manual) and ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).*

- The radiator and condenser are clean (clean if necessary) * ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).
- The heat insulation on the expansion valve is OK and mounted correctly * ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).
- The poly V-belt is OK and properly tensioned. The belts for air conditioner compressor and alternator are in good condition and correctly tensioned.* ⇒ Heating, air conditioning system; Rep. gr. 87 ; Air conditioner compressor (vehicle-specific workshop manual) and ⇒ Heating, air conditioning system; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual).
- The drive unit for the air conditioner compressor is OK and mounted properly * ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit (vehicle-specific workshop manual) and ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor (vehicle-specific workshop manual).
- The air ducts, covers and seals are OK and mounted correctly * ⇒ Heating, air conditioning; Rep. gr. 87 ; Overview of fitting locations - air conditioning system (vehicle-specific workshop manual).
- Diagnosis of the air conditioning system finds no faults (with the engine running and the air conditioning system switched on), no compressor deactivation conditions are shown in the measured values of the respective control unit (only on vehicles with diagnosis “air conditioning system”).* ⇒ Vehicle diagnostic tester in “Guided Fault Finding” mode of air conditioning system.
- The air flow rate through the dust and pollen filter is not impaired by dirt.* ⇒ Heating, air conditioning system; Rep. gr.

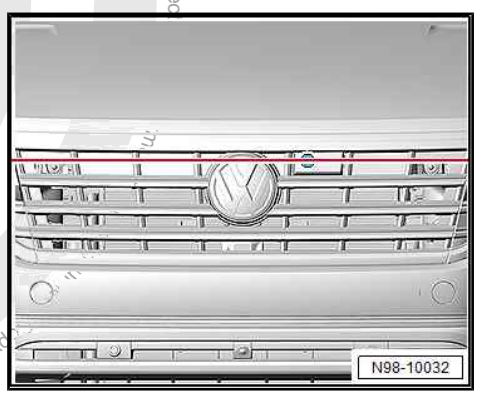
– Turn fine adjuster screw -1- on alignment beam until display on wheel alignment computer is within tolerance.



– Use adjuster screw -1- to level spirit level -A-.
– Use adjuster screw -2- to level spirit level -B-.



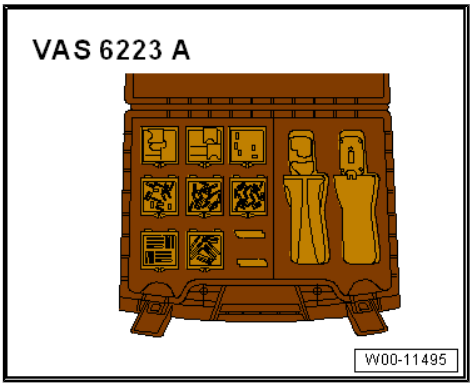
– Switch on line laser - VAS 6350/3- again and check nominal height, adjust it, if necessary.
– By turning the crank on the back of the calibration board, align the laser beam such that the laser beam contacts the centre of the camera lens in horizontal position.
– The nominal height has been reached, switch off the line laser - VAS 6350/3- .



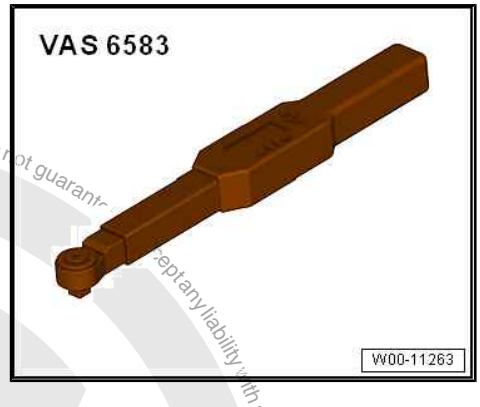
1.4 Removing and installing control unit for head-up display

Special tools and workshop equipment required

- Protective cap for wiring harness connector - VAS 6223/9-



- Torque wrench - VAS 6583-



Note

If the control unit for Head-up Display - J898- is renewed, start the respective function ⇒ Vehicle diagnostic tester.

Removing

– Remove windscreen ⇒ General body repairs, exterior; Rep. gr. 64 ; Windscreen; Removing and installing windscreen .

– Remove head-up display trim ⇒ General body repairs, interior; Rep. gr. 70 ; Dash panel; Assembly overview - dash panel .

NOTICE

Risk of destroying the control unit for head-up display.

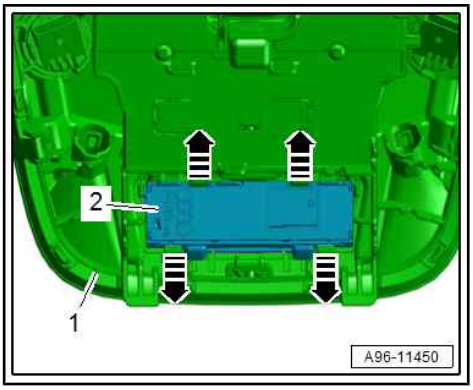
– Only unscrew the specified bolts from the control unit.

– Never unscrew the bolts for the upper part of the housing.

2.33 Removing and installing garage door operating unit - E284-

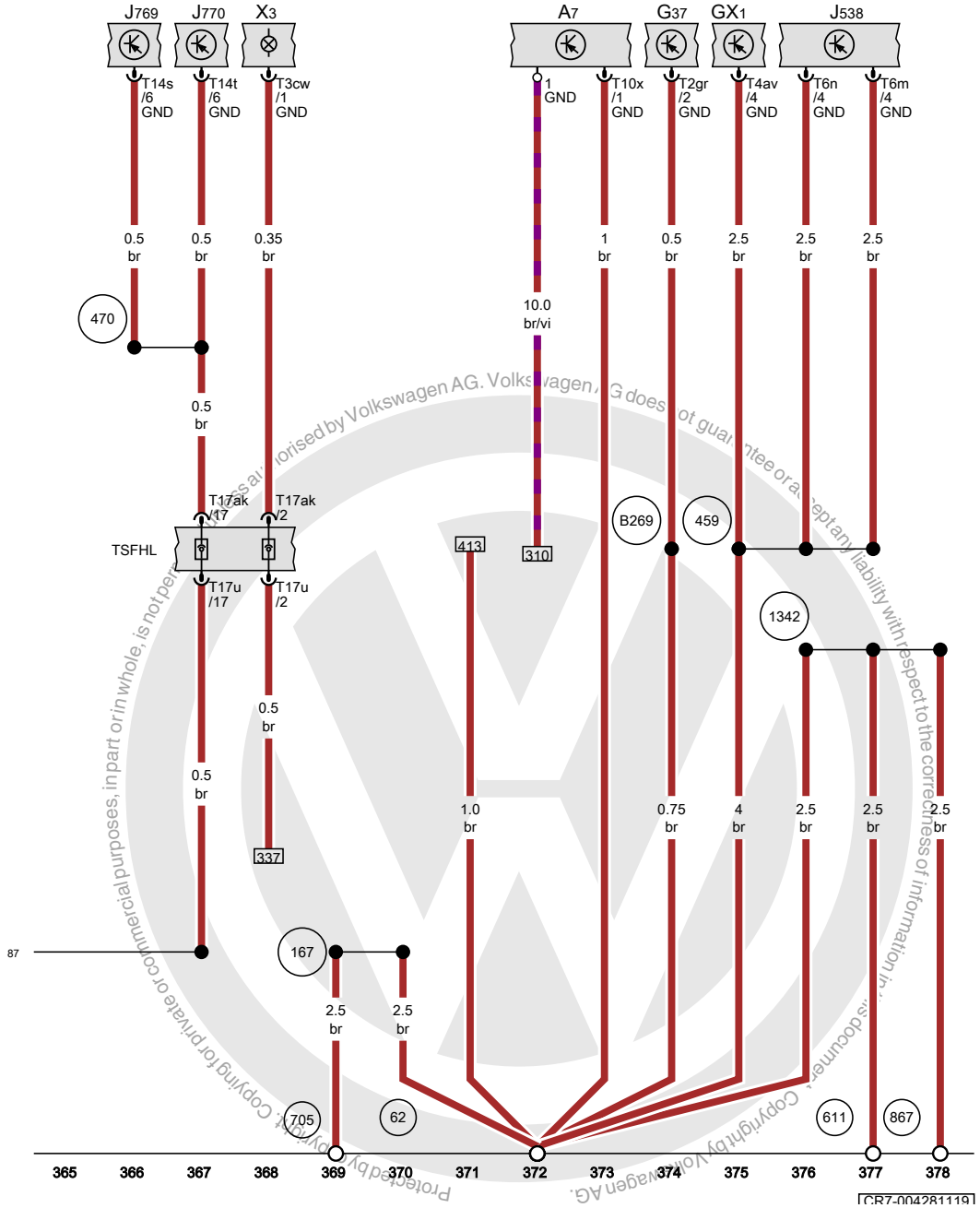
Removing

– Remove front interior light/reading light ⇒ page 185 .
– If fitted, remove anti-theft alarm sensor - G578- ⇒ page 189 .
– Carefully press fasteners towards side -arrows-.
– Remove operating unit -2- from front interior light/reading light -1-.



Installing

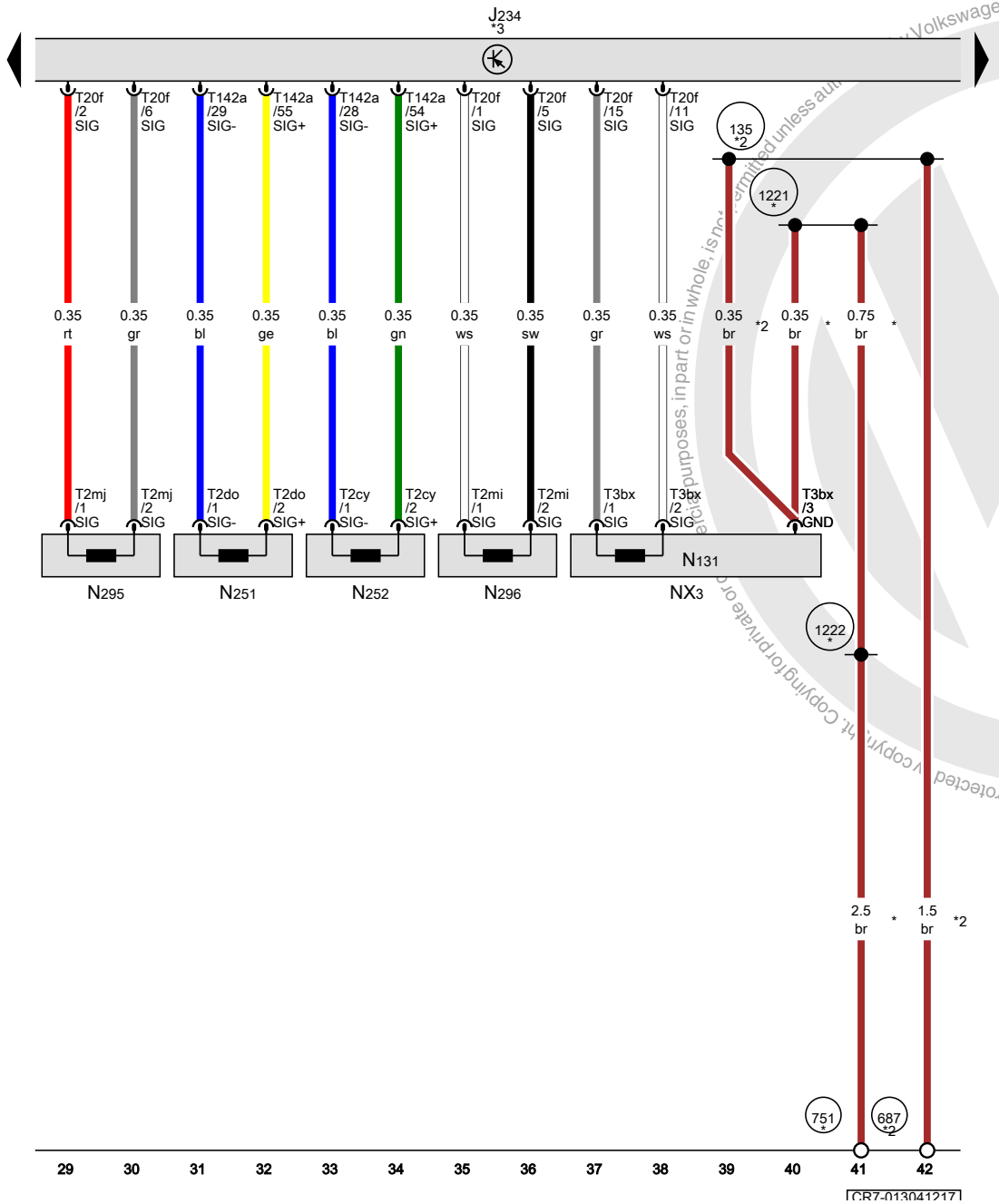
Install in reverse order of removal.



ws = white
sw = black
ro = red
rt = red
br = brown
gn = green
bl = blue
gr = grey
li = purple
vi = purple
ge = yellow
or = orange
rs = pink

Voltage converter (48 V/12 V), Fuel delivery unit, Rear right brake pad wear sender, Fuel pump control unit, Lane change assist control unit, Lane change assist control unit 2, Rear fog light

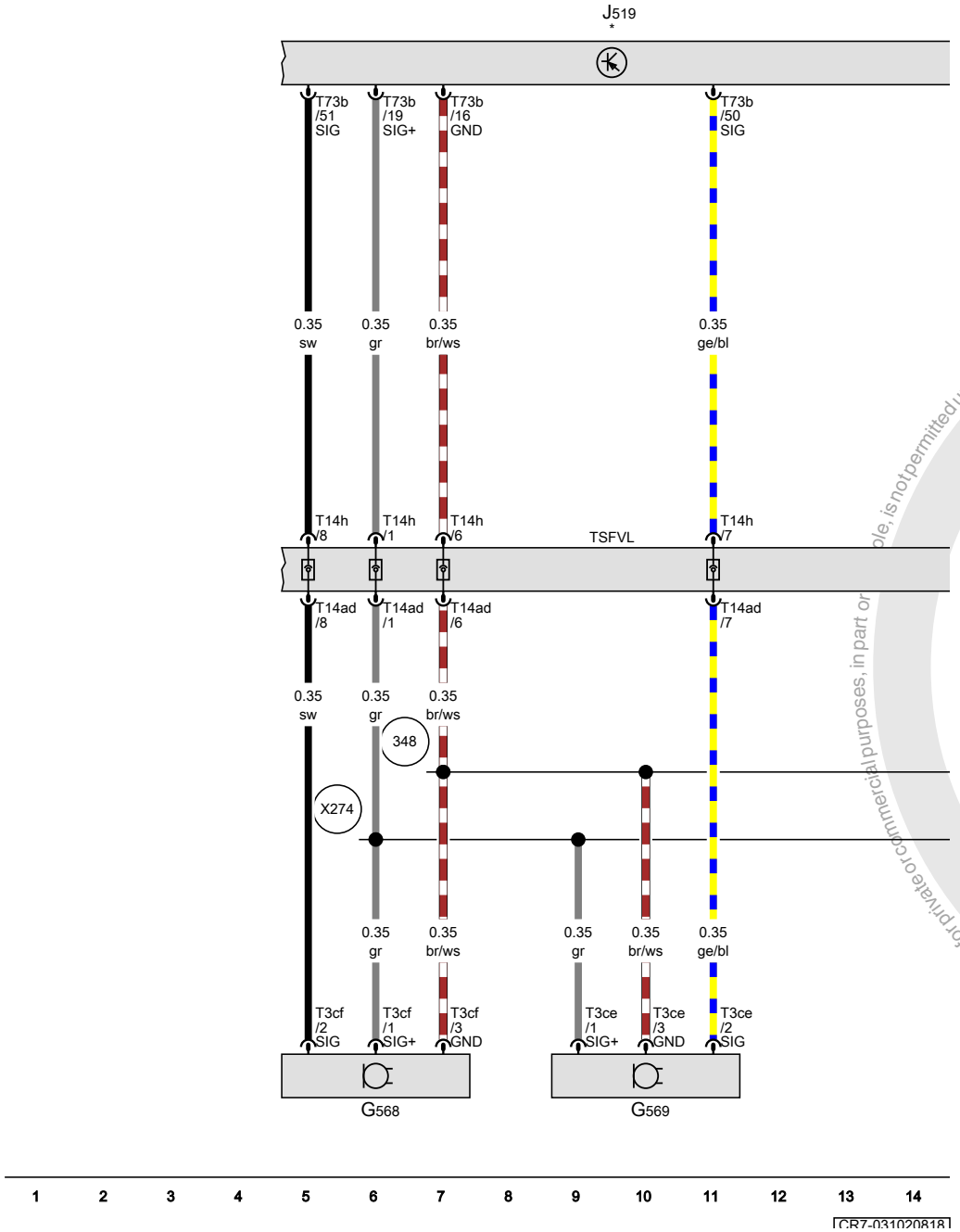
A7	Voltage converter (48 V/12 V)
GX1	Fuel delivery unit
G37	Rear right brake pad wear sender
J538	Fuel pump control unit
J769	Lane change assist control unit
J770	Lane change assist control unit 2
T2gr	2-pin connector, black
T3cw	3-pin connector, black
T4av	4-pin connector, black
T6m	6-pin connector, black
T6n	6-pin connector, black
T10x	10-pin connector, black
T14s	14-pin connector, black
T14t	14-pin connector, black
T17ak	17-pin connector, black
T17u	17-pin connector, black
TSFHL	Coupling point on rear left bumper
X3	Rear fog light
62	Earth point, right C-pillar
87	Earth connection 2, in rear wiring harness
167	Earth connection 4, in engine compartment wiring harness
459	Earth connection 15, in interior wiring harness
470	Earth connection 1, in rear bumper wiring harness
611	Earth connection, on fuel tank filler neck
705	Earth point on fuel tank
867	Earth connection 2, on fuel tank filler neck
1342	Earth connection 44, in main wiring harness
B269	Connection 2 (brake pad wear indicator), in interior wiring harness



Airbag control unit, Front passenger airbag unit, Driver side curtain airbag igniter, Front passenger side curtain airbag igniter, Driver side knee airbag igniter, Front passenger side knee airbag igniter

J234	Airbag control unit
NX3	Front passenger airbag unit
N131	Airbag igniter 1 on front passenger side
N251	Driver side curtain airbag igniter
N252	Front passenger side curtain airbag igniter
N295	Driver side knee airbag igniter
N296	Front passenger side knee airbag igniter
T2cy	2-pin connector, yellow
T2do	2-pin connector, yellow
T2mi	2-pin connector, yellow
T2mj	2-pin connector, yellow
T3bx	3-pin connector, yellow
T20f	20-pin connector, yellow
T142a	142-pin connector, yellow
135	Earth connection 2, in dash panel wiring harness
687	Earth point 1, on centre tunnel
751	Earth point 2, on right A-pillar
1221	Earth connection 7, in dash panel wiring harness
1222	Earth connection 8, in dash panel wiring harness
*	For left-hand drive models
*2	For right-hand drive models
*3	Earth supply via housing

ws	=	white
sw	=	black
ro	=	red
rt	=	red
br	=	brown
gn	=	green
bl	=	blue
gr	=	grey
li	=	purple
vi	=	purple
ge	=	yellow
or	=	orange
rs	=	pink



Front left sender for park assist steering on left side of vehicle, Front right sender for park assist steering on right side of vehicle, Onboard supply control unit

G568	Front left sender for park assist steering on left side of vehicle
G569	Front right sender for park assist steering on right side of vehicle
J519	Onboard supply control unit
T3ce	3-pin connector, black
T3cf	3-pin connector, black
T14ad	14-pin connector, black
T14h	14-pin connector, black
T73b	73-pin connector, black
TSFVL	Coupling point on front left bumper
348	Earth connection (parking aid), in front bumper wiring harness
X274	Positive connection (parking aid), in front bumper
*	see applicable current flow diagram for fuses in interior

ws	=	white
sw	=	black
ro	=	red
rt	=	red
br	=	brown
gn	=	green
bl	=	blue
gr	=	grey
li	=	purple
vi	=	purple
ge	=	yellow
or	=	orange
rs	=	pink

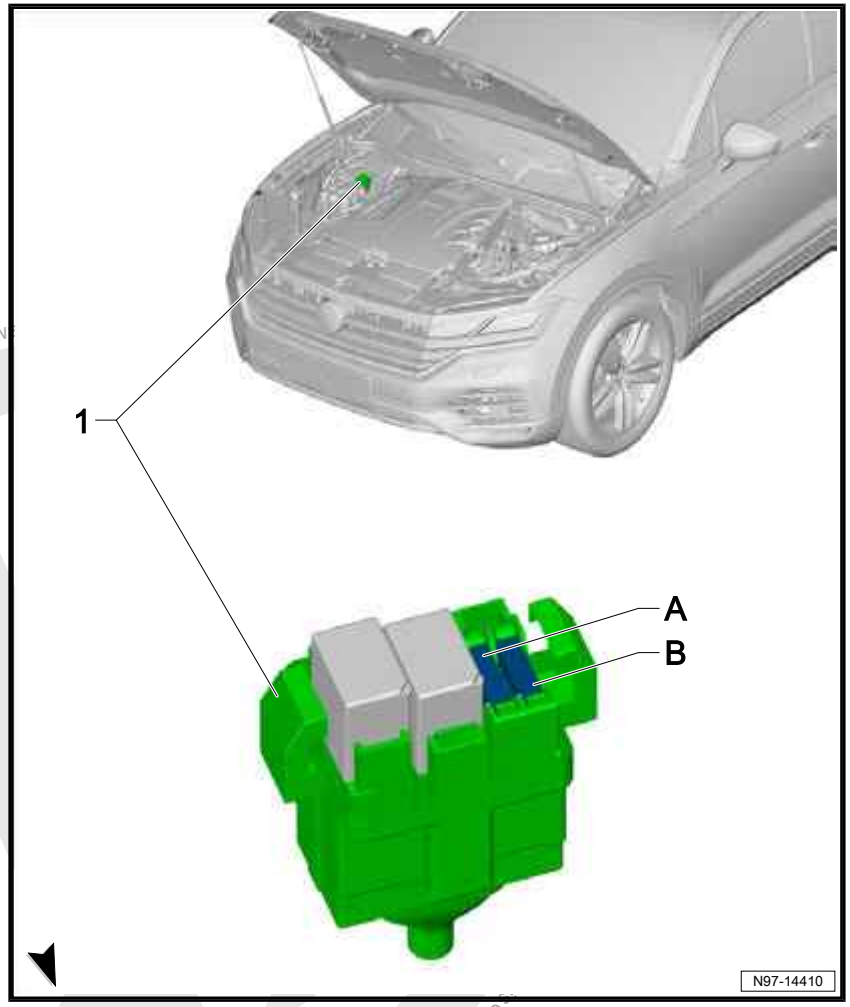
Emergency call module , (IW1),(IW3),(NZ3),(NZ4)

From November 2017

Electromechanical steering , DFKA,(QZ7)

From December 2019

1 - Relay and fuse carrier 1 -SR1-



Back to overview ⇒ page 1

1.26.2 Fuse assignment for relay and fuse carrier 1 -SR1- , from November 2017

Slot	Current flow diagram designation	Nominal value	Function / component	Terminal
A	Fuse (50) -S216-	15 A	Engine/motor control unit -J623-	30a

Back to overview ⇒ page 1

1.1.12 Steering column

1 - Steering column electronics control unit -J527-
- ❑ Fitting location of connection to steering wheel ⇒ item 1 (page 40)

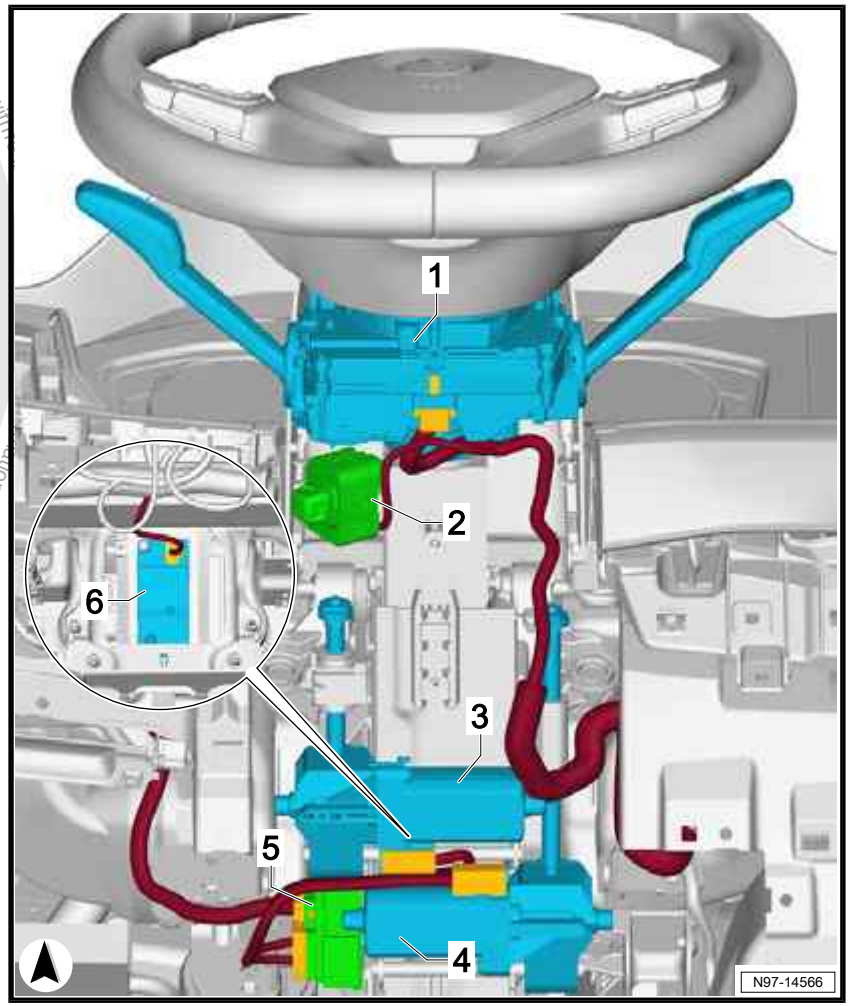
2 - Steering column adjustment switch -E167-

3 - Steering column vertical adjustment motor -V123-

4 - Steering column axial adjustment motor -V124-

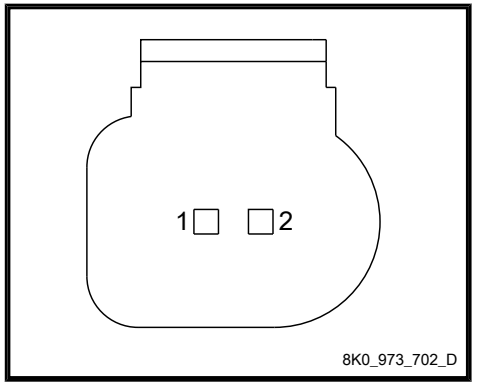
5 - Control unit for electrically adjustable steering column -J866-

6 - Control unit for electronic steering column lock -J764-



1.43.1 Connector -T2sc-

Connector -T2sc-

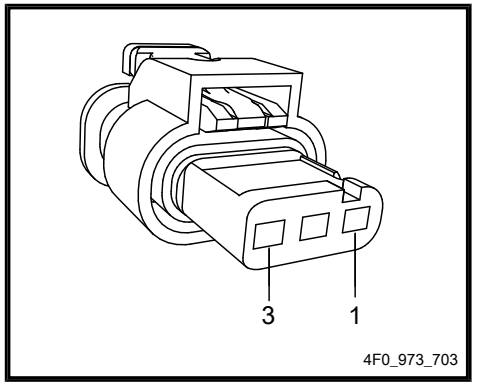


1.44 Hall sender 3 -G300-

◆ ⇒ “1.44.1 Connector T3ds ”, page 30

1.44.1 Connector -T3ds-

Connector -T3ds-



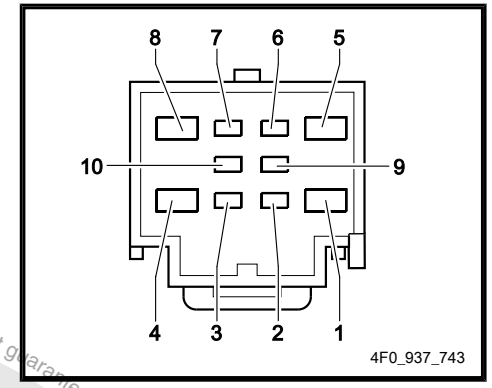
1.45 Hall sender 4 -G301-

◆ ⇒ “1.45.1 Connector T3dt ”, page 31

1 Connector views: parts with prefix N

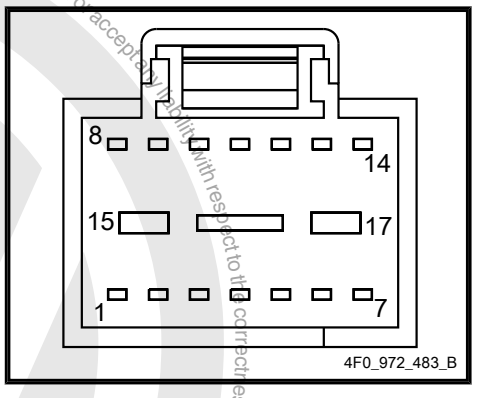
1.40.2 Connector -T10i-

Connector -T10i-



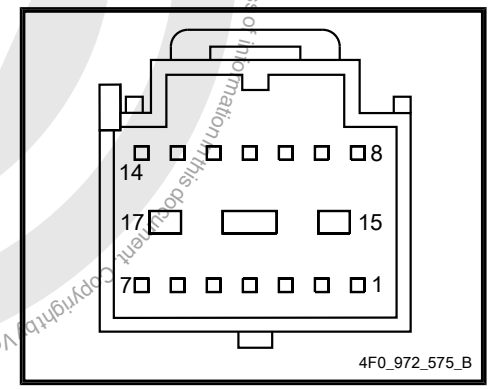
1.40.3 Connector -T17b-

Connector -T17b-



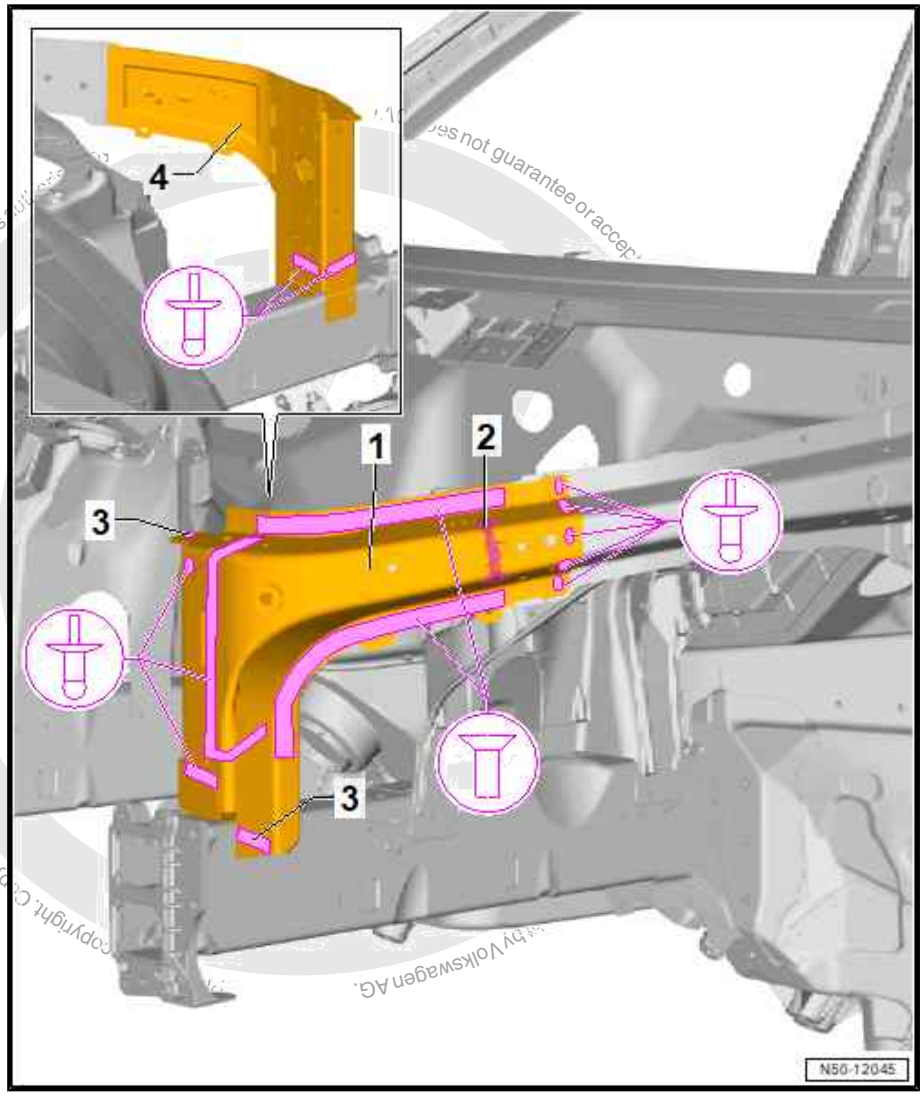
1.40.4 Connector -T17i-

Connector -T17i-

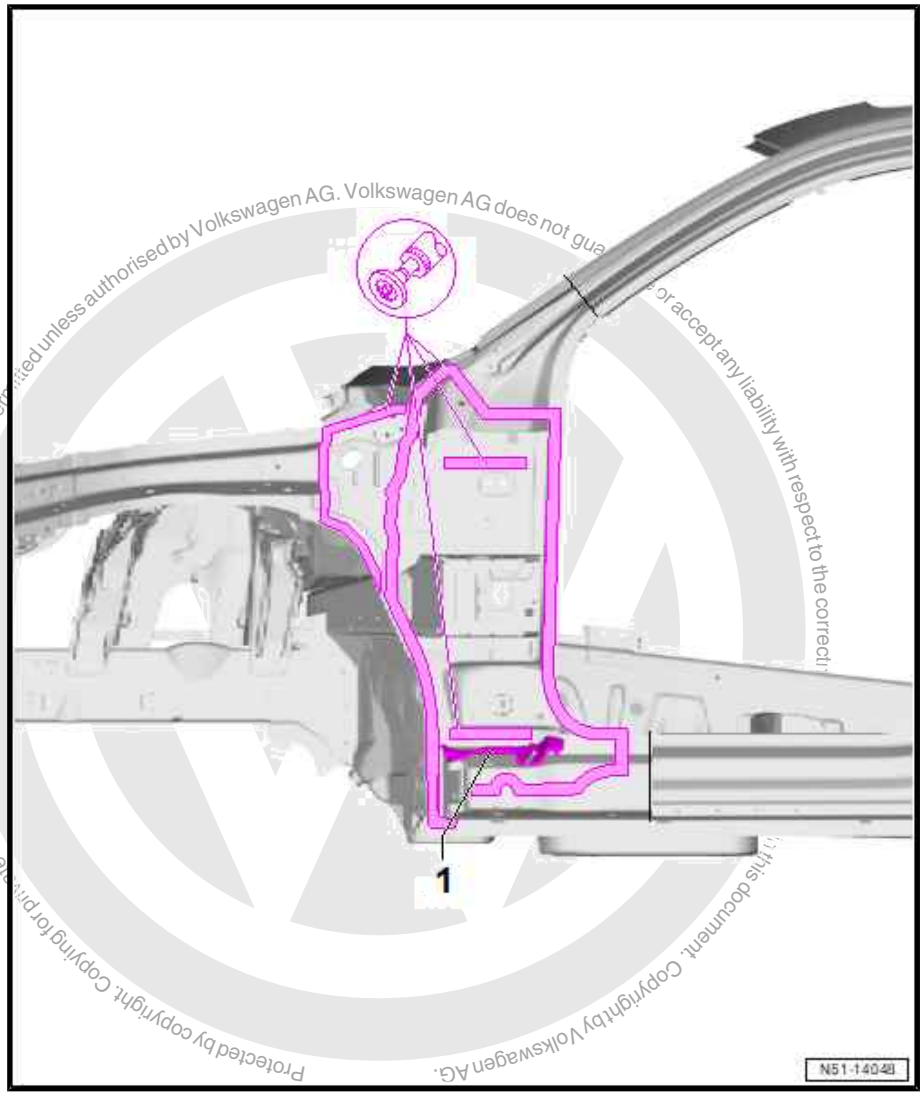


1.41 Coupling point for rear left door -TTHL-

- ⇒ “1.41.1 Connector T19a ”, page 63



– Insert moulded foam insert -2-.
– Screw in flow-drill screws in area -3- using socket for flow-drill screws .
– Install solid rivets using compact booster . To do this, use press tool insert ⇒ page 37 .
– Install pop rivets on new part -1- with inner connecting plate -4-.
– Install pop rivets on new part -1-.



– Remove remaining material.
– Sand welding surfaces down to bare metal.

7.3 Installing

⇒ “7.3.1 Preparing new part”, page 185

⇒ “7.3.2 Moulded foam inserts”, page 186

⇒ “7.3.3 Joining”, page 186

Note

- *In order to properly perform repair works at bodies, please use welding units and body tools authorised by the Volkswagen AG.*
- *The welding units and body tools authorised by the Volkswagen AG can be found in ⇒ Electronic parts catalogue (ETKA); TOOLS; Workshop equipment; Body and paintwork .*

- Pop rivets, 6.4 mm in diameter ⇒ Electronic parts catalogue (ETKA)
- Solid aluminium rivets 4 x 8 mm ⇒ Electronic parts catalogue (ETKA)
- Solid aluminium rivets 6 x 10 mm ⇒ Electronic parts catalogue (ETKA)

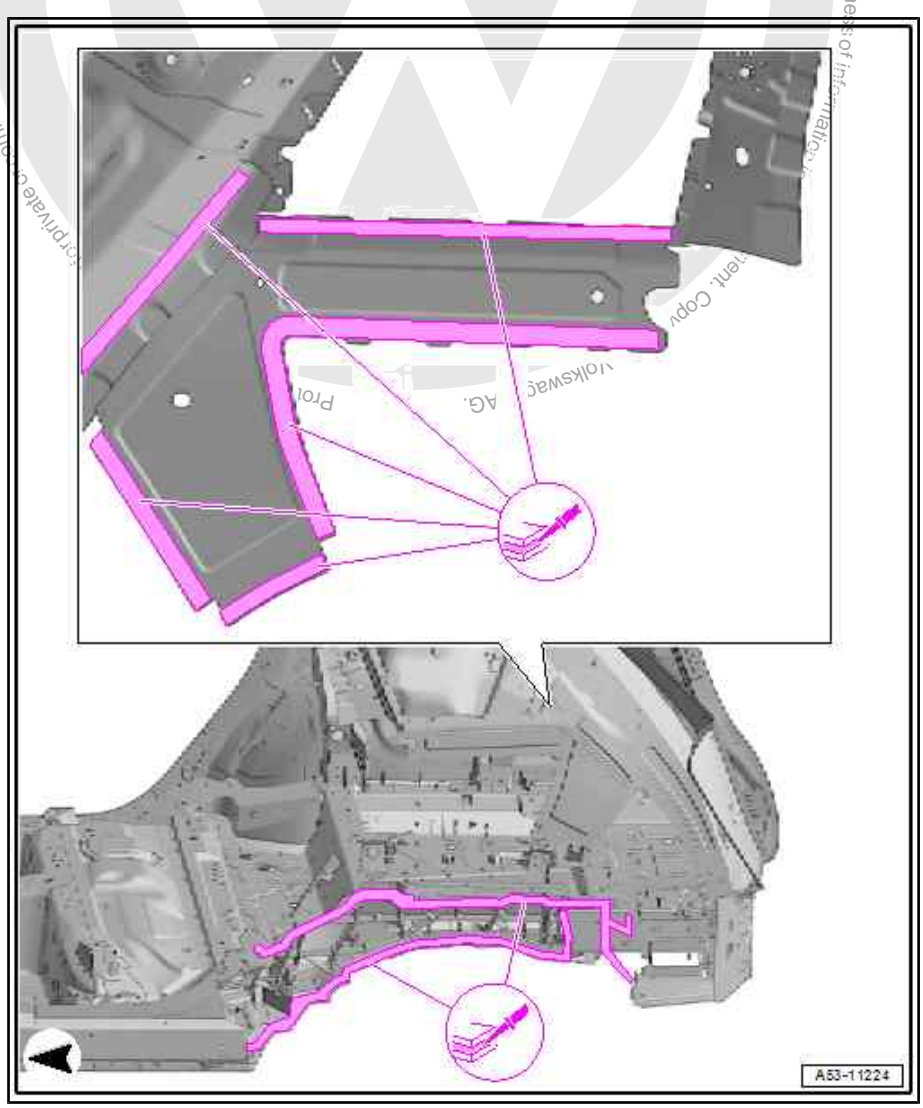
Note

Note allocation of riveted joints ⇒ page 38 .

6.3.2 Joining

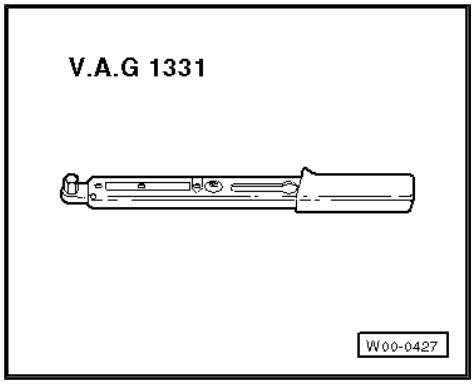
Note

New part must be joined within 90 minutes or adhesion properties of adhesive will be impaired.



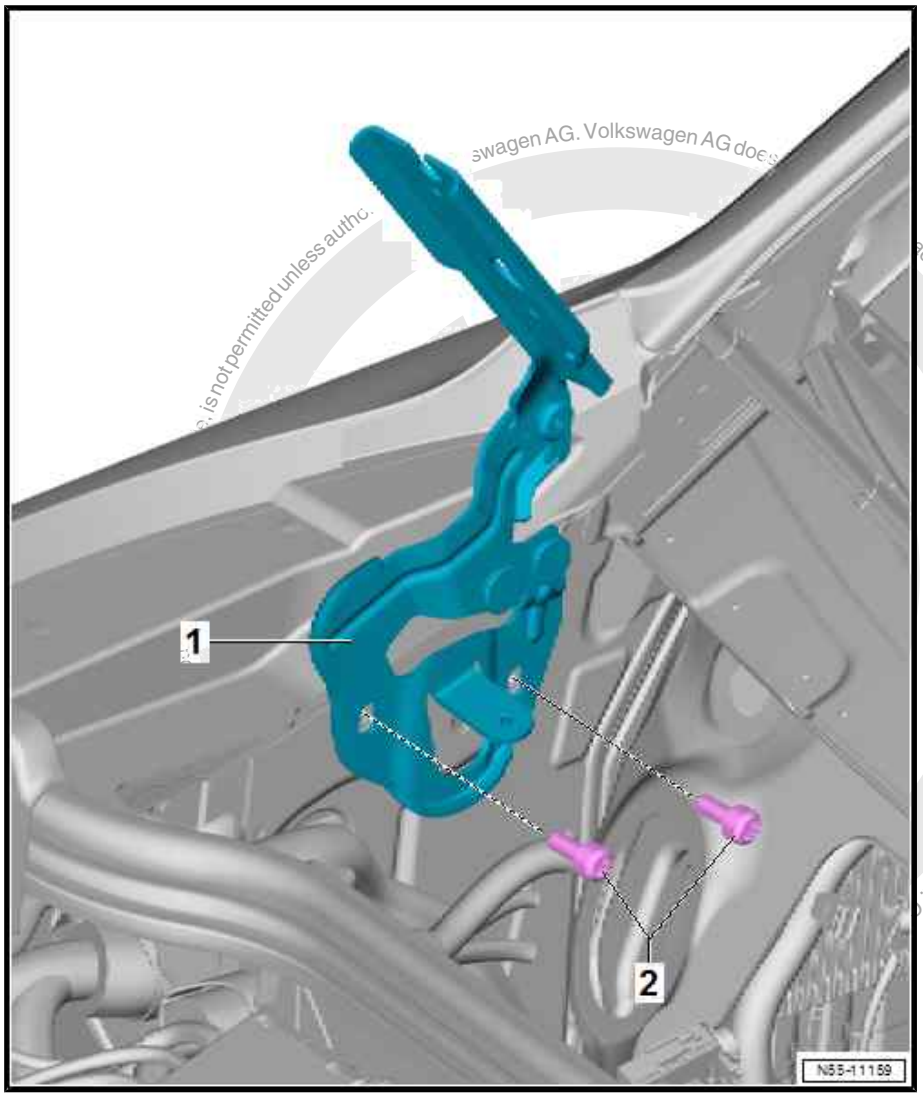
– Apply 2-component body adhesive to entire bonding surface of indicated areas and of new part.

♦ Torque wrench - V.A.G 1331-



♦ Supplement tool set - T10395/8-/10-

Removing



– Remove bonnet -3- ⇒ page 32 .
– Removing plenum chamber cover ⇒ page 24 .
– Unscrew bolts -2-.
– Pull off hinge -1-.

- *Specified tightening torque after renewal of A-pillar: 20 Nm + 90°*

5 - Bolt

- ❑ Loosening once to adjust the door is permitted. Always renew otherwise.
- ❑ Installed from inside vehicle.
- ❑ Remove B-pillar trim ⇒ General body repairs, interior; Rep. gr. 70 ; Trims, interior; Removing and installing B-pillar trim .
- ❑ 50 Nm

Note

- *After renewal of A-pillar the specified torque changes.*
- *Specified tightening torque after renewal of A-pillar: 20 Nm + 90°*

6 - Cap

- ❑ For bolt -7-.

7 - Bolt

- ❑ Connects upper part of hinge to bottom part of hinge.
- ❑ 27 Nm

8 - Door hinge

- ❑ The hinge is split.
- ❑ Upper part is secured to hinge lower part with bolt -7-.

9 - Door arrester

- ❑ Removing and installing ⇒ page 190

10 - Bolt

- ❑ 33 Nm

11 - Bolt

- ❑ Qty. 2
- ❑ 8 Nm

12 - Bolt

- ❑ Always renew, loosening it once to adjust door is allowed.
- ❑ 50 Nm

13 - Door hinge

- ❑ The hinge is split.
- ❑ Lower part is secured to hinge upper part with bolt -7-.

14 - Hexagon nut

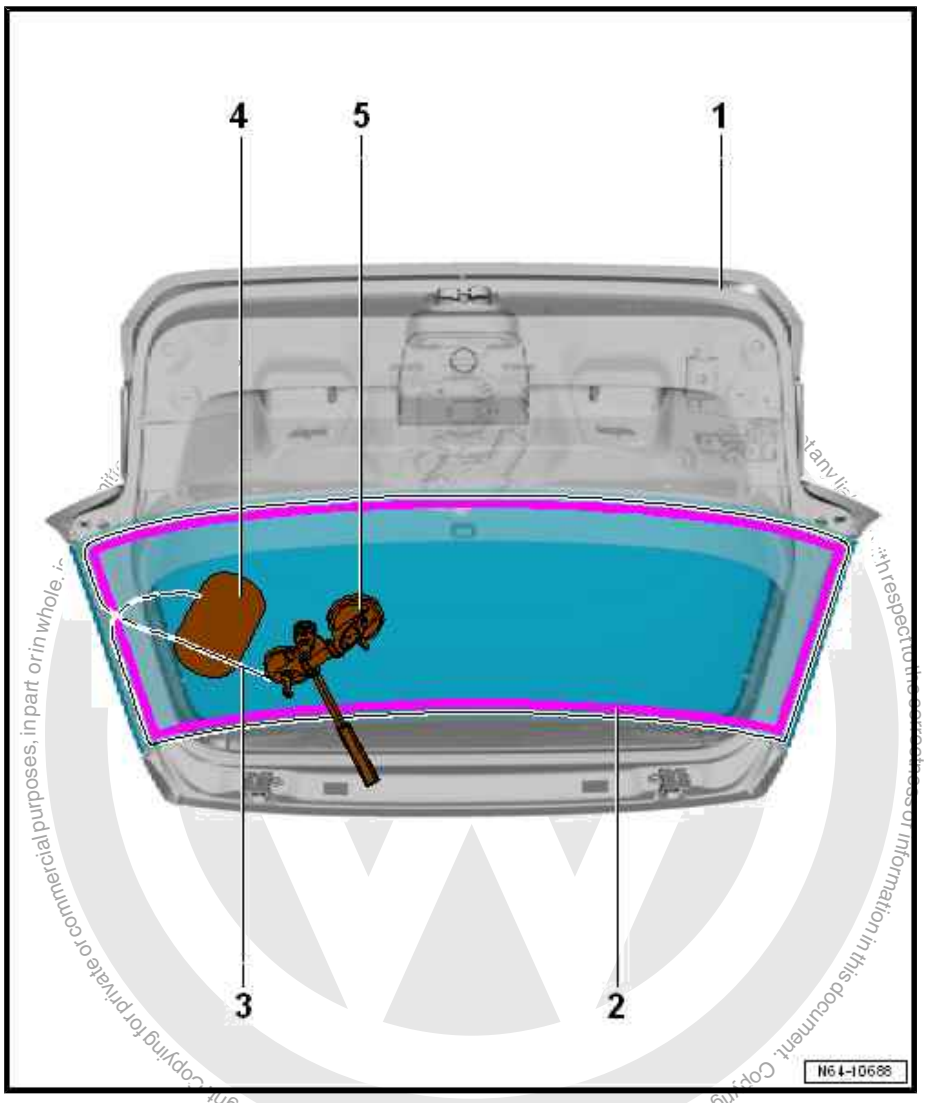
- ❑ Loosening once to adjust the door is permitted. Always renew otherwise.
- ❑ Installed from inside vehicle.
- ❑ Remove B-pillar trim ⇒ General body repairs, interior; Rep. gr. 70 ; Trims, interior; Removing and installing B-pillar trim .
- ❑ 50 Nm

Note

- *After renewal of A-pillar the specified torque changes.*
- *Specified tightening torque after renewal of A-pillar: 20 Nm + 90°*

Note

It is essential to use the protective film or the plastic strip - V.A.G 1474/15- in order to protect the metal flange.



- Carefully guide protective film -4- or plastic strip - V.A.G 1474/15- between rear window and metal flange.
- Place reel device - V.A.G 1654 A- in indicated position.
- Convert reel device - V.A.G 1654 A- accordingly and cut rear window free towards sides starting in upper area.
- Use wedge - V.A.G 1474/5- to press cutting cord -3- against rear window glass while cutting in order to have clearance at body flange.
- Remove rear window from rear lid.

Installing

- Preparing old undamaged window for glazing ⇒ page 300 .
- Preparing new window for glazing ⇒ page 301 .
- Preparing body flange for glazing ⇒ page 303 .

1.1 Safety measures when working with pyrotechnic components

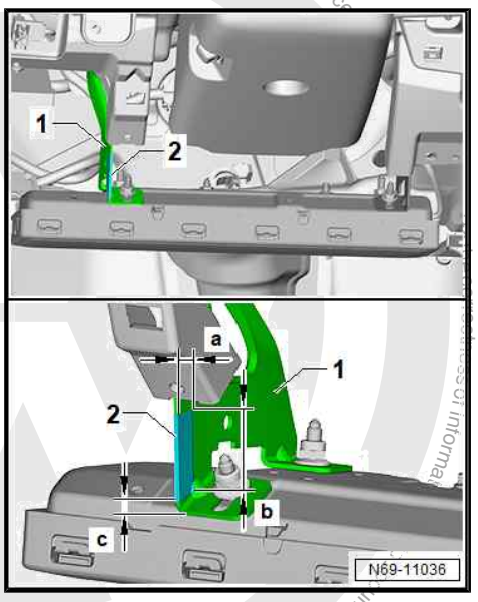
Note

– Bond on felt strip -2- according to bracket dimensions -1-.

- Dimension “a”: 15 mm, each side, overlapping
- Dimension “b”: = 30 mm
- Dimension “c”: = approx. 3 mm

Specified torque

- ⇒ “10.1 Assembly overview - knee airbag”, page 129
- ⇒ “1.4 Assembly overview - glove compartment”, page 20



10.3.2 Removing and installing knee airbag bracket, passenger side

The knee airbag bracket must be renewed if the knee airbag has been triggered.

Special tools and workshop equipment required

- Torque wrench - VAS 6583-

Removing

– Remove knee airbag with igniter ⇒ page 133 .

– Unscrew bolts -2-.

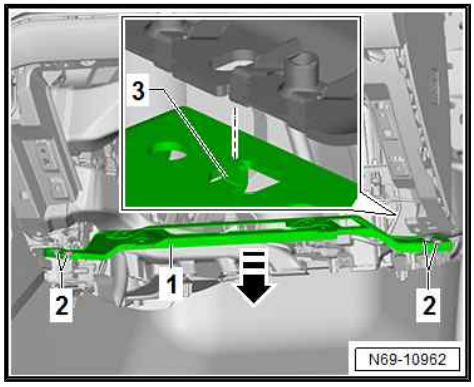
– Remove knee airbag bracket -1- in -direction of arrow-.

Installing

Install in reverse order of removal, observing the following:

Note

Position the knee airbag bracket-1- on both sides with the help of the positioning aids -3-.



Specified torque

- ⇒ “10.1 Assembly overview - knee airbag”, page 129
- ⇒ “1.4 Assembly overview - glove compartment”, page 20

- ❑ Driver seat massage function button - E670-
- ❑ Front passenger seat massage function button - E671-
- ❑ Removing and installing ⇒ page 314

7 - Cover

- ❑ For seat rail on sill side.
- ❑ Qty. 2
- ❑ Removing and installing ⇒ page 291

8 - Front seat trim

- ❑ Removing and installing ⇒ page 296

9 - Cover

- ❑ For seat rail on tunnel side.
- ❑ Qty. 2
- ❑ Removing and installing ⇒ page 291

10 - Seat pan

- ❑ Assembly overview ⇒ page 274
- ❑ Depending on vehicle equipment, with seat depth adjustment ⇒ page 276 .

11 - Belt buckle

- ❑ Assembly overview ⇒ page 79

12 - Seat trim on tunnel side

- ❑ Removing and installing ⇒ page 292